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# Ulster County

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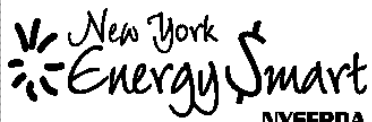


## Technical Assistance Study

## Draft Report

## NYSERDA PON 1197

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## SECTION I EXECUTIVE SUMMARY

The following report was developed by Siemens Industry, Inc., Building Technologies Division (Siemens) to identify, document, and present various infrastructure improvement and cost reduction strategies for Ulster County. As a leader in Energy Projects and with extensive experience with energy-efficient technologies, Siemens is grateful for the opportunity to do an investigation and evaluation of the potential opportunities that exist for improved utility usage, energy efficiency, and building and systems improvements for the County.

This report was developed in coordination with various members of the County staff, C&S Companies, ZeroDraft, DayLight Savings Company, and PES staff that assisted the Siemens team in the collection of information and interpretation of data. We wish to thank all of the County staff who participated in the audit for their patience in answering our innumerable questions. The end result is truly a team effort and we look forward to assisting the County in developing a project that will effectively improve your bottom line by reducing expenses related to energy use and building operations.

Section 2 of this report describes the Existing Building Conditions for the twenty-seven facilities that were included in the study. This section of the report also provides an overview of the energy usage for each of the buildings included in the study as well as a summary of Energy Star Benchmarking results for each facility. Detailed energy consumption data and the benchmarking results are provided in Appendix A and B respectively.

The total annual energy spend for the 27 buildings included in the audit is about \$2.4 million. The table below represents twelve months of utility information that was furnished by the facility staff or provided via Utility websites.

**Table 1.1: Utility Consumption Summary**

Total Sq. Ft.	Electricity		Natural Gas		#2 Fuel Oil		Propane		Total MBTU	Total MBTU/Sq. Ft.
	kWh	Total Elec. Cost	CCF	Total NG Cost	Gallons	Total FO Cost	Gallons	Total Propane Cost		
983,761	15,547,817	\$1,791,835	139,189	\$162,509	189,886	\$451,397	17,472	\$29,293	95,152,499	96.7

**Notes:**

- 1 - MBTU/Sq. Ft. is based on total building square footage served by each utility account.
- 2- Electric and Natural Gas consumption is based on 365 days from March 2009 through February 2010.
- 3- #2 Fuel Oil and Propane usage is based on one calendar year of available billing data for 2009.

Section 4 of the report describes Facility Improvement Measures (FIMs) that identify specific energy reducing and cost saving measures for each facility in the study. Based on our projections, the savings potential at the 27 facilities chosen for this study are about 15,553,090 MBTU/yr. Detailed savings by FIM are presented in Table 4.1 in

Section 4 of this report and in the FIM calculations in the Appendices. Total potential cost savings identified is \$369,833/yr which represents a potential reduction in energy cost of about 15%.

## SECTION II

### BACKGROUND/EXISTING CONDITIONS

#### Facilities Summary

Our surveys were conducted at twenty-seven facilities within Ulster County, NY. The total building square footage is approximately 983,761 ft<sup>2</sup>. Table 2.1 provides a summary of the buildings included in the survey. Following the table the existing conditions at each facility are described.

**Table 2.1: Facilities Summary**

Facility	Address	Square Footage
Carr Building	1 Pearl Street, Kingston	3,600
Community Correctional Facility	63 Golden Hill Drive, Kingston	7,700
Court House	285 Wall Street, Kingston	43,000
Emergency Management E-911	238 Golden Hill Drive, Kingston	2,200
Flatbush Annex	300 Flatbush Ave, Kingston	20,500
Golden Hill Healthcare Center	99 Golden Hill Drive, Kingston	155,000
Heavy Vehicle Maintenance Complex (Quarry)	Shamrock Lane, Kingston	35,000
Information Services	25 South Manor Ave, Kingston	12,525
Mental Health Building(Golden Hill)	239 Golden Hill Drive, Kingston	40,000
Old U.C. Jail	63 Golden Hill Drive, Kingston	54,000
Pool	241 Libertyville Rd, New Paltz	7,000
Probation Department(Kingston)	733 Broadway, Kingston	20,000
Public Works Building	313 Shamrock Lane, Kingston	8,700
Old Jail Storage Garage	63 Golden Hill Drive, Kingston	5,000
Trudy Resnick Farber Building	50 Center St., Ellenville	21,000
U.C. Historian (Dept. of Environment)	17 Pearl Street, Kingston	4,300
U.C. Office Building	244 Fair St, Kingston	62,396
U.C. Record Storage	300 Foxhall Ave, Kingston	23,000
UCAT	1 Danny Circle, Kingston	24,000
Ulster Avenue Office Complex (DSS)	1 Development Court, Kingston	118,000
Accord Substation	Granite Road	6,600
Boiceville Substation	Cold Brook Road	13,300
Saugerties Substation	Quarryville Road	3,900
Shandaken Substation - 1	Route 28, Shandaken	2,800
Shandaken Substation - 2	Route 28, Shandaken	2,800
New Paltz Salt Storage	246 Libertyville Road, New Paltz	10,440
U.C. Law Enforcement Center	380 Boulevard, Kingston	277,000
TOTAL		983,761



## CARR BUILDING – 1 Pearl Street, Kingston

The Carr Building was originally built in 1870 and prior to its current purpose of providing office space was a private residence and a funeral home. It is a 3,600 square foot two-story brick building with a full attic and basement. The Crimes Victims Unit occupies the first floor and the second floor provides office space for a County Judge. The basement is used for storage and houses the boiler and domestic hot water heater. The attic is primarily empty and contains an AHU that provides cooling to the second floor. The building occupancy is about 10-15 people and is in active use from about 8 AM to 6 PM.

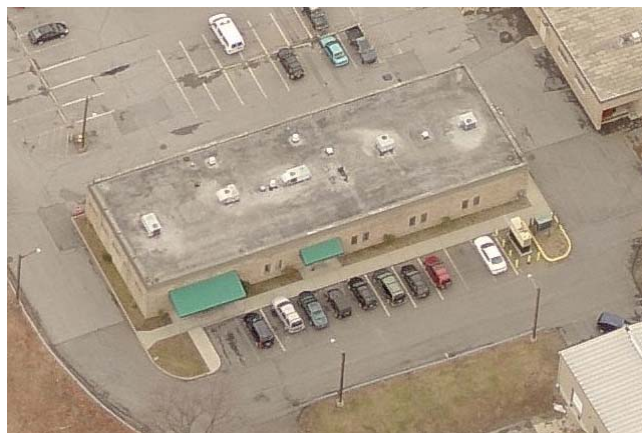


The building utilities are natural gas and electric with an energy intensity of approximately 165 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$10,900. Domestic water heating is provided by one 4.5 kW electric hot water heater. Steam at approximately 10 psig for the perimeter radiation steam heating system is provided via one non-condensing natural gas-fired steam boiler rated at 546 MBH input. The boiler is at the end of its useful life.

During the heating season, space temperature for the first and second floors is controlled by the perimeter heating system using a non-programmable thermostat on the first floor. The basement is served by electric convectors controlled by a line-voltage thermostat. Space cooling is provided on the first floor via an air handling unit suspended in the drop ceiling, which is served by a York 3.5 ton split-system condensing unit. On the second floor, space cooling is provided by a York 4 ton split-system heat pump that was installed in the Fall of 2009. First floor cooling is controlled by a dedicated non-programmable thermostat and the second floor heat pump cooling is controlled by a programmable thermostat.

## COMMUNITY CORRECTIONS – 63 Golden Hill Drive, Kingston

The Community Correctional Facility was originally built as a vehicle garage for the Sheriff's Department. It was converted into a detention and office space in 2001. Currently, the building is used as the main hub for the Community Corrections Department to help facilitate programs that provide alternatives to incarceration for nonviolent offenders. It is a 7,700 square foot single-story office building primarily of concrete block construction.



The peak occupancy of the building is approximately 40 to 50 people. The building is typically occupied during normal business hours.

The building utilities are propane and electric with an energy intensity of approximately 103 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$23,800. The heating system consists of five (5) propane fired rooftop units along with perimeter electric heat. The cooling system utilizes DX cooling coils in the five rooftop units. The rooftop units are controlled by a series of temperature sensors in the building, while the perimeter electric heat is locally controlled. The facility utilizes an Automatrix system for building control and setbacks. The graphical interface enables the user to view and change setpoints for the rooftop units but not the electric perimeter heat. The exhaust and fresh air requirements for the building are met through the existing rooftop units. The domestic hot water system is made up of a single electric hot water heater.

### **ULSTER COUNTY COURT HOUSE – 285 Wall Street, Kingston**

The Courthouse is a 43,000 square foot three-story office building primarily of stone construction that was originally built in 1818. The building houses the Supreme Court, County Court, Court Clerk, and the Commissioner of Jurors. The peak occupancy of the building is approximately 250 to 300 people. Portions of the building that house prisoners are occupied 24 hours per day. The majority of the building is occupied during normal business hours.



The building utilities are natural gas and electric with an energy intensity of approximately 85 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$104,100. The heating system consists of four (4) natural gas-fired boilers that work in conjunction with wall mounted Packaged Terminal Air Conditioners/Heat Pump (PTACs). The cooling system utilizes a cooling tower to provide water to the same PTACs used for the heating system. The heating and cooling systems are controlled by a series of temperature sensors in the building with local controls to make small adjustments as well as a central control program operated by the facility manager. The facility utilizes an Automatrix system for building control and setbacks. The graphical interface enables the user to drill down to view and change setpoints for the three air handlers and all of the 143 PTACs.

The exhaust requirements for the building are met through the use of three (3) air handling units; two smaller units and one large unit with a heat recovery wheel. These units provide the required fresh air to the space as well. The domestic hot water is provided by one natural gas-fired hot water heater.

## EMERGENCY MANAGEMENT BLDG., 238 Golden Hill Drive, Kingston

The Emergency Management E-911 Building is a 2,200 square foot single story building that was originally built as a home in 1970. Today the building houses the Emergency Management offices and the 911 Call Center. The call center area is occupied 24 hours per day and 365 days per year. The office area is used about 40 hours per week. Peak occupancy of the building is approximately 15 to 20 people.



The building utilities are natural gas and electric with an energy intensity of approximately 247 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$18,100. Space heating is provided by two natural gas-fired condensing furnaces. Space cooling is provided by three small split system AC units. In addition, the phone and data center is served by a Liebert split system unit that is at the end of its life (21 years old) and is struggling to meet the cooling needs of the data room.

## FLATBUSH ANNEX – 300 Flatbush Avenue, Kingston

The Flatbush Annex is a 20,500 square foot four-story office building. The building is used as the offices for the Ulster County Health Department including the Environmental Sanitation Division, Nursing Division, Medical Examiner, Administration, and other services. The facility was originally built in 1873 and renovated in 1950 and 1997. The peak occupancy of the building is approximately 250 to 300 people. The facility is occupied during normal business hours.



The building utilities are natural gas and electric with an energy intensity of approximately 117 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$60,200. The heating system consists of four (4) natural gas-fired boilers that work in conjunction with wall mounted PTACs and perimeter heating. The cooling system utilizes a cooling tower to provide water to the same PTACs used for the heating system. There is an air handler with a heating coil to provide fresh air to the space. The heating and cooling systems are controlled by a series of temperature sensors in the building with local controls to make small adjustments as well as a central control program operated by the facility manager. The facility utilizes an Automatrix system for building control and setbacks. The graphical interface enables the user to view and change setpoints for the

main air handler and the 103 PTAC units but the system cannot alter the exhaust fans functionality.

The exhaust requirements for the building are met through the use of a single air handling unit. This unit has two exhaust fans with runaround loops to provide some heat recovery and a single supply fan to provide the required fresh air for the space. Domestic hot water system is provided by an electric hot water heater.

## **GOLDEN HILL HEALTHCARE CENTER (NURSING HOME) – 99 Golden Hill Drive, Kingston**

The Golden Hill Healthcare Center is a 155,000 square foot three-story nursing home made of concrete block with a brick veneer. The building was originally constructed in 1972 and a new wing (south wing) was added in 1978. The building is a full service nursing home that offers multiple specialized services. The facility has 280 beds and an occupancy including residents and staff of about 380 to 430 people. The facility is occupied 24 hours per day and 7 days per week.



The building utilities are #2 fuel oil and electric with an energy intensity of approximately 127 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$594,000. The heating system consists of three (3) fuel oil-fired boilers that work in conjunction with wall mounted PTACs as well as a large amount of completely electric wall mounted PTACs. The cooling system utilizes a cooling tower and chiller to provide water to the same PTACs that utilize the boilers for heating with the remaining PTACs in the building being self-contained units. There are multiple air handlers with heating coils to provide fresh air to the space. The boiler and chiller based heating and cooling systems are controlled by a pneumatic controls system utilizing a series of temperature sensors throughout the building with local controls to make small adjustments, while the self contained PTACs have local controls to make adjustments. There is no centralized control system and most controls are only local.

The exhaust requirements for the building are met through the use of a total of eight (8) exhaust fans all fitted with heat recovery systems. There is also a dedicated kitchen exhaust system. The domestic hot water system is made up of multiple hot water storage tanks located in the boiler room and in small dedicated mechanical rooms throughout the building that store water at 140°F and mix down to 120°F for distribution.

**HEAVY VEHICLE MAINTENANCE – Shamrock Lane, Kingston**

The Heavy Vehicle Maintenance Complex is located at 521-525 Shamrock Lane in Kingston. It totals approximately 35,000 square feet and is made up of a series of garage buildings of primarily concrete block construction. The complex is used by the county for repair and maintenance of county vehicles as well as some DOT services. The peak occupancy of the buildings is approximately 50 people. The buildings see varied occupancy but in general the facility is in use during the typical work day.



The building utilities are natural gas, #2 fuel oil, and waste oil, and electric with an energy intensity of approximately 46 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$34,500.

The heating system consists of a series of multiple natural gas and oil-fired furnaces and unit heaters located throughout the complex. There is no cooling system in place. The furnaces are controlled by local thermostats with no programming abilities. Unit heaters are controlled with local controls on the units. There is no dedicated exhaust system for any of the buildings aside from locally controlled fans. The domestic hot water system is made up of multiple electric hot water tanks located throughout the complex.

**INFORMATION SERVICES – 25 South Manor Avenue, Kingston**

The Information Services Building is a 12,525 square foot single-story office building and data center of concrete block construction with a brick veneer. The building is used to provide technical guidance, expertise and support in the management of the County's computer and telecommunications technology. The peak occupancy of the building is approximately 35 people and is occupied about 9 hours per day between Monday and Friday.



The building utilities are electric and natural gas with an energy intensity of approximately 246 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$90,800.

The heating system consists of a single natural gas fired rooftop unit that provides heating supply air to the space. The cooling system utilizes the same rooftop unit as the heating system with a DX coil to cool the spaces when needed. There are also two (2) redundant Liebert air conditioning units that provide cooling to the data center through a raised floor. The heating and cooling systems are controlled through the use of thermostats and a central control program operated by the facility manager. The facility utilizes an Automatrix system for building control and setbacks. The graphical interface enables the user to view and change setpoints for the rooftop unit but the Liebert system maintains a steady state for the Data Room. The exhaust requirements for the building are met through the use of the rooftop unit. The domestic hot water system is made up of a single electric hot water heater.

### **MENTAL HEALTH BUILDING – 239 Golden Hill Drive, Kingston**

The Mental Health Building is a 40,000 square foot two-story medical office building of concrete block construction with a brick veneer. This building was built in 1986 and 60is home to the Ulster County Mental Health Department and provides services to the mentally ill, chemically dependent, and developmentally disabled persons. The peak occupancy of the building is approximately 120 people and the building is occupied on weekdays during typical business hours.



The building utilities are electric and natural gas with an energy intensity of approximately 68 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$74,400. The heating system consists of a single natural gas-fired boiler unit that provides hot water to 50 heat pumps throughout the building. The cooling system utilizes a cooling tower with a glycol loop and a heat exchanger to provide water to the same 50 heat pumps used by the heating system. The heating and cooling systems are controlled through the use of thermostats and a central control program operated by the facility manager. The facility utilizes a Metasys system for building control and setbacks. The graphical interface enables the user to view and change setpoints for the main air handler and the 50 PTAC units. There are two small split systems utilized to keep small computer equipment rooms cool.

The exhaust requirements for the building are met through the use of an air handling unit in the penthouse. The unit consists of two (2) exhaust fans that convene to a single output with a heat pipe system installed to provide some heat recovery and a single supply fan to provide the required fresh air for the space. Domestic hot water system is provided by a natural gas-fired hot water heater.

### **OLD ULSTER COUNTY JAIL – 63 Golden Hill Drive, Kingston**

The Old Ulster County Jail is a 54,000 square foot brick veneer and concrete panel structure. The facility was built in 1971 and operation was transferred to a new County owned facility in 2007. Since that time the building has been mostly abandoned. Data loggers deployed in the facility show that occupancy is limited to one small area of the building and then only for one day per week. This small space is used



about 6 hours per week. Given the currently low occupancy and evidence that equipment is turned off when the building is not occupied no additional study was deemed necessary at this facility. Any additional occupancy of this structure would likely require major retrofit. At that time energy efficiency should be incorporated into the design for the new building's purposes. Siemens feels that any significant changes at this time without knowing the future purpose of the building would be wasteful.

### **ULSTER COUNTY POOL – 241 Libertyville Road, New Paltz**

The Ulster County Pool is a 7,000 square foot facility built in 1985 located in New Paltz adjacent to the County Fair Grounds. The facility is used for general recreation as well as for local swim clubs and competitive meets. The pool is an outdoor facility with an Olympic sized pool and two kiddie pools. The pool is used from mid-June to early-September (about 80 days per year) from 10 AM to 8 PM. The facility does have outdoor lighting but they are rarely (less than 8 hours/yr) utilized.



The facility is comprised of the pool area, locker rooms, snackbar, and mechanical equipment spaces. Hot water for showers is provided by two #2 fuel oil-fired hot water heaters that were recently installed. The pool uses a sand filtration system that was recently recharged with flow supplied by two 30 hp pumps with only one pump running at a time.

### **PROBATION DEPARTMENT – 733 Broadway, Kingston**

The Probation Department is a 20,000 square foot two-story building of concrete panel and brick veneer construction. The building was originally built in 1951 and served as a car dealership until the County bought and renovated the building in 2003. The facility provides office space for the Adult and Juvenile Services branch of the Ulster County Probation Department. The occupancy of the building is approximately 60 people on weekdays and 2 on the weekends.



The building utilities are electric and natural gas with an energy intensity of approximately 64 KBTU/ft<sup>2</sup> and an energy cost per year of about \$32,800. The heating system consists of seven (7) natural gas fired rooftop units that provide heating throughout the building. The cooling system utilizes DX coils in the same seven rooftop units as the heating system. The heating and cooling systems are controlled through the use of thermostats and a central control program operated by the facility manager. The facility utilizes a Metasys system for building control and setbacks. The graphical interface enables the user to view and change setpoints for the rooftop units. There is also a small split system to provide supplementary cooling to specific areas when required. The exhaust requirements for the building are met through the existing rooftop units. Domestic hot water is provided by an electric hot water heater.

### **PUBLIC WORKS – 313 Shamrock Lane, Kingston**

The Public Works Building is an 8,700 square foot three-story office building of primarily cement block construction with a brick veneer. This building, built in 1979, holds the offices for the Public Works Administration, Highways and Bridges Division, and Building and Grounds Division of the Ulster County Department of Public Works. The building is occupied during normal weekday business hours and typical occupancy is approximately 35 to 50 people.



The building utilities are electric and natural gas with an energy intensity of approximately 120 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$29,300.

The heating system consists of a single natural gas fired boiler that provides hot water to a number of PTACs throughout the building. The cooling system utilizes a cooling tower in combination with the same PTACs that are utilized for the heating system. The heating and cooling for the corridors are taken care of by a small 100% outdoor air handling unit. The heating and cooling systems are controlled through the use of thermostats, local PTAC controls for slight adjustments and a central control program operated by the facility manager. The facility utilizes a Metasys system for building control and setbacks. The graphical interface enables the user to view and change setpoints for the main air handler and the PTAC units.

The exhaust requirements for the building are met through the use of the 100% outdoor air handling unit. The fresh air requirements are met by this unit as well, which includes an air to air heat exchanger to preheat or cool the fresh air being provided to the space. Domestic hot water system is supplied via an electric hot water heater.



**STORAGE GARAGE, 63 Golden Hill Drive, Kingston**

The Storage Garage at the Old Jail Complex is a 5,000 square pre-engineered metal skinned facility. The building is used by the County's building and grounds department to store a variety of supplies. The building is not typically occupied.



The building utilities are electric and natural gas with an energy intensity of approximately 52 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$10,100.

The heating system consists of five ceiling-hung electric unit heaters with local non-programmable thermostat controls. Several of the thermostats were damaged. There is a small office area with a window-type AC unit that exhausts to the main garage space. Domestic hot water system is supplied via a small electric hot water heater.

**TRUDY RESNICK FARBER BUILDING, 50 Center Street, Ellenville**

The Trudy Resnick Farber Building is a 21,000 square foot two-story consisting of a combination of brick and wood frame construction. This building, constructed in 1985, provides satellite offices for numerous branches of the Ulster County government including Public Health and



Probation, among others. The peak occupancy of the building is approximately 100 to 150 people, although average occupancy is much lower.

The building utilities are electric and natural gas with an energy intensity of approximately 99 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$50,400.

The heating is supplied by a 700 MGH oil fired boiler in the basement of the facility. The boiler provides hot water to the perimeter fin tube coils and a heating coil in the main air handling unit which supplies 11,000 cfm. In addition, it provides hot water for reheat coils. Cooling is supplied by a 70 ton dx unit circulating refrigerant to a shell and tube exchanger which then circulates chilled water to each of the air handlers. Exhaust air is supplied by five roof top exhaust fans which exhaust 1,760 cfm from 6 am until 6 pm. The facility utilizes an Automatrix system for building control and setbacks. The graphical interface enables the user to view and change setpoints for the four air handlers, the 5 exhaust fans and the perimeter heat loop. The system went through a major overhaul in 2001. Domestic hot water system is provided by an electric hot water heater.

**DEPT. OF THE ENVIRONMENT/HISTORIAN, 17 Pearl St., Kingston**

The total building square footage of this facility is approximately 4,300 ft<sup>2</sup>. The first floor of this building is currently used by the Ulster County Department of the Environment and the second floor is used as record storage by the County Historian but is typically unoccupied.



Domestic water heating is provided by one electric hot water heater with two elements each rated at 4,500 W. Hot water for the perimeter heating system is provided by one non-condensing natural gas-fired boiler rated at 385 MBH input. The boiler is at the end of its useful life. During the heating season, space temperature is controlled by the perimeter heating system using a programmable thermostat on the first floor.

Currently, space cooling is provided only for the first floor via four window air conditioning units. Two units provide 0.5 tons of cooling (10.7 EER each), one unit provides 0.75 tons of cooling (10.8 EER), and the largest unit provides 1.5 tons of cooling (10.7 EER).

**ULSTER COUNTY OFFICE BUILDING – 244 Fair Street, Kingston**

The Ulster County Office Building is a 62,396 square foot six-story office building. The building was constructed in 1964 and serves as the primary office for Ulster County. The typical occupancy of the building is approximately 250 to 300 people. The building is occupied primarily during normal business hours.



The building utilities are electric and natural gas with an energy intensity of approximately 101 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$145,500. The heating system consists of two (2) natural gas-fired boilers that provide hot water to a total of five (5) air handlers with heating coils. The cooling system utilizes a cooling tower in combination with a chiller to provide chilled water to the same air handlers that are utilized for the heating system. One of the air handlers is split into four supply ducts to provide heating and cooling to document vaults on multiple floors. Each one of these four supply ducts includes its own humidifier and electric duct heater. Another air handler is dedicated solely to providing an air curtain for the main entrance in the lobby. The heating and cooling systems are controlled through the use of thermostats and a central control program operated by the facility manager. The facility utilizes a Metasys

system for building controls and setbacks. The graphical interface enables the user to view and change setpoints for the five air handlers.

The exhaust requirements for the building are met through the use of the five air handling units. The fresh air requirements are met through blending return air with outdoor air in the air handling units. Domestic hot water is provided by two (2) natural gas-fired hot water heaters.

### **RECORDS STORAGE BUILDING – 300 Foxhall Avenue, Kingston**

The Ulster County Record Storage Building is a 23,000 square foot five-story office building of cement block construction that is EIFS clad. The building is used as a storage facility for many County records referred to as the Archives. The building was built in the 1960s and converted to its present use in 1997. Typical occupancy of the building is approximately 30 to 40 people. The facility operates about 10 hours per day between Monday and Friday.



The building utilities are electric and natural gas with an energy intensity of approximately 147 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$85,400. The heating system consists of four (4) natural gas-fired rooftop units that provide heating throughout the building. The cooling system consists of DX coils installed in the same air handlers that are utilized for the heating system. There is a series of VAV boxes to control the air distribution in some locations in the building. There is a humidification system in place to keep the storage facility humidity regulated. The heating and cooling systems are controlled through the use of thermostats and a central control program operated by the facility manager. The facility utilizes an Automatrix system for building control and setbacks. The graphical interface enables the user to view and change setpoints for the 4 rooftop units but equipment associated with the older records room is not integrated into the system. The exhaust and fresh air requirements for the building are met through the use of the four existing rooftop units. Domestic hot water system is provided by an electric hot water heater.

### **ULSTER COUNTY AREA TRANSIT (UCAT) – 1 Danny Circle, Kingston**

The UCAT Building is a 24,000 square foot single-story garage and repair facility of primarily concrete block construction. The facility was built in 2005. The peak occupancy of the building is approximately 20 to 30 people.

The building utilities are electric and natural gas with an energy intensity of approximately 142 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$64,800.

The building contains 7,000 square feet of office space, six high bays for County bus maintenance, two bays for bus and vehicle repair, and a high bay for vehicle washing. The heating system is a combination of air handling units, rooftop units, in-floor radiant heating and perimeter heating. Air conditioning is accomplished with the rooftop units. The facility utilizes an Automatrix system for building control and setbacks. The building has substantial control issues which have caused the simultaneous heating and cooling of certain areas. Domestic hot water is provided by an electric hot water heater.



### **ULSTER AVENUE OFFICE COMPLEX (DSS) – 1 Development Court, Kingston**

The Ulster Avenue Office Complex (DSS) is a 118,000 square foot single-story office building of primarily concrete block construction with EIFS cladding. The facility was originally built in 1964 as a shopping center and then renovated in 1995 for its current purpose. The building serves multiple purposes including holding the offices for Social Services and the New York State Small Business Development Center. In addition, a portion of the building is rented out to Ulster County Community College. Typical building occupancy is about 200 to 250 people. The majority of the building is used during normal business hours. The portion used by the Community College is in use to about 9 PM.



The building utilities are natural gas and electric with an energy intensity of approximately 36 KBTU/ft<sup>2</sup> and an energy cost per year of approximately \$113,900. The heating system consists of 30 natural gas fired rooftop units that provide heating to various locations in the building. The cooling system utilizes DX cooling coils in the 30 rooftop units used for the heating system. The rooftop units are controlled by a series of temperature sensors in the building and a central control program operated by a facility

manager. The facility utilizes an Automatrix system for building control and setbacks. The graphical interface enables the user to view and change setpoints for the rooftop units. The exhaust and fresh air requirements for the building are met through the existing rooftop units as well as through two (2) dedicated exhaust fans that are rarely used. The domestic hot water system is made up of eight (8) electric hot water heaters placed in various locations throughout the building.

## SUBSTATIONS

The County maintains numerous substations throughout the County for the purposes of providing salt storage, some office space, and garages used to store and repair equipment. The following substations were evaluated during the study:

- Accord
- Boiceville
- Saugerties
- Shandaken
- New Paltz



Salt Storage Facility at Boiceville

## UC LAW ENFORCEMENT CENTER – 380 Boulevard, Kingston

The UCLEC is a 277,000 square foot facility that functions as a County managed prison and contains the County Sheriff's Office. The Siemens team was requested to review the UCLEC for cost saving opportunities related to the building and lighting controls. A summary of the lighting controls study is included in Appendix D. A review of the building controls was conducted with facility staff and members of Eastern Heating & Cooling who provide Technical Support for the building's Energy Management System. Unfortunately, only moderate improvements are possible without significant expenditures. Some cost savings are possible through the use of Unoccupied/Occupied scheduling which could be implemented at no cost by existing facilities personnel. This recommendation is included in Section III of this report. In addition, a RTU or split-system air conditioning unit should be considered for the computer training room. This space was originally designed as a record storage space but now houses several computers and monitors and the space cooling needs have exceeded the design for its original function. There are no energy savings associated with this improvement but Siemens will evaluate it within the Performance Contract if the County so chooses.

## Utilities Overview

The facilities of Ulster County utilize a mix of electricity, natural gas, #2 fuel oil, propane, and waste oil (Heavy Vehicle Maintenance Complex). The most recent data available at the start of the Detailed Energy Audit covers the annual period of March 2009 through February 2010 for electricity and natural gas. The #2 fuel oil and propane usage is based on the 2009 calendar year. These dates represent the baseline for the project and any follow on analysis.

Energy consumption and associated cost data are summarized in Table 2.2. The table also indicates the avoided usage and demand costs for each facility and energy source. For example, the avoided cost of reducing natural gas usage by 1 CCF at the Carr building is \$1.216. Thus, reducing the natural gas usage in this building by 100 CCF/yr would result in annual savings of \$122. Details of the historical energy consumption and cost profiles are found in Appendix A.

**Table 2.2: Baseline Energy Consumption**

Facility	Electricity Usage (kWh/yr)	Electricity Cost (\$/yr)	Avoided Electric Usage Cost (\$/kWh)	Avoided Electric Demand Cost (\$/kW)	Natural Gas Usage (CCF/yr)	Natural Gas Cost (\$/yr)	Avoided NG Cost (\$/CCF)
Carr Building	32,752	4,812	0.099	8.00	4,812	6,090	1.216
Community Correctional Facility	163,000	20,029	0.097	8.00			
Court House	719,340	90,194	0.097	8.00	11,943	13,904	1.144
Emergency Management E-911	148,998	17,280	0.097	8.00	351	771	1.513
Flatbush Annex	381,480	47,366	0.098	8.00	10870	12,801	1.156
Golden Hill Healthcare Center	3,685,200	415,091	0.094	8.00			
Heavy Vehicle Maintenance Complex	193,600	22,833	0.086	8.00	9519	11,655	1.174
Information Services	735,720	84,086	0.097	8.00	5698	6,717	1.137
Mental Health Building(Golden Hill)	600,600	66,456	0.087	8.00	6662	7,944	1.156
Old U.C. Jail	269,760	31,181	0.096	8.00			
Pool	51,975	7,271	0.087	8.00			
Probation Department(Kingston)	218,960	26,349	0.097	8.00	5304	6,414	1.164
Public Works Building	190,026	24,614	0.096	8.00	3960	4,663	1.117
Old Jail Storage Garage	76,788	10,125	0.096	8.00			
Trudy Resnick Farber Building	258,360	31,377	0.097	8.00			
17 Pearl St (Dept of Environment)	15,156	1,865	0.099		3092	4,463	1.366
U.C. Office Building	990,880	113,030	0.089	8.00	28981	32,397	1.110
U.C. Record Storage	597,120	70,542	0.098	8.00	13503	14,825	1.080
UCAT	327,440	38,977	0.097	8.00	22870	25,848	1.120
Ulster Avenue Office Complex (DSS)	898,920	99,859	0.097	8.00	11624	14,019	1.165
Accord Substation	36,534	5,590	0.084	8.00			
Boiceville Substation - LPG Heat	36,481	4,819	0.084	8.00			
Saugerties Substation-FO Heat	25,428	3,431	0.084	8.00			
Shandaken Substation - 1	3,017	501	0.104				
Shandaken Substation - 2	4,504	649	0.103				
New Paltz Salt Storage	58,978	5,970	0.099				
U.C. Law Enforcement Center	4,826,800	547,540	0.097	8.00			
<b>TOTALS</b>	<b>15,547,817</b>	<b>1,791,835</b>			<b>139,189</b>	<b>162,509</b>	

**Table 2.2: Baseline Energy Consumption (Continued)**

Facility	#2 Fuel Oil Usage (gal/yr)	#2 Fuel Oil Cost (\$/yr)	Avoided Fuel Oil Cost (\$/gal)	Propane Usage (gal/yr)	Propane Cost (\$/yr)	Avoided Propane Cost (\$/gal)	Total Energy Cost (\$/yr)
Carr Building							10,901
Community Correctional Facility				2543.5	3,736	1.47	23,766
Court House							104,098
Emergency Management E-911							18,051
Flatbush Annex							60,167
Golden Hill Healthcare Center	65,980	123,795	1.88				538,886
Heavy Vehicle Maintenance Complex							34,488
Information Services							90,802
Mental Health Building(Golden Hill)							74,399
Old U.C. Jail							31,181
Pool	1,617	3,279	2.03				10,550
Probation Department(Kingston)							32,763
Public Works Building							29,277
Old Jail Storage Garage							10,125
Trudy Resnick Farber Building	8,586	18,992	2.21				50,369
17 Pearl St (Dept of Environment)							6,327
U.C. Office Building							145,427
U.C. Record Storage							85,367
UCAT							64,825
Ulster Avenue Office Complex (DSS)							113,879
Accord Substation							5,590
Boiceville Substation - LPG Heat				4497.5	7,135	1.59	11,954
Saugerties Substation-FO Heat	2,617	5,334	2.04				8,764
Shandaken Substation - 1	2,278	4,748	2.08				5,249
Shandaken Substation - 2							649
New Paltz Salt Storage	800	1,249	1.56				7,219
U.C. Law Enforcement Center	108,008	294,000	2.72	10430.7	18,422	1.77	859,962
<b>TOTALS</b>	<b>189,886</b>	<b>451,397</b>		<b>17471.7</b>	<b>29,293</b>		<b>2,435,035</b>

### Energy Star Benchmarking Summary

The U.S. Environmental Protection Agency’s Portfolio Manager program was utilized to benchmark the County’s facilities. This benchmarking program is part of EPA’s Energy Star program. Details of the buildings that could be analyzed using Portfolio Manager are found in Appendix B. Portfolio Managers is an on-line program that allows the user to compare the energy performance of a facility to similar buildings across the United States. For buildings of more than 5,000 square feet an Energy Performance Rating between 1-100 is determined by the program for most building types. “The rating expresses the performance of your building relative to similar facilities around the US. A rating of 50 signals that your performance is in the middle of your peer group – half of similar facilities are more efficient and half are less efficient. A rating of 75 indicates that your building is more efficient than 75% of buildings, in other words, you perform in the top quartile for your peer group. Buildings that earn a 75 or higher may be eligible to apply for the ENERGY STAR. The rating is based on your as-billed energy consumption, and is normalized to adjust for weather and for the level of business activity (including operating hours and occupant density).”<sup>1</sup> The Portfolio Manager program allows the user to update energy usage information thus providing the ability to

<sup>1</sup> Energy Star web-site [www.energystar.gov](http://www.energystar.gov) - Frequently Asked Questions

track progress in achieving energy saving goals. Siemens will provide the County with a tutorial on how to access the on-line program and update data.

Table 2.3 provides a summary of the Energy Star Performance ratings for the buildings that could be assessed. In addition, the current energy intensity in terms of kBtu/ft<sup>2</sup>/yr (thousand British Thermal Units per square foot per year) as well as the national average Commercial Building Energy Consumption Survey intensity are presented.

**Table 2.3: Energy Star Benchmarking Summary**

Facility	Square Footage	Energy Performance Rating	Current Energy Intensity (kBtu/ft <sup>2</sup> /yr)	CBECs Ave. Energy Intensity (kBtu/ft <sup>2</sup> /yr)
Carr Building <sup>2</sup>	3,600	N/A	165	90
Community Correctional Facility	7,700	6	102	56
Court House	43,000	50	83	83
Emergency Management E-911	2,200	N/A	247	90
Flatbush Annex	20,500	20	115	82
Golden Hill Healthcare Center <sup>3</sup>	155,000	N/A	137	124
Heavy Vehicle Maintenance Complex (Quarry) <sup>3</sup>	35,000	N/A	44	77
Information Services	12,525	88	244	303
Mental Health Building(Golden Hill)	40,000	49	67	66
Old U.C. Jail <sup>4</sup>	54,000	N/A	16	90
Pool <sup>3</sup>	7,000	N/A	58	65
Probation Department(Kingston)	20,000	72	61	79
Public Works Building	8,700	6	119	64
Old Jail Storage Garage	5,000	3	50	19
Trudy Resnick Farber Building	21,000	41	99	90
U.C. Historian (Dept. of Environment) <sup>2</sup>	4,300	N/A	84	90
U.C. Office Building	62,396	52	97	100
U.C. Record Storage <sup>3</sup>	23,000	N/A	148	25
UCAT <sup>3</sup>	24,000	N/A	137	77
Ulster Avenue Office Complex (DSS) <sup>5</sup>	118,000	N/A	36	77
Accord Substation <sup>3</sup>	6,600	N/A	19	77
Boiceville Substation <sup>3</sup>	13,300	N/A	40	77
Saugerties Substation <sup>2</sup>	3,900	N/A	116	77
Shandaken Substation – 1 <sup>2</sup>	2,800	N/A	118	77
Shandaken Substation – 2 <sup>2</sup>	2,800	N/A	6	77
New Paltz Salt Storage <sup>6</sup>	10,440	N/A	N/A	77
U.C. Law Enforcement Center <sup>3</sup>	277,000	N/A	115	90

Figure 2.1 compares the current building energy intensity to the CBECs data.

<sup>2</sup> An Energy Star energy performance rating is not available because this building is too small (<5,000 ft<sup>2</sup>)

<sup>3</sup> An Energy Star energy performance rating is not currently available for this type of facility.

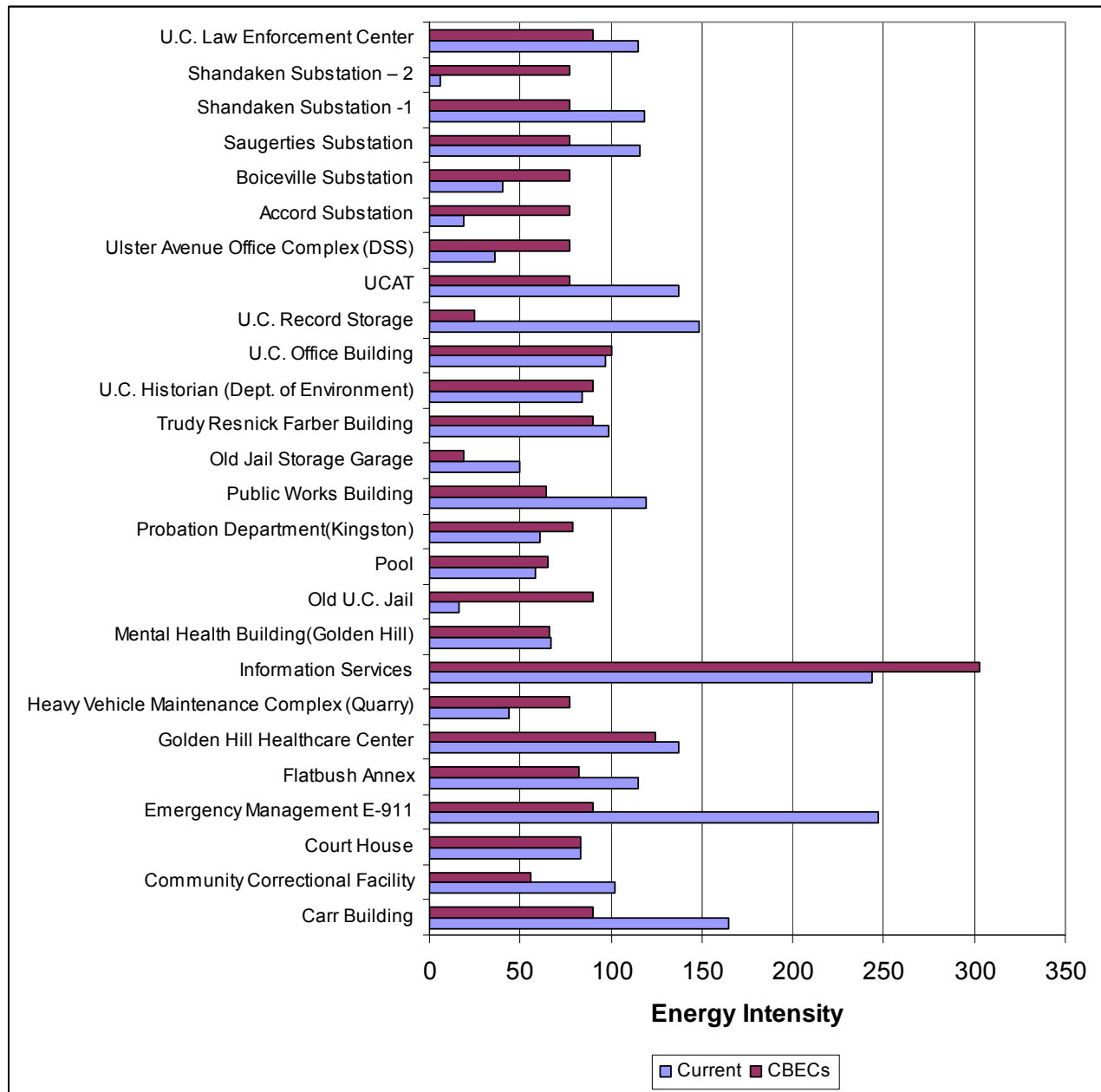
<sup>4</sup> An Energy Star energy performance rating is not available because building is used < 30 hours/wk.

<sup>5</sup> An Energy Star energy performance rating is not available because the Community College occupies more than 10% of building space.

<sup>6</sup> Building has not been occupied long enough to determine either an energy performance rating or an annual energy intensity.



**Figure 2.1: Energy Intensity Summary**



## SECTION III PROJECT DESCRIPTION

The purpose of this project is to assist Ulster County in identifying Facility Improvement Measures (FIMs) that will allow the County to reduce its energy consumption and costs. Ulster County, NY has initiated an Energy Management program to reduce energy usage and costs and promote environmental stewardship in the community. The County has developed a facility management roadmap for the investment of capital funding associated with its facilities. The roadmap provides a holistic review of physical conditions, operational plans, and County goals. The roadmap included a review of energy usage at the County's facilities and has identified several buildings with significant potential for energy conservation.

The objective of the Technical Assistance Study is to analyze energy conservation measures at those buildings to make the buildings more energy efficient with improved environmental conditions for the occupants. The need for analysis in the buildings identified is based on three parameters:

1. The energy intensity of the facility
2. Condition of major energy consuming equipment<sup>7</sup>
3. Walk-through observations of the project team

An analysis of the energy intensity in Btu/ft<sup>2</sup>/yr indicates that the County's buildings are in need of energy efficiency improvements. The average energy intensity for the buildings to be included in the study is typically greater than the CBECs data. Thus, significant energy reduction potential is achievable.

A study of County Facility Management practices completed in November of 2007 indicates that much of the existing HVAC equipment is at the end of its useful life. Several of the facilities have HVAC equipment that "currently fails to meet the required minimum level of performance". A summary of the reports' findings on the HVAC systems follows:

- Few systems have been replaced in the past 5 years, and most HVAC equipment is at the end of its expected service life.
- Controls on HVAC systems are generally outdated and in some instances failing.
- The following facilities had energy related systems that were identified as failing to meet the needs of the building:
  - Carr Building
  - Storage Garage
  - Community Correctional Facility
  - Court House
  - Emergency Management E-911
  - Flatbush Annex

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<sup>7</sup> "Technical Report: Assessment of County Facility Management Practices" conducted by C&S Companies, November, 2007.

- Golden Hill Healthcare Center
- Heavy Vehicle Maintenance Complex
- Information Services
- Mental Health Building
- Old UC Jail
- Pool
- Probation Department
- Public Works Building
- Court House
- UC Historian
- UC Office Building

The Technical Assistance Study included the following tasks:

1. Lighting: an analysis of existing lighting systems was completed for the facilities referenced in Table 2.1. Analysis focused on opportunities for lighting energy reductions including improved efficiency of lamps and ballasts, opportunities for lighting controls, and analysis of over-lit areas.
2. Heating Systems – an analysis of system and individual units to determine savings from an increased efficiency was performed.
3. Cooling Systems an analysis of system and individual units to determine savings from an increased efficiency was performed.
4. Building Envelope – an analysis of building envelope improvements was completed for the facilities indicated in Table 2.1.
5. Benchmarking using EPA Energy Star Portfolio Manager. Analysis of existing utility bills and costs to establish characteristics and develop a baseline for this facility energy usage was completed. This included all fuels consumed at the facilities.
  - Utility data for all energy sources was collected.
  - EPA Energy Star Portfolio Manager was utilized to benchmark each building, results are summarized in Table 2.3 and summary sheets are provided in the Appendices.

The FIMs described in Section 4 of this report will allow the County to create a package of recommendations combining short and long-term payback improvements. Details of the cost savings calculations are provided in Appendices D through F. Siemens is excited about this opportunity and we hope that the County will concur with the following information and associated approach to move this project to reality.

The objective of this study was to identify and analyze specific Facility Improvement Measures (FIMs) for the 27 facilities studied. Following discussions with the County the FIMs would then be considered for implementation in a Performance Contract.

## SECTION IV

### FACILITY IMPROVEMENT MEASURES

The following Facility Improvement Measures were identified for the buildings included in the Detailed Energy Audit. Table 3.1 provides a summary of the FIMs for the buildings included in the survey. Following the table, the FIMs organized by facility are described. Detailed calculations for each measure are included in the Appendices. In some cases more than one FIM was identified for a particular piece of equipment. The more economically viable measure is presented here.

**Table 4.1: Facility Improvement Measures Summary**

FIM #	Facility Improvement Measure	Electric Savings (kWh/yr)	Natural Gas Savings (CCF/yr)	#2 Fuel Oil Savings (Gallons/yr)	LPG Savings (Gallons/yr)
Carr Building					
1	Replace Steam Boiler		1,910		
2	DHW Heater Replacement		(215)		
3	Weatherization Improvements	652	350		
4	Lighting Upgrade	2,237			
Community Corrections					
5	Demand Control Ventilation	211			475
6	Modify Electric Heat Controls	7,742			
7	Weatherization Improvements	1,471			603
8	Lighting Upgrade	3,514			
Court House					
9	Boiler Replacement		1,449		
10	Cooling Tower VFD	13,735			
11	Heat Pump Replacement	56,041			
12	Weatherization Improvements	2,639	2,638		
13	Lighting Upgrade	19,222			
Emergency Management					
14	Replace Liebert	2,381			
15	Weatherization Improvements	1,238	80		
16	Lighting Upgrade	992			
Flatbush Annex					
17	Demand Control Ventilation	27,710	564		
18	Hot Water Reset Controls		547		
19	Boiler Replacement		1,055		
20	Cooling Tower Replacement	2,664			
21	Exhaust Fan Control Modification		2,035		
22	Pump Motor/VFD Replacement	50,870			
23	Weatherization Improvements	1,046	744		
24	Lighting Upgrade	473			
Heavy Vehicle Maintenance					
25	Infrared Heaters	1,969	5,464		
26	Weatherization Improvements		372		

FIM #	Facility Improvement Measure	Electric Savings (kWh/yr)	Natural Gas Savings (CCF/yr)	#2 Fuel Oil Savings (Gallons/yr)	LPG Savings (Gallons/yr)
27	Lighting Upgrade	41,717			
Information Services					
28	AHU and DCV	10,379	1,554		
29	Weatherization Improvements	1,402	664		
30	Lighting Upgrade	14,020			
Mental Health					
31	Demand Control Ventilation	14,628	863		
32	Cooling Tower Replacement	14,208			
33	Wind Turbine	33,875			
34	Heat Pump Replacement	48,157			
35	Pump Motor/VFD Replacement	36,608			
36	Weatherization Improvements	2,028	1,015		
37	Lighting Upgrade	42,721			
Pool					
38	Motor Replacement	3,378			
39	Lighting Upgrade	2,357			
Probation Department					
40	Demand Control Ventilation	465	848		
41	Weatherization Improvements	2,139	1,040		
42	Lighting Upgrade	4,555			
Public Works					
43	Replace AC Unit and Install DCV	19,246	648		
44	Cooling Tower Replacement	4,066			
45	Pump Motor Replacement	1,665			
46	Weatherization Improvements	824	690		
47	Lighting Upgrade	15,510			
Old Jail Storage Garage					
48	Replace Unit Heaters	68,084			(3,016)
49	Weatherization Improvements				130
Trudy Resnick Farber					
50	Boiler Replacement			1,345	
51	Demand Control Ventilation	213		289	
52	Lighting Upgrade	11,439			
Department of the Environment (17 Pearl Street)					
53	Boiler Replacement		354		
54	DHW Heater Replacement	2,565	(107)		
55	Weatherization Improvements	682	620		
56	Lighting Upgrade	1,491			
Ulster County Office Building					
57	Demand Control Ventilation	1,856	5,672		
58	Replace Electric Heat in AC-4	63,240	(2,372)		
59	Boiler Replacement		5,743		
60	Humidification Replacement	51,006			
61	Pump Motor/VFD Replacement	37,876			
62	Weatherization Improvements	1,476	1,148		
63	Lighting Upgrade	53,279			

FIM #	Facility Improvement Measure	Electric Savings (kWh/yr)	Natural Gas Savings (CCF/yr)	#2 Fuel Oil Savings (Gallons/yr)	LPG Savings (Gallons/yr)
Record Storage					
64	RTU and DCV	31,640	2,799		
65	Humidification Replacement	113,359	(4,123)		
66	Weatherization Improvements	2,288	1,048		
67	Lighting Upgrade	42,021			
Ulster County Area Transportation (UCAT)					
68	Demand Control Ventilation	6,279			
69	Weatherization Improvements	12,668			
70	Lighting Upgrade	31,276			
71	Remove Electric Heat	66,933	(2,456)		
Ulster Avenue Office Complex (DSS)					
72	Replace RTUs	51,552	791		
73	Weatherization Improvements	2,742	5,000		
74	Lighting Upgrade	1,606	612		
75	Demand Control Ventilation	32,706			
Accord Substation					
76	Lighting Upgrade	858			
Boiceville Substation					
77	Bay Area Thermostat Replacement				862
78	DHW Heater Replacement	2,565			(117)
79	Office Area Thermostat Replacement				345
80	Lighting Upgrade	2,982			
Saugerties Substation					
81	Infrared Heaters			2,383	(1,947)
82	Office Area Thermostat Replacement			253	
Ulster County Law Enforcement Center					
83	Lighting Sensor Upgrade	127,985			
84	Building Scheduling	162,854		4,664	
Golden Hill Healthcare Center (Nursing Home)					
85	Hot Water Reset Controls			409	
86	Kitchen Exhaust Hood Controls	17,463		459	
87	Boiler Replacement - NG		(53,292)	49,485	
88	Instantaneous DHW Heater		(17,382)	16,495	
89	Pump Motor/VFD Replacement	43,564			
90	Weatherization Improvements	150,111		5,027	
91	Lighting Upgrade	76,281			
92	PTAC Replacement	457,496			
<b>TOTALS</b>		<b>2,241,191</b>	<b>(31,630)</b>	<b>80,809</b>	<b>(2,665)</b>

## CARR BUILDING – 1 Pearl Street, Kingston

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### FIM-1 Replace Natural Gas Steam Boiler with New Condensing Hot Water Boiler and Provide Hot Water Temperature Reset

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#### Existing Conditions

Presently the existing boiler is a non-condensing unit (Burnham America 546 MBH Input) and operates at an efficiency of approximately 78.5%.

#### Recommendation

Replace existing steam boiler with a natural gas-fired Patterson-Kelley C-450 Mach series (or equal) hot water condensing boiler. Because the new condensing unit will obtain combustion air directly via a PVC intake, the existing electronically controlled combustion air damper (which is currently fixed in the open position) is no longer necessary and will be capped and sealed to reduce infiltration into the basement. Convert the existing steam distribution to hot water distribution and replace radiators with like sized units. Install hot water temperature reset controls to modulate hot water circulation temperature between 160°F at 20°F outside air to 100°F when outside air is 60°F. In addition, the existing non-programmable thermostat will be replaced with two new programmable units with separate zones for the first and second floor.



#### Methodology

Savings for this measure are based on an increase in combustion efficiency, the use of outside air temperature reset to decrease the hot water temperature, an increase in distribution efficiency, and the reduction of space temperature during unoccupied periods. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.216/CCF.

#### Alternate Implementation

Depending on the result of engineering design work that will need to be performed to convert the steam-based system to hot water the installation of a new steam boiler should also be considered. Savings would be associated with an increase in efficiency and the use of programmable thermostats.

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### FIM-2 Replace Electric Domestic Hot Water Heater with Power-Vent Natural Gas Unit

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#### Existing Conditions

Presently domestic hot water is produced by a 30 gallon electric water heater with two 4,500 W elements.

**Recommendation**

Install a new AO Smith ProMax GPVH (or equal) power-vent 40 gallon hot water heater natural gas-fired domestic hot water heater.

**Methodology**

Savings for this measure are based on a decrease in the per unit energy cost of natural gas as compared to electricity. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.216/CCF, an avoided electricity cost of \$0.099/kWh, and an avoided electric demand cost of \$8.00/kW.

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**FIM-3 Weatherization Improvements**

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**Existing Conditions**

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted. The doors of this facility are in general poorly weather stripped and have significant gaps that allow for excessive infiltration.

Several gaps were noted along the exterior including three boarded up basement windows, exhaust fan dampers, and other smaller penetrations. An abandoned fireplace flue in the second floor clerk's area was identified during the survey. Numerous penetrations and uninsulated areas of the attic were identified.

**Recommendation**

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Weather strip main entrance door
- Weather strip the abandoned double front door (along Pearl Street)
- Weather strip the two single doors at the basement and stairwell to the attic Seal gaps at three boarded up basement window
- Seal around the three exhaust fan dampers
- Seal basement penetrations
- Seal abandoned fireplace flue in second floor Clerk's office
- Air seal and insulate attic stairs
- Air seal gap at perimeter of the second floor AC supply and return ducts
- Insulate and air seal box for stained glass in ceiling of second
- Air seal miscellaneous penetrations between attic floor and second floor ceiling

**Methodology**

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack



area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.216/CCF and an average electricity cost of \$0.147/kWh.

## FIM-4 Upgrade Lighting

### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L4' E/E	11	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' T8/EL	1	Recessed lensed 2X4 fixture with 2-4' T8 lamps and electronic ballasts.
2L4' E/E	4	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' E/E	11	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
1L60W INC	7	Surface-mounted (6") fixture with 1-60 Watt incandescent lamp.
2L60W INC	3	Surface-mounted (6") fixture with 2-60 Watt incandescent lamps.
(2) 15W SLS	2	Surface-mounted (6") fixture with 2-15 Watt compact fluorescent screw-in lamps.
2L8W CF	5	Exit sign (12") fixture with 2-8 Watt compact fluorescent lamps.

44

### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.099/kWh and an avoided electric demand cost of \$8.00/kW.

## COMMUNITY CORRECTIONS – 63 Golden Hill Drive, Kingston

## FIM-5 Install Demand Control Ventilation

### Existing Conditions

Five roof-top air handlers supply outdoor air to the Community Correctional Facility. Their model and serial numbers are as follows:

*Name	Make	M/N	S/N
RTU-A	York	ZJ048N10P4BAA1	N1A0547401
RTU-B	York	ZJ048N10P4BAA1	N1A0547402
RTU-C	York	DH090N15A4AAA6B	N0L8376933

RTU-D	York	DJ060N10N4AAA3	N0M7427164
RTU-E	York	DH090N15A4AAA6B	N0L8376934
<i>*Units are not labeled, names are not valid</i>			

Currently the building control system maintains a minimum outside air position for each air handler. There is no variation in outside air based on occupancy.

Demand control ventilation (DCV) is a control strategy that adjusts the amount of outside air based on the number of occupants and the ventilation demands of those occupants. DCV accomplishes two things; it conserves energy and assures sufficient ventilation. By not heating or cooling unnecessary quantities of outside air, energy is conserved. Ventilation is based on the needs of the occupants of the space rather than using a fixed minimum-air ventilation strategy based on design occupancy.

ASHRAE Standard 62-1999, eliminated the reference to the absolute level of 1,000 ppm CO<sub>2</sub>, and now refers to maintaining an inside/outside differential of less than 700 ppm above the outdoor air CO<sub>2</sub> concentration. Typically the outdoor air CO<sub>2</sub> concentration varies from 375 to 450 ppm. Measurement of outdoor CO<sub>2</sub> above 500 ppm may indicate a combustion source is nearby. Readings were taken in the building, and demonstrated only during periods when the conference rooms are full is the current minimum outside air appropriate.

### **Recommendation**

Monitor indoor CO<sub>2</sub> levels while simultaneously monitoring outdoor air CO<sub>2</sub>. Modulate supply, return, and exhaust dampers to maintain proper CO<sub>2</sub> levels and building pressurization.

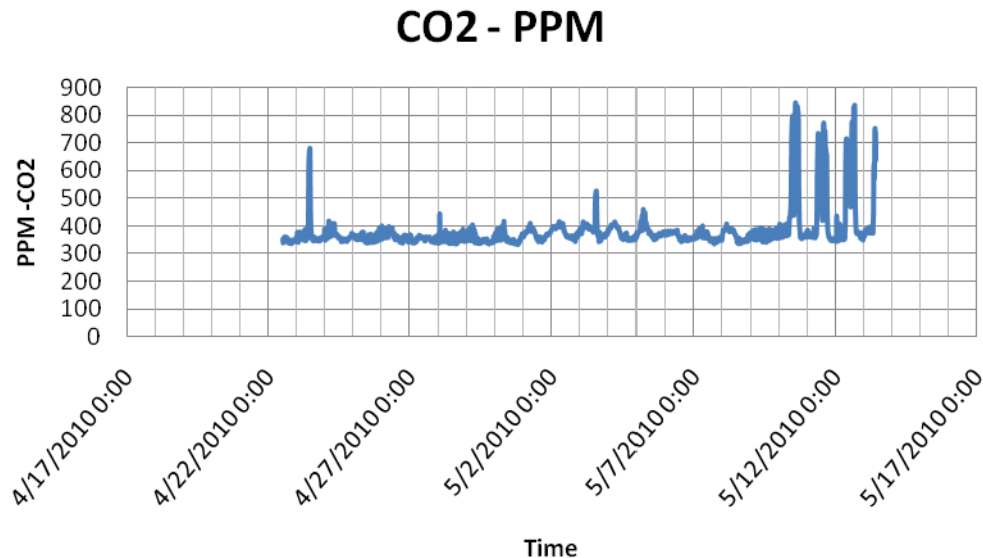
The following modifications are required:

- Install one CO<sub>2</sub> sensor in the return air duct closest to each air handler (to be located within the building envelope).
- Install one CO<sub>2</sub> sensor outside the building to monitor outdoor air CO<sub>2</sub> concentration.

Modulate the supply, return, and exhaust damper positions such that a 700 ppm delta above outside air conditions is maintained while maintaining proper building pressurization. Allow the outside air dampers to close during evening setback. System economizer mode is not to be overridden by these controls. For example, if free cooling is available, the system will still bring in additional outdoor air to satisfy cooling needs.

### **Methodology**

Savings are achieved by reducing the amount of outside air that is required to be heated or cooled. To determine the appropriate reduction in system operating hours CO<sub>2</sub> sensors and data loggers were installed in the Community Correctional building for a period of three weeks. An occupancy profile was developed using the data from the loggers placed in them and applied to the energy calculations shown in Appendix E for this building.



As demonstrated above, the building only required a significant amount of outside air for a period of four days throughout the three weeks, while the conference rooms were being used.

Building occupancy schedules were determined from discussions with facility staff as well as using logged temperature data which showed building temperature setback during unoccupied periods.

The spaces were assumed to be in economizer mode (where it is advantageous to bring in additional outdoor air) when the outdoor air temperature was below the space temperature setpoint. Spaces were assumed to need to cool the outdoor air brought in when the outdoor air temperature was above the space temperature setpoint.

Heating and cooling efficiencies were available from the nameplate data of many of the air handling units. For those that were not available an efficiency of 80% was used for heating and their cooling COPs were estimated from their age (older units had to conform to lower ASHRAE efficiency requirements).

The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided LPG cost of \$1.47/gallon and an average electricity cost of \$0.123/kWh.

## **FIM-6      Modify Electric Heat Controls**

### **Existing Conditions**

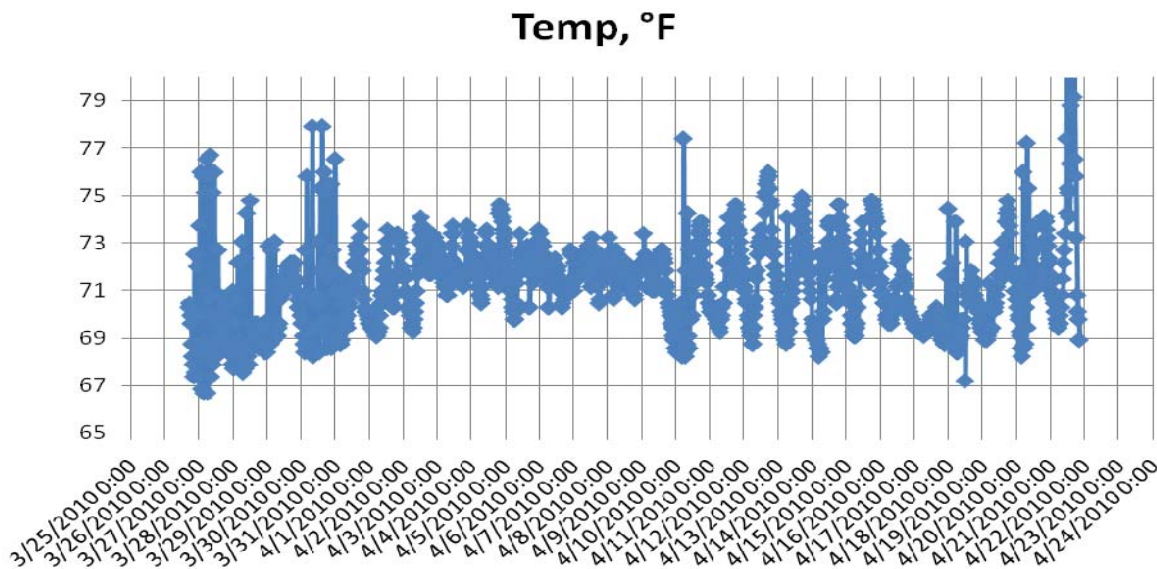
Currently the building contains approximately 3kW of electric resistant heat. The heat has the ability to be placed on a timer, but the on/off pins have been removed. Even though the rooftop units which supply the spaces with heat and fresh air set back in the evening hours, the electric heat remains active and counter acts any benefit of the setback.

**Recommendation**

Tie electric heating into existing control system and mirror the evening setbacks of the roof-top units which are currently running a 6am to 6pm schedule. The heating element control has already been brought back to the electrical room. By connecting the controller to the building management system the setback can be easily achieved.

**Methodology**

As demonstrated by the figure below, although the space is attempting to go into a setback mode every evening, the electric heat prevents the space from achieving a setback of 65F.



Bin weather data was used to estimate the amount of heat provided by the electric resistance coils during unoccupied hours. Occupied hours were determined from conversations with facility personnel. The space temperature setpoint was determined from logged data. The capacity of the electric heat was determined using nameplate data.

The calculations and savings estimates can be found in Appendix E. The utility information for the site reflected an average electricity cost of \$0.123/kWh.

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**FIM-7 Weatherization Improvements**

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**Existing Conditions**

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

**Recommendation**

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization

improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Seal gap at perimeter of building gap at the Roof/ Wall interface
- Seal gap above the entry in the soffits at the southwestern corner of the building
- Replace weather stripping on the five single and two double doors

### Methodology

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided LPG cost of \$1.47/gallon and an average electricity cost of \$0.123/kWh.

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## FIM-8 Upgrade Lighting

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### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L4' T8/EL	82	Recessed lensed 2X4 fixture with 2-4' T8 lamps and electronic ballasts.
1L4' T8/EL	2	Wraparound 1X4 fixture with 1-4' T8 lamp and electronic ballasts.
2L4' E/E	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2F39BIAX	21	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.
2L4'U E/E	2	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.
2L4'U T8/EL	4	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.
70W HPS	8	Wallpack (6") fixture with 1-70 Watt high-pressure sodium lamp.
LED	6	Exit sign (12") fixture with LED technology.

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### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.097/kWh and an avoided electric demand cost of \$8.00/kW.

## ULSTER COUNTY COURT HOUSE – 285 Wall Street, Kingston

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### FIM-9 Install Condensing Boilers

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#### Existing Conditions

There are currently four natural gas fired boilers that provide heating to the Courthouse. They are approximately 11 years old. The boilers each have an input capacity of 900 MBH and have a nameplate efficiency of 80.0%. They are located in the basement mechanical room of the building.

#### Recommendation

It is recommended that the existing boilers be replaced with four smaller high efficiency condensing boilers that are correctly sized for the current hot water requirements of the facility. Recommended boilers are four (4) Patterson-Kelley condensing boilers model Mach C-750 or equivalent. Two of the units should be dedicated to the heat pump loop and the other two to the heating loop. This would enable the 70°F loop to achieve greater efficiency. The heating loop could then provide backup to the 70°F loop through the existing heat exchangers.



#### Methodology

Savings are achieved through an increase in boiler efficiency. The increase of efficiency was applied to the current heating requirements of the facility which were based on the natural gas consumption of the building. The new condensing boilers will provide the same amount of heat to the building, but at a higher efficiency.

The current boiler efficiency was determined from nameplate data. The proposed efficiency was estimated based on manufacturer's catalogs. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.144/CCF.

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### FIM-10 Install Cooling Tower Variable Frequency Drive and Premium Efficiency Motor

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#### Existing Conditions

Currently the building's cooling tower utilizes a 15 hp fan motor. The control system monitors loop temperature and stages the processes of flow to the tower, and fan "on" based on an increasing loop temperature. The tower fan can quickly impact the loop temperature during moderate loads causing short cycling throughout the day.

**Recommendation**

Install a variable frequency drive (VFD) on the fan motor to modulate fan speed as required by the condensing loop. The new VFD will be located in the basement mechanical room and the controller will be tied into the existing condenser loop temperature sensor. The VFD will be programmed to control fan speed to activate at a loop temperature of 75F and ramp up to 100%, or 60 hertz at 95F.

**Methodology**

The energy savings from this measure are based on the reduction in power used by the fan motor when it is at partial load as well as the improved efficiency of a new premium efficiency motor. When the fan's speed can be reduced the VFD will slow the speed of the motor saving the electricity required by the motor. A load profile based on outdoor air temperatures was developed and applied to bin weather data to estimate the savings potential. The current motor's efficiency was determined from manufacturer's data.

Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electric usage cost of \$0.097/kWh and an avoided electric demand cost of \$8.00/kW.

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**FIM-11      Replace Heat Pumps**

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**Existing Conditions**

There are currently 142 aging heat pumps throughout the Courthouse facility. The units are in a constant state of disrepair and require costly maintenance.

**Recommendation**

It is recommended that the existing heat pumps throughout the facility be replaced with newer higher efficiency units.

**Methodology**

The energy savings from this measure are from the increased heating and cooling COPs of the heat pumps. The capacity and efficiencies of the existing heat pumps were determined from nameplate information and manufacturer's data. The efficiencies of the proposed heat pumps were determined using manufacturer's catalog data. The existing boiler's efficiency was taken from its nameplate.

The existing and proposed amount of heating and cooling required by the facility was determined using the total capacity of the existing system, bin weather data, and typical utilization rates.

Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electric usage cost of \$0.097/kWh and an avoided electric demand cost of \$8.00/kW.

## FIM-12 Weatherization Improvements

### Existing Conditions

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

### Recommendation

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Weather strip four single and one double doors to seal gaps
- Air seal mechanical room above the old section of the Court House (about 7,140 square feet - excludes Grand Jury)
- Air seal mechanical room above the old jail (2,900 SF) including the air barrier above the suspended ceiling
- Air seal attic space above District Attorney's office (2,700 SF)
- Install new inside storm windows in 30 windows of the Old Court House area. In addition, caulk and seal the windows.
- Caulk and seal 27 windows in the District Attorney Office area

### Methodology

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.144/CCF and an average electricity cost of \$0.125/kWh.

## FIM-13 Upgrade Lighting

### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L4' E/E	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' E/E	15	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' T8/EL	92	Deep-cell parabolic 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
2L4' T8/EL	51	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
2L4' E/E	2	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' T8/EL	31	Deep-cell parabolic 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
2F39BIAX	307	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.
2L4'U T8/EL	18	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.
1L4' E/E	9	Surface-mounted strip 1X4 fixture with 1-4' energy-efficient lamp and ballasts.



2L4' T8/EL	18	Surface-mounted strip 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
250W HPS	5	Pole-mounted (12") fixture with 1-250 Watt high-pressure sodium lamp.
1L100W INC	4	Surface-mounted (6") fixture with 1-100 Watt incandescent lamp.
150W MH	10	Surface-mounted 1X1 fixture with 1-150 Watt metal halide lamp.
13W CF SI	51	Hi-Hat (6") fixture with 13 Watt compact fluorescent screw-in lamps.
(2) 18W CF HW	88	Hi-Hat (6") fixture with 2-18 Watt compact fluorescent hard-wired lamps.
1L75W INC	30	Hi-Hat (6") fixture with 1-75 Watt incandescent lamp.
15W SLS	24	Surface-mounted (6") fixture with 1-15 Watt compact fluorescent screw-in lamp.
LED	5	Exit sign (12") fixture with LED technology.

761

### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.097/kWh and an avoided electric demand cost of \$8.00/kW.

## EMERGENCY MANAGEMENT BLDG., 238 Golden Hill Drive, Kingston

### FIM-14 Replace Data Center Condensing Unit with New High-Efficiency Split-System Condensing Unit

#### Existing Conditions

Presently the Data Center is served by a Liebert Split-System Condensing Unit.

#### Recommendation

Replace the existing electric unit with a new Liebert Model PFH (or equal) of the same capacity.

#### Methodology

The energy savings from this measure are from the increased cooling COP of the unit. The capacity and efficiency of the existing unit were determined from nameplate information and manufacturer's data. The efficiency of the proposed unit was determined using manufacturer's catalog data.

The existing and proposed amount of cooling required for the facility's Data Center was determined using the total capacity of the existing system, annual cooling hours for this area, and typical utilization rates.



Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electric usage cost of \$0.097/kWh and an avoided electric demand cost of \$8.00/kW.

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## FIM-15 Weatherization Improvements

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### Existing Conditions

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

### Recommendation

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Air seal and insulate floor at vented crawlspace
- Weather strip three single doors
- Install air barrier between suspended ceiling and vented attic
- Air sealing at main entry soffit where it meets the building

### Methodology

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.513/CCF and an average electricity cost of \$0.116/kWh.

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## FIM-16 Upgrade Lighting

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### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L4' E/E	8	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
3L4' T8/EL	20	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.
70W HPS	5	Wallpack (6") fixture with 1-70 Watt high-pressure sodium lamp.
LED	3	Exit sign (12") fixture with LED technology.

36

### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.097/kWh and an avoided electric demand cost of \$8.00/kW.

## FLATBUSH ANNEX – 300 Flatbush Avenue, Kingston

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### FIM-17 Install Demand Control Ventilation

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#### Existing Conditions

A single air handler supplies outdoor air to the Flatbush Annex. Two exhaust fans exhaust air from the building. The make, model, serial number, and part number for the air handler are as follows:

*Name	Make	M/N	S/N
AHU-A	McQuay	MSL108CH	37k00384-06
<i>*Unit is not labeled, name is not valid</i>			

Currently the building control system maintains a minimum outside air position for the air handler. There is no variation in outside air based on occupancy.

Demand control ventilation (DCV) is a control strategy that adjusts the amount of outside air based on the number of occupants and the ventilation demands of those occupants. DCV accomplishes two things; it conserves energy and assures sufficient ventilation. By not heating or cooling unnecessary quantities of outside air, energy is conserved. Ventilation is based on the needs of the occupants of the space rather than using a fixed minimum-air ventilation strategy based on design occupancy.

ASHRAE Standard 62-1999, eliminated the reference to the absolute level of 1,000 ppm CO<sub>2</sub>, and now refers to maintaining an inside/outside differential of less than 700 ppm above the outdoor air CO<sub>2</sub> concentration. Typically the outdoor air CO<sub>2</sub> concentration varies from 375 to 450 ppm. Measurement of outdoor CO<sub>2</sub> above 500 ppm may indicate a combustion source is nearby.

#### Recommendation

Monitor CO<sub>2</sub> levels at the space level while simultaneously monitoring outside air CO<sub>2</sub>.

Modulate fan speed on the supply fan and two exhaust fans to accurately maintain proper CO2 levels.

The following modifications are required:

1. Replace existing supply and exhaust fan motors with premium efficiency motors suitable for use with VFDs.
2. Install VFDs on the three new premium efficiency motors.
3. Add exhaust fans to control system.
4. Install one CO2 sensor in the return air duct closest to the air handler (to be located within the building envelope).
5. Install one CO2 sensor outside the building to monitor outdoor air CO2 concentration.

Modulate the fan speed of the supply fan such that a 700 ppm delta above outside air conditions is maintained. In addition, the speed of the two exhaust fans will be modulated to maintain proper building pressurization. Allow the outside air dampers to close during evening setback and open to 100% when VFD demand control is active. System economizer mode is not to be overridden by these controls. That is if free cooling is available, the system will still bring in additional outdoor air to satisfy cooling needs.

### **Methodology**

Savings are achieved by reducing the amount of outside air that is required to be heated or cooled. To determine the appropriate reduction in system operating hours CO2 sensors and data loggers were installed in the building for a period of three weeks. An occupancy profile was developed using the data from the loggers placed in them and applied to the energy calculations shown in Appendix E for this building.

Building occupancy schedules were determined from discussions with facility staff as well as using logged temperature data which showed building temperature setback during unoccupied periods. The existing quantity of outdoor air provided to the building was determined based on the existing AHU being a 3,000 CFM unit which provides 100% outdoor air.

The spaces were assumed to be in economizer mode (where it is advantageous to bring in additional outdoor air) when the outdoor air temperature was below the space temperature setpoint. Spaces were assumed to need to cool the outdoor air brought in when the outdoor air temperature was above the space temperature setpoint.

Heating and cooling efficiencies were available from the nameplate data of many of the air handling units. For those that were not available an efficiency of 80% was used for heating and their cooling COPs were estimated from their age (older units had to conform to lower ASHRAE efficiency requirements).

The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided natural gas cost of \$1.156/CCF and an average electricity cost of \$0.124/kWh.

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## FIM-18 Install Hot Water Temperature Reset

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### Existing Conditions

Currently the building control system maintains a constant high temperature hot water loop. The management system is not utilizing hot water reset as an energy reduction strategy.

The water temperature required to heat the building varies with outdoor temperature. When it is very cold, the heating water temperature needs to be hot. As it warms up outside, the heating water temperature can be reduced.



Resetting hot water supply temperature (HWS) to match the anticipated heating load can result in considerable energy savings, increased boiler efficiency and occupant comfort. Hot water boilers are very efficient at part-load conditions when a high water temperature is not required; also distribution losses are minimized when temperature is lower. Energy savings occurs when the supply hot water temperature is maintained at a minimum set point to satisfy the largest heating load.

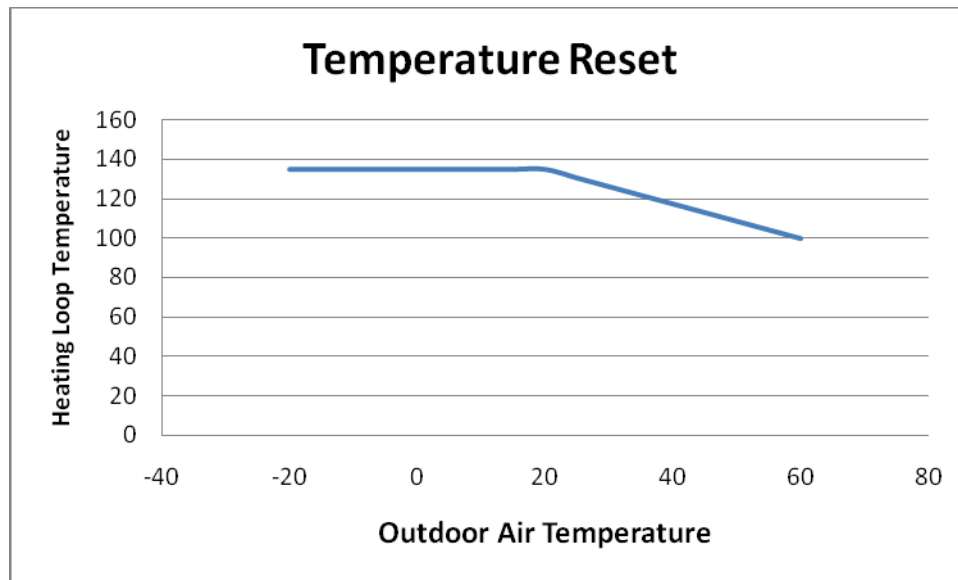
### Recommendation

Monitor outdoor air condition and modulate hot water circulation temperature from the existing 135°F during 20°F outside air to 100°F when outside air temperature is 60°F. To complete this FIM the following will be accomplished:

1. Install outdoor air sensor
2. Integrate new boiler controls into BMS
3. Install temperature reset software capabilities

### Methodology

Implementing a hot water reset schedule increases the efficiency that the boiler operates at as well as reduces the distribution losses. The current boilers' efficiencies were based on nameplate data found on the boilers. The existing hot water temperature set point was determined from conversations with facility staff. The peak heating load is based on three of the four boilers at full load. The following is an example of the loop temperature versus outdoor air temperature.



Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.156/CCF.

## FIM-19 Install Condensing Boilers

### Existing Conditions

There are currently four natural gas fired boilers that provide heating to the building. They are approximately 13 years old. The boilers each have an input capacity of 900 MBH and have a nameplate efficiency of 80.0%.

### Recommendation

It is recommended that the existing boilers be replaced with four high efficiency condensing boilers that are correctly sized for the current hot water requirements of the facility.

Recommended boilers are four (4) Harsco/Patterson-Kelley Mach Series condensing boilers C750 or equivalent. Two of the units should be dedicated to the heat pump loop and the other two to the heating loop. This would enable the 70°F loop to achieve greater efficiency. The heating loop could then provide backup to the 70°F loop through the existing heat exchangers.



### Methodology

Savings are achieved through an increase in boiler efficiency. The increase of efficiency was applied to the current heating requirements of the facility which were based on the

natural gas consumption of the building. The new condensing boilers will provide the same amount of heat to the building, but at a higher efficiency.

The current boiler efficiency was determined from nameplate data. The proposed efficiency was estimated based on manufacturer's catalogs. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.156/CCF.

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## FIM-20 Replace Cooling Tower

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### Existing Conditions

Currently the existing cooling tower is capable of approximately 100 tons of cooling with a 25 hp fan motor. The tower is in need of replacement and the motor is oversized for the existing unit. Although the unit does have a VFD to modulate fan speed, the maximum speed is still too great for the tower's connected load.



### Recommendation

Replace the tower with a BAC 1500 series model number 15146, or equivalent, with a 7.5 hp high efficiency fan and VFD.

Unit should be located and positioned to prevent the introduction of the warm discharge air and the associated drift, which may contain chemical or biological contaminants including Legionella, into the ventilation systems of the building on which the unit is located or those of adjacent buildings.

Piping must be sized and installed in accordance with good piping practice. All piping should be supported by pipe hangers or other supports and not by the unit. On open systems, in order to prevent basin overflow at shutdown and to ensure satisfactory pump operation at start-up, all heat exchangers and as much piping as possible should be installed below the operating level of the cooling tower.

### Methodology

This project provides savings from four areas, water loss reduction, motor efficiency increase, VFD kW reduction and chiller efficiency increase. The tower is currently leaking water due to extensive corrosion. The new tower will include a high efficiency motor providing an increase in efficiency from the existing motor. The new motor will also include a VFD which will modulate fan speed based on return temperature. Finally the new tower will operate more effectively providing a decrease in the return temperature to the chiller condenser which will increase the chiller efficiency.

The energy savings for this measure are based on the reduction in power used by a smaller motor and a newer more efficient VFD. When the fan's speed can be reduced

the VFD will slow the speed of the motor saving the electricity required by the motor. A load profile based on outdoor air temperatures was developed. Savings based on bin weather data are provided in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.098/kWh and an avoided electric demand cost of \$8.00/kW.

## FIM-21 Modify Exhaust Fan Control

### Existing Conditions

There are currently two exhaust fans which operate with the building’s main air handler. The main air handler supply fan is on a timed schedule and shuts down from 5pm – 8 am. Unfortunately the two exhaust fans do not shut down. This is evident in the natural gas consumption for the building which is significantly higher than any of the other buildings on a therm per square foot basis.



### Recommendation

It is recommended that the control system add these two 2 hp fans into the control sequence. Once added to the system the fans can be scheduled with the supply unit fan.

### Methodology

The energy savings for this measure are associated with the reduction of exhausting 2,800 cfm of conditioned air throughout the unoccupied hours. There are no losses assumed with the cooling season since the building sets back require no cooling. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.156/CCF.

## FIM-22 Pump Motor/VFD Replacement

### Existing Conditions

The pump motors indicated in the table to the right are all standard-efficiency motors and are not currently controlled by a variable frequency drive (VFD) in order to modulate motor speed based on system pressures.

Flatbush Annex		
Pump	HP	VFD
P-1	10	YES
P-1A	10	YES
P-2	7	-
P-2A	7	-
P-3	2	YES
P-3A	2	YES

### Recommendation

It is recommended that these standard efficiency motors be replaced with premium efficiency motors and VFDs be installed where indicated.



**Methodology**

The energy savings from this measure are based on the reduction in power used by the motors when they can run at partial load as well as the improved efficiency of new premium efficiency motors. When the motor's speed can be reduced the VFD will slow the speed of the motor saving the electricity required by the motor. A load profile for each motor was developed for each motor requiring a VFD based on its use. The current and proposed motor efficiencies were determined using manufacturer's data.

Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.098/kWh and an avoided electric demand cost of \$8.00/kW.

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**FIM-23 Weatherization Improvements**

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**Existing Conditions**

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

**Recommendation**

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Weather strip five single doors
- Seal access point for steam line (back of bldg)
- Seal gaps at floor in attic mechanical rooms
- Air seal cantilever (left back side of building)

**Methodology**

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.156/CCF and an average electricity cost of \$0.124/kWh.

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**FIM-24 Upgrade Lighting**

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**Existing Conditions**

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
3L4' T8/EL	191	Recessed lensed 2X4 fixture with 3-4' T8 lamps and electronic ballasts.
2L4' T8/EL	49	Recessed lensed 2X4 fixture with 2-4' T8 lamps and electronic ballasts.
2L4' T8/EL	43	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
4L4' T8/EL	14	Wraparound 1X4 fixture with 4-4' T8 lamps and electronic ballasts.
2L4' E/E	1	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
150W HPS	4	Wallpack (6") fixture with 1-150 Watt high-pressure sodium lamp.

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### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.098/kWh and an avoided electric demand cost of \$8.00/kW.

## HEAVY VEHICLE MAINTENANCE – Shamrock Lane, Kingston

### FIM-25 Install Infrared Heaters

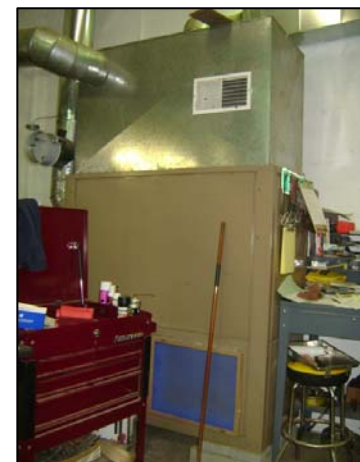
#### Existing Conditions

There are currently three natural gas fired units in the main garage of the heavy vehicle maintenance shop. Together these units produce 1,400 MBH of heat.

#### Recommendation

Install gas fired infrared heating units to the sides of the bays. The heating units are designed to heat objects rather than surrounding air. Together with motion sensors, these units can provide a comfortable working condition when workers are within the space. The units can also be controlled with a sensor that maintains temperature at a particular setpoint. Completion of this FIM includes the following:

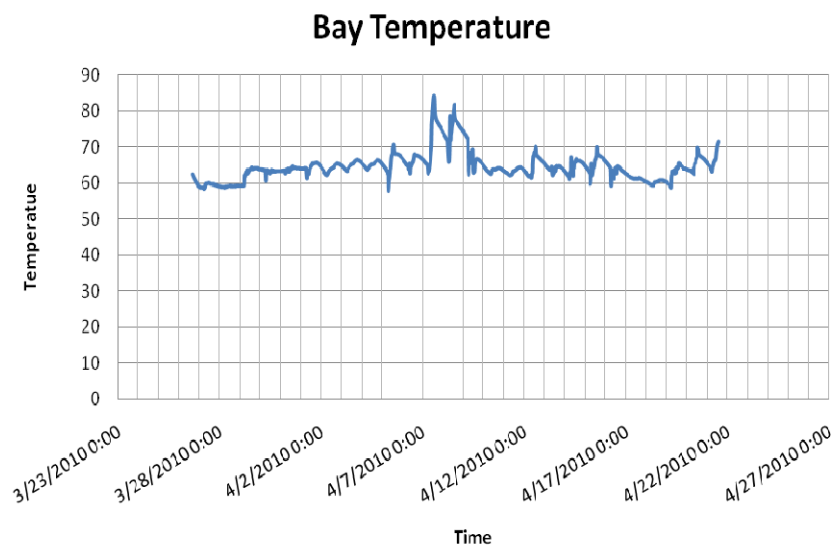
- Disconnect existing natural gas unit heaters
- Provide and install new 10 NG infrared Tube Heaters (Dayton 7D837 50 MBH or equivalent) between each of the bay doors
- Connect motion sensors and wall mounted temperature sensors within line of sight of each unit and install system controls



## Methodology

Replacing the gas-fired furnaces with infrared heaters will allow the facility to only heat specific areas of the facility when they are in use. Currently the gas fired furnaces heat the entire facility even if only one of the maintenance bays is in use. This will reduce the operating hours of the heating units. The overall heating capacity is decreased as well because infrared heaters do not heat the air in the facility. In addition, the infrared heaters are more efficient than the existing furnaces and do not use large blower motors to move air.

The space temperature was monitored to approximate the utilization of these units and it was determined that they are left on throughout the heating season with very little setback, as demonstrated in the figure below.



Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.086/kWh, an avoided electric demand cost of \$8.00/kW, and an avoided natural gas cost of \$1.174/CCF.

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## FIM-26 Weatherization Improvements

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### Existing Conditions

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

### Recommendation

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization

improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Weather strip three single doors
- Weather strip five 12' by 12' overhead doors

### Methodology

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.174/CCF.

## FIM-27 Upgrade Lighting

### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L4' E/E	32	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
1L4' E/E	4	Surface-mounted strip 1X4 fixture with 1-4' energy-efficient lamp and ballasts.
4L4' E/E	6	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.
3L4' E/E	3	Surface-mounted strip 1X4 fixture with 3-4' energy-efficient lamps and ballasts.
4L4' T8/EL	15	Wraparound 1X4 fixture with 4-4' T8 lamps and electronic ballasts.
2L4' E/E	9	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L8' E/S	149	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.
6L4' E/E	2	Surface-mounted strip 1X8 fixture with 6-4' energy-efficient lamps and ballasts.
2L4'U T8/EL	6	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.
150W MH	6	Wallpack (6") fixture with 1-150 Watt metal halide lamp.
250W MH	2	Wallpack 1X1 fixture with 1-250 Watt metal halide lamp.
400W MH	8	Pole-mounted 1X1 fixture with 1-400 Watt metal halide lamp.
250W MH	10	High-bay 1X1 fixture with 1-250 Watt metal halide lamp.
1L150W INC	17	Surface-mounted (6") fixture with 1-150 Watt incandescent lamp.
1L60W INC	1	Surface-mounted (6") fixture with 1-60 Watt incandescent lamp.
150W MH	9	High-bay 1X1 fixture with 1-150 Watt metal halide lamp.
3L75W INC	1	Surface-mounted (6") fixture with 3-75 Watt incandescent lamps.
1L100W INC	29	Surface-mounted (6") fixture with 1-100 Watt incandescent lamp.
LED	18	Exit sign (12") fixture with LED technology.

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### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by

area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.086/kWh and an avoided electric demand cost of \$8.00/kW.

## INFORMATION SERVICES – 25 South Manor Avenue, Kingston

### FIM-28 Replace AHU and Install Demand Control Ventilation

#### Existing Conditions

One rooftop air handler supplies outdoor air to the Information Services Building. The unit is inefficient and includes no advanced control strategy capabilities. The make, model, and serial number for the air handler are as follows:

*Name	Make	M/N	S/N
RTU-A	McQuay	RPS030BA	35C01417 22
<i>*Unit is not labeled, name is not valid</i>			

Currently the building control system maintains a minimum outside air position for the air handler. There is no variation in outside air based on occupancy.

Demand control ventilation (DCV) is a control strategy that adjusts the amount of outside air based on the number of occupants and the ventilation demands of those occupants. DCV accomplishes two things; it conserves energy and assures sufficient ventilation. By not heating or cooling unnecessary quantities of outside air, energy is conserved. Ventilation is based on the needs of the occupants of the space rather than using a fixed minimum-air ventilation strategy based on design occupancy.



ASHRAE Standard 62-1999, eliminated the reference to the absolute level of 1,000 ppm CO<sub>2</sub>, and now refers to maintaining an inside/outside differential of less than 700 ppm above the outdoor air CO<sub>2</sub> concentration. Typically the outdoor air CO<sub>2</sub> concentration varies from 375 to 450 ppm. Measurement of outdoor CO<sub>2</sub> above 500 ppm may indicate a combustion source is nearby.

#### Recommendation

It is recommended that this AHU be replaced with a new more efficient unit and demand control ventilation be installed. The following modifications are required:

- Provide and install new unit equipped with variable frequency drive.

- Install one CO2 sensor in the return air duct closest to each air handler (to be located within the building envelope).
- Install one CO2 sensor outside the building to monitor outdoor air CO2 concentration.

Modulate the supply, return, and exhaust damper positions and supply fan speed such that a 700 ppm delta above outside air conditions is maintained. In addition, the speed of the exhaust fan(s) will be modulated to maintain proper building pressurization. Allow the outside air dampers to close during evening setback and open to 100% when VFD demand control is active. System economizer mode is not to be overridden by these controls. That is if free cooling is available, the system will still bring in additional outdoor air to satisfy cooling needs.

### **Methodology**

The increased cooling COP and the increased combustion efficiency account for most of the savings associated with this measure. The existing COP and combustion efficiency was estimated from the nameplate data. The operating hours of the unit were based on logged data. The proposed COP and efficiency is based on manufacturer's data. Additional savings are gained by implementing demand control ventilation when the new unit is installed.

The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided natural gas cost of \$1.137/CCF, an avoided electricity cost of \$0.097/kWh, and an avoided demand cost of \$8.00/kW.

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## **FIM-29 Weatherization Improvements**

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### **Existing Conditions**

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

### **Recommendation**

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Air seal gap at roof/wall interface above facade in the west office wing
- Air seal gap at roof/wall interface above west wall
- Correct open gaps in ceiling of computer center (2,500 sq.ft. area)
- Weather strip three single doors and one double door
- Re-caulk gap on south wall where offices connect to print shop

## Methodology

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.137/CCF and an average electric cost of \$0.156/kWh.

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## FIM-30 Upgrade Lighting

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### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L4' E/E	139	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' E/E	9	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4'U T8/EL	45	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.
150W HPS	3	Pole-mounted 1X1 fixture with 1-150 Watt high-pressure sodium lamp.
1L75W INC	1	Surface-mounted (6") fixture with 1-75 Watt incandescent lamp.

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### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.097/kWh and an avoided electric demand cost of \$8.00/kW.

## MENTAL HEALTH BUILDING – 239 Golden Hill Drive, Kingston

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### FIM-31 Install Demand Control Ventilation

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#### Existing Conditions

Currently the building's main air handling system utilizes 100% outside air. There is no variation in outside air based on occupancy. The system includes a heat pipe exchanger with very low conversion efficiencies and a supply and exhaust fan.

Demand control ventilation (DCV) is a control strategy that adjusts the amount of outside air based on the number of occupants and the ventilation demands of those occupants.

DCV accomplishes two things; it conserves energy and assures sufficient ventilation. By not heating or cooling unnecessary quantities of outside air, energy is conserved. Ventilation is based on the needs of the occupants of the space rather than using a fixed minimum-air ventilation strategy based on design occupancy.

ASHRAE Standard 62-1999, eliminated the reference to the absolute level of 1,000 ppm CO<sub>2</sub>, and now refers to maintaining an inside/outside differential of less than 700 ppm above the outdoor air CO<sub>2</sub> concentration. Typically the outdoor air CO<sub>2</sub> concentration varies from 375 to 450 ppm. Measurement of outdoor CO<sub>2</sub> above 500 ppm may indicate a combustion source is nearby. Readings were taken in the building and demonstrated that the current minimum outside air is higher than necessary.

### **Recommendation**

This recommendation includes the following:

1. Replace heat exchanger.
2. Replace existing supply (5 hp) and two exhaust fan motors (2 hp and 1.5 hp) with premium efficiency motors suitable for use with VFDs.
3. Install three new VFDs.
4. Add exhaust fans to control system.
5. Install one CO<sub>2</sub> sensor in the return air duct.
6. Install one CO<sub>2</sub> sensor outside the building to monitor outdoor air CO<sub>2</sub> concentration.

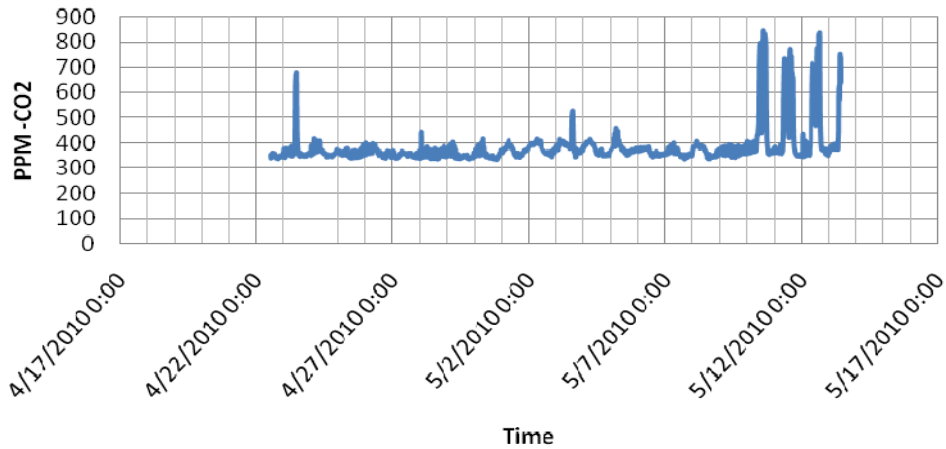
Modulate the fan speed of the supply fan such that a 700 ppm delta above outside air conditions is maintained. In addition, the speed of the exhaust fan(s) will be modulated to maintain proper building pressurization. Allow the outside air dampers to close during evening setback and open to 100% when VFD demand control is active. System economizer mode is not to be overridden by these controls. That is if free cooling is available, the system will still bring in additional outdoor air to satisfy cooling needs.

### **Methodology**

Savings are achieved by reducing the amount of outside air that is required to be heated or cooled. To determine the appropriate reduction in system operating hours CO<sub>2</sub> sensors and data loggers were installed in the building for a period of three weeks. An occupancy profile was developed using the data from the loggers placed in them and applied to the energy calculations shown in Appendix E for this building. The following figure demonstrates the CO<sub>2</sub> concentration within the building during occupied hours. The data shows that the space is significantly over ventilated. Whenever the CO<sub>2</sub> levels are below 1,100 PPM, the space receives more outdoor air than is needed by its occupants.



### CO2 - PPM

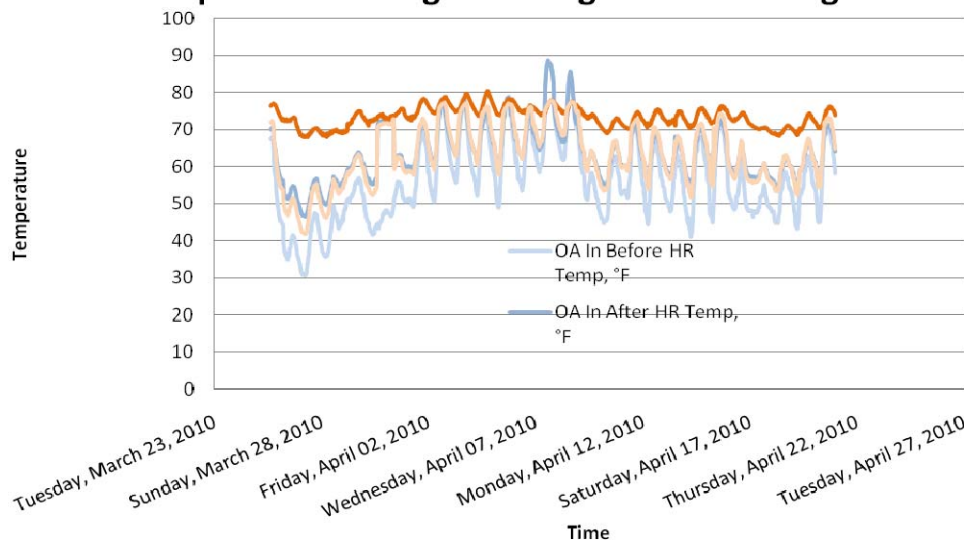


Building occupancy schedules were determined from discussions with facility staff as well as using logged temperature data which showed building temperature setback during unoccupied periods.

Heating and cooling efficiencies were available from the nameplate data of many of the air handling units. For those that were not available an efficiency of 80% was used for heating and their cooling COPs were estimated from their age (older units had to conform to lower ASHRAE efficiency requirements).

The savings calculations associated with the demand ventilation assumed that there was no impact from the existing heat recovery unit. The team monitored the existing recovery system to determine its net efficiency. The following figure demonstrates the unit's affect on entering and exiting air temperature.

### Temperature Changes Through Heat Exchanger



The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided natural gas cost of \$1.156/CCF and an average electricity cost of \$0.111/kWh.

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## **FIM-32     Replace Cooling Tower**

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### **Existing Conditions**

Currently the existing cooling tower is capable of approximately 75 tons of cooling with a 15 hp fan motor. The tower is in need of replacement and the motor is oversized for the existing unit. The unit does not have a VFD to modulate fan speed to match cooling requirements.

### **Recommendation**

Replace the tower with a BAC VTL series model number VTL-079 K, or equivalent, with a 10 hp high efficiency fan and VFD.

This project provides savings from four areas, water loss reduction, motor efficiency increase, VFD kW reduction and chiller efficiency increase. The tower is currently leaking water due to extensive corrosion. The new tower will include a high efficiency motor providing an increase in efficiency from the existing motor. The new motor will also include a VFD which will modulate fan speed based on return temperature. Finally the new tower will operate more effectively providing a decrease in the return temperature to the chiller condenser which will increase the chiller efficiency.

Unit should be located and positioned to prevent the introduction of the warm discharge air and the associated drift, which may contain chemical or biological contaminants including Legionella, into the ventilation systems of the building on which the unit is located or those of adjacent buildings.

Piping must be sized and installed in accordance with good piping practice. All piping should be supported by pipe hangers or other supports and not by the unit. On open systems, in order to prevent basin overflow at shutdown and to ensure satisfactory pump operation at start-up, all heat exchangers and as much piping as possible should be installed below the operating level of the cooling tower.

### **Methodology**

This project provides savings from four areas, water loss reduction, motor efficiency increase, VFD kW reduction and chiller efficiency increase. The tower is currently leaking water due to extensive corrosion. The new tower will include a high efficiency motor providing an increase in efficiency from the existing motor. The new motor will also include a VFD which will modulate fan speed based on return temperature. Finally the new tower will operate more effectively providing a decrease in the return temperature to the chiller condenser which will increase the chiller efficiency.

The energy savings from this measure are based on the reduction in power used by the fan motor when it is at partial load as well as the improved efficiency of a new premium efficiency motor. In addition the new cooling tower will require a smaller 10 HP motor. When the fan's speed can be reduced the VFD will slow the speed of the motor saving the electricity required by the motor. A load profile based on outdoor air temperatures was developed. Savings based on bin weather data are provided in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.087/kWh and an avoided electric demand cost of \$8.00/kW.

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## FIM-33 Install 20 kW Wind Turbine

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### Existing Conditions

Currently there are no wind turbines that are owned or operated by Ulster County. The County purchases all the electricity used at the Mental Health facility from the local utility. This measure evaluates placing a 20kW wind turbine at the peak of the hill on the Mental Health facility's property.

### Recommendation

Install a 20 kW wind turbine at the peak of the hill on the Mental Health facility's property at a height of 100 ft. Implementing this FIM requires installing a wind turbine on the Mental Health hilltop. This would be a grid tied turbine taking advantage of net metering, thereby reducing the facility's overall electricity usage and subsequent charges related to usage. A design phase will be required to specify the equipment and the scope of work.

### Methodology

Energy production was calculated by taking the bin weather data and applying it to the power production curves for three different turbines. A number of correction factors were used to adjust the estimated electrical production from each turbine. First, the elevation correction factor: wind turbine curves are generated using air at sea level which has a higher density than air at higher elevations. As a result, the density of air needs to be corrected for accordingly. This facility has an elevation of about 350 feet above sea level, therefore the air will be less dense, and produce less electricity. A second correction factor is the "location" correction factor: this corrects for the wind speed variation between Albany Airport and the Mental Health Facility. Wind maps from <http://nyswe.awstruepower.com/> were used to estimate this by taking the average wind speed at the turbines proposed hub height at Mental Health Facility and dividing it by the average wind speed at Albany Airport. Since power production is related to wind speed cubed, the location power correction factor is simply the location wind speed correction factor cubed. The final correction factor is related to the hub height difference between where the wind measurements were taken (a height of 10 meters) and where the proposed turbine will be mounted (100 ft). As the hub height of a turbine increases, wind speed increases according to the following equation:

$$V_2 = V_1 \left( \frac{h_2}{h_1} \right)^{\alpha}$$

Where:

- V1 = Wind speed at location 1
- V2 = Wind speed at location 2
- h1 = Hub height at location 1
- h2 = Hub height at location 2
- $\alpha$  = Wind shear factor, or Hellman exponent

The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided electricity cost of \$0.087 and an annual maintenance cost of \$500.

## FIM-34 Heat Pump Replacement

### Existing Conditions

There are currently 50 aging heat pumps throughout the Mental Health facility. The units are at the end of their useful lives and regularly require costly maintenance.

### Recommendation

It is recommended that the existing electric heat pumps throughout the facility be replaced with newer higher efficiency units.

### Scope of Work

The energy savings from this measure are from the increased heating and cooling COPs of the heat pumps. The capacity and efficiencies of the existing heat pumps were determined from nameplate information and manufacturer’s data. The efficiencies of the proposed heat pumps were determined using manufacturer’s catalog data. The existing boiler’s efficiency was taken from its nameplate.

The existing and proposed amount of heating and cooling required by the facility was determined using the total capacity of the existing system, bin weather data, and typical utilization rates.

Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electric usage cost of \$0.087/kWh and an avoided electric demand cost of \$8.00/kW.

## FIM-35 Pump Motor/VFD Replacement

### Existing Conditions

The pump motors indicated in the table to the right are all standard-efficiency motors and are not currently controlled by a variable frequency drive (VFD) in order to modulate motor speed based on system pressures.

Mental Health		
Pump	HP	VFD
CW Pump 1	7.5	YES
CW Pump 2	7.5	YES
Glycol 1	5.0	YES
Glycol 2	5.0	YES

**Recommendation**

It is recommended that these standard efficiency motors be replaced with premium efficiency motors and VFDs be installed where indicated.

**Methodology**

The energy savings from this measure are based on the reduction in power used by the motors when they can run at partial load as well as the improved efficiency of new premium efficiency motors. When the motor's speed can be reduced the VFD will slow the speed of the motor saving the electricity required by the motor. A load profile for each motor was developed for each motor requiring a VFD based on its use. The current and proposed motor efficiencies were determined using manufacturer's data.

Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.087/kWh and an avoided electric demand cost of \$8.00/kW.

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**FIM-36 Weatherization Improvements**

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**Existing Conditions**

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

**Recommendation**

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Air seal gap at roof/wall interface along perimeter of building
- Air seal gaps at soffits at southwest corner and western side of building
- Weather strip five single doors and two double metal doors

**Methodology**

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.156/CCF and an average electric cost of \$0.111/kWh.

## FIM-37 Upgrade Lighting

### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
3L4' T8/EL	1	Recessed lensed 2X4 fixture with 3-4' T8 lamps and electronic ballasts.
3L4' E/E	4	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.
2L4' E/E	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
4L4' E/E	2	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.
2L4' E/E	37	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' E/E	8	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' E/E	4	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
4L4' E/E	172	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.
2L4' E/E	8	Pendant-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
4L4' E/E	1	Wall-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.
2L4'U E/E	122	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.
2L4'U T8/EL	6	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.
3L2' T8/EL	13	Recessed lensed 2X2 fixture with 3-2' T8 lamps and electronic ballasts.
2L4' E/E	19	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
175W HPS	6	Surface-mounted 1X1 fixture with 1-175 Watt high-pressure sodium lamp.
1L75W INC	1	Surface-mounted (6") fixture with 1-75 Watt incandescent lamp.
(2) 13W CF HW	104	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps.
LED	10	exit sign (12") fixture with LED technology.
9W CF SI	38	exit sign (12") fixture with 9 Watt compact fluorescent lamps.

558

### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.087/kWh and an avoided electric demand cost of \$8.00/kW.

## Ulster County Pool – 241 Libertyville Road, New Paltz

## FIM-38 Motor Replacement

### Existing Conditions

The pool filtration system utilizes two 30 HP pump that are near the end of their useful lives and are badly corroded. Currently these motors have a nameplate efficiency of 89.5%.

### Recommendation

It is recommended that these standard efficiency motors be replaced with premium efficiency motors. Other motors at the facility were analyzed but were either already premium efficiency or had very low operating hours. Thus, only these two motors were targeted for replacement.

### Methodology

The energy savings from this measure are based on the improved efficiency of new premium efficiency motors. The average load of the motors was measured on-site. The current and proposed motor efficiencies were determined using manufacturer's data.

Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.087/kWh and an avoided electric demand cost of \$8.00/kW.

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## FIM-39 Upgrade Lighting

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### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L4'	24	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts.
4L4'	16	Chain Mounted 2X4 fixture with 4-4' T12 34W lamps and magnetic ballasts.
2L 4' E/E	1	Chain Mounted 2X4 fixture with 2-4' T5 lamps and electronic ballasts
2L 8'	5	Chain Mounted 1X8 fixture with 2-8' T12 95 W lamps and magnetic ballasts.

46

### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.087/kWh and an avoided electric demand cost of \$8.00/kW.

## PROBATION DEPARTMENT – 733 Broadway, Kingston

### FIM-40 Install Demand Control Ventilation

#### Existing Conditions

Seven rooftop air handlers supply outdoor air to the Probation Department Building. Their make, model, and serial numbers are as follows:

*Name	Make	M/N	S/N
RTU-1	Trane	YHC060A3EHA0XC100A2000000 B	236100749L
RTU-2	Trane	YHC060A3EHA0XC100A2000000 B	236100855L
RTU-3	Trane	YCD151C3HCAA	236100369D
RTU-4	Trane	YHC102A3ELA0RC100A2000000 D	236100815L
*RTU-A	Trane	DU-07N18ATBAA5	N0F6409038
*RTU-B	Trane	YHC048ASEMA0ZC2C0A2000000 A	242101120L
*RTU-C	Trane	YHC092A3ELA0UC1C3A2000000 D	236100795L
<i>*Units are not labeled, names are not valid</i>			

Currently the building control system maintains a minimum outside air position for the air handler. There is no variation in outside air based on occupancy.

Demand control ventilation (DCV) is a control strategy that adjusts the amount of outside air based on the number of occupants and the ventilation demands of those occupants. DCV accomplishes two things; it conserves energy and assures sufficient ventilation. By not heating or cooling unnecessary quantities of outside air, energy is conserved. Ventilation is based on the needs of the occupants of the space rather than using a fixed minimum-air ventilation strategy based on design occupancy.

ASHRAE Standard 62-1999, eliminated the reference to the absolute level of 1,000 ppm CO<sub>2</sub>, and now refers to maintaining an inside/outside differential of less than 700 ppm above the outdoor air CO<sub>2</sub> concentration. Typically the outdoor air CO<sub>2</sub> concentration varies from 375 to 450 ppm. Measurement of outdoor CO<sub>2</sub> above 500 ppm may indicate a combustion source is nearby.

#### Recommendation

Monitor CO<sub>2</sub> levels in the return air while simultaneously monitoring outdoor air CO<sub>2</sub>. Modulate supply, return, and exhaust dampers to maintain proper CO<sub>2</sub> levels and building pressurization.

The following modifications are required:

1. Install one CO<sub>2</sub> sensor in the return air duct closest to each air handler (to be located within the building envelope).
2. Install one CO<sub>2</sub> sensor outside the building to monitor outdoor air CO<sub>2</sub> concentration.

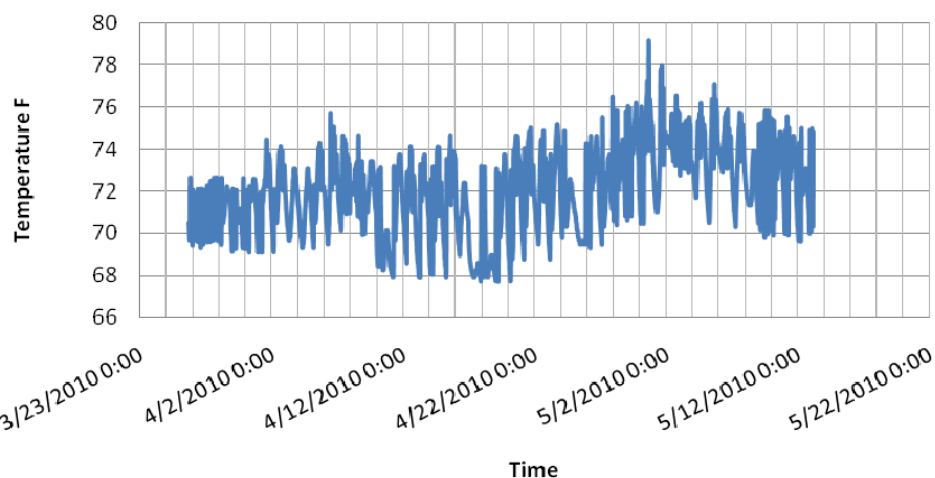


Modulate the supply, return, and exhaust damper positions such that a 700 ppm delta above outside air conditions is maintained while maintaining proper building pressurization. Allow the outside air dampers to close during evening setback. System economizer mode is not to be overridden by these controls. For example, if free cooling is available, the system will still bring in additional outdoor air to satisfy cooling needs.

### Methodology

Savings are achieved by reducing the amount of outside air that is required to be heated or cooled. Building occupancy schedules were determined from discussions with facility staff as well as using logged temperature data which showed building temperature setback during unoccupied periods. Average space temperatures were determined for the building from these loggers and utilized in the calculations shown in Appendix E. The figure below demonstrates the space temperature profile for this building. Although facility personnel indicated that the space is setback from 7 pm until 6am, there is no evidence of this. For this reason a review of the setback programming should be examined to ensure that no outside air is coming into the space during the evening hours.

### Space Temperature



The spaces were assumed to be in economizer mode (where it is advantageous to bring in additional outdoor air) when the outdoor air temperature was below the space temperature setpoint. Spaces were assumed to need to cool the outdoor air brought in when the outdoor air temperature was above the space temperature setpoint.

Heating and cooling efficiencies were available from the nameplate data of many of the air handling units. For those that were not available an efficiency of 80% was used for heating and their cooling COPs were estimated from their age (older units had to conform to lower ASHRAE efficiency requirements).

The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided natural gas cost of \$1.164/gallon and an average electricity cost of \$0.12/kWh.

## FIM-41 Weatherization Improvements

### Existing Conditions

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

### Recommendation

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Weather strip four single doors (occupied sections of building)
- Weather strip three single and two double doors (unoccupied sections)
- Weather strip two 12' X 10' overhead doors
- Sheath and air seal unsheathed exterior wall behind vented "mansard" soffit
- Correct insulation at second floor arched roof and second floor wall open to arch

### Methodology

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.164/CCF and an average electric cost of \$0.12/kWh.

## FIM-42 Upgrade Lighting

### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
3L4' T8/EL	39	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.
2L4' T8/EL	4	Recessed lensed 2X4 fixture with 2-4' T8 lamps and electronic ballasts.
4L4' E/E	6	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.
4L4' T8/EL	4	Recessed lensed 2X4 fixture with 4-4' T8 lamps and electronic ballasts.
4L4' T8/EL	9	Deep-cell parabolic 2X4 fixture with 4-4' T8 lamps and electronic ballasts.
2L4' T8/EL	30	Wraparound 1X8 fixture with 2-4' T8 lamps and electronic ballasts.
2L4'U T8/EL	79	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.
150W HPS	9	Wallpack 1X1 fixture with 1-150 Watt high-pressure sodium lamp.
70W HPS	14	Hi-Hat 1X1 fixture with 1-70 Watt high-pressure sodium lamp.
25W CF SI	4	Hi-Hat (6") fixture with 25 Watt compact fluorescent screw-in lamps.
250W HPS	7	Pole-mounted 1X1 fixture with 1-250 Watt high-pressure sodium lamp.
LED	22	Exit sign (12") fixture with LED technology.

227

**Recommendation**

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

**Methodology**

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.097/kWh and an avoided electric demand cost of \$8.00/kW.

**PUBLIC WORKS – 313 Shamrock Lane, Kingston**

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**FIM-43      Replace AC Unit and Install Demand Control Ventilation**

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**Existing Conditions**

Currently the building's main air handling system utilizes 100% outside air. The unit consists of an inefficient 20 year old air conditioning unit and an air to air heat exchanger with very low conservation efficiencies. Not only are the system components aged, there is no variation in outside air based on occupancy.

Demand control ventilation (DCV) is a control strategy that adjusts the amount of outside air based on the number of occupants and the ventilation demands of those occupants. DCV accomplishes two things; it conserves energy and assures sufficient ventilation. By not heating or cooling unnecessary quantities of outside air, energy is conserved. Ventilation is based on the needs of the occupants of the space rather than using a fixed minimum-air ventilation strategy based on design occupancy.

ASHRAE Standard 62-1999, eliminated the reference to the absolute level of 1,000 ppm CO<sub>2</sub>, and now refers to maintaining an inside/outside differential of less than 700 ppm above the outdoor air CO<sub>2</sub> concentration. Typically the outdoor air CO<sub>2</sub> concentration varies from 375 to 450 ppm. Measurement of outdoor CO<sub>2</sub> above 500 ppm may indicate a combustion source is nearby. Readings were taken in the building and demonstrated that the current minimum outside air intake is high.

**Recommendation**

It is recommended that this AC Unit be replaced with a new more efficient unit and demand control ventilation be installed. The following modifications are required:

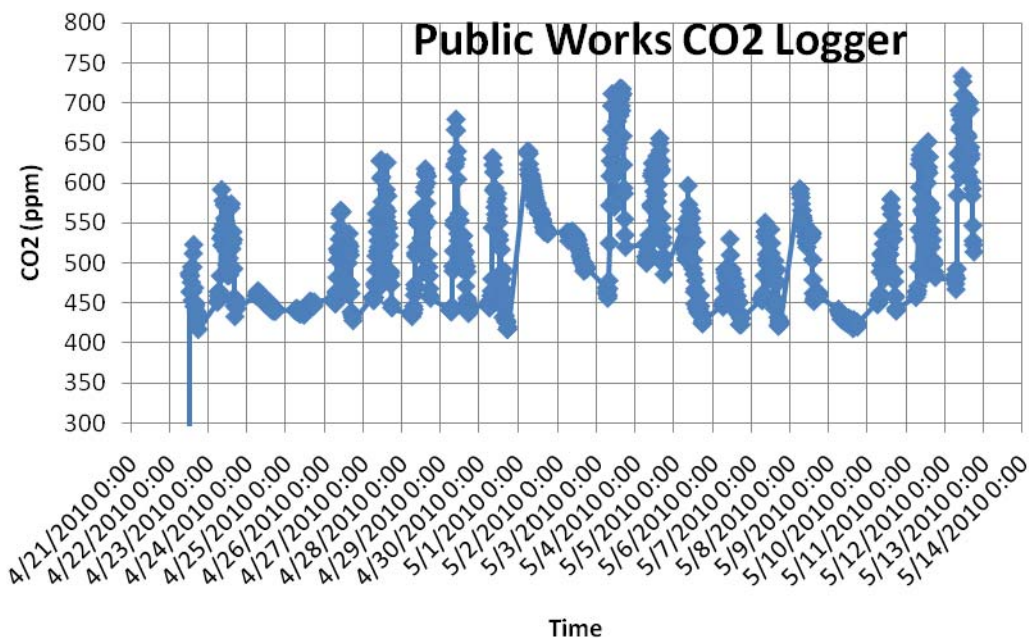
- Provide and install new 8 ton AC Unit with an EER of 11.5 or greater
- Install one CO<sub>2</sub> sensor in the return air duct
- Install one CO<sub>2</sub> sensor outside the building to monitor outdoor air CO<sub>2</sub> concentration

- Replace existing exhaust fan motors with premium efficiency motors suitable for use with VFDs
- Install VFDs on the new premium efficiency motors
- Install a new heat exchanger

Modulate the supply, return, and exhaust damper positions and supply fan speed such that a 700 ppm delta above outside air conditions is maintained. In addition, the speed of the exhaust fan(s) will be modulated to maintain proper building pressurization. Allow the outside air dampers to close during evening setback and open to 100% when VFD demand control is active. System economizer mode is not to be overridden by these controls. That is if free cooling is available, the system will still bring in additional outdoor air to satisfy cooling needs.

**Methodology**

The increased cooling COP and the increased combustion efficiency account for most of the savings associated with this measure. The existing COP and combustion efficiency was estimated from the nameplate data. The operating hours of the unit were based on logged data CO2 data. The following figure demonstrates the results of the CO2 sensor placed in the space.



The proposed COP and efficiency is based on manufacturer’s data. Additional savings are gained by implementing demand control ventilation when the new unit is installed.

The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided natural gas cost of \$1.117/CCF, an avoided electricity cost of \$0.096/kWh, and an avoided demand cost of \$8.00/kW.

## FIM-44 Replace Cooling Tower

### Existing Conditions

Currently the existing cooling tower is capable of approximately 45 tons of cooling with a 5 hp fan motor. The tower is in need of replacement and the motor is oversized for the existing unit. The unit does not have a VFD to modulate fan speed based on cooling load.

### Recommendation

Replace the tower with a BAC VTR series model number VTR-059-H, or equivalent, with a 5 hp high efficiency fan and VFD.



This project provides savings from four areas, water loss reduction, motor efficiency increase, VFD kW reduction and chiller efficiency increase. The tower is currently leaking water due to extensive corrosion. The new tower will include a high efficiency motor providing an increase in efficiency from the existing motor. The new motor will also include a VFD which will modulate fan speed based on return temperature. Finally the new tower will operate more effectively providing a decrease in the return temperature to the chiller condenser which will increase the chiller efficiency.

Unit should be located and positioned to prevent the introduction of the warm discharge air and the associated drift, which may contain chemical or biological contaminants including Legion Ella, into the ventilation systems of the building on which the unit is located or those of adjacent buildings.

Piping must be sized and installed in accordance with good piping practice. All piping should be supported by pipe hangers or other supports and not by the unit. On open systems, in order to prevent basin overflow at shutdown and to ensure satisfactory pump operation at start-up, all heat exchangers and as much piping as possible should be installed below the operating level of the cooling tower.

### Methodology

This project provides savings from four areas, water loss reduction, motor efficiency increase, VFD kW reduction and chiller efficiency increase. The tower is currently leaking water due to extensive corrosion. The new tower will include a high efficiency motor providing an increase in efficiency from the existing motor. The new motor will also include a VFD which will modulate fan speed based on return temperature. Finally the new tower will operate more effectively providing a decrease in the return temperature to the chiller condenser which will increase the chiller efficiency.

The energy savings from this measure are based on the reduction in power used by the fan motor when it is at partial load as well as the improved efficiency of a new premium

efficiency motor. When the fan's speed can be reduced the VFD will slow the speed of the motor saving the electricity required by the motor. A load profile based on outdoor air temperatures was developed. Savings based on bin weather data are provided in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.096/kWh and an avoided electric demand cost of \$8.00/kW.

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## FIM-45 Pump Motor Replacement

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### Existing Conditions

The pump motors indicated in the table to the right are all standard-efficiency motors.

### Recommendation

It is recommended that these standard efficiency motors be replaced with premium efficiency motors.

Public Works		
Pump	HP	VFD
1	1.5	-
2	2.0	-
3	1.0	-

### Methodology

The energy savings from this measure are based on the improved efficiency of new premium efficiency motors. The current and proposed motor efficiencies were determined using manufacturer's data.

Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.096/kWh and an avoided electric demand cost of \$8.00/kW.

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## FIM-46 Weatherization Improvements

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### Existing Conditions

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

### Recommendation

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Air seal roof/wall interface along perimeter of building
- Air seal fourteen linear feet at entry soffit
- Weather strip two single doors
- Weather strip two tall single metal doors

## Methodology

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.164/CCF and an average electric cost of \$0.13/kWh.

## FIM-47 Upgrade Lighting

### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
3L4' E/E	3	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.
2L4' E/E	60	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
4L4' E/E	36	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.
2L4' E/E	31	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' T8/EL	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
2L4' T8/EL	2	Deep-cell parabolic 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
2L4'U E/E	20	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.
2L4' E/E	5	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
70W HPS	14	Wallpack (6") fixture with 1-70 Watt high-pressure sodium lamp.
1L75W INC	3	Surface-mounted (6") fixture with 1-75 Watt incandescent lamp.
70W HPS	3	Hi-Hat 1X1 fixture with 1-70 Watt high-pressure sodium lamp.
LED	6	Exit sign (12") fixture with LED technology.
2L15W INC	14	Exit sign (12") fixture with 2-15 Watt incandescent lamps.

198

### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.096/kWh and an avoided electric demand cost of \$8.00/kW.

## STORAGE GARAGE, 63 Golden Hill Drive, Kingston

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### FIM-48 Replace Electric Unit Heaters with LPG Unit Heaters

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#### Existing Conditions

There are 5 ceiling-hung electric unit heaters controlled by separate non-programmable line-voltage thermostats.



#### Recommendation

Replace the existing electric space heaters with liquid propane-fired unit heaters of the same output capacity. Install a line-voltage thermostat for each of the 5 unit heaters that have a default setpoint of 55°F and a manual 2-hour override timer for intermittent occupancy through the heating season.

#### Methodology

Savings for this measure are based on a decrease in the per unit energy cost of natural gas as compared to electricity. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.096/kWh and an avoided electric demand cost of \$8.00/kW. To complete this measure LPG gas service will need to be secured. The savings estimate was based on the cost of other Ulster County facilities at a rate of \$1.50/gallon.

### FIM-49 Weatherization Improvements

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#### Existing Conditions

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

#### Recommendation

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Air seal bypasses at two roof vents
- Weather one overhead door

#### Methodology

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided LPG cost of \$1.50/gallon. Note that if FIM 48 (conversion of electric heat to



LPG-fired heating) is not accomplished the savings would then be based on electricity usage.

## TRUDY RESNICK FARBER, 50 Center Street, Ellenville

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### FIM-50 Replace Boiler

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#### Existing Conditions

There are currently three oil fired boilers that provide heating hot water to the south section of the Trudy Resnick Building. The boilers each have an input capacity of 700 MBH and have a nameplate thermal efficiency of only 70.0%. They are located in the building mechanical room.



#### Recommendation

It is recommended that the existing boiler be replaced with a higher efficiency oil boilers. Recommended boiler is a HydroTherm MO-660A, oil-fired boiler with an overall thermal efficiency of 83% or equivalent.

#### Methodology

The heating requirements of the facility were based on the oil consumption of the building and the existing boiler's efficiency. The new oil fired boiler will provide the same amount of heat to the building, but at a higher efficiency.

The current boiler efficiency was determined from nameplate data. The proposed efficiency was estimated based on manufacturer's catalogs. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided Fuel Oil cost of \$2.21/gallon.

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### FIM-51 Demand Control Ventilation

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#### Existing Conditions

Four McQuay air handlers supply outdoor air to the Trudy Resnick Building. Currently the building control system maintains a minimum outside air position for the air handler. There is no variation in outside air based on occupancy.

#### Recommendation

Monitor CO2 levels in the return air while simultaneously monitoring outdoor air CO2. Modulate supply, return, and exhaust dampers to maintain proper CO2 levels and building pressurization.. The following modifications are required:

- Install one CO2 sensor in the return air duct closest to each air handler
- Install one CO2 sensor outside the building to monitor outdoor air CO2 concentration

Modulate the supply, return, and exhaust damper positions and supply fan speed such that a 700 ppm delta above outside air conditions is maintained. Allow the outside air dampers to close during evening setback. System economizer mode is not to be overridden by these controls. That is if free cooling is available, the system will still bring in additional outdoor air to satisfy cooling needs.

### Methodology

Savings are achieved by reducing the amount of outside air that is required to be heated or cooled. Building occupancy schedules were determined from discussions with facility staff as well as using logged temperature data which showed building temperature setback during unoccupied periods. Average space temperatures were determined for the building from these loggers and utilized in the calculations shown in Appendix E.

The spaces were assumed to be in economizer mode (where it is advantageous to bring in additional outdoor air) when the outdoor air temperature was below the space temperature setpoint. Spaces were assumed to need to cool the outdoor air brought in when the outdoor air temperature was above the space temperature setpoint.

Heating and cooling efficiencies were available from the nameplate data of many of the air handling units. For those that were not available an efficiency of 80% was used for heating and their cooling COPs were estimated from their age (older units had to conform to lower ASHRAE efficiency requirements).

The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided fuel oil cost of \$2.21/gallon and an average electricity cost of \$0.121/kWh.

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## FIM-52 Upgrade Lighting

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### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
3L4' T8/EL	61	Recessed lensed 2X4 fixture with 3-4' T8 lamps and electronic ballasts.
3L4' E/E	14	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.
2L4' E/E	80	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' T8/EL	56	Recessed lensed 2X4 fixture with 2-4' T8 lamps and electronic ballasts.
2L4' E/E	11	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' T8/EL	42	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
3L2' T8/EL	57	Recessed lensed 2X2 fixture with 3-2' T8 lamps and electronic ballasts.
150W HPS	9	Wallpack (6") fixture with 1-150 Watt high-pressure sodium lamp.
15W CF SI	12	Recessed 1X1 fixture with 15 Watt compact fluorescent screw-in lamps.
150W HPS	3	Pole-mounted (12") fixture with 1-150 Watt high-pressure sodium lamp.
LED	29	Exit sign (12") fixture with LED technology.

374

### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.097/kWh and an avoided electric demand cost of \$8.00/kW.

## DEPT. OF THE ENVIRONMENT/HISTORIAN, 17 Pearl St., Kingston

### FIM-53 Replace Natural Gas Hot Water Boiler with New Condensing Boiler with Hot Water Reset Controls

#### Existing Conditions

Presently the existing boiler is a non-condensing unit (Burnham America 385 MBH Input) and operates at an efficiency of approximately 80%.

#### Recommendation

Replace existing with a natural gas-fired Patterson-Kelley C-300 Mach series (or equal) hot water condensing boiler. Re-pipe the hot water distribution to establish two zones with one zone per floor. Install hot water temperature reset controls to modulate hot water circulation temperature between 135°F at 20°F outside air to 100°F when outside air is 60°F. An additional programmable thermostat will be installed for the second floor zone and a second distribution pump will be installed.



#### Methodology

Savings for this measure are based on an increase in combustion efficiency, the use of outside air temperature reset to decrease the hot water temperature, an increase in distribution efficiency, and the reduction of space temperature on the second floor which is currently unused. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.366/CCF.

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**FIM-54      Replace Electric Domestic Hot Water Heater with Power-Vent Natural Gas Unit**

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**Existing Conditions**

Presently domestic hot water is produced by a 40 gallon electric water heater with two 4,500 W elements.

**Recommendation**

Install a new AO Smith ProMax GPVH (or equal) power-vent 40 gallon hot water heater natural gas-fired domestic hot water heater.

**Methodology**

Savings for this measure are based on a decrease in the per unit energy cost of natural gas as compared to electricity. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.366/CCF, an avoided electricity cost of \$0.099/kWh (Note: this facility does not have an electric demand charge).

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**FIM-55      Weatherization Improvements**

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**Existing Conditions**

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted. The doors of this facility are in general poorly weather stripped and have significant gaps that allow for excessive infiltration.

Several gaps were noted along the exterior including three boarded up basement windows, exhaust fan dampers, and other smaller penetrations. An abandoned fireplace flue in the second floor clerk's area was identified during the survey. Numerous penetrations and uninsulated areas of the attic were identified.

**Recommendation**

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Weather strip five single doors
- Air seal and correct two abandoned basement windows with vents
- Correct gaps in dampers in basement
- Replace four windows with AC units and air seal AC unit penetrations
- Air seal penetrations to the second floor
- Erect insulated wall with strip weather stripped door at top of stairs

## Methodology

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.366/CCF and an average electricity cost of \$0.123/kWh.

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## FIM-56 Upgrade Lighting

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### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L4' E/E	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' E/E	27	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' E/E	10	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4'U E/E	3	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.
1L2' S/S	2	Wall-mounted strip 1X2 fixture with 1-2' standard lamp and standard ballasts.
1L60W INC	3	Surface-mounted (6") fixture with 1-60 Watt incandescent lamp.
13W CF SI	3	Surface-mounted (6") fixture with 13 Watt compact fluorescent screw-in lamps.
1L8W CF	5	Exit sign (12") fixture with 1-8 Watt compact fluorescent lamp.

54

### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.099/kWh.

## ULSTER COUNTY OFFICE BUILDING – 244 Fair Street, Kingston

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## FIM-57 Install Demand Control Ventilation

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### Existing Conditions

Four air handlers supply outdoor air to the Ulster County Office Building. As these units are custom built units nameplate data was unavailable. The units in question are labeled and referred to as: AC1, AC3, AC4, and AC5.

Currently the building control system maintains a minimum outside air position for each air handler. There is no variation in outside air based on occupancy.

Demand control ventilation (DCV) is a control strategy that adjusts the amount of outside air based on the number of occupants and the ventilation demands of those occupants. DCV accomplishes two things; it conserves energy and assures sufficient ventilation. By not heating or cooling unnecessary quantities of outside air, energy is conserved. Ventilation is based on the needs of the occupants of the space rather than using a fixed minimum-air ventilation strategy based on design occupancy.

ASHRAE Standard 62-1999, eliminated the reference to the absolute level of 1,000 ppm CO<sub>2</sub>, and now refers to maintaining an inside/outside differential of less than 700 ppm above the outdoor air CO<sub>2</sub> concentration. Typically the outdoor air CO<sub>2</sub> concentration varies from 375 to 450 ppm. Measurement of outdoor CO<sub>2</sub> above 500 ppm may indicate a combustion source is nearby. Readings were taken in the building, and demonstrated only during periods when the conference rooms are full is the current minimum outside air appropriate.

### **Recommendation**

Monitor indoor CO<sub>2</sub> levels while simultaneously monitoring outdoor air CO<sub>2</sub>. Modulate supply, return, and exhaust dampers to maintain proper CO<sub>2</sub> levels and building pressurization.

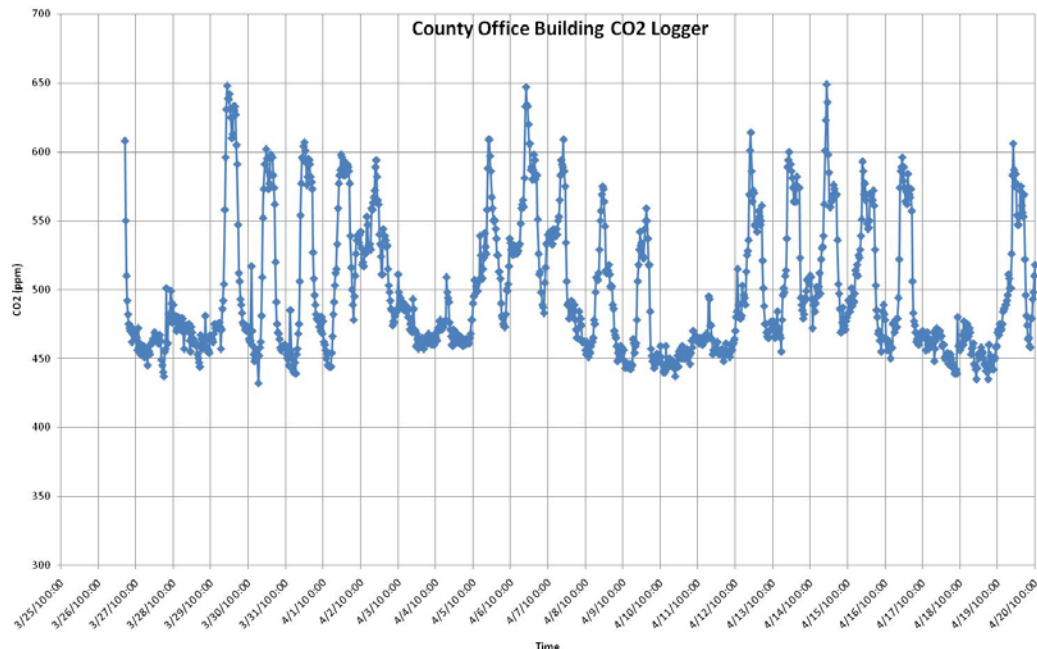
The following modifications are required:

- Replace existing supply fan motors on AC-1 and AC-2 with premium efficiency motors suitable for use with VFDs.
- Install VFDs on the new premium efficiency motors.
- Install one CO<sub>2</sub> sensor in the return air duct closest to each air handler (to be located within the building envelope).
- Install one CO<sub>2</sub> sensor outside the building to monitor outdoor air CO<sub>2</sub> concentration .

Modulate the supply, return, and exhaust damper positions such that a 700 ppm delta above outside air conditions is maintained while maintaining proper building pressurization. Allow the outside air dampers to close during evening setback. System economizer mode is not to be overridden by these controls. For example, if free cooling is available, the system will still bring in additional outdoor air to satisfy cooling needs

### **Methodology**

Savings are achieved by reducing the amount of outside air that is required to be heated or cooled. To determine the appropriate reduction in system operating hours CO<sub>2</sub> sensors and data loggers were installed in the building for a period of three weeks. An occupancy profile was developed using the data from the loggers placed in them and applied to the energy calculations shown in Appendix E for this building.



Building occupancy schedules were determined from discussions with facility staff as well as using logged temperature data which showed building temperature setback during unoccupied periods.

The spaces were assumed to be in economizer mode (where it is advantageous to bring in additional outdoor air) when the outdoor air temperature was below the space temperature setpoint. Spaces were assumed to need to cool the outdoor air brought in when the outdoor air temperature was above the space temperature setpoint.

Heating and cooling efficiencies were available from the nameplate data of many of the air handling units. For those that were not available an efficiency of 80% was used for heating and their cooling COPs were estimated from their age (older units had to conform to lower ASHRAE efficiency requirements).

The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided natural gas cost of \$1.11/CCF and an average electricity cost of \$0.114/kWh.

## FIM-58 Replace Electric Heat in AC-4

### Existing Conditions

AC-4 supplies conditioned air for records storage. Currently there are four electric heating units in the ductwork downstream of the air handler with a total capacity of approximately 60 kW.

### Recommendation

Remove electric heating units and install new hydronic

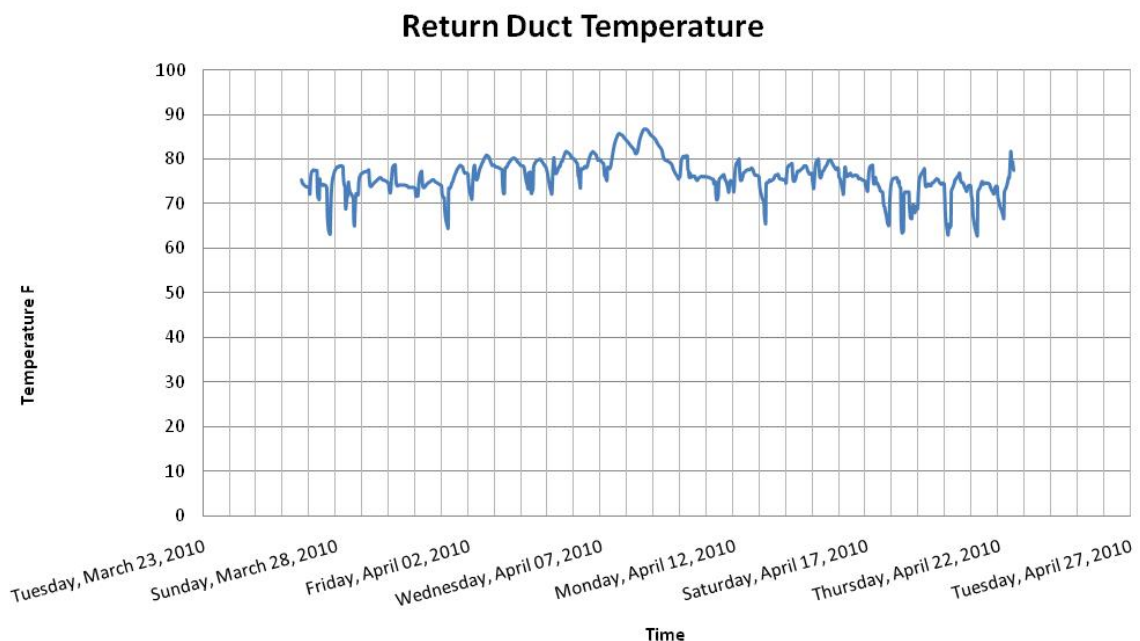


heating coils. The new Hydronic loop will be set at 130°F and consist of a standalone glycol system fed from a heat exchanger connected to the boiler system. Completion of this measure will require the following:

- Install new plate and frame heat exchanger capable of processing 200 MBH for the new heating coils
- Install new piping and pumping system capable of supplying the coils with 15 gpm  
Install three way valves on each of the coil inlets
- Install new premium efficiency motor and new pumps
- Control three-way valves based on the duct temperature

### Methodology

Energy cost savings are achieved through the reduction in electricity as compared to the same amount of heat provided by the central boiler hot water system. The new system will provide the same amount of heat to the building, but using natural gas which costs significantly less. The operating hours of the electric heating coils were based on bin weather data and temperature data collected during the site audit. The following figure demonstrates the return duct temperature over the metering period. The building setbacks are evident and seem to create a space temperature drop of about 10 degrees.



The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided natural gas cost of \$1.11/CCF, an avoided electricity cost of \$0.089/kWh, and an avoided demand cost of \$8.00/kW.



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## FIM-59 Install Condensing Boilers

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### Existing Conditions

There are currently two natural gas fired boilers that provide heating hot water to the Office Building. They are approximately 22 years old. The boilers each have an input capacity of 5,000 MBH and have a nameplate efficiency of 70.0%. They are located in the mechanical room of the building.



The hot water needs of the facility only require approximately half of the current capacity.

### Recommendation

It is recommended that the existing boilers be replaced with four smaller high efficiency condensing boilers that are correctly sized for the current hot water requirements of the facility. Recommended boilers are Harsco/Patterson-Kelley Mach Series condensing boilers C2000 or equivalent. Completion of this measure will also provide hardware/programming required for proper integration of new boiler management system(BMS) to the existing building energy management system (EMS).

### Methodology

Savings for this measure are based on an increase in combustion efficiency. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.11/CCF.

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## FIM-60 Humidification Replacement

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### Existing Conditions

There are currently four electrical humidification units associated with AC-4. These units support the basement humidity levels during the non-winter months. Together these units represent 43 kW of demand load.

### Recommendation

It is recommended that these electric units be replaced with a high pressure water and nozzle system. A single MeeFog system capable of processing 550 lb/hr will replace all four units.



## Methodology

The energy savings associated with this measure are from the electric savings associated with using high pressure nozzles to humidify the air rather than electric resistance humidifiers. The cost of running the pumps is significantly less than running the electric resistance humidifiers. By spraying the air in this manner however it reduces the temperature of the air. The energy needed to heat the air back to its discharge air setpoint can be provided by the buildings boilers. By using the boilers to provide this heat, instead of the electric resistance coils, significant cost savings is achieved.

The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided natural gas cost of \$1.11/CCF, an avoided electricity cost of \$0.089/kWh, and an avoided demand cost of \$8.00/kW.

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## FIM-61 Pump Motor/VFD Replacement

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### Existing Conditions

The pump motors indicated in the table to the right are all standard-efficiency motors and are not currently controlled by a variable frequency drive (VFD) in order to modulate motor speed based on system pressures.

### Recommendation

It is recommended that these standard efficiency motors be replaced with premium efficiency motors and VFDs be installed where indicated.

### Methodology

The energy savings from this measure are based on the reduction in power used by the motors when they can run at partial load as well as the improved efficiency of new premium efficiency motors. When the motor's speed can be reduced the VFD will slow the speed of the motor saving the electricity required by the motor. A load profile for each motor was developed for each motor requiring a VFD based on its use. The current and proposed motor efficiencies were determined using manufacturer's data.

U.C. Office Building		
Pump	HP	VFD
CW P2-2	15.0	-
CW P2-1	15.0	-
CHW P1-2	15.0	-
CHW P1-1	15.0	-
HW P31	7.5	YES
HW P32	7.5	YES
HW P4-1	2.0	YES
HW P4-2	2.0	YES
HW P5-1	3.0	YES
HW P5-2	3.0	YES
Booster P1	7.5	-
Booster P2	7.5	-

Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.089/kWh and an avoided electric demand cost of \$8.00/kW.

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## FIM-62 Weatherization Improvements

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### Existing Conditions

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

### Recommendation

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Weather strip five double doors
- Air seal gap at roof/wall interface along perimeter of building (400 feet)

### Methodology

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.11/CCF and an average electric cost of \$0.114/kWh.

## FIM-63 Upgrade Lighting

### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L4' E/E	85	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
3L4' T8/EL	509	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.
4L4' E/E	3	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.
3L4' E/E	6	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.
4L4' E/E	18	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.
2L4' E/E	54	Deep-cell parabolic 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
3L4' T8/EL	6	Wraparound 1X4 fixture with 3-4' T8 lamps and electronic ballasts.
4L4' E/E	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.
2L4'U E/E	4	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.
2L4'U T8/EL	46	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.
2L4' E/E	199	Deep-cell parabolic 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' T8/EL	19	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
2L4' E/E	2	Surface-mounted strip 1X8 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
250W MH	10	Hi-Hat (12") fixture with 1-250 Watt metal halide lamp.
(2) 13W CF HW	6	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps.
250W HPS	10	Pole-mounted (12") fixture with 1-250 Watt high-pressure sodium lamp.
150W MH	6	Hi-Hat (12") fixture with 1-150 Watt metal halide lamp.
2L4' E/E	12	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
LED	38	Exit sign (12") fixture with LED technology.
9W CF SI	35	Exit sign (12") fixture with 9 Watt compact fluorescent lamps.

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### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

## Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.089/kWh and an avoided electric demand cost of \$8.00/kW.

## RECORDS STORAGE BUILDING – 300 Foxhall Avenue, Kingston

### FIM-64 Replace RTUs and Install Demand Control Ventilation

#### Existing Conditions

Four air handlers supply outdoor air to the Ulster County Records Building. The units are inefficient and include no advanced control strategy capabilities. Their make, model, and serial numbers are as follows:

*Name	Make	M/N	S/N
RTU-1	McQuay	RRS025BA	37C0029308
RTU-2	McQuay	RRS025BA	N/A
RTU-3	McQuay	RRS025BA	N/A
RTU-4	McQuay	GCS24-953-200-1Y	2 7 B 03116 01

Currently the building control system maintains a minimum outside air position for each air handler. There is no variation in outside air based on occupancy.

Demand control ventilation (DCV) is a control strategy that adjusts the amount of outside air based on the number of occupants and the ventilation demands of those occupants. DCV accomplishes two things; it conserves energy and assures sufficient ventilation. By not heating or cooling unnecessary quantities of outside air, energy is conserved. Ventilation is based on the needs of the occupants of the space rather than using a fixed minimum-air ventilation strategy based on design occupancy.

ASHRAE Standard 62-1999, eliminated the reference to the absolute level of 1,000 ppm CO<sub>2</sub>, and now refers to maintaining an inside/outside differential of less than 700 ppm above the outdoor air CO<sub>2</sub> concentration. Typically the outdoor air CO<sub>2</sub> concentration varies from 375 to 450 ppm. Measurement of outdoor CO<sub>2</sub> above 500 ppm may indicate a combustion source is nearby.

#### Recommendation

It is recommended that the four rooftop units be replaced with new more efficient units and demand control ventilation be installed. The following modifications are required:

- Provide and install four new rooftop units equipped with variable frequency drives.

- Install one CO2 sensor in the return air duct closest to each air handler (to be located within the building envelope).
- Install one CO2 sensor outside the building to monitor outdoor air CO2 concentration.

Modulate the supply, return, and exhaust damper positions and supply fan speed such that a 700 ppm delta above outside air conditions is maintained. In addition, the speed of the exhaust fan(s) will be modulated to maintain proper building pressurization. Allow the outside air dampers to close during evening setback and open to 100% when VFD demand control is active. System economizer mode is not to be overridden by these controls. That is if free cooling is available, the system will still bring in additional outdoor air to satisfy cooling needs.

### **Methodology**

The increased cooling COP and the increased combustion efficiency account for most of the savings associated with this measure. The existing COP and combustion efficiency was estimated from the nameplate data. The operating hours of the unit were based on logged data. The proposed COP and efficiency is based on manufacturer's data. Additional savings are gained by implementing demand control ventilation when the new unit is installed.

The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided natural gas cost of \$1.108/CCF, an avoided electricity cost of \$0.098/kWh, and an avoided demand cost of \$8.00/kW.

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## **FIM-65      Replace Dehumidifiers**

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### **Existing Conditions**

There are currently three electrical humidification units associated with three of the larger roof top air handlers. These units support the humidity levels throughout the year. Together these units represent 90kW of demand load.

### **Recommendation**

It is recommended that these electric units be replaced with a high pressure water and nozzle system. Two small MeeFog systems capable of processing 200 lb/hr and 100 lb/hr would be required to replace the electric units. The larger unit can replace the two units located next to each other, and the second unit to replace the Nortex at the far end of the facility.

### **Methodology**

The energy savings associated with this measure are from the electric savings associated with using high pressure nozzles to humidify the air rather than electric resistance humidifiers. The cost of running the pumps is significantly less than running the electric resistance humidifiers. By spraying the air in this manner however it reduces the temperature of the air. The energy needed to heat the air back to its discharge air setpoint

can be provided by the buildings boilers. By using the boilers to provide this heat, instead of the electric resistance coils, significant cost savings is achieved.

The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided natural gas cost of \$1.108/CCF, an avoided electricity cost of \$0.098/kWh, and an avoided demand cost of \$8.00/kW.

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## FIM-66 Weatherization Improvements

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### Existing Conditions

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

### Recommendation

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Weather strip six single doors
- Weather strip two double doors
- Weather strip one roll-up door
- Air seal gap at roof/wall interface along perimeter of building (760 feet)

### Methodology

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.108/CCF and an average electric cost of \$0.118/kWh.

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## FIM-67 Upgrade Lighting

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### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
3L4' T8/EL	2	Recessed lensed 2X4 fixture with 3-4' T8 lamps and electronic ballasts.
2L4' T8/EL	92	Recessed lensed 2X4 fixture with 2-4' T8 lamps and electronic ballasts.
3F39BIAX	4	Recessed lensed 2X2 fixture with 3-39 Watt biax lamps and electronic ballasts.
70W HPS	14	Wallpack (6") fixture with 1-70 Watt high-pressure sodium lamp.
250W HPS	59	Low-bay 1X1 fixture with 1-250 Watt high-pressure sodium lamp.
LED	10	Exit sign (12") fixture with LED technology.

181

**Recommendation**

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

**Methodology**

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.098/kWh and an avoided electric demand cost of \$8.00/kW.

**Ulster County Area Transportation (UCAT) – 1 Danny Circle, Kingston**

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**FIM-68     Install Demand Control Ventilation**

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**Existing Conditions**

The office area of the UCAT facility is heated, cooled and ventilated with two air handler units located on the second floor. Each unit cools based on the setpoints of a single thermostat located on each floor. The majority of the second floor is unfinished space, although the team was told a project is pending. The minimum outside air provided to the space is set at 15%.

**Recommendation**

Monitor CO<sub>2</sub> levels in the return air while simultaneously monitoring outdoor air CO<sub>2</sub>. Modulate supply, return, and exhaust dampers to maintain proper CO<sub>2</sub> levels and building pressurization. The following modifications are required:

- Install one CO<sub>2</sub> sensor in the return air duct closest to each air handler
- Install one CO<sub>2</sub> sensor outside the building to monitor outdoor air CO<sub>2</sub> concentration.

Modulate the supply, return, and exhaust damper positions and supply fan speed such that a 700 ppm delta above outside air conditions is maintained. Allow the outside air dampers to close during evening setback. System economizer mode is not to be overridden by these controls. That is if free cooling is available, the system will still bring in additional outdoor air to satisfy cooling needs.

**Methodology**

Savings are achieved by reducing the amount of outside air that is required to be heated or cooled. Building occupancy schedules were determined from discussions with facility staff as well as using logged temperature data which showed building temperature setback during unoccupied periods. Average space temperatures were determined for the building from these loggers and utilized in the calculations shown in Appendix E.

The spaces were assumed to be in economizer mode (where it is advantageous to bring in additional outdoor air) when the outdoor air temperature was below the space temperature setpoint. Spaces were assumed to need to cool the outdoor air brought in when the outdoor air temperature was above the space temperature setpoint.

Heating and cooling efficiencies were available from the nameplate data of the air handling units. The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided natural gas cost of \$1.12/CCF and an average electricity cost of \$0.119/kWh.

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## **FIM-69 Weatherization Improvements**

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### **Existing Conditions**

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

### **Recommendation**

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Air seal base of turret roof and install air barrier at bottom of rafters
- Air seal gap at roof/wall interface along perimeter of office area

It was also noted during the assessment that there are issues with the plenum return which is connected to an unused space. Currently the return is drawing air from this unused space and the County should consider installing ductwork as this area is finished. In addition, the unused space is not zoned separately from the conditioned space for cooling. These items were not evaluated for cost savings potential as the County is in the process of changing the use of this area.

### **Methodology**

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.12/CCF and an average electric cost of \$0.119/kWh.



## FIM-70 Upgrade Lighting

### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
3L4' T8/EL	72	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.
1L4' T8/EL	3	Wraparound 1X4 fixture with 1-4' T8 lamp and electronic ballasts.
2L4' T8/EL	35	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
2L4'U T8/EL	1	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.
250W MH	36	Low-bay 1X1 fixture with 1-250 Watt metal halide lamp.
175W MH	26	Surface-mounted 1X1 fixture with 1-175 Watt metal halide lamp.
(2) 13W CF HW	10	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps.
LED	16	Exit sign (12") fixture with LED technology.

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### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.097/kWh and an avoided electric demand cost of \$8.00/kW.

## FIM-71 Remove Electric Heat

### Existing Conditions

The office area of the UCAT facility is heated by 32 electric coils and two air handler units located on the second floor. There are sixteen electric reheat coils serving the individual spaces on the first and second floor. Additionally, there are sixteen ceiling mounted electric radiant heating panels throughout the office area. The total electrical load of these units equates to 14.5 kW which could be served by a 75 MBH boiler.

### Recommendation

Remove electric coils and replace with a hydronic heating system. The following modifications are required:

1. Replace sixteen electric reheat duct coils with equivalent hydronic coils. There is one 1,500 Watt coil, twelve 500 Watt coils and three 1,000 Watt coils.

2. Replace sixteen electric radiant panels with equivalent hydronic panels. The radiant panels are all rated at 250 Watts.
3. Install two high efficiency boilers 75 MBH and associated piping and pumps necessary for distribution to the new hydronic coils.

**Methodology**

Energy savings are associated with the lower per unit energy cost of natural gas as compared to electricity. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.12/CCF and an average electric cost of \$0.119/kWh.

**ULSTER AVENUE OFFICE COMPLEX (DSS) – 1 Development Court, Kingston**

**FIM-72 Replace Roof Top Units**

**Existing Conditions**

There are currently twenty-eight rooftop air handlers that serve the facility’s heating and cooling needs. The majority of these units are inefficient and include no advanced control strategy capabilities.



**Recommendation**

It is recommended that seventeen (17) of these units be replaced with new units identified in the table below. The other 11 units not considered for replacement are fairly new and would not have a significant increase in efficiency.

RTU Number	Manufacturer	QTY	Cooling Output (Btu/h)	Heating Output (Btu/h)
1	Carrier	1	180,000	90,000
2	Carrier	1	180,000	90,000
7	Carrier	1	180,000	90,000
7A	Carrier	1	72,000	36,000
9	Carrier	1	180,000	90,000
11	Trane	1	84,000	42,000
12	Trane	1	84,000	42,000
13	Trane	1	180,000	90,000
14	Trane	1	120,000	60,000
15	Trane	1	120,000	60,000
16	Trane	1	120,000	60,000
17	Trane	1	120,000	60,000
18	Trane	1	120,000	60,000
19	Trane	1	120,000	60,000
20	Trane	1	120,000	60,000
22	Trane	1	96,000	48,000
21	Carrier	1	180,000	90,000

Completion of this measure involves the following:

1. Remove existing rooftop units
2. Provide and install new units equipped with variable frequency drives
3. Provide and install natural gas piping
4. Adjust curb as necessary to accommodate new units
5. Integrate controls with current EMS system

### **Methodology**

The energy savings from this measure are based on the improved efficiency of the new units. The current and proposed efficiencies were determined using manufacturer's data. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.097/kWh, an avoided electric demand cost of \$8.00/kW, and an avoided natural gas cost of \$1.165/CCF.

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## **FIM-73 Weatherization Improvements**

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### **Existing Conditions**

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

### **Recommendation**

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Weather strip eleven (11) single doors
- Weather strip ten (10) double doors
- Seal gap at the roof top ventilators between the duct and curb
- Re-gasket two attic hatches

### **Methodology**

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.165/CCF and an average electric cost of \$0.111/kWh.

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## **FIM-74 Upgrade Lighting**

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### **Existing Conditions**

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L4' T8/EL	126	Recessed lensed 2X4 fixture with 2-4' T8 lamps and electronic ballasts.
2L4' E/E	30	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
3L4' E/E	154	Deep-cell parabolic 2X4 fixture with 3-4' energy-efficient lamps and ballasts.
4L4' E/E	16	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.
3L4' T8/EL	540	Recessed lensed 2X4 fixture with 3-4' T8 lamps and electronic ballasts.
4L4' T8/EL	324	Recessed lensed 2X4 fixture with 4-4' T8 lamps and electronic ballasts.
2L4' E/E	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' T8/EL	7	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
2F39BIAX	6	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.
2L4'U T8/EL	2	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.
70W HPS	17	Hi-Hat (12") fixture with 1-70 Watt high-pressure sodium lamp.
150W HPS	26	Wallpack (6") fixture with 1-150 Watt high-pressure sodium lamp.
400W MH	13	Pole-mounted (12") fixture with 1-400 Watt metal halide lamp.
LED	92	Exit sign (12") fixture with LED technology.

1355

### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.097/kWh and an avoided electric demand cost of \$8.00/kW.

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## FIM-75 Install Demand Control Ventilation

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### Existing Conditions

The facility is currently served by twenty-eight RTUs. Currently the building control system maintains a minimum outside air position for each air handler. There is no variation in outside air based on occupancy.

Demand control ventilation (DCV) is a control strategy that adjusts the amount of outside air based on the number of occupants and the ventilation demands of those occupants. DCV accomplishes two things; it conserves energy and assures sufficient ventilation. By not heating or cooling unnecessary quantities of outside air, energy is conserved. Ventilation is based on the needs of the occupants of the space rather than using a fixed minimum-air ventilation strategy based on design occupancy.

ASHRAE Standard 62-1999, eliminated the reference to the absolute level of 1,000 ppm CO<sub>2</sub>, and now refers to maintaining an inside/outside differential of less than 700 ppm above the outdoor air CO<sub>2</sub> concentration. Typically the outdoor air CO<sub>2</sub> concentration varies from 375 to 450 ppm. Measurement of outdoor CO<sub>2</sub> above 500 ppm may indicate a

combustion source is nearby. Readings were taken in the building, and demonstrated only during periods when the conference rooms are full is the current minimum outside air appropriate.

**Recommendation**

Monitor indoor CO2 levels while simultaneously monitoring outdoor air CO2. Modulate supply, return, and exhaust dampers to maintain proper CO2 levels and building pressurization.

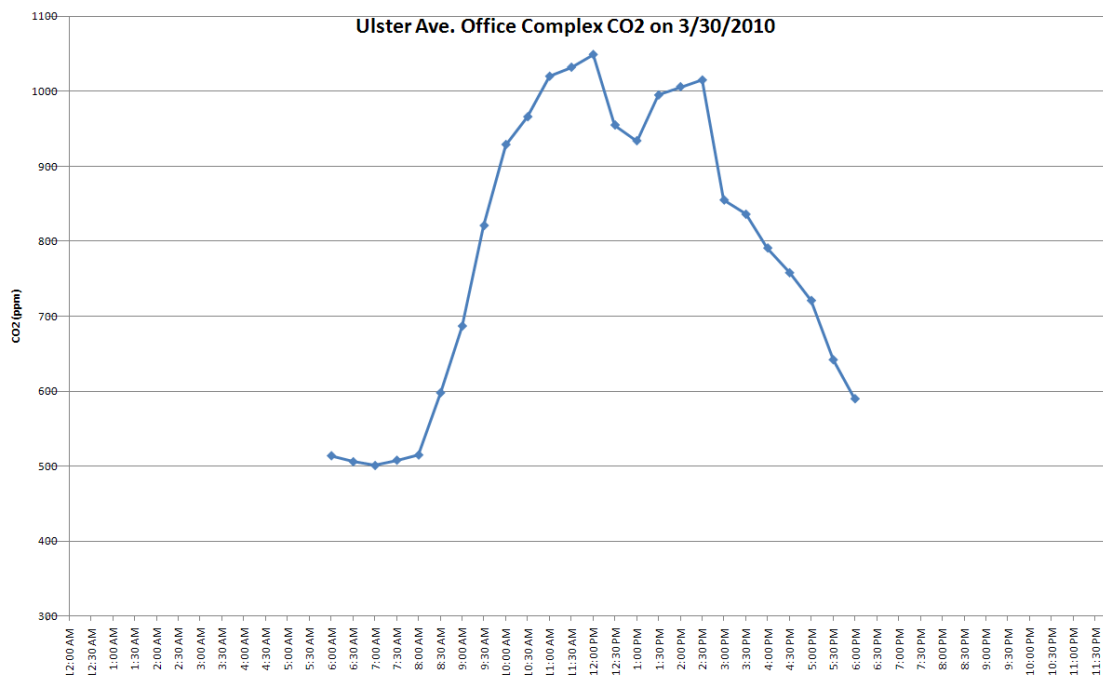
The following modifications are required:

- Install one CO2 sensor in the return air duct closest to each air handler (to be located within the building envelope).
- Install one CO2 sensor outside the building to monitor outdoor air CO2 concentration.

Modulate the supply, return, and exhaust damper positions such that a 700 ppm delta above outside air conditions is maintained while maintaining proper building pressurization. Allow the outside air dampers to close during evening setback. System economizer mode is not to be overridden by these controls. For example, if free cooling is available, the system will still bring in additional outdoor air to satisfy cooling needs

**Methodology**

Savings are achieved by reducing the amount of outside air that is required to be heated or cooled. To determine the appropriate reduction in system operating hours CO2 sensors and data loggers were installed in the building for a period of three weeks. An occupancy profile was developed using the data from the loggers placed in them and applied to the energy calculations shown in Appendix E for this building.



Building occupancy schedules were determined from discussions with facility staff as well as using logged temperature data which showed building temperature setback during unoccupied periods.

The spaces were assumed to be in economizer mode (where it is advantageous to bring in additional outdoor air) when the outdoor air temperature was below the space temperature setpoint. Spaces were assumed to need to cool the outdoor air brought in when the outdoor air temperature was above the space temperature setpoint.

Heating and cooling efficiencies were available from the nameplate data of many of the air handling units. For those that were not available an efficiency of 80% was used for heating and their cooling COPs were estimated from their age (older units had to conform to lower ASHRAE efficiency requirements).

The calculations and savings estimates can be found in Appendix E of this report. The utility information for the site reflected an avoided natural gas cost of \$1.165/CCF and an average electricity cost of \$0.111/kWh.

## ACCORD SUBSTATION, Granite Road, Accord

### FIM-76 Lighting Upgrade

#### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L4' E/E	22	Surface-mounted 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.

#### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

#### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.084/kWh and an avoided electric demand cost of \$8.00/kW.

## BOICEVILLE SUBSTATION, Cold Brook Road, Boiceville

### FIM-77 Replace Bay Area Thermostats with Programmable Thermostats

#### Existing Conditions

The truck bay areas of the substation are heated with two Modine propane-fired unit heaters. The units are controlled with non-programmable thermostats.

#### Recommendation

Replace the thermostats with programmable thermostats to allow night setback in the truck bays.

#### Methodology

Savings for this measure are based on a reduction of space temperature during unoccupied periods. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected a LPG gas cost of \$1.59/gallon.



### FIM-78 Replace Electric Domestic Hot Water Heater with Power-Vent Propane Gas Unit

#### Existing Conditions

Presently domestic hot water is produced by a 30 gallon electric water heater with two 4,500 W elements.

#### Recommendation

Install a new AO Smith ProMax GPVH power-vent 40 gallon propane gas-fired domestic hot water heater.

#### Methodology

Savings for this measure are based on a decrease in the per unit energy cost of LPG as compared to electricity. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an average LPG cost of \$1.59/gallon, an avoided electricity cost of \$0.084/kWh, and an avoided electric demand cost of \$8.00/kW.



## FIM-79 Replace Office Area Thermostats with Programmable Thermostat

### Existing Conditions

The office area of the substation is heated with two propane fired units. A fairly new hot air furnace and a propane fired stove are used to heat this area. The stove is controlled by a manual control knob and the furnace is controlled with a non-programmable thermostat.



### Recommendation

Turn off the stove when the space is unoccupied and replace the thermostat controlling the furnace with a programmable thermostat to allow night setback.

### Methodology

Savings for this measure are based on a reduction of space temperature during unoccupied periods. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected a LPG gas cost of \$1.59/gallon.

## FIM-80 Lighting Upgrade

### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L8'HO S/S	28	Chain-mounted 1X8 fixture with 2-8' high output lamps and standard ballasts.
2L8' S/S	6	Chain-mounted 1X8 fixture with 2-8' standard lamps and standard ballasts.

34

### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for



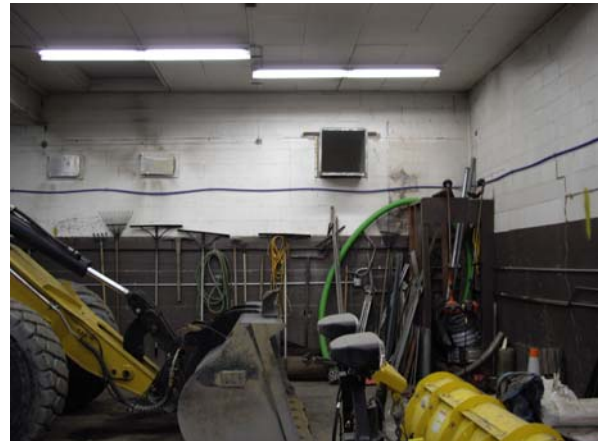
the site reflected an avoided electricity cost of \$0.084/kWh and an avoided electric demand cost of \$8.00/kW.

## SAUGERTIES SUBSTATION, Quarryville Road, Saugerties

### FIM-81 Install Infrared Heaters in the Truck Bay

#### Existing Conditions

The truck bay area of the substation is heated by a #2 fuel oil-fired hot air furnace that is located in the office area. This unit serves both the office and the truck bay area. Temperature is controlled with a non-programmable unit that is located and senses temperature in the office area.



#### Recommendation

Install gas fired infrared heating units to the each side of the truck bay. The heating units are designed to heat objects rather than surrounding air. Together with motion sensors, these units can provide a comfortable working condition when workers are within the space. The units will also be controlled with a sensor that maintains a minimum temperature of 45°F.

Completion of this FIM includes the following:

1. Disconnect existing diffusers, duct work, and return plenum.
2. Seal and insulate penetrations for old duct work.
3. Provide and install two new propane infrared Tube Heaters (Dayton 7D837 50 MBH or equivalent), one on each side of the truck bay.
4. Provide and install new LPG piping to tank (new service will be required)
5. Connect exhaust duct to minimize wall penetrations
6. Install system controls as needed
7. Connect motion sensors and wall mounted temperature sensors within line of sight of each unit

#### Methodology

Replacing the fuel oil-fired furnace heating with infrared heaters will allow the facility to only heat specific areas of the facility when they are in use. The overall heating capacity is decreased as well because infrared heaters do not heat the air in the facility. In addition, the infrared heaters are more efficient than the existing furnace.

Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an average fuel oil cost of \$2.04/gallon and an average LPG cost of \$1.50/gallon.

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**FIM-82      Replace Office Area Thermostats with Programmable Thermostat**

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**Existing Conditions**

The office area of the substation is heated with a 340 MBH #2 fuel oil-fired furnace. Space temperature is controlled with a non-programmable thermostat.

**Recommendation**

Replace the thermostat controlling the furnace with a programmable thermostat to allow night setback.

**Methodology**

Savings for this measure are based on a reduction of space temperature during unoccupied periods. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an average fuel oil cost of \$2.04/gallon.

**UC LAW ENFORCEMENT CENTER (UCLEC), 380 Boulevard, Kingston**

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**FIM-83      Lighting Sensor Upgrade**

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**Existing Conditions**

The Sheriff's Office section of the UCLEC was monitored for a two week period with lighting sensors that measure lighting levels within a space and if that space is occupied.

**Recommendation**

From the data collected during the survey spaces were identified in which lighting occupancy sensors should be installed.

**Methodology**

Savings for this measure are based on a reduction in lighting operating hours for the spaces affected. A detailed summary of the data is provided in Appendix D along with details of the energy savings calculations. The utility information for the site reflected an avoided electric avoided electricity cost of \$0.097/kWh and an avoided electric demand cost of \$8.00/kW.

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## FIM-84 Building Scheduling

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### Existing Conditions

The six air handlers serving the non-inmate occupied spaces of Areas B and C of the Ulster County Law Enforcement Center are scheduled to run continuously (168 hrs/wk) throughout the year and to maintain typical occupied room setpoints of approximately 68°F in the winter and 72°F in the summer. Each of these air handlers is a constant volume system with multiple reheat coils that serve individual zones.

### Recommendation

Initiate occupied/unoccupied scheduling for the following AHUs:

Air Handling Equipment
AHU-22, Sheriff's Wing, 1st Floor
AHU-23, Sheriff's Wing, 2nd Floor
AHU-24, Lower Security Wing C, 1st Floor
AHU-25, Upper Security Wing, 2nd Floor
AHU-26, Lower Security Wing C, 1st Floor
AHU-27, Security Lockers, 1st Floor

Each air handler and its associated reheat zones will be scheduled to operate in occupied mode between 5:00 AM and 7:00 PM, 7 days per week, 52 weeks per year, and will otherwise operate in unoccupied mode. During occupied mode, the unit will maintain a winter room temperature of 68°F and a summer room temperature of 72°F and the mixed air dampers will modulate normally to provide design ventilation and economizer cooling. During unoccupied mode, the unit will be off except to maintain a winter room temperature of 65°F and a summer room temperature of 77°F in each associated reheat zone. The outdoor air damper will be closed during this unoccupied mode.

An additional savings of up to 30% could be obtained if occupancy sensors, installed for lighting control as part of this project, were integrated with the existing Automated Logic DDC controls. This would allow for a shorter occupied schedule and would allow the unit to run automatically in occupied mode outside of the implemented schedule.

### Methodology

Savings for this measure are based on a reduction in equipment operating hours for the spaces affected. A detailed summary of the energy savings calculations is provided in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.097/kWh and an average fuel oil cost of \$2.72/gallon.

## GOLDEN HILL HEALTHCARE CENTER (NURSING HOME) – 99 Golden Hill Drive, Kingston

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### FIM-85 Install Hot Water Reset Controls

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#### Existing Conditions

Currently the building control system maintains a constant high temperature hot water loop. The management system is not utilizing hot water reset as an energy reduction strategy.

#### Recommendation

Monitor outdoor air condition and modulate hot water circulation temperature from the existing 180°F at -10°F outside air to 110°F when outside air temperature is 60°F. The water temperature required to heat the building varies with outdoor temperature. When it is very cold, the heating water temperature needs to be hot. As it warms up outside, the heating water temperature can be reduced.



Implementation of this FIM requires the following:

1. Install outdoor air sensor
2. Integrate new boiler controls into BMS
3. Install temperature reset software capabilities

#### Methodology

Resetting hot water supply temperature (HWS) to match the anticipated heating load can result in considerable energy savings, increased boiler efficiency and occupant comfort. Hot water boilers are very efficient at part-load conditions when a high water temperature is not required; also distribution losses are minimized when temperature is lower. Energy savings occurs when the supply hot water temperature is maintained at a minimum set point to satisfy the largest heating load. The new boilers recommended for this facility will further enhance this control strategy.

A detailed summary of the energy savings calculations is provided in Appendix E. The utility information for the site reflected an average fuel oil cost of \$1.88/gallon.

### FIM-86 Install Kitchen Exhaust Hood Controls

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#### Existing Conditions

A central exhaust hood is currently used in the kitchen area. The fans associated with the hood run at full speed whenever they are in operation, regardless of the cooking schedule, which results in wasted fan energy and unnecessary exhausting of conditioned air.

### Recommendation

Install a variable speed kitchen hood control on the hood. The unit will monitor the rate of change in temperature in the exhausted air and adjust fan speed accordingly. For example, a rapid increase in the temperature of the exhausted air will cause the fan to increase to full speed. Likewise, a rapid decrease in temperature, as with the termination of active cooking, will cause the fan to slow to a preset minimum.

A Melink Intelli-Hood will be installed in the kitchen hood that measures 12' by 8' and is served by AC-16, which has a 10 HP supply fan and a 7.5 HP exhaust fan. Completion of this FIM involves:

1. Provide and install temperature and optical sensors in the exhaust hood.
2. Wire sensors back to a new, central control module in the main kitchen.
3. Install VFDs on each fan.
4. Install control wiring to connect the VFDs to the central controller.

### Methodology

The energy savings from this measure are based on the reduction in power used by the motors when they can run at partial load as well as the improved efficiency of new premium efficiency motors. When the motor's speed can be reduced the VFD will slow the speed of the motor saving the electricity required by the motor. A load profile for each motor was developed based on typical kitchen usage. The current and proposed motor efficiencies were determined using manufacturer's data.

In addition to the motor savings, the savings from the reduction in amount of outdoor air that needs to be brought in and conditioned is quantified. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an average fuel oil cost of \$1.88/gallon and an average electricity cost of \$0.113/kWh.

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## FIM-87 Install Natural Gas-Fired Condensing Boilers

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### Existing Conditions

There are currently three oil fired boilers that provide heating hot water to the south section of the nursing home. They are approximately 25 years old. The boilers each have an input capacity of 3,000 MBH and have a nameplate efficiency of only 70.0%. They are located in the mechanical room of the building.

***The completion of this measure will require a new natural gas service connection.***



### Recommendation

It is recommended that the existing boilers be replaced with three smaller high efficiency natural gas-fired condensing boilers that are correctly sized for the current hot water

requirements of the facility. The hot water needs of the facility only require approximately half of the current capacity. Recommended boilers are Harsco/Patterson-Kelley Mach Series condensing boilers C2000 or equivalent.

### Methodology

Savings are achieved through an increase in boiler efficiency. The increase of efficiency was applied to the current heating requirements of the facility which were based on the fuel oil consumption of the building during the heating season. The new condensing boilers will provide the same amount of heat to the building, but at a higher efficiency.

The current boiler efficiency was determined from nameplate data. The proposed efficiency was estimated based on manufacturer's catalogs. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.11/CCF and an average fuel oil cost of \$1.88/gallon.

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## FIM-88 Install Instantaneous Natural Gas-Fired Domestic Hot Water Heaters

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### Existing Conditions

There are currently two large domestic hot water storage tanks located within the facility. The tanks are maintained at 140°F and immediately reduced to 120°F for circulation to the facility occupants. ***The completion of this measure will require a new natural gas service connection.***



### Recommendation

It is recommended that the facility produce the domestic hot water they need instantaneously with four new natural gas-fired heaters capable of providing a combined 80 gallons per minute, Rannai R98LSe or equivalent.

### Methodology

The energy savings associated with this measure are from switching from oil fired boilers to natural gas fired instantaneous heaters and eliminating standby losses. The surface areas of the existing domestic hot water tanks were estimated using field measurements. The insulation R value of the tanks was estimated based on similar experience with domestic hot water tanks. The existing boiler's efficiency was based on nameplate data and manufacturer's information. The proposed boiler efficiency was based on manufacturer's data.

Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided natural gas cost of \$1.11/CCF and an average fuel oil cost of \$1.88/gallon.

## FIM-89 Pump Motor/VFD Replacement

### Existing Conditions

The pump motors indicated in the table to the right are all standard-efficiency motors and are not currently controlled by a variable frequency drive (VFD) in order to modulate motor speed based on system pressures.

### Recommendation

It is recommended that these standard efficiency motors be replaced with premium efficiency motors and VFDs be installed where indicated.

Golden Hill Healthcare Center

Pump	HP	VFD
HW Pump 1	3	-
HW Pump 2	3	-
HW Pump 3	15	YES
HW Pump 4	15	YES
CW 1	10	-
CW 2	10	-
CW 3	10	-

### Methodology

The energy savings from this measure are based on the reduction in power used by the motors when they can run at partial load as well as the improved efficiency of new premium efficiency motors. When the motor's speed can be reduced the VFD will slow the speed of the motor saving the electricity required by the motor. A load profile for each motor was developed for each motor requiring a VFD based on its use. The current and proposed motor efficiencies were determined using manufacturer's data.

Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.094/kWh and an avoided electric demand cost of \$8.00/kW.

## FIM-90 Weatherization Improvements

### Existing Conditions

An assessment of the building envelope including the condition of windows, doors, and other building penetrations was conducted.

### Recommendation

There are significant opportunities to reduce air leakage through the building envelope of this facility. Gaps, cracks and seams in building components combine to create large holes, through which energy is lost. A summary of the building weatherization improvements recommended is provided below and calculations associated with these improvements are found in Appendix E.

- Weather strip 16 single and 8 double doors
- Air seal 308 Unit Ventilators
- Seal (3 ea) – 4 foot entry soffits at interior wall plane
- Seal (2 ea) – 8 foot entry soffits at interior wall plane
- Seal soffit area near loading dock area

- Seal soffit at entrance (20 feet)
- Air seal perimeters of 28 wall vents (fresh air, other)
- Air seal 21 rooftop vents between curb and duct; correct damper bypass conditions

### Methodology

Savings for this measure are based on a reduction of infiltration and an associated heating and cooling energy losses. During the site audit measurements of the crack area for each improvement identified above were made. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided fuel oil cost of \$1.88/gallon and an average electric cost of \$0.113/kWh.

## FIM-91 Upgrade Lighting

### Existing Conditions

A summary of the lighting systems for the facility and proposed lighting recommendations for this facility are summarized in the table below:

Lamp and Ballast Codes	Qty	Description
2L4' T8/EL	15	Recessed lensed 2X4 fixture with 2-4' T8 lamps and electronic ballasts.
3L4' E/E	14	Deep-cell parabolic 2X4 fixture with 3-4' energy-efficient lamps and ballasts.
3L4' T8/EL	36	Recessed lensed 2X4 fixture with 3-4' T8 lamps and electronic ballasts.
2L4' E/E	240	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' T8/EL	16	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
2L4' E/E	169	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L4' T8/EL	34	Recessed lensed 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
2F39BIAX	362	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.
2L4'U E/E	7	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.
4L2' S/S	2	Recessed lensed 2X2 fixture with 4-2' standard lamps and standard ballasts.
2L4' E/E	2	Surface-mounted strip 1X8 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.
2L8' E/E	1	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and ballasts.
(2) 13W CF HW	12	Hi-Hat (12") fixture with 2-13 Watt compact fluorescent hard-wired lamps.
(2) 13W CF HW	328	Surface-mounted (12") fixture with 2-13 Watt compact fluorescent hard-wired lamps.
1L2' S/S	165	Wall-mounted 1X1 fixture with 1-2' standard lamp and standard ballasts.
400W HPS	12	Pole-mounted 1X1 fixture with 1-400 Watt high-pressure sodium lamp.
250W HPS	10	Pole-mounted 1X1 fixture with 1-250 Watt high-pressure sodium lamp.
150W MH	16	Wallpack (6") fixture with 1-150 Watt metal halide lamp.
70W HPS	20	Hi-Hat (6") fixture with 1-70 Watt high-pressure sodium lamp.
2L4' T8/EL	294	Wall-mounted 1X4 fixture with 2-4' T8 lamps and electronic ballasts.
2L2' S/S	14	Wall-mounted 1X2 fixture with 2-2' standard lamps and standard ballasts.
1L2' S/S	4	Wall-mounted 1X2 fixture with 1-2' standard lamp and standard ballasts.
9W CF SI	74	Exit sign (12") fixture with 9 Watt compact fluorescent lamps.

1847

### Recommendation

A detailed audit of the existing lighting was conducted and is provided in Appendix C. Based on this audit several recommendations were made to reduce lighting related energy costs at this facility.

### Methodology

Details of the energy saving calculations are presented in Appendix C. Existing fixture wattage is based on field observations and data published by ballast manufacturers for



various ballast and lamp combinations. The annual hours of lighting operation vary by area; these hours were estimated based on staff interviews. The utility information for the site reflected an avoided electricity cost of \$0.094/kWh and an avoided electric demand cost of \$8.00/kW.

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## **FIM-92     Replace PTACs**

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### **Existing Conditions**

There are currently 152 aging heat pumps throughout the north section of the Nursing Home facility. The heat pumps are utilized on all three floors of living space. The units are in a constant state of disrepair and require costly maintenance.

### **Recommendation**

Replace the existing electric PTACs with new higher efficiency units.

### **Methodology**

Savings for this measure are based in an increase in both the cooling and heating COP of the new PTACs. In addition, maintenance costs will be significantly reduced. Details of the energy saving calculations are presented in Appendix E. The utility information for the site reflected an avoided electricity cost of \$0.094/kWh and an avoided electric demand cost of \$8.00/kW.

## Other Measures Considered (OMC)

The following measures were investigated during the audit phase and are presented here as alternates or additional FIMs. The majority of these measures had more cost effective options that were described in the FIMs section of the report. For example, OMC-1 would be an alternate to FIM-1 (Replace Steam Boiler).

### OMC-1 Install Geothermal Heat Pump System at Carr Building

#### Existing Conditions

The existing cooling system is provided by a ceiling-mounted fan coil unit served by a York 3.5 ton split-system condensing unit (SEER 13) on the first floor and a new York heat split-system condensing unit with an air handler located in the attic. Space heating is provided via a steam radiant system.



#### Recommendation

A geothermal system could be designed and installed. A design phase will be required in order to ensure that a geothermal system's efficiency is maximized. **This measure would replace the need for the condensing boiler upgrade.**

Based on the initial geothermal design, the water loop heat pump systems are specified as follows:

Geothermal Heat Pumps	Flatbush
Loop Field	Vertical
Number of Wells	1
Well Depth (ft)	400
<b>New Heat Pumps</b>	<b>4 (1.5 tons each)</b>

### OMC-2 Install Geothermal Heat Pump System at Flatbush Annex

#### Existing Conditions

The Flatbush building in Ulster County is currently heated and cooled by 102 heat pumps with heat provided by boilers, and cooling provided by an out-of-date cooling tower. Horizontal heat pumps in the ceiling serve as the terminal equipment to condition the spaces.

Geothermal heat pumps could be applied to the Flatbush building, and replace the existing cooling towers, and utilize the boilers as a backup heating system. Geothermal heat pumps use the natural properties of the earth to provide heating and cooling to a building. Since the geothermal heat pump system utilizes the ground as source of heat, as well as a medium for heat rejection, a boiler and cooling tower can be replaced or used as a backup system. By subtracting a boiler and a cooling tower from the mechanical system, there is a significant reduction in maintenance cost as well as overall electrical and natural gas consumption for the facilities.

The existing equipment is as follows.

- 102 water source heat pumps (15 MBH cooling capacity, 17 MBH heating capacity)
- One Calhoun & Poxon cooling tower
- Four 900 MBH natural gas boiler, with output 720 MBH

**Recommendation**

A geothermal system will be designed and installed. A design phase will be required in order to ensure that a geothermal system’s efficiency is maximized. **This measure would replace the need for a tower replacement and condensing boiler upgrade recommendations.**

Since the existing boilers are to be used as backup systems, the geothermal heat pumps are sized by total cooling capacity. Based on the initial geothermal design, the water loop heat pump systems are specified as follows:

Geothermal Heat Pumps	Flatbush
Loop Field	Vertical
Number of Wells	14
Well Depth (ft)	400
Space between Wells (ft)	20
Well Area (acre)	0.125
<b>New Heat Pumps</b>	<b>102</b>

The scope of work for the heat pump replacement and connections to the proposed heat pump system are as follows:

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**OMC-3     Install Geothermal Heat Pump System at Mental Health**

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**Existing Conditions**

The Mental Health building in Ulster County is currently heated and cooled by heat pumps with heat provided by boilers, and cooling provided by an out-of-date cooling tower. Horizontal heat pumps in the ceiling serve as the terminal equipment to condition the spaces.

Geothermal heat pumps could be applied to the Mental Health building, and replace the existing cooling towers, and utilize the boilers as a backup heating system.

Geothermal heat pumps use the natural properties of the earth to provide heating and cooling to a building. Since the geothermal heat pump system utilizes the ground as source of heat, as well as a medium for heat rejection, a boiler and cooling tower can be replaced or used as a backup system. By subtracting a boiler and a cooling tower from the mechanical system, there is a significant reduction in maintenance cost as well as overall electrical and natural gas consumption for the facilities.

The existing equipment is as follows.

- 30 water source heat pumps (15 MBH cooling capacity, 17 MBH heating capacity)
- 20 water source heat pumps (30 MBH cooling capacity, 34 MBH heating capacity)
- One Frick cooling tower
- One 1,700 MBH natural gas boiler, with output 1,380 MBH

### **Recommendation**

A geothermal system will be designed and installed. A design phase will be required in order to ensure that a geothermal system's efficiency is maximized. **This measure would replace the need for a tower replacement and condensing boiler upgrade recommendations.**

Since the existing boilers are to be used as backup systems, the geothermal heat pumps are sized by total cooling capacity.

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## **OMC-4 Install Economizer on Liebert at Information Services**

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### **Existing Conditions**

The Information Services building currently has two Liebert air conditioning units that provide cooling to the server room. These units provide temperature and humidity control to the space. The units recycle the air in the space and reject heat to the outside using two condensing units. Outdoor air is not provided to the space via these units.

When the outside temperature and humidity conditions are correct, it can be more efficient to bring in outdoor air rather than recycle the room air. A Liebert economizer can be added to bring in appropriate amounts of outdoor air to cool the space. Ducts will need to be constructed to bring outdoor air into the space as well as exhaust room air. When bringing in outdoor air into a server room care must be taken to ensure that the air is properly filtered and treated to the correct temperature and humidity levels. The economizer will mix outdoor air with return air to minimize mechanical cooling provided by the Liebert units.

### **Recommendation**

Install a Liebert airside economizer on each Liebert unit to bring outdoor air into the space when appropriate. Dampers included as part of the Liebert economizers will be programmed to modulate such that they bring in appropriate amounts of outdoor air

when outdoor air conditions are favorable for free cooling. **This measure was not included as a FIM due to concerns with the buildings roof and its prohibitive cost as compared to savings potential.**

## OMC-5 Install Microturbines at Golden Hill Healthcare Center

### Existing Conditions

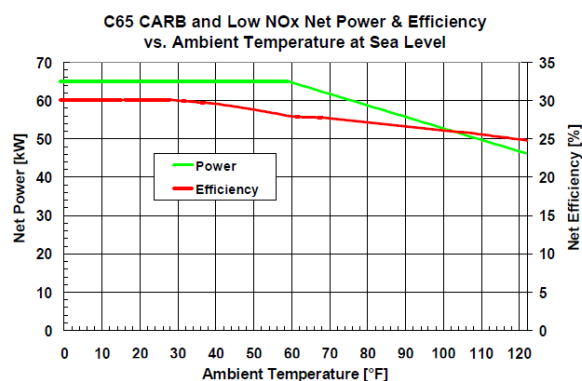
The facility currently does not generate any electricity internally and uses #2 fuel oil in its boilers as natural gas is currently not available on-site. **The completion of this measure will require a new natural gas service connection that will need to be provided by the local gas distribution company or third party contractor.**

### Recommendation

It is recommended that the facility install two 65-kW micro turbines (Capstones or equivalent) to provide electricity to the facility. In addition to the electricity produced, a significant amount of waste heat can be recovered and used to supplement the hot water needs of the facility. The turbines will be in operation continuously, so the waste heat recovery will be best utilized by supplementing the domestic hot water needs of the facility.

The turbine installation will include the following:

- Two 65-kW micro turbines installed in a new mechanical space
- Electrical connection
- Natural gas connection
- Water connection



**Turbine Performance**

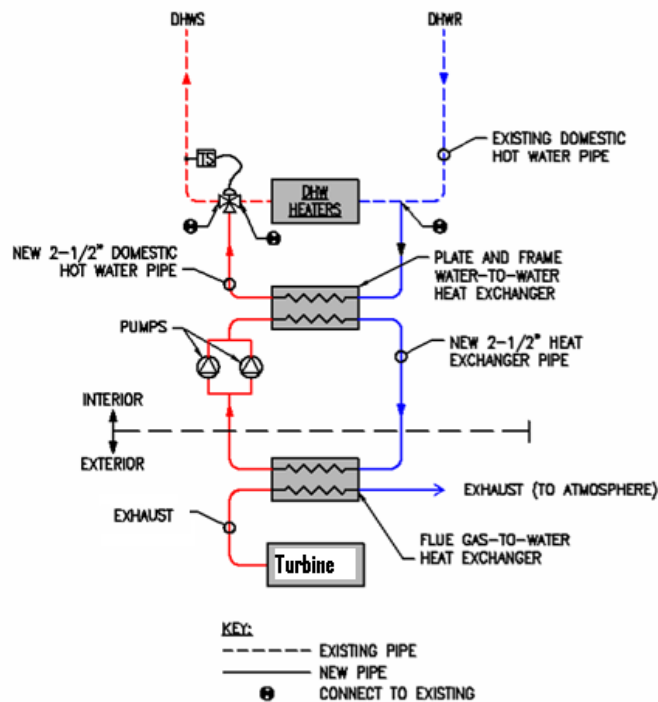


**Proposed Micro Turbine Location**

The heat recovery system will include the following:

- An air-to-water heat exchanger installed adjacent to the micro turbine
- Water piping from the heat exchanger to the mechanical room
- A duplex pumping system in the mechanical room
- A water-to-water plate-and-frame heat exchanger installed in the mechanical room

A schematic of the proposed system can be found below:



## OMC-6 Install High Efficiency Fuel Oil Boilers at Golden Hill Healthcare Center

### Existing Conditions

There are currently three oil fired boilers that provide heating hot water to the south section of the nursing home. They are approximately 25 years old. The boilers each have an input capacity of 3,000 MBH and have a nameplate thermal efficiency of only 70.0%. They are located in the mechanical room of the building. The hot water needs of the facility only require approximately half of the current capacity.

### Recommendation

It is recommended that the existing boilers be replaced with three higher efficiency oil boilers. Replacement boilers are 3 Cleaver Brooks FLX 3,000 MBH oil fired boilers with an overall thermal efficiency of 83% or equivalent.

**Note: This measure is an alternate to replacing the boilers with Natural Gas-fired condensing boilers as described in FIM 87.**



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## **OMC-7     Replace Heat Pumps with Hydronic Units at Golden Hill Healthcare Center**

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### **Existing Conditions**

There are currently 152 aging heat pumps throughout the north section of the Nursing Home facility. The heat pumps are utilized on all three floors of living space. The units are in a constant state of disrepair and require costly maintenance.

### **Recommendation**

It is recommended that the existing electric heat throughout the facility be replaced with hydronic heat and cooling. This would be accomplished by the following:

- Installation of two 1,500 MBH Harsco/Patterson-Kelley Mach Series C1500 natural-gas fired condensing hot water boilers or equivalent.
- One Trane rotary chiller 125 tons (RTWA125), or equivalent, and accompanying tower
- Installation of a duplex pumping system in the new mechanical space for both a chilled water and heating water four pipe system
- Installation of chilled and hot water piping infrastructure throughout building
- Replacement of existing PTACs units with hydronic cooling and heating coils, McQuay four pipe unit ventilator AVS07 or equivalent

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## **OMC-8     Install Solar Photovoltaic Systems – Various Sites**

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### **Existing Conditions**

Currently the County does not have any active solar power generation. A new site is currently under development at the New Paltz Substation.

### **Recommendation**

As part of a preliminary study Siemens developed an Alternative Energy Analysis report that was provided to assist the County in submitting an application for EECBG funds (stimulus money). Several sites were identified. Siemens would gladly assist the County develop solar PV projects at these sites or others identified by the County. A copy of the Alternative Energy Analysis is provided in Appendix F.

## SECTION V PROJECT ECONOMICS SUMMARY

The table that follows provides an overview of the FIMs identified showing the annual cost savings, approximate implementation cost, simple payback in years, and potential sources of funding. The potential funding sources identified are:

- EFP – NYSEERDA’s Existing Facilities Program (PON 1219)
- CHE – Central Hudson’s Business Energy Savings Program – Electric Measures
- CHN – Central Hudson’s Business Energy Savings Program – Natural Gas Measures
- SWI – Small Wind Incentive – NYSEERDA PON 1098

Approximate NYSEERDA incentives are based on \$0.12/kWh for PON 1219 and a 20 kW wind turbine at a Municipal facility. Incentives from Central Hudson are also available although only one source of incentive funding may be utilized per measure.

**Table 4.1: Project Economics Summary**

Facility	Facility Improvement Measure	Annual Cost Savings (\$/yr)	Implementation Cost (\$)	Approximate NYSEERDA Incentive	Simple Payback (Years)	Potential Incentive Sources
Carr Building	Replace Steam Boiler with HW Boiler	\$2,322	\$192,352		82.8	CHN
Carr Building	DHW Heater Replacement	\$463	\$4,846		10.5	None
Carr Building	Weatherization Improvements	\$522	\$7,741		14.8	None
Carr Building	Lighting Upgrade	\$377	\$5,286	\$268	13.3	EFP, CHE
Community Corrections	Demand Control Ventilation	\$724	\$22,319	\$25	30.8	EFP, CHE
Community Corrections	Modify Electric Heat Controls	\$952	\$2,716	\$929	1.9	EFP, CHE
Community Corrections	Weatherization Improvements	\$1,067	\$17,555		16.5	None
Community Corrections	Lighting Upgrade	\$368	\$7,195	\$422	18.4	EFP, CHE
Court House	Boiler Replacement	\$1,658	\$280,792		169.4	CHN
Court House	Cooling Tower VFD	\$1,756	\$22,466	\$1,648	11.9	EFP, CHE
Court House	Heat Pump Replacement	\$8,739	\$726,825	\$6,725	82.4	EFP, CHE
Court House	Weatherization Improvements	\$3,347	\$101,961		30.5	None
Court House	Lighting Upgrade	\$2,221	\$24,228	\$2,307	9.9	EFP, CHE
Emergency Management	Replace Liebert	\$264	\$22,906	\$286	85.7	EFP, CHE
Emergency Management	Lighting Upgrade	\$121	\$1,028	\$149	7.3	None
Emergency Management	Weatherization Improvements	\$265	\$11,948		45.1	EFP, CHE
Flatbush Annex	Demand Control Ventilation	\$4,087	\$55,275	\$3,325	12.7	EFP, CHE
Flatbush Annex	Hot Water Reset Controls	\$632	\$20,498		32.4	CHN
Flatbush Annex	Boiler Replacement	\$1,220	\$276,022		226.2	CHN
Flatbush Annex	Cooling Tower Replacement	\$887	\$171,515	\$320	193.0	EFP, CHE
Flatbush Annex	Exhaust Fan Control Modification	\$2,352	\$8,223		3.5	EFP, CHE
Flatbush Annex	Pump Motor/VFD Replacement	\$5,859	\$59,027	\$6,104	9.0	EFP, CHE
Flatbush Annex	Weatherization Improvements	\$990	\$12,797		12.9	None



Facility	Facility Improvement Measure	Annual Cost Savings (\$/yr)	Implementation Cost (\$)	Approximate NYSERDA Incentive	Simple Payback (Years)	Potential Incentive Sources
Flatbush Annex	Lighting Upgrade	\$63	\$1,909	\$57	29.4	EFP, CHE
Heavy Vehicle Maintenance	Infrared Heaters	\$6,665	\$125,102	\$236	18.7	CHN
Heavy Vehicle Maintenance	Weatherization Improvements	\$437	\$4,346		9.9	None
Heavy Vehicle Maintenance	Lighting Upgrade	\$5,571	\$74,151	\$5,006	12.4	EFP, CHE
Information Services	AHU and DCV	\$3,228	\$112,298	\$1,245	34.4	EFP, CHE
Information Services	Weatherization Improvements	\$1,003	\$10,616		10.6	None
Information Services	Lighting Upgrade	\$1,882	\$29,367	\$1,682	14.7	EFP, CHE
Mental Health	Demand Control Ventilation	\$2,621	\$94,440	\$1,755	35.4	EFP, CHE
Mental Health	Cooling Tower Replacement	\$1,777	\$146,833	\$1,705	81.7	EFP, CHE
Mental Health	Wind Turbine	\$2,447	\$202,630	\$70,000	54.2	SWI
Mental Health	Heat Pump Replacement	\$5,337	\$481,613	\$5,779	89.2	EFP, CHE
Mental Health	Pump Motor/VFD Replacement	\$3,934	\$48,637	\$4,393	11.2	EFP, CHE
Mental Health	Weatherization Improvements	\$1,399	\$19,411		13.9	None
Mental Health	Lighting Upgrade	\$5,485	\$76,353	\$5,127	13.0	EFP, CHE
Pool	Motor Replacement	\$331	\$5,433	\$405	15.2	EFP, CHE
Pool	Lighting Upgrade	\$490	\$6,461	\$283	12.6	EFP, CHE
Probation Dept	Demand Control Ventilation	\$1,044	\$69,452	\$56	66.5	EFP, CHE
Probation Dept	Weatherization Improvements	\$1,467	\$53,873		36.7	None
Probation Dept	Lighting Upgrade	\$484	\$10,278	\$547	20.1	EFP, CHE
Public Works	Replace AC Unit and Install DCV	\$3,324	\$148,052	\$2,310	43.8	EFP, CHE
Public Works	Cooling Tower Replacement	\$537	\$136,555	\$488	253.4	EFP, CHE
Public Works	Pump Motor Replacement	\$190	\$2,379	\$200	11.5	EFP, CHE
Public Works	Weatherization Improvements	\$878	\$10,255		11.7	None
Public Works	Lighting Upgrade	\$2,180	\$28,588	\$1,861	12.3	EFP, CHE
Old Jail Storage Garage	Replace Unit Heaters	\$2,852	\$29,367	\$8,170	7.4	None
Old Jail Storage Garage	Weatherization Improvements	\$194	\$1,285		6.6	None
Trudy Resnick Farber	Boiler Replacement	\$2,972	\$87,278		29.4	None
Trudy Resnick Farber	Demand Control Ventilation	\$664	\$9,750	\$26	14.6	EFP, CHE
Trudy Resnick Farber	Lighting Upgrade	\$1,497	\$16,886	\$1,373	10.4	EFP, CHE
Dept of Environment (17 Pearl)	Boiler Replacement	\$483	\$36,708		76.0	CHN
Dept of Environment (17 Pearl)	DHW Heater Replacement	\$107	\$5,286	\$308	46.5	None
Dept of Environment (17 Pearl)	Weatherization Improvements	\$932	\$21,833		23.4	None
Dept of Environment (17 Pearl)	Lighting Upgrade	\$155	\$6,901	\$179	43.3	EFP, CHE
UC Office Building	Demand Control Ventilation	\$6,508	\$74,411	\$223	11.4	EFP, CHE
UC Office Building	Replace Electric Heat in AC-4	\$6,419	\$180,301	\$7,589	26.9	CHE
UC Office Building	Boiler Replacement	\$6,374	\$458,330		71.9	CHN
UC Office Building	Humidification Replacement	\$4,187	\$213,202	\$6,121	49.5	EFP, CHE
UC Office Building	Pump Motor/VFD Replacement	\$3,952	\$96,506	\$4,545	23.3	EFP, CHE
UC Office Building	Weatherization Improvements	\$1,442	\$16,409		11.4	None
UC Office Building	Lighting Upgrade	\$6,259	\$73,417	\$6,393	10.7	EFP, CHE
Record Storage	RTU and DCV	\$6,869	\$318,012	\$3,797	45.7	EFP, CHE

Facility	Facility Improvement Measure	Annual Cost Savings (\$/yr)	Implementation Cost (\$)	Approximate NYSERDA Incentive	Simple Payback (Years)	Potential Incentive Sources
Record Storage	Humidification Replacement	\$10,715	\$193,526	\$13,603	16.8	EFP, CHE
Record Storage	Weatherization Improvements	\$1,402	\$27,017		19.3	None
Record Storage	Lighting Upgrade	\$5,413	\$98,378	\$5,043	17.2	EFP, CHE
UCAT	Demand Control Ventilation	\$747	\$10,968	\$753	13.7	EFP, CHE
UCAT	Weatherization Improvements	\$1,678	\$49,042		29.2	None
UCAT	Lighting Upgrade	\$3,821	\$38,030	\$3,753	9.0	EFP, CHE
UCAT	Remove Electric Heat	\$5,214	\$114,838	\$8,032	20.5	CHE
Ulster Ave Office (DSS)	Replace RTUs	\$7,271	\$624,042	\$6,186	85.0	EFP, CHE
Ulster Ave Office (DSS)	Weatherization Improvements	\$803	\$15,410		19.2	None
Ulster Ave Office (DSS)	Lighting Upgrade	\$4,148	\$43,316	\$193	10.4	EFP, CHE
Ulster Ave Office (DSS)	Demand Control Ventilation	\$6,129	\$130,682	\$3,925	20.7	EFP, CHE
Accord Substation	Lighting Upgrade	\$158	\$2,863	\$103	17.5	EFP, CHE
Boiceville Substation	Bay Area Thermostat Replacement	\$1,419	\$1,101		0.8	CHN
Boiceville Substation	DHW Heater Replacement	\$245	\$5,139	\$308	19.7	CHN
Boiceville Substation	Office Area Thermostat Replacement	\$549	\$1,101		2.0	CHN
Boiceville Substation	Lighting Upgrade	\$615	\$1,982	\$358	2.6	EFP, CHE
Saugerties Substation	Infrared Heaters	\$1,941	\$28,735		14.8	CHN
Saugerties Substation	Office Area Thermostat Replacement	\$517	\$147		0.3	CHN
UCLEC	Lighting Sensor Upgrade	\$12,415	\$85,425	\$15,358	5.6	EFP, CHE
UCLEC	Building Scheduling	\$28,482	\$0	\$19,542	-0.7	None
Golden Hill Nursing Home	Hot Water Reset Controls	\$769	\$25,872		33.6	CHN
Golden Hill Nursing Home	Kitchen Exhaust Hood Controls	\$2,836	\$28,779	\$2,096	9.4	EFP, CHE
Golden Hill Nursing Home	Boiler Replacement - NG	\$34,411	\$323,768		9.4	CHN
Golden Hill Nursing Home	Instantaneous DHW Heater	\$12,186	\$144,983		11.9	None
Golden Hill Nursing Home	Pump Motor/VFD Replacement	\$4,773	\$62,735	\$5,228	12.0	EFP, CHE
Golden Hill Nursing Home	Weatherization Improvements	\$21,891	\$147,312	\$18,013	5.9	None
Golden Hill Nursing Home	Lighting Upgrade	\$8,970	\$95,001	\$9,154	9.6	EFP, CHE
Golden Hill Nursing Home	PTAC Replacement	\$44,483	\$435,541	\$54,900	8.6	EFP, CHE
<b>TOTALS</b>		<b>\$369,833</b>	<b>\$8,336,168</b>	<b>\$330,912</b>	<b>21.6</b>	

## **APPENDIX A**

### **Utility Data Analysis**

## **APPENDIX B**

# **Energy Star Benchmarking Analysis**

## **APPENDIX C**

# **Lighting Audit Results**

## **APPENDIX D**

# **Ulster County Law Enforcement Center Lighting Sensor Survey**

## **APPENDIX E**

### **FIM Calculations**

## **APPENDIX F**

### **Alternative Energy Study**



## **APPENDIX G**

### **Project Summary Sheet**

## **APPENDIX H**

### **Case Study**

**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

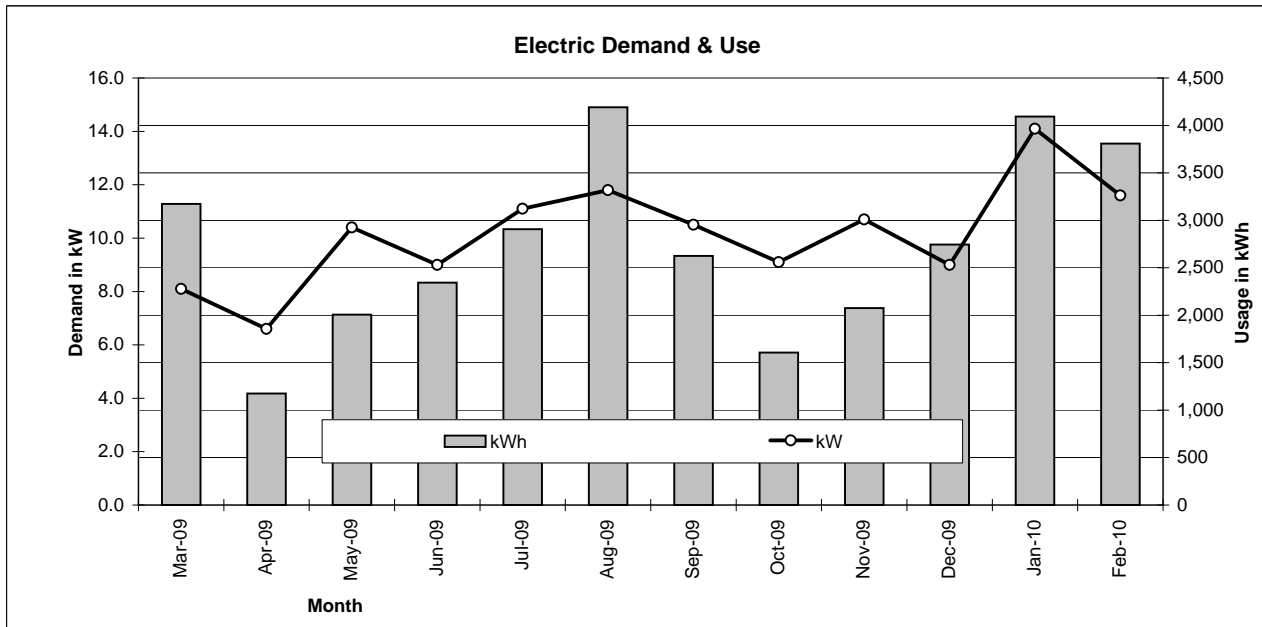
Client: **Ulster County**  
 Facility: **Carr Building**  
 Address: **1 Pearl Street, Kingston**  
 Square Footage: **3,600**  
 kWh per square foot: **9.1**

Account #: **36200760001**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E205**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
19-Feb-10	31	3,809	11.6	\$ 166.46	\$ 344.71	\$ 511.17	\$ 0.134	\$ 8.00	\$ 0.097
19-Jan-10	32	4,094	14.1	\$ 190.51	\$ 370.51	\$ 561.02	\$ 0.137	\$ 8.00	\$ 0.097
18-Dec-09	35	2,745	9.0	\$ 163.03	\$ 248.42	\$ 411.45	\$ 0.150	\$ 8.00	\$ 0.105
13-Nov-09	29	2,076	10.7	\$ 154.39	\$ 187.88	\$ 342.27	\$ 0.165	\$ 8.00	\$ 0.100
15-Oct-09	27	1,606	9.1	\$ 141.23	\$ 145.34	\$ 286.57	\$ 0.178	\$ 8.00	\$ 0.102
18-Sep-09	32	2,625	10.5	\$ 159.32	\$ 237.56	\$ 396.88	\$ 0.151	\$ 8.00	\$ 0.100
17-Aug-09	28	4,192	11.8	\$ 189.79	\$ 379.38	\$ 569.17	\$ 0.136	\$ 8.00	\$ 0.101
20-Jul-09	28	2,907	11.1	\$ 156.53	\$ 263.08	\$ 419.61	\$ 0.144	\$ 8.00	\$ 0.097
22-Jun-09	32	2,343	9.0	\$ 99.29	\$ 212.04	\$ 311.33	\$ 0.133	\$ 7.53	\$ 0.091
21-May-09	34	2,007	10.4	\$ 122.37	\$ 181.63	\$ 304.00	\$ 0.151	\$ 7.53	\$ 0.098
17-Apr-09	28	1,175	6.6	\$ 85.58	\$ 106.34	\$ 191.92	\$ 0.163	\$ 7.53	\$ 0.096
20-Mar-09	30	3,173	8.1			\$ 506.32	\$ 0.160	\$ 7.53	\$ 0.131
Annual	366	32,752	122.0			\$ 4,811.72	\$ 0.147	\$ 8.00	\$ 0.099

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule

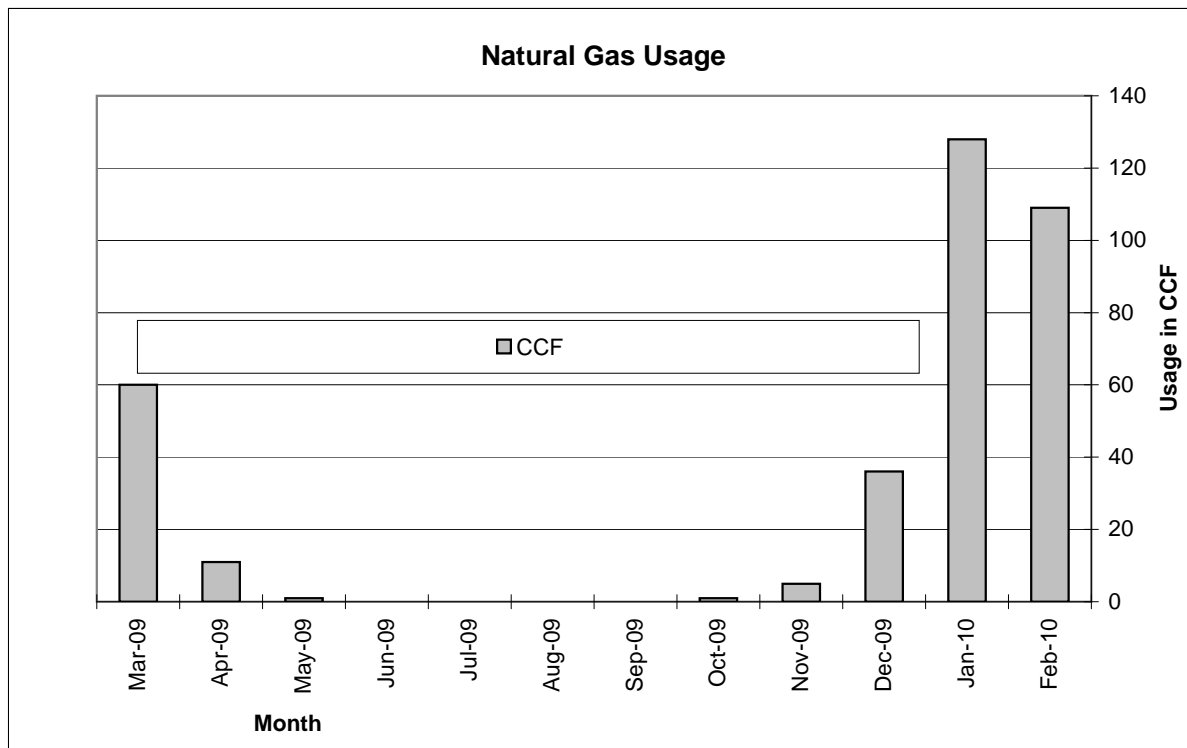


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Emergency Management E-911**  
 Address: **238 Golden Hill Drive, Kingston**  
 Square Footage: **2,200**  
 CCF per square foot: **0.2**

Account #: **36201109000**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G220**  
 Service Charge: **\$20.00**

Consumption and Cost Data				Unit Cost Data	
Meter Read Date	Days	CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
18-Feb-10	31	109	\$ 169.62	\$ 1.556	\$ 1.373
18-Jan-10	33	128	\$ 183.09	\$ 1.430	\$ 1.274
16-Dec-09	33	36	\$ 75.91	\$ 2.109	\$ 1.553
13-Nov-09	29	5	\$ 35.52	\$ 7.104	\$ 3.104
15-Oct-09	29	1	\$ 31.00	\$ 31.000	\$ 11.000
16-Sep-09	33	0	\$ 30.30	N/A	N/A
14-Aug-09	28	0	\$ 30.30	N/A	N/A
17-Jul-09	29	0	\$ 25.25	N/A	N/A
18-Jun-09	28	0	\$ 20.20	N/A	N/A
21-May-09	35	1	\$ 24.88	\$ 24.880	\$ 4.880
16-Apr-09	27	11	\$ 33.70	\$ 3.064	\$ 1.245
20-Mar-09	30	60	\$ 111.34	\$ 1.856	\$ 1.522
Annual	365	351	\$ 771.11	\$ 2.197	\$ 1.513



Client: **Ulster County**  
 Facility: **Community Correctional Facility**  
 Address: **63 West Golden Hill Drive, Kingston**  
 Square Footage: **7,700**  
 kWh per square foot: **21.2**

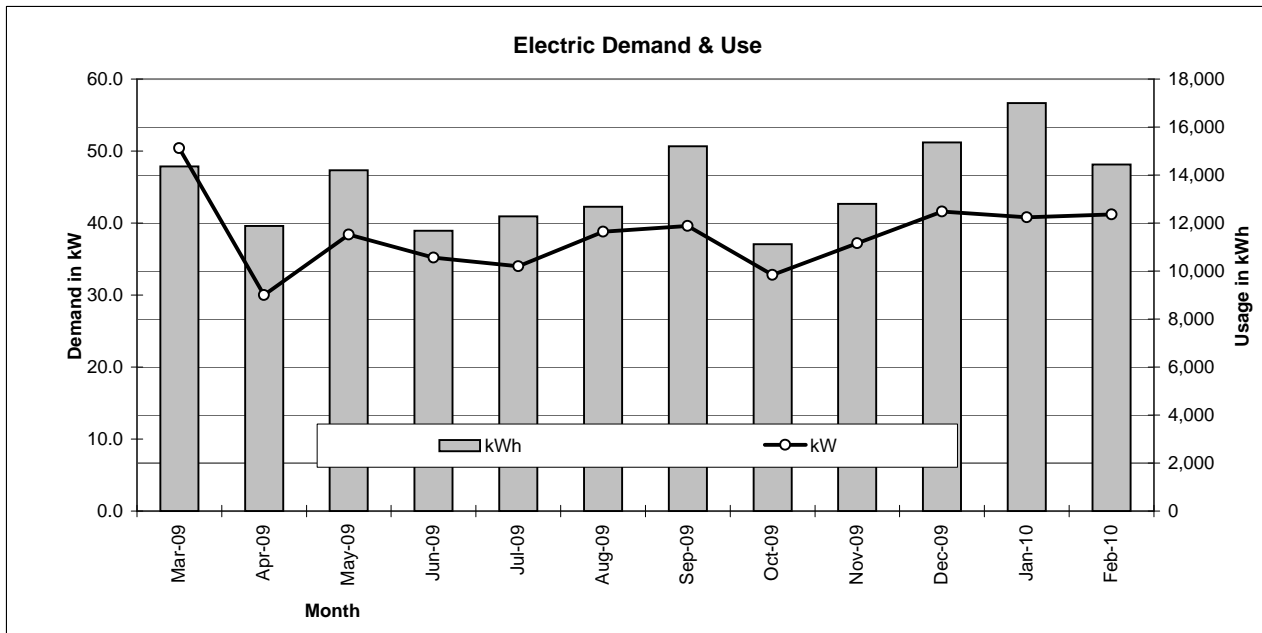
Account #: **36201104001**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
18-Feb-10	31	14,440	41.2	469.28	\$ 1,306.82	\$ 1,776.10	\$ 0.123	\$ 8.00	\$ 0.097
18-Jan-10	33	17,000	40.8	491.49	\$ 1,538.50	\$ 2,029.99	\$ 0.119	\$ 8.00	\$ 0.097
16-Dec-09	33	15,360	41.6	475.88	\$ 1,390.08	\$ 1,865.96	\$ 0.121	\$ 8.00	\$ 0.097
13-Nov-09	29	12,800	37.2	463.46	\$ 1,158.40	\$ 1,621.86	\$ 0.127	\$ 8.00	\$ 0.100
15-Oct-09	29	11,120	32.8	439.95	\$ 1,006.36	\$ 1,446.31	\$ 0.130	\$ 8.00	\$ 0.102
16-Sep-09	33	15,200	39.6	513.46	\$ 1,375.60	\$ 1,889.06	\$ 0.124	\$ 8.00	\$ 0.100
14-Aug-09	28	12,680	38.8	497.73	\$ 1,147.54	\$ 1,645.27	\$ 0.130	\$ 8.00	\$ 0.101
17-Jul-09	29	12,280	34.0	419.76	\$ 1,111.34	\$ 1,531.10	\$ 0.125	\$ 8.00	\$ 0.098
18-Jun-09	28	11,680	35.2	302.65	\$ 1,057.04	\$ 1,359.69	\$ 0.116	\$ 7.53	\$ 0.091
21-May-09	35	14,200	38.4	482.37	\$ 1,285.10	\$ 1,767.47	\$ 0.124	\$ 7.53	\$ 0.102
16-Apr-09	27	11,880	30.0	315.41	\$ 1,075.14	\$ 1,390.55	\$ 0.117	\$ 7.53	\$ 0.096
20-Mar-09	30	14,360	50.4			\$ 1,706.05	\$ 0.119	\$ 7.53	\$ 0.090
Annual	365	163,000	460.0			\$ 20,029.41	\$ 0.123	\$ 8.00	\$ 0.097

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh effective March 2009

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule

<sup>3</sup> Delivery Cost for March 2009 estimated due to billing error



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

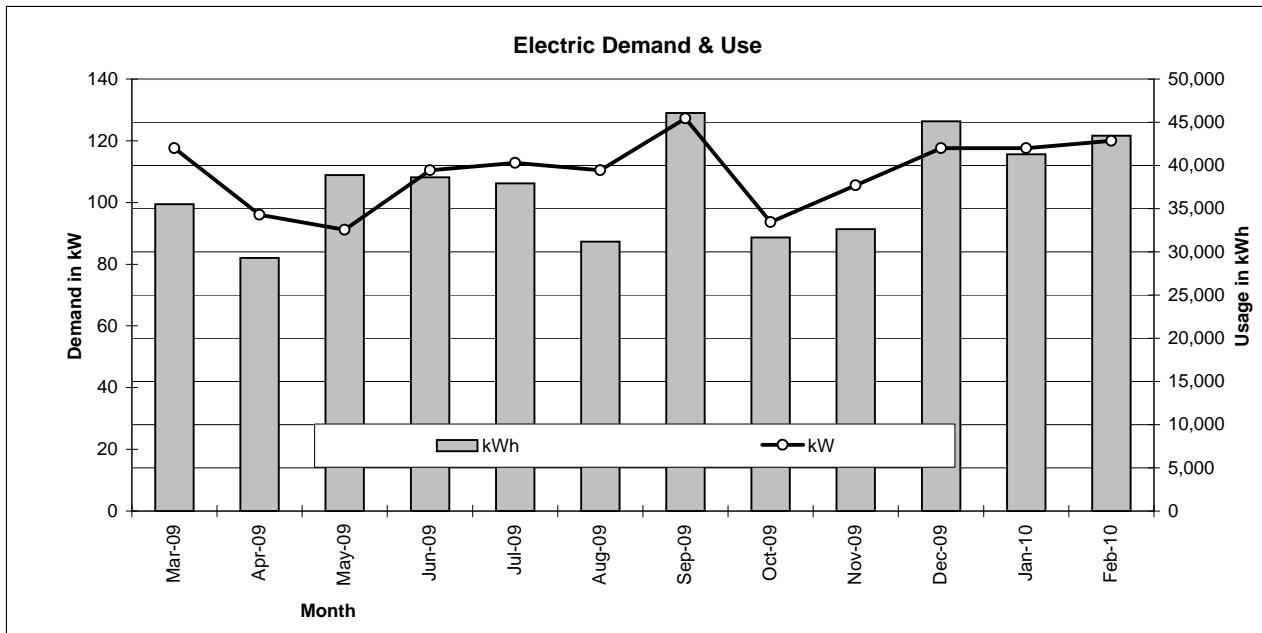
Client: **Ulster County**  
 Facility: **Court House**  
 Address: **285 Wall Street, Kingston**  
 Square Footage: **43,000**  
 kWh per square foot: **N/A**

Account #: **36200590002**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
18-Feb-10	31	43,440	120	\$ 1,279.77	\$ 3,931.32	\$ 5,211.09	\$ 0.120	\$ 8.00	\$ 0.097
18-Jan-10	28	41,280	117.6	\$ 1,270.26	\$ 3,735.84	\$ 5,006.10	\$ 0.121	\$ 8.00	\$ 0.097
21-Dec-09	38	45,120	117.6	\$ 1,561.48	\$ 4,083.36	\$ 5,644.84	\$ 0.125	\$ 8.00	\$ 0.103
13-Nov-09	29	32,640	105.6	\$ 1,190.19	\$ 2,953.92	\$ 4,144.11	\$ 0.127	\$ 8.00	\$ 0.100
15-Oct-09	27	31,680	93.6	\$ 1,162.17	\$ 2,867.04	\$ 4,029.21	\$ 0.127	\$ 8.00	\$ 0.102
18-Sep-09	35	46,080	127.2	\$ 1,512.27	\$ 4,170.24	\$ 5,682.51	\$ 0.123	\$ 8.00	\$ 0.100
14-Aug-09	24	31,200	110.4	\$ 1,084.44	\$ 2,823.60	\$ 3,908.04	\$ 0.125	\$ 8.00	\$ 0.095
21-Jul-09	29	37,920	112.8	\$ 1,298.59	\$ 3,431.76	\$ 4,730.35	\$ 0.125	\$ 8.00	\$ 0.100
22-Jun-09	32	38,640	110.4	\$ 886.42	\$ 3,496.92	\$ 4,383.34	\$ 0.113	\$ 7.53	\$ 0.091
21-May-09	35	38,880	91.2	\$ 1,132.24	\$ 3,518.64	\$ 4,650.88	\$ 0.120	\$ 7.53	\$ 0.101
16-Apr-09	27	29,280	96	\$ 899.58	\$ 2,649.84	\$ 3,549.42	\$ 0.121	\$ 7.53	\$ 0.096
20-Mar-09	30	35,520	117.6			\$ 4,121.58	\$ 0.116	\$ 7.53	\$ 0.090
<b>Annual</b>	<b>365</b>	<b>451,680</b>	<b>1,320.0</b>			<b>\$ 55,061.47</b>	<b>\$ 0.122</b>	<b>\$ 8.00</b>	<b>\$ 0.097</b>

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

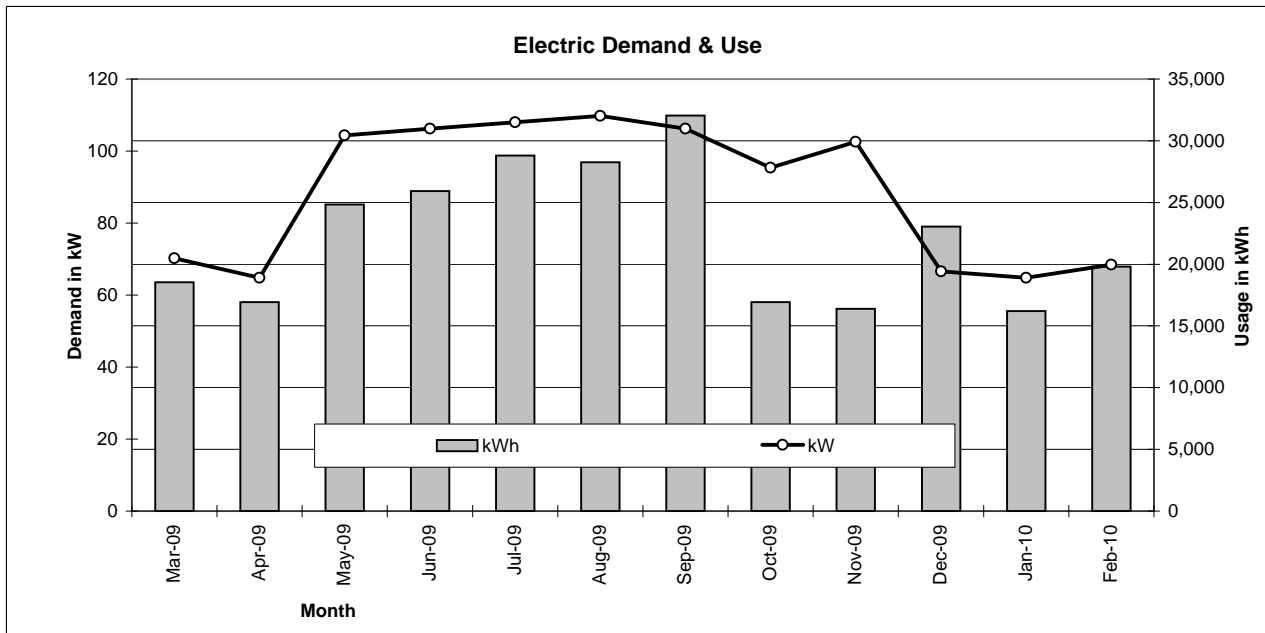
Client: **Ulster County**  
 Facility: **Court House**  
 Address: **285 Wall Street, Kingston**  
 Square Footage: **43,000**  
 kWh per square foot: **N/A**

Account #: **36200580003**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
18-Feb-10	31	19,800	68.4	\$ 720.18	\$ 1,791.90	\$ 2,512.08	\$ 0.127	\$ 8.00	\$ 0.097
18-Jan-10	28	16,200	64.8	\$ 678.06	\$ 1,466.10	\$ 2,144.16	\$ 0.132	\$ 8.00	\$ 0.097
21-Dec-09	38	23,040	66.6	\$ 897.27	\$ 2,085.12	\$ 2,982.39	\$ 0.129	\$ 8.00	\$ 0.104
13-Nov-09	29	16,380	102.6	\$ 1,019.04	\$ 1,482.39	\$ 2,501.43	\$ 0.153	\$ 8.00	\$ 0.100
15-Oct-09	27	16,920	95.4	\$ 1,007.27	\$ 1,531.26	\$ 2,538.53	\$ 0.150	\$ 8.00	\$ 0.102
18-Sep-09	35	32,040	106.2	\$ 1,208.79	\$ 2,899.62	\$ 4,108.41	\$ 0.128	\$ 8.00	\$ 0.100
14-Aug-09	24	28,260	109.8	\$ 1,048.78	\$ 2,557.53	\$ 3,606.31	\$ 0.128	\$ 8.00	\$ 0.095
21-Jul-09	29	28,800	108	\$ 1,172.34	\$ 2,606.40	\$ 3,778.74	\$ 0.131	\$ 8.00	\$ 0.099
22-Jun-09	32	25,920	106.2	\$ 846.54	\$ 2,345.76	\$ 3,192.30	\$ 0.123	\$ 7.53	\$ 0.091
21-May-09	35	24,840	104.4	\$ 1,153.24	\$ 2,248.02	\$ 3,401.26	\$ 0.137	\$ 7.53	\$ 0.104
16-Apr-09	27	16,920	64.8	\$ 602.71	\$ 1,531.26	\$ 2,133.97	\$ 0.126	\$ 7.53	\$ 0.096
20-Mar-09	30	18,540	70.2			\$ 2,232.86	\$ 0.120	\$ 7.53	\$ 0.090
<b>Annual</b>	<b>365</b>	<b>267,660</b>	<b>1,067.4</b>			<b>\$ 35,132.44</b>	<b>\$ 0.131</b>	<b>\$ 8.00</b>	<b>\$ 0.097</b>

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

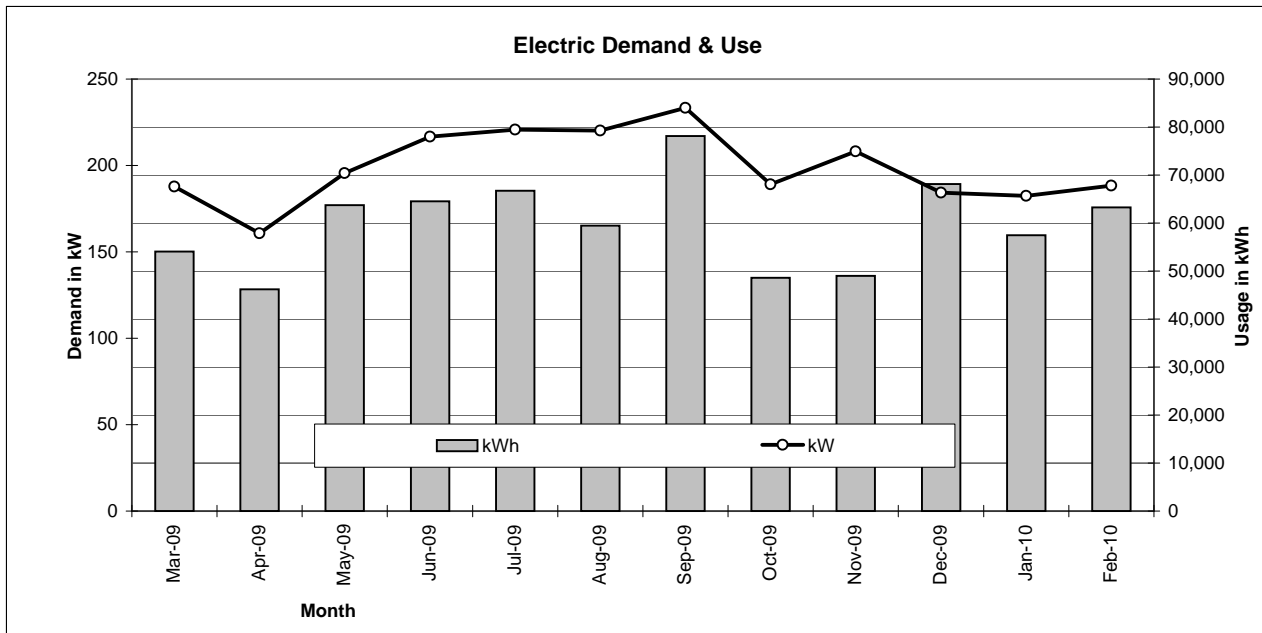
Client: **Ulster County**  
 Facility: **Court House**  
 Address: **285 Wall Street, Kingston**  
 Square Footage: **43,000**  
 kWh per square foot: **16.7**

Account #: **36200590002**  
**36200580003**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
18-Feb-10	31	63,240	188.4	\$ 1,999.95	\$ 5,723.22	\$ 7,723.17	\$ 0.122	\$ 8.00	\$ 0.097
18-Jan-10	28	57,480	182.4	\$ 1,948.32	\$ 5,201.94	\$ 7,150.26	\$ 0.124	\$ 8.00	\$ 0.097
21-Dec-09	38	68,160	184.2	\$ 2,458.75	\$ 6,168.48	\$ 8,627.23	\$ 0.127	\$ 8.00	\$ 0.103
13-Nov-09	29	49,020	208.2	\$ 2,209.23	\$ 4,436.31	\$ 6,645.54	\$ 0.136	\$ 8.00	\$ 0.100
15-Oct-09	27	48,600	189	\$ 2,169.44	\$ 4,398.30	\$ 6,567.74	\$ 0.135	\$ 8.00	\$ 0.102
18-Sep-09	35	78,120	233.4	\$ 2,721.06	\$ 7,069.86	\$ 9,790.92	\$ 0.125	\$ 8.00	\$ 0.100
14-Aug-09	24	59,460	220.2	\$ 2,133.22	\$ 5,381.13	\$ 7,514.35	\$ 0.126	\$ 8.00	\$ 0.095
21-Jul-09	29	66,720	220.8	\$ 2,470.93	\$ 6,038.16	\$ 8,509.09	\$ 0.128	\$ 8.00	\$ 0.100
22-Jun-09	32	64,560	216.6	\$ 1,732.96	\$ 5,842.68	\$ 7,575.64	\$ 0.117	\$ 7.53	\$ 0.091
21-May-09	35	63,720	195.6	\$ 2,285.48	\$ 5,766.66	\$ 8,052.14	\$ 0.126	\$ 7.53	\$ 0.102
16-Apr-09	27	46,200	160.8	\$ 1,502.29	\$ 4,181.10	\$ 5,683.39	\$ 0.123	\$ 7.53	\$ 0.095
20-Mar-09	30	54,060	187.8			\$ 6,354.44	\$ 0.118	\$ 7.53	\$ 0.090
<b>Annual</b>	<b>365</b>	<b>719,340</b>	<b>2,387.4</b>			<b>\$ 90,193.91</b>	<b>\$ 0.125</b>	<b>\$ 8.00</b>	<b>\$ 0.097</b>

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule



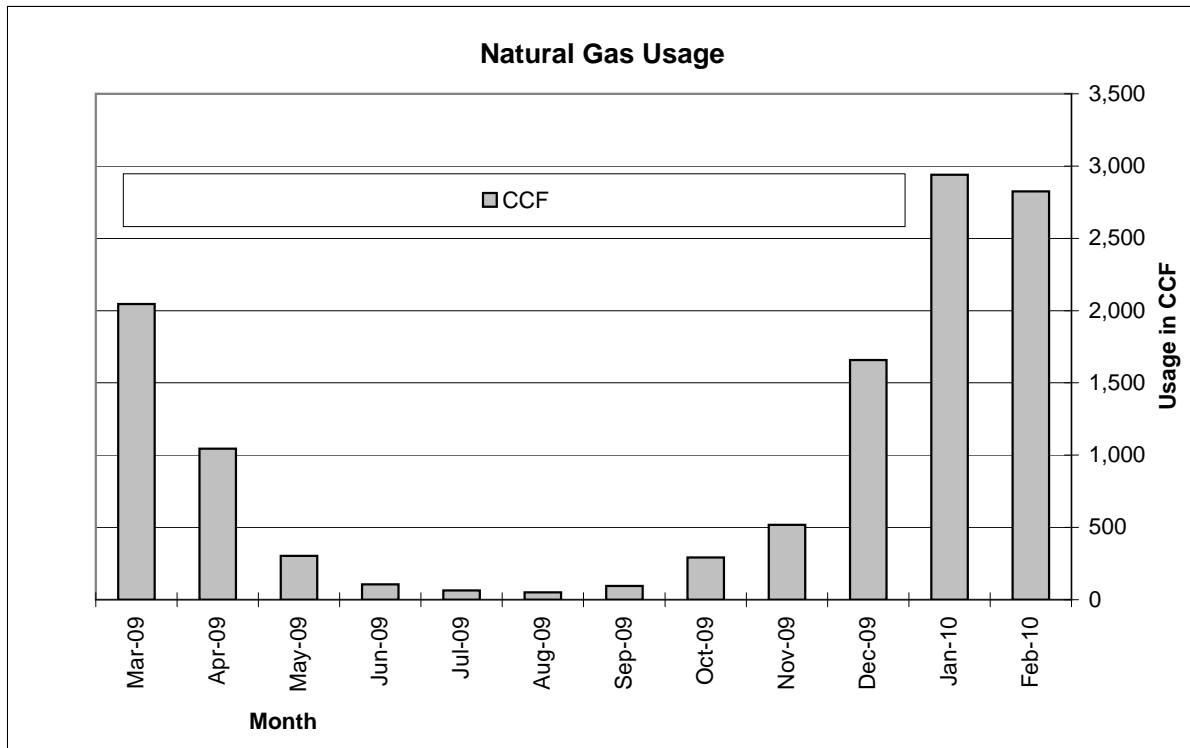


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Court House**  
 Address: **285 Wall Street, Kingston**  
 Square Footage: **43,000**  
 CCF per square foot: **0.3**

Account #: **36200590002**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G220**  
 Service Charge: **\$20.00**

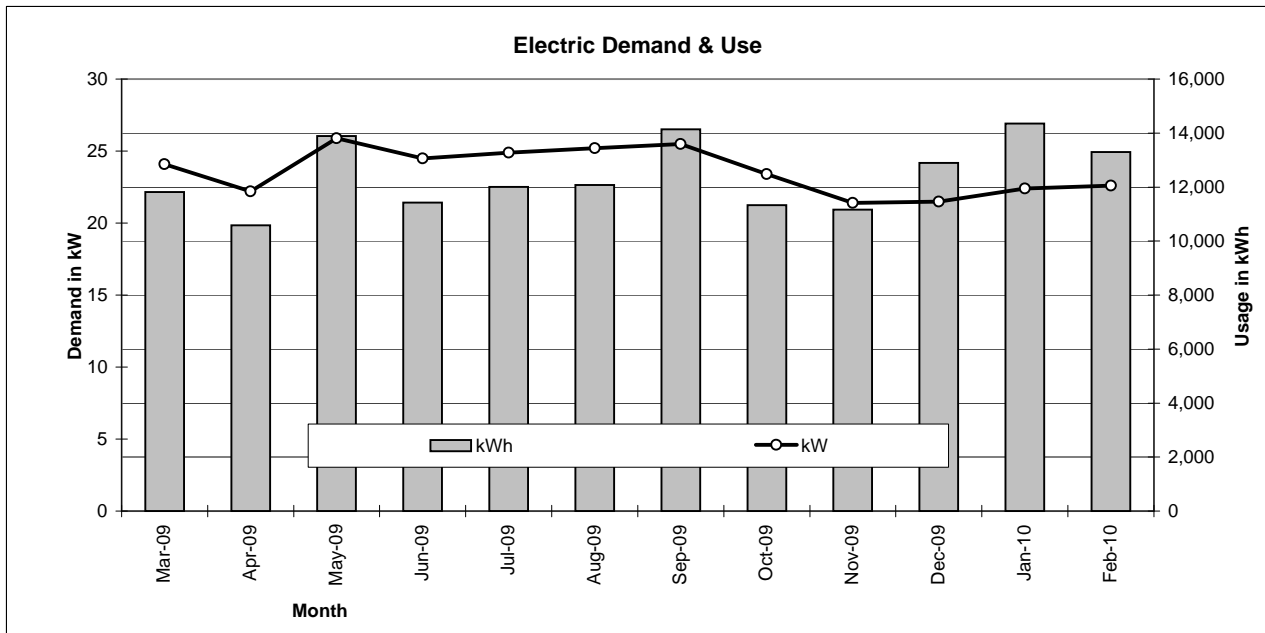
Consumption and Cost Data				Unit Cost Data	
Meter Read Date	Days	CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
18-Feb-10	31	2,824	\$ 3,154.65	\$ 1.117	\$ 1.110
18-Jan-10	28	2,939	\$ 3,115.54	\$ 1.060	\$ 1.053
21-Dec-09	38	1,658	\$ 1,851.58	\$ 1.117	\$ 1.105
13-Nov-09	29	518	\$ 582.99	\$ 1.125	\$ 1.087
15-Oct-09	27	292	\$ 336.89	\$ 1.154	\$ 1.085
18-Sep-09	35	95	\$ 142.68	\$ 1.502	\$ 1.291
14-Aug-09	24	51	\$ 85.13	\$ 1.669	\$ 1.277
21-Jul-09	29	65	\$ 99.41	\$ 1.529	\$ 1.222
22-Jun-09	32	106	\$ 122.37	\$ 1.154	\$ 0.966
21-May-09	35	304	\$ 311.88	\$ 1.026	\$ 0.960
16-Apr-09	27	1,045	\$ 1,235.85	\$ 1.183	\$ 1.163
20-Mar-09	30	2,046	\$ 2,864.82	\$ 1.400	\$ 1.390
Annual	365	11,943	\$ <b>13,903.79</b>	\$ 1.164	\$ 1.144



Client: **Ulster County**  
 Facility: **Emergency Management E-911**  
 Address: **238 Golden Hill Drive, Kingston**  
 Square Footage: **2,200**  
 kWh per square foot: **67.7**

Account #: **36201109000**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E205**  
 Service Charge: **\$50.00**

Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
18-Feb-10	31	13,302	22.6	\$ 313.42	\$ 1,203.83	\$ 1,517.25	\$ 0.114	\$ 8.00	\$ 0.097
18-Jan-10	33	14,358	22.4	\$ 326.39	\$ 1,299.40	\$ 1,625.79	\$ 0.113	\$ 8.00	\$ 0.097
16-Dec-09	33	12,890	21.5	\$ 300.11	\$ 1,166.55	\$ 1,466.66	\$ 0.114	\$ 8.00	\$ 0.097
13-Nov-09	29	11,164	21.4	\$ 322.24	\$ 1,010.34	\$ 1,332.58	\$ 0.119	\$ 8.00	\$ 0.100
15-Oct-09	29	11,335	23.4	\$ 367.21	\$ 1,025.82	\$ 1,393.03	\$ 0.123	\$ 8.00	\$ 0.102
16-Sep-09	33	14,141	25.5	\$ 390.47	\$ 1,279.76	\$ 1,670.23	\$ 0.118	\$ 8.00	\$ 0.100
14-Aug-09	28	12,077	25.2	\$ 382.40	\$ 1,092.97	\$ 1,475.37	\$ 0.122	\$ 8.00	\$ 0.101
17-Jul-09	29	12,000	24.9	\$ 346.45	\$ 1,086.00	\$ 1,432.45	\$ 0.119	\$ 8.00	\$ 0.099
18-Jun-09	28	11,430	24.5	\$ 221.91	\$ 1,034.42	\$ 1,256.33	\$ 0.110	\$ 7.53	\$ 0.091
21-May-09	35	13,893	25.9	\$ 367.29	\$ 1,257.32	\$ 1,624.61	\$ 0.117	\$ 7.53	\$ 0.101
16-Apr-09	27	10,587	22.2	\$ 250.21	\$ 958.12	\$ 1,208.33	\$ 0.114	\$ 7.53	\$ 0.096
20-Mar-09	30	11,821	24.1			\$ 1,277.50	\$ 0.108	\$ 7.53	\$ 0.090
Annual	365	148,998	283.6			\$ 17,280.12	\$ 0.116	\$ 8.00	\$ 0.097

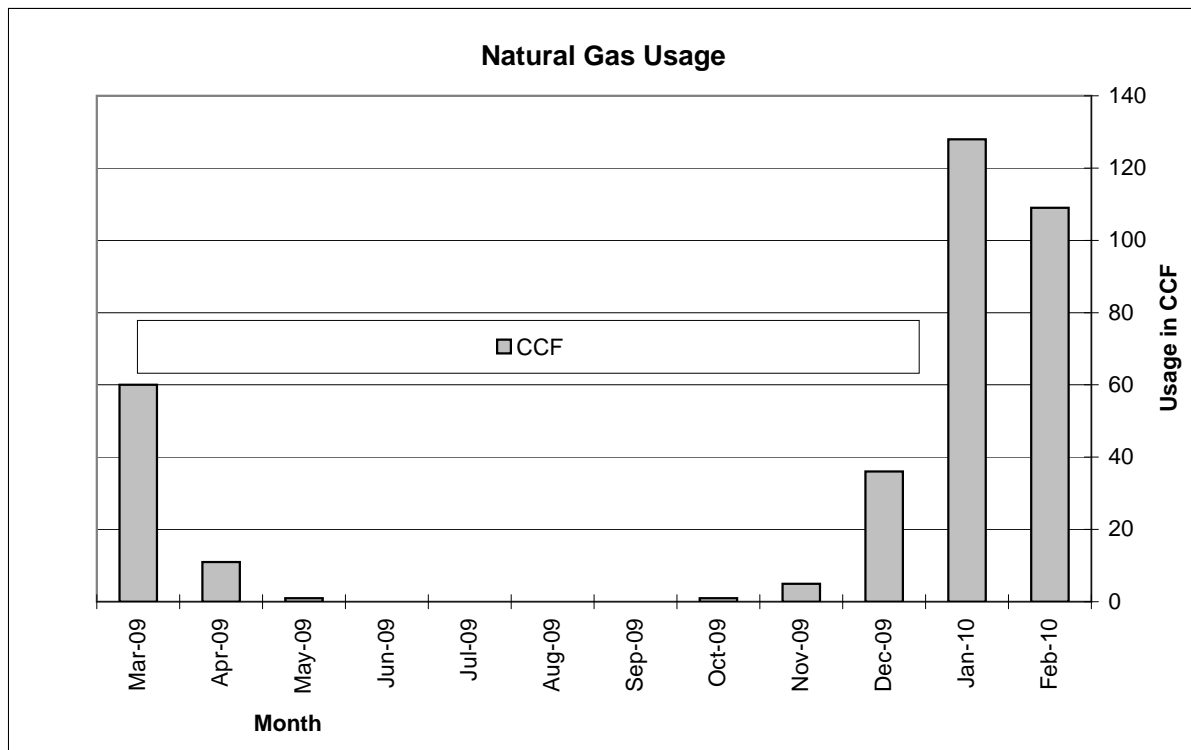


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Emergency Management E-911**  
 Address: **238 Golden Hill Drive, Kingston**  
 Square Footage: **2,200**  
 CCF per square foot: **0.2**

Account #: **36201109000**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G220**  
 Service Charge: **\$20.00**

Consumption and Cost Data				Unit Cost Data	
Meter Read Date	Days	CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
18-Feb-10	31	109	\$ 169.62	\$ 1.556	\$ 1.373
18-Jan-10	33	128	\$ 183.09	\$ 1.430	\$ 1.274
16-Dec-09	33	36	\$ 75.91	\$ 2.109	\$ 1.553
13-Nov-09	29	5	\$ 35.52	\$ 7.104	\$ 3.104
15-Oct-09	29	1	\$ 31.00	\$ 31.000	\$ 11.000
16-Sep-09	33	0	\$ 30.30	N/A	N/A
14-Aug-09	28	0	\$ 30.30	N/A	N/A
17-Jul-09	29	0	\$ 25.25	N/A	N/A
18-Jun-09	28	0	\$ 20.20	N/A	N/A
21-May-09	35	1	\$ 24.88	\$ 24.880	\$ 4.880
16-Apr-09	27	11	\$ 33.70	\$ 3.064	\$ 1.245
20-Mar-09	30	60	\$ 111.34	\$ 1.856	\$ 1.522
Annual	365	351	\$ 771.11	\$ 2.197	\$ 1.513



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

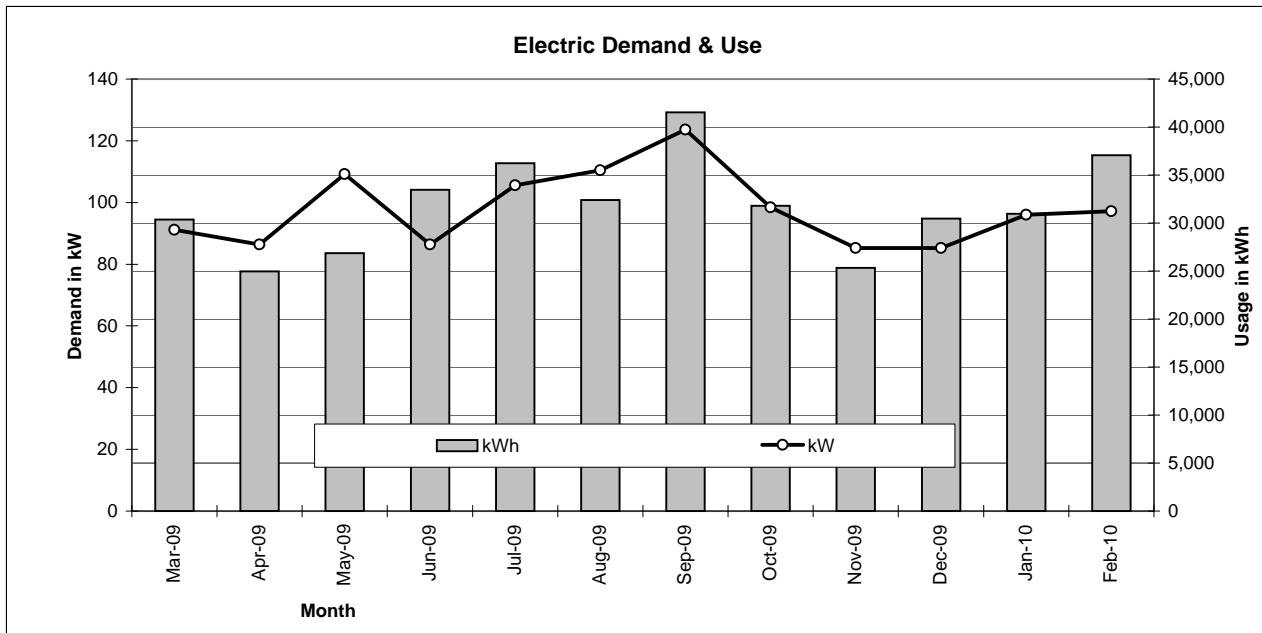
Client: **Ulster County**  
 Facility: **Flatbush Annex**  
 Address: **300 Flatbush Ave, Kingston**  
 Square Footage: **20,500**  
 kWh per square foot: **18.6**

Account #: **36100509003**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
8-Feb-10	34	37,080	97.2	\$ 1,078.62	\$ 3,355.74	\$ 4,434.36	\$ 0.120	\$ 8.00	\$ 0.097
5-Jan-10	29	30,960	96	\$ 1,005.61	\$ 2,801.88	\$ 3,807.49	\$ 0.123	\$ 8.00	\$ 0.097
7-Dec-09	35	30,480	85.2	\$ 1,153.77	\$ 2,758.44	\$ 3,912.21	\$ 0.128	\$ 8.00	\$ 0.104
2-Nov-09	28	25,320	85.2	\$ 1,023.79	\$ 2,291.46	\$ 3,315.25	\$ 0.131	\$ 8.00	\$ 0.102
5-Oct-09	33	31,800	98.4	\$ 1,149.50	\$ 2,877.90	\$ 4,027.40	\$ 0.127	\$ 8.00	\$ 0.100
2-Sep-09	30	41,520	123.6	\$ 1,480.15	\$ 3,757.56	\$ 5,237.71	\$ 0.126	\$ 8.00	\$ 0.101
3-Aug-09	26	32,400	110.4	\$ 1,074.77	\$ 2,932.20	\$ 4,006.97	\$ 0.124	\$ 8.00	\$ 0.095
8-Jul-09	30	36,240	105.6	\$ 872.94	\$ 3,279.72	\$ 4,152.66	\$ 0.115	\$ 8.00	\$ 0.090
8-Jun-09	34	33,480	86.4	\$ 914.95	\$ 3,029.94	\$ 3,944.89	\$ 0.118	\$ 7.53	\$ 0.097
5-May-09	29	26,880	109.2	\$ 986.94	\$ 2,432.64	\$ 3,419.58	\$ 0.127	\$ 7.53	\$ 0.096
6-Apr-09	26	24,960	86.4	\$ 685.75	\$ 2,258.88	\$ 2,944.63	\$ 0.118	\$ 7.53	\$ 0.091
11-Mar-09	31	30,360	91.2			\$ 4,162.95	\$ 0.137	\$ 7.53	\$ 0.114
	365	381,480	1,174.8			\$ 47,366.10	\$ 0.124	\$ 8.00	\$ 0.098

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule

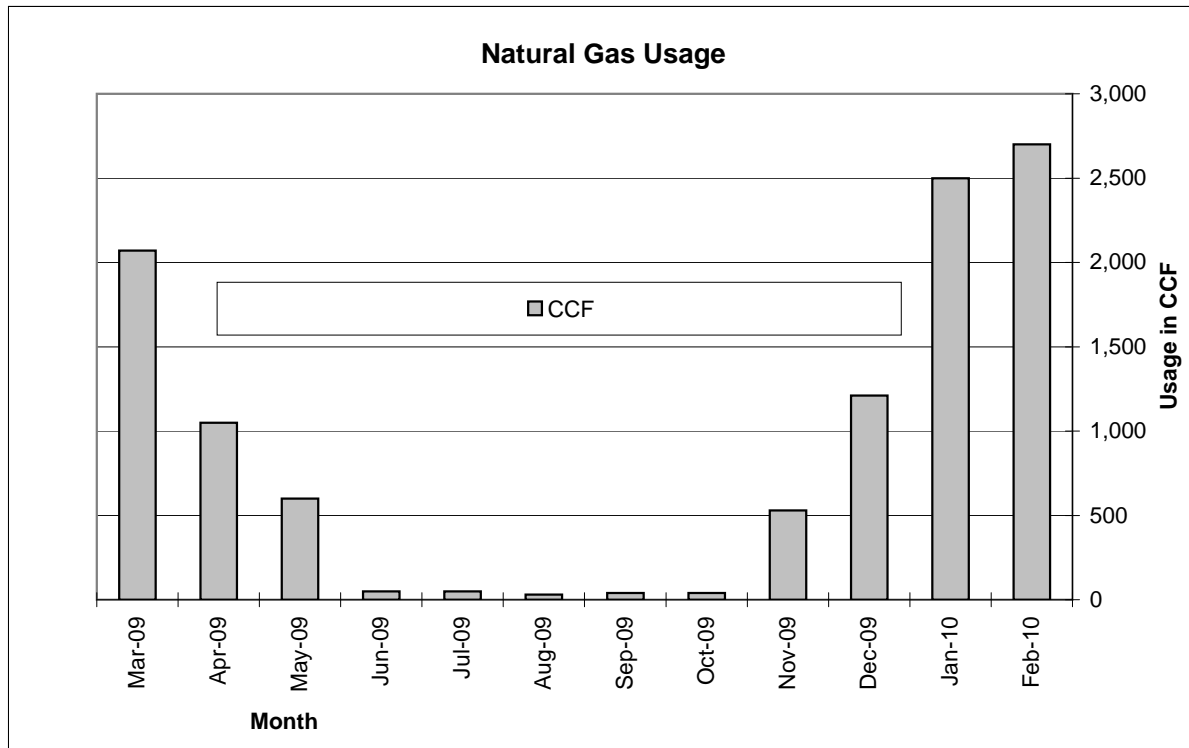


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Flatbush Annex**  
 Address: **300 Flatbush Ave, Kingston**  
 Square Footage: **20,500**  
 CCF per square foot: **0.5**

Account #: **36100509003**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G220**  
 Service Charge: **\$20.00**

Consumption and Cost Data				Unit Cost Data	
Meter Read Date	Days	CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
8-Feb-10	34	2,700	\$ 2,901.86	\$ 1.075	\$ 1.067
5-Jan-10	29	2,500	\$ 2,689.55	\$ 1.076	\$ 1.068
7-Dec-09	35	1,210	\$ 1,378.94	\$ 1.140	\$ 1.123
2-Nov-09	28	530	\$ 583.41	\$ 1.101	\$ 1.063
5-Oct-09	33	40	\$ 76.12	\$ 1.903	\$ 1.403
2-Sep-09	30	40	\$ 78.32	\$ 1.958	\$ 1.458
3-Aug-09	26	30	\$ 59.08	\$ 1.969	\$ 1.303
8-Jul-09	30	50	\$ 72.66	\$ 1.453	\$ 1.053
8-Jun-09	34	50	\$ 68.22	\$ 1.364	\$ 0.964
5-May-09	29	600	\$ 604.37	\$ 1.007	\$ 0.974
6-Apr-09	26	1,050	\$ 1,398.20	\$ 1.332	\$ 1.313
11-Mar-09	31	2,070	\$ 2,890.25	\$ 1.396	\$ 1.387
Annual	365	10,870	\$ 12,800.98	\$ 1.178	\$ 1.156



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

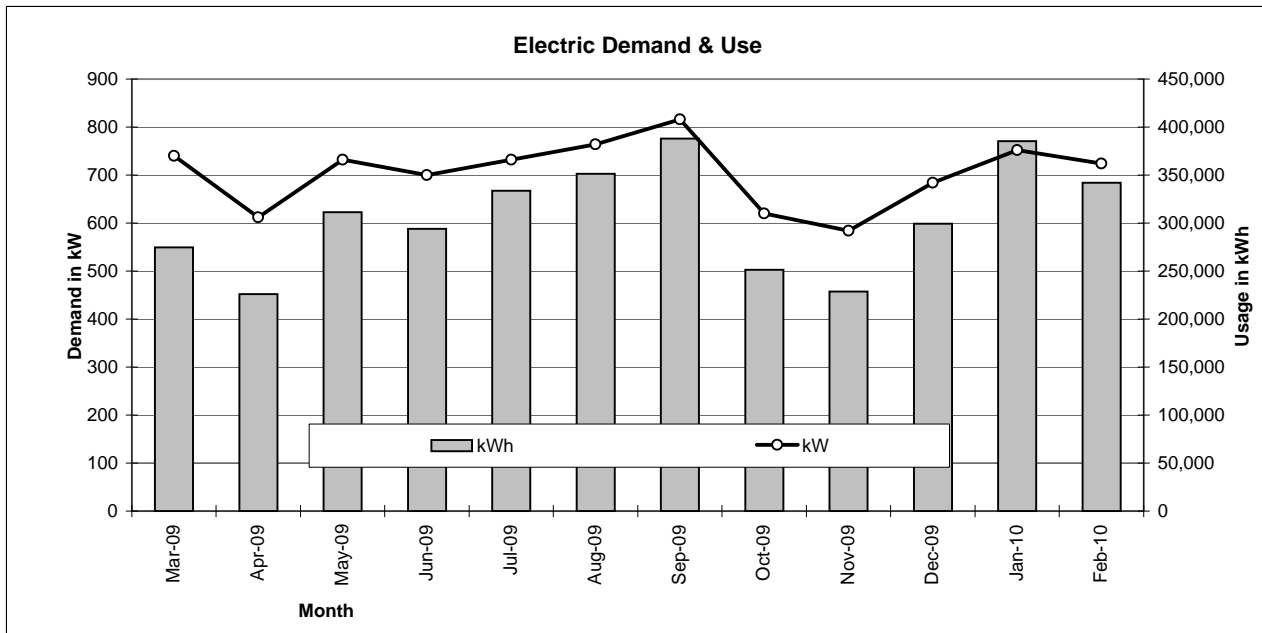
Client: **Ulster County**  
 Facility: **Golden Hill Healthcare Center**  
 Address: **99 Golden Hill Drive, Kingston**  
 Square Footage: **155,000**  
 kWh per square foot: **23.8**

Account #: **36201097007**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
18-Feb-10	31	342,000	724	\$ 7,965.82	\$ 30,951.00	\$ 38,916.82	\$ 0.114	\$ 8.00	\$ 0.097
18-Jan-10	33	385,200	752	\$ 8,673.79	\$ 34,860.60	\$ 43,534.39	\$ 0.113	\$ 8.00	\$ 0.097
16-Dec-09	33	299,200	684	\$ 7,335.13	\$ 27,077.60	\$ 34,412.73	\$ 0.115	\$ 8.00	\$ 0.097
13-Nov-09	29	228,800	584	\$ 6,792.66	\$ 20,706.40	\$ 27,499.06	\$ 0.120	\$ 8.00	\$ 0.100
15-Oct-09	29	251,200	620	\$ 7,891.25	\$ 22,733.60	\$ 30,624.85	\$ 0.122	\$ 8.00	\$ 0.102
16-Sep-09	33	388,000	816	\$ 10,322.20	\$ 35,114.00	\$ 45,436.20	\$ 0.117	\$ 8.00	\$ 0.100
14-Aug-09	28	351,200	764	\$ 9,965.48	\$ 31,783.60	\$ 41,749.08	\$ 0.119	\$ 8.00	\$ 0.101
17-Jul-09	29	333,600	732	\$ 8,868.16	\$ 30,190.80	\$ 39,058.96	\$ 0.117	\$ 8.00	\$ 0.099
18-Jun-09	28	294,000	700	\$ 5,492.10	\$ 26,607.00	\$ 32,099.10	\$ 0.109	\$ 7.53	\$ 0.091
21-May-09	35	311,200	732			\$ 28,941.59	\$ 0.093	\$ 7.53	\$ 0.075
16-Apr-09	27	226,000	612			\$ 22,427.36	\$ 0.099	\$ 7.53	\$ 0.079
20-Mar-09	30	274,800	740			\$ 30,390.80	\$ 0.111	\$ 7.53	\$ 0.090
	365	3,685,200	8,460.0			\$ 415,090.94	\$ 0.113	\$ 8.00	\$ 0.094

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

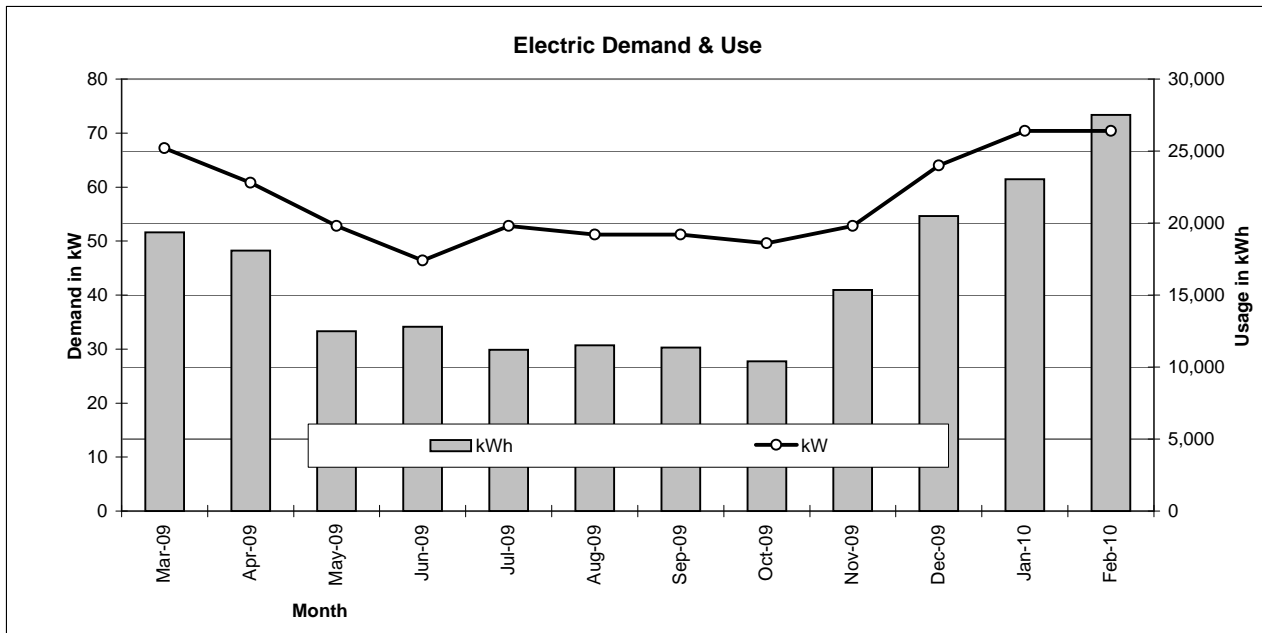
Client: **Ulster County**  
 Facility: **Heavy Vehicle Maintenance Complex (Quarry)**  
 Address: **334, 521-525 Shamrock Lane, Kingston**  
 Square Footage: **35,000**  
 kWh per square foot: **5.5**

Account #: **36050129000**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E201**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
16-Feb-10	34	27,520	70.4	\$ 3,374.99		\$ 3,374.99	\$ 0.123	\$ 8.00	\$ 0.100
13-Jan-10	28	23,040	70.4	\$ 2,615.98		\$ 2,615.98	\$ 0.114	\$ 8.00	\$ 0.087
16-Dec-09	35	20,480	64	\$ 2,301.83		\$ 2,301.83	\$ 0.112	\$ 8.00	\$ 0.085
11-Nov-09	33	15,360	52.8	\$ 1,838.78		\$ 1,838.78	\$ 0.120	\$ 8.00	\$ 0.089
9-Oct-09	28	10,400	49.6	\$ 1,415.04		\$ 1,415.04	\$ 0.136	\$ 8.00	\$ 0.093
11-Sep-09	29	11,360	51.2	\$ 1,674.26		\$ 1,674.26	\$ 0.147	\$ 8.00	\$ 0.107
13-Aug-09	28	11,520	51.2	\$ 1,488.58		\$ 1,488.58	\$ 0.129	\$ 8.00	\$ 0.089
16-Jul-09	29	11,200	52.8	\$ 1,317.04		\$ 1,317.04	\$ 0.118	\$ 8.00	\$ 0.075
17-Jun-09	35	12,800	46.4	\$ 1,287.77		\$ 1,287.77	\$ 0.101	\$ 7.53	\$ 0.071
13-May-09	28	12,480	52.8	\$ 1,323.15		\$ 1,323.15	\$ 0.106	\$ 7.53	\$ 0.072
15-Apr-09	30	18,080	60.8	\$ 1,912.12		\$ 1,912.12	\$ 0.106	\$ 7.53	\$ 0.079
16-Mar-09	28	19,360	67.2	\$ 2,283.84		\$ 2,283.84	\$ 0.118	\$ 7.53	\$ 0.090
	365	193,600	689.6			\$ 22,833.38	\$ 0.118	\$ 8.00	\$ 0.086

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule

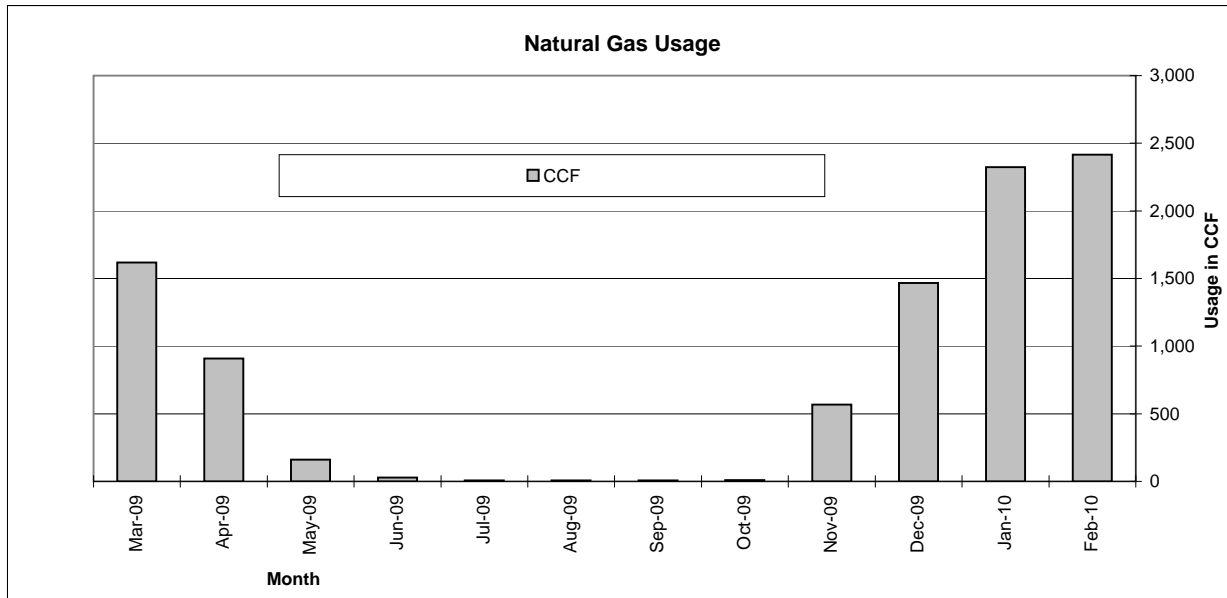


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Heavy Vehicle Maintenance Complex (Quarry)**  
 Address: **334, 521-525 Shamrock Lane, Kingston**  
 Square Footage: **35,000**  
 CCF per square foot: **0.3**

Account #: **36050129000**  
**36050141005**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G220**  
 Service Charge: **\$40.00**

Consumption and Cost Data						Unit Cost Data	
Meter Read Date	Days	36050129000 CCF	36050141005 CCF	TOTAL CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
16-Feb-10	34	1,123	1,293	2,416	\$ 2,727.12	\$ 1.129	\$ 1.112
13-Jan-10	28	1,077	1,246	2,323	\$ 2,544.67	\$ 1.095	\$ 1.078
16-Dec-09	35	722	744	1,466	\$ 1,706.79	\$ 1.164	\$ 1.137
11-Nov-09	33	256	311	567	\$ 682.51	\$ 1.204	\$ 1.133
9-Oct-09	28	9	-	9	\$ 70.28	\$ 7.809	\$ 3.364
11-Sep-09	29	7	-	7	\$ 68.07	\$ 9.724	\$ 4.010
13-Aug-09	28	6	-	6	\$ 66.87	\$ 11.145	\$ 4.478
16-Jul-09	29	8	-	8	\$ 58.32	\$ 7.290	\$ 2.290
17-Jun-09	35	18	10	28	\$ 66.24	\$ 2.366	\$ 0.937
13-May-09	28	61	101	162	\$ 210.46	\$ 1.299	\$ 1.052
15-Apr-09	30	415	493	908	\$ 1,147.19	\$ 1.263	\$ 1.219
16-Mar-09	28	766	853	1,619	\$ 2,306.42	\$ 1.425	\$ 1.400
Annual	365	4,468	5,051	9,519	\$ 11,654.94	\$ 1.224	\$ 1.174

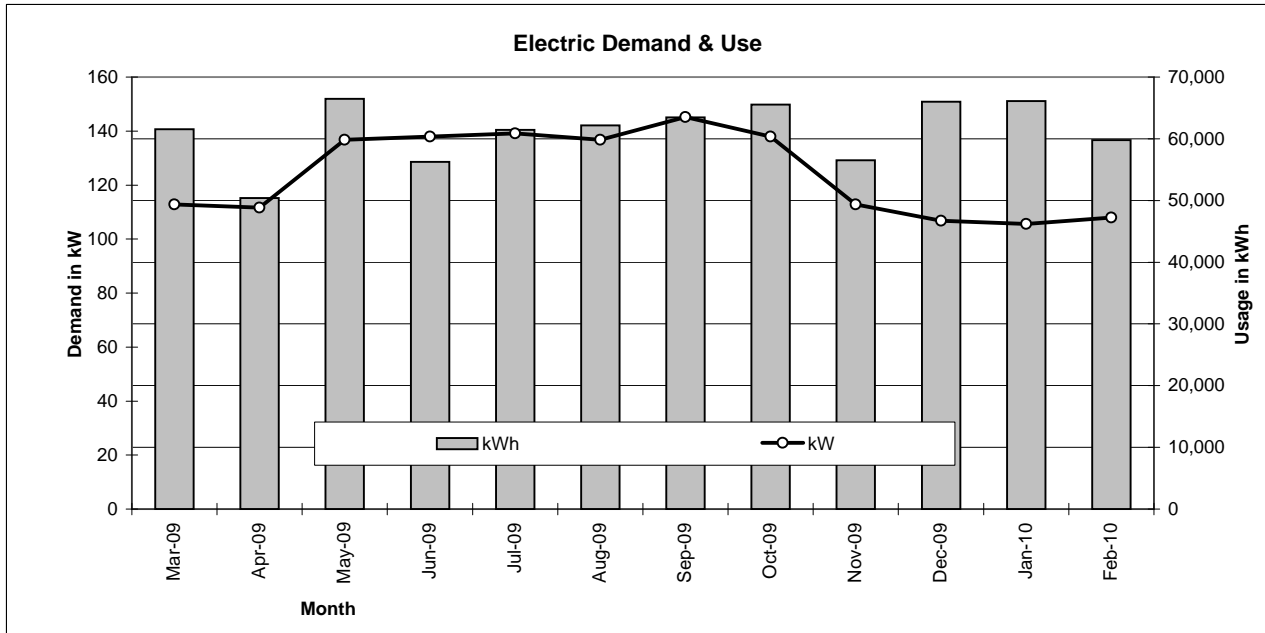




Client: **Ulster County**  
 Facility: **Information Services**  
 Address: **25 South Manor Ave, Kingston**  
 Square Footage: **12,525**  
 kWh per square foot: **58.7**

Account #: **36110750001**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
23-Feb-10	28	59,760	108	\$ 1,285.11	\$ 5,408.28	\$ 6,693.39	\$ 0.112	\$ 8.00	\$ 0.097
26-Jan-10	35	66,120	105.6	\$ 1,342.45	\$ 5,983.86	\$ 7,326.31	\$ 0.111	\$ 8.00	\$ 0.097
22-Dec-09	33	66,000	106.8	\$ 1,304.36	\$ 5,973.00	\$ 7,277.36	\$ 0.110	\$ 8.00	\$ 0.097
19-Nov-09	29	56,520	112.8	\$ 1,463.90	\$ 5,115.06	\$ 6,578.96	\$ 0.116	\$ 8.00	\$ 0.100
21-Oct-09	34	65,520	138	\$ 1,907.47	\$ 5,929.56	\$ 7,837.03	\$ 0.120	\$ 8.00	\$ 0.102
17-Sep-09	29	63,480	145.2	\$ 1,824.19	\$ 5,744.94	\$ 7,569.13	\$ 0.119	\$ 8.00	\$ 0.100
19-Aug-09	27	62,160	136.8	\$ 1,817.60	\$ 5,625.48	\$ 7,443.08	\$ 0.120	\$ 8.00	\$ 0.101
23-Jul-09	29	61,440	139.2	\$ 1,734.38	\$ 5,560.32	\$ 7,294.70	\$ 0.119	\$ 8.00	\$ 0.100
24-Jun-09	28	56,280	138	\$ 1,105.73	\$ 5,093.34	\$ 6,199.07	\$ 0.110	\$ 7.53	\$ 0.091
27-May-09	35	66,480	136.8	\$ 1,737.48	\$ 6,016.44	\$ 7,753.92	\$ 0.117	\$ 7.53	\$ 0.101
22-Apr-09	27	50,400	111.6	\$ 1,122.85	\$ 4,561.20	\$ 5,684.05	\$ 0.113	\$ 7.53	\$ 0.096
26-Mar-09	31	61,560	112.8			\$ 6,428.66	\$ 0.104	\$ 7.53	\$ 0.090
	365	735,720	1,491.6			\$ 84,085.66	\$ 0.114	\$ 8.00	\$ 0.097

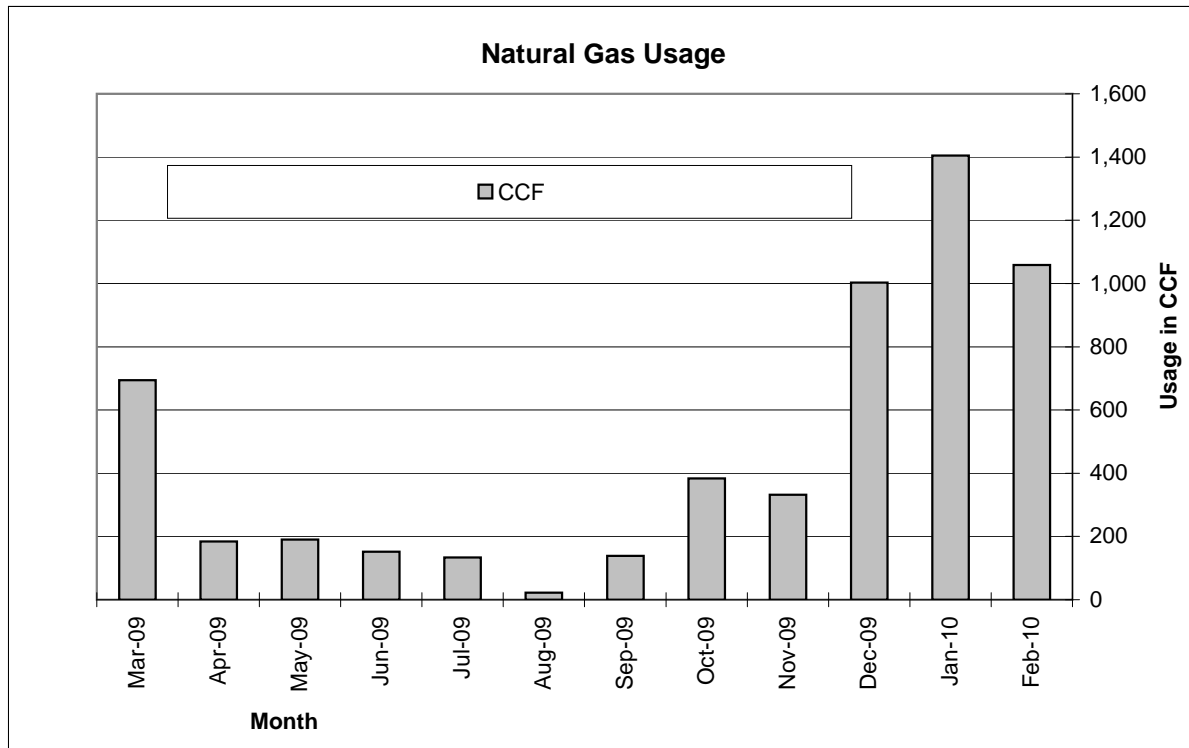


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Information Services**  
 Address: **25 South Manor Ave, Kingston**  
 Square Footage: **12,525**  
 CCF per square foot: **0.5**

Account #: **36110750001**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G220**  
 Service Charge: **\$20.00**

Consumption and Cost Data				Unit Cost Data	
Meter Read Date	Days	CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
23-Feb-10	28	1,059	\$ 1,235.35	\$ 1.167	\$ 1.148
26-Jan-10	35	1,405	\$ 1,525.14	\$ 1.086	\$ 1.071
22-Dec-09	33	1,003	\$ 1,126.96	\$ 1.124	\$ 1.104
19-Nov-09	29	332	\$ 400.28	\$ 1.206	\$ 1.145
21-Oct-09	34	384	\$ 424.38	\$ 1.105	\$ 1.053
17-Sep-09	29	139	\$ 186.46	\$ 1.341	\$ 1.198
19-Aug-09	27	22	\$ 56.07	\$ 2.549	\$ 1.640
23-Jul-09	29	134	\$ 171.12	\$ 1.277	\$ 1.128
24-Jun-09	28	152	\$ 160.80	\$ 1.058	\$ 0.926
27-May-09	35	190	\$ 206.00	\$ 1.084	\$ 0.979
22-Apr-09	27	184	\$ 228.33	\$ 1.241	\$ 1.132
26-Mar-09	31	694	\$ 995.85	\$ 1.435	\$ 1.406
Annual	365	5,698	\$ 6,716.74	\$ 1.179	\$ 1.137



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

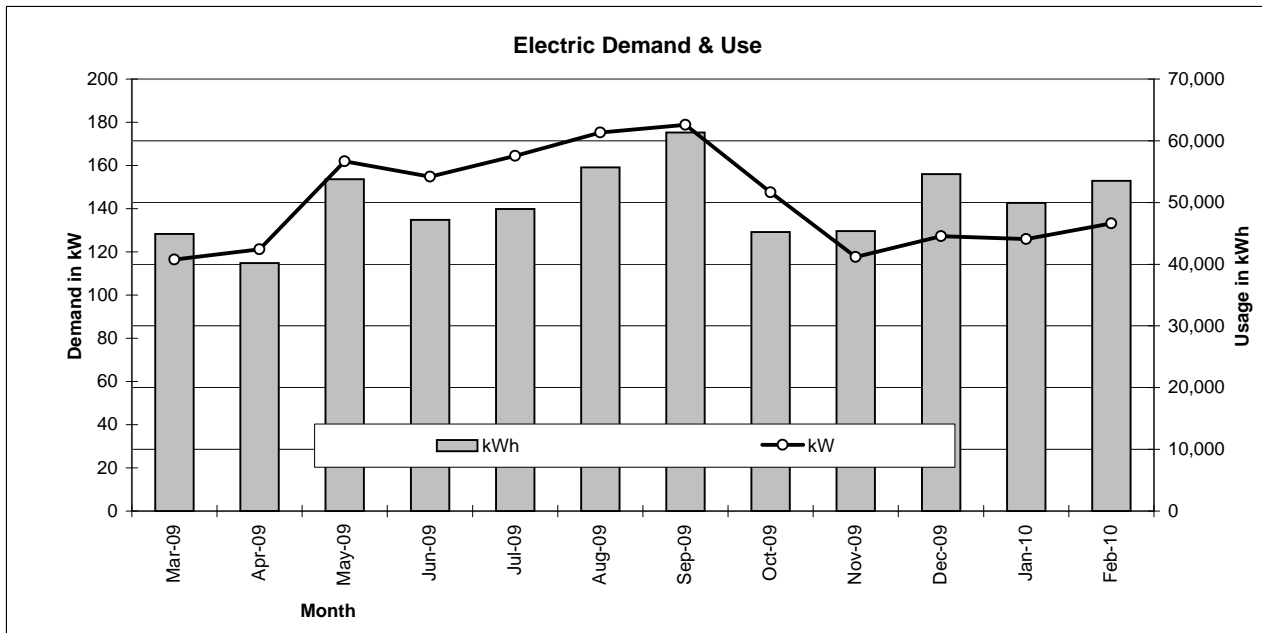
Client: **Ulster County**  
 Facility: **Mental Health Building(Golden Hill)**  
 Address: **239 Golden Hill Drive, Kingston**  
 Square Footage: **40,000**  
 kWh per square foot: **15.0**

Account #: **36201102005**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **E201**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
18-Feb-10	30	53,520	133.2			\$ 6,485.88	\$ 0.121	\$ 8.00	\$ 0.100
19-Jan-10	29	49,920	126			\$ 5,394.59	\$ 0.108	\$ 8.00	\$ 0.087
21-Dec-09	35	54,600	127.2			\$ 5,614.63	\$ 0.103	\$ 8.00	\$ 0.083
16-Nov-09	32	45,360	117.6			\$ 5,021.81	\$ 0.111	\$ 8.00	\$ 0.089
15-Oct-09	29	45,240	147.6			\$ 5,436.83	\$ 0.120	\$ 8.00	\$ 0.093
16-Sep-09	33	61,320	178.8			\$ 8,026.87	\$ 0.131	\$ 8.00	\$ 0.107
14-Aug-09	28	55,680	175.2			\$ 6,417.28	\$ 0.115	\$ 8.00	\$ 0.089
17-Jul-09	28	48,960	164.4			\$ 5,100.28	\$ 0.104	\$ 8.00	\$ 0.076
19-Jun-09	29	47,160	154.8			\$ 4,540.36	\$ 0.096	\$ 7.53	\$ 0.071
21-May-09	35	53,760	162			\$ 5,354.21	\$ 0.100	\$ 7.53	\$ 0.076
16-Apr-09	27	40,200	121.2			\$ 4,108.05	\$ 0.102	\$ 7.53	\$ 0.079
20-Mar-09	30	44,880	116.4			\$ 4,954.85	\$ 0.110	\$ 7.53	\$ 0.090
	365	600,600	1,724.4			<b>\$ 66,455.64</b>	<b>\$ 0.111</b>	<b>\$ 8.00</b>	<b>\$ 0.087</b>

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

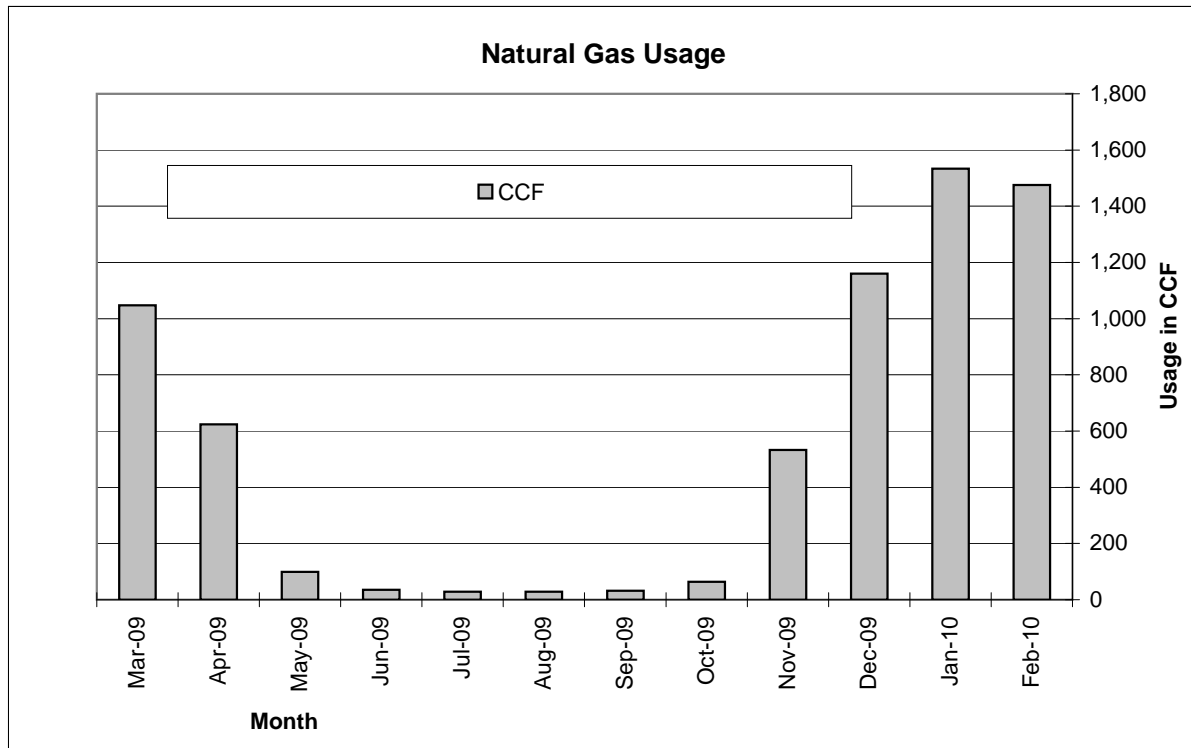
<sup>2</sup> Current demand charge from Central Hudson Rate Schedule



**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: <b>Ulster County</b>	Account #: <b>36201102005</b>
Facility: <b>Mental Health Building(Golden Hill)</b>	Supplier: <b>Central Hudson</b>
Address: <b>239 Golden Hill Drive, Kingston</b>	Delivery: <b>Central Hudson</b>
Square Footage: <b>40,000</b>	Rate Code: <b>G220</b>
CCF per square foot: <b>0.2</b>	Service Charge: <b>\$20.00</b>

Consumption and Cost Data				Unit Cost Data	
Meter Read Date	Days	CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
18-Feb-10	30	1,476	\$ 1,672.80	\$ 1.133	\$ 1.120
19-Jan-10	29	1,534	\$ 1,652.42	\$ 1.077	\$ 1.064
21-Dec-09	35	1,160	\$ 1,306.11	\$ 1.126	\$ 1.109
16-Nov-09	32	533	\$ 604.68	\$ 1.134	\$ 1.097
15-Oct-09	29	64	\$ 105.22	\$ 1.644	\$ 1.332
16-Sep-09	33	32	\$ 67.58	\$ 2.112	\$ 1.487
14-Aug-09	28	28	\$ 63.10	\$ 2.254	\$ 1.539
17-Jul-09	28	29	\$ 55.95	\$ 1.929	\$ 1.240
19-Jun-09	29	35	\$ 53.70	\$ 1.534	\$ 0.963
21-May-09	35	99	\$ 126.20	\$ 1.275	\$ 1.073
16-Apr-09	27	624	\$ 751.78	\$ 1.205	\$ 1.173
20-Mar-09	30	1,048	\$ 1,484.14	\$ 1.416	\$ 1.397
Annual	365	6,662	\$ 7,943.68	\$ 1.192	\$ 1.156



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

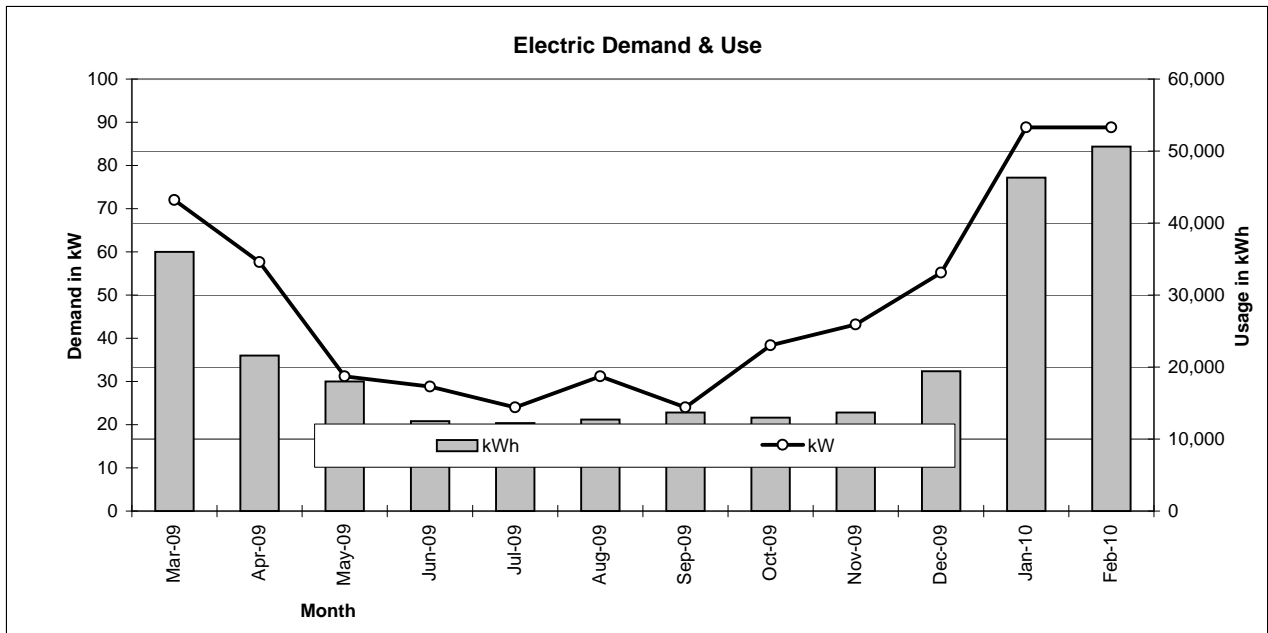
Client: **Ulster County**  
 Facility: **Old U.C. Jail**  
 Address: **25 South Manor Ave, Kingston**  
 Square Footage: **54,000**  
 kWh per square foot: **5.0**

Account #: **36201103003**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
18-Feb-10	31	50,640	88.8	\$ 1,074.87	\$ 4,582.92	\$ 5,657.79	\$ 0.112	\$ 8.00	\$ 0.097
18-Jan-10	33	46,320	88.8	\$ 1,073.98	\$ 4,191.96	\$ 5,265.94	\$ 0.114	\$ 8.00	\$ 0.097
16-Dec-09	33	19,440	55.2	\$ 609.41	\$ 1,759.32	\$ 2,368.73	\$ 0.122	\$ 8.00	\$ 0.097
13-Nov-09	29	13,680	43.2	\$ 519.40	\$ 1,238.04	\$ 1,757.44	\$ 0.128	\$ 8.00	\$ 0.100
15-Oct-09	29	12,960	38.4	\$ 505.85	\$ 1,172.88	\$ 1,678.73	\$ 0.130	\$ 8.00	\$ 0.102
16-Sep-09	33	13,680	24	\$ 374.01	\$ 1,238.04	\$ 1,612.05	\$ 0.118	\$ 8.00	\$ 0.100
14-Aug-09	28	12,720	31.2	\$ 437.35	\$ 1,151.16	\$ 1,588.51	\$ 0.125	\$ 8.00	\$ 0.101
17-Jul-09	29	12,240	24	\$ 341.72	\$ 1,107.72	\$ 1,449.44	\$ 0.118	\$ 8.00	\$ 0.099
18-Jun-09	28	12,480	28.8	\$ 254.97	\$ 1,129.44	\$ 1,384.41	\$ 0.111	\$ 7.53	\$ 0.091
21-May-09	35	18,000	31.2	\$ 443.92	\$ 1,629.00	\$ 2,072.92	\$ 0.115	\$ 7.53	\$ 0.100
16-Apr-09	27	21,600	57.6	\$ 571.95	\$ 1,954.80	\$ 2,526.75	\$ 0.117	\$ 7.53	\$ 0.096
20-Mar-09	30	36,000	72			\$ 3,817.94	\$ 0.106	\$ 7.53	\$ 0.090
Annual	365	269,760	583.2			\$ 31,180.65	\$ 0.116	\$ 8.00	\$ 0.096

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

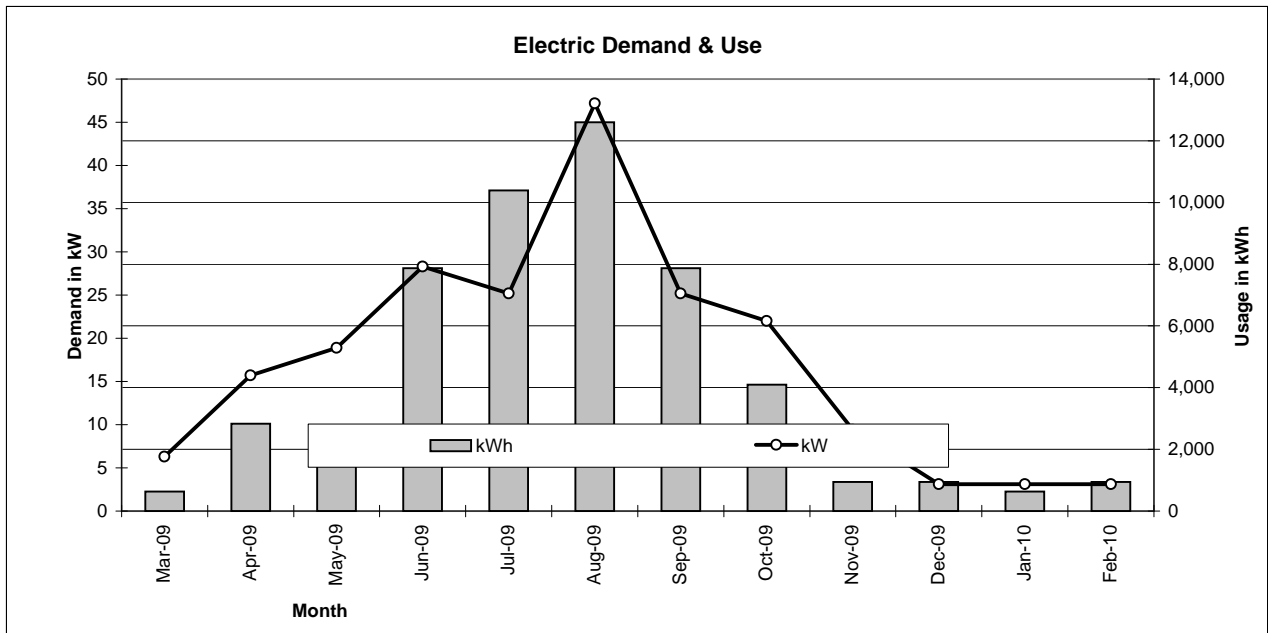
Client: **Ulster County**  
 Facility: **Pool**  
 Address: **241 Libertyville Rd, New Paltz**  
 Square Footage: **7,000**  
 kWh per square foot: **7.4**

Account #: **86440780004**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E205**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
19-Feb-10	30	945	3.1	\$ 80.65	\$ 85.52	\$ 166.17	\$ 0.176	\$ 8.00	\$ 0.097
20-Jan-10	33	630	3.1	\$ 79.07	\$ 57.02	\$ 136.09	\$ 0.216	\$ 8.00	\$ 0.097
18-Dec-09	35	945	3.1	\$ 95.47	\$ 85.52	\$ 180.99	\$ 0.192	\$ 8.00	\$ 0.112
13-Nov-09	28	945	9.4	\$ 133.73	\$ 85.52	\$ 219.25	\$ 0.232	\$ 8.00	\$ 0.100
16-Oct-09	32	4,095	22	\$ 272.98	\$ 370.60	\$ 643.58	\$ 0.157	\$ 8.00	\$ 0.102
14-Sep-09	27	7,875	25.2	\$ 327.59	\$ 712.69	\$ 1,040.28	\$ 0.132	\$ 8.00	\$ 0.100
18-Aug-09	29	12,600	47.2	\$ 564.06	\$ 1,140.30	\$ 1,704.36	\$ 0.135	\$ 8.00	\$ 0.101
20-Jul-09	31	10,395	25.2	\$ 338.30	\$ 940.75	\$ 1,279.05	\$ 0.123	\$ 8.00	\$ 0.099
19-Jun-09	30	7,875	28.3	\$ 248.21	\$ 712.69	\$ 960.90	\$ 0.122	\$ 7.53	\$ 0.091
20-May-09	30	2,205	18.9	\$ 187.74	\$ 199.55	\$ 387.29	\$ 0.176	\$ 7.53	\$ 0.097
20-Apr-09	31	2,835	15.7	\$ 162.43	\$ 256.57	\$ 419.00	\$ 0.148	\$ 7.53	\$ 0.096
20-Mar-09	29	630	6.3			\$ 133.57	\$ 0.212	\$ 7.53	\$ 0.089
<b>Annual</b>	<b>365</b>	<b>51,975</b>	<b>207.5</b>			<b>\$ 7,270.52</b>	<b>\$ 0.140</b>	<b>\$ 8.00</b>	<b>\$ 0.096</b>

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

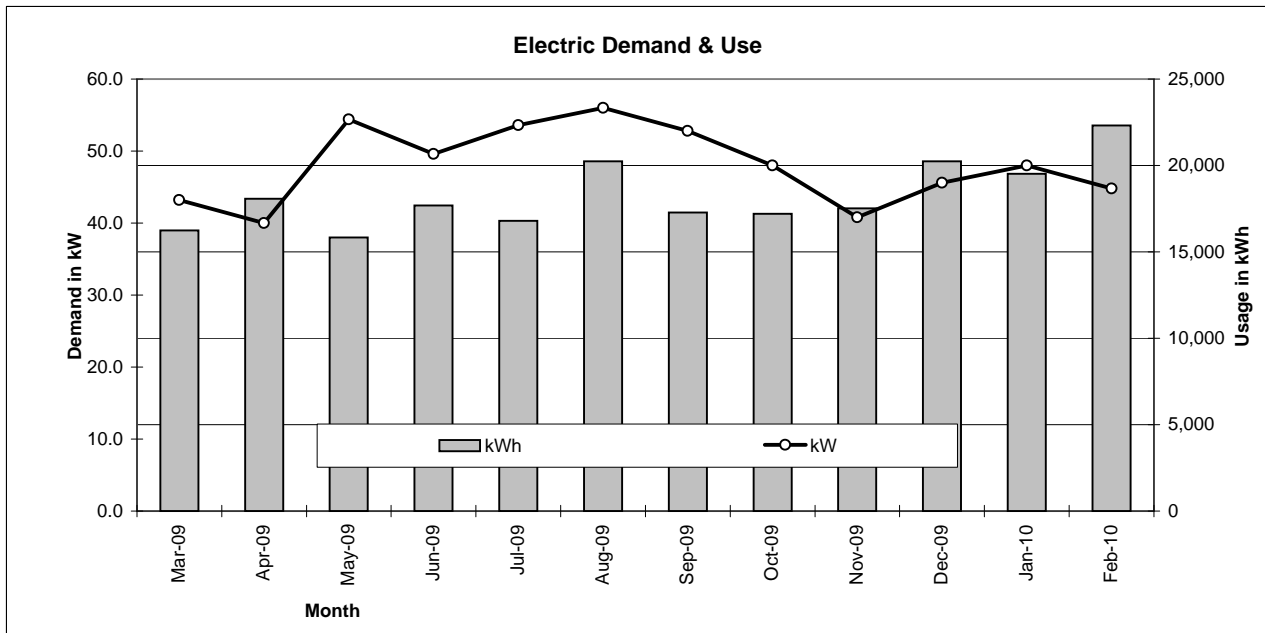
Client: **Ulster County**  
 Facility: **Probation Department(Kingston)**  
 Address: **733 Broadway, Kingston**  
 Square Footage: **20,000**  
 kWh per square foot: **10.9**

Account #: **36120984004**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
22-Feb-10	34	22,320	44.8	\$ 547.00	\$ 2,019.96	\$ 2,566.96	\$ 0.115	\$ 8.00	\$ 0.097
19-Jan-10	29	19,520	48.0	\$ 566.14	\$ 1,766.56	\$ 2,332.70	\$ 0.120	\$ 8.00	\$ 0.097
21-Dec-09	32	20,240	45.6	\$ 537.45	\$ 1,831.72	\$ 2,369.17	\$ 0.117	\$ 8.00	\$ 0.097
19-Nov-09	30	17,520	40.8	\$ 534.95	\$ 1,585.56	\$ 2,120.51	\$ 0.121	\$ 8.00	\$ 0.100
20-Oct-09	33	17,200	48.0	\$ 631.44	\$ 1,556.60	\$ 2,188.04	\$ 0.127	\$ 8.00	\$ 0.102
17-Sep-09	29	17,280	52.8	\$ 639.15	\$ 1,563.84	\$ 2,202.99	\$ 0.127	\$ 8.00	\$ 0.100
19-Aug-09	30	20,240	56.0	\$ 717.19	\$ 1,831.72	\$ 2,548.91	\$ 0.126	\$ 8.00	\$ 0.101
20-Jul-09	27	16,800	53.6	\$ 621.43	\$ 1,520.40	\$ 2,141.83	\$ 0.127	\$ 8.00	\$ 0.099
23-Jun-09	32	17,680	49.6	\$ 414.98	\$ 1,600.04	\$ 2,015.02	\$ 0.114	\$ 7.53	\$ 0.091
22-May-09	28	15,840	54.4	\$ 550.51	\$ 1,433.52	\$ 1,984.03	\$ 0.125	\$ 7.53	\$ 0.097
24-Apr-09	32	18,080	40.0	\$ 421.78	\$ 1,636.24	\$ 2,058.02	\$ 0.114	\$ 7.53	\$ 0.096
23-Mar-09	29	16,240	43.2			\$ 1,820.49	\$ 0.112	\$ 7.53	\$ 0.090
<b>Annual</b>	<b>365</b>	<b>218,960</b>	<b>576.8</b>			<b>\$ 26,348.67</b>	<b>\$ 0.120</b>	<b>\$ 8.00</b>	<b>\$ 0.097</b>

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule

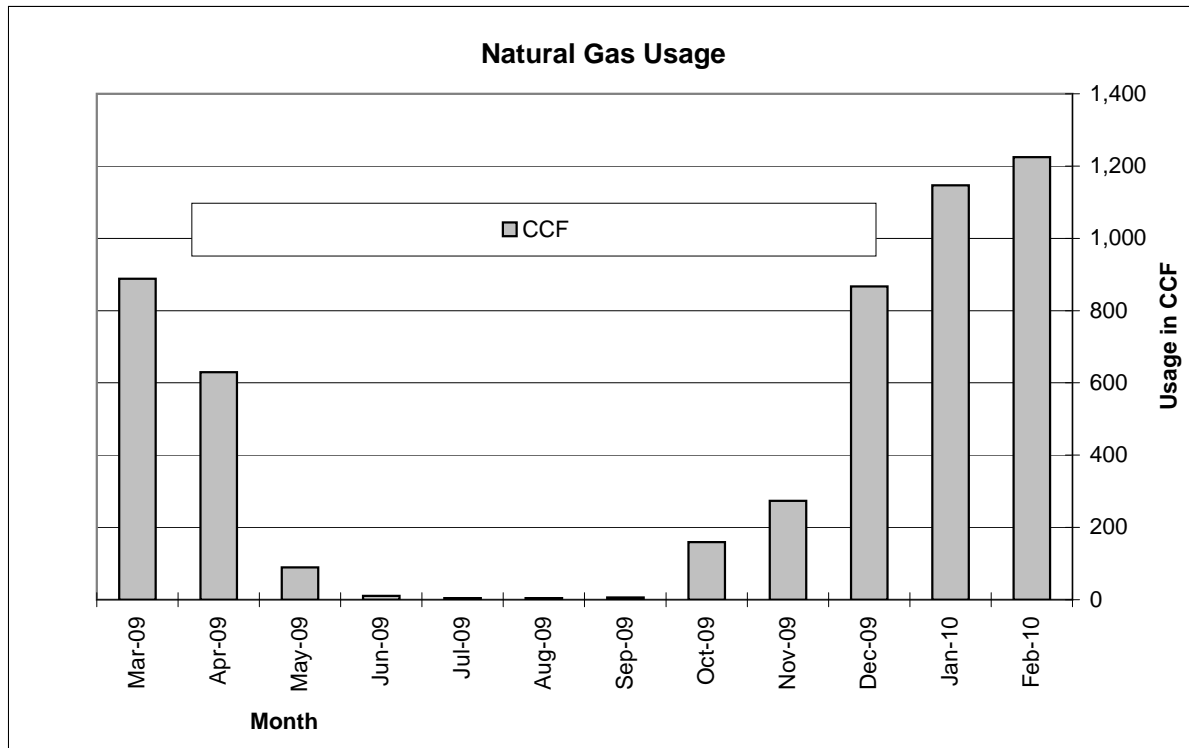


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Probation Department(Kingston)**  
 Address: **733 Broadway, Kingston**  
 Square Footage: **20,000**  
 CCF per square foot: **0.3**

Account #: **36120980010**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G200**  
 Service Charge: **\$20.00**

Consumption and Cost Data				Unit Cost Data	
Meter Read Date	Days	CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
2/22/2010	34	1,225	\$ 1,403.89	\$ 1.146	\$ 1.130
1/19/2010	29	1,147	\$ 1,260.97	\$ 1.099	\$ 1.082
12/21/2009	32	867	\$ 983.92	\$ 1.135	\$ 1.112
11/19/2009	30	274	\$ 338.23	\$ 1.234	\$ 1.161
10/20/2009	33	159	\$ 207.63	\$ 1.306	\$ 1.180
9/17/2009	29	6	\$ 36.46	\$ 6.077	\$ 2.743
8/19/2009	30	4	\$ 34.19	\$ 8.548	\$ 3.548
7/20/2009	27	4	\$ 29.81	\$ 7.453	\$ 2.453
6/23/2009	32	11	\$ 30.19	\$ 2.745	\$ 0.926
5/22/2009	28	89	\$ 109.96	\$ 1.236	\$ 1.011
4/24/2009	32	630	\$ 714.63	\$ 1.134	\$ 1.103
3/23/2009	29	888	\$ 1,264.42	\$ 1.424	\$ 1.401
Annual	365	5,304	\$ 6,414.30	\$ 1.209	\$ 1.164





**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

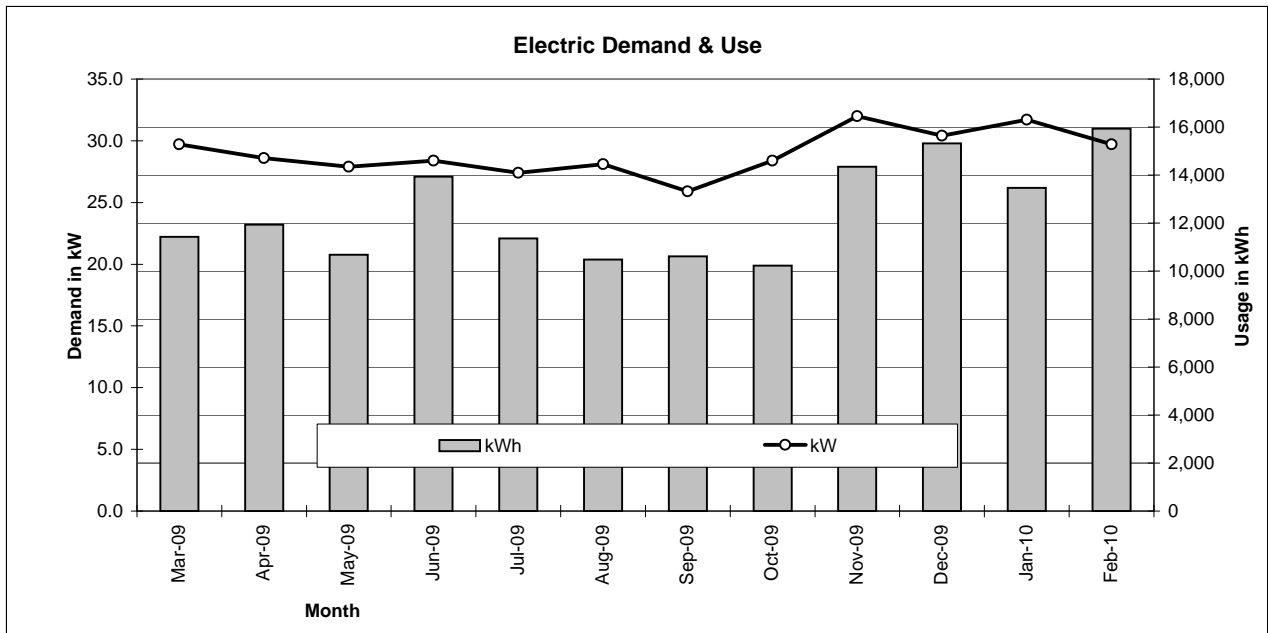
Client: **Ulster County**  
 Facility: **Public Works Building**  
 Address: **313 Shamrock Lane, Kingston**  
 Square Footage: **8,700**  
 kWh per square foot: **17.2**

Account #: **36050143001**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E205**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
16-Feb-10	34	15,930	29.7	\$ 386.53	\$ 1,441.67	\$ 1,828.20	\$ 0.115	\$ 8.00	\$ 0.097
13-Jan-10	28	13,464	31.7	\$ 394.76	\$ 1,218.49	\$ 1,613.25	\$ 0.120	\$ 8.00	\$ 0.097
16-Dec-09	34	15,318	30.4	\$ 386.04	\$ 1,386.28	\$ 1,772.32	\$ 0.116	\$ 8.00	\$ 0.097
12-Nov-09	34	14,346	32.0	\$ 435.83	\$ 1,298.31	\$ 1,734.14	\$ 0.121	\$ 8.00	\$ 0.100
9-Oct-09	28	10,224	28.4	\$ 394.16	\$ 925.27	\$ 1,319.43	\$ 0.129	\$ 8.00	\$ 0.102
11-Sep-09	29	10,620	25.9	\$ 359.69	\$ 961.11	\$ 1,320.80	\$ 0.124	\$ 8.00	\$ 0.100
13-Aug-09	28	10,476	28.1	\$ 388.26	\$ 948.08	\$ 1,336.34	\$ 0.128	\$ 8.00	\$ 0.101
16-Jul-09	29	11,358	27.4	\$ 359.81	\$ 1,027.90	\$ 1,387.71	\$ 0.122	\$ 8.00	\$ 0.098
17-Jun-09	35	13,932	28.4	\$ 252.91	\$ 1,260.85	\$ 1,513.76	\$ 0.109	\$ 7.53	\$ 0.091
13-May-09	28	10,674	27.9	\$ 314.80	\$ 966.00	\$ 1,280.80	\$ 0.120	\$ 7.53	\$ 0.097
15-Apr-09	30	11,934	28.6	\$ 305.16	\$ 1,080.03	\$ 1,385.19	\$ 0.116	\$ 7.53	\$ 0.096
16-Mar-09	28	11,430	29.7			\$ 1,284.90	\$ 0.112	\$ 7.53	\$ 0.090
<b>Annual</b>	<b>365</b>	<b>149,706</b>	<b>348.2</b>			<b>\$ 17,776.83</b>	<b>\$ 0.119</b>	<b>\$ 8.00</b>	<b>\$ 0.096</b>

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

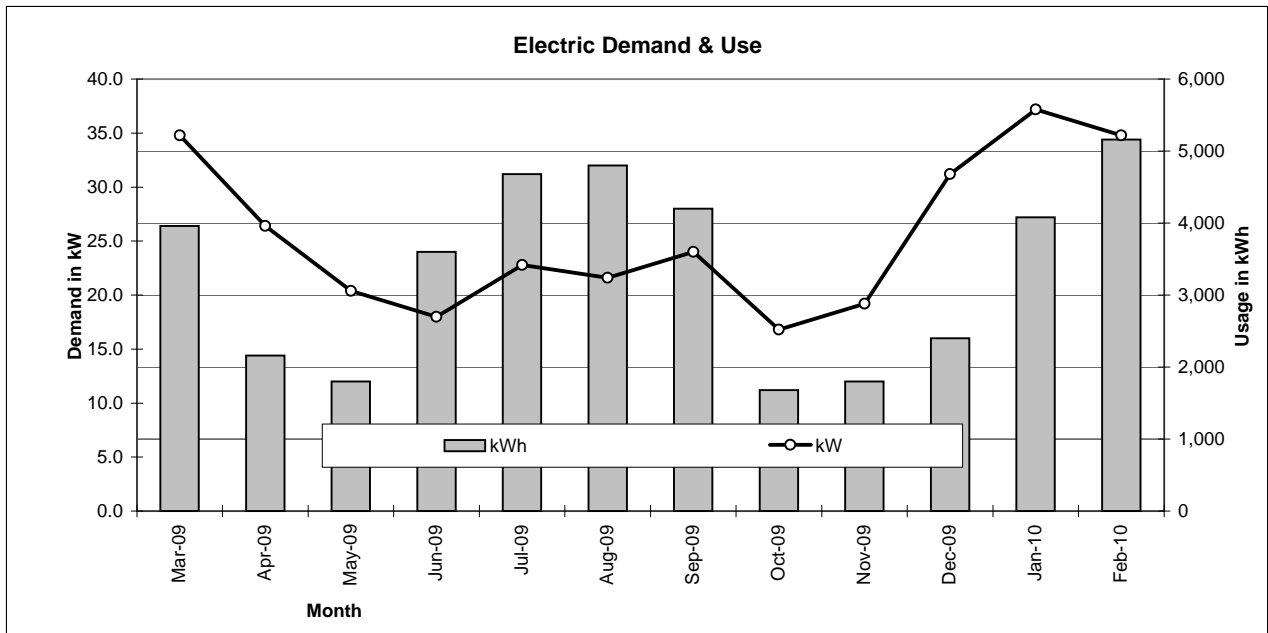
Client: **Ulster County**  
 Facility: **Public Works Building**  
 Address: **313 Shamrock Lane, Kingston**  
 Square Footage: **8,700**  
 kWh per square foot: **4.6**

Account #: **36050128002**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E205**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
16-Feb-10	34	5,160	34.8	\$ 360.46	\$ 466.98	\$ 827.44	\$ 0.160	\$ 8.00	\$ 0.097
13-Jan-10	28	4,080	37.2	\$ 375.21	\$ 369.24	\$ 744.45	\$ 0.182	\$ 8.00	\$ 0.097
16-Dec-09	34	2,400	31.2	\$ 314.14	\$ 217.20	\$ 531.34	\$ 0.221	\$ 8.00	\$ 0.097
12-Nov-09	34	1,800	19.2	\$ 219.91	\$ 162.90	\$ 382.81	\$ 0.213	\$ 8.00	\$ 0.100
9-Oct-09	28	1,680	16.8	\$ 203.62	\$ 152.04	\$ 355.66	\$ 0.212	\$ 8.00	\$ 0.102
11-Sep-09	29	4,200	24.0	\$ 282.51	\$ 380.10	\$ 662.61	\$ 0.158	\$ 8.00	\$ 0.100
13-Aug-09	28	4,800	21.6	\$ 274.80	\$ 434.40	\$ 709.20	\$ 0.148	\$ 8.00	\$ 0.101
16-Jul-09	29	4,680	22.8	\$ 261.15	\$ 423.54	\$ 684.69	\$ 0.146	\$ 8.00	\$ 0.097
17-Jun-09	35	3,600	18.0	\$ 167.88	\$ 325.80	\$ 493.68	\$ 0.137	\$ 7.53	\$ 0.091
13-May-09	28	1,800	20.4	\$ 196.22	\$ 162.90	\$ 359.12	\$ 0.200	\$ 7.53	\$ 0.098
15-Apr-09	30	2,160	26.4	\$ 239.60	\$ 195.48	\$ 435.08	\$ 0.201	\$ 7.53	\$ 0.096
16-Mar-09	28	3,960	34.8			\$ 651.40	\$ 0.164	\$ 7.53	\$ 0.091
Annual	365	40,320	307.2			\$ 6,837.48	\$ 0.170	\$ 8.00	\$ 0.094

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

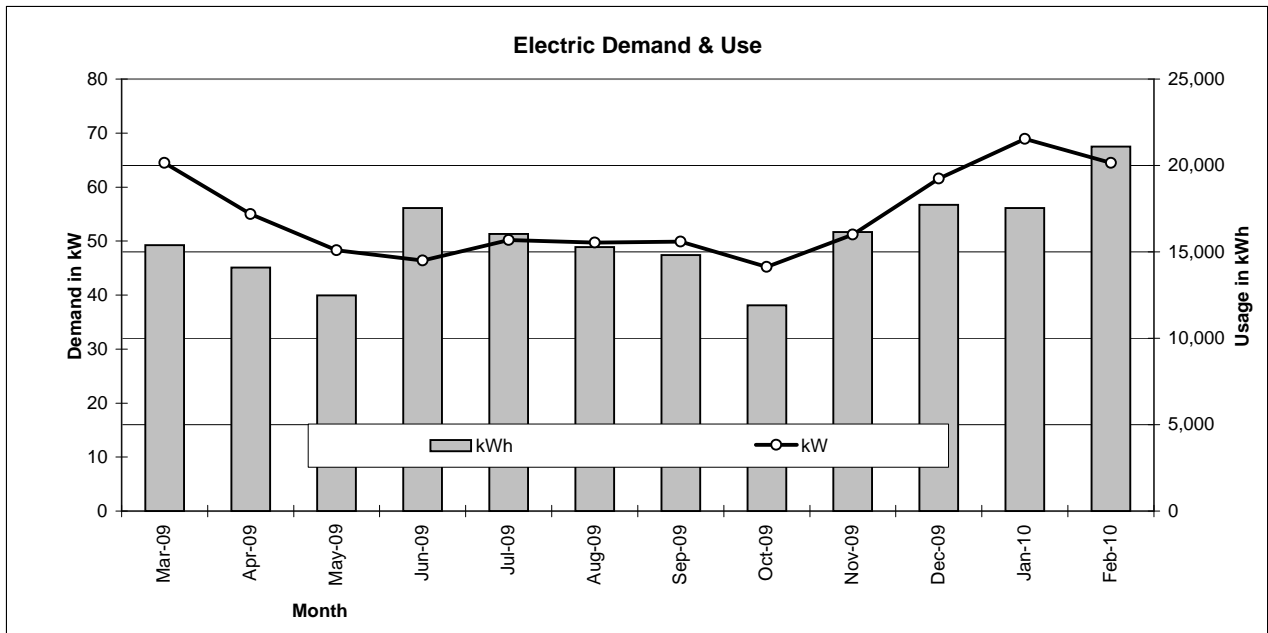
Client: **Ulster County**  
 Facility: **Public Works Building**  
 Address: **313 Shamrock Lane, Kingston**  
 Square Footage: **8,700**  
 kWh per square foot: **21.8**

Account #: **36050143001**  
**36050128002**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E205**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
16-Feb-10	34	21,090	64.5	\$ 746.99	\$ 1,908.65	\$ 2,655.64	\$ 0.126	\$ 8.00	\$ 0.097
13-Jan-10	28	17,544	68.9	\$ 769.97	\$ 1,587.73	\$ 2,357.70	\$ 0.134	\$ 8.00	\$ 0.097
16-Dec-09	34	17,718	61.6	\$ 700.18	\$ 1,603.48	\$ 2,303.66	\$ 0.130	\$ 8.00	\$ 0.097
12-Nov-09	34	16,146	51.2	\$ 655.74	\$ 1,461.21	\$ 2,116.95	\$ 0.131	\$ 8.00	\$ 0.100
9-Oct-09	28	11,904	45.2	\$ 597.78	\$ 1,077.31	\$ 1,675.09	\$ 0.141	\$ 8.00	\$ 0.102
11-Sep-09	29	14,820	49.9	\$ 642.20	\$ 1,341.21	\$ 1,983.41	\$ 0.134	\$ 8.00	\$ 0.100
13-Aug-09	28	15,276	49.7	\$ 663.06	\$ 1,382.48	\$ 2,045.54	\$ 0.134	\$ 8.00	\$ 0.101
16-Jul-09	29	16,038	50.2	\$ 620.96	\$ 1,451.44	\$ 2,072.40	\$ 0.129	\$ 8.00	\$ 0.098
17-Jun-09	35	17,532	46.4	\$ 420.79	\$ 1,586.65	\$ 2,007.44	\$ 0.115	\$ 7.53	\$ 0.089
13-May-09	28	12,474	48.3	\$ 511.02	\$ 1,128.90	\$ 1,639.92	\$ 0.131	\$ 7.53	\$ 0.094
15-Apr-09	30	14,094	55.0	\$ 544.76	\$ 1,275.51	\$ 1,820.27	\$ 0.129	\$ 7.53	\$ 0.093
16-Mar-09	28	15,390	64.5			\$ 1,936.30	\$ 0.126	\$ 7.53	\$ 0.088
Annual	365	190,026	655.4			\$ 24,614.31	\$ 0.130	\$ 8.00	\$ 0.096

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule

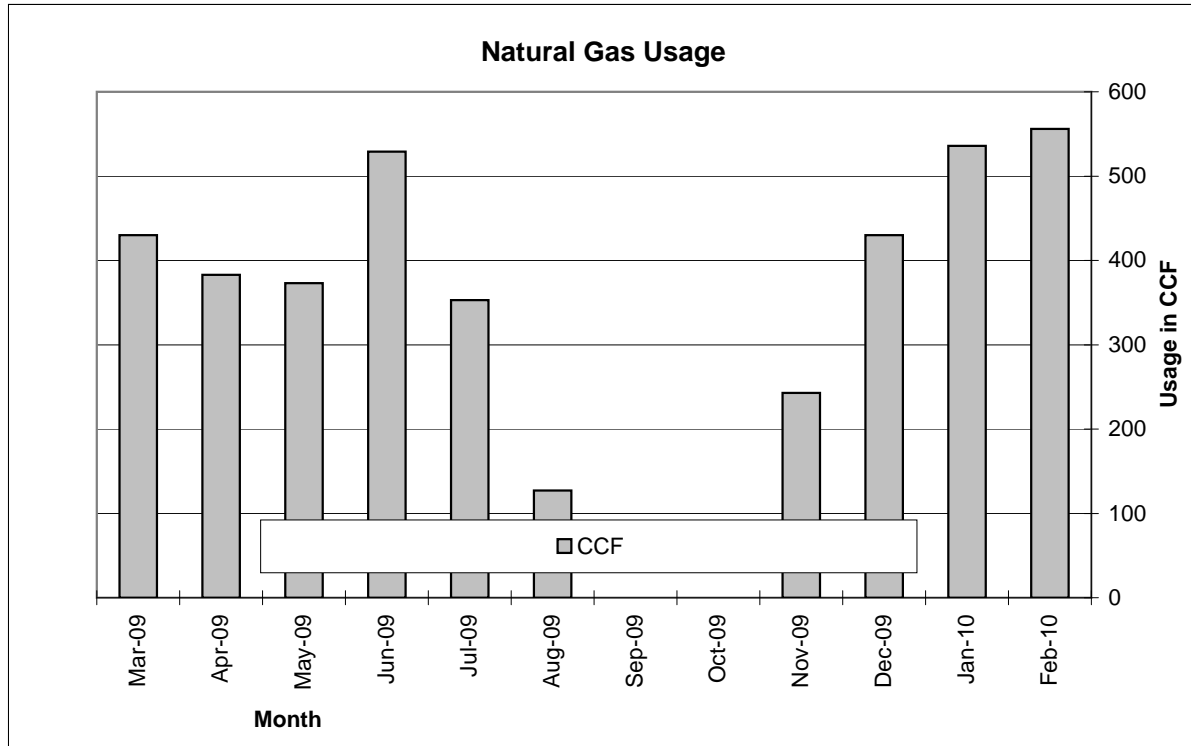


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Public Works Building**  
 Address: **313 Shamrock Lane, Kingston**  
 Square Footage: **8,700**  
 CCF per square foot: **0.5**

Account #: **36050139009**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G200**  
 Service Charge: **\$20.00**

Consumption and Cost Data				Unit Cost Data	
Meter Read Date	Days	CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
16-Feb-10	34	556	\$ 653.22	\$ 1.175	\$ 1.139
13-Jan-10	28	536	\$ 620.31	\$ 1.157	\$ 1.120
16-Dec-09	35	430	\$ 522.85	\$ 1.216	\$ 1.169
11-Nov-09	33	243	\$ 301.40	\$ 1.240	\$ 1.158
9-Oct-09	28	-	\$ 30.30	N/A	N/A
11-Sep-09	29	-	\$ 30.30	N/A	N/A
13-Aug-09	28	127	\$ 176.69	\$ 1.391	\$ 1.234
16-Jul-09	29	353	\$ 362.71	\$ 1.028	\$ 0.971
17-Jun-09	35	529	\$ 472.99	\$ 0.894	\$ 0.856
13-May-09	28	373	\$ 374.31	\$ 1.004	\$ 0.950
15-Apr-09	30	383	\$ 489.25	\$ 1.277	\$ 1.225
16-Mar-09	28	430	\$ 628.65	\$ 1.462	\$ 1.415
Annual	365	3,960	\$ 4,662.98	\$ 1.178	\$ 1.117



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

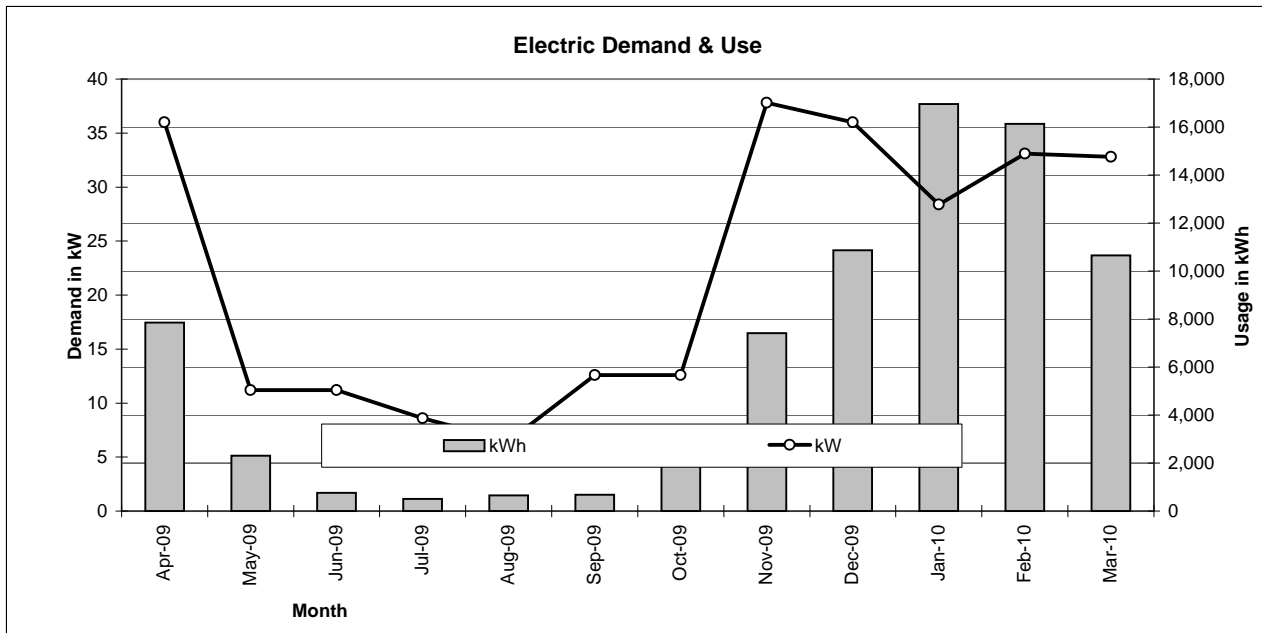
Client: **Ulster County**  
 Facility: **Old Jail Storage Garage**  
 Address: **63 West Golden Hill Drive, Kingston**  
 Square Footage: **5,000**  
 kWh per square foot: **15.4**

Account #: **36201106006**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E205**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
16-Mar-10	26	10,656	32.8	\$ 385.28	\$ 964.37	\$ 1,349.65	\$ 0.127	\$ 8.00	\$ 0.097
18-Feb-10	31	16,128	33.1	\$ 414.96	\$ 1,459.58	\$ 1,874.54	\$ 0.116	\$ 8.00	\$ 0.097
18-Jan-10	33	16,956	28.4	\$ 391.99	\$ 1,534.52	\$ 1,926.51	\$ 0.114	\$ 8.00	\$ 0.097
16-Dec-09	33	10,872	36	\$ 403.88	\$ 983.92	\$ 1,387.80	\$ 0.128	\$ 8.00	\$ 0.097
13-Nov-09	29	7,416	37.8	\$ 419.50	\$ 671.15	\$ 1,090.65	\$ 0.147	\$ 8.00	\$ 0.100
15-Oct-09	29	2,016	12.6	\$ 173.92	\$ 182.45	\$ 356.37	\$ 0.177	\$ 8.00	\$ 0.102
16-Sep-09	33	684	12.6	\$ 157.40	\$ 61.90	\$ 219.30	\$ 0.321	\$ 8.00	\$ 0.100
14-Aug-09	28	648	6.5	\$ 109.02	\$ 58.64	\$ 167.66	\$ 0.259	\$ 8.00	\$ 0.101
17-Jul-09	29	504	8.6	\$ 111.53	\$ 45.61	\$ 157.14	\$ 0.312	\$ 7.53	\$ 0.124
18-Jun-09	28	756	11.2	\$ 114.83	\$ 68.42	\$ 183.25	\$ 0.242	\$ 7.53	\$ 0.091
21-May-09	35	2,304	11.2	\$ 153.33	\$ 208.51	\$ 361.84	\$ 0.157	\$ 7.53	\$ 0.107
16-Apr-09	31	7,848	36	\$ 340.40	\$ 710.24	\$ 1,050.64	\$ 0.134	\$ 7.53	\$ 0.096
<b>Annual</b>	<b>365</b>	<b>76,788</b>	<b>266.8</b>			<b>\$ 10,125.35</b>	<b>\$ 0.132</b>	<b>\$ 8.00</b>	<b>\$ 0.096</b>

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

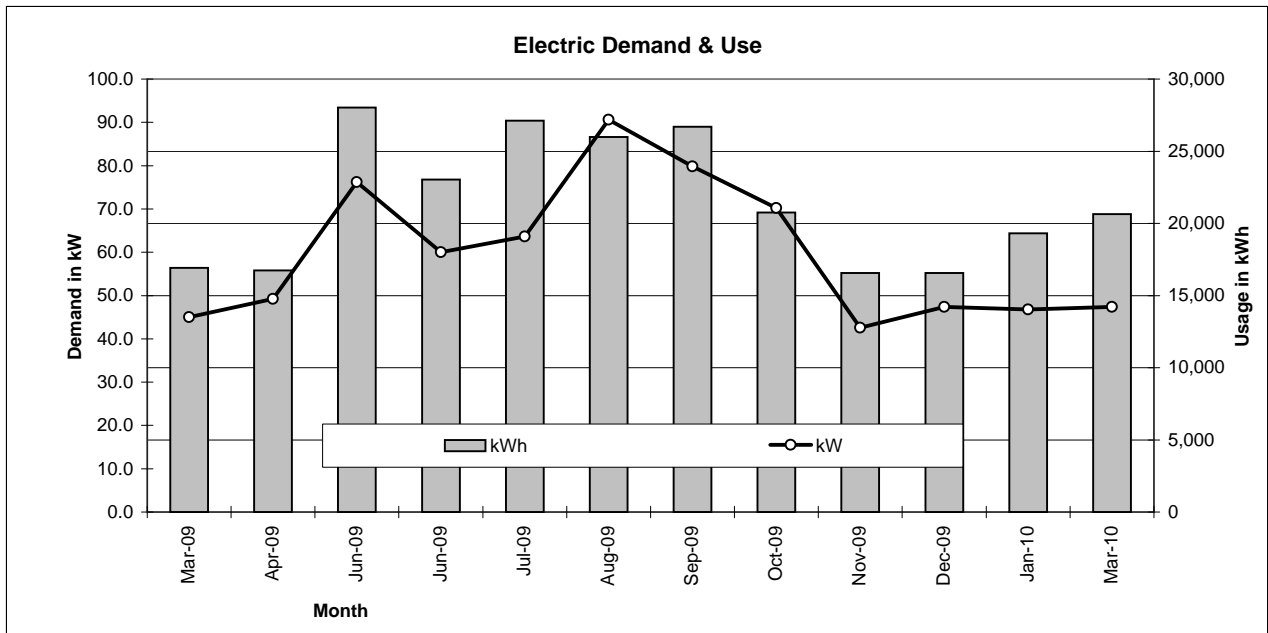
Client: **Ulster County**  
 Facility: **Trudy Resnick Farber Building**  
 Address: **50 Center St., Ellenville**  
 Square Footage: **21,000**  
 kWh per square foot: **12.3**

Account #: **36130120003**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
1-Mar-10	33	20,640	47.4	\$ 557.37	\$ 1,867.92	\$ 2,425.29	\$ 0.118	\$ 8.00	\$ 0.097
27-Jan-10	35	19,320	46.8	\$ 555.19	\$ 1,748.46	\$ 2,303.65	\$ 0.119	\$ 8.00	\$ 0.097
23-Dec-09	29	16,560	47.4	\$ 529.55	\$ 1,498.68	\$ 2,028.23	\$ 0.122	\$ 8.00	\$ 0.097
24-Nov-09	28	16,560	42.6	\$ 540.66	\$ 1,498.68	\$ 2,039.34	\$ 0.123	\$ 8.00	\$ 0.100
27-Oct-09	32	20,760	70.2	\$ 850.97	\$ 1,878.78	\$ 2,729.75	\$ 0.131	\$ 8.00	\$ 0.102
25-Sep-09	29	26,700	79.8	\$ 946.05	\$ 2,416.35	\$ 3,362.40	\$ 0.126	\$ 8.00	\$ 0.100
27-Aug-09	28	25,980	90.6	\$ 1,056.16	\$ 2,351.19	\$ 3,407.35	\$ 0.131	\$ 8.00	\$ 0.101
30-Jul-09	31	27,120	63.6	\$ 833.53	\$ 2,454.36	\$ 3,287.89	\$ 0.121	\$ 8.00	\$ 0.101
29-Jun-09	28	23,040	60.0	\$ 496.77	\$ 2,085.12	\$ 2,581.89	\$ 0.112	\$ 7.53	\$ 0.091
1-Jun-09	34	28,020	76.2	\$ 799.94	\$ 2,535.81	\$ 3,335.75	\$ 0.119	\$ 7.53	\$ 0.098
28-Apr-09	29	16,740	49.2	\$ 484.35	\$ 1,514.97	\$ 1,999.32	\$ 0.119	\$ 7.53	\$ 0.096
30-Mar-09	29	16,920	45.0			\$ 1,876.42	\$ 0.111	\$ 7.53	\$ 0.089
<b>Annual</b>	<b>365</b>	<b>258,360</b>	<b>718.8</b>			<b>\$ 31,377.28</b>	<b>\$ 0.121</b>	<b>\$ 8.00</b>	<b>\$ 0.097</b>

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule



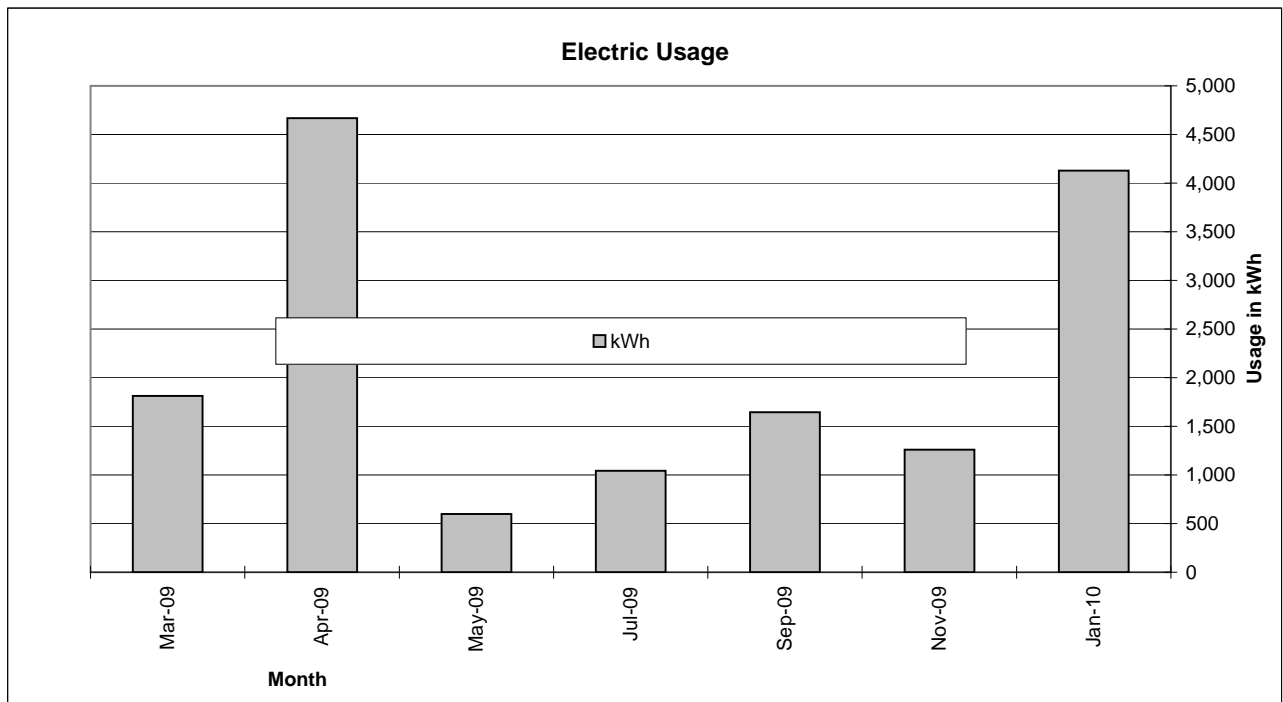
**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **17 Pearl St (Dept of Environment)**  
 Address: **17 Pearl Street, Kingston**  
 Square Footage: **4,300**  
 kWh per square foot: **3.5**

Account #: **34710255000**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E235**  
 Service Charge: **\$30.00**

Consumption and Cost Data						Unit Cost Data	
Meter Read Date	Days	kWh	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Usage Cost \$/kWh
7-Jan-10	64	4,128	\$ 71.27	\$ 373.58	\$ 444.85	\$ 0.108	\$ 0.100
4-Nov-09	57	1,260	\$ 67.55	\$ 114.03	\$ 181.58	\$ 0.144	\$ 0.120
8-Sep-09	60	1,644	\$ 67.90	\$ 148.78	\$ 216.68	\$ 0.132	\$ 0.114
10-Jul-09	60	1,044	\$ 59.47	\$ 94.48	\$ 153.95	\$ 0.147	\$ 0.119
11-May-09	34	600	\$ 31.87	\$ 54.30	\$ 86.17	\$ 0.144	\$ 0.094
7-Apr-09	27	4,668	\$ 109.25	\$ 422.45	\$ 531.70	\$ 0.114	\$ 0.107
11-Mar-09	58	1,812			\$ 249.82	\$ 0.138	\$ 0.121
Annual	360	15,156			<b>\$ 1,864.76</b>	\$ 0.123	\$ 0.099

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

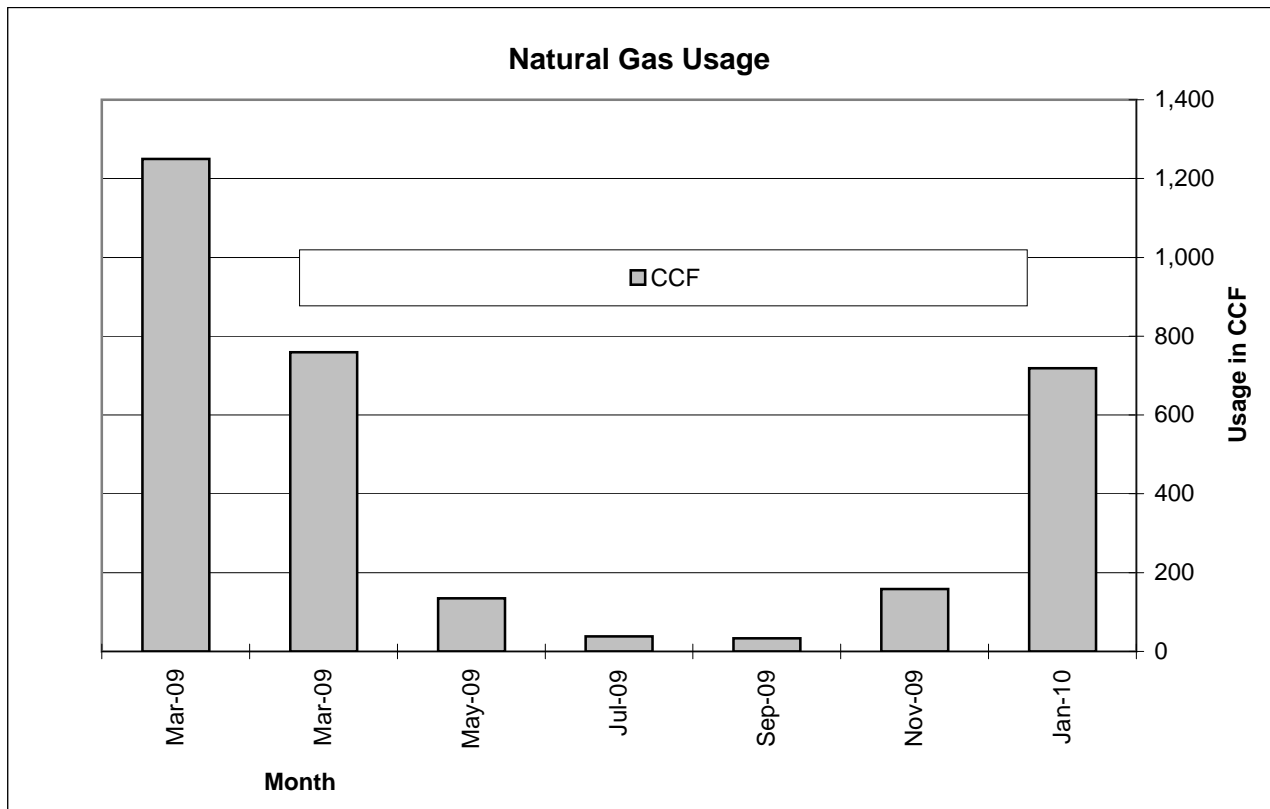


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **17 Pearl St (Dept of Environment)**  
 Address: **17 Pearl Street, Kingston**  
 Square Footage: **4,300**  
 CCF per square foot: **0.7**

Account #: **34710255000**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G220**  
 Service Charge: **\$20.00**

Consumption and Cost Data				Unit Cost Data	
Meter Read Date	Days	CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
1/7/2010	64	719	\$ 868.46	\$ 1.208	\$ 1.180
11/4/2009	57	158	\$ 246.72	\$ 1.562	\$ 1.435
9/8/2009	60	33	\$ 98.36	\$ 2.981	\$ 2.375
7/10/2009	60	38	\$ 80.19	\$ 2.110	\$ 1.584
5/11/2009	45	135	\$ 181.93	\$ 1.348	\$ 1.199
3/27/2009	16	759	\$ 1,153.61	\$ 1.520	\$ 1.494
3/11/2009	58	1,250	\$ 1,833.24	\$ 1.467	\$ 1.451
Annual	360	3,092	\$ 4,462.51	\$ 1.443	\$ 1.366





**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

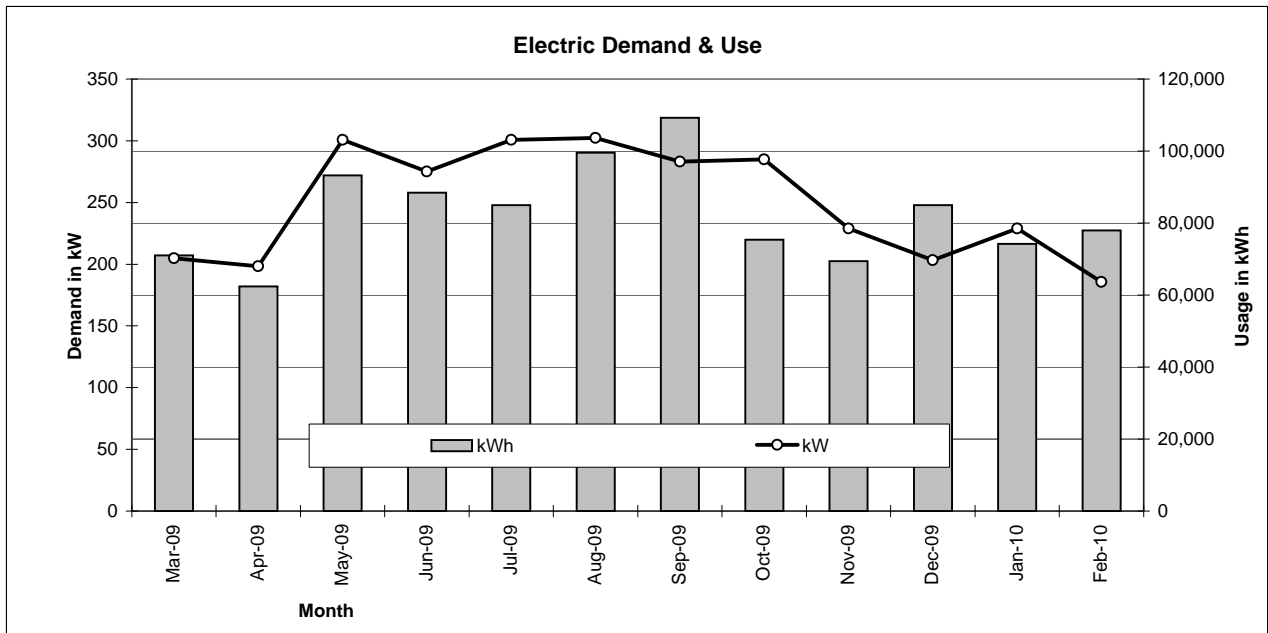
Client: **Ulster County**  
 Facility: **U.C. Office Building**  
 Address: **244 Fair St, Kingston**  
 Square Footage: **62,396**  
 kWh per square foot: **15.9**

Account #: **36200220006**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E245**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
19-Feb-10	31	77,920	185.6	\$ 1,538.09	\$ 7,051.76	\$ 8,589.85	\$ 0.110	\$ 8.00	\$ 0.091
19-Jan-10	32	74,240	228.8	\$ 1,833.06	\$ 6,718.72	\$ 8,551.78	\$ 0.115	\$ 8.00	\$ 0.090
18-Dec-09	35	84,960	203.2	\$ 1,940.60	\$ 7,688.88	\$ 9,629.48	\$ 0.113	\$ 8.00	\$ 0.094
13-Nov-09	29	69,440	228.8	\$ 1,990.98	\$ 6,284.32	\$ 8,275.30	\$ 0.119	\$ 8.00	\$ 0.092
15-Oct-09	27	75,360	284.8	\$ 2,544.31	\$ 6,820.08	\$ 9,364.39	\$ 0.124	\$ 8.00	\$ 0.093
18-Sep-09	32	109,280	283.2	\$ 2,606.40	\$ 9,889.84	\$ 12,496.24	\$ 0.114	\$ 8.00	\$ 0.093
17-Aug-09	28	99,520	302.4	\$ 2,820.48	\$ 9,006.56	\$ 11,827.04	\$ 0.119	\$ 8.00	\$ 0.094
20-Jul-09	28	84,960	300.8	\$ 2,455.83	\$ 7,688.88	\$ 10,144.71	\$ 0.119	\$ 8.00	\$ 0.090
22-Jun-09	32	88,480	275.2	\$ 1,344.91	\$ 8,007.44	\$ 9,352.35	\$ 0.106	\$ 7.53	\$ 0.082
21-May-09	34	93,280	300.8	\$ 2,060.04	\$ 8,441.84	\$ 10,501.88	\$ 0.113	\$ 7.53	\$ 0.088
17-Apr-09	28	62,400	198.4	\$ 1,275.55	\$ 5,647.20	\$ 6,922.75	\$ 0.111	\$ 7.53	\$ 0.087
20-Mar-09	29	71,040	204.8			\$ 7,374.22	\$ 0.104	\$ 7.53	\$ 0.082
<b>Annual</b>	<b>365</b>	<b>990,880</b>	<b>2,996.8</b>			<b>\$ 113,029.99</b>	<b>\$ 0.114</b>	<b>\$ 8.00</b>	<b>\$ 0.089</b>

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule

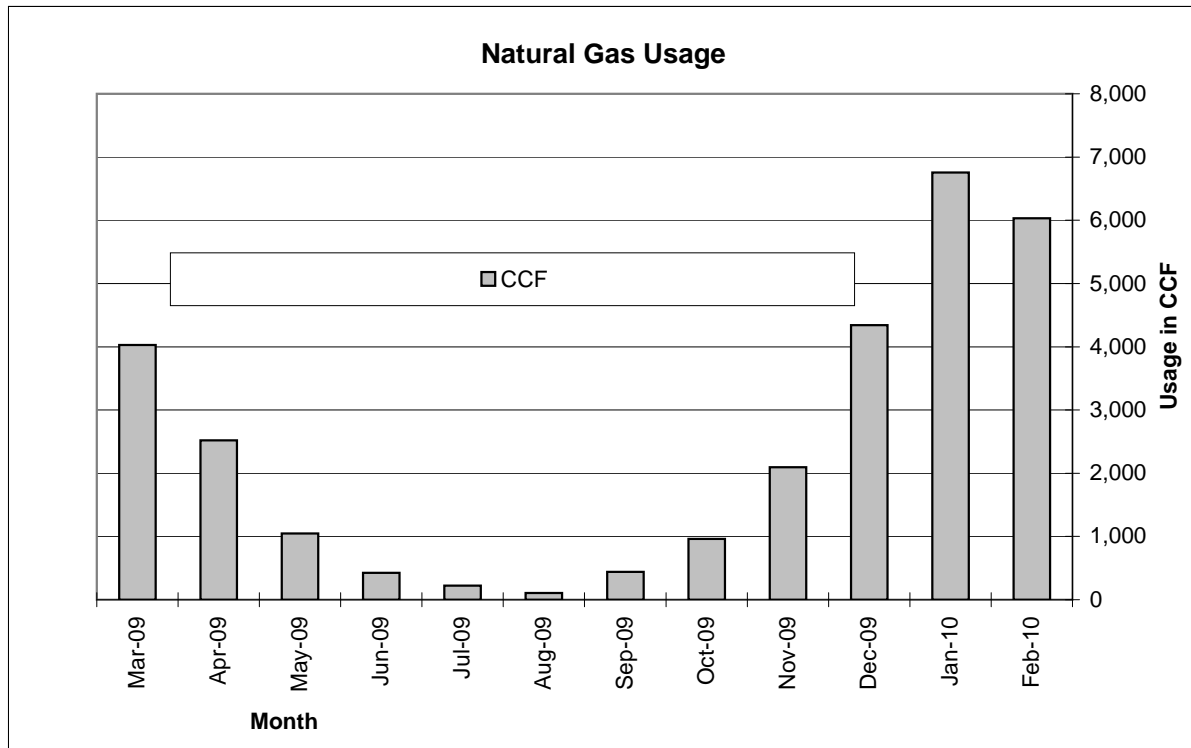


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **U.C. Office Building**  
 Address: **244 Fair St, Kingston**  
 Square Footage: **62,396**  
 CCF per square foot: **0.5**

Account #: **36200230005**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G220**  
 Service Charge: **\$20.00**

Consumption and Cost Data				Unit Cost Data	
Meter Read Date	Days	CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
2/19/2010	31	6,032	\$ 6,646.97	\$ 1.102	\$ 1.099
1/19/2010	32	6,755	\$ 7,012.08	\$ 1.038	\$ 1.035
12/18/2009	35	4,344	\$ 4,767.66	\$ 1.098	\$ 1.093
11/13/2009	29	2,097	\$ 2,208.35	\$ 1.053	\$ 1.044
10/15/2009	27	960	\$ 993.71	\$ 1.035	\$ 1.014
9/18/2009	32	440	\$ 483.23	\$ 1.098	\$ 1.053
8/17/2009	28	107	\$ 157.42	\$ 1.471	\$ 1.284
7/20/2009	28	224	\$ 251.16	\$ 1.121	\$ 1.032
6/22/2009	32	425	\$ 387.43	\$ 0.912	\$ 0.865
5/21/2009	34	1,047	\$ 964.67	\$ 0.921	\$ 0.902
4/17/2009	28	2,520	\$ 2,914.71	\$ 1.157	\$ 1.149
3/20/2009	29	4,030	\$ 5,609.61	\$ 1.392	\$ 1.387
Annual	365	28,981	\$ 32,397.00	\$ 1.118	\$ 1.110



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

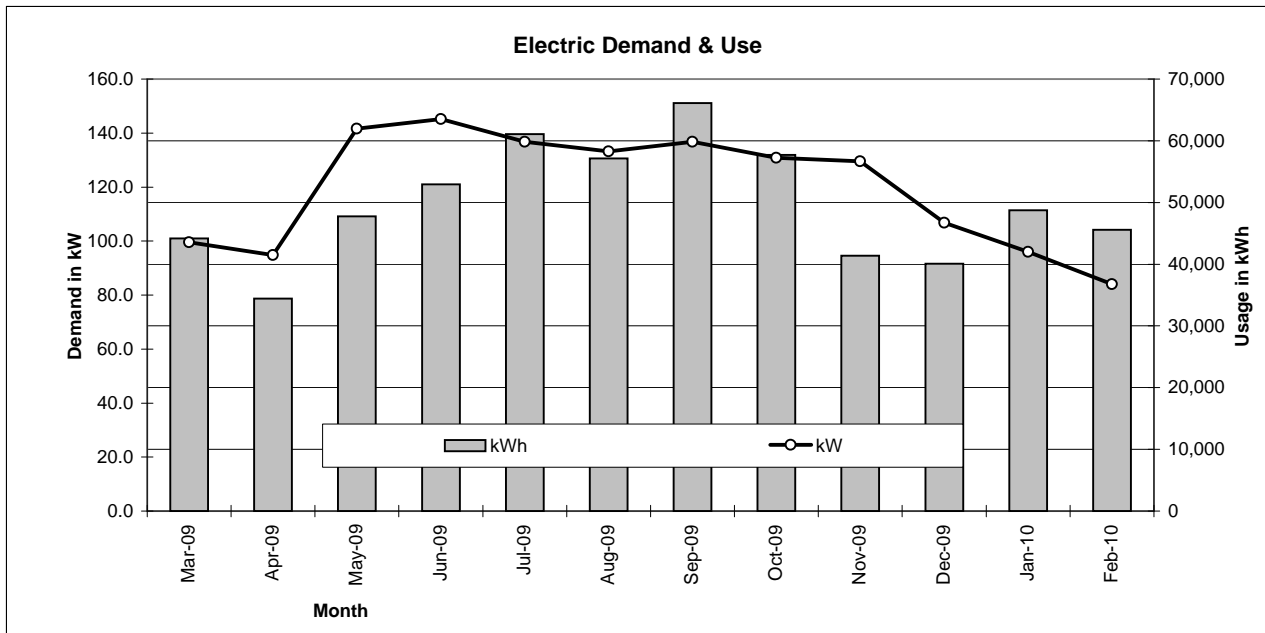
Client: **Ulster County**  
 Facility: **U.C. Record Storage**  
 Address: **300 Foxhall Ave, Kingston**  
 Square Footage: **23,000**  
 kWh per square foot: **26.0**

Account #: **36100120009**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
5-Feb-10	31	45,600	84.0	\$ 1,030.72	\$ 4,126.80	\$ 5,157.52	\$ 0.113	\$ 8.00	\$ 0.097
5-Jan-10	32	48,720	96.0	\$ 1,113.25	\$ 4,409.16	\$ 5,522.41	\$ 0.113	\$ 8.00	\$ 0.097
4-Dec-09	32	40,080	106.8	\$ 1,267.11	\$ 3,627.24	\$ 4,894.35	\$ 0.122	\$ 8.00	\$ 0.100
2-Nov-09	31	41,400	129.6	\$ 1,564.55	\$ 3,746.70	\$ 5,311.25	\$ 0.128	\$ 8.00	\$ 0.102
2-Oct-09	31	57,720	130.8	\$ 1,662.06	\$ 5,223.66	\$ 6,885.72	\$ 0.119	\$ 8.00	\$ 0.100
1-Sep-09	29	66,120	136.8	\$ 1,847.26	\$ 5,983.86	\$ 7,831.12	\$ 0.118	\$ 8.00	\$ 0.101
3-Aug-09	26	57,120	133.2	\$ 1,471.11	\$ 5,169.36	\$ 6,640.47	\$ 0.116	\$ 8.00	\$ 0.097
8-Jul-09	29	61,080	136.8	\$ 1,134.02	\$ 5,527.74	\$ 6,661.76	\$ 0.109	\$ 8.00	\$ 0.090
9-Jun-09	34	52,920	145.2	\$ 1,493.81	\$ 4,789.26	\$ 6,283.07	\$ 0.119	\$ 7.53	\$ 0.098
6-May-09	33	47,760	141.6	\$ 1,335.53	\$ 4,322.28	\$ 5,657.81	\$ 0.118	\$ 7.53	\$ 0.096
3-Apr-09	24	34,440	94.8	\$ 790.01	\$ 3,116.82	\$ 3,906.83	\$ 0.113	\$ 7.53	\$ 0.092
10-Mar-09	29	44,160	99.6			\$ 5,789.99	\$ 0.131	\$ 7.53	\$ 0.113
Annual	361	597,120	1,435.2			<b>\$ 70,542.30</b>	\$ 0.118	\$ 8.00	\$ 0.098

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule

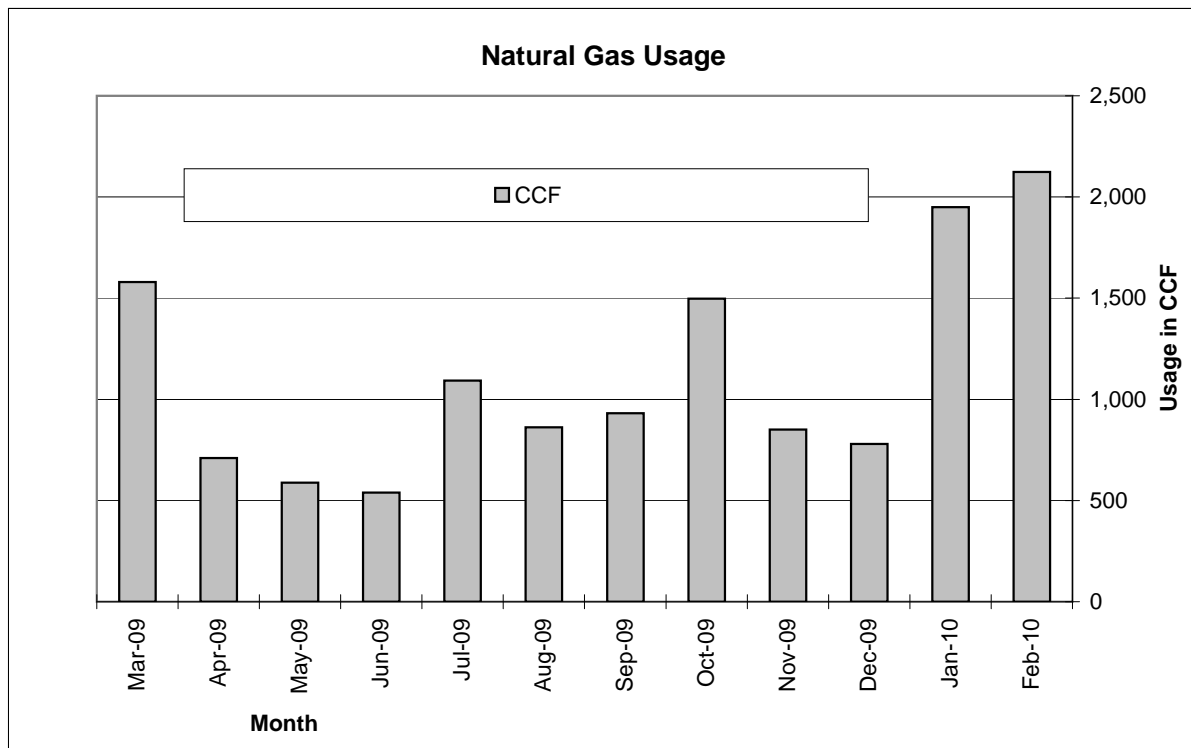


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **U.C. Record Storage**  
 Address: **300 Foxhall Ave, Kingston**  
 Square Footage: **23,000**  
 CCF per square foot: **0.6**

Account #: **36100120009**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G220**  
 Service Charge: **\$20.00**

Consumption and Cost Data				Unit Cost Data	
Meter Read Date	Days	CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
5-Feb-10	31	2,123	\$ 2,276.23	\$ 1.072	\$ 1.063
5-Jan-10	32	1,949	\$ 2,111.31	\$ 1.083	\$ 1.073
4-Dec-09	32	780	\$ 903.15	\$ 1.158	\$ 1.132
2-Nov-09	31	850	\$ 908.38	\$ 1.069	\$ 1.045
2-Oct-09	31	1,498	\$ 1,481.00	\$ 0.989	\$ 0.975
1-Sep-09	29	931	\$ 1,001.81	\$ 1.076	\$ 1.055
3-Aug-09	26	862	\$ 886.77	\$ 1.029	\$ 1.006
8-Jul-09	29	1,092	\$ 982.92	\$ 0.900	\$ 0.882
9-Jun-09	34	540	\$ 481.09	\$ 0.891	\$ 0.854
6-May-09	33	589	\$ 592.19	\$ 1.005	\$ 0.971
3-Apr-09	24	710	\$ 987.49	\$ 1.391	\$ 1.363
10-Mar-09	29	1,579	\$ 2,212.20	\$ 1.401	\$ 1.388
Annual	361	13,503	\$ 14,824.54	\$ 1.098	\$ 1.080



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

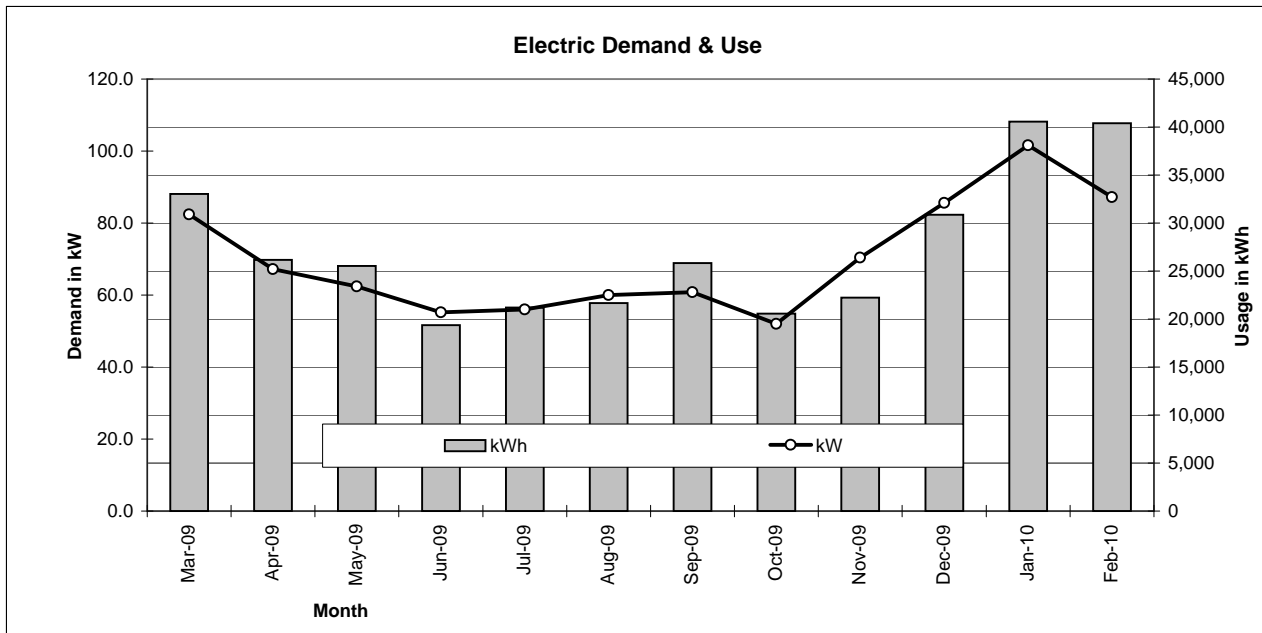
Client: **Ulster County**  
 Facility: **UCAT**  
 Address: **1 Danny Circle, Kingston**  
 Square Footage: **24,000**  
 kWh per square foot: **13.6**

Account #: **36201099003**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
18-Feb-10	31	40,400	87.2	\$ 998.48	\$ 3,656.20	\$ 4,654.68	\$ 0.115	\$ 8.00	\$ 0.097
18-Jan-10	33	40,560	101.6	\$ 1,137.38	\$ 3,670.68	\$ 4,808.06	\$ 0.119	\$ 8.00	\$ 0.097
16-Dec-09	33	30,880	85.6	\$ 921.92	\$ 2,794.64	\$ 3,716.56	\$ 0.120	\$ 8.00	\$ 0.097
13-Nov-09	29	22,240	70.4	\$ 814.46	\$ 2,012.72	\$ 2,827.18	\$ 0.127	\$ 8.00	\$ 0.100
15-Oct-09	29	20,560	52.0	\$ 701.81	\$ 1,860.68	\$ 2,562.49	\$ 0.125	\$ 8.00	\$ 0.102
16-Sep-09	33	25,840	60.8	\$ 785.75	\$ 2,338.52	\$ 3,124.27	\$ 0.121	\$ 8.00	\$ 0.100
14-Aug-09	28	21,680	60.0	\$ 764.80	\$ 1,962.04	\$ 2,726.84	\$ 0.126	\$ 8.00	\$ 0.101
17-Jul-09	29	21,200	56.0	\$ 674.64	\$ 1,918.60	\$ 2,593.24	\$ 0.122	\$ 8.00	\$ 0.099
18-Jun-09	28	19,360	55.2	\$ 458.25	\$ 1,752.08	\$ 2,210.33	\$ 0.114	\$ 7.53	\$ 0.091
21-May-09	35	25,520	62.4	\$ 778.49	\$ 2,309.56	\$ 3,088.05	\$ 0.121	\$ 7.53	\$ 0.101
16-Apr-09	27	26,160	67.2	\$ 667.07	\$ 2,367.48	\$ 3,034.55	\$ 0.116	\$ 7.53	\$ 0.096
20-Mar-09	30	33,040	82.4			\$ 3,630.63	\$ 0.110	\$ 7.53	\$ 0.090
Annual	365	327,440	840.8			\$ 38,976.88	\$ 0.119	\$ 8.00	\$ 0.097

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule

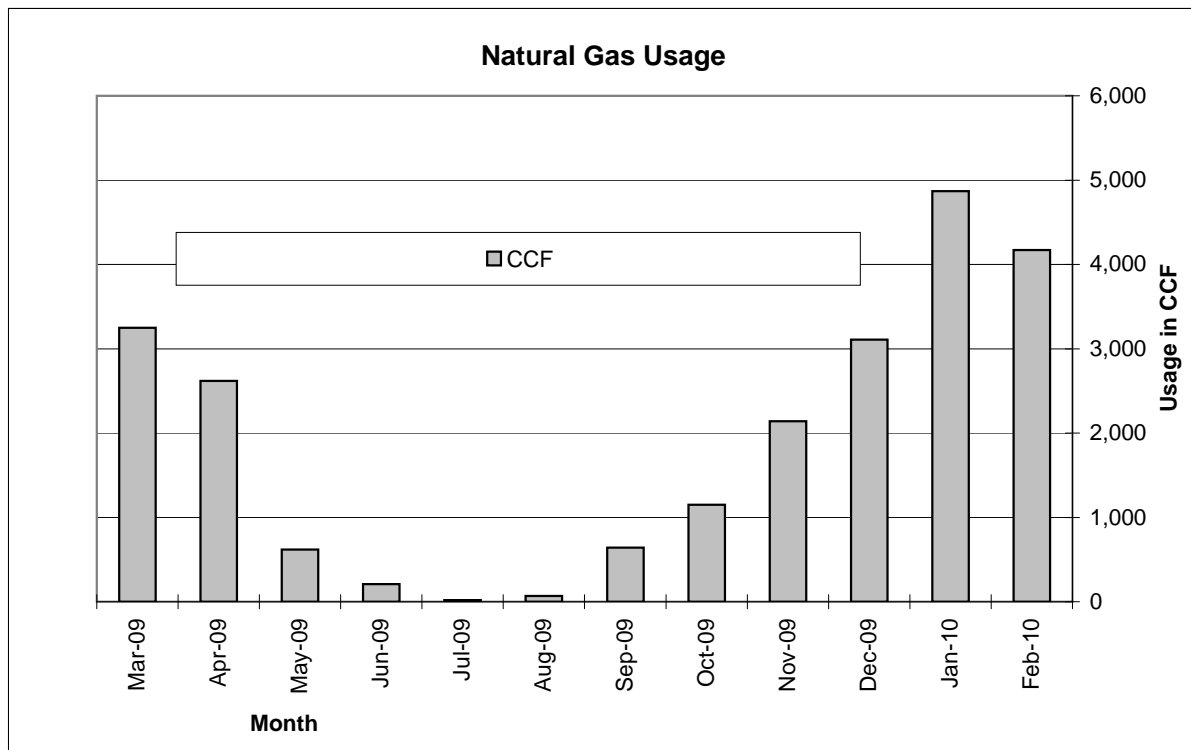


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **UCAT**  
 Address: **1 Danny Circle, Kingston**  
 Square Footage: **24,000**  
 CCF per square foot: **1.0**

Account #: **36201099003**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G220**  
 Service Charge: **\$20.00**

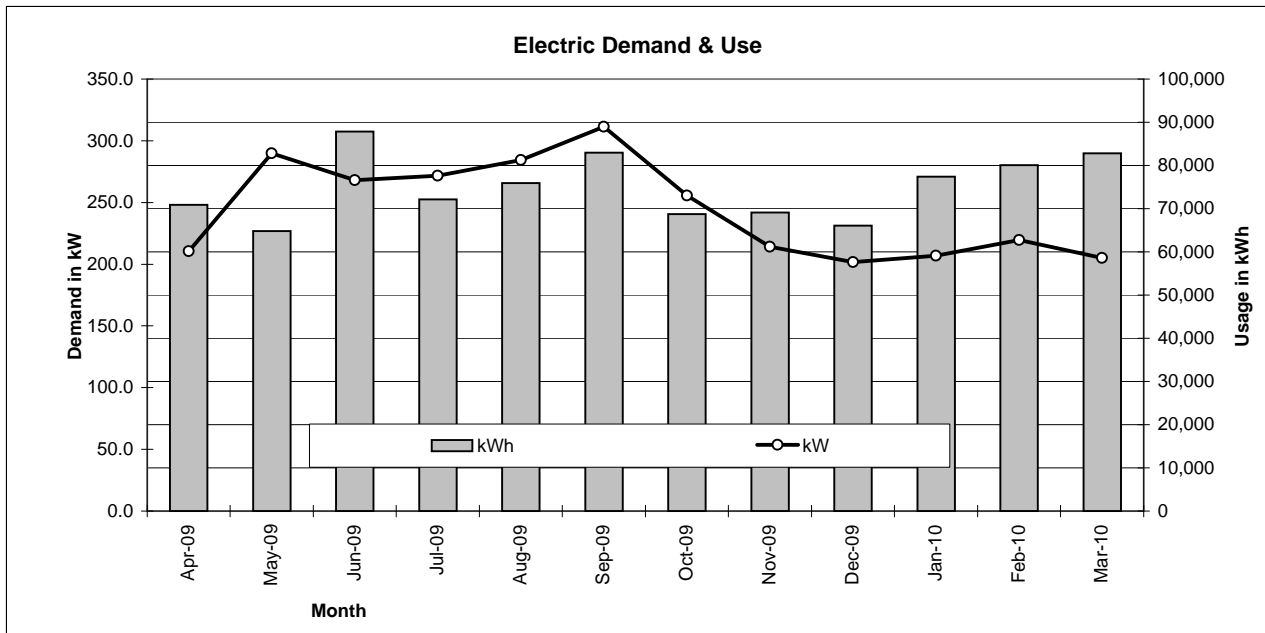
Consumption and Cost Data				Unit Cost Data	
Meter Read Date	Days	CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
18-Feb-10	31	4,170	\$ 4,634.54	\$ 1.111	\$ 1.107
18-Jan-10	33	4,870	\$ 5,121.47	\$ 1.052	\$ 1.048
16-Dec-09	33	3,110	\$ 3,438.22	\$ 1.106	\$ 1.099
13-Nov-09	29	2,140	\$ 2,252.62	\$ 1.053	\$ 1.043
15-Oct-09	29	1,150	\$ 1,178.09	\$ 1.024	\$ 1.007
16-Sep-09	33	640	\$ 683.79	\$ 1.068	\$ 1.037
14-Aug-09	28	70	\$ 113.71	\$ 1.624	\$ 1.339
17-Jul-09	29	20	\$ 46.13	\$ 2.307	\$ 1.307
18-Jun-09	28	210	\$ 208.69	\$ 0.994	\$ 0.899
21-May-09	35	620	\$ 593.33	\$ 0.957	\$ 0.925
16-Apr-09	27	2,620	\$ 3,046.83	\$ 1.163	\$ 1.155
20-Mar-09	30	3,250	\$ 4,530.50	\$ 1.394	\$ 1.388
Annual	365	22,870	\$ 25,847.92	\$ 1.130	\$ 1.120



Client: **Ulster County**  
 Facility: **Ulster Avenue Office Complex (DSS)**  
 Address: **1 Development Court, Kingston**  
 Square Footage: **118,000**  
 kWh per square foot: **7.6**

Account #: **36180250007**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **E201**  
 Service Charge: **\$50.00**

Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>1</sup> \$/kW	Usage Cost \$/kWh
5-Mar-10	31	82,800	205.2			\$ 9,899.58	\$ 0.120	\$ 8.00	\$ 0.099
2-Feb-10	29	80,100	219.6			\$ 8,678.57	\$ 0.108	\$ 8.00	\$ 0.086
4-Jan-10	31	77,400	207.0			\$ 7,769.51	\$ 0.100	\$ 8.00	\$ 0.078
4-Dec-09	31	66,060	201.6			\$ 7,460.23	\$ 0.113	\$ 8.00	\$ 0.088
3-Nov-09	33	69,120	214.2			\$ 8,111.59	\$ 0.117	\$ 8.00	\$ 0.092
1-Oct-09	29	68,760	255.6			\$ 9,355.87	\$ 0.136	\$ 8.00	\$ 0.106
2-Sep-09	29	82,980	311.4			\$ 9,829.32	\$ 0.118	\$ 8.00	\$ 0.088
4-Aug-09	28	75,960	284.4			\$ 8,168.04	\$ 0.108	\$ 8.00	\$ 0.077
7-Jul-09	29	72,180	271.8			\$ 7,175.98	\$ 0.099	\$ 7.53	\$ 0.071
8-Jun-09	38	87,840	268.2			\$ 8,669.75	\$ 0.099	\$ 7.53	\$ 0.075
1-May-09	25	64,800	289.8			\$ 6,806.03	\$ 0.105	\$ 7.53	\$ 0.071
6-Apr-09	28	70,920	210.6			\$ 7,934.79	\$ 0.112	\$ 7.53	\$ 0.089

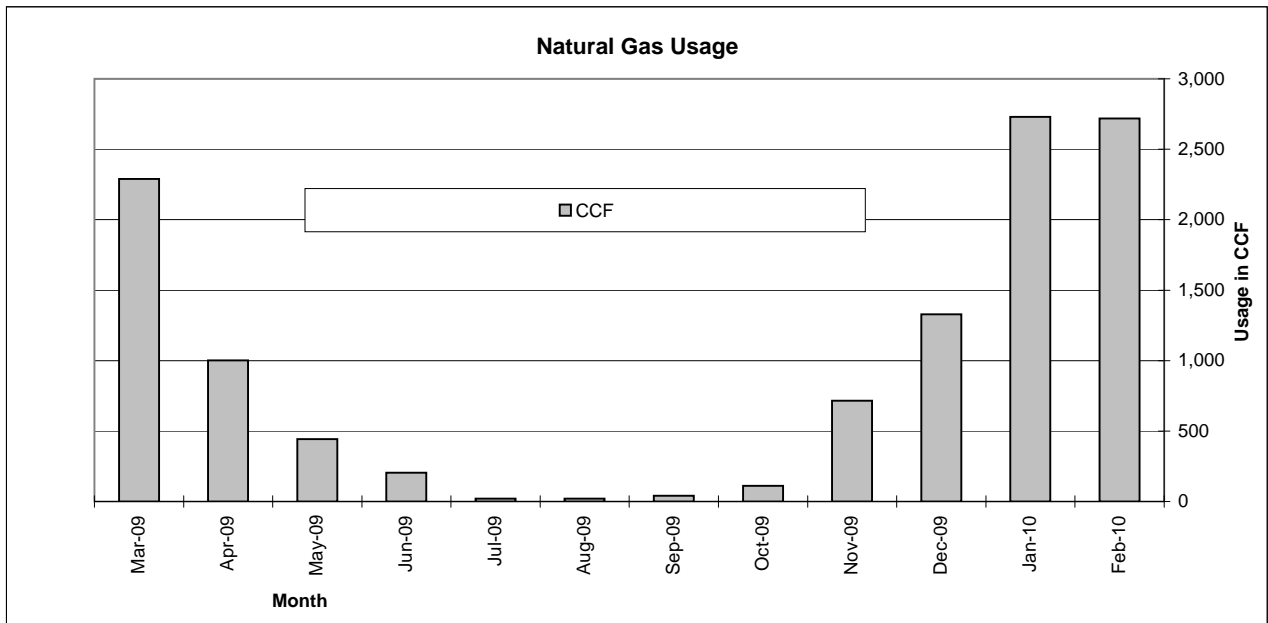


**NATURAL GAS CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Ulster Avenue Office Complex (DSS)**  
 Address: **1 Development Court, Kingston**  
 Square Footage: **118,000**  
 CCF per square foot: **0.1**

Account #: **36180440004**  
**36180270013**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **G220/G200**  
 Service Charge: **\$40.00**

Consumption and Cost Data						Unit Cost Data	
Meter Read Date	Days	36180440004 CCF	36180270013 CCF	TOTAL CCF	Total Cost	Blended Cost \$/CCF	Usage Cost \$/CCF
2-Feb-10	29	2,590	128	2,718	\$ 2,916.17	\$ 1.073	\$ 1.058
4-Jan-10	31	2,590	139	2,729	\$ 2,991.41	\$ 1.096	\$ 1.081
4-Dec-09	31	1,220	109	1,329	\$ 1,552.97	\$ 1.169	\$ 1.138
3-Nov-09	33	670	46	716	\$ 809.99	\$ 1.131	\$ 1.075
1-Oct-09	29	110	1	111	\$ 185.64	\$ 1.672	\$ 1.312
2-Sep-09	28	40	2	42	\$ 109.78	\$ 2.614	\$ 1.661
5-Aug-09	29	20	-	20	\$ 83.15	\$ 4.158	\$ 2.158
7-Jul-09	29	20	-	20	\$ 63.87	\$ 3.194	\$ 1.194
8-Jun-09	38	200	5	205	\$ 234.44	\$ 1.144	\$ 0.948
1-May-09	25	410	33	443	\$ 472.36	\$ 1.066	\$ 0.976
6-Apr-09	28	920	82	1,002	\$ 1,378.50	\$ 1.376	\$ 1.336
9-Mar-09	32	2,070	219	2,289	\$ 3,221.04	\$ 1.407	\$ 1.390
<b>Annual</b>	<b>362</b>	<b>10,860</b>	<b>764</b>	<b>11,624</b>	<b>\$ 14,019.32</b>	<b>\$ 1.291</b>	<b>\$ 1.165</b>





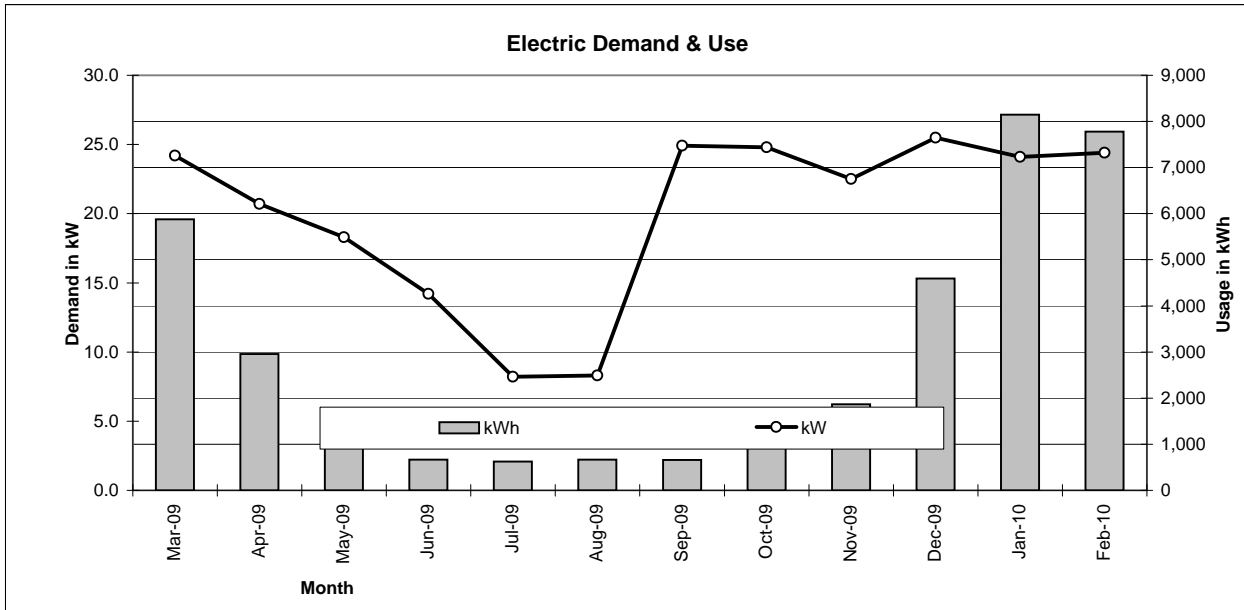
**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Accord Substation**  
 Address: **Granite Road**  
 Square Footage: **6,600**  
 kWh per square foot: **5.5**

Account #: **36230645008**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **E200**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>1</sup> \$/kW	Usage Cost \$/kWh
19-Feb-10	31	7,779	24.4			\$ 1,016.33	\$ 0.131	\$ 8.00	\$ 0.099
19-Jan-10	32	8,149	24.1			\$ 941.91	\$ 0.116	\$ 8.00	\$ 0.086
18-Dec-09	32	4,593	25.5			\$ 613.81	\$ 0.134	\$ 8.00	\$ 0.078
16-Nov-09	28	1,864	22.5			\$ 393.58	\$ 0.211	\$ 8.00	\$ 0.088
19-Oct-09	32	1,637	24.8			\$ 398.66	\$ 0.244	\$ 8.00	\$ 0.092
17-Sep-09	30	662	24.9			\$ 319.03	\$ 0.482	\$ 8.00	\$ 0.105
18-Aug-09	29	666	8.3			\$ 175.03	\$ 0.263	\$ 8.00	\$ 0.088
20-Jul-09	32	626	8.2			\$ 153.85	\$ 0.246	\$ 8.00	\$ 0.061
18-Jun-09	34	668	14.2			\$ 183.66	\$ 0.275	\$ 7.53	\$ 0.070
15-May-09	28	1,061	18.3			\$ 242.81	\$ 0.229	\$ 7.53	\$ 0.071
17-Apr-09	27	2,955	20.7			\$ 415.54	\$ 0.141	\$ 7.53	\$ 0.078
21-Mar-09	30	5,874	24.2			\$ 735.60	\$ 0.125	\$ 7.53	\$ 0.089
Annual	365	36,534	240.1			\$ 5,589.81	\$ 0.153	\$ 8.00	\$ 0.084

<sup>1</sup> Current demand charge from Central Hudson Rate Schedule



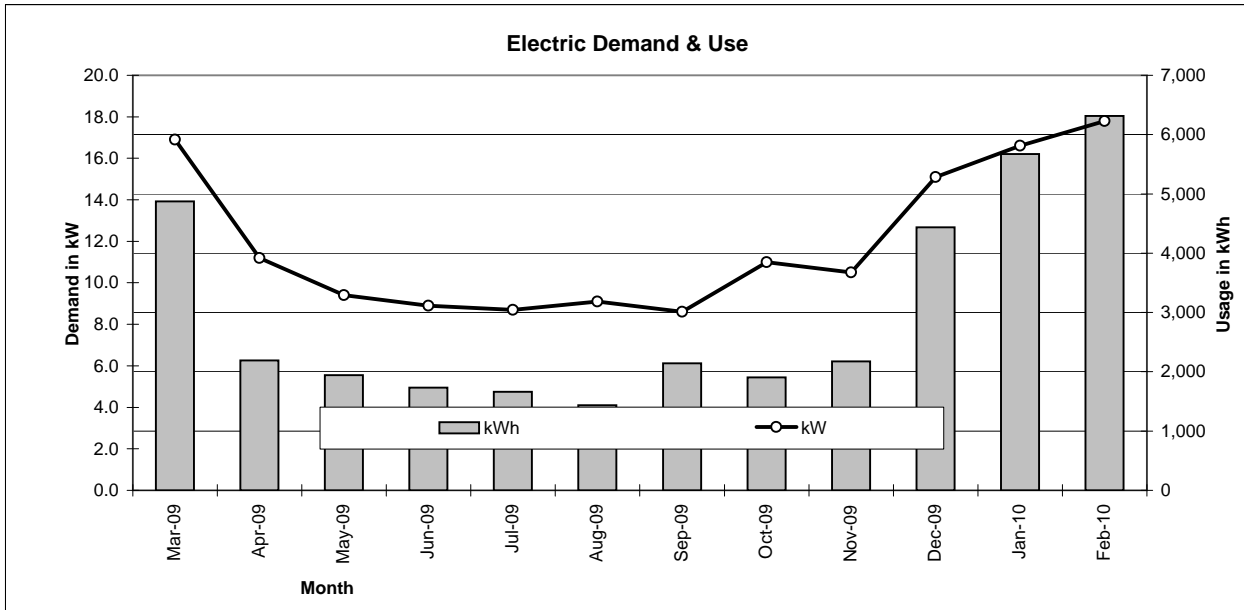
**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Boiceville Substation - LPG Heat**  
 Address: **Cold Brook Road**  
 Square Footage: **13,300**  
 kWh per square foot: **2.7**

Account #: **3608056000**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **E200**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>1</sup> \$/kW	Usage Cost \$/kWh
19-Feb-10	31	6,312	17.8			\$ 818.11	\$ 0.130	\$ 8.00	\$ 0.099
19-Jan-10	29	5,674	16.6			\$ 669.55	\$ 0.118	\$ 8.00	\$ 0.086
21-Dec-09	35	4,435	15.1			\$ 552.41	\$ 0.125	\$ 8.00	\$ 0.086
16-Nov-09	28	2,175	10.5			\$ 324.87	\$ 0.149	\$ 8.00	\$ 0.088
19-Oct-09	31	1,905	11.0			\$ 312.83	\$ 0.164	\$ 8.00	\$ 0.092
18-Sep-09	35	2,143	8.6			\$ 344.78	\$ 0.161	\$ 8.00	\$ 0.105
14-Aug-09	24	1,434	9.1			\$ 224.48	\$ 0.157	\$ 8.00	\$ 0.071
21-Jul-09	29	1,660	8.7			\$ 239.38	\$ 0.144	\$ 8.00	\$ 0.072
22-Jun-09	32	1,733	8.9			\$ 218.25	\$ 0.126	\$ 7.53	\$ 0.070
21-May-09	31	1,944	9.4			\$ 238.23	\$ 0.123	\$ 7.53	\$ 0.071
20-Apr-09	28	2,193	11.2			\$ 284.76	\$ 0.130	\$ 7.53	\$ 0.078
23-Mar-09	28	4,873	16.9			\$ 591.44	\$ 0.121	\$ 7.53	\$ 0.089
Annual	361	36,481	143.8			\$ 4,819.09	\$ 0.132	\$ 8.00	\$ 0.084

<sup>1</sup> Current demand charge from Central Hudson Rate Schedule



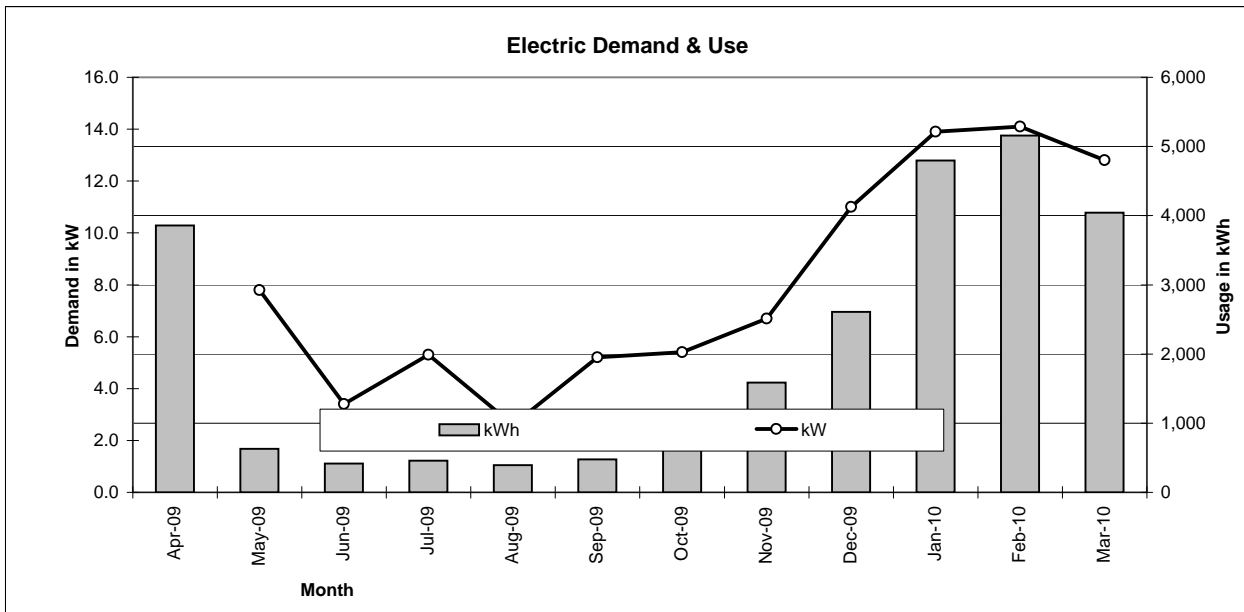
**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Saugerties Substation-FO Heat**  
 Address: **Granite Road**  
 Square Footage: **6,600**  
 kWh per square foot: **3.9**

Account #: **36360945004**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **E200**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>1</sup> \$/kW	Usage Cost \$/kWh
15-Mar-10	27	4,044	12.8			\$ 496.18	\$ 0.123	\$ 8.00	\$ 0.085
16-Feb-10	34	5,159	14.1			\$ 674.20	\$ 0.131	\$ 8.00	\$ 0.099
13-Jan-10	29	4,799	13.9			\$ 572.90	\$ 0.119	\$ 8.00	\$ 0.086
15-Dec-09	33	2,608	11.0			\$ 342.31	\$ 0.131	\$ 8.00	\$ 0.078
12-Nov-09	30	1,586	6.7			\$ 242.80	\$ 0.153	\$ 8.00	\$ 0.088
13-Oct-09	29	1,008	5.4			\$ 185.67	\$ 0.184	\$ 8.00	\$ 0.092
14-Sep-09	33	475	5.2			\$ 141.69	\$ 0.298	\$ 8.00	\$ 0.105
12-Aug-09	27	393	2.6			\$ 105.40	\$ 0.268	\$ 8.00	\$ 0.088
16-Jul-09	31	458	5.3			\$ 116.06	\$ 0.253	\$ 7.53	\$ 0.101
15-Jun-09	28	415	3.4			\$ 84.62	\$ 0.204	\$ 7.53	\$ 0.070
18-May-09	31	627	7.8			\$ 133.05	\$ 0.212	\$ 7.53	\$ 0.071
17-Apr-09	33	3,856				\$ 335.69	\$ 0.087		\$ 0.079
Annual	365	25,428	88.2			\$ 3,430.57	\$ 0.135	\$ 8.00	\$ 0.084

<sup>1</sup> Current demand charge from Central Hudson Rate Schedule



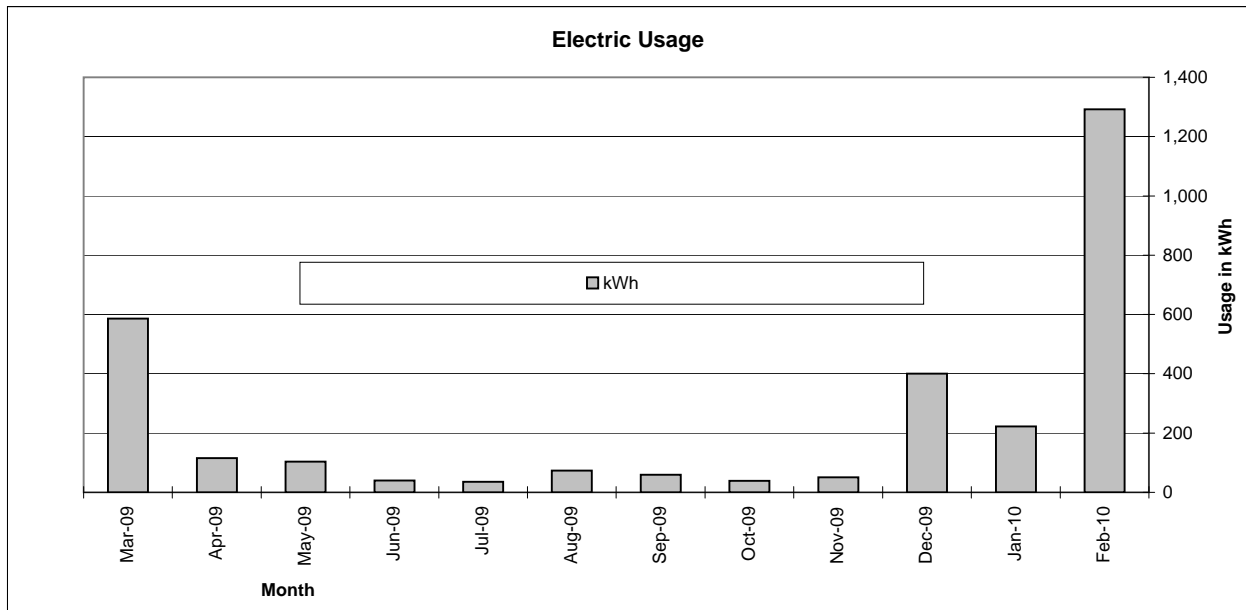
**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Shandaken Substation - 1**  
 Address: **Route 28, Shandaken**  
 Square Footage: **2,800**  
 kWh per square foot: **1.1**

Account #: **10015093759**  
 Supplier: **NYSEG**  
 Delivery: **NYSEG**  
 Rate Code: **12006**  
 Service Charge: **\$15.49**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>1</sup> \$/kW	Usage Cost \$/kWh
1-Feb-10	31	1,292				\$ 157.62	\$ 0.122		\$ 0.110
1-Jan-10	31	222				\$ 38.71	\$ 0.174		\$ 0.105
1-Dec-09	30	400				\$ 58.46	\$ 0.146		\$ 0.107
1-Nov-09	31	51				\$ 20.76	\$ 0.407		\$ 0.103
1-Oct-09	30	39				\$ 19.54	\$ 0.501		\$ 0.104
1-Sep-09	31	59				\$ 21.65	\$ 0.367		\$ 0.104
1-Aug-09	31	73				\$ 23.28	\$ 0.319		\$ 0.107
1-Jul-09	30	36				\$ 19.21	\$ 0.534		\$ 0.103
1-Jun-09	31	40				\$ 19.38	\$ 0.485		\$ 0.097
1-May-09	30	104				\$ 24.72	\$ 0.238		\$ 0.089
1-Apr-09	31	115				\$ 25.71	\$ 0.224		\$ 0.089
1-Mar-09	28	586				\$ 71.71	\$ 0.122		\$ 0.096
Annual	365	3,017				\$ 500.75	\$ 0.166		\$ 0.104

<sup>1</sup> Current demand charge from Central Hudson Rate Schedule



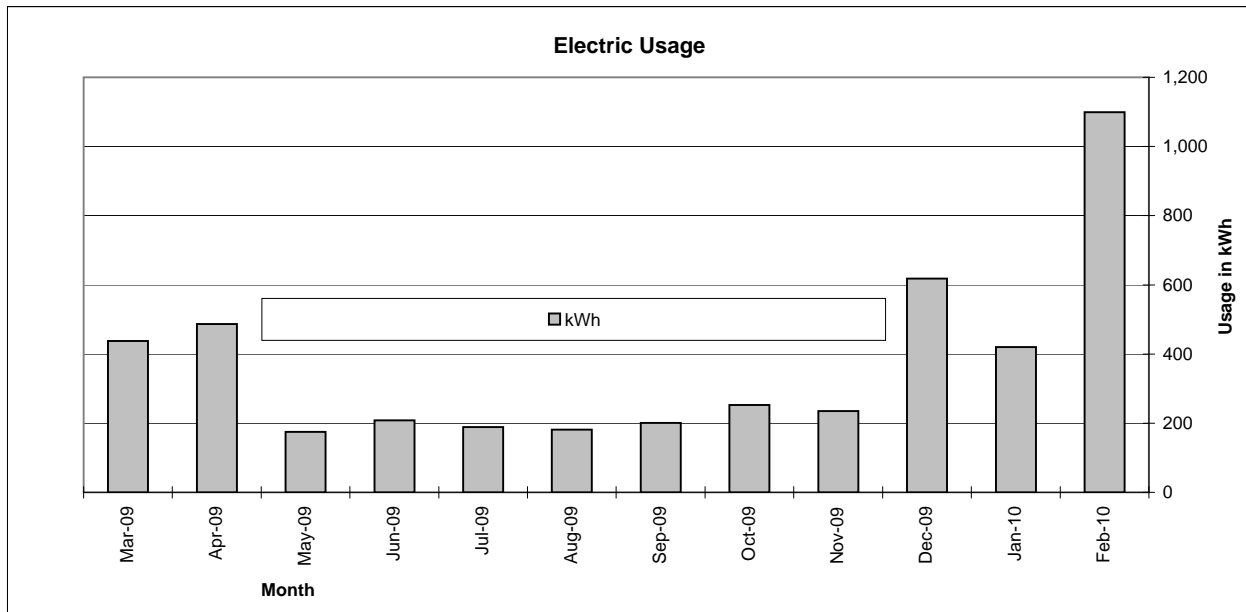
**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

Client: **Ulster County**  
 Facility: **Shandaken Substation - 2**  
 Address: **Route 28, Shandaken**  
 Square Footage: **2,800**  
 kWh per square foot: **1.6**

Account #: **10015093767**  
 Supplier: **NYSEG**  
 Delivery: **NYSEG**  
 Rate Code: **12006**  
 Service Charge: **\$15.49**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>1</sup> \$/kW	Usage Cost \$/kWh
1-Feb-10	31	1,099				\$ 136.38	\$ 0.124		\$ 0.110
1-Jan-10	31	420				\$ 59.44	\$ 0.142		\$ 0.105
1-Dec-09	30	618				\$ 81.88	\$ 0.132		\$ 0.107
1-Nov-09	31	235				\$ 39.81	\$ 0.169		\$ 0.103
1-Oct-09	30	253				\$ 41.68	\$ 0.165		\$ 0.104
1-Sep-09	31	201				\$ 36.46	\$ 0.181		\$ 0.104
1-Aug-09	31	181				\$ 34.82	\$ 0.192		\$ 0.107
1-Jul-09	30	189				\$ 35.02	\$ 0.185		\$ 0.103
1-Jun-09	31	208				\$ 35.72	\$ 0.172		\$ 0.097
1-May-09	30	175				\$ 31.05	\$ 0.177		\$ 0.089
1-Apr-09	31	487				\$ 58.75	\$ 0.121		\$ 0.089
1-Mar-09	28	438				\$ 57.51	\$ 0.131		\$ 0.096
Annual	365	4,504				\$ 648.52	\$ 0.144		\$ 0.103

<sup>1</sup> Current demand charge from Central Hudson Rate Schedule



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

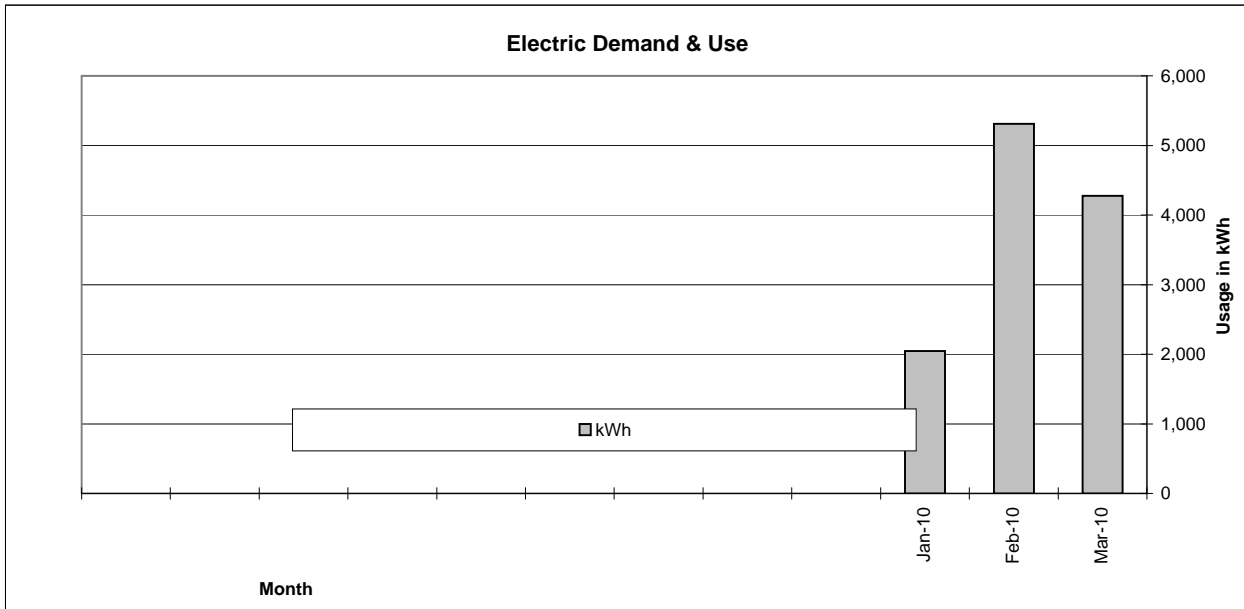
Client: **Ulster County**  
 Facility: **New Paltz Salt Storage-FO Heat**  
 Address: **246 Libertyville Road, New Paltz**  
 Square Footage: **10,440**  
 kWh per square foot: **5.6**

Account #: **86440755006**  
 Supplier: **Central Hudson**  
 Delivery: **Central Hudson**  
 Rate Code: **E230**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>1</sup> \$/kW	Usage Cost \$/kWh
18-Mar-10	27	4,277				\$ 407.14	\$ 0.095		\$ 0.084
19-Feb-10	30	5,310				\$ 573.11	\$ 0.108		\$ 0.099
20-Jan-10	15	2,047				\$ 197.30	\$ 0.096		\$ 0.072
Annual <sup>2</sup>	72	58,978	0.0			\$ 5,969.52	\$ 0.101		\$ 0.099

<sup>1</sup> Current demand charge from Central Hudson Rate Schedule

<sup>2</sup> Annual values prorated based on available data, new construction with electric service starting at beginning of 2010



**ELECTRICITY CONSUMPTION AND COST ANALYSIS**

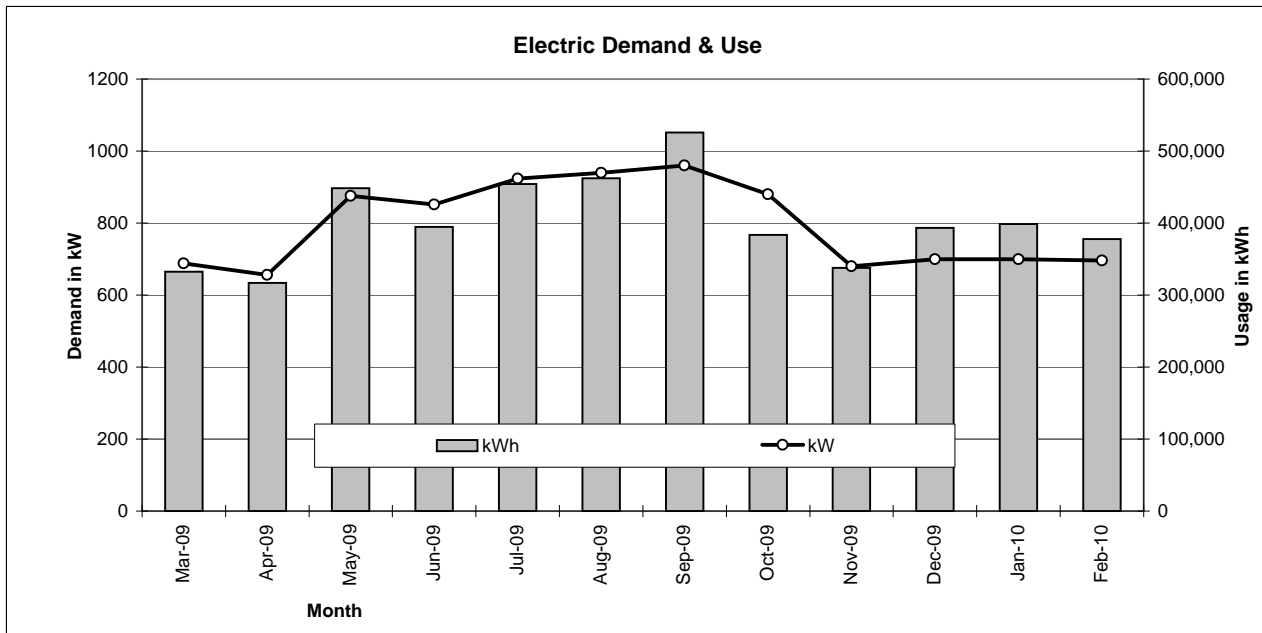
Client: **Ulster County**  
 Facility: **U.C. Law Enforcement Center**  
 Address: **380 Boulevard, Kingston**  
 Square Footage: **277,000**  
 kWh per square foot: **17.4**

Account #: **36201118001**  
 Supplier: **Hess**  
 Delivery: **Central Hudson**  
 Rate Code: **E202**  
 Service Charge: **\$50.00**

Consumption and Cost Data							Unit Cost Data		
Meter Read Date	Days	kWh	Billing kW	Delivery Cost	Supplier Cost <sup>1</sup>	Total Cost	Blended Cost \$/kWh	Demand Cost <sup>2</sup> \$/kW	Usage Cost \$/kWh
18-Feb-10	31	378,000	696	\$ 7,965.38	\$ 34,209.00	\$ 42,174.38	\$ 0.112	\$ 8.00	\$ 0.097
18-Jan-10	33	398,800	700	\$ 8,349.89	\$ 36,091.40	\$ 44,441.29	\$ 0.111	\$ 8.00	\$ 0.097
16-Dec-09	33	393,200	700	\$ 8,032.77	\$ 35,584.60	\$ 43,617.37	\$ 0.111	\$ 8.00	\$ 0.097
13-Nov-09	29	338,000	680	\$ 8,548.90	\$ 30,589.00	\$ 39,137.90	\$ 0.116	\$ 8.00	\$ 0.100
15-Oct-09	29	383,600	880	\$ 11,489.90	\$ 34,715.80	\$ 46,205.70	\$ 0.120	\$ 8.00	\$ 0.102
16-Sep-09	33	526,000	960	\$ 12,805.90	\$ 47,603.00	\$ 60,408.90	\$ 0.115	\$ 8.00	\$ 0.100
14-Aug-09	28	462,400	940	\$ 12,577.79	\$ 41,847.20	\$ 54,424.99	\$ 0.118	\$ 8.00	\$ 0.101
17-Jul-09	29	454,400	924	\$ 11,497.58	\$ 41,123.20	\$ 52,620.78	\$ 0.116	\$ 8.00	\$ 0.099
18-Jun-09	28	394,800	852	\$ 6,702.19	\$ 35,729.40	\$ 42,431.59	\$ 0.107	\$ 7.53	\$ 0.091
21-May-09	35	448,400	876	\$ 11,090.34	\$ 40,580.20	\$ 51,670.54	\$ 0.115	\$ 7.53	\$ 0.100
16-Apr-09	27	316,800	656	\$ 6,556.86	\$ 28,670.40	\$ 35,227.26	\$ 0.111	\$ 7.53	\$ 0.096
20-Mar-09	30	332,400	688			\$ 35,179.28	\$ 0.106	\$ 7.53	\$ 0.090
<b>Annual</b>	<b>365</b>	<b>4,826,800</b>	<b>9,552.0</b>			<b>\$ 547,539.98</b>	<b>\$ 0.113</b>	<b>\$ 8.00</b>	<b>\$ 0.097</b>

<sup>1</sup> Based on current negotiated fixed unit cost from supplier of \$0.0905/kWh

<sup>2</sup> Current demand charge from Central Hudson Rate Schedule





# STATEMENT OF ENERGY PERFORMANCE

## Community Corrections

**Building ID:** 2351653  
**For 12-month Period Ending:** January 31, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 15, 2010

**Facility**  
 Community Corrections  
 63 Golden Hill Drive  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 2001  
**Gross Floor Area (ft<sup>2</sup>):** 7,700

**Energy Performance Rating<sup>2</sup> (1-100)** 6

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	554,986
Natural Gas - (kBtu) <sup>4</sup>	0
Total Energy (kBtu)	554,986

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	102
Source (kBtu/ft <sup>2</sup> /yr)	271

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	68
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	56
National Average Source EUI	150
% Difference from National Average Source EUI	81%
Building Type	Office

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

#### Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

Stamp of Certifying Professional
Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

**Certifying Professional**  
 N/A



# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Community Corrections  
63 Golden Hill Drive  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Community Corrections	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	7,700
Year Built	2001
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

Community Corrections	
Space Type	Office
Gross Floor Area(ft <sup>2</sup> )	7,700
Weekly operating hours	40
Workers on Main Shift	20
Number of PCs <sup>d</sup>	17
Percent Cooled	50% or more
Percent Heated	50% or more

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	6	6	75	N/A	50
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	102	102	42	N/A	56
Source (kBtu/ft <sup>2</sup> )	271	271	111	N/A	150
Energy Cost					
\$/year	\$ 22,606.74	\$ 22,606.74	\$ 9,216.61	N/A	\$ 12,460.96
\$/ft <sup>2</sup> /year	\$ 2.94	\$ 2.94	\$ 1.20	N/A	\$ 1.62
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	68	68	28	N/A	37
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	9	9	4	N/A	5

More than 50% of your building is defined as Office. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Ulster County Court House

**Building ID:** 2351769  
**For 12-month Period Ending:** January 31, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 15, 2010

**Facility**  
 Ulster County Court House  
 285 Wall Street  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1818  
**Gross Floor Area (ft<sup>2</sup>):** 43,000

**Energy Performance Rating<sup>2</sup> (1-100)** 50

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	2,450,178
Natural Gas (kBtu) <sup>4</sup>	1,113,976
Total Energy (kBtu)	3,564,154

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	83
Source (kBtu/ft <sup>2</sup> /yr)	217

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	295
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	83
National Average Source EUI	218
% Difference from National Average Source EUI	0%
Building Type	Courthouse

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

**Certifying Professional**  
 N/A

#### Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Ulster County Court House  
285 Wall Street  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Ulster County Court House	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	43,000
Year Built	1818
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

Main Areas	
Space Type	Courthouse
Gross Floor Area(ft <sup>2</sup> )	43,000
Weekly operating hours	50
Workers on Main Shift	138
Number of PCs <sup>d</sup>	95
Percent Cooled	50% or more
Percent Heated	50% or more

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	50	50	75	N/A	50
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	83	83	62	N/A	83
Source (kBtu/ft <sup>2</sup> )	217	217	161	N/A	218
Energy Cost					
\$/year	\$ 94,441.65	\$ 94,441.65	\$ 70,127.68	N/A	\$ 94,817.64
\$/ft <sup>2</sup> /year	\$ 2.20	\$ 2.20	\$ 1.63	N/A	\$ 2.21
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	295	295	219	N/A	296
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	7	7	5	N/A	7

More than 50% of your building is defined as Courthouse. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Flatbush Annex

Building ID: 2351796  
 For 12-month Period Ending: January 31, 2010<sup>1</sup>  
 Date SEP becomes ineligible: N/A

Date SEP Generated: June 15, 2010

**Facility**  
 Flatbush Annex  
 300 Flatbush Avenue  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1873  
**Gross Floor Area (ft<sup>2</sup>):** 20,500

**Energy Performance Rating<sup>2</sup> (1-100)** 20

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	1,297,396
Natural Gas (kBtu) <sup>4</sup>	1,062,791
Total Energy (kBtu)	2,360,187

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	115
Source (kBtu/ft <sup>2</sup> /yr)	266

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	182
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	82
National Average Source EUI	190
% Difference from National Average Source EUI	40%
Building Type	Office

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

#### Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

Stamp of Certifying Professional
Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

**Certifying Professional**  
 N/A

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Flatbush Annex  
300 Flatbush Avenue  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Flatbush Annex	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	20,500
Year Built	1873
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

Flatbush Annex	
Space Type	Office
Gross Floor Area(ft <sup>2</sup> )	20,500
Weekly operating hours	40
Workers on Main Shift	138
Number of PCs <sup>d</sup>	45
Percent Cooled	50% or more
Percent Heated	50% or more

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	20	20	75	N/A	50
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	115	115	61	N/A	82
Source (kBtu/ft <sup>2</sup> )	266	266	141	N/A	190
Energy Cost					
\$/year	\$ 58,172.84	\$ 58,172.84	\$ 30,791.74	N/A	\$ 41,629.99
\$/ft <sup>2</sup> /year	\$ 2.84	\$ 2.84	\$ 1.50	N/A	\$ 2.03
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	182	182	96	N/A	130
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	9	9	5	N/A	6

More than 50% of your building is defined as Office. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Golden Hill Healthcare Center

**Building ID:** 2351817  
**For 12-month Period Ending:** January 31, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 15, 2010

**Facility**  
 Golden Hill Healthcare Center  
 99 Golden Hill Drive  
 Kingston, NY 12404

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1972  
**Gross Floor Area (ft<sup>2</sup>):** 155,000

**Energy Performance Rating<sup>2</sup> (1-100)** N/A

**Site Energy Use Summary<sup>3</sup>**

Electricity - Grid Purchase(kBtu)	12,513,447
Natural Gas - (kBtu) <sup>4</sup>	0
Total Energy (kBtu)	12,513,447

**Energy Intensity<sup>5</sup>**

Site (kBtu/ft <sup>2</sup> /yr)	137
Source (kBtu/ft <sup>2</sup> /yr)	327

**Emissions (based on site energy use)**

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	1,849
---	-------

**Electric Distribution Utility**

Central Hudson Gas & Elec Corp

**National Average Comparison**

National Average Site EUI	124
National Average Source EUI	255
% Difference from National Average Source EUI	28%
Building Type	Health Care: Long Term Care (Nursing Home, Assisted Living)

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

**Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:**

Ventilation for Acceptable Indoor Air Quality	<b>N/A</b>
Acceptable Thermal Environmental Conditions	<b>N/A</b>
Adequate Illumination	<b>N/A</b>

**Certifying Professional**  
 N/A

**Notes:**

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Golden Hill Healthcare Center  
99 Golden Hill Drive  
Kingston, NY 12404

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Golden Hill Healthcare Center	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	155,000
Year Built	1972
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

Nursing Home	
Space Type	Other - Health Care: Long Term Care (Nursing Home, Assisted Living)
Gross Floor Area(ft <sup>2</sup> )	155,000
Number of PCs <sup>o</sup>	20
Weekly operating hours <sup>o</sup>	168
Workers on Main Shift <sup>o</sup>	100

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	137	137	0	N/A	124
Source (kBtu/ft <sup>2</sup> )	327	327	0	N/A	255
Energy Cost					
\$/year	\$ 510,184.07	\$ 510,184.07	N/A	N/A	\$ 461,132.92
\$/ft <sup>2</sup> /year	\$ 3.29	\$ 3.29	N/A	N/A	\$ 2.97
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	1,849	1,849	0	N/A	1,671
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	12	12	0	N/A	11

More than 50% of your building is defined as Health Care: Long Term Care (Nursing Home, Assisted Living). This building is currently ineligible for a rating. Please note the National Average column represents the CBECS national average data for Health Care: Long Term Care (Nursing Home, Assisted Living). This building uses X% less energy per square foot than the CBECS national average for Health Care: Long Term Care (Nursing Home, Assisted Living).

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Heavy Vehicle Maintenance

**Building ID:** 2352097  
**For 12-month Period Ending:** January 31, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 16, 2010

**Facility**  
 Heavy Vehicle Maintenance  
 Shamrock Lane  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1960  
**Gross Floor Area (ft<sup>2</sup>):** 35,000

**Energy Performance Rating<sup>2</sup> (1-100)** N/A

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	640,161
Natural Gas (kBtu) <sup>4</sup>	883,984
Total Energy (kBtu)	1,524,145

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	44
Source (kBtu/ft <sup>2</sup> /yr)	88

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	109
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	77
National Average Source EUI	150
% Difference from National Average Source EUI	-42%
Building Type	Service (Vehicle Repair/Service, Postal Service)

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

### Certifying Professional

N/A

#### Notes:

- Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
- The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
- Values represent energy consumption, annualized to a 12-month period.
- Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
- Values represent energy intensity, annualized to a 12-month period.
- Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.



# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Heavy Vehicle Maintenance  
Shamrock Lane  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Heavy Vehicle Maintenance	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	35,000
Year Built	1960
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

Heavy Vehicle Maintenance	
Space Type	Other - Service (Vehicle Repair/Service, Postal Service)
Gross Floor Area(ft <sup>2</sup> )	35,000
Number of PCs <sup>o</sup>	5
Weekly operating hours <sup>o</sup>	50
Workers on Main Shift <sup>o</sup>	50

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	44	44	0	N/A	77
Source (kBtu/ft <sup>2</sup> )	88	88	0	N/A	150
Energy Cost					
\$/year	\$ 31,338.58	\$ 31,338.58	N/A	N/A	\$ 55,409.20
\$/ft <sup>2</sup> /year	\$ 0.90	\$ 0.90	N/A	N/A	\$ 1.59
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	109	109	0	N/A	193
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	3	3	0	N/A	5

More than 50% of your building is defined as Service (Vehicle Repair/Service, Postal Service). This building is currently ineligible for a rating. Please note the National Average column represents the CBECS national average data for Service (Vehicle Repair/Service, Postal Service). This building uses X% less energy per square foot than the CBECS national average for Service (Vehicle Repair/Service, Postal Service).

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE Information Services

**Building ID:** 2352106  
**For 12-month Period Ending:** January 31, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 16, 2010

**Facility**  
 Information Services  
 25 South Manor Avenue  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1950  
**Gross Floor Area (ft<sup>2</sup>):** 12,525

**Energy Performance Rating<sup>2</sup> (1-100)** 88

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	2,517,641
Natural Gas (kBtu) <sup>4</sup>	535,692
Total Energy (kBtu)	3,053,333

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	244
Source (kBtu/ft <sup>2</sup> /yr)	716

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	271
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	303
National Average Source EUI	890
% Difference from National Average Source EUI	-20%
Building Type	Data Center

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

### Certifying Professional

N/A

#### Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Information Services  
25 South Manor Avenue  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Information Services	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	12,525
Year Built	1950
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

Data Center		Office	
Space Type	Data Center	Space Type	Office
Gross Floor Area(ft <sup>2</sup> )	7,525	Gross Floor Area(ft <sup>2</sup> )	5,000
IT Energy Configuration	Uninterruptible Power Supply (UPS) supports only IT equipment. (Preferred)	Weekly operating hours	45
		Workers on Main Shift	35
UPS System Redundancy <sup>o</sup>	N+1	Number of PCs	35
Cooling Equipment Redundancy <sup>d</sup>	N	Percent Cooled	50% or more
Annual Source IT Energy (kBtu)	4,929,337	Percent Heated	50% or more

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	88	88	75	N/A	50
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	244	244	268	N/A	303
Source (kBtu/ft <sup>2</sup> )	716	716	789	N/A	890
Energy Cost					
\$/year	\$ 84,916.94	\$ 84,916.94	\$ 93,499.90	N/A	\$ 105,576.65
\$/ft <sup>2</sup> /year	\$ 6.78	\$ 6.78	\$ 7.47	N/A	\$ 8.43
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	271	271	298	N/A	337
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	22	22	24	N/A	27

More than 50% of your building is defined as Data Center. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Mental Health

**Building ID:** 2352400  
**For 12-month Period Ending:** January 31, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 16, 2010

**Facility**  
 Mental Health  
 239 Golden Hill Drive  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1986  
**Gross Floor Area (ft<sup>2</sup>):** 40,000

**Energy Performance Rating<sup>2</sup> (1-100)** 49

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	2,044,016
Natural Gas (kBtu) <sup>4</sup>	623,918
Total Energy (kBtu)	2,667,934

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	67
Source (kBtu/ft <sup>2</sup> /yr)	187

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	230
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	66
National Average Source EUI	186
% Difference from National Average Source EUI	1%
Building Type	Medical Office

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

Stamp of Certifying Professional
Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

**Certifying Professional**  
 N/A

#### Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Mental Health  
239 Golden Hill Drive  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Mental Health	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	40,000
Year Built	1986
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

Mental Health	
Space Type	Medical Office
Gross Floor Area(ft <sup>2</sup> )	40,000
Number of Workers	60
Weekly operating hours	50
Percent Cooled	100
Percent Heated	100

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	49	49	75	N/A	50
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	67	67	44	N/A	66
Source (kBtu/ft <sup>2</sup> )	187	187	124	N/A	186
Energy Cost					
\$/year	\$ 69,662.52	\$ 69,662.52	\$ 46,309.39	N/A	\$ 69,150.76
\$/ft <sup>2</sup> /year	\$ 1.74	\$ 1.74	\$ 1.16	N/A	\$ 1.73
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	230	230	153	N/A	228
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	6	6	4	N/A	6

More than 50% of your building is defined as Medical Office. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:

- o - This attribute is optional.
- d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Old Ulster County Jail

**Building ID:** 2352413  
**For 12-month Period Ending:** January 31, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 16, 2010

**Facility**  
 Old Ulster County Jail  
 63 Golden Hill Drive  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1971  
**Gross Floor Area (ft<sup>2</sup>):** 54,000

**Energy Performance Rating<sup>2</sup> (1-100)** N/A

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	862,636
Natural Gas - (kBtu) <sup>4</sup>	0
Total Energy (kBtu)	862,636

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	16
Source (kBtu/ft <sup>2</sup> /yr)	53

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	83
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	90
National Average Source EUI	189
% Difference from National Average Source EUI	-72%
Building Type	Public Order and Safety

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

### Certifying Professional

N/A

#### Notes:

- Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
- The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
- Values represent energy consumption, annualized to a 12-month period.
- Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
- Values represent energy intensity, annualized to a 12-month period.
- Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Old Ulster County Jail  
63 Golden Hill Drive  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Old Ulster County Jail	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	54,000
Year Built	1971
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

Utilized Space		Abandoned Area	
Space Type	Office	Space Type	Other - Public Order and Safety
Gross Floor Area(ft <sup>2</sup> )	5,000	Gross Floor Area(ft <sup>2</sup> )	49,000
Weekly operating hours	6	Number of PCs <sup>o</sup>	0
Workers on Main Shift	10	Weekly operating hours <sup>o</sup>	0
Number of PCs	2	Workers on Main Shift <sup>o</sup>	0
Percent Cooled	Less than 50%		
Percent Heated	50% or more		

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	16	16	0	N/A	90
Source (kBtu/ft <sup>2</sup> )	53	53	1	N/A	189
Energy Cost					
\$/year	\$ 27,895.71	\$ 27,895.71	\$ 331.88	N/A	\$ 157,208.13
\$/ft <sup>2</sup> /year	\$ 0.52	\$ 0.52	\$ 0.01	N/A	\$ 2.93
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	83	83	1	N/A	468
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	2	2	0	N/A	11

More than 50% of your building is defined as Public Order and Safety. This building is currently ineligible for a rating. Please note the National Average column represents the CBECS national average data for Public Order and Safety. This building uses X% less energy per square foot than the CBECS national average for Public Order and Safety.

### Notes:

- o - This attribute is optional.
- d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Ulster County Pool

Building ID: 2352437  
 For 12-month Period Ending: January 31, 2010<sup>1</sup>  
 Date SEP becomes ineligible: N/A

Date SEP Generated: June 16, 2010

**Facility**  
 Ulster County Pool  
 241 Libertyville Road  
 New Paltz, NY 12561

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1985  
**Gross Floor Area (ft<sup>2</sup>):** 7,000

**Energy Performance Rating<sup>2</sup> (1-100)** N/A

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	184,992
Natural Gas - (kBtu) <sup>4</sup>	0
Total Energy (kBtu)	184,992

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	58
Source (kBtu/ft <sup>2</sup> /yr)	121

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	34
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	65
National Average Source EUI	136
% Difference from National Average Source EUI	-11%
Building Type	Recreation

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

**Certifying Professional**  
 N/A

Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.



# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Ulster County Pool  
241 Libertyville Road  
New Paltz, NY 12561

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Ulster County Pool	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	7,000
Year Built	1985
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

Buildings		Pool	
Space Type	Other - Recreation	Space Type	Swimming Pool
Gross Floor Area(ft <sup>2</sup> )	7,000	Pool Size	Olympic (50 meters x 25 meters)
Number of PCs <sup>o</sup>	0		Indoor Outdoor
Weekly operating hours <sup>o</sup>	30	Months in Use <sup>o</sup>	03
Workers on Main Shift <sup>o</sup>	5		

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	58	58	42	N/A	65
Source (kBtu/ft <sup>2</sup> )	121	121	86	N/A	136
Energy Cost					
\$/year	\$ 10,276.57	\$ 10,276.57	\$ 7,303.99	N/A	\$ 11,426.22
\$/ft <sup>2</sup> /year	\$ 1.47	\$ 1.47	\$ 1.04	N/A	\$ 1.63
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	34	34	24	N/A	38
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	5	5	4	N/A	6

More than 50% of your building is defined as Recreation. This building is currently ineligible for a rating. Please note the National Average column represents the CBECS national average data for Recreation. This building uses X% less energy per square foot than the CBECS national average for Recreation.

### Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Probation Department

Building ID: 2352665  
 For 12-month Period Ending: January 31, 2010<sup>1</sup>  
 Date SEP becomes ineligible: N/A

Date SEP Generated: June 16, 2010

**Facility**  
 Probation Department  
 733 Broadway  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1951  
**Gross Floor Area (ft<sup>2</sup>):** 20,000

**Energy Performance Rating<sup>2</sup> (1-100)** 72

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	737,497
Natural Gas (kBtu) <sup>4</sup>	482,194
Total Energy (kBtu)	1,219,691

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	61
Source (kBtu/ft <sup>2</sup> /yr)	148

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	97
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	79
National Average Source EUI	192
% Difference from National Average Source EUI	-23%
Building Type	Office

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

**Certifying Professional**  
 N/A

#### Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
 Probation Department  
 733 Broadway  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

## General Information

Probation Department	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	20,000
Year Built	1951
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

Probation	
Space Type	Office
Gross Floor Area(ft <sup>2</sup> )	20,000
Weekly operating hours	56
Workers on Main Shift	30
Number of PCs <sup>d</sup>	44
Percent Cooled	50% or more
Percent Heated	50% or more

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	72	72	75	N/A	50
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	61	61	58	N/A	79
Source (kBtu/ft <sup>2</sup> )	148	148	142	N/A	192
Energy Cost					
\$/year	\$ 29,944.87	\$ 29,944.87	\$ 28,717.22	N/A	\$ 38,823.24
\$/ft <sup>2</sup> /year	\$ 1.50	\$ 1.50	\$ 1.44	N/A	\$ 1.94
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	97	97	93	N/A	126
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	5	5	5	N/A	6

More than 50% of your building is defined as Office. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Public Works

**Building ID:** 2352875  
**For 12-month Period Ending:** January 31, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 16, 2010

**Facility**  
 Public Works  
 313 Shamrock Lane  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1979  
**Gross Floor Area (ft<sup>2</sup>):** 8,700

**Energy Performance Rating<sup>2</sup> (1-100)** 6

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	639,250
Natural Gas (kBtu) <sup>4</sup>	392,515
Total Energy (kBtu)	1,031,765

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	119
Source (kBtu/ft <sup>2</sup> /yr)	293

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	82
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	64
National Average Source EUI	158
% Difference from National Average Source EUI	86%
Building Type	Office

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

**Certifying Professional**  
 N/A

**Notes:**

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Public Works  
313 Shamrock Lane  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Public Works	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	8,700
Year Built	1979
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

Public Works	
Space Type	Office
Gross Floor Area(ft <sup>2</sup> )	8,700
Weekly operating hours	40
Workers on Main Shift	35
Number of PCs <sup>d</sup>	19
Percent Cooled	50% or more
Percent Heated	50% or more

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	6	6	75	N/A	50
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	119	119	47	N/A	64
Source (kBtu/ft <sup>2</sup> )	293	293	117	N/A	158
Energy Cost					
\$/year	\$ 27,577.65	\$ 27,577.65	\$ 10,992.46	N/A	\$ 14,864.35
\$/ft <sup>2</sup> /year	\$ 3.17	\$ 3.17	\$ 1.26	N/A	\$ 1.71
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	82	82	33	N/A	44
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	9	9	4	N/A	5

More than 50% of your building is defined as Office. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Old Jail Storage Garage

**Building ID:** 2352905  
**For 12-month Period Ending:** February 28, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 16, 2010

**Facility**  
 Old Jail Storage Garage  
 63 Golden Hill Drive  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1997  
**Gross Floor Area (ft<sup>2</sup>):** 5,000

**Energy Performance Rating<sup>2</sup> (1-100)** 3

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	252,284
Natural Gas - (kBtu) <sup>4</sup>	0
Total Energy (kBtu)	252,284

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	50
Source (kBtu/ft <sup>2</sup> /yr)	169

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	24
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	19
National Average Source EUI	65
% Difference from National Average Source EUI	160%
Building Type	Warehouse (Unrefrigerated)

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

### Certifying Professional

N/A

#### Notes:

- Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
- The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
- Values represent energy consumption, annualized to a 12-month period.
- Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
- Values represent energy intensity, annualized to a 12-month period.
- Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Old Jail Storage Garage  
63 Golden Hill Drive  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Old Jail Storage Garage	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	5,000
Year Built	1997
For 12-month Evaluation Period Ending Date:	February 28, 2010

## Facility Space Use Summary

Storage Garage	
Space Type	Warehouse (Unrefrigerated)
Gross Floor Area(ft <sup>2</sup> )	5,000
Workers on Main Shift	1
Weekly operating hours	40
Percent Cooled	10
Percent Heated	100
Number of walk-in refrigeration/freezer units	0
Distribution Center <sup>o</sup>	N

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 02/28/2010)	Baseline (Ending Date 02/28/2010)	Rating of 75	Target	National Average
Energy Performance Rating	3	3	75	N/A	50
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	50	50	13	N/A	19
Source (kBtu/ft <sup>2</sup> )	169	169	43	N/A	65
Energy Cost					
\$/year	\$ 9,355.57	\$ 9,355.57	\$ 2,375.05	N/A	\$ 3,600.58
\$/ft <sup>2</sup> /year	\$ 1.87	\$ 1.87	\$ 0.47	N/A	\$ 0.72
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	24	24	6	N/A	9
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	5	5	1	N/A	2

More than 50% of your building is defined as Warehouse (Unrefrigerated). Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Trudy Resnick Farber

**Building ID:** 2352920  
**For 12-month Period Ending:** February 28, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 16, 2010

**Facility**  
 Trudy Resnick Farber  
 50 Center Street  
 Ellenville, NY 12428

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1985  
**Gross Floor Area (ft<sup>2</sup>):** 21,000

**Energy Performance Rating<sup>2</sup> (1-100)** 41

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	881,424
Natural Gas - (kBtu) <sup>4</sup>	0
Total Energy (kBtu)	881,424

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	99
Source (kBtu/ft <sup>2</sup> /yr)	197

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	173
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	90
National Average Source EUI	181
% Difference from National Average Source EUI	9%
Building Type	Office

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

**Certifying Professional**  
 N/A

#### Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.



# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Trudy Resnick Farber  
50 Center Street  
Ellenville, NY 12428

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Trudy Resnick Farber	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	21,000
Year Built	1985
For 12-month Evaluation Period Ending Date:	February 28, 2010

## Facility Space Use Summary

Trudy Resnick Farber	
Space Type	Office
Gross Floor Area(ft <sup>2</sup> )	21,000
Weekly operating hours	40
Workers on Main Shift	50
Number of PCs <sup>d</sup>	46
Percent Cooled	50% or more
Percent Heated	50% or more

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 02/28/2010)	Baseline (Ending Date 02/28/2010)	Rating of 75	Target	National Average
Energy Performance Rating	41	41	75	N/A	50
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	99	99	67	N/A	90
Source (kBtu/ft <sup>2</sup> )	197	197	134	N/A	181
Energy Cost					
\$/year	\$ 50,229.36	\$ 50,229.36	\$ 34,012.22	N/A	\$ 45,989.29
\$/ft <sup>2</sup> /year	\$ 2.39	\$ 2.39	\$ 1.62	N/A	\$ 2.19
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	173	173	117	N/A	158
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	8	8	5	N/A	7

More than 50% of your building is defined as Office. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Ulster County Office Bldg

**Building ID:** 2352952  
**For 12-month Period Ending:** January 31, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 16, 2010

**Facility**  
 Ulster County Office Bldg  
 244 Fair Street  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1964  
**Gross Floor Area (ft<sup>2</sup>):** 62,396

**Energy Performance Rating<sup>2</sup> (1-100)** 52

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	3,322,654
Natural Gas (kBtu) <sup>4</sup>	2,725,377
Total Energy (kBtu)	6,048,031

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	97
Source (kBtu/ft <sup>2</sup> /yr)	224

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	465
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	100
National Average Source EUI	230
% Difference from National Average Source EUI	-3%
Building Type	Office

Stamp of Certifying Professional
Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

**Certifying Professional**  
 N/A

#### Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Ulster County Office Bldg  
244 Fair Street  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Ulster County Office Bldg	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	62,396
Year Built	1964
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

UCOB	
Space Type	Office
Gross Floor Area(ft <sup>2</sup> )	62,396
Weekly operating hours	50
Workers on Main Shift	200
Number of PCs <sup>d</sup>	137
Percent Cooled	50% or more
Percent Heated	50% or more

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	52	52	75	N/A	50
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	97	97	74	N/A	100
Source (kBtu/ft <sup>2</sup> )	224	224	170	N/A	230
Energy Cost					
\$/year	\$ 136,087.19	\$ 136,087.19	\$ 103,627.31	N/A	\$ 140,116.60
\$/ft <sup>2</sup> /year	\$ 2.18	\$ 2.18	\$ 1.66	N/A	\$ 2.24
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	465	465	354	N/A	479
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	7	7	5	N/A	7

More than 50% of your building is defined as Office. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.

### Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## UC Record Storage

Building ID: 2352969

For 12-month Period Ending: January 31, 2010<sup>1</sup>

Date SEP becomes ineligible: N/A

Date SEP Generated: June 16, 2010

**Facility**

UC Record Storage  
300 Foxhall Avenue  
Kingston, NY 12402

**Facility Owner**

Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**

N/A

**Year Built:** 1960**Gross Floor Area (ft<sup>2</sup>):** 23,000**Energy Performance Rating<sup>2</sup> (1-100)** N/A**Site Energy Use Summary<sup>3</sup>**

Electricity - Grid Purchase(kBtu)	2,042,718
Natural Gas (kBtu) <sup>4</sup>	1,363,421
Total Energy (kBtu)	3,406,139

**Energy Intensity<sup>5</sup>**

Site (kBtu/ft <sup>2</sup> /yr)	148
Source (kBtu/ft <sup>2</sup> /yr)	359

**Emissions (based on site energy use)**

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	269
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**Electric Distribution Utility**

Central Hudson Gas &amp; Elec Corp

**National Average Comparison**

National Average Site EUI	25
National Average Source EUI	56
% Difference from National Average Source EUI	541%
Building Type	Storage/Shipping/Non-Refrigerated Warehouse

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

**Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:**

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

**Certifying Professional**

N/A

**Notes:**

- Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
- The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
- Values represent energy consumption, annualized to a 12-month period.
- Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
- Values represent energy intensity, annualized to a 12-month period.
- Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
UC Record Storage  
300 Foxhall Avenue  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

UC Record Storage	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	23,000
Year Built	1960
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

Record Storage	
Space Type	Other - Storage/Shipping/Non-Refrigerated Warehouse
Gross Floor Area(ft <sup>2</sup> )	23,000
Number of PCs <sup>a</sup>	10
Weekly operating hours <sup>a</sup>	50
Workers on Main Shift <sup>a</sup>	30

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	148	148	0	N/A	25
Source (kBtu/ft <sup>2</sup> )	359	359	0	N/A	56
Energy Cost					
\$/year	\$ 84,155.97	\$ 84,155.97	N/A	N/A	\$ 14,206.90
\$/ft <sup>2</sup> /year	\$ 3.66	\$ 3.66	N/A	N/A	\$ 0.62
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	269	269	0	N/A	45
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	12	12	0	N/A	2

More than 50% of your building is defined as Storage/Shipping/Non-Refrigerated Warehouse. This building is currently ineligible for a rating. Please note the National Average column represents the CBECS national average data for Storage/Shipping/Non-Refrigerated Warehouse. This building uses X% less energy per square foot than the CBECS national average for Storage/Shipping/Non-Refrigerated Warehouse.

### Notes:

- o - This attribute is optional.
- d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE UCAT

**Building ID:** 2353030

**For 12-month Period Ending:** January 31, 2010<sup>1</sup>

**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 16, 2010

## Facility

UCAT  
1 Danny Circle  
Kingston, NY 12402

## Facility Owner

Ulster County  
244 Fair Street  
Kingston, NY 12402

## Primary Contact for this Facility

N/A

**Year Built:** 2005

**Gross Floor Area (ft<sup>2</sup>):** 24,000

**Energy Performance Rating<sup>2</sup> (1-100)** N/A

## Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	1,090,989
Natural Gas (kBtu) <sup>4</sup>	2,197,829
Total Energy (kBtu)	3,288,818

## Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	137
Source (kBtu/ft <sup>2</sup> /yr)	248

## Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	222
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## Electric Distribution Utility

Central Hudson Gas & Elec Corp

## National Average Comparison

National Average Site EUI	77
National Average Source EUI	150
% Difference from National Average Source EUI	65%
Building Type	Service (Vehicle Repair/Service, Postal Service)

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

## Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

## Certifying Professional

N/A

### Notes:

- Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
- The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
- Values represent energy consumption, annualized to a 12-month period.
- Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
- Values represent energy intensity, annualized to a 12-month period.
- Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

# FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
UCAT  
1 Danny Circle  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

UCAT	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	24,000
Year Built	2005
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

UCAT	
Space Type	Other - Service (Vehicle Repair/Service, Postal Service)
Gross Floor Area(ft <sup>2</sup> )	24,000
Number of PCs <sup>o</sup>	5
Weekly operating hours <sup>o</sup>	40
Workers on Main Shift <sup>o</sup>	20

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	137	137	0	N/A	77
Source (kBtu/ft <sup>2</sup> )	248	248	0	N/A	150
Energy Cost					
\$/year	\$ 59,431.81	\$ 59,431.81	N/A	N/A	\$ 33,395.97
\$/ft <sup>2</sup> /year	\$ 2.48	\$ 2.48	N/A	N/A	\$ 1.39
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	222	222	0	N/A	125
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	9	9	0	N/A	5

More than 50% of your building is defined as Service (Vehicle Repair/Service, Postal Service). This building is currently ineligible for a rating. Please note the National Average column represents the CBECS national average data for Service (Vehicle Repair/Service, Postal Service). This building uses X% less energy per square foot than the CBECS national average for Service (Vehicle Repair/Service, Postal Service).

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Ulster County Law Enforcement Center

**Building ID:** 2363735  
**For 12-month Period Ending:** January 31, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 21, 2010

**Facility**  
 Ulster County Law Enforcement Center  
 380 Boulevard  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 2007  
**Gross Floor Area (ft<sup>2</sup>):** 277,000

**Energy Performance Rating<sup>2</sup> (1-100)** N/A

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	16,535,618
Natural Gas - (kBtu) <sup>4</sup>	0
Total Energy (kBtu)	16,535,618

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	115
Source (kBtu/ft <sup>2</sup> /yr)	255

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	2,710
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	90
National Average Source EUI	189
% Difference from National Average Source EUI	35%
Building Type	Public Order and Safety

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

### Certifying Professional

N/A

#### Notes:

- Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
- The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
- Values represent energy consumption, annualized to a 12-month period.
- Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
- Values represent energy intensity, annualized to a 12-month period.
- Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.



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## Facility

Ulster County Law Enforcement Center  
380 Boulevard  
Kingston, NY 12402

## Facility Owner

Ulster County  
244 Fair Street  
Kingston, NY 12402

## Primary Contact for this Facility

N/A

## General Information

Ulster County Law Enforcement Center	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	277,000
Year Built	2007
For 12-month Evaluation Period Ending Date:	January 31, 2010

## Facility Space Use Summary

UCLEC	
Space Type	Other - Public Order and Safety
Gross Floor Area(ft <sup>2</sup> )	277,000
Number of PCs <sup>o</sup>	50
Weekly operating hours <sup>o</sup>	168
Workers on Main Shift <sup>o</sup>	200

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 01/31/2010)	Baseline (Ending Date 01/31/2010)	Rating of 75	Target	National Average
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	115	115	0	N/A	90
Source (kBtu/ft <sup>2</sup> )	255	255	0	N/A	189
Energy Cost					
\$/year	\$ 806,105.00	\$ 806,105.00	N/A	N/A	\$ 632,956.29
\$/ft <sup>2</sup> /year	\$ 2.91	\$ 2.91	N/A	N/A	\$ 2.28
Greenhouse Gas Emissions					
MtCO <sub>2</sub> e/year	2,710	2,710	0	N/A	2,128
kgCO <sub>2</sub> e/ft <sup>2</sup> /year	10	10	0	N/A	8

More than 50% of your building is defined as Public Order and Safety. This building is currently ineligible for a rating. Please note the National Average column represents the CBECS national average data for Public Order and Safety. This building uses X% less energy per square foot than the CBECS national average for Public Order and Safety.

### Notes:

- o - This attribute is optional.
- d - A default value has been supplied by Portfolio Manager.



# STATEMENT OF ENERGY PERFORMANCE

## Ulster Avenue Office Complex

**Building ID:** 2363441  
**For 12-month Period Ending:** February 28, 2010<sup>1</sup>  
**Date SEP becomes ineligible:** N/A

**Date SEP Generated:** June 21, 2010

**Facility**  
 Ulster Avenue Office Complex  
 1 Development Court  
 Kingston, NY 12402

**Facility Owner**  
 Ulster County  
 244 Fair Street  
 Kingston, NY 12402

**Primary Contact for this Facility**  
 N/A

**Year Built:** 1964  
**Gross Floor Area (ft<sup>2</sup>):** 118,000

**Energy Performance Rating<sup>2</sup> (1-100)** N/A

### Site Energy Use Summary<sup>3</sup>

Electricity - Grid Purchase(kBtu)	3,058,564
Natural Gas (kBtu) <sup>4</sup>	1,145,633
Total Energy (kBtu)	4,204,197

### Energy Intensity<sup>5</sup>

Site (kBtu/ft <sup>2</sup> /yr)	36
Source (kBtu/ft <sup>2</sup> /yr)	97

### Emissions (based on site energy use)

Greenhouse Gas Emissions (MtCO <sub>2</sub> e/year)	356
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### Electric Distribution Utility

Central Hudson Gas & Elec Corp

### National Average Comparison

National Average Site EUI	77
National Average Source EUI	182
% Difference from National Average Source EUI	-47%
Building Type	Office

Stamp of Certifying Professional

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate.

### Meets Industry Standards<sup>6</sup> for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	N/A
Acceptable Thermal Environmental Conditions	N/A
Adequate Illumination	N/A

**Certifying Professional**  
 N/A

**Notes:**

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, annualized to a 12-month period.
4. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
5. Values represent energy intensity, annualized to a 12-month period.
6. Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

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Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

**Facility**  
Ulster Avenue Office Complex  
1 Development Court  
Kingston, NY 12402

**Facility Owner**  
Ulster County  
244 Fair Street  
Kingston, NY 12402

**Primary Contact for this Facility**  
N/A

## General Information

Ulster Avenue Office Complex	
Gross Floor Area Excluding Parking: (ft <sup>2</sup> )	118,000
Year Built	1964
For 12-month Evaluation Period Ending Date:	February 28, 2010

## Facility Space Use Summary

DSS		Ulster County CC	
Space Type	Office	Space Type	Other - College/University (Campus-Level)
Gross Floor Area(ft <sup>2</sup> )	74,000	Gross Floor Area(ft <sup>2</sup> )	44,000
Weekly operating hours	50	Number of PCs <sup>o</sup>	30
Workers on Main Shift	100	Weekly operating hours <sup>o</sup>	72
Number of PCs	100	Workers on Main Shift <sup>o</sup>	50
Percent Cooled	50% or more		
Percent Heated	50% or more		

## Energy Performance Comparison

Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 02/28/2010)	Baseline (Ending Date 02/28/2010)	Rating of 75	Target	National Average
Energy Performance Rating	N/A	N/A	75	N/A	N/A
Energy Intensity					
Site (kBtu/ft <sup>2</sup> )	36	36	58	N/A	77
Source (kBtu/ft <sup>2</sup> )	97	97	158	N/A	182
Energy Cost					
\$/year	\$ 200,957.21	\$ 200,957.21	\$ 328,085.35	N/A	\$ 434,288.67
\$/ft <sup>2</sup> /year	\$ 1.70	\$ 1.70	\$ 2.78	N/A	\$ 3.67
Greenhouse Gas Emissions					
MtCO <sub>2</sub> /year	356	356	581	N/A	769
kgCO <sub>2</sub> /ft <sup>2</sup> /year	3	3	5	N/A	6

More than 50% of your building is defined as Office. This building is currently ineligible for a rating. Please note the National Average column represents the CBECS national average data for Office. This building uses X% less energy per square foot than the CBECS national average for Office.

Notes:

o - This attribute is optional.

d - A default value has been supplied by Portfolio Manager.

Ulster County - Carr Building															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Waiting Room	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	55	8	5	3
2	Hallway	3	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	55	12	7	5
3	Manager's Office	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	55	4	2	2
4	Staff Area	1	Recessed lensed 2X4 fixture with 2-4' T8 lamps and electronic ballasts.	61	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	61	43	18	0.018	55	3	2	1
5	Training Room	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	2	1	1
6	Employee Restroom	1	Surface-mounted (6") fixture with 2-60 Watt incandescent lamps.	120	1	Modify the existing fixtures with 2-15 Watt compact fluorescent screw-in lamps.	36	120	36	84	0.084	15	2	1	1
7	Public Restroom	1	Surface-mounted (6") fixture with 2-60 Watt incandescent lamps.	120	1	Modify the existing fixtures with 2-15 Watt compact fluorescent screw-in lamps.	36	120	36	84	0.084	15	2	1	1
8	2nd Floor Secretary	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	40	3	2	1
9	County Clerk	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	40	3	2	1
10	Judge's Chambers	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	40	6	3	2
11	Storage Room	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	5	0	0	0
12	Copy Room	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	2	1	1
13	Break Room	1	Surface-mounted (6") fixture with 2-60 Watt incandescent lamps.	120	1	Modify the existing fixtures with 2-15 Watt compact fluorescent screw-in lamps.	36	120	36	84	0.084	25	3	1	2
14	2nd Floor Restroom 1	1	Surface-mounted (6") fixture with 1-60 Watt incandescent lamp.	60	1	Modify the existing fixtures with 1-15 Watt compact fluorescent screw-in lamp.	18	60	18	42	0.042	15	1	0	1
15	2nd Floor Restroom 2	1	Surface-mounted (6") fixture with 2-15 Watt compact fluorescent screw-in lamps.	36	1	Do not address these areas.	36	36	36			15	1	1	
16	Attic	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	40	3	2	1
16	Attic	5	Surface-mounted (6") fixture with 1-60 Watt incandescent lamp.	300	5	Modify the existing fixtures with 1-15 Watt compact fluorescent screw-in lamp.	90	300	90	210	0.21	5	2	0	1
17	2nd Floor Corridor	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	40	3	2	1
18	Basement	11	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	803	11	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	473	803	473	330	0.33	5	4	2	2
18	Basement	1	Surface-mounted (6") fixture with 1-60 Watt incandescent lamp.	60	1	Modify the existing fixtures with 1-15 Watt compact fluorescent screw-in lamp.	18	60	18	42	0.042	5	0	0	0
18	Basement	1	Surface-mounted (6") fixture with 2-15 Watt compact fluorescent screw-in lamps.	36	1	Do not address these areas.	36	36	36			5	0	0	
19	General Areas	5	exit sign (12") fixture with 2-8 Watt compact fluorescent lamps.	100	5	Install new LED exit signs with battery backup.	10	100	10	90	0.09	168	17	2	15
<b>Totals:</b>		<b>44</b>		<b>2,911</b>	<b>44</b>		<b>1,477</b>	2911	1477	1434	1,434		4150.38	1913.34	2237.04
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - Community Correctional Facility														Watts per Line		Total kW	Hours	kWh per Week		
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings					
1	Exterior	8	Wallpack (6") fixture with 1-70 Watt high-pressure sodium lamp.	736		Do not address these areas.	736	736	736			98	72	72						
2	Main Lobby & Corridors	21	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	1,491		Do not address these areas.	1,491	1491	1491			75	112	112						
2	Main Lobby & Corridors	6	exit sign (12") fixture with LED technology.	36		Do not address these areas.	36	36	36			168	6	6						
3	Reception	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	122		Do not address these areas.	122	122	122			45	5	5						
4	Office 1	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	122		Do not address these areas. Install wallswitch occupancy sensors.	122	122	122			45	5	3	3					
5	Office 2	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	122		Do not address these areas. Install wallswitch occupancy sensors.	122	122	122			45	5	3	3					
6	Office 3	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	122		Do not address these areas. Install wallswitch occupancy sensors.	122	122	122			45	5	3	3					
7	Office 4	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	122		Do not address these areas. Install wallswitch occupancy sensors.	122	122	122			45	5	3	3					
8	Office 5	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	122		Do not address these areas. Install wallswitch occupancy sensors.	122	122	122			45	5	3	3					
9	Storage Room	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	122		Do not address these areas.	122	122	122			10	1	1						
10	Classroom A	8	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	488		Do not address these areas. Install ceiling occupancy sensors.	488	488	488			45	22	11	11					
11	Classroom B	8	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	488		Do not address these areas. Install ceiling occupancy sensors.	488	488	488			45	22	11	11					
12	Classroom C	8	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	488		Do not address these areas. Install ceiling occupancy sensors.	488	488	488			45	22	11	11					
13	Classroom D	8	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	488		Do not address these areas. Install ceiling occupancy sensors.	488	488	488			45	22	11	11					
14	Lab Restroom	2	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	110	146	110	36	0.036	10	1	1	0.4					
15	Men's Restroom	2	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	122		Do not address these areas. Install ceiling occupancy sensors.	122	122	122			45	5	1	4					
16	Men's Restroom	1	Wraparound 1X4 fixture with 1-4' T8 lamp and electronic ballasts.	31		Do not address these areas.	31	31	31			45	1	0	1					
17	Women's Restroom	2	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	122		Do not address these areas. Install ceiling occupancy sensors.	122	122	122			45	5	1	4					
18	Women's Restroom	1	Wraparound 1X4 fixture with 1-4' T8 lamp and electronic ballasts.	31		Do not address these areas.	31	31	31			45	1	1						
19	Meeting Room	16	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	976		Do not address these areas.	976	976	976			45	44	44						
20	Equipment Room	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	5	1	0	0.3					
21	Large Storage Room	20	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	1,220		Do not address these areas.	1,220	1220	1220			5	6	6						
<b>Totals:</b>		<b>127</b>		<b>7,863</b>	<b>4</b>		<b>7,767</b>	<b>7863</b>	<b>7767</b>	<b>96</b>	<b>0.096</b>		<b>19655.012</b>	<b>16140.527</b>	<b>3514.485</b>					
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year					

Ulster County - Court House															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW Saved	Hours per Wk	kWh per Week		
								Existing	Proposed	Savings			Exist	Proposed	Savings
1	Common Areas	5	exit sign (12") fixture with LED technology.	30		Do not address these areas.	30	30	30			168	5	5	
2	Elevator	2	Surface-mounted strip 1X4 fixture with 1-4' energy-efficient lamp and ballasts.	84	2	Modify the existing fixtures with 1-4' 25W supersaver T8 lamp and QHE electronic ballasts.	44	84	44	40	0.04	168	14	7	7
3	G-Corridor	10	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	710		Do not address these areas.	710	710	710			168	119	119	
3	G-Corridor	6	Hi-Hat (6") fixture with 13 Watt compact fluorescent screw-in lamps.	90		Do not address these areas.	90	90	90			168	15	15	
4	G-Maintenance Office	10	Surface-mounted strip 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	610		Do not address these areas.	610	610	610			50	31	31	
5	G-Jury Assembly Room	18	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	1,098		Do not address these areas. Install ceiling occupancy sensors.	1,098	1098	1098			75	82	41	41
6	Stairwell 1	2	Surface-mounted strip 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	122		Do not address these areas.	122	122	122			168	20	20	
7	Stairwell 2	2	Surface-mounted strip 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	122		Do not address these areas.	122	122	122			5	1	1	
8	Stairwell 3	2	Surface-mounted strip 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	122		Do not address these areas.	122	122	122			168	20	20	
9	Stairwell 4	2	Surface-mounted strip 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	122		Do not address these areas.	122	122	122			168	20	20	
10	G-Juvenile Interview Room	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas. Install wallswitch occupancy sensors.	284	284	284			50	14	7	7
11	G-Observation Room	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	50	4	2	2
12	G-Maintenance Storage	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7	4	3
13	G-Office Area	6	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	426		Do not address these areas.	426	426	426			50	21	21	
14	G-Storage 2	3	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	183		Do not address these areas.	183	183	183			168	31	31	
15	G-Sheriff Office	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	86	146	86	60	0.06	168	25	7	17
16	G-Jail Cell Hall	4	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	244		Do not address these areas.	244	244	244			168	41	41	
17	G-Jail Cell 1	1	Surface-mounted strip 1X4 fixture with 1-4' energy-efficient lamp and ballasts.	42	1	Modify the existing fixtures with 1-4' 25W supersaver T8 lamp and QHE electronic ballasts.	22	42	22	20	0.02	168	7	4	3
18	G-Jail Cell 2	1	Surface-mounted strip 1X4 fixture with 1-4' energy-efficient lamp and ballasts.	42	1	Modify the existing fixtures with 1-4' 25W supersaver T8 lamp and QHE electronic ballasts.	22	42	22	20	0.02	168	7	4	3
19	G-Jail Cell 3	1	Surface-mounted strip 1X4 fixture with 1-4' energy-efficient lamp and ballasts.	42	1	Modify the existing fixtures with 1-4' 25W supersaver T8 lamp and QHE electronic ballasts.	22	42	22	20	0.02	168	7	4	3
20	G-Jail Cell 4	1	Surface-mounted strip 1X4 fixture with 1-4' energy-efficient lamp and ballasts.	42	1	Modify the existing fixtures with 1-4' 25W supersaver T8 lamp and QHE electronic ballasts.	22	42	22	20	0.02	168	7	4	3
21	G-Jail Cell 5	1	Surface-mounted strip 1X4 fixture with 1-4' energy-efficient lamp and ballasts.	42	1	Modify the existing fixtures with 1-4' 25W supersaver T8 lamp and QHE electronic ballasts.	22	42	22	20	0.02	168	7	4	3

Ulster County - Court House							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
22	G-Jail Cell 6	1	Surface-mounted strip 1X4 fixture with 1-4' energy-efficient lamp and ballasts.	42	1	Modify the existing fixtures with 1-4' 25W supersaver T8 lamp and QHE electronic ballasts.	22	42	22	20	0.02	168	7	4	3
23	G-Jail Cell 7	1	Surface-mounted strip 1X4 fixture with 1-4' energy-efficient lamp and ballasts.	42	1	Modify the existing fixtures with 1-4' 25W supersaver T8 lamp and QHE electronic ballasts.	22	42	22	20	0.02	168	7	4	3
24	G-Boiler Room	8	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	584	8	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	344	584	344	240	0.24	5	3	2	1
25	G-Evidence Room 1	4	Surface-mounted (6") fixture with 1-100 Watt incandescent lamp.	400	4	Modify the existing fixtures with 25 Watt compact fluorescent screw-in lamps.	104	400	104	296	0.296	10	4	1	3
26	G-Evidence Room 2	2	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	122		Do not address these areas.	122	122	122			10	1	1	
27	G-Evidence Room 3	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			10	1	1	
28	G-Elevator Machine Room	2	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	122		Do not address these areas.	122	122	122			5	1	1	
29	G-Telephone Equipment Room	4	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	244		Do not address these areas.	244	244	244			10	2	2	
30	G-Library	72	Deep-cell parabolic 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	4,392		Do not address these areas.	4,392	4392	4392			50	220	220	
31	G-Mechanical Room Near Library	3	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	183		Do not address these areas.	183	183	183			5	1	1	
32	G-Women's Restroom	8	Deep-cell parabolic 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	488		Do not address these areas. Install ceiling occupancy sensors.	488	488	488			50	24	6	18
33	G-Research Room	11	Deep-cell parabolic 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	671		Do not address these areas.	671	671	671			50	34	34	
34	G-Library Office	2	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	142		Do not address these areas.	142	142	142			50	7	7	
35	G-Elevator Room 2	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	5	1	0	0
36	G-Vestibule and Lobby	18	Hi-Hat (6") fixture with 13 Watt compact fluorescent screw-in lamps.	270		Do not address these areas.	270	270	270			168	45	45	
37	1st- Court Clerk Reception	16	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	1,136		Do not address these areas.	1,136	1136	1136			50	57	57	
38	1st- Judge's Chambers	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas.	284	284	284			50	14	14	
39	1st- Men's Restroom	3	Deep-cell parabolic 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	183		Do not address these areas. Install ceiling occupancy sensors.	183	183	183			75	14	3	10
40	1st-Judicial Hearing Room	8	Deep-cell parabolic 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	488		Do not address these areas.	488	488	488			50	24	24	
40	1st-Judicial Hearing Room	8	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	568		Do not address these areas.	568	568	568			50	28	28	
41	1st-Judge's Secretary	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address these areas.	213	213	213			50	11	11	

Ulster County - Court House															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
42	1st-Commissioner of Juror's Staff	11	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	781		Do not address these areas.	781	781	781			50	39	39	
43	1st-Commissioner Side Office	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas. Install wallswitch occupancy sensors.	284	284	284			50	14	7	7
44	1st-Judge's Secretary	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas.	284	284	284			50	14	14	
45	1st-Judge's Secretary Restroom	2	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	142		Do not address these areas. Install wallswitch occupancy sensors.	142	142	142			25	4	4	
46	1st-Judge's Secretary Waiting Room	2	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	142		Do not address these areas.	142	142	142			50	7	7	
47	1st-Women's Restroom	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address these areas. Install ceiling occupancy sensors.	213	213	213			75	16	8	8
48	1st-Judge's Chambers	6	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	426		Do not address these areas.	426	426	426			50	21	21	
49	1st-Judge's Chambers Access	2	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	142		Do not address these areas.	142	142	142			50	7	7	
50	1st-Jury Deliberation	6	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	426		Do not address these areas.	426	426	426			50	21	21	
51	1st-City Judge's Law Clerk	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas. Install wallswitch occupancy sensors.	284	284	284			50	14	7	7
52	1st-Men's Restroom	2	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	142		Do not address these areas. Install ceiling occupancy sensors.	142	142	142			75	11	3	8
53	1st-County Court Room	12	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	852		Do not address these areas.	852	852	852			50	43	43	
53	1st-County Court Room	20	Hi-Hat (6") fixture with 13 Watt compact fluorescent screw-in lamps.	300		Do not address these areas.	300	300	300			50	15	15	
54	1st-DA's Secretary	8	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	568		Do not address these areas. Install wallswitch occupancy sensors.	568	568	568			50	28	14	14
55	1st-DA Reception/Waiting	8	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	568		Do not address these areas. Install ceiling occupancy sensors.	568	568	568			50	28	14	14
56	1st-DA Conference Room	5	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	355		Do not address these areas. Install wallswitch occupancy sensors.	355	355	355			50	18	9	9
57	1st-DA Storage Room	1	Deep-cell parabolic 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			5	0	0	
58	1st-DA Restroom 1	1	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	71		Do not address these areas.	71	71	71			50	4	4	
59	1st-DA Restroom 2	1	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	71		Do not address these areas.	71	71	71			50	4	4	
60	1st-DA Office 1	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas. Install wallswitch occupancy sensors.	284	284	284			50	14	7	7
61	1st-DA Office 2	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas. Install wallswitch occupancy sensors.	284	284	284			50	14	7	7
62	1st-DA Office 3	8	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	568		Do not address these areas. Install wallswitch occupancy sensors.	568	568	568			50	28	14	14



Ulster County - Court House															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW Saved	Hours per Wk	kWh per Week		
								Existing	Proposed	Savings			Exist	Proposed	Savings
63	1st-DA Kitchen	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	2	1	1
64	1st Floor Lobby	20	Hi-Hat (6") fixture with 2-18 Watt compact fluorescent hard-wired lamps.	840		Do not address these areas.	840	840	840			75	63	63	
65	2nd-Judge's Chambers	14	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	994		Do not address these areas.	994	994	994			50	50	50	
66	2nd-Judge's Secretary	8	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	568		Do not address these areas.	568	568	568			50	28	28	
67	2nd-Clerk Library	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas.	284	284	284			50	14	14	
68	2nd-Judge's Office	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas.	284	284	284			50	14	14	
69	2nd-Foyer 1	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas.	284	284	284			50	14	14	
70	2nd-Law Clerk	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas. Install wallswitch occupancy sensors.	284	284	284			50	14	7	7
71	2nd-Library	5	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	355		Do not address these areas.	355	355	355			50	18	18	
72	2nd- Judge's Waiting Room	6	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	426		Do not address these areas.	426	426	426			50	21	21	
73	2nd-Foyer 2	2	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	142		Do not address these areas.	142	142	142			50	7	7	
74	2nd-Office 1	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address these areas. Install wallswitch occupancy sensors.	213	213	213			50	11	5	5
75	2nd-Office 2	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address these areas. Install wallswitch occupancy sensors.	213	213	213			50	11	5	5
76	2nd-Office 3	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address these areas. Install wallswitch occupancy sensors.	213	213	213			50	11	5	5
77	2nd-Office 4	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas. Install wallswitch occupancy sensors.	284	284	284			50	14	7	7
78	2nd-Office 5	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address these areas. Install wallswitch occupancy sensors.	213	213	213			50	11	5	5
79	2nd-Office 6	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas. Install wallswitch occupancy sensors.	284	284	284			50	14	7	7
80	2nd-Records Office	2	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	142		Do not address these areas.	142	142	142			50	7	7	
81	2nd-Unisex Restroom	2	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	86	146	86	60	0.06	50	7	1	6
82	2nd-Supreme Court	3	Surface-mounted 1X1 fixture with 1-150 Watt metal halide lamp.	585		Do not address these areas.	585	585	585			25	15	15	
82	2nd-Supreme Court	30	Hi-Hat (6") fixture with 1-75 Watt incandescent lamp.	2,250	30	Modify the existing fixtures with 20 Watt compact fluorescent screw-in lamps.	660	2250	660	1590	1.59	25	56	17	40
82	2nd-Supreme Court	18	Surface-mounted (6") fixture with 1-15 Watt compact fluorescent screw-in lamp.	324		Do not address these areas.	324	324	324			25	8	8	
83	2nd-Jury Deliberation	6	Surface-mounted (6") fixture with 1-15 Watt compact fluorescent screw-in lamp.	108		Do not address these areas.	108	108	108			50	5	5	
84	2nd-Chambers	6	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	426		Do not address these areas.	426	426	426			50	21	21	
85	2nd-Court Reporter	2	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	142		Do not address these areas.	142	142	142			50	7	7	

Ulster County - Court House															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW Saved	Hours per Wk	kWh per Week		
								Existing	Proposed	Savings			Exist	Proposed	Savings
86	2nd-Secretary	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas.	284	284	284			50	14	14	
87	2nd-Secretary Corridor	4	Hi-Hat (6") fixture with 13 Watt compact fluorescent screw-in lamps.	60		Do not address these areas.	60	60	60			50	3	3	
88	2nd-Supreme Court Room	18	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	1,098		Do not address these areas.	1,098	1098	1098			50	55	55	
88	2nd-Supreme Court Room	24	Hi-Hat (6") fixture with 2-18 Watt compact fluorescent hard-wired lamps.	1,008		Do not address these areas.	1,008	1008	1008			50	50	50	
89	2nd-Women's Restroom A	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address these areas. Install ceiling occupancy sensors.	213	213	213			50	11	5	5
90	2nd-Principle Law Clerk	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address these areas.	213	213	213			50	11	11	
91	2nd-Attorney Client	2	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	142		Do not address these areas.	142	142	142			50	7	7	
92	2nd-Jury Room	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas.	284	284	284			50	14	14	
93	3rd-Chambers	6	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	426		Do not address these areas.	426	426	426			50	21	21	
94	3rd-Court Reporter	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address these areas. Install wallswitch occupancy sensors.	213	213	213			50	11	5	5
95	3rd-Secretary	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas. Install wallswitch occupancy sensors.	284	284	284			50	14	7	7
96	3rd-Court Reporter 2	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address these areas. Install wallswitch occupancy sensors.	213	213	213			50	11	5	5
97	3rd-Court Reporter 3	2	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	142		Do not address these areas. Install wallswitch occupancy sensors.	142	142	142			50	7	4	4
98	3rd-Jury Room	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas.	284	284	284			50	14	14	
99	3rd-Supreme Court Room	20	Deep-cell parabolic 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	1,220		Do not address these areas.	1,220	1220	1220			25	31	31	
99	3rd-Supreme Court Room	6	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	426		Do not address these areas.	426	426	426			25	11	11	
99	3rd-Supreme Court Room	24	Hi-Hat (6") fixture with 2-18 Watt compact fluorescent hard-wired lamps.	1,008		Do not address these areas.	1,008	1008	1008			25	25	25	
100	3rd-Men's Restroom	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address these areas. Install ceiling occupancy sensors.	213	213	213			50	11	3	8
101	3rd-Unisex Restroom	1	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	61		Do not address these areas. Install ceiling occupancy sensors.	61	61	61			50	3	1	2
101	3rd-Unisex Restroom	3	Hi-Hat (6") fixture with 13 Watt compact fluorescent screw-in lamps.	45		Do not address these areas.	45	45	45			50	2	2	
102	3rd-Building Maintenance Storage	1	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	61		Do not address these areas.	61	61	61			5	0	0	
103	3rd-Waiting Room	20	Hi-Hat (6") fixture with 2-18 Watt compact fluorescent hard-wired lamps.	840		Do not address these areas.	840	840	840			75	63	63	
104	3rd-Grand Jury	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address these areas.	213	213	213			25	5	5	

Ulster County - Court House						Watts per Line		Total kW	Hours	kWh per Week					
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
105	3rd-Grand Jury	3	Surface-mounted 1X1 fixture with 1-150 Watt metal halide lamp.	585		Do not address these areas.	585	585	585			25	15	15	
106	3rd-DA Secretary	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas. Install wallswitch occupancy sensors.	284	284	284			50	14	7	7
107	3rd-Assistant DA	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas. Install wallswitch occupancy sensors.	284	284	284			50	14	7	7
108	3rd-DA Foyer	6	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	426		Do not address these areas.	426	426	426			50	21	21	
109	3rd-DA Secretary 2	4	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	284		Do not address these areas.	284	284	284			50	14	14	
110	3rd-DA Office	8	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	568		Do not address these areas.	568	568	568			50	28	28	
111	Attic	12	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	732		Do not address these areas.	732	732	732			5	4	4	
112	Exterior	5	Pole-mounted (12") fixture with 1-250 Watt high-pressure sodium lamp.	1,475		Do not address these areas.	1,475	1475	1475			98	145	145	
112	Exterior	4	Surface-mounted 1X1 fixture with 1-150 Watt metal halide lamp.	780		Do not address these areas.	780	780	780			98	76	76	
	<b>Totals:</b>	<b>761</b>		<b>47,297</b>	<b>61</b>		<b>44,691</b>	47297	44691	2606	2,606		132442.49	113220.81	19221.683
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - Emergency Management E-911							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Main Dispatch Area	16	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,424	16	Do not address these areas.	1,424	1424	1424			168	239	239	
1	Main Dispatch Area	2	exit sign (12") fixture with LED technology.	12	2	Do not address these areas.	12	12	12			168	2	2	
2	Office 1	3	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	75	16	10	7
3	Server Room	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	2	1	1
4	Restroom 1	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	2	1	1
5	Restroom 2	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	2	1	1
6	Restroom Hall	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	168	25	14	10
6	Restroom Hall	1	exit sign (12") fixture with LED technology.	6	1	Do not address these areas.	6	6	6			168	1	1	
7	Office 2	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356	4	Do not address these areas.	356	356	356			40	14	14	
8	Exterior	5	Wallpack (6") fixture with 1-70 Watt high-pressure sodium lamp.	460	5	Do not address these areas.	460	460	460			98	45	45	
<b>Totals:</b>		<b>36</b>		<b>2,842</b>	<b>36</b>		<b>2,602</b>	2842	2602	240	0.24		18096.208	17104.048	992.16
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - Flatbush Annex														Watts per Line		Total kW	Hours	kWh per Week		
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings					
1	Boiler Room	10	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	610		No changes.	610	610	610			5	3	3						
2	Stairwell 1	6	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	366		No changes.	366	366	366			168	61	61						
2	Stairwell 2	6	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	366		No changes.	366	366	366			168	61	61						
3	Stairwell 2 Restroom	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			5	0	0						
4	Ground Level - Corridor	10	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	610		No changes.	610	610	610			75	46	46						
5	Ground Level - Office A	6	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	534		No changes.	534	534	534			40	21	21						
6	Ground Level - Office C	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11						
7	Ground Level - Office D	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
8	Ground Level - Office E	4	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	356		No changes.	356	356	356			40	14	14						
9	Ground Level - Office F	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11						
10	Ground Level - Office G	6	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	534		No changes.	534	534	534			40	21	21						
11	Ground Level - Restroom	2	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	122		Install ceiling occupancy sensors.	122	122	122			40	5	1	4					
12	Ground Level - Air Handler Room	3	Wraparound 1X4 fixture with 4-4' T8 lamps and electronic ballasts.	330		No changes.	330	330	330			5	2	2						
13	Ground Level - Office K	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11						
14	Ground Level - Office I	4	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	356		No changes.	356	356	356			40	14	14						
15	Ground Level - Break Room	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
16	Ground Level - Office J	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
17	Ground Level - Janitor Closet	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			5	0	0						
18	Ground Level - Secretary	11	Wraparound 1X4 fixture with 4-4' T8 lamps and electronic ballasts.	1,210		No changes.	1,210	1210	1210			40	48	48						

Ulster County - Flatbush Annex															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
19	Ground Level - Secretary Storage 1	9	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	801		No changes.	801	801	801			40	32	32	
20	Ground Level - Secretary Storage 2	4	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	356		No changes.	356	356	356			5	2	2	
21	Ground Level - Server Room	1	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73		No changes.	73	73	73			5	0	0	
22	1st Floor - Conference Room X	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		Install wallswitch occupancy sensors.	267	267	267			25	7	3	3
23	1st Floor - Server Closet	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			5	0	0	
24	1st Floor - Restroom	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		Install wallswitch occupancy sensors.	61	61	61			25	2	0.4	1
25	1st Floor - Office V	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11	
26	1st Floor - Office Y	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11	
27	1st Floor - Office U	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11	
28	1st Floor - Office Z	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11	
29	1st Floor - Office S	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11	
30	1st Floor - Office BB	8	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	712		No changes.	712	712	712			40	28	28	
31	1st Floor - Office R	8	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	712		No changes.	712	712	712			40	28	28	
32	1st Floor - Office Q	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11	
33	1st Floor - Office P	1	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	89		No changes.	89	89	89			40	4	4	
34	1st Floor - Office A	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11	
35	1st Floor - Office B	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11	
36	1st Floor - Closet	1	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	89		No changes.	89	89	89			40	4	4	
37	1st Floor - Office C	1	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	89		No changes.	89	89	89			40	4	4	
38	1st Floor - Office O	5	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	445		No changes.	445	445	445			40	18	18	
39	1st Floor - E-Break Room	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		Install wallswitch occupancy sensors.	178	178	178			40	7	4	4
39	1st Floor - E-Break Room	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			25	2	2	
40	1st Floor - Server Closet	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			40	2	2	
41	1st Floor - Office F	6	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	534		No changes.	534	534	534			40	21	21	

Ulster County - Flatbush Annex														Watts per Line		Total kW	Hours	kWh per Week		
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings					
42	1st Floor-Office M	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11						
43	1st Floor-Office L	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11						
44	1st Floor-Office H	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11						
45	1st Floor-Office I	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11						
46	1st Floor Corridors	16	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	976		No changes.	976	976	976			75	73	73						
47	2nd Floor - Office B	6	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	534		No changes.	534	534	534			40	21	21						
48	2nd Floor - Office C	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
49	2nd Floor - Office D	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
50	2nd Floor - Restroom 1	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			10	1	1						
51	2nd Floor - Office E	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
52	2nd Floor - Office F	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
53	2nd Floor - Restroom 2	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			5	0	0						
54	2nd Floor - Restroom 3	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			5	0	0						
55	2nd Floor - Server Room	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			5	0	0						
56	2nd Floor - G Conference Room	6	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	534		No changes.	534	534	534			40	21	21						
57	2nd Floor - Office H	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
58	2nd Floor - Office A1	4	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	356		No changes.	356	356	356			40	14	14						
59	2nd Floor - Office A2	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
60	2nd Floor - Office Q	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
61	2nd Floor - Office R	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
62	2nd Floor - Office I	6	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	534		No changes.	534	534	534			40	21	21						
63	2nd Floor - Restroom	2	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	122		No changes.	122	122	122			5	1	1						
64	2nd Floor - Office K	4	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	356		No changes.	356	356	356			40	14	14						
65	2nd Floor - Office P	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
66	2nd Floor - Office O	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
67	2nd Floor - Office N	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		No changes.	178	178	178			40	7	7						
68	2nd Floor - Corridors	13	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	793		No changes.	793	793	793			40	32	32						

Ulster County - Flatbush Annex							Watts per Line			Total kW	Hours	kWh per Week			
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
69	3rd Floor - Restroom 1	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			5	0	0	
70	3rd Floor - Restroom 2	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			5	0	0	
71	3rd Floor - HVAC Closet	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			5	0	0	
72	3rd Floor - Corridor	10	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	610		No changes.	610	610	610			40	24	24	
73	3rd Floor - Office F	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11	
74	3rd Floor - Office G	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11	
75	3rd Floor - Office H	4	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	356		No changes.	356	356	356			40	14	14	
76	3rd Floor - Office E	4	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	356		No changes.	356	356	356			40	14	14	
77	3rd Floor - Office A	4	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	356		No changes.	356	356	356			40	14	14	
78	3rd Floor - Office C	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11	
79	3rd Floor - Storage 1	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			5	0	0	
80	3rd Floor - Storage 2	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			5	0	0	
81	3rd Floor - Office B	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		No changes.	267	267	267			40	11	11	
82	3rd Floor - Copy Room	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			5	0	0	
83	3rd Floor - Restroom 3	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		No changes.	61	61	61			5	0	0	
84	Exterior Lighting	4	Wallpack (6") fixture with 1-150 Watt high-pressure sodium lamp.	760		No changes.	760	760	760			98	74	74	
<b>Totals:</b>		<b>302</b>		<b>24,984</b>			<b>24,984</b>	24984	24984				57462.132	56853.667	608.465
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year



Ulster County - Heavy Vehicle Maintenance Complex							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Mechanic Garage - Lounge	3	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	129	219	129	90	0.09	45	10	3	7
2	Mechanic Garage - Restroom	6	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	366		Do not address these areas. Install ceiling occupancy sensors.	366	366	366			45	16	8	8
3	Mechanic Garage - #2123	9	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	1,242	9	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	684	1242	684	558	0.558	45	56	31	25
3	Mechanic Garage - #2123	2	High-bay 1X1 fixture with 1-250 Watt metal halide lamp.	572	2	Install new low-bay fixtures using 4-4' 25W supersaver T8 lamps and QHE hi-power electronic ballasts.	224	572	224	348	0.348	45	26	10	16
4	Mechanic Garage - Parts Room	4	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	552	4	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	304	552	304	248	0.248	45	25	14	11
4	Mechanic Garage - Parts Room	3	High-bay 1X1 fixture with 1-250 Watt metal halide lamp.	858	3	Install new low-bay fixtures using 4-4' 25W supersaver T8 lamps and QHE hi-power electronic ballasts.	336	858	336	522	0.522	45	39	15	23
5	Mechanic Garage - Rear Parts Room	2	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	276	2	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	152	276	152	124	0.124	45	12	7	6
5	Mechanic Garage - Rear Parts Room	4	Surface-mounted (6") fixture with 1-150 Watt incandescent lamp.	600	4	Modify the existing fixtures with 2-25 Watt compact fluorescent screw-in lamps and a screw-in "Y" adaptor.	208	600	208	392	0.392	45	27	9	18
6	Mechanic Garage - Main Garage	6	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	828	6	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	456	828	456	372	0.372	45	37	21	17
6	Mechanic Garage - Main Garage	1	High-bay 1X1 fixture with 1-250 Watt metal halide lamp.	286	1	Install new low-bay fixtures using 4-4' 25W supersaver T8 lamps and QHE hi-power electronic ballasts.	112	286	112	174	0.174	45	13	5	8
7	Mechanic Garage - Upstairs Above Parts	3	Surface-mounted strip 1X4 fixture with 1-4' energy-efficient lamp and ballasts.	126	3	Modify the existing fixtures with 1-4' 25W supersaver T8 lamp and QHE electronic ballasts.	66	126	66	60	0.06	45	6	3	3
7	Mechanic Garage - Upstairs Above Parts	1	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	138	1	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	76	138	76	62	0.062	45	6	3	3
7	Mechanic Garage - Upstairs Above Parts	1	Surface-mounted (6") fixture with 1-150 Watt incandescent lamp.	150	1	Modify the existing fixtures with 2-25 Watt compact fluorescent screw-in lamps and a screw-in "Y" adaptor.	52	150	52	98	0.098	45	7	2	4
8	Mechanic Garage - #2529	1	Surface-mounted strip 1X4 fixture with 1-4' energy-efficient lamp and ballasts.	42	1	Modify the existing fixtures with 1-4' 25W supersaver T8 lamp and QHE electronic ballasts.	22	42	22	20	0.02	45	2	1	1
8	Mechanic Garage - #2529	28	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	3,864	28	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	2,128	3864	2128	1736	1.736	45	174	96	78
8	Mechanic Garage - #2529	4	High-bay 1X1 fixture with 1-250 Watt metal halide lamp.	1,144	4	Install new low-bay fixtures using 4-4' 25W supersaver T8 lamps and QHE hi-power electronic ballasts.	448	1144	448	696	0.696	45	51	20	31

Ulster County - Heavy Vehicle Maintenance Complex							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
9	Dispatch-Main Office	5	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	730	5	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	425	730	425	305	0.305	60	44	13	31
10	Dispatch-Restroom Hall	1	Surface-mounted strip 1X4 fixture with 3-4' energy-efficient lamps and ballasts.	105	1	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	65	105	65	40	0.04	10	1	1	0
11	Dispatch-Restroom	1	Surface-mounted (6") fixture with 1-60 Watt incandescent lamp.	60	1	Modify the existing fixtures with 1-15 Watt compact fluorescent screw-in lamp.	18	60	18	42	0.042	10	1	0	0
12	Dispatch-Wash Bay	15	Wraparound 1X4 fixture with 4-4' T8 lamps and electronic ballasts.	1,650		Do not address these areas.	1,650	1650	1650			45	74	74	
13	Dispatch-Callout	6	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install ceiling occupancy sensors.	258	438	258	180	0.18	45	20	12	8
14	Dispatch-Locker	8	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	584	8	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install ceiling occupancy sensors.	344	584	344	240	0.24	45	26	8	19
15	Storage Bay 1-5	10	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	1,380	10	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	760	1380	760	620	0.62	25	35	19	16
16	Storage Bay 6-10	6	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	828	6	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	456	828	456	372	0.372	25	21	11	9
17	Storage Bay 11-15	4	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	552	4	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	304	552	304	248	0.248	25	14	8	6
17	Storage Bay 11-15	4	Surface-mounted (6") fixture with 1-150 Watt incandescent lamp.	600	4	Modify the existing fixtures with 2-25 Watt compact fluorescent screw-in lamps and a screw-in "Y" adaptor.	208	600	208	392	0.392	25	15	5	10
17	Storage Bay 11-15	2	High-bay 1X1 fixture with 1-150 Watt metal halide lamp.	390	2	Install new low-bay fixtures using 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	170	390	170	220	0.22	25	10	4	6
18	Welding Shop	20	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	2,760	20	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	1,520	2760	1520	1240	1.24	45	124	68	56
18	Welding Shop	2	Surface-mounted (6") fixture with 1-150 Watt incandescent lamp.	300	2	Modify the existing fixtures with 2-25 Watt compact fluorescent screw-in lamps and a screw-in "Y" adaptor.	104	300	104	196	0.196	45	14	5	9
18	Welding Shop	7	High-bay 1X1 fixture with 1-150 Watt metal halide lamp.	1,365	7	Install new low-bay fixtures using 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	595	1365	595	770	0.77	45	61	27	35
19	Bridge Shop Kitchen	1	Surface-mounted (6") fixture with 3-75 Watt incandescent lamps.	225	1	Modify the existing fixtures with 3-20 Watt compact fluorescent screw-in lamps.	63	225	63	162	0.162	10	2	1	2
20	Bridge Shop Main	12	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	1,656	12	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	912	1656	912	744	0.744	45	75	41	33
21	Tire Shop	10	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	730	10	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	430	730	430	300	0.3	45	33	19	14
21	Tire Shop	1	Surface-mounted strip 1X4 fixture with 3-4' energy-efficient lamps and ballasts.	105	1	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	65	105	65	40	0.04	45	5	3	2
21	Tire Shop	26	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	3,588	26	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	1,976	3588	1976	1612	1.612	45	161	89	73
21	Tire Shop	2	Surface-mounted strip 1X8 fixture with 6-4' energy-efficient lamps and ballasts.	438	2	Install new 1X8 industrial fixtures with 4-4' T8 lamps, high-power electronic ballasts and reflectors.	304	438	304	134	0.134	45	20	14	6
22	Tire Shop - Restroom	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	10	1	0	0
23	Tire Shop - Lube Bay	2	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	45	7	4	3

Ulster County - Heavy Vehicle Maintenance Complex							Watts per Line		Total kW	Hours	kWh per Week								
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings				
23	Tire Shop - Lube Bay	6	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	258	438	258	180	0.18	10	4	3	2				
23	Tire Shop - Lube Bay	1	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	45	7	4	3				
23	Tire Shop - Lube Bay	1	Surface-mounted strip 1X4 fixture with 3-4' energy-efficient lamps and ballasts.	105	1	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	65	105	65	40	0.04	45	5	3	2				
23	Tire Shop - Lube Bay	5	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	690	5	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	380	690	380	310	0.31	45	31	17	14				
24	Sign Shop	5	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	690	5	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	380	690	380	310	0.31	45	31	17	14				
25	Machine Shop	3	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	45	10	6	4				
25	Machine Shop	10	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	1,380	10	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	760	1380	760	620	0.62	45	62	34	28				
26	Carpenter Shop	15	Surface-mounted (6") fixture with 1-100 Watt incandescent lamp.	1,500	15	Modify the existing fixtures with 25 Watt compact fluorescent screw-in lamps.	390	1500	390	1110	1.11	10	15	4	11				
27	Bolt Shed	6	Surface-mounted (6") fixture with 1-150 Watt incandescent lamp.	900	6	Modify the existing fixtures with 2-25 Watt compact fluorescent screw-in lamps and a screw-in "Y" adaptor.	312	900	312	588	0.588	45	41	14	26				
28	Gatehouse	2	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	25	4	2	2				
28	Gatehouse	1	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and standard ballasts.	138	1	Install new 1X8 strip fixtures with 2-4' T8 lamp and high-power electronic ballasts.	76	138	76	62	0.062	25	3	2	2				
29	Exterior	6	Wallpack (6") fixture with 1-150 Watt metal halide lamp.	1,170		Do not address these areas.	1,170	1170	1170			98	115	115					
29	Exterior	2	Wallpack 1X1 fixture with 1-250 Watt metal halide lamp.	572		Do not address these areas.	572	572	572			98	56	56					
29	Exterior	8	Pole-mounted 1X1 fixture with 1-400 Watt metal halide lamp.	3,560		Do not address these areas.	3,560	3560	3560			98	349	349					
29	Exterior	14	Surface-mounted (6") fixture with 1-100 Watt incandescent lamp.	1,400	14	Modify the existing fixtures with 25 Watt compact fluorescent screw-in lamps.	364	1400	364	1036	1.036	98	137	36	102				
30	Common Areas	18	exit sign (12") fixture with LED technology.	108		Do not address these areas.	108	108	108			168	18	18					
<b>Totals:</b>		<b>327</b>		<b>43,128</b>	<b>272</b>		<b>25,214</b>	43128	25214	17914	17,914		112085	70328	41757				
												Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - Information Services								Watts per Line			Total kW	Hours	kWh per Week		
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Exterior	3	Pole-mounted 1X1 fixture with 1-150 Watt high pressure sodium lamp.	570		Do not address these areas.	570	570	570			98	56	56	
2	Vestibule	2	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	122		Do not address these areas.	122	122	122			60	7	7	
3	Men's Restroom	3	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	183		Do not address these areas. Install ceiling occupancy sensors.	183	183	183			45	8	2	6
4	Women's Restroom	3	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	183		Do not address these areas. Install ceiling occupancy sensors.	183	183	183			45	8.2	2	6
5	Open Office Area	6	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	366		Do not address these areas.	366	366	366			45	16	16	
6	Closet	1	Surface-mounted (6") fixture with 1-75 Watt incandescent lamp.	75	1	Modify the existing fixtures with 1-15 Watt compact fluorescent screw-in lamp.	18	75	18	57	0.057	5	0	0	0
7	Office A	4	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	172	292	172	120	0.12	45	13	4	9
8	Office B	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	86	146	86	60	0.06	45	7	2	5
9	Office C	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	86	146	86	60	0.06	45	7	2	5
10	Conference Room	8	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	584	8	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	344	584	344	240	0.24	45	26	8	19
11	Classroom	4	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	45	13	8	5
11	Classroom	2	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	122		Do not address these areas. Install ceiling occupancy sensors.	122	122	122			45	5	3	3
12	Library	4	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	45	13	4	9
13	Office D	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	45	7	4	3
14	Mail Room	15	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,095	15	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	645	1095	645	450	0.45	45	49	29	20
14	Mail Room	9	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	657	9	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	387	657	387	270	0.27	45	30	17	12
15	Paper Storage	4	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	172	292	172	120	0.12	45	13	4	9
16	Office E	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	45	7	4	3
17	Cubicle Area	20	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,460	20	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	860	1460	860	600	0.6	60	88	52	36
18	Office 1	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	86	146	86	60	0.06	45	7	2	5
19	Office 2	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	86	146	86	60	0.06	45	7	2	5

Ulster County - Information Services															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
20	Office 3	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	86	146	86	60	0.06	45	7	2	5
21	Office 4	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	86	146	86	60	0.06	45	7	2	5
22	Office 5	4	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	244		Do not address these areas. Install ceiling occupancy sensors.	244	244	244			45	11	5	5
23	Men's Restroom 2	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install ceiling occupancy sensors.	43	73	43	30	0.03	45	3	1	2
24	Women's Restroom 2	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install ceiling occupancy sensors.	43	73	43	30	0.03	45	3	1	2
25	Open Office Area	3	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	45	10	6	4
25	Open Office Area	4	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	244		Do not address these areas.	244	244	244			45	11	11	
26	Office 6	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	86	146	86	60	0.06	45	7	2	5
27	Office 7	4	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	172	292	172	120	0.12	45	13	4	9
28	Large Server Area	35	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	2,555	35	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	1,505	2555	1505	1050	1.05	45	115	68	47
29	Server Area Closet	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	86	146	86	60	0.06	45	7	2	5
30	Office 8	3	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	129	219	129	90	0.09	45	10	3	7
30	Office 8	1	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			45	3	3	
31	Storage	9	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	657	9	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	387	657	387	270	0.27	25	16	10	7
32	Corridors	4	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	60	18	10	7
32	Corridors	20	Recessed lensed 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	1,220		Do not address these areas.	1,220	1220	1220			60	73	73	
<b>Totals:</b>		<b>197</b>		<b>14,194</b>	<b>149</b>		<b>9,697</b>	14194	9697	4497	4.497		36358.92	22339.2	14019.72
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs

Ulster County - Mental Health															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW Saved	Hours per Wk	kWh per Week		
								Existing	Proposed	Savings			Exist	Proposed	Savings
1	Common Areas	10	exit sign (12") fixture with LED technology.	60		Do not address these areas.	60	60	60			168	10	10	
1	Common Areas	38	exit sign (12") fixture with 9 Watt compact fluorescent lamps.	418	38	Install new LED exit signs with battery backup.	76	418	76	342	0.342	168	70	13	57
2	Boiler Room	9	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	657	9	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	387	657	387	270	0.27	10	7	4	3
3	Sprinkler Pump Room	2	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	86	146	86	60	0.06	10	1	1	1
4	Generator Room	2	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	86	146	86	60	0.06	10	1	1	1
5	Panel Room	2	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	86	146	86	60	0.06	10	1	1	1
6	Men's Restroom 1	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	43	73	43	30	0.03	45	3	2	1
6	Men's Restroom 1	2	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts. Install wallswitch occupancy sensors	110	146	110	36	0.036	45	7	1	5
7	Women's Restroom 1	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	86	146	86	60	0.06	45	7	4	3
7	Women's Restroom 1	2	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts. Install wallswitch occupancy sensors	110	146	110	36	0.036	45	7	1	5
8	1st Floor Janitor's Closet	1	Surface-mounted (6") fixture with 1-75 Watt incandescent lamp.	75	1	Modify the existing fixtures with 1-15 Watt compact fluorescent screw-in lamp.	18	75	18	57	0.057	5	0	0	0
9	Maintenance Office	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors	86	146	86	60	0.06	75	11	3	8
10	Adult Unit Hall	14	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	1,022	14	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	770	1022	770	252	0.252	168	172	129	42
11	Office 107	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
12	Office 109	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
13	Office 110	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
14	Office 111	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
15	Office 112	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
16	Office 113	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
17	Office 114	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
18	Office 115	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3

Ulster County - Mental Health															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
19	Office 116	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
20	Office 117	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
21	Office 119	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
22	Office 120	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
23	Office 121	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
24	Office 122	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
25	Office 123A	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
26	Office 126	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
27	Office 127	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
28	Office 128	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
29	Office 129	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
30	Office 130	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
31	Office 131	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
32	Office 132	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
33	Office 133	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
34	Office 135	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
35	Office 136	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
36	Office 137	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
37	Office 139	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
38	Office 123	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	43	73	43	30	0.03	45	3	2	1
39	Maintenance Workshop	1	Recessed lensed 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	89		Do not address these areas.	89	89	89			45	4	4	

Ulster County - Mental Health															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW Saved	Hours per Wk	kWh per Week		
								Existing	Proposed	Savings			Exist	Proposed	Savings
39	Maintenance Workshop	1	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	55	73	55	18	0.018	45	3	2	1
40	114	4	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	45	13	8	5
41	Daycare Hall	3	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	165	219	165	54	0.054	75	16	12	4
42	Daycare Restroom	2	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	110	146	110	36	0.036	10	1	1	0
43	124	7	Recessed lensed 2X2 fixture with 3-2' T8 lamps and electronic ballasts.	350		Do not address these areas.	350	350	350			45	16	16	
44	123	6	Recessed lensed 2X2 fixture with 3-2' T8 lamps and electronic ballasts.	300		Do not address these areas.	300	300	300			45	14	14	
45	Main Hall	6	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	330	438	330	108	0.108	75	33	25	8
46	Insurance Lobby	16	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	480		Do not address these areas.	480	480	480			75	36	36	
47	Office 147	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	45	7	4	3
48	Office 148	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	45	7	4	3
49	Office 149	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	45	7	4	3
50	Office 150	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	45	7	4	3
51	Office 151	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	45	7	4	3
52	Office 150A	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	45	7	4	3
53	Office 153	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	45	7	4	3
54	Office 155	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	45	7	4	3
55	Women's Restroom 2	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	10	1	0	0
55	Women's Restroom 2	1	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	30		Do not address these areas.	30	30	30			10	0	0	
56	145- Break Room	6	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts. Install ceiling occupancy sensors.	330	438	330	108	0.108	45	20	7	12
57	Copy Machine Area	1	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	55	73	55	18	0.018	45	3	2	1
58	152	4	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	45	13	8	5
59	Insurance Lobby	6	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	330	438	330	108	0.108	75	33	25	8



Ulster County - Mental Health															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW Saved	Hours per Wk	kWh per Week		
								Existing	Proposed	Savings			Exist	Proposed	Savings
59	Insurance Lobby	2	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	60		Do not address these areas.	60	60	60			75	5	5	
60	Office 142	2	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	122		Do not address these areas.	122	122	122			20	2	2	
61	Office 156	4	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	584	4	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	340	584	340	244	0.244	45	26	15	11
62	Office 157	6	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	876	6	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	510	876	510	366	0.366	45	39	23	16
63	Men's Restroom 2	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	43	73	43	30	0.03	45	3	2	1
63	Men's Restroom 2	1	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts	73	1	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	55	73	55	18	0.018	45	3	2	1
63	Men's Restroom 2	2	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	60		Do not address these areas.	60	60	60			45	3	3	
64	Women's Restroom 3	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	43	73	43	30	0.03	45	3	2	1
64	Women's Restroom 3	1	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts	73	1	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	55	73	55	18	0.018	45	3	2	1
64	Women's Restroom 3	2	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	60		Do not address these areas.	60	60	60			45	3	3	
65	Office 158	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
66	Office 159	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
67	Main Lobby & Hall	18	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts	1,314	18	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	990	1314	990	324	0.324	75	99	74	24
67	Main Lobby & Hall	4	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	244		Do not address these areas.	244	244	244			75	18	18	
67	Main Lobby & Hall	10	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	300		Do not address these areas.	300	300	300			75	23	23	
68	Main Vestibule	2	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	110	146	110	36	0.036	75	11	8	3
69	Office 190	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
70	Billing - Cubicle Area	13	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	1,898	13	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	1,105	1898	1105	793	0.793	45	85	50	36
71	Office 164	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
72	Office 165	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
73	Office 182	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
74	Office 183	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
75	Office 184	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3

Ulster County - Mental Health							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
76	Office 185	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
77	Office 186	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
78	Office 187	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
79	Office 188	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
80	Office 189	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
81	Vestibule & Hall	1	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	55	73	55	18	0.018	75	5	4	1
81	Vestibule & Hall	20	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	600		Do not address these areas.	600	600	600			75	45	45	
82	Elevator 1	2	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	86	146	86	60	0.06	168	25	14	10
83	Elevator 2	2	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	86	146	86	60	0.06	168	25	14	10
84	202 Conference Room	2	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	292	2	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	170	292	170	122	0.122	20	6	3	2
85	318	1	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
86	317	1	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
87	Office 305	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
88	Office 306	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
89	Office 307	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
90	Office 309	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
91	Office 310	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
92	Office 311	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
93	Office 312	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
94	Office 313	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
95	Office 314	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3

Ulster County - Mental Health							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
96	Office 315	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
97	Admin Support Staff	4	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	584	4	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	340	584	340	244	0.244	45	26	15	11
97	Admin Support Staff	12	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps.	360		Do not address these areas.	360	360	360			45	16	16	
98	302 Conference Room	6	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	330	438	330	108	0.108	20	9	7	2
99	Office 300	6	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	330	438	330	108	0.108	45	20	15	5
100	Office 301	6	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	330	438	330	108	0.108	45	20	15	5
101	Office 303	6	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	330	438	330	108	0.108	45	20	15	5
102	316 Conference Room	4	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	584	4	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	340	584	340	244	0.244	20	12	7	5
103	297	3	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	438	3	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	255	438	255	183	0.183	45	20	11	8
104	297	3	Pendant-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	129	219	129	90	0.09	45	10	6	4
105	Office 299	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
106	Office 298	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
107	Office 295	2	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	110	146	110	36	0.036	45	7	5	2
107	Office 295	3	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	90		Do not address these areas.	90	90	90			45	4	4	
108	Office 282	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
109	Office 283	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
110	Office 284	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
111	Office 285	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
112	Office 286	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
113	Office 287	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
114	Office 289	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3

Ulster County - Mental Health							Watts per Line			Total kW	Hours	kWh per Week			
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
115	Office 290	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
116	Office 291	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
117	Office 292	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
118	Office 293	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
119	Office 294	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
120	Lounge 282	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
121	281	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	86	146	86	60	0.06	45	7	4	3
121	281	4	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	120		Do not address these areas.	120	120	120			45	5	5	
122	2nd Floor Corridor	16	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	1,168	16	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	880	1168	880	288	0.288	75	88	66	22
122	2nd Floor Corridor	24	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	720		Do not address these areas.	720	720	720			75	54	54	
123	270	3	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	438	3	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	255	438	255	183	0.183	45	20	11	8
124	271	3	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	438	3	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	255	438	255	183	0.183	45	20	11	8
124	271	3	Pendant-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	129	219	129	90	0.09	45	10	6	4
125	Men's Restroom 3	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	43	73	43	30	0.03	45	3	2	1
125	Men's Restroom 3	1	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	55	73	55	18	0.018	45	3	2	1
125	Men's Restroom 3	2	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	60		Do not address these areas.	60	60	60			45	3	3	
126	Women's Restroom 4	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	43	73	43	30	0.03	45	3	2	1
126	Women's Restroom 4	1	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	55	73	55	18	0.018	45	3	2	1
126	Women's Restroom 4	2	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	60		Do not address these areas.	60	60	60			45	3	3	
127	Men's Restroom 4	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	43	73	43	30	0.03	45	3	2	1
127	Men's Restroom 4	1	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	55	73	55	18	0.018	45	3	2	1
127	Men's Restroom 4	2	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	60		Do not address these areas.	60	60	60			45	3	3	

Ulster County - Mental Health															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
128	Women's Restroom 5	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	43	73	43	30	0.03	45	3	2	1
128	Women's Restroom 5	1	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	55	73	55	18	0.018	45	3	2	1
128	Women's Restroom 5	2	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps	60		Do not address these areas.	60	60	60			45	3	3	
129	Office 245	4	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	172	292	172	120	0.12	45	13	8	5
130	Office 247	4	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	420	4	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts	260	420	260	160	0.16	45	19	12	7
131	Office 250	4	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	584	4	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	340	584	340	244	0.244	45	26	15	11
132	Office 236	6	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	258	438	258	180	0.18	45	20	12	8
133	Office 228	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
133	Office 228	1	Pendant-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	43	73	43	30	0.03	45	3	2	1
134	Office 230	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
134	Office 230	1	Pendant-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	43	73	43	30	0.03	45	3	2	1
135	Office 210	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
136	Office 211	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
137	Office 212	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
138	Office 213	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
139	Office 214	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
140	Office 215	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
141	Office 216	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
142	Office 217	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
143	Office 218	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
144	Office 219	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3



Ulster County - Mental Health							Watts per Line			Total kW	Hours	kWh per Week			
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
166	Office 255	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
167	Office 256	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
168	Office 257	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
169	Office 258	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
170	Office 259	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
171	Office 260	2	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	292	2	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	170	292	170	122	0.122	45	13	8	5
172	Office 262	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
173	Office 263	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
174	Office 264	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
175	Office 265	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
176	Office 266	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
177	Office 267	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
178	Office 253	1	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	85	146	85	61	0.061	45	7	4	3
179	Children's Waiting Area	1	Wall-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' T8 lamps and electronic ballasts.	110	146	110	36	0.036	75	11	8	3
180	Stairwell 1	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	129	219	129	90	0.09	168	37	22	15
181	Stairwell 2	5	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	365	5	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	215	365	215	150	0.15	168	61	36	25
182	Any Missed Areas	10	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	730	10	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts	430	730	430	300	0.3	20	15	9	6
182	Any Missed Areas	6	Pendant-mounted 1X8 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	876	6	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts	510	876	510	366	0.366	20	18	10	7
182	Any Missed Areas	10	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	730	10	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	550	730	550	180	0.18	20	15	11	4
183	Exterior	6	Surface-mounted 1X1 fixture with 1-175 Watt high-pressure sodium lamp	1,320		Do not address these areas.	1,320	1320	1320			98	129	129	
<b>Totals:</b>		<b>558</b>		<b>46,668</b>	<b>418</b>		<b>30,923</b>	46668	30923	15745	15.745		130659.776	87938.552	42721.224
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - County Pool						Watts per Line		Total kW	Hours	kWh per Week					
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Filter Room	3	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts	225	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Ceiling mounted occupancy sensor.	129	225	129	96	0.096	42	9.5	2.7	6.7
2	Chlorine Storage/Pump Room	5	Chain Mounted 1X8 fixture with 2-8' T12 95 W lamps and magnetic ballasts	1,045	5	Ceiling mounted occupancy sensor.	1,045	1,045	1,045			42	43.9	21.9	21.9
3	Chlorine Storage/Pump Room	8	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts	600	8	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Ceiling mounted occupancy sensor.	344	600	344	256	0.256	42	25.2	7.2	18.0
4	Chlorine Storage/Pump Room	1	Chain Mounted 2X4 fixture with 2-4' T5 lamps and electronic ballasts	48	1	No change	48	48	48			42	2.0	2.0	
5	First Aid	2	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts	150	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	150	86	64	0.064	35	5.3	3.0	2.2
6	Snack Bar	7	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts	525	7	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	301	525	301	224	0.224	70	36.8	21.1	15.7
7	Rest Rooms (2)	2	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts	150	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	150	86	64	0.064	70	10.5	3.0	7.5
8	Locker Rooms	16	Chain Mounted 2X4 fixture with 4-4' T12 34W lamps and magnetic ballasts	2,400	16	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	688	2,400	688	1712	1.712	70	168.0	48.2	119.8
9	Entrance	2	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts	150	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	150	86	64	0.064	70	10.5	6.0	4.5
<b>Totals:</b>		<b>46</b>		<b>5,293</b>	<b>46</b>		<b>2,813</b>	5293	2813	2480	2.48		3739	1382	2357
								Exist	Proposed	Savings	kW Savings		Annual Exist (12 weeks)	Annual Prop	kWh Svngs per year



Ulster County - Probation Department														Watts per Line		Total kW	Hours	kWh per Week		
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings					
1	Stairwell	3	Wraparound 1X8 fixture with 2-4' T8 lamps and electronic ballasts.	183		Do not address these areas.	183	183	183			98	17.9	17.9						
2	2nd Floor Hall	4	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	244		Do not address these areas.	244	244	244			70	17.1	17.1						
3	Office 201	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
4	Office 202	4	Hi-Hat (6") fixture with 25 Watt compact fluorescent screw-in lamps.	104		Do not address these areas.	104	104	104			50	5.2	5.2						
5	203 Storage	1	Wraparound 1X8 fixture with 2-4' T8 lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			10	0.6	0.6						
6	2nd Floor Break Room/Kitchenette	3	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	183		Do not address these areas. Install ceiling occupancy sensors.	183	183	183			25	4.6	2.3	2.3					
7	2nd Floor Men's Restroom	1	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	61		Do not address these areas. Install wallswitch occupancy sensors.	61	61	61			25	1.5	0.4	1.1					
8	2nd Floor Women's Restroom	1	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	61		Do not address these areas. Install wallswitch occupancy sensors.	61	61	61			25	1.5	0.4	1.1					
9	2nd Floor - Open Cubicle Area	6	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	534		Do not address these areas.	534	534	534			70	37.4	37.4						
10	Office 205	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas. Install wallswitch occupancy sensors.	178	178	178			50	8.9	4.5	4.5					
11	Office 206	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install wallswitch occupancy sensors.	267	267	267			50	13.4	6.7	6.7					
12	Office 209	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas.	356	356	356			50	17.8	17.8						
13	208- Conference Room	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas. Install ceiling occupancy sensors.	356	356	356			50	17.8	8.9	8.9					
14	207	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas.	356	356	356			50	17.8	17.8						
15	1st Floor Lobby	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas.	267	267	267			98	26.2	26.2						
16	1st Floor Vestibule	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			98	17.4	17.4						
17	Criminal Waiting Room	7	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	427		Do not address these areas.	427	427	427			70	29.9	29.9						
18	Office 100	1	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	89		Do not address these areas. Install wallswitch occupancy sensors.	89	89	89			50	4.5	2.2	2.2					
19	Office 101	1	Recessed lensed 2X4 fixture with 4-4' T8 lamp and electronic ballasts.	110		Do not address these areas. Install wallswitch occupancy sensors.	110	110	110			50	5.5	2.8	2.8					
20	Office 102	1	Recessed lensed 2X4 fixture with 4-4' T8 lamp and electronic ballasts.	110		Do not address these areas. Install wallswitch occupancy sensors.	110	110	110			50	5.5	2.8	2.8					
21	1st Floor Cubicles	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			70	12.5	12.5						
21	1st Floor Cubicles	23	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	1,403		Do not address these areas.	1,403	1403	1403			70	98.2	98.2						
22	Unisex Restroom	1	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	89		Do not address these areas. Install wallswitch occupancy sensors.	89	89	89			25	2.2	0.6	1.7					
23	104	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	122		Do not address these areas.	122	122	122			50	6.1	6.1						

Ulster County - Probation Department															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
24	105- Conference Room	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas. Install ceiling occupancy sensors.	356	356	356			50	17.8	8.9	8.9
25	107	2	Recessed lensed 2X4 fixture with 4-4' T8 lamp and electronic ballasts.	220		Do not address these areas.	220	220	220			50	11.0	11.0	
26	Rear Vestibule	1	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			70	4.3	4.3	
27	108	1	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	89		Do not address these areas.	89	89	89			25	2.2	2.2	
28	Office Area "The Cave"	8	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	488		Do not address these areas.	488	488	488			50	24.4	24.4	
29	Reception	4	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	244		Do not address these areas.	244	244	244			50	12.2	12.2	
30	Mail Room	2	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	122		Do not address these areas. Install wallswitch occupancy sensors.	122	122	122			50	6.1	3.1	3.1
31	Juvenile Office Hall	8	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	488		Do not address these areas.	488	488	488			70	34.2	34.2	
32	Juvenile Waiting Room	10	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	610		Do not address these areas.	610	610	610			70	42.7	42.7	
33	Juvenile Restroom	1	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			10	0.6	0.6	
34	Men's Restroom	1	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			10	0.6	0.6	
35	Women's Restroom	1	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			10	0.6	0.6	
36	Office 152	1	Deep-cell parabolic 2X4 fixture with 4-4' T8 lamps and electronic ballasts.	110		Do not address these areas. Install wallswitch occupancy sensors.	110	110	110			50	5.5	2.8	2.8
37	Office 153	1	Deep-cell parabolic 2X4 fixture with 4-4' T8 lamps and electronic ballasts.	110		Do not address these areas. Install wallswitch occupancy sensors.	110	110	110			50	5.5	2.8	2.8
38	Office 155	1	Deep-cell parabolic 2X4 fixture with 4-4' T8 lamps and electronic ballasts.	110		Do not address these areas. Install wallswitch occupancy sensors.	110	110	110			50	5.5	2.8	2.8
39	Office 157	1	Deep-cell parabolic 2X4 fixture with 4-4' T8 lamps and electronic ballasts.	110		Do not address these areas. Install wallswitch occupancy sensors.	110	110	110			50	5.5	2.8	2.8
40	Office 158	1	Deep-cell parabolic 2X4 fixture with 4-4' T8 lamps and electronic ballasts.	110		Do not address these areas. Install wallswitch occupancy sensors.	110	110	110			50	5.5	2.8	2.8
41	Office 151	2	Deep-cell parabolic 2X4 fixture with 4-4' T8 lamps and electronic ballasts.	220		Do not address these areas. Install wallswitch occupancy sensors.	220	220	220			50	11.0	5.5	5.5
42	159- Conference Room	2	Deep-cell parabolic 2X4 fixture with 4-4' T8 lamps and electronic ballasts.	220		Do not address these areas. Install ceiling occupancy sensors.	220	220	220			50	11.0	5.5	5.5
43	1st Floor Hall to Storage Area	4	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	244		Do not address these areas. Install ceiling occupancy sensors.	244	244	244			50	12.2	6.1	6.1
44	Men's Locker Room	3	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	438	3	Modify the existing fixtures with 4-4' T8 lamps and electronic ballasts.	330	438	330	108	0.108	50	21.9	16.5	5.4
45	Women's Locker Room	3	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	438	3	Modify the existing fixtures with 4-4' T8 lamps and electronic ballasts.	330	438	330	108	0.108	50	21.9	16.5	5.4
46	Storage	17	Wraparound 1X8 fixture with 2-4' T8 lamps and electronic ballasts.	1,037		Do not address these areas.	1,037	1037	1037			25	25.9	25.9	
47	Maintenance Office	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	122		Do not address these areas.	122	122	122			25	3.1	3.1	
48	Common Areas	22	Exit sign (12") fixture with LED technology.	132		Do not address these areas.	132	132	132			168	22.2	22.2	

<i>Ulster County - Probation Department</i>						Watts per Line		Total kW	Hours	kWh per Week					
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
49	Exterior	9	Wraparound 1X8 fixture with 2-4' T8 lamps and electronic ballasts.	549		Do not address these areas.	549	549	549			98	53.8	53.8	
49	Exterior	9	Wallpack 1X1 fixture with 1-150 Watt high-pressure sodium lamp.	1,710		Do not address these areas.	1,710	1710	1710			98	167.6	167.6	
49	Exterior	14	Hi-Hat 1X1 fixture with 1-70 Watt high-pressure sodium lamp.	1,288		Do not address these areas.	1,288	1288	1288			98	126.2	126.2	
49	Exterior	7	Pole-mounted 1X1 fixture with 1-250 Watt high-pressure sodium lamp.	2,065		Do not address these areas.	2,065	2065	2065			98	202.4	202.4	
<b>Totals:</b>		<b>227</b>		<b>17,969</b>	<b>6</b>		<b>17,753</b>	17969	17753	216	0.216		64565	60010	4555
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - Public Works Building															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Common Areas	6	exit sign (12") fixture with LED technology.	36		Do not address these areas.	36	36	36			168	6	6	
1	Common Areas	14	exit sign (12") fixture with 2-15 Watt incandescent lamps.	420	14	Install new LED exit signs with battery backup	28	420	28	392	0.392	168	71	5	66
2	Boiler Room	5	Surface-mounted strip 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	365	5	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	215	365	215	150	0.15	5	2	1	1
3	G Level - Lobby	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			70	4	4	
3	G Level - Lobby	3	Hi-Hat 1X1 fixture with 1-70 Watt high-pressure sodium lamp.	276		Do not address these areas.	276	276	276			70	19	19	
4	Maintenance Office	4	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	45	13	8	5
5	G Level - Open Area	20	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,460	20	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	860	1460	860	600	0.6	45	66	39	27
5	G Level - Open Area	2	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	110	146	110	36	0.036	45	7	5	2
6	G Level - Men's Restroom	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	10	2	1	1
7	G Level - Women's Restroom	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	10	2	1	1
8	G Level - Janitor's Closet	1	Surface-mounted (6") fixture with 1-75 Watt incandescent lamp.	75	1	Modify the existing fixtures with 1-15 Watt compact fluorescent screw-in lamp.	18	75	18	57	0.057	5	0	0	0
9	G Level - Break Room	4	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	584	4	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	340	584	340	244	0.244	20	12	7	5
9	G Level - Break Room	2	Deep-cell parabolic 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	122		Do not address these areas.	122	122	122			20	2	2	
10	G Level - Office	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	20	3	2	1
11	G Level - Elevator Pump Room	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	5	1	0	0
12	G Level - Storage	1	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	10	1	1	1
13	G Level - Blueprint Room	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	20	1	1	1
14	Stairwell 1	5	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	365	5	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	215	365	215	150	0.15	45	16	10	7
15	Stairwell 2	5	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	365	5	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	215	365	215	150	0.15	45	16	10	7
16	1st Floor - Main Reception	13	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	1,898	13	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	1,105	1898	1105	793	0.793	45	85	50	36

Ulster County - Public Works Building															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
16	1st Floor - Main Reception	11	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	803	11	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	605	803	605	198	0.198	45	36	27	9
17	1st Floor - Commissioner's Office	4	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	584	4	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	340	584	340	244	0.244	20	12	7	5
18	1st Floor - Commissioner's Restroom	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	5	0	0	0
19	1st Floor - Operating Manager	4	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	584	4	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	340	584	340	244	0.244	20	12	7	5
20	1st Floor - Sue Ronga's Office	3	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	315	3	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	195	315	195	120	0.12	20	6	4	2
21	1st Floor - Kitchen	2	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	292	2	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	170	292	170	122	0.122	20	6	3	2
22	1st Floor - Janitor's Closet	1	Surface-mounted (6") fixture with 1-75 Watt incandescent lamp.	75	1	Modify the existing fixtures with 1-15 Watt compact fluorescent screw-in lamp.	18	75	18	57	0.057	5	0	0	0
23	1st Floor - Men's Restroom	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	10	2	1	1
24	1st Floor - Women's Restroom	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	10	2	1	1
25	1st Floor - Vault	4	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	584	4	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	340	584	340	244	0.244	20	12	7	5
26	2nd Floor - Server Room	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	10	1	0	0
27	2nd Floor - Conference Room	5	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	365	5	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	215	365	215	150	0.15	10	4	2	2
28	2nd Floor - Engineering	15	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,095	15	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	645	1095	645	450	0.45	45	49	29	20
29	2nd Floor - Janitor's Closet	1	Surface-mounted (6") fixture with 1-75 Watt incandescent lamp.	75	1	Modify the existing fixtures with 1-15 Watt compact fluorescent screw-in lamp.	18	75	18	57	0.057	5	0	0	0
30	2nd Floor - Men's Restroom	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	10	2	1	1
31	2nd Floor - Women's Restroom	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	10	2	1	1
32	2nd Floor - Restroom Hall	2	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	110	146	110	36	0.036	45	7	5	2
33	2nd Floor - Vault	4	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	584	4	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	340	584	340	244	0.244	45	26	15	11
34	2nd Floor - Survey Room	8	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	584	8	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	344	584	344	240	0.24	45	26	15	11

<i>Ulster County - Public Works Building</i>						Watts per Line		Total kW	Hours	kWh per Week					
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
35	2nd Floor - MS4 Office	4	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	45	13	8	5
36	2nd Floor - Corridor	5	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	365	5	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	275	365	275	90	0.09	70	26	19	6
37	Exterior	14	Wallpack (6") fixture with 1-70 Watt high-pressure sodium lamp.	1,288		Do not address these areas.	1,288	1288	1288			98	126	126	
<b>Totals:</b>		<b>198</b>		<b>16,467</b>	<b>172</b>		<b>10,348</b>	16467	10348	6119	6.119		36505.404	23539.412	12965.992
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - Trudy Resnick Farber Building														Watts per Line		Total kW	Hours	kWh per Week		
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings					
1	Office 137	1	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	89		Do not address these areas.	89	89	89			50	4.5	4.5						
2	Office 138	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
3	Office 135	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	122		Do not address these areas.	122	122	122			50	6.1	6.1						
4	Office 136	4	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	420	4	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	260	420	260	160	0.16	50	21.0	6.5	14.5					
5	Office 129	2	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	130	210	130	80	0.08	50	10.5	6.5	4.0					
6	Office 130	2	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	130	210	130	80	0.08	50	10.5	6.5	4.0					
7	133-Rest Room	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8					
8	Office 126	3	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	183		Do not address these areas.	183	183	183			50	9.2	9.2						
9	Office 127	3	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	183		Do not address these areas.	183	183	183			50	9.2	9.2						
10	Office 134	3	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	50	11.0	6.5	4.5					
11	Office 125	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		Do not address these areas.	267	267	267			50	13.4	13.4						
12	122	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		Do not address these areas. Install wallswitch occupancy sensors.	267	267	267			50	13.4	6.7	6.7					
13	Office 121	6	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	258	438	258	180	0.18	50	21.9	12.9	9.0					
14	120-Rest Room	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8					
15	118	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0					
16	Office 117	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0					
17	Office 116	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0					
18	Office 110	4	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	50	14.6	8.6	6.0					
19	Office 114	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0					
20	Office 112	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
21	Lobby	4	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	75	21.9	12.9	9.0					

Ulster County - Trudy Resnick Farber Building							Watts per Line			Total kW	Hours	kWh per Week			
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
22	150-Open Dining Area	12	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	876	12	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	516	876	516	360	0.36	25	21.9	12.9	9.0
23	Office 151	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	50	3.7	2.2	1.5
24	Office 152	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	50	3.7	2.2	1.5
25	Kitchen	3	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	25	5.5	3.2	2.3
26	Kitchen Side Room	3	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	25	5.5	3.2	2.3
27	147-2nd Kitchen	6	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	258	438	258	180	0.18	25	11.0	6.5	4.5
28	Office 145	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0
29	Office 146	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0
30	Office 143	3	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	129	219	129	90	0.09	50	11.0	3.2	7.7
31	Office 144	3	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	129	219	129	90	0.09	50	11.0	3.2	7.7
32	140-Rest Room	1	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	61		Do not address these areas.	61	61	61			75	4.6	4.6	
33	141 Restroom	1	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	61		Do not address these areas.	61	61	61			75	4.6	4.6	
34	Corridors	19	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,387	19	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	817	1387	817	570	0.57	75	104.0	61.3	42.8
34	Corridors	15	exit sign (12") fixture with LED technology.	90		Do not address these areas.	90	90	90			168	15.1	15.1	
35	Exterior	8	Wallpack (6") fixture with 1-150 Watt high-pressure sodium lamp.	1,520		Do not address these areas.	1,520	1520	1520			98	149.0	149.0	
36	B Lobby	6	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	366		Do not address these areas.	366	366	366			75	27.5	27.5	
37	B-Main Office	4	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	356		Do not address these areas.	356	356	356			50	17.8	17.8	
38	B11-B44	46	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	4,094		Do not address these areas.	4,094	4094	4094			50	204.7	204.7	
38	B11-B44	28	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	1,708		Do not address these areas.	1,708	1708	1708			50	85.4	85.4	
38	B11-B44	42	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	2,562		Do not address these areas.	2,562	2562	2562			50	128.1	128.1	
38	B11-B44	57	Recessed lensed 2X2 fixture with 3-2' T8 lamp and electronic ballasts.	2,850		Do not address these areas.	2,850	2850	2850			50	142.5	142.5	
38	B11-B44	14	exit sign (12") fixture with LED technology.	84		Do not address these areas.	84	84	84			168	14.1	14.1	
39	1st Floor Lobby	12	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	732		Do not address these areas.	732	732	732			75	54.9	54.9	



Ulster County - Trudy Resnick Farber Building						Watts per Line		Total kW	Hours	kWh per Week					
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
39	1st Floor Lobby	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	75	16.4	9.7	6.8
40	1st Floor Mens Restroom	3	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	315	3	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install ceiling occupancy sensors.	195	315	195	120	0.12	50	15.8	2.4	13.3
40	1st Floor Womens Restroom	3	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	315	3	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install ceiling occupancy sensors.	195	315	195	120	0.12	50	15.8	2.4	13.3
41	Stairwell 1	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	168	36.8	21.7	15.1
42	Stairwell 2	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	168	36.8	21.7	15.1
43	Exterior	1	Wallpack (6") fixture with 1-150 Watt high-pressure sodium lamp.	190		Do not address these areas.	190	190	190			98	18.6	18.6	
43	Exterior	12	Recessed 1X1 fixture with 15 Watt compact fluorescent screw-in lamps.	216		Do not address these areas.	216	216	216			98	21.2	21.2	
43	Exterior	3	Pole-mounted (12") fixture with 1-150 Watt high-pressure sodium lamp.	570		Do not address these areas.	570	570	570			98	55.9	55.9	
<b>Totals:</b>		<b>374</b>		<b>25,040</b>	<b>105</b>		<b>21,750</b>	25040	21750	3290	3.29		76675	65236	11439
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - Department of Environment															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Main Entrance	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
2	Break Area	3	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	165	219	165	54	0.054	25	5.5	4.1	1.4
3	Marty's Office	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	45	3.3	1.9	1.4
4	Small Restroom	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	10	0.7	0.4	0.3
4	Small Restroom	1	Wall-mounted strip 1X2 fixture with 1-2' standard lamp and standard ballasts.	32	1	Modify the existing fixtures with 1-2' T8 lamp and low-power QHE electronic ballasts.	14	32	14	18	0.018	10	0.3	0.1	0.2
5	Amanda's Office	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	45	9.9	5.8	4.1
6	Main Reception	4	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	45	13.1	7.7	5.4
7	Public Restroom	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	10	0.7	0.4	0.3
7	Public Restroom	1	Wall-mounted strip 1X2 fixture with 1-2' standard lamp and standard ballasts.	32	1	Modify the existing fixtures with 1-2' T8 lamp and low-power QHE electronic ballasts.	14	32	14	18	0.018	10	0.3	0.1	0.2
8	Conference Room	4	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	25	7.3	4.3	3.0
9	Front Hall & Copy Room	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	129	219	129	90	0.09	25	5.5	3.2	2.3
10	2nd Floor	10	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	730	10	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	430	730	430	300	0.3	5	3.7	2.2	1.5
11	3rd Floor - ATTIC	3	Surface-mounted (6") fixture with 1-60 Watt incandescent lamp.	180	3	Modify the existing fixtures with 13 Watt compact fluorescent screw-in lamps.	45	180	45	135	0.135	5	0.9	0.2	0.7
12	Basement	10	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	730	10	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	430	730	430	300	0.3	5	3.7	2.2	1.5
12	Basement	3	Surface-mounted (6") fixture with 13 Watt compact fluorescent screw-in lamps.	45	3	Do not address these areas.	45	45	45			5	0.2	0.2	
13	General	5	exit sign (12") fixture with 1-8 Watt compact fluorescent lamp.	45	5	Install new LED exit signs with battery backup	10	45	10	35	0.035	168	7.6	1.7	5.9
<b>Totals:</b>		<b>54</b>		<b>3,327</b>	<b>54</b>		<b>1,927</b>	3327	1927	1400	1.4		3351	1860	1491
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - Office Building							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Common Areas	38	exit sign (12") fixture with LED technology.	228		Do not address these areas.	228	228	228			168	38.3	38.3	
1	Common Areas	35	exit sign (12") fixture with 9 Watt compact fluorescent lamps.	385	35	Install new LED exit signs with battery backup	70	385	70	315	0.315	168	64.7	11.8	52.9
2	Basement Vault	14	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,022	14	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	602	1022	602	420	0.42	50	51.1	30.1	21.0
2	Basement Vault	6	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	876	6	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	510	876	510	366	0.366	50	43.8	25.5	18.3
2	Basement Vault	1	Deep-cell parabolic 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	50	3.7	2.2	1.5
3	B- Information Services	9	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	801		Do not address these areas.	801	801	801			50	40.1	40.1	
4	B- Maintenance Office	6	Wraparound 1X4 fixture with 3-4' T8 lamps and electronic ballasts.	534	6	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	390	534	390	144	0.144	50	26.7	9.8	17.0
5	B- Storage	2	Deep-cell parabolic 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	10	1.5	0.9	0.6
6	B- Corridor	14	Deep-cell parabolic 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,022	14	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	602	1022	602	420	0.42	75	76.7	45.2	31.5
7	B-Clerk Storage	5	Deep-cell parabolic 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	365	5	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	215	365	215	150	0.15	50	18.3	5.4	12.9
8	B-DMV Plate Room	4	Deep-cell parabolic 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	172	292	172	120	0.12	50	14.6	4.3	10.3
9	B-Break Room	3	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	438	3	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	255	438	255	183	0.183	50	21.9	3.8	18.1
10	B-Generator Room	4	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	244		Do not address these areas.	244	244	244			5	1.2	1.2	
11	B-Switch Gear Room	5	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	305		Do not address these areas.	305	305	305			25	7.6	7.6	
12	B-Boiler Room	18	Deep-cell parabolic 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,314	18	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	774	1314	774	540	0.54	50	65.7	38.7	27.0
13	B-Chiller Room	4	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	244		Do not address these areas.	244	244	244			25	6.1	6.1	
14	Stairwell 1	12	Deep-cell parabolic 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	876	12	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	516	876	516	360	0.36	168	147.2	86.7	60.5
15	Stairwell 2	12	Deep-cell parabolic 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	876	12	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	516	876	516	360	0.36	168	147.2	86.7	60.5
16	1st-Main Lobby	10	Hi-Hat (12") fixture with 1-250 Watt metal halide lamp.	2,860		Do not address these areas.	2,860	2860	2860			75	214.5	214.5	
17	1st-DMV Testing	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas.	267	267	267			50	13.4	13.4	
18	1st-DMV Testing Hall	1	Surface-mounted strip 1X8 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	75	5.5	3.2	2.3

Ulster County - Office Building															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
19	1st-DMV Reception Area	22	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,958		Do not address these areas.	1,958	1958	1958			75	146.9	146.9	
19	1st-DMV Reception Area	6	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps.	180		Do not address these areas.	180	180	180			75	13.5	13.5	
20	1st-Deputy Clerk	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas.	356	356	356			50	17.8	17.8	
21	1st-Break Room	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas. Install wallswitch occupancy sensors.	178	178	178			50	8.9	3.6	5.3
22	1st-DMV Corridor	14	Deep-cell parabolic 1X4 fixture with 2-4' energy efficient lamps and energy-efficient ballasts.	1,022	14	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	602	1022	602	420	0.42	75	76.7	45.2	31.5
23	1st Floor Vault	17	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,241	17	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	731	1241	731	510	0.51	50	62.1	36.6	25.5
24	Vault Stairwell	5	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	365	5	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	215	365	215	150	0.15	50	18.3	10.8	7.5
25	1st Floor Vault Office	3	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	315	3	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	195	315	195	120	0.12	50	15.8	9.8	6.0
26	1st-Clerk Data Entry	16	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,424		Do not address these areas.	1,424	1424	1424			50	71.2	71.2	
27	1st-Secretary Office 1	2	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	130	210	130	80	0.08	50	10.5	6.5	4.0
28	1st-Secretary Office 2	1	Recessed lensed 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	105	1	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	65	105	65	40	0.04	50	5.3	3.3	2.0
29	2nd-County Clerk Receiving	27	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	2,403		Do not address these areas.	2,403	2403	2403			50	120.2	120.2	
30	2nd-County Clerk	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas. Install wallswitch occupancy sensors.	356	356	356			50	17.8	10.7	7.1
31	2nd-County Clerk Conference Room	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install wallswitch occupancy sensors.	267	267	267			25	6.7	5.3	1.3
32	2nd-Corridor	124	Deep-cell parabolic 1X4 fixture with 2-4' energy efficient lamps and energy-efficient ballasts.	9,052	124	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	5,332	9052	5332	3720	3.72	75	678.9	399.9	279.0
33	2nd Floor Vault	19	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,387	19	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	817	1387	817	570	0.57	50	69.4	40.9	28.5
34	2nd-County Clerk Public Area	1	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	50	3.7	2.2	1.5
34	2nd-County Clerk Public Area	15	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,335		Do not address these areas.	1,335	1335	1335			50	66.8	66.8	
35	3rd-Surrogate County Clerk	12	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,068		Do not address these areas.	1,068	1068	1068			50	53.4	53.4	
36	312	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	

Ulster County - Office Building							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
37	311	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas.	267	267	267			50	13.4	13.4	
38	3rd-State Server Room	1	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			25	1.5	1.5	
39	3rd Floor Vault	19	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,387	19	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	817	1387	817	570	0.57	50	69.4	40.9	28.5
40	3rd-Jury Room	8	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	712		Do not address these areas.	712	712	712			50	35.6	35.6	
41	3rd-Surrogate Chambers	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas.	356	356	356			50	17.8	17.8	
42	3rd-Surrogate Conference Room	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas. Install ceiling occupancy sensors.	356	356	356			50	17.8	7.1	10.7
43	3rd-Court Room	12	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,068		Do not address these areas.	1,068	1068	1068			50	53.4	53.4	
44	3rd-Court Attorney Office	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
45	3rd-Judge's Chambers	6	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	534		Do not address these areas.	534	534	534			50	26.7	26.7	
46	3rd Floor Corridor	11	Deep-cell parabolic 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	803	11	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	473	803	473	330	0.33	75	60.2	35.5	24.8
47	3rd-Planning	17	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,513		Do not address these areas.	1,513	1513	1513			50	75.7	75.7	
48	3rd-Planning Director	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install wallswitch occupancy sensors.	267	267	267			50	13.4	5.3	8.0
49	3rd-Planning Conference Room	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas. Install wallswitch occupancy sensors.	356	356	356			50	17.8	10.7	7.1
50	3rd-Planning Office 1	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install wallswitch occupancy sensors.	267	267	267			50	13.4	8.0	5.3
51	3rd-Planning Office 2	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install wallswitch occupancy sensors.	267	267	267			50	13.4	8.0	5.3
52	3rd-Planning Data Room	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas. Install wallswitch occupancy sensors.	178	178	178			50	8.9	3.6	5.3
53	3rd-Tresury Vault	10	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	730	10	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	430	730	430	300	0.3	50	36.5	21.5	15.0
54	4th-Tax Area	41	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	3,649		Do not address these areas.	3,649	3649	3649			50	182.5	182.5	
55	4th-Finance-Director Office	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
56	4th-Finance-Conference Room	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install wallswitch occupancy sensors.	267	267	267			50	13.4	5.3	8.0
57	4th-Finance-Office 1	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
58	4th-Finance-Office 2	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
59	4th-Payroll	29	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	2,581		Do not address these areas.	2,581	2581	2581			5	12.9	12.9	

Ulster County - Office Building						Watts per Line		Total kW	Hours	kWh per Week					
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
60	4th-Corridor	12	Deep-cell parabolic 1X4 fixture with 2-4' energy efficient lamps and energy-efficient ballasts.	876	12	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	516	876	516	360	0.36	75	65.7	38.7	27.0
61	4th-Real Property	16	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,424		Do not address these areas.	1,424	1424	1424			50	71.2	71.2	
62	4th-Real Property-Office 1	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas.	267	267	267			50	13.4	13.4	
63	4th-Real Property-Office 2	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
64	4th-Real Property-Office 3	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
65	4th-Real Property-Office 4	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
66	4th-Real Property-Office 5	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
67	4th-Mapping Area	17	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,513		Do not address these areas.	1,513	1513	1513			50	75.7	75.7	
68	5th-Comptroller Record Room	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas.	267	267	267			50	13.4	13.4	
68	5th-Comptroller Record Room	1	Surface-mounted strip 1X8 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	50	3.7	2.2	1.5
69	5th-Comptroller Office	13	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,157		Do not address these areas.	1,157	1157	1157			50	57.9	57.9	
70	5th-Senior Auditor	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas. Install wallswitch occupancy sensors.	356	356	356			50	17.8	10.7	7.1
71	5th-Deputy Comptroller	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install wallswitch occupancy sensors.	267	267	267			50	13.4	8.0	5.3
72	5th-Comptroller	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install wallswitch occupancy sensors.	267	267	267			50	13.4	8.0	5.3
73	5th-County Attorney	15	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,335		Do not address these areas.	1,335	1335	1335			50	66.8	66.8	
73	5th-County Attorney	8	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	488		Do not address these areas.	488	488	488			50	24.4	24.4	
74	5th-Assistant County Attorney 1	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
75	5th-Assistant County Attorney 2	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
76	5th-Assistant County Attorney 3	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	

Ulster County - Office Building							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
77	5th-County Attorney-Conference Room	6	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	534		Do not address these areas. Install ceiling occupancy sensors.	534	534	534			50	26.7	13.4	13.4
78	5th-Attorney Office	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas.	267	267	267			50	13.4	13.4	
79	5th-State Assistant Attorney	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas.	267	267	267			50	13.4	13.4	
80	5th-Attorney Storage	1	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	89		Do not address these areas. Install wallswitch occupancy sensors.	89	89	89			50	4.5	1.8	2.7
81	5th-Attorney Break Room	4	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts. Install wallswitch occupancy sensors.	220	292	220	72	0.072	50	14.6	4.4	10.2
82	5th- Personnel Staff	11	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	979		Do not address these areas.	979	979	979			50	49.0	49.0	
83	5th- Personnel Staff Office	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
84	5th- Reception Area	8	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	712		Do not address these areas.	712	712	712			50	35.6	35.6	
85	5th-Testing Room	5	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	445		Do not address these areas.	445	445	445			50	22.3	22.3	
86	5th- Personnel Records	16	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,424		Do not address these areas.	1,424	1424	1424			50	71.2	71.2	
87	5th- Personnel Records- Office 1	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
88	5th- Personnel Records- Office 2	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
89	5th- Personnel Records- Office 3	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
90	5th- Personnel Records- Office 4	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
91	5th- Personnel Records- Office 5	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
92	5th- Personnel Records- Office 6	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	

Ulster County - Office Building														Watts per Line		Total kW	Hours	kWh per Week		
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings					
93	5th- Personnel Records- Office 7	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
94	5th- Personnel Records- Office 8	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
95	5th- Personnel Records- Office 9	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
96	5th-Corridor	12	Deep-cell parabolic 1X4 fixture with 2-4' energy efficient lamps and energy-efficient ballasts.	876	12	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	516	876	516	360	0.36	75	65.7	38.7	27.0					
97	6th- Legislative Minority	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
98	6th-County Executive Office	16	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,424		Do not address these areas.	1,424	1424	1424			50	71.2	71.2						
98	6th-County Executive Office	6	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	534		Do not address these areas.	534	534	534			50	26.7	26.7						
98	6th-County Executive Office	1	Pendant-mounted 1X8 fixture with 4-4' energy efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	50	7.3	4.3	3.1					
98	6th-County Executive Office	2	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	122		Do not address these areas.	122	122	122			50	6.1	6.1						
99	6th-County Deputy Office 1	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
100	6th-County Deputy Office 2	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
101	6th-County Deputy Office 3	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
102	6th-Chief of Staff 1	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas.	356	356	356			50	17.8	17.8						
103	6th-Chief of Staff 2	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
104	6th-Chief of Staff 3	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
105	6th-Chief of Staff 4	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
106	6th-Budget Director 1	6	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	534		Do not address these areas.	534	534	534			50	26.7	26.7						
107	6th-Budget Director 2	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9						
108	6th-Budget-Break Room	4	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	244		Do not address these areas. Install wallswitch occupancy sensors.	244	244	244			50	12.2	4.9	7.3					
109	6th- Legislative Chambers	37	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	2,257		Do not address these areas.	2,257	2257	2257			50	112.9	112.9						



Ulster County - Office Building															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line		Savings	Total kW	Hours	kWh per Week		
								Existing	Proposed		Saved	per Wk	Exist	Proposed	Savings
110	6th-Legislative Offices	10	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	890		Do not address these areas.	890	890	890			50	44.5	44.5	
111	6th-Counsel	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas.	267	267	267			50	13.4	13.4	
112	6th-Deputy Clerk	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
113	6th-Clerk	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			50	8.9	8.9	
114	6th-Conference Room	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas.	267	267	267			50	13.4	13.4	
115	6th-Library Conference Room	8	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	712		Do not address these areas. Install ceiling occupancy sensors.	712	712	712			50	35.6	17.8	17.8
116	6th-Corridor	12	Deep-cell parabolic 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	876	12	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	516	876	516	360	0.36	50	43.8	25.8	18.0
117	1st-Men's Restroom	1	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	25	3.7	2.1	1.5
117	1st-Men's Restroom	1	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
118	1st-Women's Restroom	1	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	25	3.7	2.1	1.5
118	1st-Women's Restroom	1	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
119	2nd-Men's Restroom	1	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	25	3.7	2.1	1.5
119	2nd-Men's Restroom	1	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
120	2nd-Women's Restroom	1	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	25	3.7	2.1	1.5
120	2nd-Women's Restroom	1	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
121	3rd-Men's Restroom	1	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	25	3.7	2.1	1.5
121	3rd-Men's Restroom	1	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
122	3rd-Women's Restroom	1	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	25	3.7	2.1	1.5
122	3rd-Women's Restroom	1	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
123	4th-Men's Restroom	1	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	25	3.7	2.1	1.5

Ulster County - Office Building							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
123	4th-Men's Restroom	1	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
124	4th-Women's Restroom	1	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	25	3.7	2.1	1.5
124	4th-Women's Restroom	1	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
125	5th-Men's Restroom	1	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	25	3.7	2.1	1.5
125	5th-Men's Restroom	1	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
126	5th-Women's Restroom	1	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	25	3.7	2.1	1.5
126	5th-Women's Restroom	1	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
127	6th-Men's Restroom	1	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	25	3.7	2.1	1.5
127	6th-Men's Restroom	1	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
128	6th-Women's Restroom	1	Wraparound 1X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	146	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	146	85	61	0.061	25	3.7	2.1	1.5
128	6th-Women's Restroom	1	Wall-mounted 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
129	Exterior	10	Pole-mounted (12") fixture with 1-250 Watt high-pressure sodium lamp.	2,950		Do not address these areas.	2,950	2950	2950			98	289.1	289.1	
129	Exterior	6	Hi-Hat (12") fixture with 1-150 Watt metal halide lamp.	1,170		Do not address these areas.	1,170	1170	1170			98	114.7	114.7	
<b>Totals:</b>		<b>1,069</b>		<b>87,403</b>	<b>425</b>		<b>74,730</b>	87403	74730	12673	12.673		264911	211631	53279
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - Record Storage															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours per Wk	kWh per Week		
								Existing	Proposed	Savings			Saved	Exist	Proposed
1	Vestibule	1	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	61		Do not address these areas.	61	61	61			168	10.2	10.2	
2	Common Areas	10	exit sign (12") fixture with LED technology.	60		Do not address these areas.	60	60	60			168	10.1	10.1	
3	Lobby & Open Office Area	8	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	488		Do not address these areas.	488	488	488			50	24.4	24.4	
4	Conference Room	4	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	244		Do not address these areas. Install wallswitch occupancy sensors	244	244	244			50	12.2	4.9	7.3
5	Break Room	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	122		Do not address these areas. Install wallswitch occupancy sensors	122	122	122			50	6.1	2.4	3.7
6	Warehouse	51	Low-bay 1X1 fixture with 1-250 Watt high-pressure sodium lamp.	15,045	51	Install new low-bay fixtures using 4-4' 25V supersaver T8 lamps and QHE hi-power electronic ballasts. Install fixture mounted occupancy sensors	5,712	15045	5712	9333	9.333	50	752.3	85.7	666.6
7	Vault	6	Low-bay 1X1 fixture with 1-250 Watt high-pressure sodium lamp.	1,770	6	Install new low-bay fixtures using 4-4' 25V supersaver T8 lamps and QHE hi-power electronic ballasts. Install wallswitch occupancy sensors.	672	1770	672	1098	1.098	50	88.5	13.4	75.1
8	Vault Side Room	2	Low-bay 1X1 fixture with 1-250 Watt high-pressure sodium lamp.	590	2	Install new low-bay fixtures using 4-4' 25V supersaver T8 lamps and QHE hi-power electronic ballasts. Install fixture mounted occupancy sensors	224	590	224	366	0.366	5	3.0	1.1	1.8
9	Micrographs	27	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	1,647		Do not address these areas.	1,647	1647	1647			50	82.4	82.4	
10	Micrographs - Back Office	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	122		Do not address these areas.	122	122	122			50	6.1	6.1	
11	Camera Area	6	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	366		Do not address these areas.	366	366	366			10	3.7	3.7	
12	Micrographs - Office	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts	178		Do not address these areas. Install wallswitch occupancy sensors	178	178	178			50	8.9	4.5	4.5
13	Maintenance Office	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	122		Do not address these areas. Install wallswitch occupancy sensors	122	122	122			50	6.1	2.4	3.7
14	Receiving	4	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	244		Do not address these areas. Install wallswitch occupancy sensors	244	244	244			50	12.2	4.9	7.3
15	Men's Restroom	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	122		Do not address these areas.	122	122	122			10	1.2	1.2	
16	Women's Restroom	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	122		Do not address these areas.	122	122	122			10	1.2	1.2	
17	Loading Dock	4	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	244		Do not address these areas. Install wallswitch occupancy sensors	244	244	244			50	12.2	4.9	7.3
18	Switchboard	6	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	366		Do not address these areas. Install ceiling occupancy sensors	366	366	366			50	18.3	7.3	11.0
19	Laurie Hancock's Office	2	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	122		Do not address these areas.	122	122	122			50	6.1	6.1	
20	Corridor	16	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	976		Do not address these areas.	976	976	976			75	73.2	73.2	
21	Communications Room	4	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	244		Do not address these areas. Install wallswitch occupancy sensors	244	244	244			50	12.2	4.9	7.3
22	Conference Room	4	Recessed lensed 2X2 fixture with 3-39 Watt biax lamps and electronic ballasts	420		Do not address these areas. Install wallswitch occupancy sensors	420	420	420			50	21.0	8.4	12.6
23	Exterior	14	Wallpack (6") fixture with 1-70 Watt high pressure sodium lamp	1,288		Do not address these areas.	1,288	1288	1288			98	126.2	126.2	
	<b>Totals:</b>	<b>181</b>		<b>24,963</b>	<b>59</b>		<b>14,166</b>	24963	14166	10797	10.797		67481	25460	42021
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - UCAT															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Common Areas	16	exit sign (12") fixture with LED technology.	96		Do not address these areas.	96	96	96			168	16.1	16.1	
2	Lobby	10	Hi-Hat (6") fixture with 2-13 Watt compact fluorescent hard-wired lamps.	300		Do not address these areas.	300	300	300			168	50.4	50.4	
3	Reception & Corridor	15	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	1,335		Do not address these areas.	1,335	1335	1335			84	112.1	112.1	
4	105	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			45	8.0	8.0	
5	106	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			45	8.0	8.0	
6	108 Storage	1	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	61		Do not address these areas.	61	61	61			5	0.3	0.3	
7	109 Janitor's Closet	1	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	61		Do not address these areas.	61	61	61			5	0.3	0.3	
8	112	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			45	8.0	8.0	
9	116 Kitchen	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas. Install wallswitch occupancy sensors.	356	356	356			45	16.0	8.0	8.0
10	114 Men's Restroom	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install ceiling occupancy sensors.	267	267	267			45	12.0	3.0	9.0
11	115 Women's Restroom	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install ceiling occupancy sensors.	267	267	267			45	12.0	3.0	9.0
12	119 Computer Room	1	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	61		Do not address these areas.	61	61	61			5	0.3	0.3	
13	118	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas.	356	356	356			168	59.8	59.8	
14	117 Closet	2	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	122		Do not address these areas.	122	122	122			5	0.6	0.6	
15	Stairwell	3	Wraparound 1X4 fixture with 1-4' T8 lamp and electronic ballasts.	93		Do not address these areas.	93	93	93			168	15.6	15.6	
16	Upstairs Storage	11	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	671		Do not address these areas.	671	671	671			10	6.7	6.7	
17	2nd Floor Lobby	8	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	712		Do not address these areas.	712	712	712			168	119.6	119.6	
17	2nd Floor Lobby	1	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			168	10.2	10.2	
18	204 Storage	1	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	89		Do not address these areas.	89	89	89			5	0.4	0.4	
19	200	4	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	356		Do not address these areas.	356	356	356			45	16.0	16.0	
20	202 Closet	1	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	61		Do not address these areas.	61	61	61			5	0.3	0.3	
21	203	2	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	178		Do not address these areas.	178	178	178			45	8.0	8.0	
22	103 Office	1	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	89		Do not address these areas.	89	89	89			45	4.0	4.0	
23	Lobby Restroom	1	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	89		Do not address these areas.	89	89	89			10	0.9	0.9	
24	110 Conference Room	10	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	890		Do not address these areas. Install ceiling occupancy sensors.	890	890	890			45	40.1	20.0	20.0
25	111 Office	1	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	89		Do not address these areas.	89	89	89			45	4.0	4.0	
26	Highbay Garage Area	11	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	671		Do not address these areas.	671	671	671			84	56.4	56.4	

Ulster County - UCAT															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
26	Highbay Garage Areas	36	Low-bay 1X1 fixture with 1-250 Watt metal halide lamp.	10,296	36	Install new low-bay fixtures using 4-4' 25W supersaver T8 lamps and QHE hi-power electronic ballasts.	4,032	10296	4032	6264	6.264	84	864.9	338.7	526.2
27	Men's Restroom	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install wallswitch occupancy sensors.	267	267	267			45	12.0	3.0	9.0
28	Women's Restroom	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install wallswitch occupancy sensors.	267	267	267			45	12.0	3.0	9.0
29	Highbay Office	3	Deep-cell parabolic 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address these areas. Install ceiling occupancy sensors.	267	267	267			84	22.4	11.2	11.2
30	Highbay Storage 1	4	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	244		Do not address these areas.	244	244	244			5	1.2	1.2	
31	Highbay Storage 2	1	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	61		Do not address these areas.	61	61	61			5	0.3	0.3	
32	Highbay Boiler Room	2	Wraparound 1X4 fixture with 2-4' T8 lamps an electronic ballasts.	122		Do not address these areas.	122	122	122			5	0.6	0.6	
33	Exterior	26	Surface-mounted 1X1 fixture with 1-175 Watt metal halide lamp.	5,590		Do not address these areas.	5,590	5590	5590			98	547.8	547.8	
<b>Totals:</b>		<b>199</b>		<b>24,979</b>	<b>36</b>		<b>18,715</b>	24979	18715	6264	6.264		106478	75201	31276
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - Ulster Avenue Office Complex							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Maintenance	5	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	305		Do not address these areas.	305	305	305			50	15.3	15.3	
2	Maintenance Hall	7	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	735	7	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	455	735	455	280	0.28	75	55.1	34.1	21.0
3	Maintenance Break Room	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	86	146	86	60	0.06	50	7.3	1.7	5.6
4	Children Services - Corridors	8	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	840	8	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	520	840	520	320	0.32	75	63.0	39.0	24.0
5	Preventative Intake Office 1	2	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	86	146	86	60	0.06	50	7.3	2.6	4.7
6	Preventative Intake Office 2	3	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	315	3	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	195	315	195	120	0.12	50	15.8	5.9	9.9
7	Preventative Intake Office 3	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	3.9	6.6
8	Preventative Intake Office 4	3	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	315	3	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	195	315	195	120	0.12	50	15.8	5.9	9.9
9	Preventative Intake Office 5	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	3.9	6.6
10	Preventative Intake Office 6	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	3.9	6.6
11	Preventative Intake Office 7	3	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	315	3	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	195	315	195	120	0.12	50	15.8	5.9	9.9
12	Preventative Intake Office 8	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	3.9	6.6
13	Family Violence Offices 1-6	16	Recessed lensed 2X4 fixture with 4-4' energy-efficient lamps and energy-efficient ballasts.	2,336	16	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	1,360	2336	1360	976	0.976	50	116.8	68.0	48.8
14	Family Violence Offices 7-20	28	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	2,940	28	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	1,820	2940	1820	1120	1.12	50	147.0	91.0	56.0
15	Family Violence Corridor	6	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	258	438	258	180	0.18	75	32.9	19.4	13.5
15	Family Violence Corridor	4	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	420	4	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	260	420	260	160	0.16	75	31.5	19.5	12.0
16	CCS Corridor	4	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	420	4	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	260	420	260	160	0.16	75	31.5	19.5	12.0
16	CCS Corridor	14	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	1,246		Do not address these areas.	1,246	1246	1246			75	93.5	93.5	
17	CCS Office 1	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	2.6	7.9

Ulster County - Ulster Avenue Office Complex															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
18	CCS Office 2	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	2.6	7.9
19	CCS Office 3	3	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	315	3	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	195	315	195	120	0.12	50	15.8	3.9	11.9
20	CCS Office 4	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	2.6	7.9
21	CCS Office 5	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	2.6	7.9
22	CCS Office 6	3	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	315	3	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	195	315	195	120	0.12	50	15.8	3.9	11.9
23	CCS Office 7	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	2.6	7.9
24	CCS Office 8	3	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	315	3	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	195	315	195	120	0.12	50	15.8	3.9	11.9
25	CCS Office 9	3	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	315	3	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	195	315	195	120	0.12	50	15.8	3.9	11.9
26	CCS Office 10	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	2.6	7.9
27	CCS Office 11	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	2.6	7.9
28	CCS Office 12	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	2.6	7.9
29	CCS Office 13	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	2.6	7.9
30	CCS Office 14	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	2.6	7.9
31	CCS Office 15	2	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensors.	130	210	130	80	0.08	50	10.5	2.6	7.9
32	CCS Conference Room 1	7	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	735	7	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install ceiling occupancy sensors.	455	735	455	280	0.28	75	55.1	9.1	46.0
33	CCS Copy Room	2	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	178		Do not address the light fixtures, but install wallswitch occupancy sensors.	178	178	178			75	13.4	3.6	9.8
34	Preventative Hall	14	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,022	14	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	602	1022	602	420	0.42	75	76.7	45.2	31.5
35	Preventative Hall-Offices	15	Deep-cell parabolic 2X4 fixture with 3-4' energy efficient lamps and ballasts.	1,575	15	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	975	1575	975	600	0.6	50	78.8	48.8	30.0
36	Staff Women's Restroom	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		Do not address the light fixtures, but install ceiling occupancy sensors.	61	61	61			50	3.1	3.1	

Ulster County - Ulster Avenue Office Complex							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
36	Staff Women's Restroom	1	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			50	3.1	1.5	1.5
37	Staff Men's Restroom	1	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	61		Do not address the light fixtures, but install ceiling occupancy sensors.	61	61	61			50	3.1	3.1	
37	Staff Men's Restroom	1	Deep-cell parabolic 2X2 fixture with 2-4' T8 "U" lamps and electronic ballasts.	61		Do not address these areas.	61	61	61			50	3.1	1.5	1.5
38	Aisle W	8	Recessed lensed 2X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	584	8	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	344	584	344	240	0.24	75	43.8	25.8	18.0
39	Aisle W - Office Space	30	Deep-cell parabolic 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	3,150	30	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	1,950	3150	1950	1200	1.2	50	157.5	97.5	60.0
40	Foster Care Office Space	25	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	2,225		Do not address these areas.	2,225	2225	2225			50	111.3	111.3	
41	Visitation Conference Room	4	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	356		Do not address the light fixtures, but install wallswitch occupancy sensors.	356	356	356			50	17.8	10.7	7.1
42	Visitation Rooms A-D	10	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	890		Do not address these areas.	890	890	890			50	44.5	44.5	
43	Visitation Restroom	3	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	267		Do not address the light fixtures, but install wallswitch occupancy sensors.	267	267	267			50	13.4	6.7	6.7
44	Child Services Lobby/Vestibule	8	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	712		Do not address these areas.	712	712	712			75	53.4	53.4	
44	Child Services Lobby/Vestibule	3	Hi-Hat (12") fixture with 1-70 Watt high-pressure sodium lamp.	276		Do not address these areas.	276	276	276			75	20.7	20.7	
45	Section C Hall	15	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	1,335		Do not address these areas.	1,335	1335	1335			75	100.1	100.1	
46	Section C Office Space	155	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	13,795		Do not address these areas.	13,795	13795	13795			50	689.8	689.8	
46	Section C Office Space	76	Recessed lensed 2X4 fixture with 4-4' T8 lamp and electronic ballasts.	8,360		Do not address these areas.	8,360	8360	8360			50	418.0	418.0	
47	202-Legal Department	10	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	890		Do not address these areas.	890	890	890			50	44.5	44.5	
47	202-Legal Department	14	Recessed lensed 2X4 fixture with 4-4' T8 lamp and electronic ballasts.	1,540		Do not address these areas.	1,540	1540	1540			50	77.0	77.0	
48	Section B Office Space	38	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	2,318		Do not address these areas.	2,318	2318	2318			50	115.9	115.9	
48	Section B Office Space	92	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	8,188		Do not address these areas.	8,188	8188	8188			50	409.4	409.4	
48	Section B Office Space	88	Recessed lensed 2X4 fixture with 4-4' T8 lamp and electronic ballasts.	9,680		Do not address these areas.	9,680	9680	9680			50	484.0	484.0	
49	Section B Vestibules	8	Hi-Hat (12") fixture with 1-70 Watt high-pressure sodium lamp.	736		Do not address these areas.	736	736	736			75	55.2	55.2	
50	Section A - General	88	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts.	5,368		Do not address these areas.	5,368	5368	5368			50	268.4	268.4	
50	Section A - General	196	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts.	17,444		Do not address these areas.	17,444	17444	17444			50	872.2	872.2	
50	Section A - General	146	Recessed lensed 2X4 fixture with 4-4' T8 lamp and electronic ballasts.	16,060		Do not address these areas.	16,060	16060	16060			50	803.0	803.0	
50	Section A - General	6	Hi-Hat (12") fixture with 1-70 Watt high-pressure sodium lamp.	552		Do not address these areas.	552	552	552			50	27.6	27.6	



Ulster County - Ulster Avenue Office Complex							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
51	Section A-105A	3	Recessed lensed 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address the light fixtures, but install wallswitch occupancy sensors.	267	267	267			50	13.4	5.3	8.0
52	Section A-105B	3	Recessed lensed 2X4 fixture with 3-4' T8 lamps and electronic ballasts.	267		Do not address the light fixtures, but install wallswitch occupancy sensors.	267	267	267			50	13.4	5.3	8.0
53	126 Lounge-Men's Restroom	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address the light fixtures, but install wallswitch occupancy sensors.	213	213	213			50	10.7	4.3	6.4
54	126 Lounge-Women's Restroom	3	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	213		Do not address the light fixtures, but install wallswitch occupancy sensors.	213	213	213			50	10.7	4.3	6.4
55	Exterior	26	Wallpack (6") fixture with 1-150 Watt high-pressure sodium lamp.	4,940		Do not address these areas.	4,940	4940	4940			98	484.1	484.1	
55	Exterior	13	Pole-mounted (12") fixture with 1-400 Watt metal halide lamp.	5,785		Do not address these areas.	5,785	5785	5785			98	566.9	566.9	
56	Common Areas	92	exit sign (12") fixture with LED technology.	552		Do not address these areas.	552	552	552			168	92.7	92.7	
<b>Totals:</b>		<b>1,355</b>		<b>126,044</b>	<b>202</b>		<b>117,948</b>	126044	117948	8096	8,096		370451	337745	32706
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - Accord Substation						Watts per Line		Total kW	Hours	kWh per Week					
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Filter Room	3	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts	225	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Ceiling mounted occupancy sensor.	129	225	129	96	0.096	42	9.5	2.7	6.7
2	Chlorine Storage/Pump Room	5	Chain Mounted 1X8 fixture with 2-8' T12 95 W lamps and magnetic ballasts	1,045	5	Ceiling mounted occupancy sensor.	1,045	1,045	1,045			42	43.9	21.9	21.9
3	Chlorine Storage/Pump Room	8	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts	600	8	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Ceiling mounted occupancy sensor.	344	600	344	256	0.256	42	25.2	7.2	18.0
4	Chlorine Storage/Pump Room	1	Chain Mounted 2X4 fixture with 2-4' T5 lamps and electronic ballasts	48	1	No change	48	48	48			42	2.0	2.0	
5	First Aid	2	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts	150	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	150	86	64	0.064	35	5.3	3.0	2.2
6	Snack Bar	7	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts	525	7	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	301	525	301	224	0.224	70	36.8	21.1	15.7
7	Rest Rooms (2)	2	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts	150	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	150	86	64	0.064	70	10.5	3.0	7.5
8	Locker Rooms	16	Chain Mounted 2X4 fixture with 4-4' T12 34W lamps and magnetic ballasts	2,400	16	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	688	2,400	688	1712	1.712	70	168.0	48.2	119.8
9	Entrance	2	Chain Mounted 2X4 fixture with 2-4' T12 34W lamps and magnetic ballasts	150	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	150	86	64	0.064	70	10.5	6.0	4.5
<b>Totals:</b>		<b>46</b>		<b>5,293</b>	<b>46</b>		<b>2,813</b>	5293	2813	2480	2.48		3739	1382	2357
								Exist	Proposed	Savings	kW Savings		Annual Exist (12 weeks)	Annual Prop	kWh Svngs per year

Ulster County - Boiceville Substation						Watts per Line		Total kW	Hours	kWh per Week					
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Garage Bays 1-2	9	Chain-mounted 1X8 fixture with 2-8' high output lamps and standard ballasts.	2,313	9	Install new 1X8 industrial fixtures with 4-4' T8 lamps, high-power electronic ballasts and wireguards..	1,368	2313	1368	945	0.945	20	46.3	27.4	18.9
2	Garage Bays 3-6	17	Chain-mounted 1X8 fixture with 2-8' high output lamps and standard ballasts.	4,369	17	Install new 1X8 industrial fixtures with 4-4' T8 lamps, high-power electronic ballasts and wireguards..	2,584	4369	2584	1785	1.785	5	21.8	12.9	8.9
3	Storage Locker	2	Chain-mounted 1X8 fixture with 2-8' high output lamps and standard ballasts.	514	2	Install new 1X8 industrial fixtures with 4-4' T8 lamps, high-power electronic ballasts and wireguards..	304	514	304	210	0.21	40	20.6	12.2	8.4
4	Office Area	6	Chain-mounted 1X8 fixture with 2-8' standard lamps and standard ballasts.	1,038	6	Install new 1X8 industrial fixtures with 4-4' 25V supersaver T8 lamps, QHE electronic ballasts and wireguards..	510	1038	510	528	0.528	40	41.5	20.4	21.1
<b>Totals:</b>		<b>34</b>		<b>8,234</b>	<b>34</b>		<b>4,766</b>	8234	4766	3468	3.468		6770	3788	2982
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year

Ulster County - Golden Hill Healthcare Center							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
1	Lobby	12	Deep-cell parabolic 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	1,260	12	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	780	1260	780	480	0.48	168	211.7	131.0	80.6
1	Lobby	2	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	168	24.5	14.4	10.1
1	Lobby	2	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	110	146	110	36	0.036	168	24.5	18.5	6.0
2	Gift Shop	2	Deep-cell parabolic 2X4 fixture with 3-4' energy-efficient lamps and ballasts.	210	2	Modify the existing fixtures with 3-4' 25W supersaver T8 lamps and QHE electronic ballasts.	130	210	130	80	0.08	50	10.5	6.5	4.0
3	Staff Dining	20	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts	1,780		Do not address these areas.	1,780	1780	1780			84	149.5	149.5	
4	Kitchen	16	Recessed lensed 2X4 fixture with 3-4' T8 lamp and electronic ballasts	1,424		Do not address these areas.	1,424	1424	1424			84	119.6	119.6	
4	Kitchen	42	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	3,066	42	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	1,806	3066	1806	1260	1.26	84	257.5	151.7	105.8
5	Kitchen Storage	5	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	365	5	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install ceiling occupancy sensor	215	365	215	150	0.15	84	30.7	5.4	25.3
5	Kitchen Storage	1	Surface-mounted strip 1X8 fixture with 2-8' energy-efficient lamps and ballasts.	123	1	Modify the existing fixtures with 4-4' 25W supersaver T8 lamps and QHE electronic ballasts.	85	123	85	38	0.038	84	10.3	7.1	3.2
6	Record Storage	3	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensor	129	219	129	90	0.09	25	5.5	1.3	4.2
7	Oxygen Storage	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensor	43	73	43	30	0.03	25	1.8	0.4	1.4
8	Medical Billing	9	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	657	9	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install ceiling occupancy sensor	387	657	387	270	0.27	50	32.9	9.7	23.2
9	Medical Billing Office	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensor	86	146	86	60	0.06	50	7.3	2.2	5.2
10	Morgue Oxygen	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensor	86	146	86	60	0.06	25	3.7	0.9	2.8
11	Boiler Room	13	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	949	13	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	559	949	559	390	0.39	10	9.5	5.6	3.9
12	Senior Clerk	4	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensor	172	292	172	120	0.12	50	14.6	4.3	10.3
13	Janitor's Closet	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install wallswitch occupancy sensor	43	73	43	30	0.03	25	1.8	0.2	1.6
14	Storage	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	5	0.4	0.2	0.2
15	Elevator Room	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	5	0.4	0.2	0.2
16	Sump Pump Room	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	5	0.7	0.4	0.3
17	Elevator 1	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	168	24.5	14.4	10.1

Ulster County - Golden Hill Healthcare Center															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW	Hours	kWh per Week		
								Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
18	Elevator 2	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	168	24.5	14.4	10.1
19	Hallways	12	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	732		Do not address these areas.	732	732	732			168	123.0	123.0	
19	Hallways	24	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,752	24	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	1,032	1752	1032	720	0.72	168	294.3	173.4	121.0
19	Hallways	16	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts	1,136		Do not address these areas.	1,136	1136	1136			168	190.8	190.8	
20	S-2 Corridors	72	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts	5,112		Do not address these areas.	5,112	5112	5112			168	858.8	858.8	
21	Beauty Parlor	3	Recessed lensed 2X4 fixture with 2-4' T8 lamp and electronic ballasts	183		Do not address these areas.	183	183	183			50	9.2	9.2	
22	Lounge	1	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts	71		Do not address these areas.	71	71	71			25	1.8	1.8	
23	Telephone Closet	3	Hi-Hat (12") fixture with 2-13 Watt compact fluorescent hard-wired lamps	90		Do not address these areas.	90	90	90			25	2.3	2.3	
24	Tub Rooms	15	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,095	15	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	645	1095	645	450	0.45	84	92.0	54.2	37.8
24	Tub Rooms	15	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts	1,065		Do not address these areas.	1,065	1065	1065			84	89.5	89.5	
24	Tub Rooms	5	Surface-mounted (12") fixture with 2-13 Watt compact fluorescent hard-wired lamp	150		Do not address these areas.	150	150	150			50	7.5	7.5	
25	Patient-Dining	8	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	584	8	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	344	584	344	240	0.24	50	29.2	17.2	12.0
25	Patient-Dining	5	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	365	5	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	215	365	215	150	0.15	84	30.7	18.1	12.6
25	Patient-Dining	108	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts	7,668		Do not address these areas.	7,668	7668	7668			84	644.1	644.1	
26	Patient-Treatment Rooms	8	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	584	8	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	344	584	344	240	0.24	50	29.2	17.2	12.0
27	Patient-Training Rooms	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	25	3.7	2.2	1.5
28	Personal Clothing Closets	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	5	0.7	0.4	0.3
29	Soiled Utility Closets	8	Wall-mounted 1X1 fixture with 1-2' standard lamp and standard ballasts.	256		Do not address these areas.	256	256	256			10	2.6	2.6	
30	Cleaned Utility Closets	8	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	584	8	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	344	584	344	240	0.24	10	5.8	3.4	2.4
31	High Voltage Closets	4	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	5	1.5	0.9	0.6
32	Resident Storage Rooms	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	10	0.7	0.4	0.3
33	Patient Rooms	166	Surface-mounted (12") fixture with 2-13 Watt compact fluorescent hard-wired lamp	4,980		Do not address these areas.	4,980	4980	4980			25	124.5	124.5	
33	Patient Rooms	294	Wall-mounted 1X4 fixture with 2-4' T8 lamp and electronic ballasts	17,934		Do not address these areas.	17,934	17934	17934			25	448.4	448.4	
34	Patient Room-Restrooms	157	Surface-mounted (12") fixture with 2-13 Watt compact fluorescent hard-wired lamps.	4,710		Do not address these areas.	4,710	4710	4710			5	23.6	23.6	

Ulster County - Golden Hill Healthcare Center							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
34	Patient Room-Restrooms	157	Wall-mounted 1X1 fixture with 1-2' standard lamp and standard ballasts.	5,024		Do not address these areas.	5,024	5024	5024			10	50.2	50.2	
35	Patient Corridors	12	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts	732		Do not address these areas.	732	732	732			50	36.6	36.6	
35	Patient Corridors	60	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	4,380	60	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	2,580	4380	2580	1800	1.8	84	367.9	216.7	151.2
35	Patient Corridors	90	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts	6,390		Do not address these areas.	6,390	6390	6390			168	1,073.5	1,073.5	
35	Patient Corridors	6	Hi-Hat (12") fixture with 2-13 Watt compact fluorescent hard-wired lamps	180		Do not address these areas.	180	180	180			50	9.0	9.0	
35	Patient Corridors	25	exit sign (12") fixture with 9 Watt compact fluorescent lamps	275	25	Install new LED exit signs with battery backup	50	275	50	225	0.225	168	46.2	8.4	37.8
36	Old Ambulance Entrance	1	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	84	6.1	3.6	2.5
37	Nurse's Meeting Room	4	Wraparound 1X4 fixture with 2-4' T8 lamps and electronic ballasts.	244		Do not address these areas.	244	244	244			25	6.1	6.1	
39	S-400-Office 1	2	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0
40	S-400-Office 2	6	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	258	438	258	180	0.18	50	21.9	12.9	9.0
41	S-400-Office 3	2	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0
42	S-400-Office 4	2	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0
43	S-400-Men's Restroom	1	Recessed lensed 2X2 fixture with 4-2' standard lamps and standard ballasts.	112	1	Modify the existing fixtures with 4-2' T8 lamps and low-power QHE electronic ballasts.	50	112	50	62	0.062	50	5.6	2.5	3.1
43	S-400-Men's Restroom	1	Wall-mounted 1X2 fixture with 2-2' standard lamps and standard ballasts.	56	1	Modify the existing fixtures with 2-2' T8 lamps and low-power QHE electronic ballasts.	26	56	26	30	0.03	50	2.8	1.3	1.5
44	S-400-Women's Restroom	1	Recessed lensed 2X2 fixture with 4-2' standard lamps and standard ballasts.	112	1	Modify the existing fixtures with 4-2' T8 lamps and low-power QHE electronic ballasts.	50	112	50	62	0.062	50	5.6	2.5	3.1
44	S-400-Women's Restroom	1	Wall-mounted 1X2 fixture with 2-2' standard lamps and standard ballasts.	56	1	Modify the existing fixtures with 2-2' T8 lamp and low-power QHE electronic ballasts. Install ceiling occupancy sensors	26	56	26	30	0.03	50	2.8	0.5	2.3
45	S-400 Dining Room	36	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts.	2,556		Do not address these areas.	2,556	2556	2556			50	127.8	127.8	
46	Maintenance Shop	20	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,460	20	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts. Install ceiling occupancy sensor	860	1460	860	600	0.6	50	73.0	17.2	55.8
46	Maintenance Shop	2	Surface-mounted strip 1X8 fixture with 2-4 energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0
47	S-400 Corridor	4	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	168	49.1	28.9	20.2
47	S-400 Corridor	10	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts	710		Do not address these areas.	710	710	710			168	119.3	119.3	
47	S-400 Corridor	3	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	219	3	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	165	219	165	54	0.054	168	36.8	27.7	9.1
47	S-400 Corridor	24	exit sign (12") fixture with 9 Watt compact fluorescent lamps	264	24	Install new LED exit signs with battery backup	48	264	48	216	0.216	168	44.4	8.1	36.3

Ulster County - Golden Hill Healthcare Center															
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Watts per Line			Total kW Saved	Hours per Wk	kWh per Week		
								Existing	Proposed	Savings			Exist	Proposed	Savings
48	"Long Hall"	34	Recessed lensed 1X4 fixture with 2-4' T8 lamp and electronic ballasts	2,074		Do not address these areas.	2,074	2074	2074			168	348.4	348.4	
48	"Long Hall"	14	Recessed lensed 2X2 fixture with 2-39 Watt biax lamps and electronic ballasts	994		Do not address these areas.	994	994	994			168	167.0	167.0	
48	"Long Hall"	14	exit sign (12") fixture with 9 Watt compac fluorescent lamps	154	14	Install new LED exit signs with battery backup	28	154	28	126	0.126	168	25.9	4.7	21.2
49	Volunteer's Office	2	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0
50	Beauty Parlor	2	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0
51	Dental	2	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	50	7.3	4.3	3.0
52	Ambulance Entrance	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	168	12.3	7.2	5.0
52	Ambulance Entrance	2	Recessed lensed 2X2 fixture with 2-4' energy-efficient "U" lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' T8 "U" lamps and low-power electronic ballasts.	110	146	110	36	0.036	168	24.5	18.5	6.0
53	Linen Room	9	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	657	9	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	387	657	387	270	0.27	84	55.2	32.5	22.7
54	Linen Office	8	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	584	8	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	344	584	344	240	0.24	84	49.1	28.9	20.2
55	Laundry Room	13	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	949	13	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	559	949	559	390	0.39	84	79.7	47.0	32.8
56	Store Room	1	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	73	1	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	43	73	43	30	0.03	25	1.8	1.1	0.8
57	2B Physical Therapy	20	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,460	20	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	860	1460	860	600	0.6	50	73.0	43.0	30.0
58	2B Elevator	2	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	146	2	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	86	146	86	60	0.06	168	24.5	14.4	10.1
59	2B Hall	12	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	876	12	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	516	876	516	360	0.36	168	147.2	86.7	60.5
59	2B Hall	4	exit sign (12") fixture with 9 Watt compac fluorescent lamps	44	4	Install new LED exit signs with battery backup	8	44	8	36	0.036	168	7.4	1.3	6.0
60	3B Public Restroom 1	1	Wall-mounted 1X2 fixture with 1-2' standard lamp and standard ballasts.	32	1	Modify the existing fixtures with 1-2' T8 lamp and low-power QHE electronic ballasts. Install wallswitch occupancy sensor	14	32	14	18	0.018	50	1.6	0.3	1.3
61	3B Public Restroom 2	1	Wall-mounted 1X2 fixture with 1-2' standard lamp and standard ballasts.	32	1	Modify the existing fixtures with 1-2' T8 lamp and low-power QHE electronic ballasts. Install wallswitch occupancy sensor	14	32	14	18	0.018	25	0.8	0.3	0.5
62	3B Office Space	4	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	292	4	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	172	292	172	120	0.12	168	49.1	28.9	20.2
63	3B Public Restroom 1	1	Wall-mounted 1X2 fixture with 1-2' standard lamp and standard ballasts.	32	1	Modify the existing fixtures with 1-2' T8 lamp and low-power QHE electronic ballasts. Install wallswitch occupancy sensor	14	32	14	18	0.018	50	1.6	0.3	1.3
64	3B Public Restroom 2	1	Wall-mounted 1X2 fixture with 1-2' standard lamp and standard ballasts.	32	1	Modify the existing fixtures with 1-2' T8 lamp and low-power QHE electronic ballasts. Install wallswitch occupancy sensor	14	32	14	18	0.018	25	0.8	0.3	0.5
65	3B Chapel	6	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	258	438	258	180	0.18	50	21.9	12.9	9.0

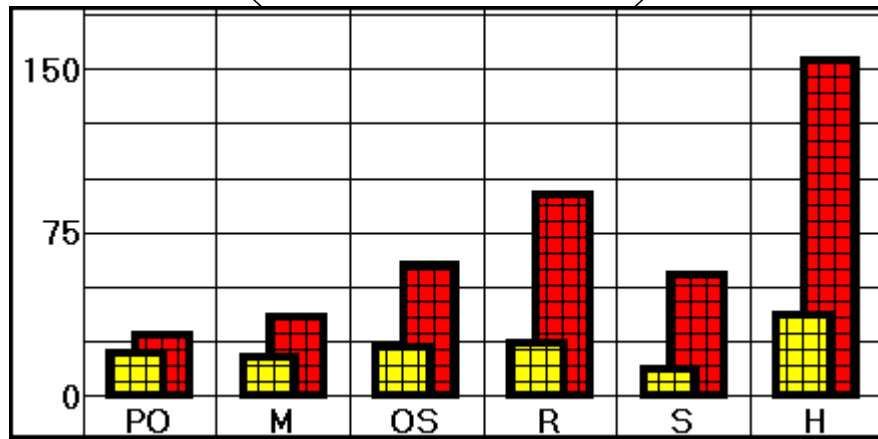
Ulster County - Golden Hill Healthcare Center							Watts per Line		Total kW	Hours	kWh per Week				
Area No.	Area Description	Qty	Existing Fixture Description	Watts	Qty	Proposed Fixture Description	Watts	Existing	Proposed	Savings	Saved	per Wk	Exist	Proposed	Savings
66	3B-Activities	6	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	438	6	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	258	438	258	180	0.18	50	21.9	12.9	9.0
67	3B Hall	5	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	365	5	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	215	365	215	150	0.15	168	61.3	36.1	25.2
67	3B Hall	3	exit sign (12") fixture with 9 Watt compac fluorescent lamps	33	3	Install new LED exit signs with battery backup	6	33	6	27	0.027	168	5.5	1.0	4.5
68	3A Hall	22	Recessed lensed 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	1,606	22	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	946	1606	946	660	0.66	168	269.8	158.9	110.9
68	3A Hall	3	Hi-Hat (12") fixture with 2-13 Watt compac fluorescent hard-wired lamps	90		Do not address these areas.	90	90	90			168	15.1	15.1	
68	3A Hall	4	exit sign (12") fixture with 9 Watt compac fluorescent lamps	44	4	Install new LED exit signs with battery backup	8	44	8	36	0.036	168	7.4	1.3	6.0
69	Stairwell 1	7	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	511	7	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	301	511	301	210	0.21	168	85.8	50.6	35.3
70	Stairwell 2	12	Wall-mounted 1X2 fixture with 2-2' standar lamps and standard ballasts	672	12	Modify the existing fixtures with 2-2' T8 lamp and low-power QHE electronic ballast.	312	672	312	360	0.36	168	112.9	52.4	60.5
71	Stairwell 3	7	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	511	7	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	301	511	301	210	0.21	168	85.8	50.6	35.3
72	Stairwell 4	7	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	511	7	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	301	511	301	210	0.21	168	85.8	50.6	35.3
73	Stairwell 5	7	Wraparound 1X4 fixture with 2-4' energy-efficient lamps and energy-efficient ballasts.	511	7	Modify the existing fixtures with 2-4' 25W supersaver T8 lamps and QHE electronic ballasts.	301	511	301	210	0.21	168	85.8	50.6	35.3
74	Exterior	12	Pole-mounted 1X1 fixture with 1-400 Watt high-pressure sodium lamp	5,400		Do not address these areas.	5,400	5400	5400			98	529.2	529.2	
74	Exterior	10	Pole-mounted 1X1 fixture with 1-250 Watt high-pressure sodium lamp	2,950		Do not address these areas.	2,950	2950	2950			98	289.1	289.1	
74	Exterior	16	Wallpack (6") fixture with 1-150 Watt metal halide lamp.	3,120		Do not address these areas.	3,120	3120	3120			98	305.8	305.8	
74	Exterior	20	Hi-Hat (6") fixture with 1-70 Watt high-pressure sodium lamp.	1,840		Do not address these areas.	1,840	1840	1840			98	180.3	180.3	
<b>Totals:</b>		<b>1,847</b>		<b>113,652</b>	<b>527</b>		<b>99,316</b>	113652	99316	14336	14.336		486165	409884	76281
								Exist	Proposed	Savings	kW Savings		Annual Exist	Annual Prop	kWh Svngs per year



# Area Type Averages

## Siemens Industry, Ulster County Sheriffs

Area Type Averages			Normalized Weekly Lights On					Normalized Weekly Occupied						
Area Type	Qty	Watts	Peak	Off	Shldr 1	Shldr 2	Total	Peak	Off	Shldr 1	Shldr 2	Total	% sav	
Private Office	PO	9	352	27.82	0.00	0.00	0.00	27.82	19.95	0.00	0.00	0.00	19.95	28.29%
Meeting Rooms	M	7	553	36.34	0.00	0.00	0.00	36.34	18.18	0.00	0.00	0.00	18.18	49.97%
Open Space	OS	6	967	59.78	0.00	0.00	0.00	59.78	22.03	0.00	0.00	0.00	22.03	63.15%
Restroom	R	6	128	92.08	0.00	0.00	0.00	92.08	23.98	0.00	0.00	0.00	23.98	73.96%
Storage	S	4	601	55.06	0.00	0.00	0.00	55.06	11.98	0.00	0.00	0.00	11.98	78.24%
Hallway	H	4	627	153.80	0.00	0.00	0.00	153.80	37.34	0.00	0.00	0.00	37.34	75.72%
Building Average			18521	62.87			0.00	62.87	21.72			0.00	21.72	65.45%



**Hours per Week for each Area Type**



# Normalized Data Logger Detail for Siemens Industry, Ulster County Sheriffs Page 1 of 1

All Loggers Listed			Load	Normalized Weekly Hours of Use					Normalized Weekly Hours of Occupancy					
Logger	Room Location	Ty	Watts	Peak	Off	Shldr 1	Shldr 2	Total	Peak	Off	Shldr 1	Shldr 2	Total	% sav
23657	1030 Mens	R	176	76.85	0.00	0.00	0.00	76.85	16.50	0.00	0.00	0.00	16.50	78.53%
21897	1066A Roll Call	M	1320	161.43	0.00	0.00	0.00	161.43	74.11	0.00	0.00	0.00	74.11	54.09%
23208	2001	OS	616	21.28	0.00	0.00	0.00	21.28	4.90	0.00	0.00	0.00	4.90	76.97%
23153	2004	S	440	167.99	0.00	0.00	0.00	167.99	4.46	0.00	0.00	0.00	4.46	97.35%
24877	2008 Womens	R	59	2.76	0.00	0.00	0.00	2.76	1.52	0.00	0.00	0.00	1.52	44.93%
23047	2009 Mens	R	59	38.77	0.00	0.00	0.00	38.77	6.60	0.00	0.00	0.00	6.60	82.98%
24130	2011	PO	352	12.20	0.00	0.00	0.00	12.20	9.20	0.00	0.00	0.00	9.20	24.59%
23559	2016	M	176	4.69	0.00	0.00	0.00	4.69	1.68	0.00	0.00	0.00	1.68	64.18%
21175	2019	OS	264	77.06	0.00	0.00	0.00	77.06	52.98	0.00	0.00	0.00	52.98	31.25%
23742	2023	PO	176	17.97	0.00	0.00	0.00	17.97	17.90	0.00	0.00	0.00	17.90	0.39%
24357	2024	S	176	0.02	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.02	0.00%
20714	2036	M	528	0.05	0.00	0.00	0.00	0.05	0.03	0.00	0.00	0.00	0.03	40.00%
23923	2038B	S	1760	49.72	0.00	0.00	0.00	49.72	41.59	0.00	0.00	0.00	41.59	16.35%
21756	2043 Mens	R	177	167.99	0.00	0.00	0.00	167.99	22.45	0.00	0.00	0.00	22.45	86.64%
21323	2044	PO	616	31.01	0.00	0.00	0.00	31.01	15.40	0.00	0.00	0.00	15.40	50.34%
23305	2044 Custodial	S	26	2.52	0.00	0.00	0.00	2.52	1.83	0.00	0.00	0.00	1.83	27.38%
24098	2044 Hall	H	1062	167.99	0.00	0.00	0.00	167.99	40.89	0.00	0.00	0.00	40.89	75.66%
23501	2046	PO	352	26.67	0.00	0.00	0.00	26.67	16.45	0.00	0.00	0.00	16.45	38.32%
22773	2047	PO	352	39.25	0.00	0.00	0.00	39.25	31.76	0.00	0.00	0.00	31.76	19.08%
21864	2048	PO	264	30.53	0.00	0.00	0.00	30.53	22.29	0.00	0.00	0.00	22.29	26.99%
22240	2050	PO	176	42.91	0.00	0.00	0.00	42.91	35.46	0.00	0.00	0.00	35.46	17.36%
24527	2055B	M	792	10.50	0.00	0.00	0.00	10.50	8.89	0.00	0.00	0.00	8.89	15.33%
21265	2060	PO	704	39.24	0.00	0.00	0.00	39.24	20.43	0.00	0.00	0.00	20.43	47.94%
23186	2061	PO	176	10.63	0.00	0.00	0.00	10.63	10.62	0.00	0.00	0.00	10.62	0.09%
20988	2nd Floor	M	264	10.49	0.00	0.00	0.00	10.49	6.73	0.00	0.00	0.00	6.73	35.84%
22834	2nd Floor	M	264	18.25	0.00	0.00	0.00	18.25	10.33	0.00	0.00	0.00	10.33	43.40%
23313	2nd Floor	H	440	167.99	0.00	0.00	0.00	167.99	44.69	0.00	0.00	0.00	44.69	73.40%
23363	2nd Floor Open	OS	528	36.74	0.00	0.00	0.00	36.74	28.11	0.00	0.00	0.00	28.11	23.49%
24825	2nd Floor Open	OS	649	167.99	0.00	0.00	0.00	167.99	19.77	0.00	0.00	0.00	19.77	88.23%
23679	2nd Womens	R	118	115.56	0.00	0.00	0.00	115.56	13.91	0.00	0.00	0.00	13.91	87.96%
21162	Detective	H	528	117.04	0.00	0.00	0.00	117.04	24.78	0.00	0.00	0.00	24.78	78.83%
22691	L Hall, 2nd	H	476	162.18	0.00	0.00	0.00	162.18	38.98	0.00	0.00	0.00	38.98	75.96%
23847	Mens Lckr, RR	R	176	150.53	0.00	0.00	0.00	150.53	82.87	0.00	0.00	0.00	82.87	44.95%
23645	Open Visitation	OS	3472	43.40	0.00	0.00	0.00	43.40	15.16	0.00	0.00	0.00	15.16	65.07%
23380	Training A, B, C	M	528	48.96	0.00	0.00	0.00	48.96	25.46	0.00	0.00	0.00	25.46	48.00%
21150	Weight Room	OS	270	12.19	0.00	0.00	0.00	12.19	11.28	0.00	0.00	0.00	11.28	7.47%

# Building Summary Totals for Siemens Industry, Ulster County Sheriffs Page 1 of 1

Building Summary Totals				Lights On KWHR					Occupied KWHR				
Area Type		Qty	Watts	Peak	Off	Shldr 1	Shldr 2	Total	Peak	Off	Shldr 1	Shldr 2	Total
Private Office	PO	9	3168	88	0	0	0	88	63	0	0	0	63
Meeting Rooms	M	7	3871	141	0	0	0	141	70	0	0	0	70
Open Space	OS	6	5802	347	0	0	0	347	128	0	0	0	128
Restroom	R	6	768	71	0	0	0	71	18	0	0	0	18
Storage	S	4	2404	132	0	0	0	132	29	0	0	0	29
Hallway	H	4	2508	386	0	0	0	386	94	0	0	0	94
Building Totals			18521	1164	0			1164	402	0			402

# 1030 Mens

Area type: Restroom. Logger: 23657. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	23.467	11.733	6.433	3.217
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>23.467</b>	<b>11.733</b>	<b>6.433</b>	<b>3.217</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	18.850	9.425	4.867	2.433
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>18.850</b>	<b>9.425</b>	<b>4.867</b>	<b>2.433</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	46.667	24.000	22.733	11.691	4.700	2.417
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>46.667</b>	<b>24.000</b>	<b>22.733</b>	<b>11.691</b>	<b>4.700</b>	<b>2.417</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	18.500	9.250	5.167	2.583
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>18.500</b>	<b>9.250</b>	<b>5.167</b>	<b>2.583</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	29.583	14.792	4.800	2.400
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>29.583</b>	<b>14.792</b>	<b>4.800</b>	<b>2.400</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	24.200	12.100	5.233	2.617
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>24.200</b>	<b>12.100</b>	<b>5.233</b>	<b>2.617</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	15.767	7.883	1.667	0.833
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>15.767</b>	<b>7.883</b>	<b>1.667</b>	<b>0.833</b>

Peak	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	153.100	32.867	334.667	76.855	16.499	78.5%
Dff Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>153.100</b>	<b>32.867</b>	<b>334.667</b>	<b>76.855</b>	<b>16.499</b>	<b>78.5%</b>



## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	11.733	3.217	14.792	2.400	9.425	2.433	12.100	2.617	11.691	2.417	7.883	0.833	9.250	2.583
Dff Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>11.733</b>	<b>3.217</b>	<b>14.792</b>	<b>2.400</b>	<b>9.425</b>	<b>2.433</b>	<b>12.100</b>	<b>2.617</b>	<b>11.691</b>	<b>2.417</b>	<b>7.883</b>	<b>0.833</b>	<b>9.250</b>	<b>2.583</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	153.100	32.867	334.667	^ ^ ^ ^	76.855	16.499	78.5%
Dff Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>153.100</b>	<b>32.867</b>	<b>334.667</b>		<b>76.855</b>	<b>16.499</b>	<b>78.5%</b>



# 2001

Area type: Open Space. Logger: 23208. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	3.967	1.983	1.600	0.800
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>3.967</b>	<b>1.983</b>	<b>1.600</b>	<b>0.800</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	9.167	4.583	1.500	0.750
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>9.167</b>	<b>4.583</b>	<b>1.500</b>	<b>0.750</b>

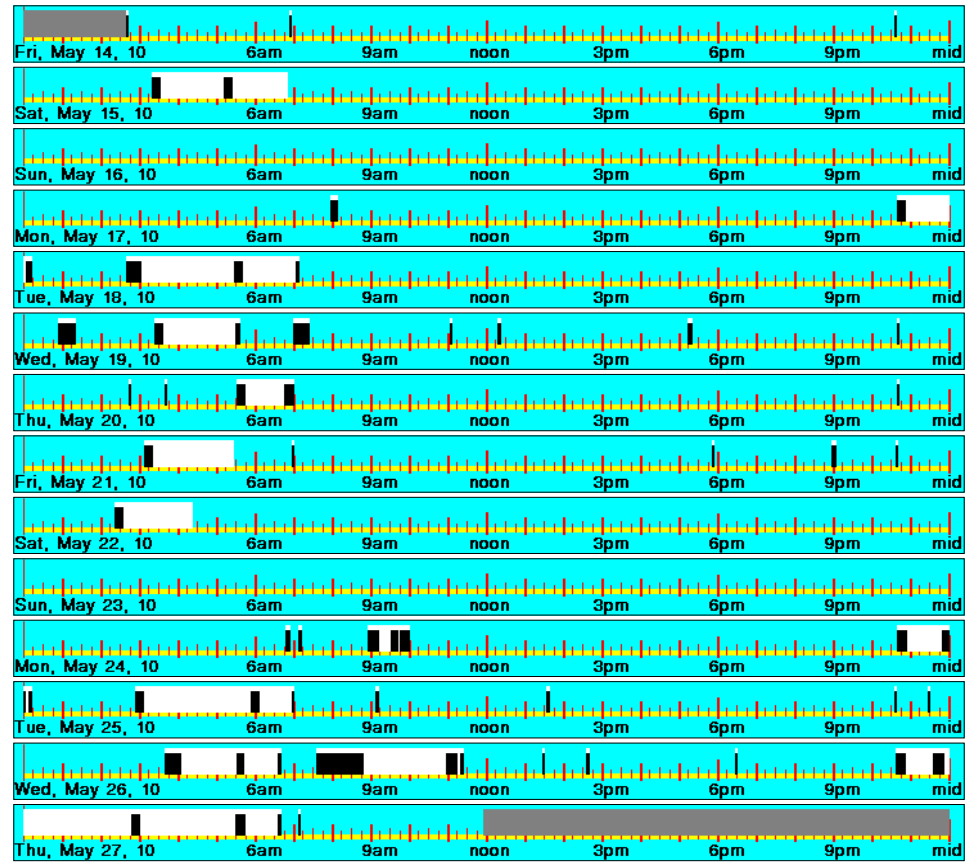
Wed	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	11.467	5.733	4.100	2.050
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>11.467</b>	<b>5.733</b>	<b>4.100</b>	<b>2.050</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	35.933	24.000	8.167	5.455	1.067	0.712
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>35.933</b>	<b>24.000</b>	<b>8.167</b>	<b>5.455</b>	<b>1.067</b>	<b>0.712</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	45.333	24.000	2.567	1.359	0.500	0.265
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>45.333</b>	<b>24.000</b>	<b>2.567</b>	<b>1.359</b>	<b>0.500</b>	<b>0.265</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	5.367	2.683	0.600	0.300
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>5.367</b>	<b>2.683</b>	<b>0.600</b>	<b>0.300</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	40.700	9.367	321.267	21.283	4.898	77.0%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>40.700</b>	<b>9.367</b>	<b>321.267</b>	<b>21.283</b>	<b>4.898</b>	<b>77.0%</b>



## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	1.983	0.800	4.583	0.750	5.733	2.050	5.455	0.712	1.359	0.265	2.683	0.300
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>1.983</b>	<b>0.800</b>	<b>4.583</b>	<b>0.750</b>	<b>5.733</b>	<b>2.050</b>	<b>5.455</b>	<b>0.712</b>	<b>1.359</b>	<b>0.265</b>	<b>2.683</b>	<b>0.300</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	40.700	9.367	321.267	^ ^ ^ ^	21.283	4.898	77.0%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>40.700</b>	<b>9.367</b>	<b>321.267</b>		<b>21.283</b>	<b>4.898</b>	<b>77.0%</b>

2004

Area type: Storage. Logger: 23153. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	24.000	24.000	24.000	24.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>24.000</b>	<b>24.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	3.667	1.833
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>3.667</b>	<b>1.833</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	35.783	24.000	35.767	23.989	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>35.783</b>	<b>24.000</b>	<b>35.767</b>	<b>23.989</b>	<b>0.000</b>	<b>0.000</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	24.000	24.000	24.000	24.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>24.000</b>	<b>24.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	37.217	24.000	37.217	24.000	1.233	0.795
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>37.217</b>	<b>24.000</b>	<b>37.217</b>	<b>24.000</b>	<b>1.233</b>	<b>0.795</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	0.633	0.317
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>0.633</b>	<b>0.317</b>

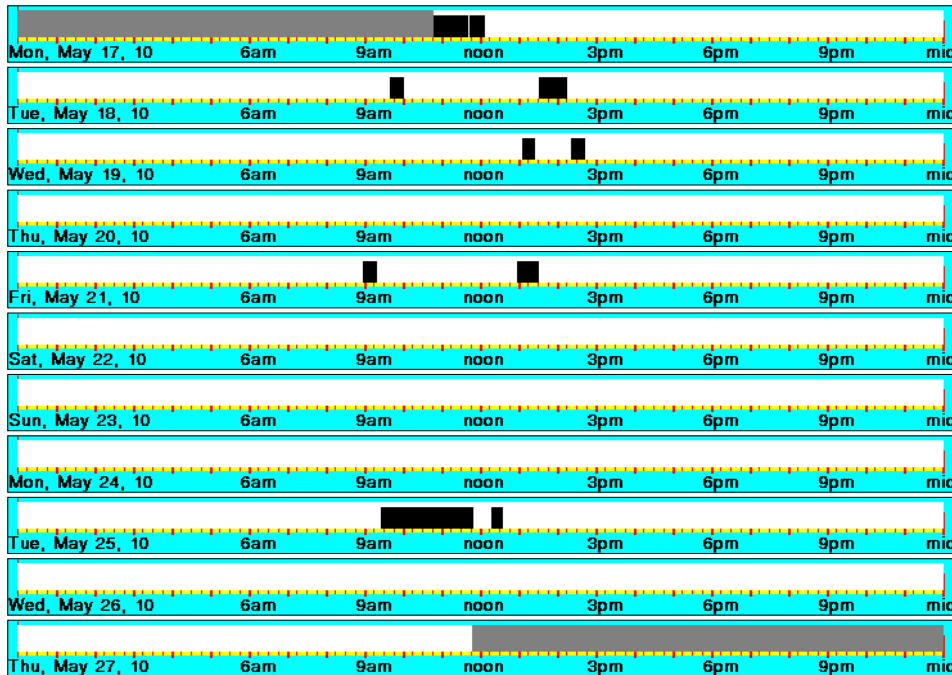
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	24.000	24.000	24.000	24.000	0.867	0.867
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>24.000</b>	<b>24.000</b>	<b>24.000</b>	<b>0.867</b>	<b>0.867</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	240.983	6.400	241.000	167.988	4.461	97.3%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>240.983</b>	<b>6.400</b>	<b>241.000</b>	<b>167.988</b>	<b>4.461</b>	<b>97.3%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	24.000	0.000	24.000	0.795	24.000	1.833	24.000	0.317	23.989	0.000	24.000	0.867	24.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>0.000</b>	<b>24.000</b>	<b>0.795</b>	<b>24.000</b>	<b>1.833</b>	<b>24.000</b>	<b>0.317</b>	<b>23.989</b>	<b>0.000</b>	<b>24.000</b>	<b>0.867</b>	<b>24.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	240.983	6.400	241.000	^^ ^^	167.988	4.461	97.3%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>240.983</b>	<b>6.400</b>	<b>241.000</b>		<b>167.988</b>	<b>4.461</b>	<b>97.3%</b>





# 2008 Womens

Area type: Restroom. Logger: 24877. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	1.233	0.617	0.933	0.467
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>1.233</b>	<b>0.617</b>	<b>0.933</b>	<b>0.467</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	46.933	24.000	0.733	0.375	0.633	0.324
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>46.933</b>	<b>24.000</b>	<b>0.733</b>	<b>0.375</b>	<b>0.633</b>	<b>0.324</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	2.367	1.183	0.467	0.233
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>2.367</b>	<b>1.183</b>	<b>0.467</b>	<b>0.233</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	1.067	0.533	0.900	0.450
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>1.067</b>	<b>0.533</b>	<b>0.900</b>	<b>0.450</b>

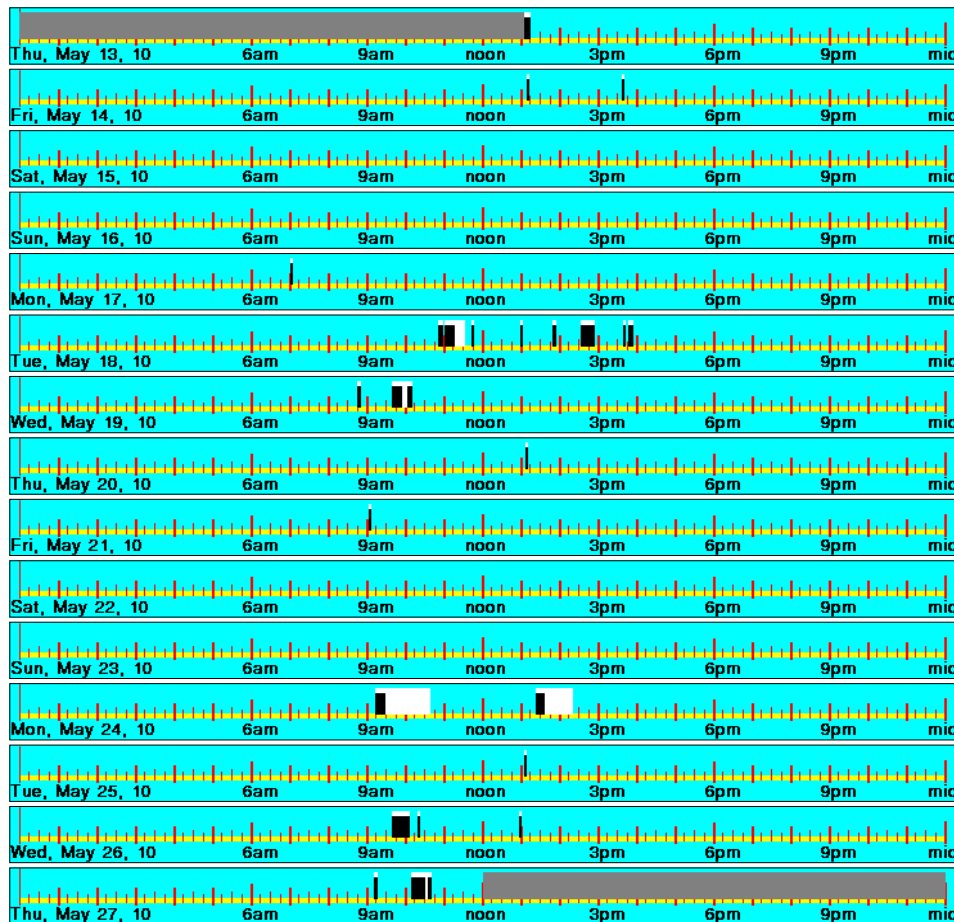
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.100	0.050	0.100	0.050
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.100</b>	<b>0.050</b>	<b>0.100</b>	<b>0.050</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	5.500	3.033	334.933	2.759	1.521	44.8%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>5.500</b>	<b>3.033</b>	<b>334.933</b>	<b>2.759</b>	<b>1.521</b>	<b>44.8%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	1.183	0.233	0.617	0.467	0.533	0.450	0.375	0.324	0.050	0.050	0.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>1.183</b>	<b>0.233</b>	<b>0.617</b>	<b>0.467</b>	<b>0.533</b>	<b>0.450</b>	<b>0.375</b>	<b>0.324</b>	<b>0.050</b>	<b>0.050</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	5.500	3.033	334.933	^^ ^^	2.759	1.521	44.8%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>5.500</b>	<b>3.033</b>	<b>334.933</b>		<b>2.759</b>	<b>1.521</b>	<b>44.8%</b>



# 2009 Mens

Area type: Restroom. Logger: 23047. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	13.067	6.533	0.533	0.267
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>13.067</b>	<b>6.533</b>	<b>0.533</b>	<b>0.267</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	14.667	7.333	4.733	2.367
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>14.667</b>	<b>7.333</b>	<b>4.733</b>	<b>2.367</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	47.133	24.000	14.017	7.137	1.600	0.815
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.133</b>	<b>24.000</b>	<b>14.017</b>	<b>7.137</b>	<b>1.600</b>	<b>0.815</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	12.500	6.250	0.233	0.117
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>12.500</b>	<b>6.250</b>	<b>0.233</b>	<b>0.117</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	7.433	3.717	2.667	1.333
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>7.433</b>	<b>3.717</b>	<b>2.667</b>	<b>1.333</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	7.467	3.733	2.467	1.233
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>7.467</b>	<b>3.733</b>	<b>2.467</b>	<b>1.233</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	8.183	4.092	0.933	0.467
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>8.183</b>	<b>4.092</b>	<b>0.933</b>	<b>0.467</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	77.333	13.167	335.133	38.767	6.600	83.0%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>77.333</b>	<b>13.167</b>	<b>335.133</b>	<b>38.767</b>	<b>6.600</b>	<b>83.0%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	6.533	0.267	3.717	1.333	7.333	2.367	3.733	1.233	7.137	0.815	4.092	0.467	6.250	0.117
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>6.533</b>	<b>0.267</b>	<b>3.717</b>	<b>1.333</b>	<b>7.333</b>	<b>2.367</b>	<b>3.733</b>	<b>1.233</b>	<b>7.137</b>	<b>0.815</b>	<b>4.092</b>	<b>0.467</b>	<b>6.250</b>	<b>0.117</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	77.333	13.167	335.133	^^ ^^	38.767	6.600	83.0%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>77.333</b>	<b>13.167</b>	<b>335.133</b>		<b>38.767</b>	<b>6.600</b>	<b>83.0%</b>



2011

Area type: Private Office. Logger: 24130. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	8.367	4.183	6.900	3.450
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>8.367</b>	<b>4.183</b>	<b>6.900</b>	<b>3.450</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	35.717	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>35.717</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	5.800	2.900	3.067	1.533
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>5.800</b>	<b>2.900</b>	<b>3.067</b>	<b>1.533</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	5.667	2.833	5.300	2.650
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>5.667</b>	<b>2.833</b>	<b>5.300</b>	<b>2.650</b>

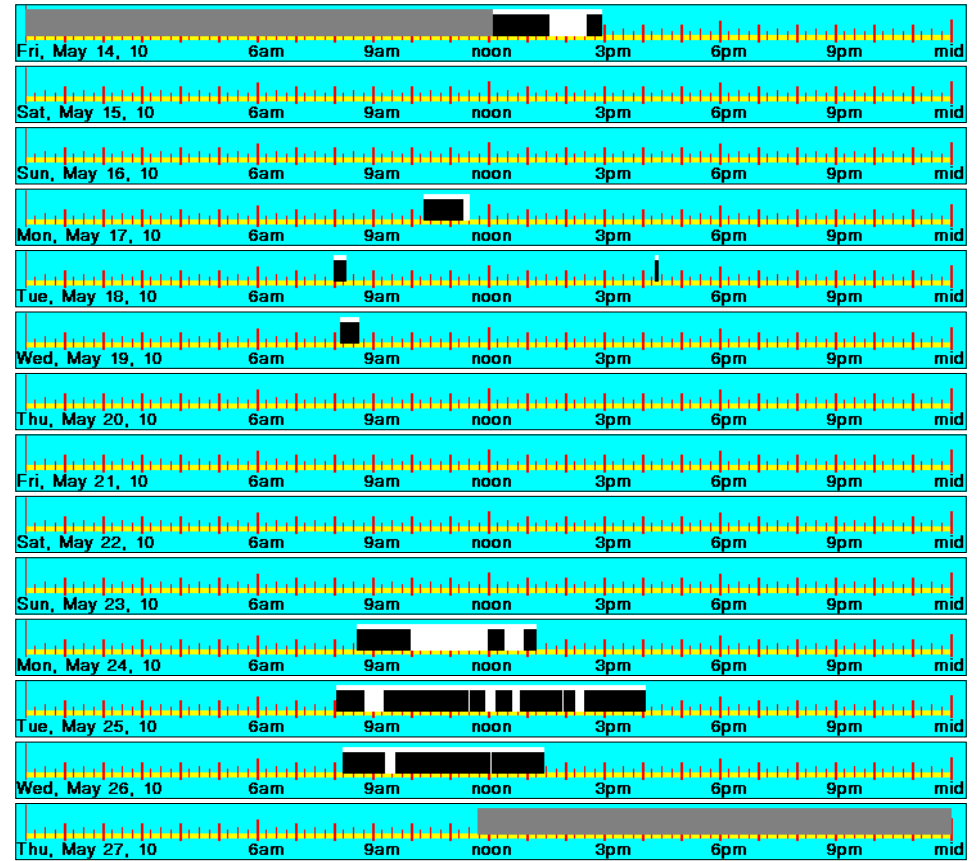
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	35.883	24.000	2.800	1.873	1.800	1.204
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>35.883</b>	<b>24.000</b>	<b>2.800</b>	<b>1.873</b>	<b>1.800</b>	<b>1.204</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	22.633	17.067	311.600	12.203	9.202	24.6%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>22.633</b>	<b>17.067</b>	<b>311.600</b>	<b>12.203</b>	<b>9.202</b>	<b>24.6%</b>

## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	2.900	1.533	4.183	3.450	2.833	2.650	0.000	0.000	1.873	1.204	0.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>2.900</b>	<b>1.533</b>	<b>4.183</b>	<b>3.450</b>	<b>2.833</b>	<b>2.650</b>	<b>0.000</b>	<b>0.000</b>	<b>1.873</b>	<b>1.204</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	22.633	17.067	311.600	^^ ^^	12.203	9.202	24.6%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>22.633</b>	<b>17.067</b>	<b>311.600</b>		<b>12.203</b>	<b>9.202</b>	<b>24.6%</b>



2016

Area type: Meeting Rooms. Logger: 23559. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

# Energy Analysis

## Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	5.867	2.933	1.367	0.683
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>5.867</b>	<b>2.933</b>	<b>1.367</b>	<b>0.683</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	35.733	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>35.733</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.333	0.167	0.333	0.167
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.333</b>	<b>0.167</b>	<b>0.333</b>	<b>0.167</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.533	0.267	0.533	0.267
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.533</b>	<b>0.267</b>	<b>0.533</b>	<b>0.267</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	33.817	24.000	1.900	1.348	0.867	0.615
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>33.817</b>	<b>24.000</b>	<b>1.900</b>	<b>1.348</b>	<b>0.867</b>	<b>0.615</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	8.633	3.100	309.550	4.686	1.682	64.1%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>8.633</b>	<b>3.100</b>	<b>309.550</b>	<b>4.686</b>	<b>1.682</b>	<b>64.1%</b>

## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	0.167	0.167	2.933	0.683	0.267	0.267	0.000	0.000	1.348	0.615	0.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>0.167</b>	<b>0.167</b>	<b>2.933</b>	<b>0.683</b>	<b>0.267</b>	<b>0.267</b>	<b>0.000</b>	<b>0.000</b>	<b>1.348</b>	<b>0.615</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	8.633	3.100	309.550	^^ ^^	4.686	1.682	64.1%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>8.633</b>	<b>3.100</b>	<b>309.550</b>		<b>4.686</b>	<b>1.682</b>	<b>64.1%</b>



2019

Area type: Open Space. Logger: 21175. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	14.700	7.350	7.700	3.850
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>14.700</b>	<b>7.350</b>	<b>7.700</b>	<b>3.850</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	29.633	14.817	21.433	10.717
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>29.633</b>	<b>14.817</b>	<b>21.433</b>	<b>10.717</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	47.783	24.000	27.817	13.971	21.083	10.589
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.783</b>	<b>24.000</b>	<b>27.817</b>	<b>13.971</b>	<b>21.083</b>	<b>10.589</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	17.433	8.717	9.133	4.567
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>17.433</b>	<b>8.717</b>	<b>9.133</b>	<b>4.567</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	14.200	7.100	7.833	3.917
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>14.200</b>	<b>7.100</b>	<b>7.833</b>	<b>3.917</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	27.933	13.967	22.333	11.167
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>27.933</b>	<b>13.967</b>	<b>22.333</b>	<b>11.167</b>

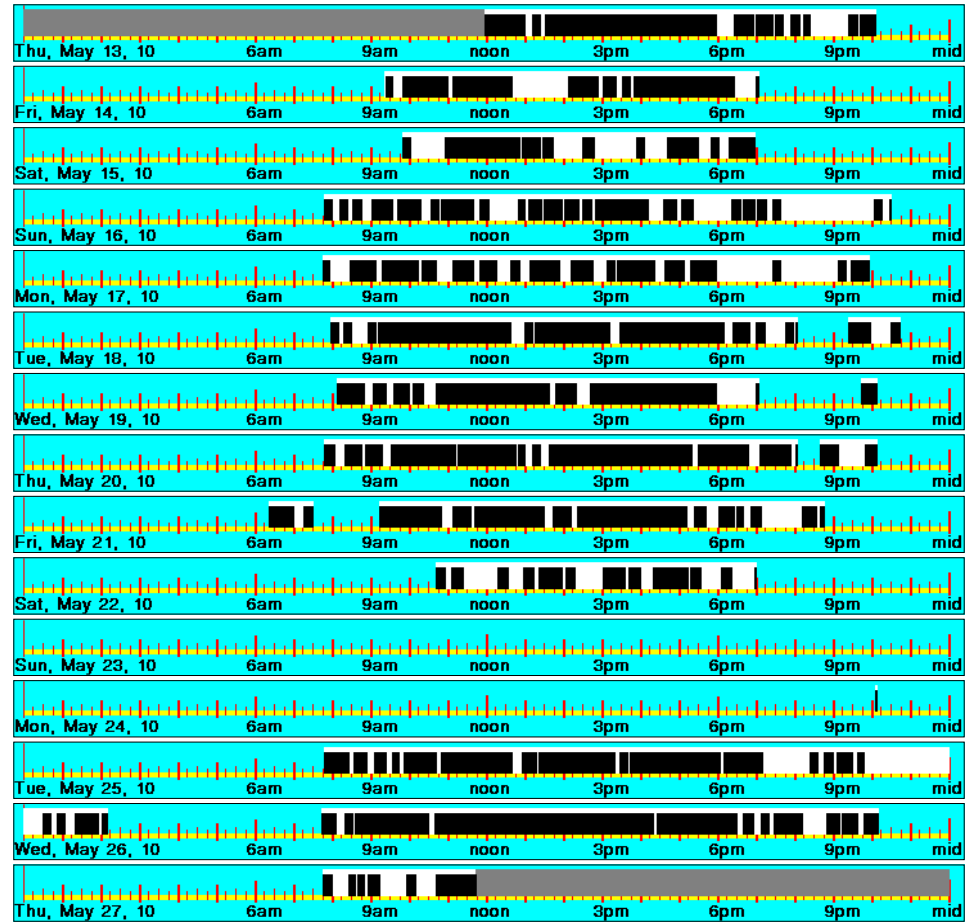
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	22.300	11.150	16.367	8.183
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>22.300</b>	<b>11.150</b>	<b>16.367</b>	<b>8.183</b>

	Logged Totals			Normalized Totals		
Peak	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	154.017	105.883	335.783	77.058	52.976	31.3%
Off	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>154.017</b>	<b>105.883</b>	<b>335.783</b>	<b>77.058</b>	<b>52.976</b>	<b>31.3%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
Peak	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	7.350	3.850	7.100	3.917	14.817	10.717	13.967	11.167	13.971	10.589	11.150	8.183	8.717	4.567
Off	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>7.350</b>	<b>3.850</b>	<b>7.100</b>	<b>3.917</b>	<b>14.817</b>	<b>10.717</b>	<b>13.967</b>	<b>11.167</b>	<b>13.971</b>	<b>10.589</b>	<b>11.150</b>	<b>8.183</b>	<b>8.717</b>	<b>4.567</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	154.017	105.883	335.783	^^^	77.058	52.976	31.3%
Off	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>154.017</b>	<b>105.883</b>	<b>335.783</b>		<b>77.058</b>	<b>52.976</b>	<b>31.3%</b>



2023

Area type: Private Office. Logger: 23742. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

### Energy Analysis Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	1.800	0.900	1.800	0.900
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>1.800</b>	<b>0.900</b>	<b>1.800</b>	<b>0.900</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	7.867	3.933	7.867	3.933
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>7.867</b>	<b>3.933</b>	<b>7.867</b>	<b>3.933</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	8.733	4.367	8.733	4.367
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>8.733</b>	<b>4.367</b>	<b>8.733</b>	<b>4.367</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	7.700	3.850	7.700	3.850
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>7.700</b>	<b>3.850</b>	<b>7.700</b>	<b>3.850</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	47.683	24.000	2.033	1.023	2.033	1.023
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.683</b>	<b>24.000</b>	<b>2.033</b>	<b>1.023</b>	<b>2.033</b>	<b>1.023</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	7.767	3.883	7.633	3.817
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>7.767</b>	<b>3.883</b>	<b>7.633</b>	<b>3.817</b>

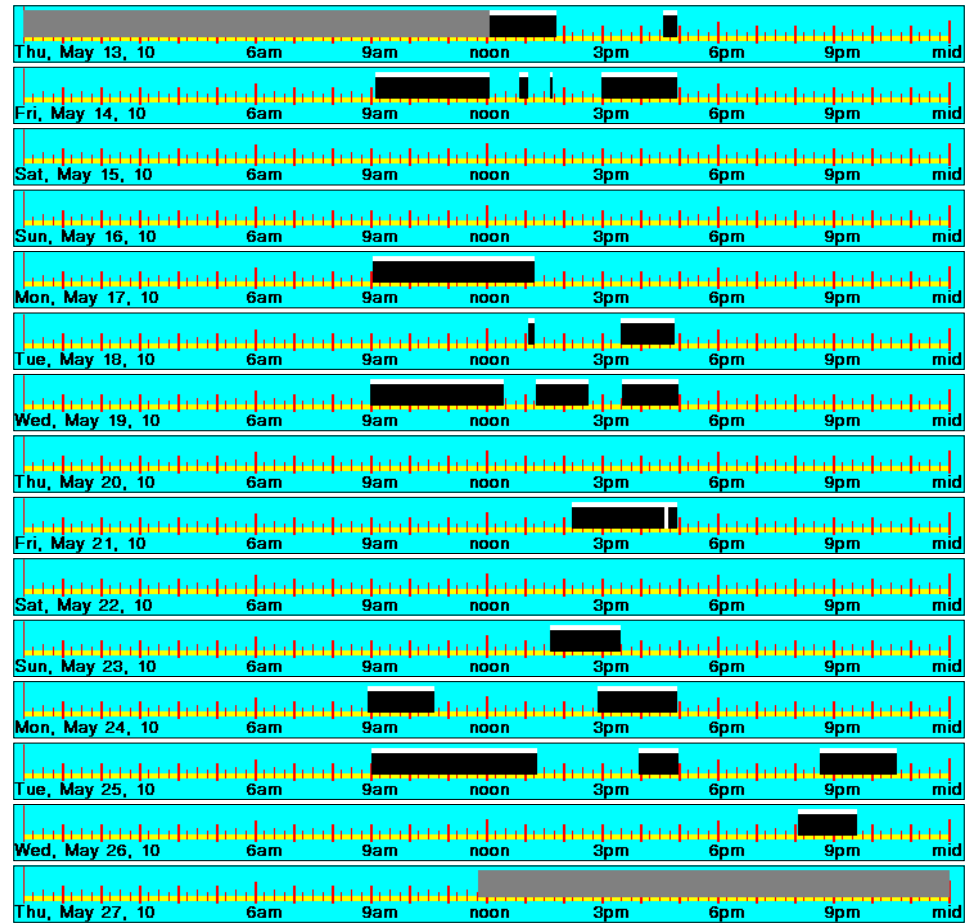
Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Peak	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	35.900	35.767	335.683	17.967	17.900	0.4%
Diff	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>35.900</b>	<b>35.767</b>	<b>335.683</b>	<b>17.967</b>	<b>17.900</b>	<b>0.4%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.900	0.900	3.933	3.933	4.367	4.367	3.850	3.850	1.023	1.023	3.883	3.817	0.000	0.000
Diff Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.900</b>	<b>0.900</b>	<b>3.933</b>	<b>3.933</b>	<b>4.367</b>	<b>4.367</b>	<b>3.850</b>	<b>3.850</b>	<b>1.023</b>	<b>1.023</b>	<b>3.883</b>	<b>3.817</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	35.900	35.767	335.683	^^ ^^	17.967	17.900	0.4%
Diff Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>35.900</b>	<b>35.767</b>	<b>335.683</b>		<b>17.967</b>	<b>17.900</b>	<b>0.4%</b>



## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	24.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	38.267	24.000	0.033	0.021	0.033	0.021
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>38.267</b>	<b>24.000</b>	<b>0.033</b>	<b>0.021</b>	<b>0.033</b>	<b>0.021</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

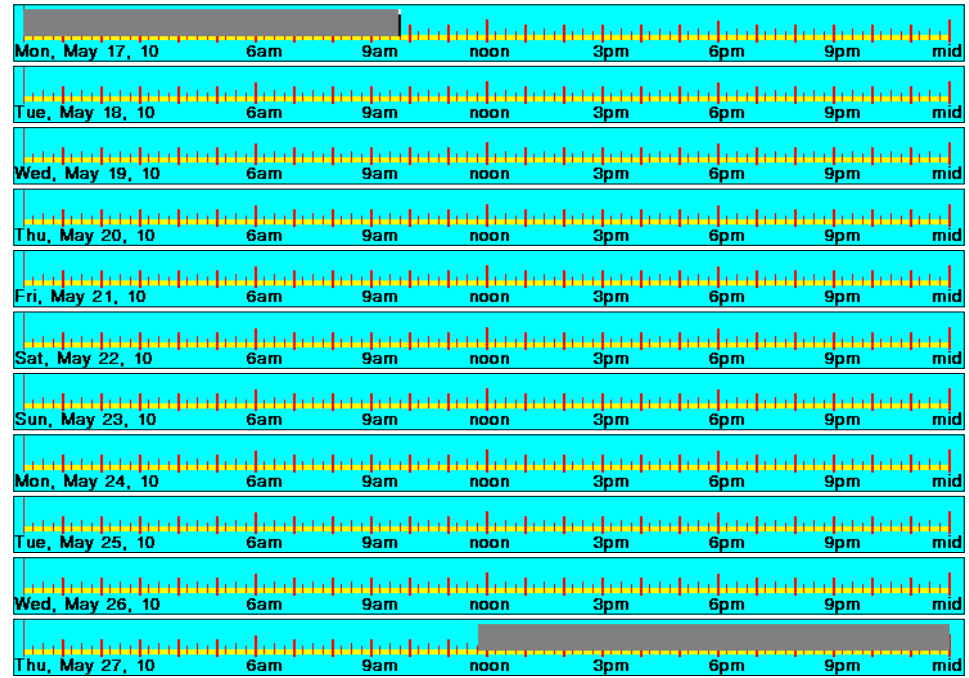
Wed	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	35.783	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>35.783</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	24.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	24.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	0.033	0.033	242.050	0.023	0.023	0.0%
Diff	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>0.033</b>	<b>0.033</b>	<b>242.050</b>	<b>0.023</b>	<b>0.023</b>	<b>0.0%</b>



### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	0.021	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Diff Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>0.021</b>	<b>0.021</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	0.033	0.033	242.050	^^ ^^	0.023	0.023	0.0%
Diff Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>0.033</b>	<b>0.033</b>	<b>242.050</b>		<b>0.023</b>	<b>0.023</b>	<b>0.0%</b>

Area type: Meeting Rooms. Logger: 20714. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

### Energy Analysis Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	24.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	36.717	24.000	0.067	0.044	0.033	0.022
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>36.717</b>	<b>24.000</b>	<b>0.067</b>	<b>0.044</b>	<b>0.033</b>	<b>0.022</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	35.883	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>35.883</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

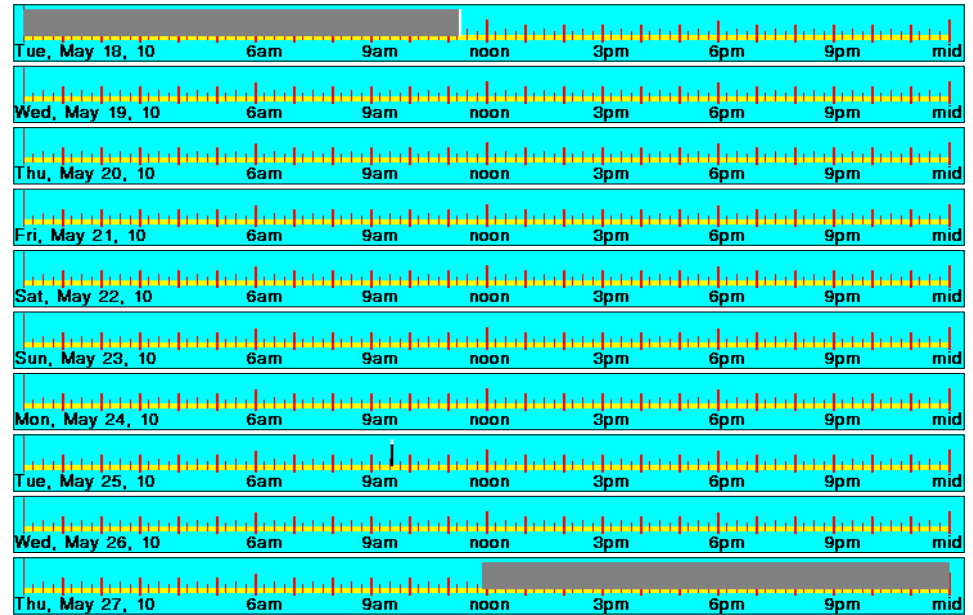
Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	24.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	24.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	24.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	0.067	0.033	216.600	0.052	0.026	50.0%
Diff	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>0.067</b>	<b>0.033</b>	<b>216.600</b>	<b>0.052</b>	<b>0.026</b>	<b>50.0%</b>



### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	0.000	0.000	0.044	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Diff Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.044</b>	<b>0.022</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	0.067	0.033	216.600	^^ ^^	0.052	0.026	50.0%
Diff Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>0.067</b>	<b>0.033</b>	<b>216.600</b>		<b>0.052</b>	<b>0.026</b>	<b>50.0%</b>



2038B

Area type: Storage. Logger: 23923. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	4.200	2.100	3.900	1.950
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>4.200</b>	<b>2.100</b>	<b>3.900</b>	<b>1.950</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	19.767	9.883	15.333	7.667
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>19.767</b>	<b>9.883</b>	<b>15.333</b>	<b>7.667</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	46.933	24.000	15.483	7.918	12.483	6.384
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>46.933</b>	<b>24.000</b>	<b>15.483</b>	<b>7.918</b>	<b>12.483</b>	<b>6.384</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	2.000	1.000	1.933	0.967
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>2.000</b>	<b>1.000</b>	<b>1.933</b>	<b>0.967</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	17.967	8.983	14.467	7.233
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>17.967</b>	<b>8.983</b>	<b>14.467</b>	<b>7.233</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	19.633	9.817	16.533	8.267
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>19.633</b>	<b>9.817</b>	<b>16.533</b>	<b>8.267</b>

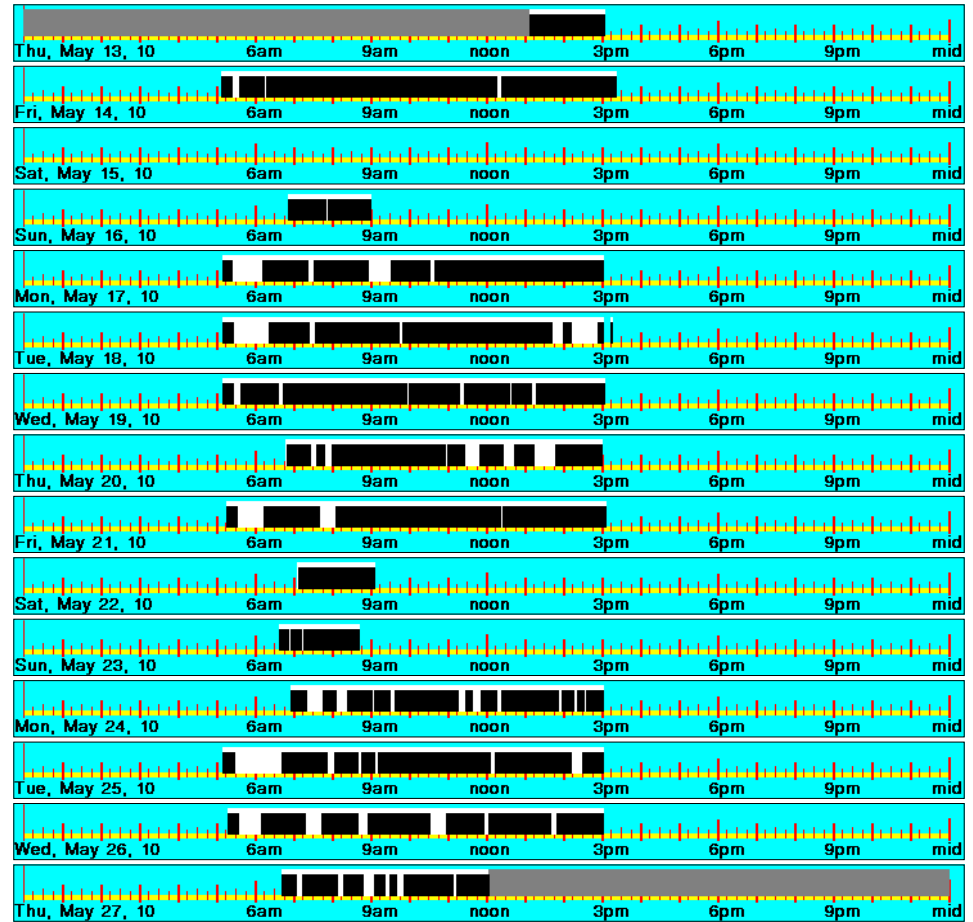
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	20.067	10.033	18.267	9.133
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>20.067</b>	<b>10.033</b>	<b>18.267</b>	<b>9.133</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	99.117	82.917	334.933	49.716	41.590	16.3%
Diff	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>99.117</b>	<b>82.917</b>	<b>334.933</b>	<b>49.716</b>	<b>41.590</b>	<b>16.3%</b>

## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	2.100	1.950	8.983	7.233	9.883	7.667	9.817	8.267	7.918	6.384	10.033	9.133	1.000	0.967
Diff Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>2.100</b>	<b>1.950</b>	<b>8.983</b>	<b>7.233</b>	<b>9.883</b>	<b>7.667</b>	<b>9.817</b>	<b>8.267</b>	<b>7.918</b>	<b>6.384</b>	<b>10.033</b>	<b>9.133</b>	<b>1.000</b>	<b>0.967</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	99.117	82.917	334.933	^ ^ ^ ^	49.716	41.590	16.3%
Diff Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>99.117</b>	<b>82.917</b>	<b>334.933</b>		<b>49.716</b>	<b>41.590</b>	<b>16.3%</b>



# 2043 Mens

Area type: Restroom. Logger: 21756. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	2.633	1.317
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>2.633</b>	<b>1.317</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	9.833	4.917
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>9.833</b>	<b>4.917</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	47.267	24.000	47.250	23.992	7.833	3.977
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.267</b>	<b>24.000</b>	<b>47.250</b>	<b>23.992</b>	<b>7.833</b>	<b>3.977</b>

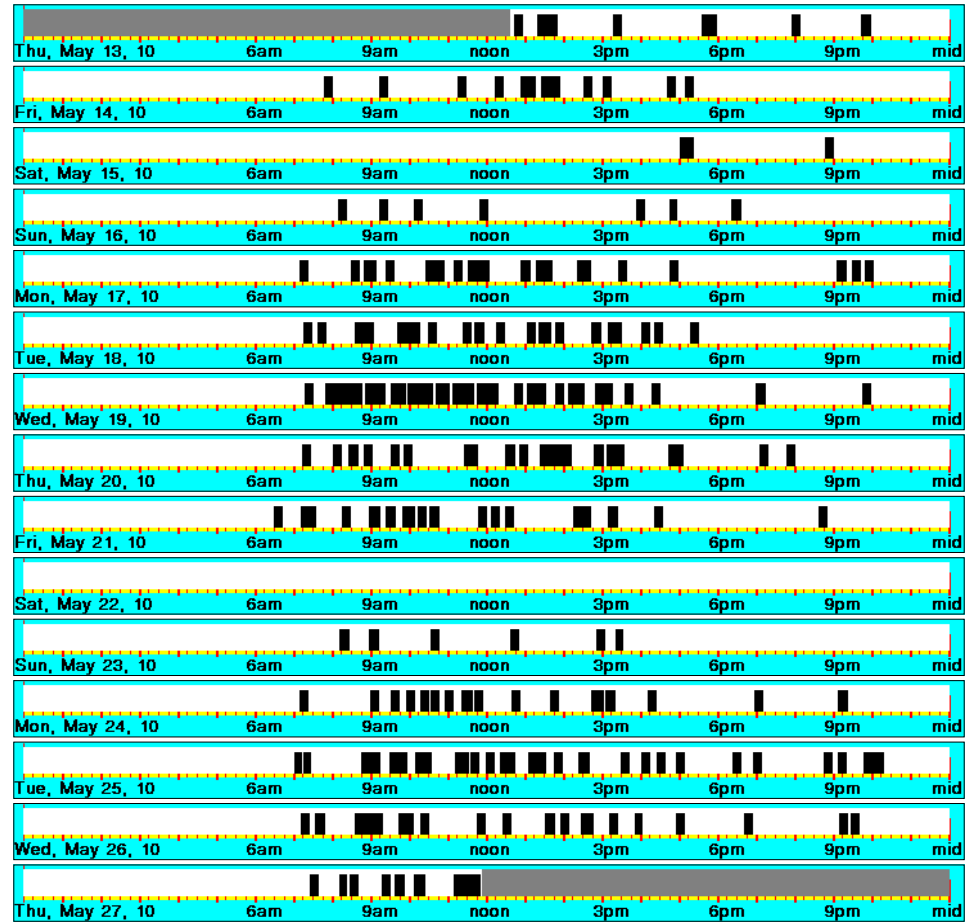
Sat	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	0.533	0.267
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>0.533</b>	<b>0.267</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	7.500	3.750
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>7.500</b>	<b>3.750</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	10.433	5.217
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>10.433</b>	<b>5.217</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	6.033	3.017
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>6.033</b>	<b>3.017</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	335.250	44.800	335.267	167.992	22.449	86.6%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>335.250</b>	<b>44.800</b>	<b>335.267</b>	<b>167.992</b>	<b>22.449</b>	<b>86.6%</b>



## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	24.000	1.317	24.000	3.750	24.000	4.917	24.000	5.217	23.992	3.977	24.000	3.017	24.000	0.267
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>1.317</b>	<b>24.000</b>	<b>3.750</b>	<b>24.000</b>	<b>4.917</b>	<b>24.000</b>	<b>5.217</b>	<b>23.992</b>	<b>3.977</b>	<b>24.000</b>	<b>3.017</b>	<b>24.000</b>	<b>0.267</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	335.250	44.800	335.267	^^ ^^	167.992	22.449	86.6%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>335.250</b>	<b>44.800</b>	<b>335.267</b>		<b>167.992</b>	<b>22.449</b>	<b>86.6%</b>

Area type: Private Office. Logger: 21323. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	10.350	5.175	3.517	1.758
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>10.350</b>	<b>5.175</b>	<b>3.517</b>	<b>1.758</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	47.183	24.000	10.917	5.553	5.117	2.603
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.183</b>	<b>24.000</b>	<b>10.917</b>	<b>5.553</b>	<b>5.117</b>	<b>2.603</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	9.033	4.517	5.400	2.700
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>9.033</b>	<b>4.517</b>	<b>5.400</b>	<b>2.700</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	15.933	7.967	9.167	4.583
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>15.933</b>	<b>7.967</b>	<b>9.167</b>	<b>4.583</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	15.633	7.817	7.533	3.767
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>15.633</b>	<b>7.817</b>	<b>7.533</b>	<b>3.767</b>

Peak	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	61.867	30.733	335.183	31.009	15.404	50.3%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>61.867</b>	<b>30.733</b>	<b>335.183</b>	<b>31.009</b>	<b>15.404</b>	<b>50.3%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	4.517	2.700	5.175	1.758	7.967	4.583	5.553	2.603	7.817	3.767	0.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>4.517</b>	<b>2.700</b>	<b>5.175</b>	<b>1.758</b>	<b>7.967</b>	<b>4.583</b>	<b>5.553</b>	<b>2.603</b>	<b>7.817</b>	<b>3.767</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	61.867	30.733	335.183	^ ^ ^ ^	31.009	15.404	50.3%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>61.867</b>	<b>30.733</b>	<b>335.183</b>		<b>31.009</b>	<b>15.404</b>	<b>50.3%</b>



# 2044 Custodial

Area type: Storage. Logger: 23305. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	0.933	0.467	0.800	0.400
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.933</b>	<b>0.467</b>	<b>0.800</b>	<b>0.400</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	45.983	24.000	1.100	0.574	0.700	0.365
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>45.983</b>	<b>24.000</b>	<b>1.100</b>	<b>0.574</b>	<b>0.700</b>	<b>0.365</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	1.100	0.550	0.700	0.350
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>1.100</b>	<b>0.550</b>	<b>0.700</b>	<b>0.350</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	0.833	0.417	0.700	0.350
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.833</b>	<b>0.417</b>	<b>0.700</b>	<b>0.350</b>

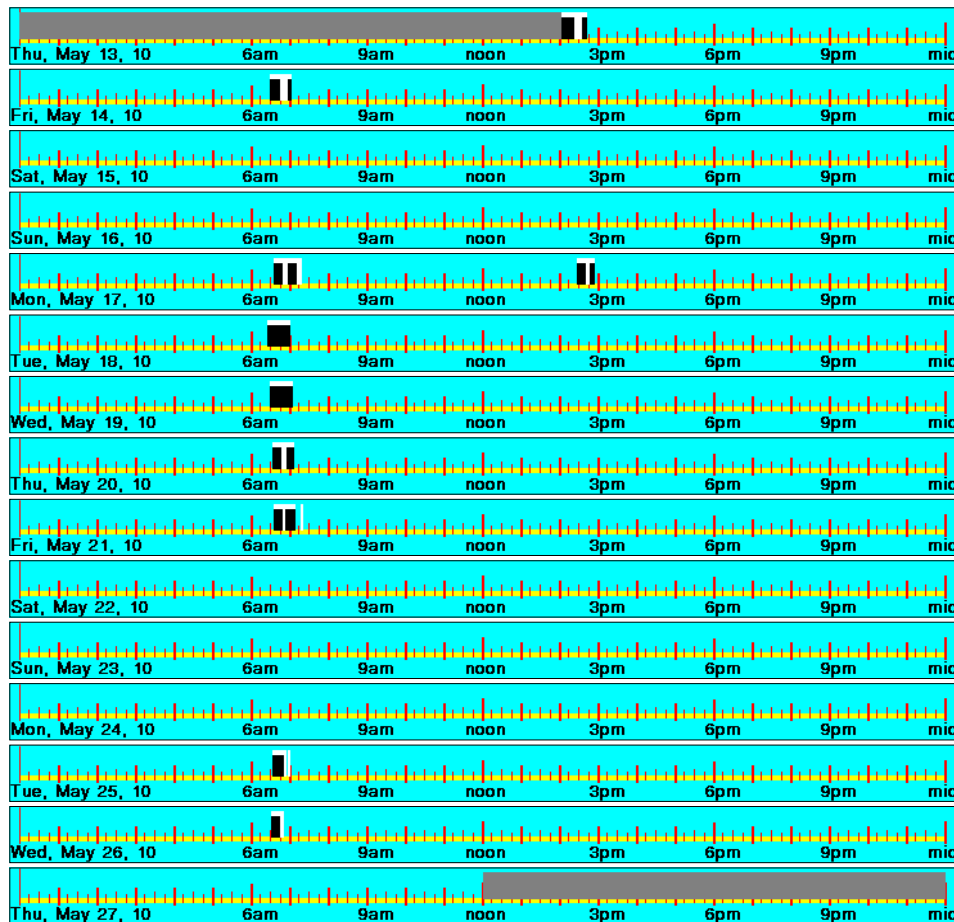
Fri	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	1.033	0.517	0.733	0.367
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>1.033</b>	<b>0.517</b>	<b>0.733</b>	<b>0.367</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	5.000	3.633	333.983	2.515	1.828	27.3%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>5.000</b>	<b>3.633</b>	<b>333.983</b>	<b>2.515</b>	<b>1.828</b>	<b>27.3%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC
Peak	0.000	0.000	0.550	0.350	0.467	0.400	0.417	0.350	0.574	0.365	0.517	0.367	0.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>0.550</b>	<b>0.350</b>	<b>0.467</b>	<b>0.400</b>	<b>0.417</b>	<b>0.350</b>	<b>0.574</b>	<b>0.365</b>	<b>0.517</b>	<b>0.367</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	5.000	3.633	333.983	^^ ^^	2.515	1.828	27.3%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>5.000</b>	<b>3.633</b>	<b>333.983</b>		<b>2.515</b>	<b>1.828</b>	<b>27.3%</b>



# 2044 Hall

Area type: Hallway. Logger: 24098. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	2.167	1.083
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>2.167</b>	<b>1.083</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	16.933	8.467
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>16.933</b>	<b>8.467</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	47.167	24.000	47.150	23.992	13.067	6.649
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.167</b>	<b>24.000</b>	<b>47.150</b>	<b>23.992</b>	<b>13.067</b>	<b>6.649</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	2.100	1.050
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>2.100</b>	<b>1.050</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	15.633	7.817
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>15.633</b>	<b>7.817</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	17.533	8.767
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>17.533</b>	<b>8.767</b>

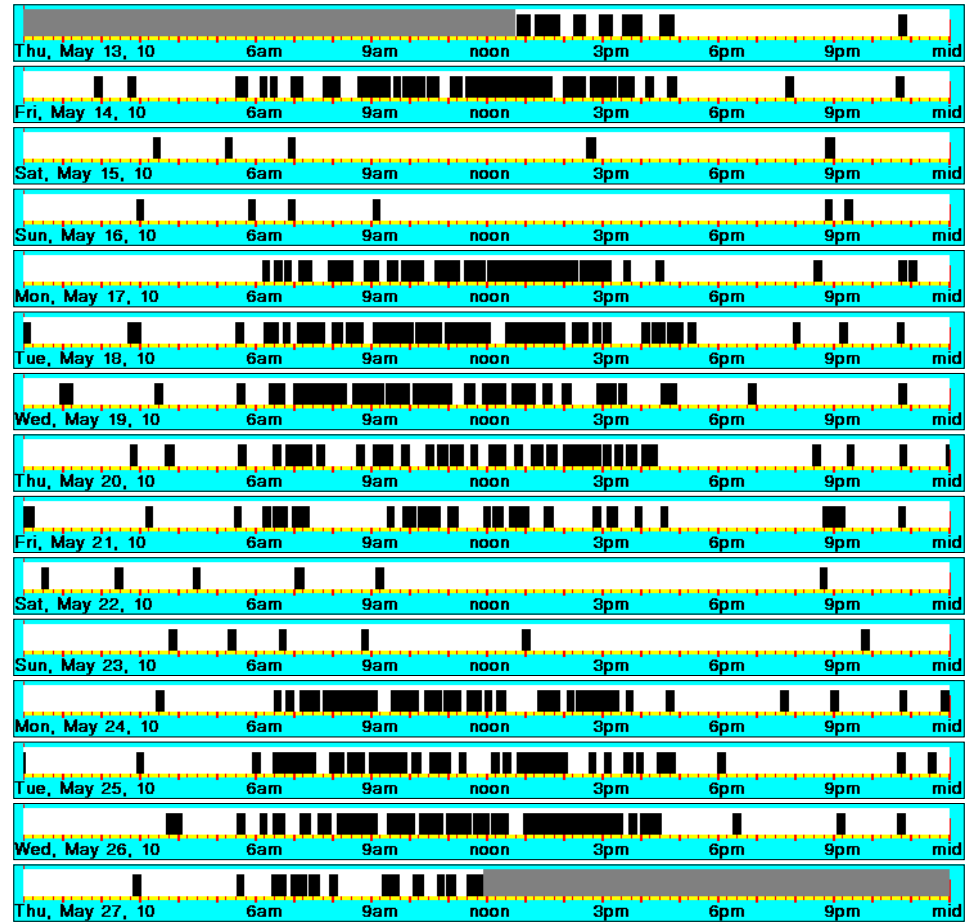
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	14.150	7.075
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>14.150</b>	<b>7.075</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	335.150	81.583	335.167	167.992	40.893	75.7%
Off	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>335.150</b>	<b>81.583</b>	<b>335.167</b>	<b>167.992</b>	<b>40.893</b>	<b>75.7%</b>

## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	24.000	1.083	24.000	7.817	24.000	8.467	24.000	8.767	23.992	6.649	24.000	7.075	24.000	1.050
Off	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>1.083</b>	<b>24.000</b>	<b>7.817</b>	<b>24.000</b>	<b>8.467</b>	<b>24.000</b>	<b>8.767</b>	<b>23.992</b>	<b>6.649</b>	<b>24.000</b>	<b>7.075</b>	<b>24.000</b>	<b>1.050</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	335.150	81.583	335.167	^^^	167.992	40.893	75.7%
Off	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>335.150</b>	<b>81.583</b>	<b>335.167</b>		<b>167.992</b>	<b>40.893</b>	<b>75.7%</b>



# Energy Analysis

## Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	14.967	7.483	7.367	3.683
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>14.967</b>	<b>7.483</b>	<b>7.367</b>	<b>3.683</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	18.167	9.083	10.233	5.117
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>18.167</b>	<b>9.083</b>	<b>10.233</b>	<b>5.117</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	46.917	24.000	13.467	6.889	10.467	5.354
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>46.917</b>	<b>24.000</b>	<b>13.467</b>	<b>6.889</b>	<b>10.467</b>	<b>5.354</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	6.567	3.283	4.733	2.367
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>6.567</b>	<b>3.283</b>	<b>4.733</b>	<b>2.367</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	53.167	32.800	334.917	26.669	16.453	38.3%
Diff	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>53.167</b>	<b>32.800</b>	<b>334.917</b>	<b>26.669</b>	<b>16.453</b>	<b>38.3%</b>

## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	7.483	3.683	0.000	0.000	9.083	5.117	6.889	5.354	3.283	2.367	0.000	0.000
Diff Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>7.483</b>	<b>3.683</b>	<b>0.000</b>	<b>0.000</b>	<b>9.083</b>	<b>5.117</b>	<b>6.889</b>	<b>5.354</b>	<b>3.283</b>	<b>2.367</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	53.167	32.800	334.917	^ ^ ^ ^	26.669	16.453	38.3%
Diff Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>53.167</b>	<b>32.800</b>	<b>334.917</b>		<b>26.669</b>	<b>16.453</b>	<b>38.3%</b>



### Energy Analysis Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	15.867	7.933	13.767	6.883
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>15.867</b>	<b>7.933</b>	<b>13.767</b>	<b>6.883</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	46.967	24.000	15.150	7.742	12.683	6.481
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>46.967</b>	<b>24.000</b>	<b>15.150</b>	<b>7.742</b>	<b>12.683</b>	<b>6.481</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	16.533	8.267	12.433	6.217
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>16.533</b>	<b>8.267</b>	<b>12.433</b>	<b>6.217</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	15.633	7.817	11.167	5.583
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>15.633</b>	<b>7.817</b>	<b>11.167</b>	<b>5.583</b>

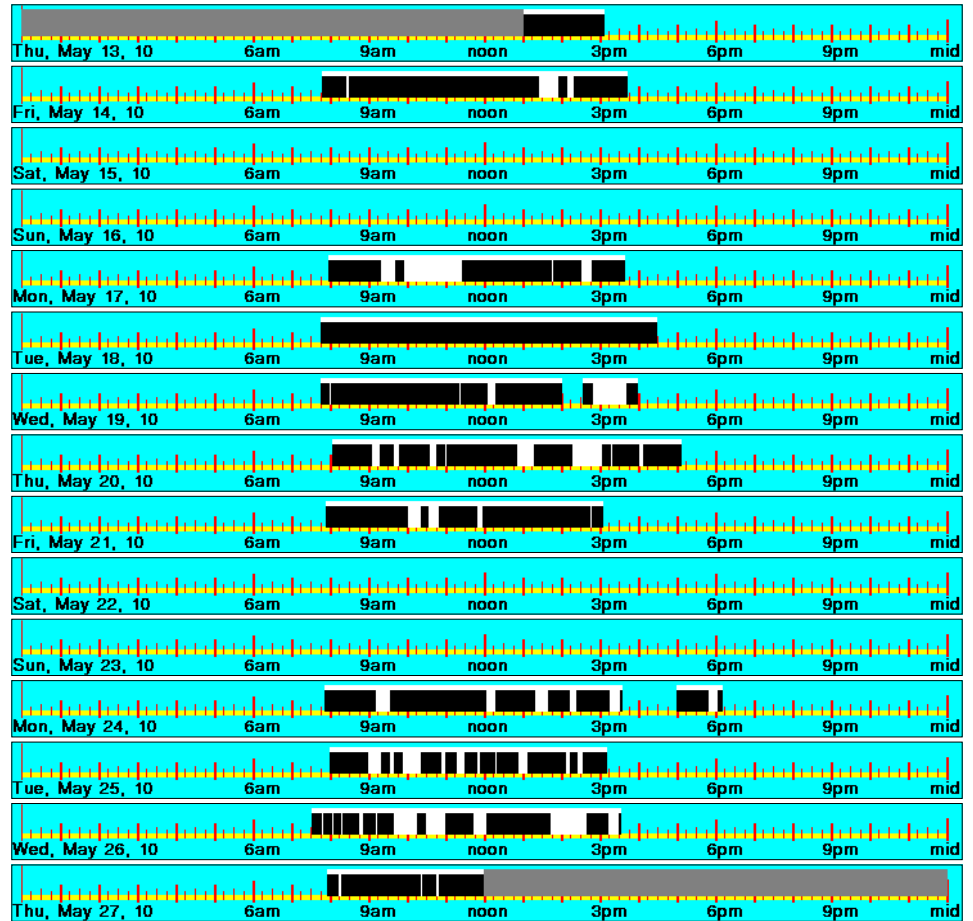
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	15.067	7.533	13.267	6.633
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>15.067</b>	<b>7.533</b>	<b>13.267</b>	<b>6.633</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	78.250	63.317	334.967	39.246	31.756	19.1%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>78.250</b>	<b>63.317</b>	<b>334.967</b>	<b>39.246</b>	<b>31.756</b>	<b>19.1%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	8.267	6.217	7.933	6.883	7.817	5.583	7.742	6.481	7.533	6.633	0.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>8.267</b>	<b>6.217</b>	<b>7.933</b>	<b>6.883</b>	<b>7.817</b>	<b>5.583</b>	<b>7.742</b>	<b>6.481</b>	<b>7.533</b>	<b>6.633</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	78.250	63.317	334.967	^^ ^^	39.246	31.756	19.1%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>78.250</b>	<b>63.317</b>	<b>334.967</b>		<b>39.246</b>	<b>31.756</b>	<b>19.1%</b>



## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.167	0.083	0.167	0.083
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.167</b>	<b>0.083</b>	<b>0.167</b>	<b>0.083</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	14.500	7.250	6.867	3.433
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>14.500</b>	<b>7.250</b>	<b>6.867</b>	<b>3.433</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	16.067	8.033	14.267	7.133
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>16.067</b>	<b>8.033</b>	<b>14.267</b>	<b>7.133</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	15.767	7.883	11.900	5.950
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>15.767</b>	<b>7.883</b>	<b>11.900</b>	<b>5.950</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	47.050	24.000	14.383	7.337	11.250	5.739
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.050</b>	<b>24.000</b>	<b>14.383</b>	<b>7.337</b>	<b>11.250</b>	<b>5.739</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Peak	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	60.883	44.450	335.050	30.528	22.288	27.0%
Off	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>60.883</b>	<b>44.450</b>	<b>335.050</b>	<b>30.528</b>	<b>22.288</b>	<b>27.0%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.083	0.083	7.250	3.433	8.033	7.133	7.883	5.950	7.337	5.739	0.000	0.000	0.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.083</b>	<b>0.083</b>	<b>7.250</b>	<b>3.433</b>	<b>8.033</b>	<b>7.133</b>	<b>7.883</b>	<b>5.950</b>	<b>7.337</b>	<b>5.739</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	60.883	44.450	335.050	^^ ^^	30.528	22.288	27.0%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>60.883</b>	<b>44.450</b>	<b>335.050</b>		<b>30.528</b>	<b>22.288</b>	<b>27.0%</b>





# Energy Analysis

## Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	19.833	9.917	16.867	8.433
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>19.833</b>	<b>9.917</b>	<b>16.867</b>	<b>8.433</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	47.417	24.000	15.533	7.862	12.667	6.411
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.417</b>	<b>24.000</b>	<b>15.533</b>	<b>7.862</b>	<b>12.667</b>	<b>6.411</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	15.300	7.650	13.533	6.767
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>15.300</b>	<b>7.650</b>	<b>13.533</b>	<b>6.767</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	18.333	9.167	14.000	7.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>18.333</b>	<b>9.167</b>	<b>14.000</b>	<b>7.000</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	16.667	8.333	13.733	6.867
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>16.667</b>	<b>8.333</b>	<b>13.733</b>	<b>6.867</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	85.667	70.800	335.417	42.908	35.462	17.4%
Off	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>85.667</b>	<b>70.800</b>	<b>335.417</b>	<b>42.908</b>	<b>35.462</b>	<b>17.4%</b>

## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	7.650	6.767	9.917	8.433	9.167	7.000	7.862	6.411	8.333	6.867	0.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>7.650</b>	<b>6.767</b>	<b>9.917</b>	<b>8.433</b>	<b>9.167</b>	<b>7.000</b>	<b>7.862</b>	<b>6.411</b>	<b>8.333</b>	<b>6.867</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	85.667	70.800	335.417	^^ ^^	42.908	35.462	17.4%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>85.667</b>	<b>70.800</b>	<b>335.417</b>		<b>42.908</b>	<b>35.462</b>	<b>17.4%</b>



## Energy Analysis Data by Day of Week

<b>Sun</b>	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

<b>Tue</b>	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	8.133	4.067	5.700	2.850
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>8.133</b>	<b>4.067</b>	<b>5.700</b>	<b>2.850</b>

<b>Thu</b>	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	35.850	24.000	0.233	0.156	0.233	0.156
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>35.850</b>	<b>24.000</b>	<b>0.233</b>	<b>0.156</b>	<b>0.233</b>	<b>0.156</b>

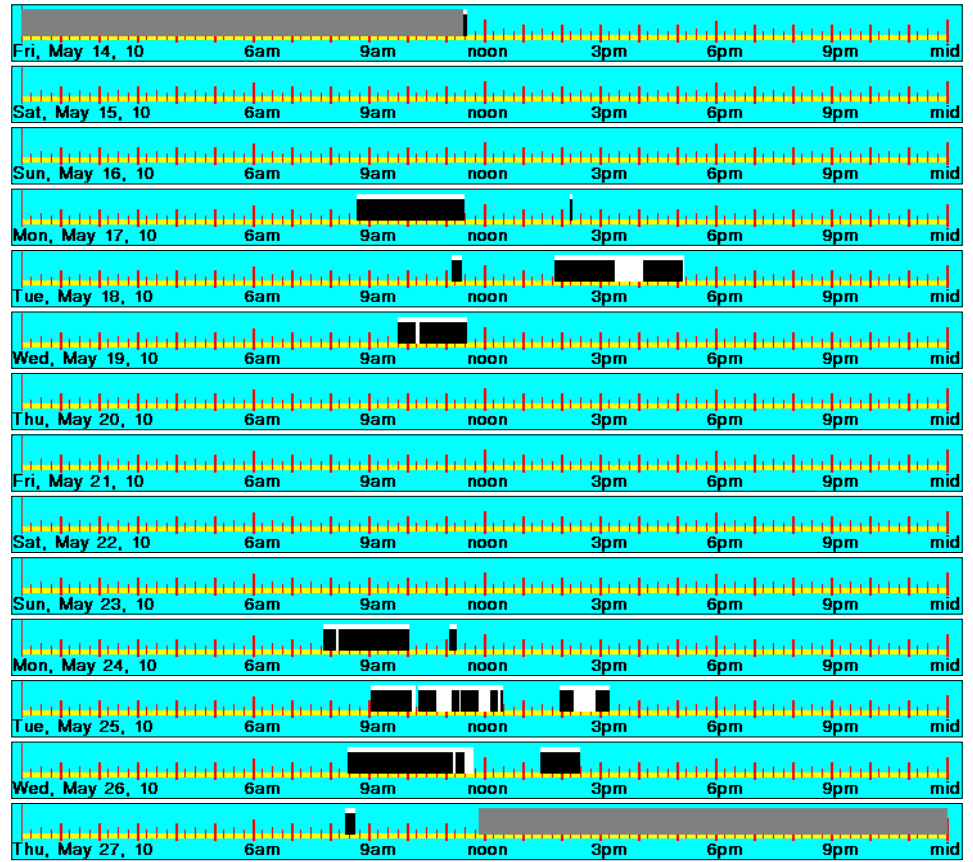
<b>Sat</b>	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

<b>Mon</b>	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	5.133	2.567	5.033	2.517
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>5.133</b>	<b>2.567</b>	<b>5.033</b>	<b>2.517</b>

<b>Wed</b>	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	5.967	2.983	5.500	2.750
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>5.967</b>	<b>2.983</b>	<b>5.500</b>	<b>2.750</b>

<b>Fri</b>	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	36.550	24.000	0.067	0.044	0.067	0.044
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>36.550</b>	<b>24.000</b>	<b>0.067</b>	<b>0.044</b>	<b>0.067</b>	<b>0.044</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	19.533	16.533	312.400	10.504	8.891	15.4%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>19.533</b>	<b>16.533</b>	<b>312.400</b>	<b>10.504</b>	<b>8.891</b>	<b>15.4%</b>



## Normalized Data

	<b>Sun</b>		<b>Mon</b>		<b>Tue</b>		<b>Wed</b>		<b>Thu</b>		<b>Fri</b>		<b>Sat</b>	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	2.567	2.517	4.067	2.850	2.983	2.750	0.156	0.156	0.044	0.044	0.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>2.567</b>	<b>2.517</b>	<b>4.067</b>	<b>2.850</b>	<b>2.983</b>	<b>2.750</b>	<b>0.156</b>	<b>0.156</b>	<b>0.044</b>	<b>0.044</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	19.533	16.533	312.400	^^ ^^	10.504	8.891	15.4%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>19.533</b>	<b>16.533</b>	<b>312.400</b>		<b>10.504</b>	<b>8.891</b>	<b>15.4%</b>

# Energy Analysis

## Data by Day of Week

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Sun</b>						
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Tue</b>						
Peak	48.000	24.000	16.100	8.050	8.933	4.467
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>16.100</b>	<b>8.050</b>	<b>8.933</b>	<b>4.467</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Thu</b>						
Peak	47.517	24.000	14.867	7.509	7.300	3.687
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.517</b>	<b>24.000</b>	<b>14.867</b>	<b>7.509</b>	<b>7.300</b>	<b>3.687</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Sat</b>						
Peak	48.000	24.000	0.033	0.017	0.033	0.017
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.033</b>	<b>0.017</b>	<b>0.033</b>	<b>0.017</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Mon</b>						
Peak	48.000	24.000	17.167	8.583	9.133	4.567
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>17.167</b>	<b>8.583</b>	<b>9.133</b>	<b>4.567</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Wed</b>						
Peak	48.000	24.000	17.533	8.767	8.300	4.150
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>17.533</b>	<b>8.767</b>	<b>8.300</b>	<b>4.150</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Fri</b>						
Peak	48.000	24.000	12.667	6.333	7.100	3.550
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>12.667</b>	<b>6.333</b>	<b>7.100</b>	<b>3.550</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	78.367	40.800	335.517	39.240	20.429	47.9%
Diff	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>78.367</b>	<b>40.800</b>	<b>335.517</b>	<b>39.240</b>	<b>20.429</b>	<b>47.9%</b>

## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	8.583	4.567	8.050	4.467	8.767	4.150	7.509	3.687	6.333	3.550	0.017	0.017
Diff Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>8.583</b>	<b>4.567</b>	<b>8.050</b>	<b>4.467</b>	<b>8.767</b>	<b>4.150</b>	<b>7.509</b>	<b>3.687</b>	<b>6.333</b>	<b>3.550</b>	<b>0.017</b>	<b>0.017</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	78.367	40.800	335.517	^^ ^^	39.240	20.429	47.9%
Diff Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>78.367</b>	<b>40.800</b>	<b>335.517</b>		<b>39.240</b>	<b>20.429</b>	<b>47.9%</b>



## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	6.867	3.433	6.833	3.417
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>6.867</b>	<b>3.433</b>	<b>6.833</b>	<b>3.417</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	8.233	4.117	8.233	4.117
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>8.233</b>	<b>4.117</b>	<b>8.233</b>	<b>4.117</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	4.533	2.267	4.533	2.267
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>4.533</b>	<b>2.267</b>	<b>4.533</b>	<b>2.267</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	47.500	24.000	1.600	0.808	1.600	0.808
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.500</b>	<b>24.000</b>	<b>1.600</b>	<b>0.808</b>	<b>1.600</b>	<b>0.808</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

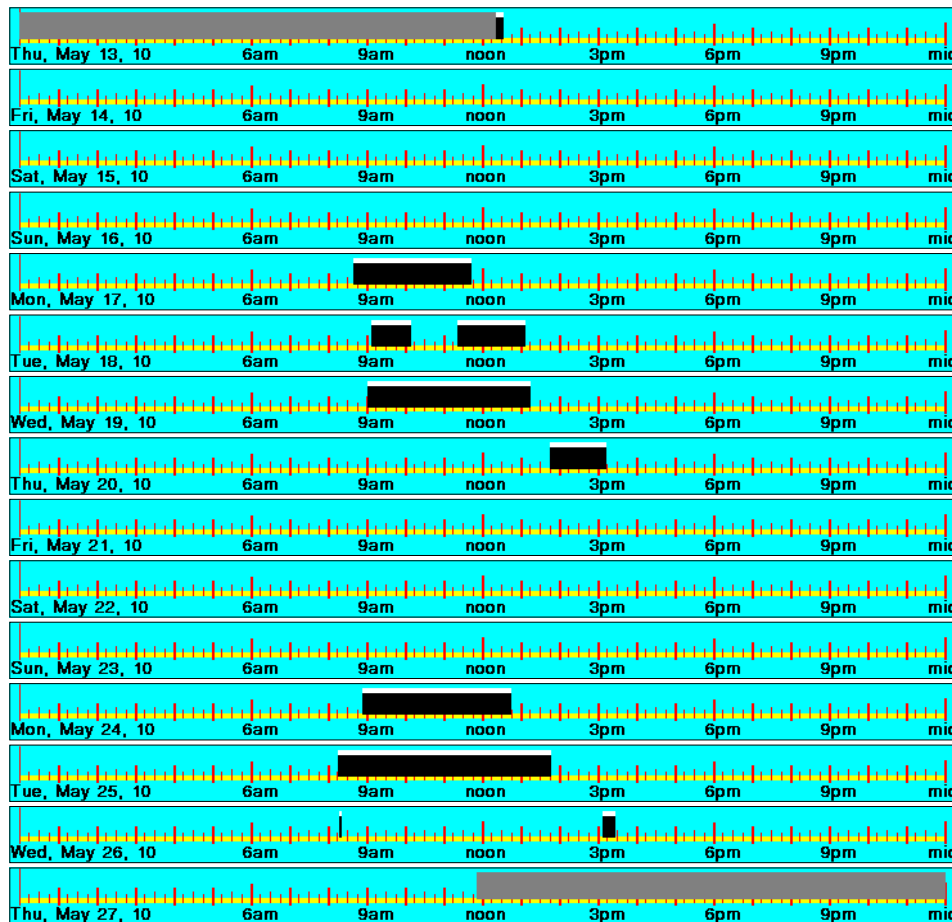
Sat	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	21.233	21.200	335.500	10.632	10.616	0.2%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>21.233</b>	<b>21.200</b>	<b>335.500</b>	<b>10.632</b>	<b>10.616</b>	<b>0.2%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	3.433	3.417	4.117	4.117	2.267	2.267	0.808	0.808	0.000	0.000	0.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>3.433</b>	<b>3.417</b>	<b>4.117</b>	<b>4.117</b>	<b>2.267</b>	<b>2.267</b>	<b>0.808</b>	<b>0.808</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	21.233	21.200	335.500	^^ ^^	10.632	10.616	0.2%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>21.233</b>	<b>21.200</b>	<b>335.500</b>		<b>10.632</b>	<b>10.616</b>	<b>0.2%</b>



# 2nd Floor Break Area

Area type: Meeting Rooms. Logger: 20988. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	4.333	2.167	2.767	1.383
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>4.333</b>	<b>2.167</b>	<b>2.767</b>	<b>1.383</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	8.400	4.200	4.767	2.383
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>8.400</b>	<b>4.200</b>	<b>4.767</b>	<b>2.383</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.667	0.333	0.667	0.333
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.667</b>	<b>0.333</b>	<b>0.667</b>	<b>0.333</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	47.217	24.000	5.333	2.711	3.667	1.864
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.217</b>	<b>24.000</b>	<b>5.333</b>	<b>2.711</b>	<b>3.667</b>	<b>1.864</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	2.200	1.100	1.567	0.783
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>2.200</b>	<b>1.100</b>	<b>1.567</b>	<b>0.783</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	20.933	13.433	335.217	10.491	6.732	35.8%
Diff	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>20.933</b>	<b>13.433</b>	<b>335.217</b>	<b>10.491</b>	<b>6.732</b>	<b>35.8%</b>

## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC
Peak	0.000	0.000	2.167	1.383	4.200	2.383	0.333	0.333	2.711	1.864	1.100	0.783	0.000	0.000
Diff Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>2.167</b>	<b>1.383</b>	<b>4.200</b>	<b>2.383</b>	<b>0.333</b>	<b>0.333</b>	<b>2.711</b>	<b>1.864</b>	<b>1.100</b>	<b>0.783</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	20.933	13.433	335.217	^ ^ ^ ^	10.491	6.732	35.8%
Diff Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>20.933</b>	<b>13.433</b>	<b>335.217</b>		<b>10.491</b>	<b>6.732</b>	<b>35.8%</b>



# 2nd Floor Break Area 2

Area type: Meeting Rooms. Logger: 22834. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis Data by Day of Week

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Sun</b>						
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Tue</b>						
Peak	48.000	24.000	5.467	2.733	4.333	2.167
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>5.467</b>	<b>2.733</b>	<b>4.333</b>	<b>2.167</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Thu</b>						
Peak	47.167	24.000	9.067	4.613	3.133	1.594
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.167</b>	<b>24.000</b>	<b>9.067</b>	<b>4.613</b>	<b>3.133</b>	<b>1.594</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Sat</b>						
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Mon</b>						
Peak	48.000	24.000	3.533	1.767	3.167	1.583
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>3.533</b>	<b>1.767</b>	<b>3.167</b>	<b>1.583</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Wed</b>						
Peak	48.000	24.000	14.933	7.467	6.900	3.450
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>14.933</b>	<b>7.467</b>	<b>6.900</b>	<b>3.450</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Fri</b>						
Peak	48.000	24.000	3.400	1.700	3.067	1.533
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>3.400</b>	<b>1.700</b>	<b>3.067</b>	<b>1.533</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	36.400	20.600	335.167	18.245	10.326	43.4%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>36.400</b>	<b>20.600</b>	<b>335.167</b>	<b>18.245</b>	<b>10.326</b>	<b>43.4%</b>

## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.000	0.000	1.767	1.583	2.733	2.167	7.467	3.450	4.613	1.594	1.700	1.533	0.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>1.767</b>	<b>1.583</b>	<b>2.733</b>	<b>2.167</b>	<b>7.467</b>	<b>3.450</b>	<b>4.613</b>	<b>1.594</b>	<b>1.700</b>	<b>1.533</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	36.400	20.600	335.167	^^ ^^	18.245	10.326	43.4%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>36.400</b>	<b>20.600</b>	<b>335.167</b>		<b>18.245</b>	<b>10.326</b>	<b>43.4%</b>



# 2nd Floor Hallway by 2029

Area type: Hallway. Logger: 23313. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	3.867	1.933
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>3.867</b>	<b>1.933</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	14.400	7.200
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>14.400</b>	<b>7.200</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	18.667	9.333
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>18.667</b>	<b>9.333</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	17.733	8.867
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>17.733</b>	<b>8.867</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	47.617	24.000	47.600	23.992	16.017	8.073
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.617</b>	<b>24.000</b>	<b>47.600</b>	<b>23.992</b>	<b>16.017</b>	<b>8.073</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	15.300	7.650
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>15.300</b>	<b>7.650</b>

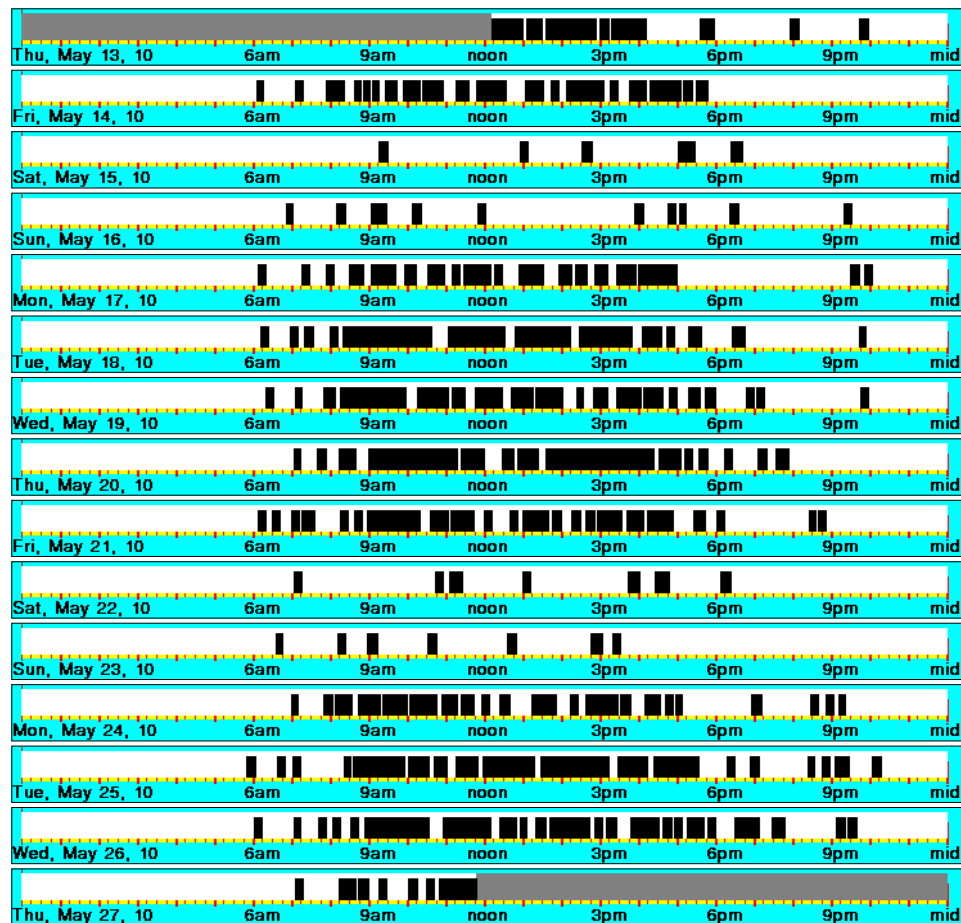
Sat	Total Log Time	Hours /Day	Logged Lites On	Normalized Lites On per Day	Logged Occ	Normalized Occ per Day
Peak	48.000	24.000	48.000	24.000	3.300	1.650
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>3.300</b>	<b>1.650</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	335.600	89.283	335.617	167.992	44.693	73.4%
Off	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>335.600</b>	<b>89.283</b>	<b>335.617</b>	<b>167.992</b>	<b>44.693</b>	<b>73.4%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	24.000	1.933	24.000	7.200	24.000	9.333	24.000	8.867	23.992	8.073	24.000	7.650	24.000	1.650
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>1.933</b>	<b>24.000</b>	<b>7.200</b>	<b>24.000</b>	<b>9.333</b>	<b>24.000</b>	<b>8.867</b>	<b>23.992</b>	<b>8.073</b>	<b>24.000</b>	<b>7.650</b>	<b>24.000</b>	<b>1.650</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	335.600	89.283	335.617	^^ ^^	167.992	44.693	73.4%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>335.600</b>	<b>89.283</b>	<b>335.617</b>		<b>167.992</b>	<b>44.693</b>	<b>73.4%</b>



# 2nd Floor Open by 2033

Area type: Open Space. Logger: 23363. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	16.033	8.017	13.600	6.800
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>16.033</b>	<b>8.017</b>	<b>13.600</b>	<b>6.800</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	47.567	24.000	16.283	8.216	11.650	5.878
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.567</b>	<b>24.000</b>	<b>16.283</b>	<b>8.216</b>	<b>11.650</b>	<b>5.878</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	16.467	8.233	12.033	6.017
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>16.467</b>	<b>8.233</b>	<b>12.033</b>	<b>6.017</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	9.967	4.983	8.800	4.400
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>9.967</b>	<b>4.983</b>	<b>8.800</b>	<b>4.400</b>

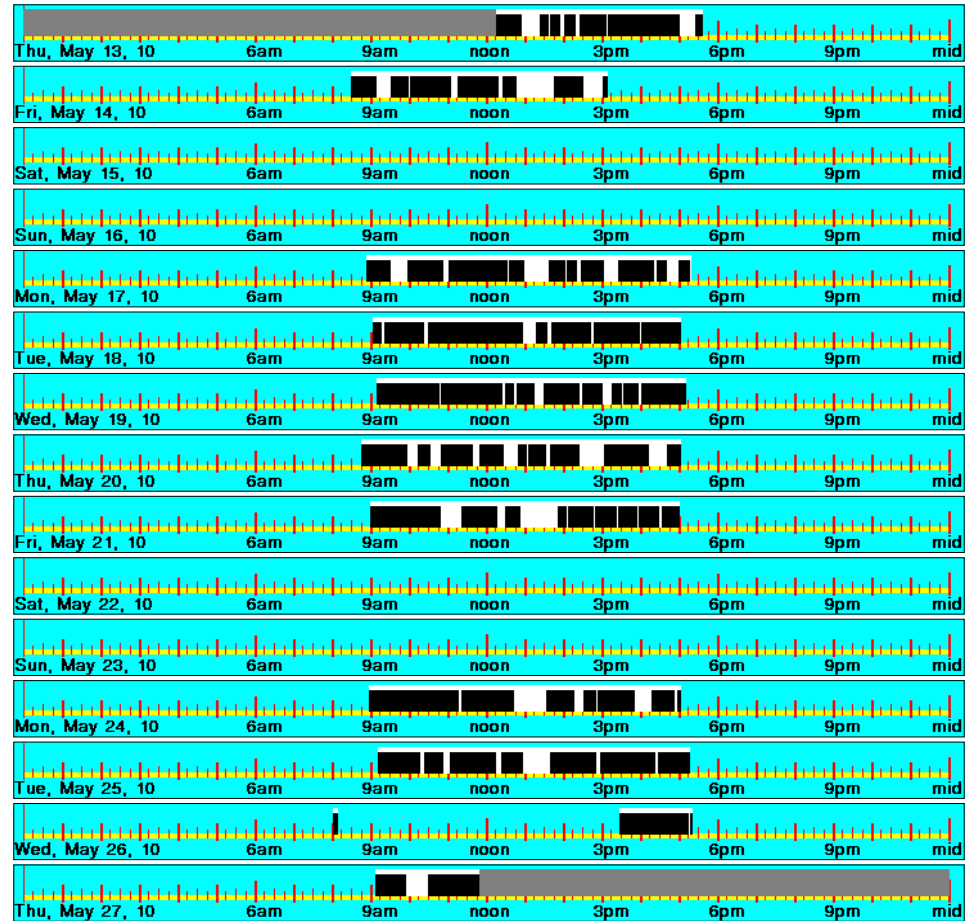
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	14.633	7.317	10.067	5.033
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>14.633</b>	<b>7.317</b>	<b>10.067</b>	<b>5.033</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	73.383	56.150	335.567	36.739	28.111	23.5%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>73.383</b>	<b>56.150</b>	<b>335.567</b>	<b>36.739</b>	<b>28.111</b>	<b>23.5%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC
Peak	0.000	0.000	8.233	6.017	8.017	6.800	4.983	4.400	8.216	5.878	7.317	5.033	0.000	0.000
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>8.233</b>	<b>6.017</b>	<b>8.017</b>	<b>6.800</b>	<b>4.983</b>	<b>4.400</b>	<b>8.216</b>	<b>5.878</b>	<b>7.317</b>	<b>5.033</b>	<b>0.000</b>	<b>0.000</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	73.383	56.150	335.567	^^ ^^	36.739	28.111	23.5%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>73.383</b>	<b>56.150</b>	<b>335.567</b>		<b>36.739</b>	<b>28.111</b>	<b>23.5%</b>





# 2nd Floor Open by Elevator

Area type: Open Space. Logger: 24825. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	0.600	0.300
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>0.600</b>	<b>0.300</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	9.433	4.717
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>9.433</b>	<b>4.717</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	46.883	24.000	46.867	23.991	5.417	2.773
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>46.883</b>	<b>24.000</b>	<b>46.867</b>	<b>23.991</b>	<b>5.417</b>	<b>2.773</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	0.533	0.267
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>0.533</b>	<b>0.267</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	6.467	3.233
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>6.467</b>	<b>3.233</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	11.167	5.583
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>11.167</b>	<b>5.583</b>

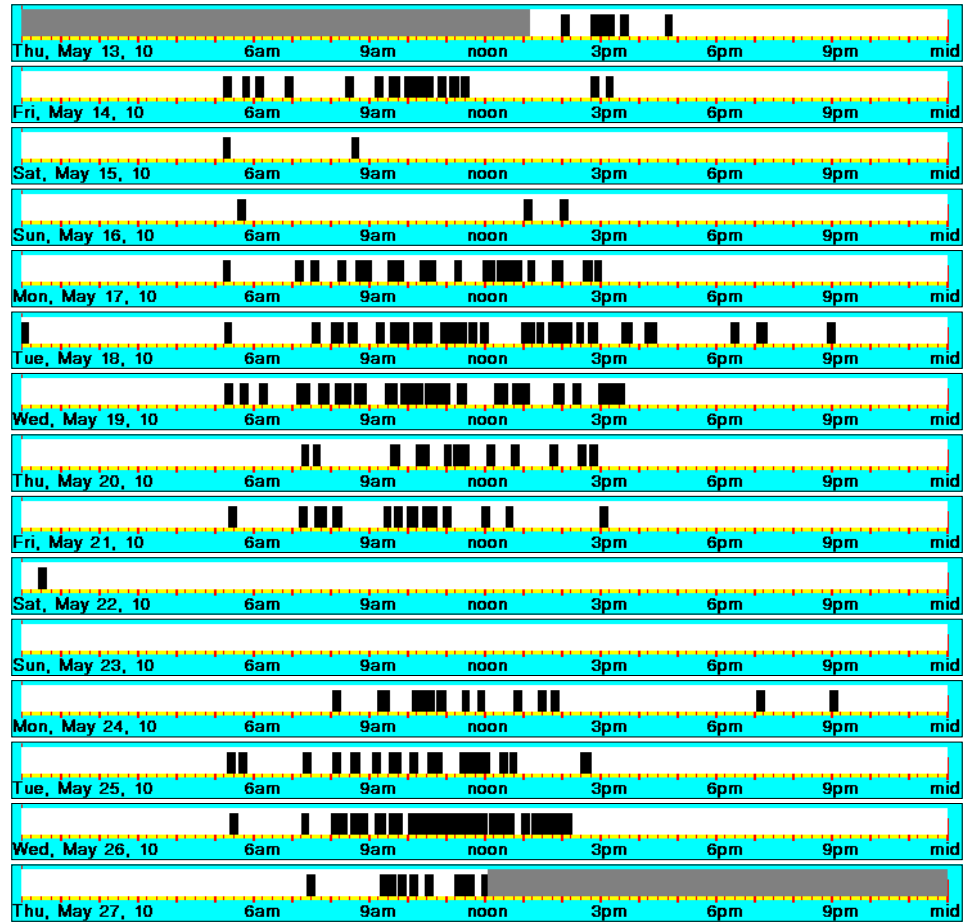
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	5.800	2.900
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>5.800</b>	<b>2.900</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	334.867	39.417	334.883	167.992	19.774	88.2%
Off	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>334.867</b>	<b>39.417</b>	<b>334.883</b>	<b>167.992</b>	<b>19.774</b>	<b>88.2%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	24.000	0.300	24.000	3.233	24.000	4.717	24.000	5.583	23.991	2.773	24.000	2.900	24.000	0.267
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>0.300</b>	<b>24.000</b>	<b>3.233</b>	<b>24.000</b>	<b>4.717</b>	<b>24.000</b>	<b>5.583</b>	<b>23.991</b>	<b>2.773</b>	<b>24.000</b>	<b>2.900</b>	<b>24.000</b>	<b>0.267</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	334.867	39.417	334.883	^^ ^^	167.992	19.774	88.2%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>334.867</b>	<b>39.417</b>	<b>334.883</b>		<b>167.992</b>	<b>19.774</b>	<b>88.2%</b>



# 2nd Womens by 2043

Area type: Restroom. Logger: 23679. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	0.000	0.000
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	27.833	13.917	5.367	2.683
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>27.833</b>	<b>13.917</b>	<b>5.367</b>	<b>2.683</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	47.250	24.000	27.767	14.104	4.533	2.303
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.250</b>	<b>24.000</b>	<b>27.767</b>	<b>14.104</b>	<b>4.533</b>	<b>2.303</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	33.483	16.742	2.300	1.150
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>33.483</b>	<b>16.742</b>	<b>2.300</b>	<b>1.150</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	27.667	13.833	3.367	1.683
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>27.667</b>	<b>13.833</b>	<b>3.367</b>	<b>1.683</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	45.167	22.583	6.533	3.267
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>45.167</b>	<b>22.583</b>	<b>6.533</b>	<b>3.267</b>

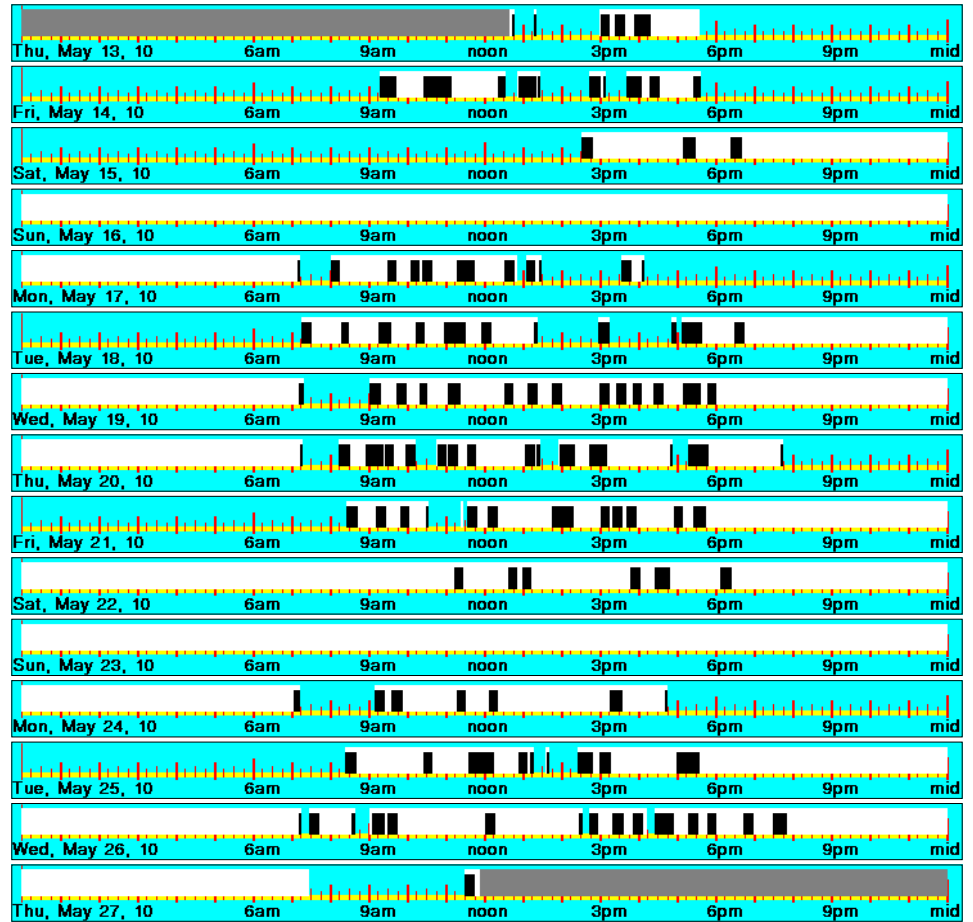
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	20.683	10.342	5.667	2.833
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>20.683</b>	<b>10.342</b>	<b>5.667</b>	<b>2.833</b>

Peak	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	230.600	27.767	335.250	115.558	13.914	88.0%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>230.600</b>	<b>27.767</b>	<b>335.250</b>	<b>115.558</b>	<b>13.914</b>	<b>88.0%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC
Peak	24.000	0.000	13.833	1.683	13.917	2.683	22.583	3.267	14.104	2.303	10.342	2.833	16.742	1.150
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>0.000</b>	<b>13.833</b>	<b>1.683</b>	<b>13.917</b>	<b>2.683</b>	<b>22.583</b>	<b>3.267</b>	<b>14.104</b>	<b>2.303</b>	<b>10.342</b>	<b>2.833</b>	<b>16.742</b>	<b>1.150</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	230.600	27.767	335.250	^^ ^^	115.558	13.914	88.0%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>230.600</b>	<b>27.767</b>	<b>335.250</b>		<b>115.558</b>	<b>13.914</b>	<b>88.0%</b>



# Detective Interview Hall

Area type: Hallway. Logger: 21162. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	38.633	19.317	2.633	1.317
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>38.633</b>	<b>19.317</b>	<b>2.633</b>	<b>1.317</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	30.967	15.483	11.267	5.633
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>30.967</b>	<b>15.483</b>	<b>11.267</b>	<b>5.633</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	47.850	24.000	28.500	14.295	8.300	4.163
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>47.850</b>	<b>24.000</b>	<b>28.500</b>	<b>14.295</b>	<b>8.300</b>	<b>4.163</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	1.267	0.633
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>1.267</b>	<b>0.633</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	28.600	14.300	9.400	4.700
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>28.600</b>	<b>14.300</b>	<b>9.400</b>	<b>4.700</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	27.600	13.800	10.067	5.033
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>27.600</b>	<b>13.800</b>	<b>10.067</b>	<b>5.033</b>

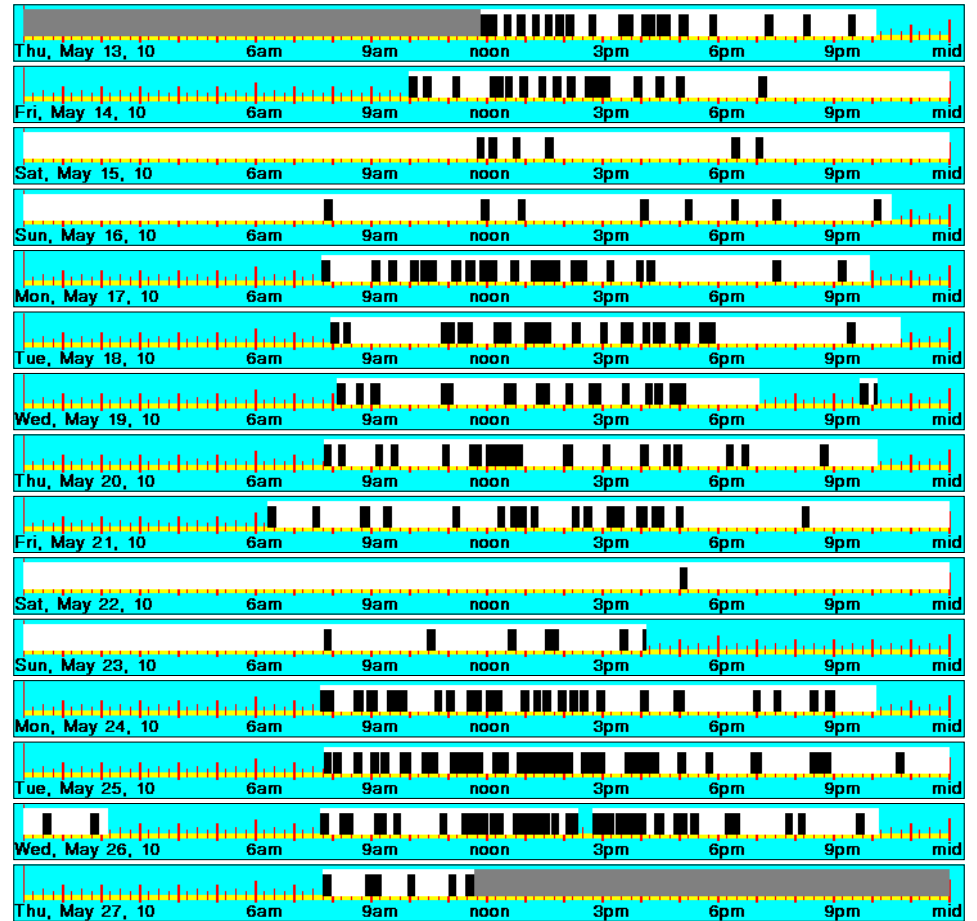
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	31.683	15.842	6.600	3.300
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>31.683</b>	<b>15.842</b>	<b>6.600</b>	<b>3.300</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	233.983	49.533	335.850	117.044	24.778	78.8%
Off Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>233.983</b>	<b>49.533</b>	<b>335.850</b>	<b>117.044</b>	<b>24.778</b>	<b>78.8%</b>

## Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	19.317	1.317	14.300	4.700	15.483	5.633	13.800	5.033	14.295	4.163	15.842	3.300	24.000	0.633
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>19.317</b>	<b>1.317</b>	<b>14.300</b>	<b>4.700</b>	<b>15.483</b>	<b>5.633</b>	<b>13.800</b>	<b>5.033</b>	<b>14.295</b>	<b>4.163</b>	<b>15.842</b>	<b>3.300</b>	<b>24.000</b>	<b>0.633</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	233.983	49.533	335.850	^^ ^^	117.044	24.778	78.8%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>233.983</b>	<b>49.533</b>	<b>335.850</b>		<b>117.044</b>	<b>24.778</b>	<b>78.8%</b>



# L Hall, 2nd Floor

Area type: Hallway. Logger: 22691. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

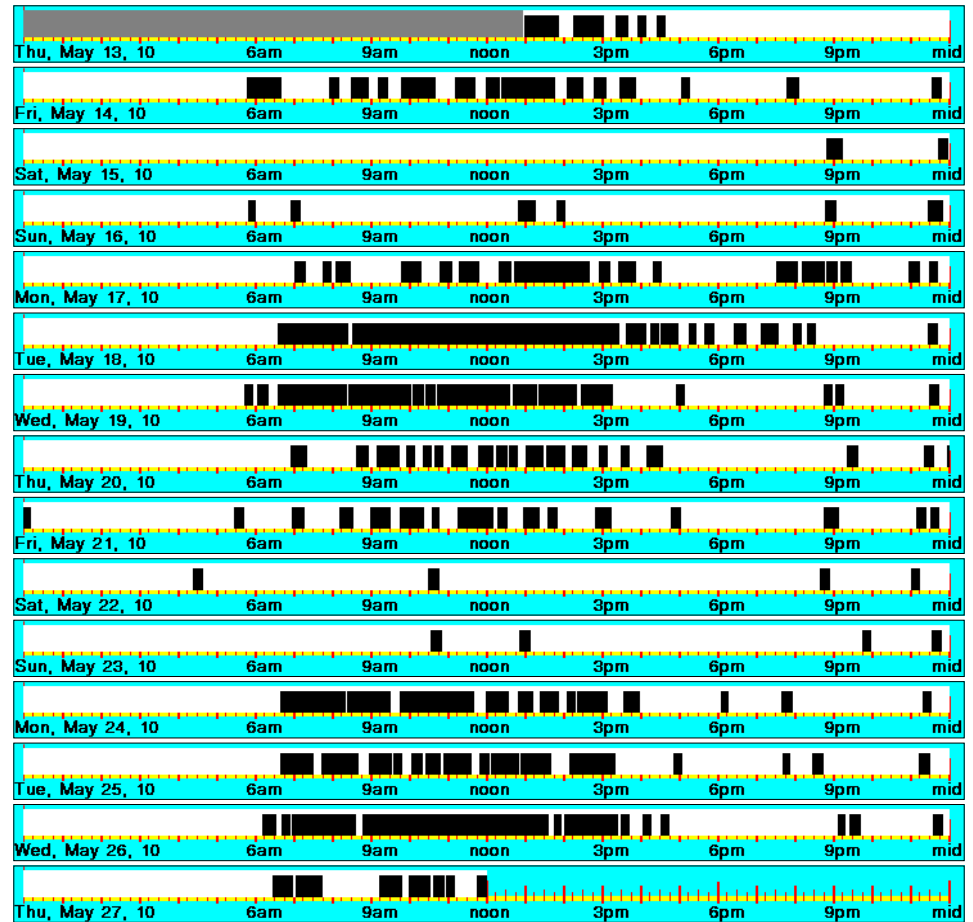
Day	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Sun</b>	48.000	24.000	48.000	24.000	2.600	1.300
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>2.600</b>	<b>1.300</b>
<b>Mon</b>	48.000	24.000	48.000	24.000	15.167	7.583
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>15.167</b>	<b>7.583</b>
<b>Tue</b>	48.000	24.000	48.000	24.000	19.067	9.533
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>19.067</b>	<b>9.533</b>
<b>Wed</b>	48.000	24.000	48.000	24.000	19.133	9.567
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>19.133</b>	<b>9.567</b>
<b>Thu</b>	59.050	24.000	47.033	19.116	10.983	4.464
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>59.050</b>	<b>24.000</b>	<b>47.033</b>	<b>19.116</b>	<b>10.983</b>	<b>4.464</b>
<b>Fri</b>	48.000	24.000	48.000	24.000	12.017	6.008
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>12.017</b>	<b>6.008</b>
<b>Sat</b>	48.000	24.000	48.000	24.000	1.567	0.783
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>1.567</b>	<b>0.783</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	335.033	80.533	347.050	162.183	38.985	76.0%
Diff	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>335.033</b>	<b>80.533</b>	<b>347.050</b>	<b>162.183</b>	<b>38.985</b>	<b>76.0%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	24.000	1.300	24.000	7.583	24.000	9.533	24.000	9.567	19.116	4.464	24.000	6.008	24.000	0.783
Diff Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>1.300</b>	<b>24.000</b>	<b>7.583</b>	<b>24.000</b>	<b>9.533</b>	<b>24.000</b>	<b>9.567</b>	<b>19.116</b>	<b>4.464</b>	<b>24.000</b>	<b>6.008</b>	<b>24.000</b>	<b>0.783</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	335.033	80.533	347.050	^ ^ ^ ^	162.183	38.985	76.0%
Diff Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>335.033</b>	<b>80.533</b>	<b>347.050</b>		<b>162.183</b>	<b>38.985</b>	<b>76.0%</b>



# Mens Lckr, RR Area

Area type: Restroom. Logger: 23847. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	19.283	9.642
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>19.283</b>	<b>9.642</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	39.667	19.833	25.567	12.783
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>39.667</b>	<b>19.833</b>	<b>25.567</b>	<b>12.783</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	46.550	24.000	37.933	19.557	23.433	12.082
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>46.550</b>	<b>24.000</b>	<b>37.933</b>	<b>19.557</b>	<b>23.433</b>	<b>12.082</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	48.000	24.000	20.233	10.117
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>48.000</b>	<b>24.000</b>	<b>20.233</b>	<b>10.117</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	43.467	21.733	25.017	12.508
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>43.467</b>	<b>21.733</b>	<b>25.017</b>	<b>12.508</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	43.100	21.550	29.167	14.583
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>43.100</b>	<b>21.550</b>	<b>29.167</b>	<b>14.583</b>

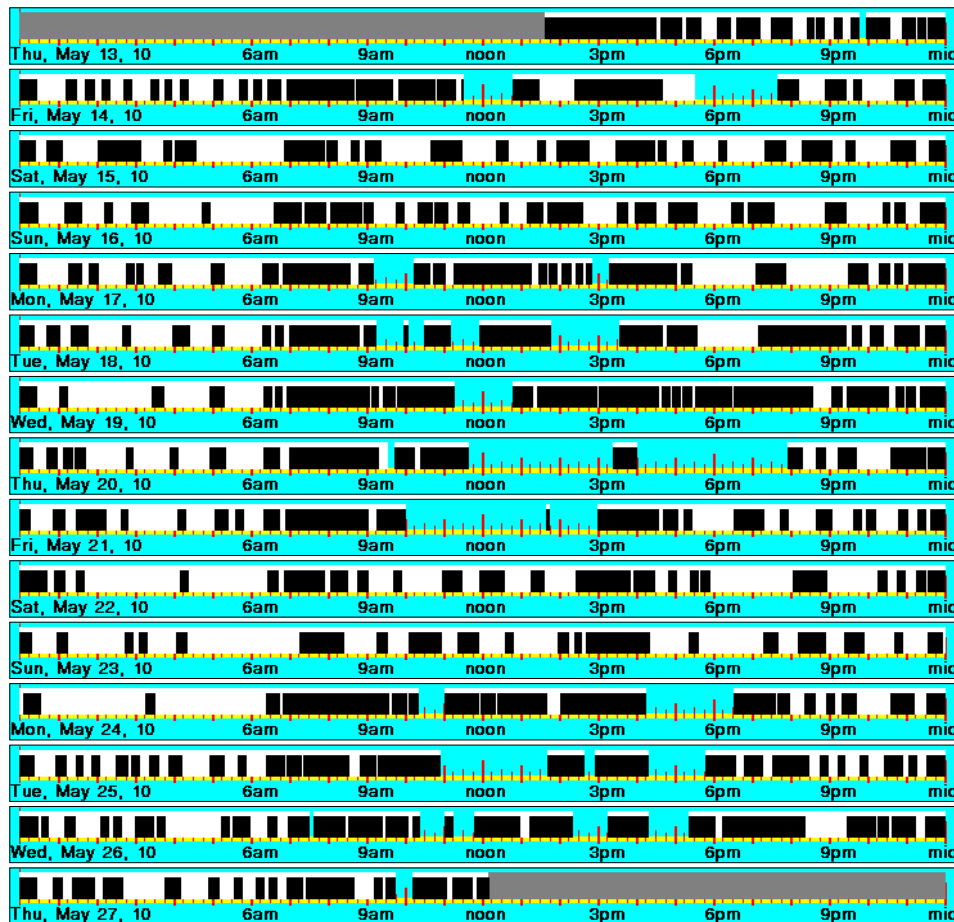
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	39.600	19.800	22.333	11.167
Off	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>39.600</b>	<b>19.800</b>	<b>22.333</b>	<b>11.167</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	299.767	165.033	334.550	150.533	82.874	44.9%
Off	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>299.767</b>	<b>165.033</b>	<b>334.550</b>	<b>150.533</b>	<b>82.874</b>	<b>44.9%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	24.000	9.642	21.733	12.508	19.833	12.783	21.550	14.583	19.557	12.082	19.800	11.167	24.000	10.117
Off Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>24.000</b>	<b>9.642</b>	<b>21.733</b>	<b>12.508</b>	<b>19.833</b>	<b>12.783</b>	<b>21.550</b>	<b>14.583</b>	<b>19.557</b>	<b>12.082</b>	<b>19.800</b>	<b>11.167</b>	<b>24.000</b>	<b>10.117</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	299.767	165.033	334.550	^^ ^^	150.533	82.874	44.9%
Off Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>299.767</b>	<b>165.033</b>	<b>334.550</b>		<b>150.533</b>	<b>82.874</b>	<b>44.9%</b>



# Open Visitation

Area type: Open Space. Logger: 23645. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	12.400	6.200	6.467	3.233
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>12.400</b>	<b>6.200</b>	<b>6.467</b>	<b>3.233</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	20.867	10.433	6.333	3.167
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>20.867</b>	<b>10.433</b>	<b>6.333</b>	<b>3.167</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	46.667	24.000	18.517	9.523	5.967	3.063
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>46.667</b>	<b>24.000</b>	<b>18.517</b>	<b>9.523</b>	<b>5.967</b>	<b>3.063</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	14.100	7.050	6.067	3.033
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>14.100</b>	<b>7.050</b>	<b>6.067</b>	<b>3.033</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.000	0.000	0.000	0.000
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	20.467	10.233	5.267	2.633
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>20.467</b>	<b>10.233</b>	<b>5.267</b>	<b>2.633</b>

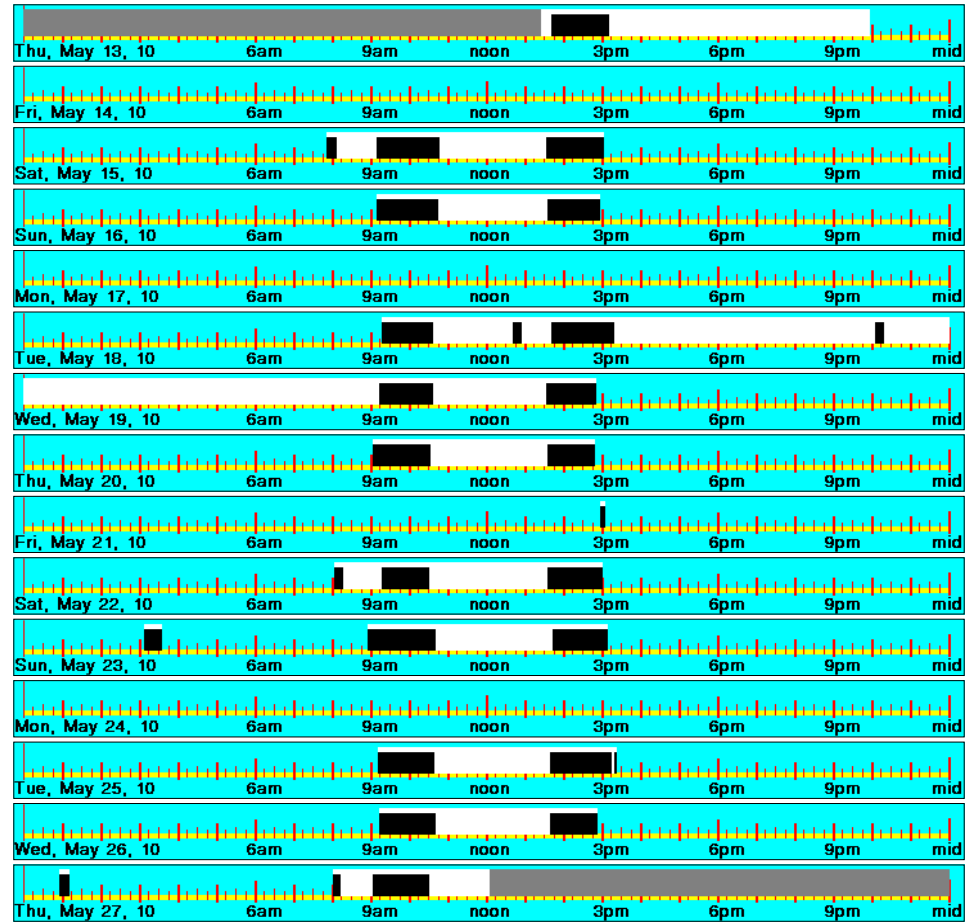
Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.100	0.050	0.100	0.050
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.100</b>	<b>0.050</b>	<b>0.100</b>	<b>0.050</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	86.450	30.200	334.667	43.397	15.160	65.1%
Dff Peak	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>86.450</b>	<b>30.200</b>	<b>334.667</b>	<b>43.397</b>	<b>15.160</b>	<b>65.1%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	6.200	3.233	0.000	0.000	10.433	3.167	10.233	2.633	9.523	3.069	0.050	0.050	7.050	3.033
Dff Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>6.200</b>	<b>3.233</b>	<b>0.000</b>	<b>0.000</b>	<b>10.433</b>	<b>3.167</b>	<b>10.233</b>	<b>2.633</b>	<b>9.523</b>	<b>3.069</b>	<b>0.050</b>	<b>0.050</b>	<b>7.050</b>	<b>3.033</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	86.450	30.200	334.667	^^ ^^	43.397	15.160	65.1%
Dff Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>86.450</b>	<b>30.200</b>	<b>334.667</b>		<b>43.397</b>	<b>15.160</b>	<b>65.1%</b>



# Training A, B, C

Area type: Meeting Rooms. Logger: 23380. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Sun</b>	48.000	24.000	0.000	0.000	0.000	0.000
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Tue</b>	48.000	24.000	11.333	5.667	10.600	5.300
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>11.333</b>	<b>5.667</b>	<b>10.600</b>	<b>5.300</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Thu</b>	46.500	24.000	16.350	8.439	4.067	2.099
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>46.500</b>	<b>24.000</b>	<b>16.350</b>	<b>8.439</b>	<b>4.067</b>	<b>2.099</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Sat</b>	48.000	24.000	14.833	7.417	1.333	0.667
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>14.833</b>	<b>7.417</b>	<b>1.333</b>	<b>0.667</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Mon</b>	48.000	24.000	14.900	7.450	13.933	6.967
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>14.900</b>	<b>7.450</b>	<b>13.933</b>	<b>6.967</b>

	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Wed</b>	48.000	24.000	21.867	10.933	12.100	6.050
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>21.867</b>	<b>10.933</b>	<b>12.100</b>	<b>6.050</b>

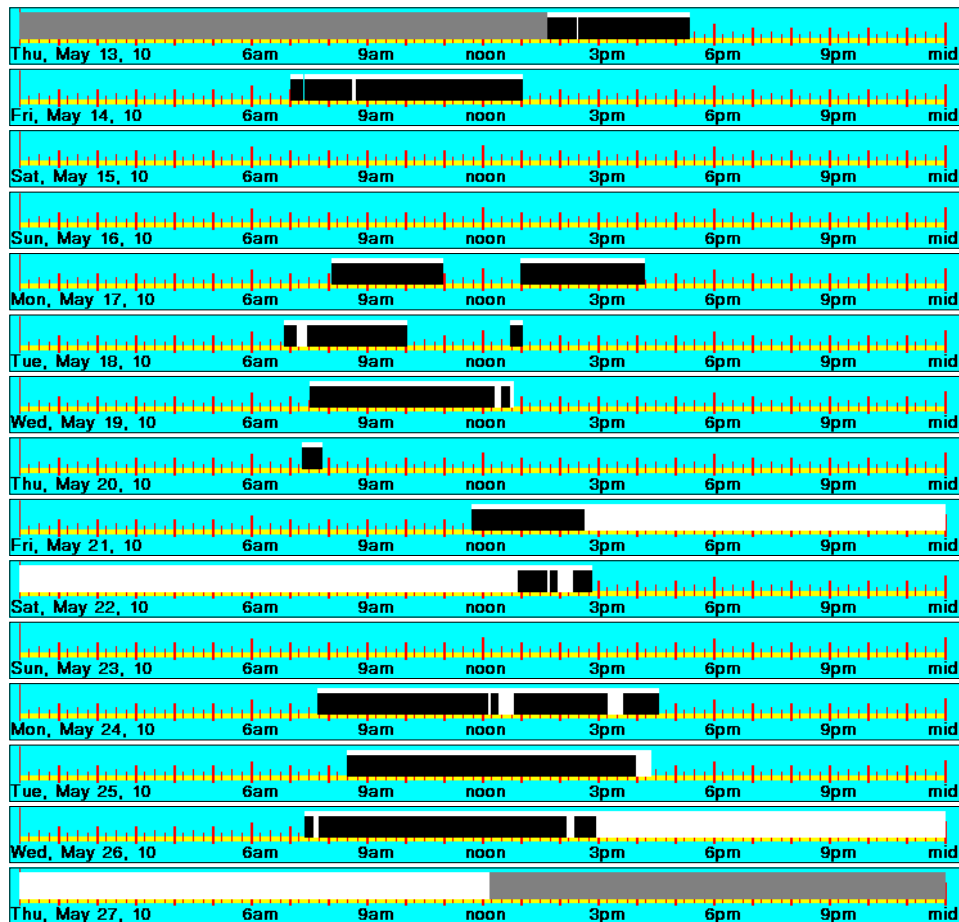
	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
<b>Fri</b>	48.000	24.000	18.200	9.100	8.667	4.333
Peak	0.000	0.000	0.000	0.000	0.000	0.000
Diff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>18.200</b>	<b>9.100</b>	<b>8.667</b>	<b>4.333</b>

	Logged Totals			Normalized Totals		
	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	97.483	50.700	334.500	48.960	25.464	48.0%
Diff	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>97.483</b>	<b>50.700</b>	<b>334.500</b>	<b>48.960</b>	<b>25.464</b>	<b>48.0%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC	LO	OCC
Peak	0.000	0.000	7.450	6.967	5.667	5.300	10.933	6.050	8.439	2.099	9.100	4.333	7.417	0.667
Diff Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>7.450</b>	<b>6.967</b>	<b>5.667</b>	<b>5.300</b>	<b>10.933</b>	<b>6.050</b>	<b>8.439</b>	<b>2.099</b>	<b>9.100</b>	<b>4.333</b>	<b>7.417</b>	<b>0.667</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	97.483	50.700	334.500	^^ ^^	48.960	25.464	48.0%
Diff Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>97.483</b>	<b>50.700</b>	<b>334.500</b>		<b>48.960</b>	<b>25.464</b>	<b>48.0%</b>



# Weight Room

Area type: Open Space. Logger: 21150. Time delay 10 minutes. Siemens Industry, Ulster County Sheriffs

## Energy Analysis

### Data by Day of Week

Sun	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	0.633	0.317	0.633	0.317
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>0.633</b>	<b>0.317</b>	<b>0.633</b>	<b>0.317</b>

Mon	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	3.067	1.533	2.567	1.283
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>3.067</b>	<b>1.533</b>	<b>2.567</b>	<b>1.283</b>

Tue	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	4.467	2.233	4.200	2.100
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>4.467</b>	<b>2.233</b>	<b>4.200</b>	<b>2.100</b>

Wed	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	5.800	2.900	5.300	2.650
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>5.800</b>	<b>2.900</b>	<b>5.300</b>	<b>2.650</b>

Thu	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	46.550	24.000	4.867	2.509	4.533	2.337
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>46.550</b>	<b>24.000</b>	<b>4.867</b>	<b>2.509</b>	<b>4.533</b>	<b>2.337</b>

Fri	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	3.367	1.683	3.167	1.583
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>3.367</b>	<b>1.683</b>	<b>3.167</b>	<b>1.583</b>

Sat	Total Log Time	Hours /Day	Logged Lites On	Normlzd Lites On per Day	Logged Occ	Normlzd Occ per Day
Peak	48.000	24.000	2.067	1.033	2.067	1.033
Dff	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>48.000</b>	<b>24.000</b>	<b>2.067</b>	<b>1.033</b>	<b>2.067</b>	<b>1.033</b>

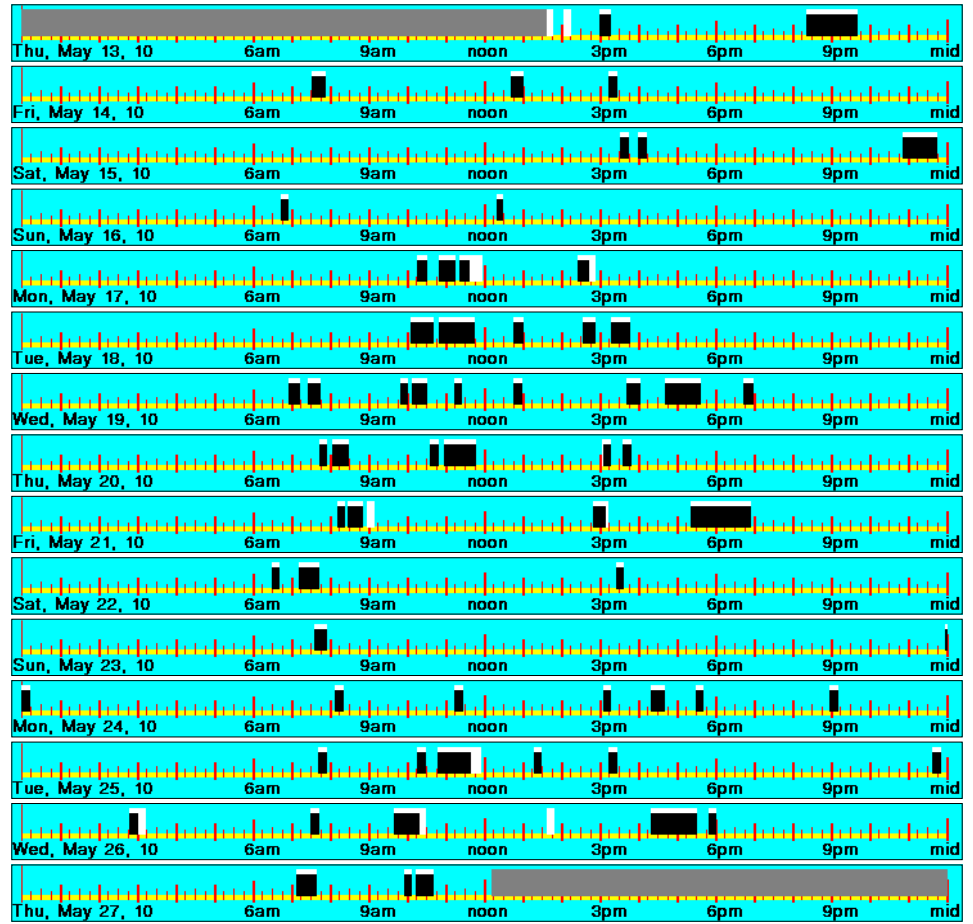
  

	Logged Totals			Normalized Totals		
Peak	Lites On	Occupied	Logged	Lites On	Occupied	% Savings
Peak	24.267	22.467	334.550	12.186	11.282	7.4%
Dff	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000	0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000	0.000	0.000	0.0%
<b>Total</b>	<b>24.267</b>	<b>22.467</b>	<b>334.550</b>	<b>12.186</b>	<b>11.282</b>	<b>7.4%</b>

### Normalized Data

	Sun		Mon		Tue		Wed		Thu		Fri		Sat	
Peak	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ	LO	Occ
Peak	0.317	0.317	1.533	1.283	2.233	2.100	2.900	2.650	2.509	2.337	1.683	1.583	1.033	1.033
Dff Peak	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sh 2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>0.317</b>	<b>0.317</b>	<b>1.533</b>	<b>1.283</b>	<b>2.233</b>	<b>2.100</b>	<b>2.900</b>	<b>2.650</b>	<b>2.509</b>	<b>2.337</b>	<b>1.683</b>	<b>1.583</b>	<b>1.033</b>	<b>1.033</b>

	Logged Totals			Normalized by Day	Normalized Weekly Totals		
	Lites On	Occupied	Logged		Lites On	Occupied	% Savings
Peak	24.267	22.467	334.550	^^ ^^	12.186	11.282	7.4%
Dff Peak	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 1	0.000	0.000	0.000		0.000	0.000	0.0%
Sh 2	0.000	0.000	0.000		0.000	0.000	0.0%
<b>Total</b>	<b>24.267</b>	<b>22.467</b>	<b>334.550</b>		<b>12.186</b>	<b>11.282</b>	<b>7.4%</b>





# ENERGY SAVINGS ANALYSIS

AREA TYPE		EXISTING		AFTER RETROFIT		WKS/Y R	SAVINGS		
		SENSOR LOAD (KW)	OTHER LOAD (KW)	SENSOR LOAD (KW)	OTHER LOAD (KW)		CURRENT USE HRS/WK	OPTIMAL USE HRS/WK	KWH/Y
PRIVATE OFFICE	P	14.874	0.528	14.874	0.528	52	27.8	20.0	6,033
MEETING ROOM	M	3.711		3.711		52	36.3	18.2	3,493
OPEN OFFICE	O	21.143	2.152	21.143	2.152	52	59.8	22.0	41,526
RESTROOM	R	2.653	0.412	2.653	0.412	52	92.1	24.0	9,395
STORAGE	S	7.181	0.648	7.181	0.648	52	55.1	12.0	16,094
HALLWAY	H	8.492	0.826	8.492	0.826	52	153.8	37.3	51,445
MECH ROOM	MR		0.783		0.783	52	20.0	20.0	
<b>TOTALS</b>		<b>58.054</b>	<b>5.349</b>	<b>58.054</b>	<b>5.349</b>				<b>127,985</b>

**TITLE: Boiler Replacement**

**PROJECT:** Ulster County

**SITE:** Carr Building

**DESCRIPTION:** Replace existing boiler with new efficient boiler of similar size and operation.

<b>GIVEN:</b>	Fuel Energy Cost	=	\$1.22	\$/CCF (Nat'l Gas)	▼
	Boiler Plant Capacity	=	546	Mbh	
	Operation (Hours/Week)	=	40.00	Hours/Week	
	Operation (Heating Weeks/Year)	=	30.00	Weeks/Year	
	Operation (Hours/Year)	=	1200	Hours/Year	
	Annual Heating Plant Energy Cost	=	\$5,610		

<b>ASSUMPTION:</b>	Existing Efficiency (Combustion)	=	79%
	Existing Efficiency (Dist./Losses)	=	80%
	New Efficiency (Combustion)	=	91%
	New Efficiency (Dist./Losses)	=	80%
	Part Load Factor	=	46%

**FORMULA:** Energy Usage = (Capacity(Mbh)) x (Hours of Operation/Year) x (Part Load Factor) / (Combustion Efficiency x Distribution Efficiency)  
 Fuel Use (Unit) = (Usage (Mbh)) / (Heating Value of Fuel)  
 Fuel Energy Cost (\$) = ((Fuel Use(Unit) x Fuel Cost(\$/Unit))

**CALCULATION:**

Existing Energy Usage =	Capacity	Hours/Year	Part Load Factor	Efficiency (Comb.)	Efficiency (Dist.)	
	546	x( 1200 )	x( 46% )	/(( 79% )x( 80% ))	=	<b>479,924 Mbh</b>

New Energy Usage = (	Capacity	Hours/Year	Part Load Factor	Efficiency (Comb.)	Efficiency (Dist.)	
	546	x( 1200 )	x( 46% )	/(( 91% )x( 80% ))	=	<b>414,000 Mbh</b>

Existing Fuel Usage = (	Usage (Mbh)	Conversion( Mbh/CCF )	) =	
	479,924	)/( 103 )	=	<b>4,659 CCF</b>

New Fuel Usage = (	Usage (Mbh)	Conversion( Mbh/CCF )	) =	
	414,000	)/( 103 )	=	<b>4,019 CCF</b>

Existing Fuel Cost = (	CCF	\$/fuel unit	) =	
	4,659	)*( \$1.216 )	=	<b>\$ 5,666</b>

Existing Fuel Cost = (	CCF	\$/fuel unit	) =	
	4,019	)*( \$1.216 )	=	<b>\$ 4,888</b>

<b>Result</b>	<b>Existing Annual Use =</b>	<b>4,659 CCF</b>	<b>\$ 5,666</b>	<b>101% of utility bill</b>
	<b>Proposed Annual Use =</b>	<b>4,019 CCF</b>	<b>\$ 4,888</b>	

<b>100%</b>	<b>Annual Savings =</b>	<b>640 CCF</b>	<b>\$ 778</b>	
	<b>Savings as Percent of Existing</b>	<b>=</b>	<b>14%</b>	<b>14% of utility bill</b>

**Title** Unoccupied Space Temperature Setpoint Adjustment  
**Project:** Ulster County  
**Site:** Carr Building

**Description** Reset unoccupied space temperature to 60F in winter.

<b>Given</b>	Heating Energy Cost	\$1.22	2	(From Bills)
	Electric Energy Cost	\$0.099	\$/kWh	(From Bills)
	Wall Area	3,200	square feet	(From survey)
	Window Area	800	square feet	(From survey)
	Roof Area	1,600	square feet	(From survey)
	Total Envelope Area	5,600	square feet	
	Building Heating Costs	\$ 4,345		(From Bills)
	Window U factor	0.55	Btu/(h*sqft*degf)	(From window survey)
	Wall U factor	0.06	Btu/(h*sqft*degf)	(From wall survey)
	Roof U factor	0.03	Btu/(h*sqft*degf)	(From roof survey)
	Cooling Conversion	12	Mbh/Ton	
	Heating Btu Conversion	103	Mbh/CCF	

<b>Assumptions</b>	Boiler Efficiency	91%		(Assumption)
	Chiller Efficiency	1.00	kW/Ton	(Assumption)
	Air Infiltration & Leakage	0.13	cfm/ft2	(Assumption)
	Occupied Indoor Heating Temperature Setpoint	70	Degrees F	(Assumption)
	Unoccupied Indoor Heating Temperature Setpoint	60	Degrees F	(Assumption)
	Occupied Indoor Cooling Temperature Setpoint	74	Degrees F	(Assumption)
	Unoccupied Indoor Cooling Temperature Setpoint	74	Degrees F	(Assumption)

**Formula**  
 Overall U Factor = ((Window U factor x Window Area) + (Wall U factor x Wall Area) + (Roof U factor x Roof Area)) / (Total Envelope Area)  
 Cooling Conduction (MBH) = Overall U Factor x Area x ((OA Temperature - Unoccupied Temperature) \* Occupied Hours) + (OA Temperature - Unoccupied Temperature) \* Unoccupied Hours / 1,000 btu/MBH  
 Heating Conduction (MBH) = Overall U Factor x Area x ((Occupied Temperature - OA Temperature) \* Occupied Hours) + (Unoccupied Temperature - OA Temperature) \* Unoccupied Hours / 1,000 btu/MBH  
 Cooling Infiltration (MBH) = Air Infiltration & Leakage x Area x ((OA Temperature - Occupied Temperature) \* Occupied Hours) + (OA Temperature - Unoccupied Temperature) \* Unoccupied Hours / 1,000 btu/MBH  
 Heating Infiltration (MBH) = Air Infiltration & Leakage x Area x ((Occupied Temperature - OA Temperature) \* Occupied Hours) + (Unoccupied Temperature - OA Temperature) \* Unoccupied Hours / 1,000 btu/MBH  
 Heat loss = (Heating Conduction) + (Heating Infiltration) Heating Energy = (Heat Loss) / (Boiler Efficiency x Conversion Factor )  
 Cooling loss = (Cooling Conduction) + (Cooling Infiltration) Cooling Energy = (Cooling Loss) \* (Chiller Efficiency) / (Conversion Factor )

**Calculations**  
 Overall U Factor = (( Window U factor x Window Area ) + ( Wall U factor x Wall Area ) + ( Roof U factor x Roof Area )) / ( Total Envelope Area )  
 Overall U Factor = (( 0.55 x 800 ) + ( 0.06 x 3200 ) + ( 0.03 x 1600 )) / ( 5600 ) = **0.121 Btu/(h\*sqft\*degf)**

Total Envelope energy loss per year without temperature setback

OA Temp	Unoccupied Hours	Total Hours	Cooling Conduction (MBH)	Heating Conduction (MBH)	Cooling Infiltration (MBH)	Heating Infiltration (MBH)
92	0	18	220	0	255	0
87	0	84	743	0	859	0
82	6	284	1,545	0	1,786	0
77	59	404	824	0	953	0
72	226	608	0	0	0	0
67	357	629	0	1,283	0	1,484
62	539	806	0	4,385	0	5,070
57	437	715	0	6,321	0	7,308
52	330	561	0	6,867	0	7,939
47	337	544	0	8,508	0	9,837
42	289	552	0	10,510	0	12,152
37	531	874	0	19,613	0	22,677
32	440	772	0	19,948	0	23,065
27	364	670	0	19,591	0	22,652
22	261	432	0	14,100	0	16,303
17	291	442	0	15,930	0	18,418
12	115	176	0	6,941	0	8,026
7	87	106	0	4,541	0	5,251
2	57	63	0	2,913	0	3,368
-3	19	20	0	993	0	1,148
<b>Subtotal =</b>	<b>4745 Hours</b>	<b>8760 Hours</b>	<b>3,112 MBH</b>	<b>141,451 MBH</b>	<b>3,598 MBH</b>	<b>163,550 MBH</b>

Total Envelope energy loss per year with temperature setback

OA Temp	Unoccupied Hours	Total Hours	Cooling Conduction (MBH)	Heating Conduction (MBH)	Cooling Infiltration (MBH)	Heating Infiltration (MBH)
92	0	18	220	0	255	0
87	0	84	743	0	859	0
82	6	284	1,545	0	1,786	0
77	59	404	824	0	953	0
72	226	608	0	0	0	0
67	357	629	0	0	0	0
62	539	806	0	719	0	832
57	437	715	0	3,349	0	3,872
52	330	561	0	4,623	0	5,345
47	337	544	0	6,217	0	7,188
42	289	552	0	8,545	0	9,880
37	531	874	0	16,002	0	18,502
32	440	772	0	16,956	0	19,606
27	364	670	0	17,116	0	19,790
22	261	432	0	12,326	0	14,251
17	291	442	0	13,951	0	16,130
12	115	176	0	6,159	0	7,122
7	87	106	0	3,949	0	4,566
2	57	63	0	2,526	0	2,920
-3	19	20	0	864	0	999
<b>Subtotal =</b>	<b>4745 Hours</b>	<b>8760 Hours</b>	<b>3,112 MBH</b>	<b>112,437 MBH</b>	<b>3,598 MBH</b>	<b>130,004 MBH</b>

Existing Heat loss = ( Existing Heating Conduction ) + ( Existing Heating Infiltration )  
 Existing Heat loss = ( 141,451 ) + ( 163,550 ) = **305,001 MBH**  
 Proposed Heat loss = ( Proposed Heating Conduction ) + ( Proposed Heating Infiltration )  
 Proposed Heat loss = ( 112,437 ) + ( 130,004 ) = **242,441 MBH** **20.5% Reduction**  
 Existing Cooling loss = ( Existing Cooling Conduction ) + ( Existing Cooling Infiltration )  
 Existing Cooling loss = ( 3,112 ) + ( 3,598 ) = **6,710 MBH**  
 Proposed Cooling loss = ( Proposed Cooling Conduction ) + ( Proposed Cooling Infiltration )  
 Proposed Cooling loss = ( 3,112 ) + ( 3,598 ) = **6,710 MBH** **0.0% Reduction**  
 Existing Heating Energy = ( Existing Heat Loss ) / ( ( Boiler Efficiency ) \* Conversion Factor ) =  
 Existing Heating Energy = ( 305,001 ) / ( ( 91% ) \* 103 ) = **3,254 CCF**  
 Proposed Heating Energy = ( Proposed Heat Loss ) / ( ( Boiler Efficiency ) \* Conversion Factor ) =  
 Proposed Heating Energy = ( 242,441 ) / ( ( 91% ) \* 103 ) = **2,587 CCF** **20.5% Reduction**  
 Existing Cooling Energy = ( Existing Cooling Loss ) \* ( Chiller Efficiency ) / Conversion Factor ) =  
 Existing Cooling Energy = ( 6,710 ) \* ( 1.00 ) / 12 ) = **559 kWh**  
 Proposed Cooling Energy = ( Proposed Cooling Loss ) \* Chiller Efficiency ) / Conversion Factor ) =  
 Proposed Cooling Energy = ( 6,710 ) \* ( 1.00 ) / 12 ) = **559 kWh** **0.0% Reduction**

<b>Results</b>	Annual Existing Heating	3,254 CCF	=>	\$ 3,957
	Annual Existing Cooling	559 kWh	=>	\$ 55
	<b>TOTAL EXIST COST PER YEAR</b>	<b>=====</b>		<b>\$ 4,012</b>
	Annual Proposed Heating	2,587 CCF	=>	\$ 3,145
	Annual Proposed Cooling	559 kWh	=>	\$ 55
	<b>TOTAL POPOSED COST PER YEAR</b>	<b>=====</b>		<b>\$ 3,201</b>
	<b>SAVINGS AT 100% GUARANTEE</b>			
	Annual Heating Savings	667 CCF	=>	\$ 812 20.51% of existing
	Annual Cooling Savings	- kWh	=>	\$ - 0.00% of existing
	<b>TOTAL EXIST COST SAVINGS PER YEAR</b>	<b>=====</b>		<b>\$ 812 20.23% Reduction</b>

**ENERGY SAVINGS ANALYSIS**

**Replace Electric DHW with NG-fired Unit  
Ulster County  
Carr Building**

**Summary:** The existing DHW system is a 40 gallon electric hot water heater with two 4,500 Watt elements. Replace with a NG-fired power-vent unit of same storage capacity.

Employees	10	
Average usage/day	10	gal/person
Total use per day	100	gal/day

Utility Cost Data	
Electric	\$0.099 \$/kWh
	8 \$/kW
Therms	\$1.216 \$/therm

Total Usage/day	100	gal/day
Entering water temp	50	F
Leaving water temp	120	F
Energy per day	58,366	Btu/day
System Losses	20%	
Total Energy per day	70,039	BTU/day

Days of Oper/yr	250	M-F, 10 Holidays
Yearly Heater Input	17,510	Mbtu/yr
	5,130	KWH/yr
Diversity Factor	0.5	
Element Power (one element)	4,500.0	Watts
Demand Contribution	2.3	
Yearly Cost	\$ 724	

New DHW Heater efficiency	85%
New System Efficiency	80%
New Heater Input	85,832 Btu/day
New Yearly Input	215 therm/yr
Annual energy cost	\$261
Savings =	\$463 per year

FIM #3

Carr Building - Weatherization Improvements

Notes:

1. Historic structure - low occupancy
2. Poor air barrier at top plane - cellulose installed in attic.
3. Basement has sewer gas problem - currently ventilated 24X7 with 80 cfm exhaust fan - s/b corrected at source.

- 2.5 ...EXISTING CRACK AREA IN SQ.FT. (From ZeroDraft Audit)
- 50% ...% INFILTRATION VS. EXFILTRATION (%INF)
- 5 ...LOCAL SHIELDING CLASS (LSC)
- 2 ...# OF STORIES TO BUILDING (FLOORS)
- 144.0000 ...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)
- 0.0299 ...STACK COEFFICIENT, A (A)
- 0.0016 ...STACK COEFFICIENT, B (B)
- 5.0 ...AVERAGE WIND VELOCITY (VEL)
- 70 ...SPACE HEATING SETPOINT (HTSP)
- 60 ...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)
- 32.1 ...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)
- 4,693 ...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)
- 74 ...SPACE COOLING SETPOINT (CLSP)
- 76 ...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)
- 2,027 ...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)
- 50 ...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)

(Heat Leak Occ)	AREA * %INF * EFL *((A * (HTSP - OAHT)) + (B * VEL^2))^.5	196.2	HLOCC	(CFM)
(Heat Leak Unocc)	AREA * %INF * EFL *((A * (HTSPUNOC - OAHT)) + (B * VEL^2))^.5	169.4	HLUNOCC	(CFM)

(Cool Leak Occ)	AREA * EFL *((A * (CLSP - OACT)) + (B * VEL^2))^.5	114.5	CLOCC	(CFM)
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NG (Therm)	...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)	KWh	3,413	btus in a KWh	OIL	146,000	btus in a gallon of oil
\$	1,2160 Fuel Cost						
	100,000 ...BTUs / UNIT (BTUs/UNIT)						
	20% ...LOSSES OF HEATING SYSTEM (EOSH)						

(Occupied Heating)	1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / 168 / (BTUs/UNIT) / (1-EOSH)	140	NG (Therm)	LPG	91,000	btus per Gal	NG	100,000	btus per Therm
	FUELCOST * FUEL SAVED	\$170.5	SAVINGS						

(Unoccupied Heating)	1.08 * HLUNOCC * (HTSPUNOC - OAHT) * (HHPY - (HRSOCC * HHPY / 168)) / (BTUs/UNIT) / (1-EOSH)	210	NG (Therm)
	FUELCOST * FUEL SAVED	\$255.7	SAVINGS

- 32.537 ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)
- 1.10 ...Avg. KW/TON OF CHILLER (KW/TON)
- 1.00 ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)
- \$ 0.1470 ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)

(Cooling Savings)	CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000	310	TON-HRS
	TON-HRS * (KW/TON + KWSUPT)	652	kWh
	ELECCOST * KWH SAVED	\$95.8	SAVINGS

<b>TOTAL ANNUAL SAVINGS</b>	\$426.2	NG (Therm)
	\$95.8	kWh
	\$522.1	TOTAL

STACK COEFFICIENT

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

WIND COEFFICIENT

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

LOCAL SHIELDING CLASSES

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light Local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within tow house heights; typical downtown shielding

CRACK AREA "A" BASED UPON:

<b>Total, Vendor Collected Data:</b>	2.5162	Square Ft
	0.2338	Square Meters

Inputs

Room Temperature Setpoint	72	*F
Heating Below	55	*F (OAT)
Heating Efficiency	80%	
Cost per Gallon of Propane	\$ 1.47	
Tons of CO2 per Therm	0.0053	
Hours off per year	5640	

OA supplied to space	2156	CFM
Cooling Above	72	*F (OAT)
Cooling COP	3.2	
Cost per kWh	\$ 0.123	
Tons of CO2 per kWh	0.000252	

Savings

	Current	Proposed	Savings	Savings	Savings
	btu/yr	btu/yr	btu/yr	kWh/Gal per yr	\$/yr
Cooling	3,629,941	1,326,223	2,303,718	211	\$ 25.95
Heating	54,807,003	20,024,104	34,782,899	475	\$ 697.75
<b>Total</b>				<b>\$ 723.70</b>	<b>2.6</b>

Mid-pts DB	Total Hrs
*F	Hr
91	18
89	24
87	30
85	37
83	68
81	70
79	94
77	44
75	104
73	128
71	114
69	109
67	106
65	82
63	71
61	75
59	58
57	98
55	112
53	62
51	59
49	62
47	65
45	75
43	94
41	64
39	96
37	141
35	98
33	99
31	94
29	105
27	107
25	68
23	48
21	73
19	84
17	51
15	41
13	26
11	12
9	10
7	10
5	5
3	10
1	11
-1	6
-3	2

Current			
% Occupied	0%	>0%	
# hours/year at Occupancy	5640	3120	hours
Outdoor air flow	107.8	2156	CFM

Cooling Status	Heating Status	Heating/Cooling Load		Energy
		On/Off	btu/h	
1	0	2212	44,241	283,628
1	0	1979	39,584	338,363
1	0	1746	34,927	373,195
1	0	1514	30,270	398,904
1	0	1281	25,613	620,333
1	0	1048	20,956	522,473
1	0	815	16,299	545,694
1	0	582	11,642	182,451
1	0	349	6,985	258,748
1	0	116	2,328	106,153
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	1	2222	44,446	981,464
0	1	2456	49,124	1,032,287
0	1	2690	53,803	1,188,088
0	1	2924	58,482	1,353,887
0	1	3158	63,160	1,687,151
0	1	3392	67,839	2,271,197
0	1	3626	72,517	1,652,992
0	1	3860	77,196	2,639,454
0	1	4094	81,874	4,111,650
0	1	4328	86,553	3,021,042
0	1	4562	91,231	3,216,835
0	1	4795	95,910	3,211,003
0	1	5029	100,588	3,761,722
0	1	5263	105,267	4,011,671
0	1	5497	109,945	2,662,783
0	1	5731	114,624	1,958,955
0	1	5965	119,302	3,101,859
0	1	6199	123,981	3,709,233
0	1	6433	128,659	2,337,017
0	1	6667	133,338	1,947,097
0	1	6901	138,016	1,278,699
0	1	7135	142,695	609,874
0	1	7369	147,373	524,891
0	1	7603	152,052	541,555
0	1	7837	156,730	279,109
0	1	8070	161,409	574,881
0	1	8304	166,087	650,699
0	1	8538	170,766	364,925
0	1	8772	175,445	124,974
<b>Cooling Total</b>				<b>3,629,941</b>
<b>Heating Total</b>				<b>54,807,003</b>

		Proposed										
% Occupied	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
# hours/year at Occupancy	5799	408	847	951	421	236	58	9	9	17	3	hrs/yr
Outdoor air flow	108	216	431	647	862	1078	1294	1509	1725	1940	2156	CFM

Cooling Status	Heating Status	Heating/Cooling Load										Energy	
		On/Off	On/Off	2,212	4,424	8,848	13,272	17,696	22,121	26,545	30,969		35,393
1	0	1,979	3,958	7,917	11,875	15,834	19,792	23,750	27,709	31,667	35,626	39,584	123,623
1	0	1,746	3,493	6,985	10,478	13,971	17,464	20,956	24,449	27,942	31,434	34,927	136,349
1	0	1,514	3,027	6,054	9,081	12,108	15,135	18,162	21,189	24,216	27,243	30,270	145,742
1	0	1,281	2,561	5,123	7,684	10,245	12,807	15,368	17,929	20,491	23,052	25,613	226,643
1	0	1,048	2,096	4,191	6,287	8,383	10,478	12,574	14,669	16,765	18,861	20,956	190,889
1	0	815	1,630	3,260	4,890	6,520	8,150	9,780	11,410	13,039	14,669	16,299	199,373
1	0	582	1,164	2,328	3,493	4,657	5,821	6,985	8,150	9,314	10,478	11,642	66,660
1	0	349	699	1,397	2,096	2,794	3,493	4,191	4,890	5,588	6,287	6,985	94,535
1	0	116	233	466	699	931	1,164	1,397	1,630	1,863	2,096	2,328	38,784
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	1	2,222	4,445	8,889	13,334	17,778	22,223	26,668	31,112	35,557	40,001	44,446	358,584
0	1	2,456	4,912	9,825	14,737	19,650	24,562	29,475	34,387	39,300	44,212	49,124	377,153
0	1	2,690	5,380	10,761	16,141	21,521	26,901	32,282	37,662	43,042	48,423	53,803	434,076
0	1	2,924	5,848	11,696	17,544	23,393	29,241	35,089	40,937	46,785	52,633	58,482	494,652
0	1	3,158	6,316	12,632	18,948	25,264	31,580	37,896	44,212	50,528	56,844	63,160	616,412
0	1	3,392	6,784	13,568	20,352	27,135	33,919	40,703	47,487	54,271	61,055	67,839	829,797
0	1	3,626	7,252	14,503	21,755	29,007	36,259	43,510	50,762	58,014	65,265	72,517	603,931
0	1	3,860	7,720	15,439	23,159	30,878	38,598	46,317	54,037	61,756	69,476	77,196	964,342
0	1	4,094	8,187	16,375	24,562	32,750	40,937	49,124	57,312	65,499	73,687	81,874	1,502,219
0	1	4,328	8,655	17,311	25,966	34,621	43,276	51,932	60,587	69,242	77,897	86,553	1,103,758
0	1	4,562	9,123	18,246	27,369	36,492	45,616	54,739	63,862	72,985	82,108	91,231	1,175,292
0	1	4,795	9,591	19,182	28,773	38,364	47,955	57,546	67,137	76,728	86,319	95,910	1,173,161
0	1	5,029	10,059	20,118	30,176	40,235	50,294	60,353	70,412	80,471	90,529	100,588	1,374,370
0	1	5,263	10,527	21,053	31,580	42,107	52,633	63,160	73,687	84,213	94,740	105,267	1,465,691
0	1	5,497	10,995	21,989	32,984	43,978	54,973	65,967	76,962	87,956	98,951	109,945	972,865
0	1	5,731	11,462	22,925	34,387	45,849	57,312	68,774	80,237	91,699	103,161	114,624	715,951
0	1	5,965	11,930	23,860	35,791	47,771	59,651	71,581	83,512	95,442	107,372	119,302	1,133,285
0	1	6,199	12,398	24,796	37,194	49,592	61,990	74,388	86,787	99,185	111,583	123,981	1,355,193
0	1	6,433	12,866	25,732	38,598	51,464	64,330	77,196	90,062	102,927	115,793	128,659	853,845
0	1	6,667	13,334	26,668	40,001	53,335	66,669	80,003	93,336	106,670	120,004	133,338	711,385
0	1	6,901	13,802	27,603	41,405	55,207	69,008	82,810	96,611	110,413	124,215	138,016	466,951
0	1	7,135	14,269	28,539	42,808	57,078	71,347	85,617	99,886	114,156	128,425	142,695	222,822
0	1	7,369	14,737	29,475	44,212	58,949	73,687	88,424	103,161	117,899	132,636	147,373	191,773
0	1	7,603	15,205	30,410	45,616	60,821	76,026	91,231	106,436	121,642	136,847	152,052	197,861
0	1	7,837	15,673	31,346	47,019	62,692	78,365	94,038	109,711	125,384	141,057	156,730	101,974
0	1	8,070	16,141	32,282	48,423	64,564	80,704	96,845	112,986	129,127	145,268	161,409	210,037
0	1	8,304	16,609	33,217	49,826	66,435	83,044	99,652	116,261	132,870	149,479	166,087	237,737
0	1	8,538	17,077	34,153	51,230	68,306	85,383	102,460	119,536	136,613	153,689	170,766	133,328
0	1	8,772	17,544	35,089	52,633	70,178	87,722	105,267	122,811	140,356	157,900	175,445	45,660
<b>Cooling Total</b>													<b>1,326,223</b>
<b>Heating Total</b>													<b>20,024,104</b>

Inputs

Room Temperature Setpoint	71	°F	Electric Heat Max Demand	3	kW
Heating Below	50	°F (OAT)	Elec. heating max required at	25	°F (OAT)
Heating Efficiency	100%		Cost per kWh	\$ 0.123	
			Tons of CO2 per kWh	0.000252	

Savings

	Current	Proposed	Savings	Savings	Savings
	kwh/yr	kwh/yr	kwh/yr	\$/yr	Tn CO2
Cooling	7,742	-	7,742	\$ 952.30	1.95

Weather	
Mid-pt DB	Total Hrs
°F	Hr
89	7
87	17
85	19
83	38
81	44
79	46
77	37
75	68
73	170
71	161
69	213
67	188
65	205
63	211
61	184
59	123
57	220
55	248
53	164
51	151
49	156
47	150
45	146
43	150
41	129
39	195
37	300
35	221
33	226
31	191
29	170
27	180
25	153
23	84
21	113
19	160
17	90
15	74
13	57
11	34
9	31
7	39
5	15
3	25
1	23
-1	8
-3	4
-5	2

Heating Status	Heating Load	Energy
On/Off	kW	kWh
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
0	-	-
1	1.6	243.4
1	1.7	252.0
1	1.8	262.8
1	1.9	288.0
1	2.0	263.2
1	2.2	421.2
1	2.3	684.0
1	2.4	530.4
1	2.5	569.5
1	2.6	504.2
1	2.8	469.2
1	2.9	518.4
1	3.0	459.0
1	3.0	252.0
1	3.0	339.0
1	3.0	480.0
1	3.0	270.0
1	3.0	222.0
1	3.0	171.0
1	3.0	102.0
1	3.0	93.0
1	3.0	117.0
1	3.0	45.0
1	3.0	75.0
1	3.0	69.0
1	3.0	24.0
1	3.0	12.0
1	3.0	6.0
		7,742

kWh

**Community Corrections - Golden Hill Dr - Weatherization Improvements**

Notes:

1. The building has heating and cooling.
2. Infiltration CFM is based on an estimated total crack area (to be verified) and calculated using ASHRAE Methods.
3. All identified infiltration points will be sealed as part of this measure.

6.2 ...EXISTING CRACK AREA IN SQ.FT. (From ZeroDraft Audit)

50% ...% INFILTRATION VS. EXFILTRATION (%INF)

4 ...LOCAL SHIELDING CLASS (LSC)

1 ...# OF STORIES TO BUILDING (FLOORS)

144.0000 ...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)

0.0150 ...STACK COEFFICIENT, A (A)

0.0039 ...STACK COEFFICIENT, B (B)

5.0 ...AVERAGE WIND VELOCITY (VEL)

70 ...SPACE HEATING SETPOINT (HTSP)

55 ...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)

32.1 ...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)

4.693 ...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)

74 ...SPACE COOLING SETPOINT (CLSP)

73.6 ...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)

2.027 ...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)

45 ...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)

(Heat Leak Occ)	AREA * %INF * EFL *((A * (HTSP - OAHT)) + (B * VEL^2))^.5	364.0	HLOCC	(CFM)
(Heat Leak Unocc)	AREA * %INF * EFL *((A * (HTSPUNOC - OAHT)) + (B * VEL^2))^.5	296.2	HLUNOCC	(CFM)

(Cool Leak Occ)	AREA * EFL *((A * (CLSP - OACT)) + (B * VEL^2))^.5	287.0	CLOCC	(CFM)
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LPG (gal) ...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)

1.47 Fuel Cost

91,000 ...BTUs / UNIT (BTUs/UNIT)

20% ...LOSSES OF HEATING SYSTEM (EOSH)

(Occupied Heating)	1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / 168 / (BTUs/UNIT) / (1-EOSH)	257	LPG (gal)	
	FUELCOST * FUEL SAVED	\$378.2	SAVINGS	

(Unoccupied Heating)	1.08 * HLUNOCC * (HTSPUNOC - OAHT) * (HHPY - (HRSOCC * HHPY / 168)) / (BTUs/UNIT) / (1-EOSH)	346	LPG (gal)	
	FUELCOST * FUEL SAVED	\$508.2	SAVINGS	

32.537 ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)

1.10 ...Avg. KW/TON OF CHILLER (KW/TON)

1.00 ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)

\$ 0.1230 ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)

(Cooling Savings)	CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000	700	TON-HRS	
	TON-HRS * (KW/TON + KWSUPT)	1,471	kWh	
	ELECCOST * KWH SAVED	\$180.9	SAVINGS	

<b>TOTAL ANNUAL SAVINGS</b>	\$886.4	LPG (gal)
	\$180.9	kWh
	<b>\$1,067.3</b>	<b>TOTAL</b>

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within two house heights; typical downtown shielding

**CRACK AREA "A" BASED UPON:**

<b>Total, Vendor Collected Data:</b>	6.1948	Square Ft
	0.5755	Square Meters

KWh	3,413	btus in a KWh
OIL	146,000	btus in a gallon of oil

LPG	91,000	btus per Gal
NG	100,000	btus per Therm



**FIM # 9  
 Ulster County  
 Court House  
 Install Condensing Boilers**

Item	Value	Units	Formula/Comments
Baseline Fuel Use	11,943	CCF	Based on historical utility data
DHW Usage	8%		
Boiler Input	10,988	CCF	
Existing Boiler Plant Efficiency	80%		Name plate
Boiler Output	8,966	Therms	Baseline Fuel Use x Existing Efficiency
Fuel Cost	1.144	\$/CCF	
Proposed Boiler Plant Efficiency	94%		Feeds heat pump loop and AHUs
Proposed Fuel Use	9,538	CCF	Baseline Fuel Use x Proposed Efficiency
<b>Annual Savings</b>	1,449	<b>CCF</b>	Baseline Fuel - Proposed Fuel

**Savings Summary:**

Utility	Energy Savings
Therms	1,449
\$	\$1,658

**FIM #10**

**Courthouse Cooling Tower Fan Motor VFD Retrofit**

**Inputs**

Electricity Usage (\$/kWh)	\$ 0.0970	Current Motor Size (HP)	15
Electricity Demand (\$/kW)	\$ 8.00	Current Load Factor	85%
		Current Motor Efficiency	91%
		Proposed Motor Size (HP)	15
		Proposed Motor Efficiency	93%
		Proposed VFD Efficiency	98.5%

Cooling Capacity	OA Temp
0%	70
100%	95

**Savings**

Electricity Demand (kW)	53.0
Demand Savings (\$)	424.00
Electricity Usage (kWh)	13,735
Usage Savings (\$)	1,332.30
Total Savings (\$)	1,756.30

EXISTING CONDITIONS							Notes
Motor Size (HP)	Annual Hours	Load Factor	Efficiency	Peak Demand	Annual Usage (kWh)	Annual Demand (kW)	
15	1,398	85%	91%	10.5	14,679	84.0	1, 2

PROPOSED CONDITIONS									Notes
Outdoor Air Dry Bulb Temp	Annual Hours	% Annual Hours	Air Flow Required	Power Required	Motor Efficiency	VFD Efficiency	Peak Demand (kW)	Annual Usage (kWh)	
71	278	20%	4%	0.01%	93.0%	98.5%	0.0	0	1,2
73	310	22%	12%	0.17%	93.0%	98.5%	0.0	0	1,2
75	186	13%	20%	0.80%	93.0%	98.5%	0.1	19	1,2
77	87	6%	28%	2.20%	93.0%	98.5%	0.2	17	1,2
79	151	11%	36%	4.67%	93.0%	98.5%	0.5	76	1,2
81	118	8%	44%	8.52%	93.0%	98.5%	0.9	106	1,2
83	109	8%	52%	14.06%	93.0%	98.5%	1.5	164	1,2
85	59	4%	60%	21.60%	93.0%	98.5%	2.3	136	1,2
87	48	3%	68%	31.44%	93.0%	98.5%	3.3	158	1,2
89	34	2%	76%	43.90%	93.0%	98.5%	4.6	156	1,2
91	18	1%	84%	59.27%	93.0%	98.5%	6.2	112	1,2
TOTALS:								944	

Notes:

- 1 - Annual Hours are based off of minimum OA Temp for operation
- 2 - Annual hours at temperatures shown are based on Albany NY bin data

**FIM #11**

**Courthouse Heat Pump Replacement**

Model Parameters/Assumptions	
Cooling Utilization	30%
Heating Utilization	20%
Cooling Hours (OAT >50)	1,970 hours
Heating Hours (OAT <45)	1,761 hours
Adjusted Cooling Hours	591 hours
Adjusted Heating Hours	352 hours
Boiler Efficiency	94.0%
Electricity usage Cost	0.097 /kWh
Electricity Demand cost	\$ 8.00 /kW
Gas Cost	\$ 1.144 /therm

Electrical Cost Summary			
	Existing	Proposed	Saving
Electrical Consumption (kWh)	238,153	182,111	56,041
Electrical Consumption Cost (\$)	23,101	17,665	5,436
Electrical Demand (kW/yr)	1,663	1,250	413
Electrical Cooling Demand Cost (\$)	13,301	9,998	3,303
Total Electrical Savings (\$)		\$8,739	

Natural Gas Cost Summary		
	Existing	Proposed
Gas Use (therms)	8,428	8,428
Gas Cost (\$)	9,641	9,641
Total Gas Savings (\$)		\$0

Annual Cost Savings (\$)	
Annual Cost Savings (\$)	8,739
Annual CO2 Savings (Metric Tons)	14

Existing Energy Use																
Equipment Information			Cooling Performance - Heat Pumps w/ Cooling Tower							Heating Performance - Heat Pumps w/ Boiler						
Unit #	Type	Qty	Cooling Capacity	Heating Capacity	Total Cooling Capacity	COP*	Power Usage	Peak Demand	Energy Usage	Total Heating Capacity	COP	Power Usage	Peak Demand	Energy Usage	Total Heating Output	**Natural Gas Usage
			(MBH)	(MBH)												
1	Heat Pump	103	15.0	17.0	1,545	3.0	515.0	150.89	89,178	1,751	3.8	460.8	135.01	47,551	616,702	4,920
2	Heat Pump	39	30.0	32.0	1,170	3.0	390.0	114.27	67,533	1,248	3.8	328.4	96.23	33,891	439,546	3,507
							<b>Total</b>	265.16	156,711	2,999		789	231.24	81,441.53	1,056,247.80	8,428

Proposed Energy Use																
Equipment Information			Cooling Performance							Heating Performance						
Unit #	Type	Qty	Cooling Capacity	Heating Capacity	Total Cooling Capacity	COP	Power Usage	Peak Demand	Energy Usage	Total Heating Capacity	COP	Power Usage	Peak Demand	Energy Usage	Total Heating Output	**Natural Gas Usage
			(MBH)	(MBH)												
1	Heat Pump	103	21.0	23.6	1,545	3.8	406.6	119.13	70,404	1,751	5.3	330.4	96.80	34,093	616,702	4,920
2	Heat Pump	39	30.0	32.0	1,170	3.8	307.9	90.21	53,315	1,248	5.3	235.5	68.99	24,299	439,546	3,507
							<b>Total</b>	209.34	123,719	2,999		566	165.79	58,392	1,056,248	8,428

\*Original rating was 3.5-3.7, assumes units have degraded

\*\* Assumes that 75% of the heat produced comes from the boilers, 25% comes from the heat generated by the heat pump (compressors, motors, friction, etc...)

FIM #12

Ulster County Court House - Weatherization Improvments

Notes:

1. The building has heating and cooling.
2. Infiltration CFM is based on an estimated total crack area (to be verified) and calculated using ASHRAE Methods.
3. All identified infiltration points will be sealed as part of this measure.

- 15.0 ...EXISTING CRACK AREA IN SQ.FT. (from ZeroDraft Audit)
- 50% ...% INFILTRATION VS. EXFILTRATION (%INF)
- 4 ...LOCAL SHIELDING CLASS (LSC)
- 3 ...# OF STORIES TO BUILDING (FLOORS)
- 144.0000 ...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)
- 0.0449 ...STACK COEFFICIENT, A (A)
- 0.0060 ...STACK COEFFICIENT, B (B)
- 5.0 ...AVERAGE WIND VELOCITY (VEL)
- 70 ...SPACE HEATING SETPOINT (HTSP)
- 60 ...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)
- 32.1 ...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)
- 4,693 ...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)
- 74 ...SPACE COOLING SETPOINT (CLSP)
- 73.6 ...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)
- 2,027 ...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)
- 50 ...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)

(Heat Leak Occ) AREA * %INF * EFL *((A * (HTSP - OAHT)) + (B * VEL^2))^.5	1,469.1	HLOCC	(CFM)
(Heat Leak Unoc) AREA * %INF * EFL *((A * (HTSPUNOC - OAHT)) + (B * VEL^2))^.5	1,278.7	HLUNOCC	(CFM)

(Cool Leak Occ) AREA * EFL *((A * (CLSP - OACT)) + (B * VEL^2))^.5	884.9	CLOCC	(CFM)
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- NG (Therm) ...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)
- 1.144 Fuel Cost
- 100,000 ...BTUs / UNIT (BTUs/UNIT)
- 20% ...LOSSES OF HEATING SYSTEM (EOSH)

(Occupied Heating)	1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / 168 / (BTUs/UNIT) / (1-EOSH)	1,050	NG (Therm)
	FUELCOST * FUEL SAVED	\$1,201.1	SAVINGS
(Unoccupied Heating)	1.08 * HLUNOCC * (HTSPUNOC - OAHT) * (HHPY - (HRSOCC * HHPY / 168)) / (BTUs/UNIT) / (1-EOSH)	1,588	NG (Therm)
	FUELCOST * FUEL SAVED	\$1,816.1	SAVINGS

- 32.537 ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)
- 1.10 ...Avg. KW/TON OF CHILLER (KW/TON)
- 0.00 ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)
- \$ 0.1250 ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)

(Cooling Savings)	CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000	2,399	TON-HRS
	TON-HRS * (KW/TON + KWSUPT)	2,639	kWh
	ELECCOST * KWH SAVED	\$329.9	SAVINGS
<b>TOTAL ANNUAL SAVINGS</b>		\$3,017.2	NG (Therm)
		\$329.9	kWh
		\$3,347.2	TOTAL

STACK COEFFICIENT

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.06283333
5	0.07858333
6	0.09433333
7	0.11008333
8	0.12583333
9	0.14158333
10	0.15733333

WIND COEFFICIENT

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.02183333	0.01696667	0.012	0.0071	0.00213333
5	0.02508333	0.01951667	0.0138	0.00815	0.00243333
6	0.02833333	0.02206667	0.0156	0.0092	0.00273333
7	0.03158333	0.02461667	0.0174	0.01025	0.00303333
8	0.03483333	0.02716667	0.0192	0.0113	0.00333333
9	0.03808333	0.02971667	0.021	0.01235	0.00363333
10	0.04133333	0.03226667	0.0228	0.0134	0.00393333

LOCAL SHIELDING CLASSES

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within tow house heights; typical downtown shielding

CRACK AREA "A" BASED UPON:

Total, Vendor Collected Data:

14.9950	Square Ft
1.3931	Square Meters

KWh	3,413	btus in a KWh	OIL	146,000	btus in a gallon of oil
LPG	91,000	btus per Gal	NG	100,000	btus per Therm

**FIM #14**  
**Liebert unit Replacement**  
**E-911**

UTILITY DATA		
Electricity Usage Cost	\$ 0.097	\$/kWh
Electricity Demand Cost	\$ 8.00	\$/kW

ENERGY SAVINGS				
Commodity	Existing	Proposed	Savings	Savings (\$)
Electricity Usage (kWh)	10,418	8,036	2,381	\$ 231
Electricity Demand (kW)	18	14	4	\$ 33
				\$ 264

OPERATING PARAMETERS	
Cooling Hours	4000

EXISTING CONDITIONS											
EQUIPMENT		COOLING						HEATING			
Manufacturer	QTY	Cooling Output (Btu/h)	Coefficient of Performance	Total Cooling Output (Btu/h)	Power Usage (Btu/h)	Demand (kW)	Power Usage (kWh)	Heating Output (Btu/h)	Total Heating Output (Btu/h)	Therms Input	Therms Used
Liebert	1	24,000	2.7	24,000	8,889	2.6	10,418	-	-	-	-
						2.6	10,417.7				-
						\$ 21	\$ 1,011				\$ -

PROPOSED CONDITIONS											
EQUIPMENT		COOLING						HEATING			
Manufacturer	QTY	Cooling Output (Btu/h)	Coefficient of Performance	Total Cooling Output (Btu/h)	Power Usage (Btu/h)	Demand (kW)	Power Usage (kWh)	Heating Output (Btu/h)	Total Heating Output (Btu/h)	Therms Input	Therms Used
Liebert	1	24,000	3.5	24,000	6,857	2.0	8,036	-	-	-	-
						2.0	8,036				-
						\$ 16	\$ 780				\$ -

**FIM #15**

**Ulster County E-911 - Weatherization Improvements**

Notes:

1. The building has heating and cooling.
2. Infiltration CFM is based on an estimated total crack area (to be verified) and calculated using ASHRAE Methods.
3. All identified infiltration points will be sealed as part of this measure.

- 2.5 ...EXISTING CRACK AREA IN SQ.FT. (from ZeroDraft Audit)
- 20% ...% INFILTRATION VS. EXFILTRATION (%INF)
- 4 ...LOCAL SHIELDING CLASS (LSC)
- 1 ...# OF STORIES TO BUILDING (FLOORS)
- 144,0000 ...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)
- 0.0150 ...STACK COEFFICIENT, A (A)
- 0.0039 ...STACK COEFFICIENT, B (B)
- 5.0 ...AVERAGE WIND VELOCITY (VEL)
- 60 ...SPACE HEATING SETPOINT (HTSP)
- 60 ...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)
- 32.1 ...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)
- 4,693 ...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)
- 72 ...SPACE COOLING SETPOINT (CLSP)
- 73.6 ...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)
- 2,027 ...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)
- 168 ...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)

(Heat Leak Occ) AREA * %INF * EFL *((A * (HTSP - OAHT)) + (B * VEL^2))^.5	50.9	HLOCC	(CFM)
(Heat Leak Unoc) AREA * %INF * EFL *((A * (HTSPUNOC - OAHT)) + (B * VEL^2))^.5	50.9	HLUNOCC	(CFM)

(Cool Leak Occ) AREA * EFL *((A * (CLSP - OACT)) + (B * VEL^2))^.5	123.5	CLOCC	(CFM)
--	-------	-------	-------

- NG (CCF) ...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)
- 1,513 Fuel Cost
- 100,000 ...BTUs / UNIT (BTUs/UNIT)
- 10% ...LOSSES OF HEATING SYSTEM (EOSH)

(Occupied Heating)	1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / (168 / (BTUs/UNIT) / (1-EOSH))	80	NG (CCF)
	FUELCOST * FUEL SAVED	\$121.0	SAVINGS

(Unoccupied Heating)	1.08 * HLUNOCC * (HTSPUNOC - OAHT) * (HHPY - (HRSOCC * HHPY / 168)) / (BTUs/UNIT) / (1-EOSH)	0	NG (CCF)
	FUELCOST * FUEL SAVED	\$0.0	SAVINGS

- 32,537 ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)
- 1.10 ...Avg. KW/TON OF CHILLER (KW/TON)
- 0.00 ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)
- \$ 0.1160 ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)

(Cooling Savings)	CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000	1,125	TON-HRS
	TON-HRS * (KW/TON + KWSUPT)	1,238	kWh
	ELECCOST * KWH SAVED	\$143.6	SAVINGS

<b>TOTAL ANNUAL SAVINGS</b>	\$121.0	NG (CCF)
	\$143.6	kWh
	\$264.6	TOTAL

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light Local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within tow house heights; typical downtown shielding

**CRACK AREA "A" BASED UPON:**

Total, Vendor Collected Data:

2,411	Square Ft
0.2286	Square Meters

KWh	3,413	btus in a KWh	OIL	146,000	btus in a gallon of oil
LPG	91,000	btus per Gal	NG	100,000	btus per Therm



FIM # 18

Title Hot Water Reset  
 Project Ulster County  
 Site Flatbush Annex

Description A hot water reset program will be initiated to decrease the hot water supply temperature when demand for heating is low. The calculation is based on reduced boiler consumption.

Given Energy Fuel Cost \$1.16 \$/CCF (Nat'l Gas)  
 Boiler Plant Peak Load 720,000 btu/hr

Assumptions Boiler Efficiency 80%  
 Design Hot Water Supply Temperature 135 deg F  
 Design Indoor Air Temperature 72 deg F  
 Hot Water Reset 35 deg F  
 Reset Factor 0.05  
 OA Temperature Boiler Initiates 50 deg F  
 Minimum Boiler Load - btu/hr

Formula Hot Water Supply Temp @ OA Bin = Design IA Temp + (Design HWS Temp - Design IA Temp)/(Design IA Temp - Design OA Temp) x (Design IA Temp - Actual OATemp)  
 Building Load = (Boiler Plant Peak Load) x ((Actual OA Temp - Initiate OA Temp.) / (Design OA Temp. - Initiate OA Temp.))  
 Boiler Load = Building Load if above Minimum, otherwise it is Minimum  
 Energy Use = ((Boiler Load) / (Boiler Efficiency)) x (Hours/Bin)  
 Reset Potential = ((Boiler Peak Load - Boiler Load)/(Boiler Peak Load))  
 Reset Temperature = (Reset Potential) x (Hot Water Reset)  
 Energy Savings = ((Energy) x (Hours/Bin) x (Reset Factor) / 1,000,000 btu/mmbtu)  
 Energy Cost = (Energy) x (Fossil Fuel Cost)

See bins below for samples of calculation in chart.

Building Load =	Boiler Plant Peak Load	Actual OA Temp.	Initiate OA Temp.	Design OA Temp.	Initiate OA Temp.	
Building Load =	( 720,000 ) x ((	-5 -	50 ) / (	-5 -	50 ) =	720,000 btu
Energy Use =	Boiler Load	Boiler Efficiency	Hours/Bin	Conversion		
Energy Use =	(( 720,000 ) / (	80% )) x (	2 ) /	1,000,000		2 mmbtu
Reset Potential =	Boiler Peak Load	Boiler Load	Boiler Peak Load			
Reset Potential =	(( 720,000 -	379,636 ) / (	720,000 )) =			47%
Reset Temperature =	Reset Potential	Hot Water Reset				
Reset Temperature =	( 47% ) x (	35.0 ) =				17 Deg. F
Energy Savings =	Boiler Load	Hours/Bin	Reset Factor	Conversion		
Energy Savings =	( 379,636 ) x (	190 ) x (	0.050 ) / (	1,000,000		4 mmbtu

Calculation	Operation	OA Temp	Hours	Building Load (btu)	Boiler Load (btu)	Energy Use (mmBtu)	Reset Potential	Reset F	Energy Savings
	Heating	49	217	13,091	13,091	4	98%	34	0
	Heating	47	219	39,273	39,273	11	95%	33	0
	Heating	45	220	65,455	65,455	18	91%	32	1
	Heating	43	245	91,636	91,636	28	87%	31	1
	Heating	41	195	117,818	117,818	29	84%	29	1
	Heating	39	287	144,000	144,000	52	80%	28	2
	Heating	37	435	170,182	170,182	93	76%	27	4
	Heating	35	312	196,364	196,364	77	73%	25	3
	Heating	33	327	222,545	222,545	91	69%	24	4
	Heating	31	285	248,727	248,727	89	65%	23	4
	Heating	29	281	274,909	274,909	97	62%	22	4
	Heating	27	280	301,091	301,091	105	58%	20	4
	Heating	25	226	327,273	327,273	92	55%	19	4
	Heating	23	125	353,455	353,455	55	51%	18	2
	Heating	21	190	379,636	379,636	90	47%	17	4
	Heating	19	242	405,818	405,818	123	44%	15	5
	Heating	17	136	432,000	432,000	73	40%	14	3
	Heating	15	117	458,182	458,182	67	36%	13	3
	Heating	13	77	484,364	484,364	47	33%	11	2
	Heating	11	46	510,545	510,545	29	29%	10	1
	Heating	9	41	536,727	536,727	28	25%	9	1
	Heating	7	47	562,909	562,909	33	22%	8	1
	Heating	5	18	589,091	589,091	13	18%	6	1
	Heating	3	33	615,273	615,273	25	15%	5	1
	Heating	1	30	641,455	641,455	24	11%	4	1
	Heating	-1	13	667,636	667,636	11	7%	3	0
	Heating	-3	5	693,818	693,818	4	4%	1	0
	Heating	-5	2	720,000	720,000	2	0%	0	0
	<b>Subtotal =</b>		<b>4651 Hours</b>			<b>1,409 mmBtu</b>			<b>56 mmBtu</b>

Existing Energy Use = Energy Use (in Mmbtu) / (MMbh/CCF)  
 Existing Energy Use = ( 1,409 ) / ( 0.10 ) = 13,676 CCF

Proposed Energy Use = Existing Energy (in mmBtu) - Energy Savings / (MMbh/CCF)  
 Proposed Energy Use = ( 1,409 - 56 ) / 0.10 = 13,129 CCF

EXISTING HEATING ENERGY	13,676 CCF	\$ 15,810
PROPOSED HEATING ENERGY	13,129 CCF	\$ 15,177

SAVINGS AT 100% GUARANTEE  
 HEATING ENERGY SAVINGS 547 CCF \$ 632 4.0% of existing

SAVINGS AT 80% GUARANTEE  
 HEATING ENERGY SAVINGS 438 CCF \$ 506 3.2% of existing

Comments



**FIM #19  
 Ulster County  
 Flatbush Annex  
 Install Condensing Boilers**

<u>Item</u>	<u>Value</u>	<u>Units</u>	<u>Formula/Comments</u>
Baseline Fuel Use	10,870	CCF	Based on historical utility data
DHW Usage	6%		
Boiler Input	10,218	CCF	
Existing Boiler Plant Efficiency	80%		Name plate
Boiler Output	8,338	Therms	Baseline Fuel Use x Existing Efficiency
Fuel Cost	1.156	\$/CCF	
Proposed Boiler Plant Efficiency	91%		
Proposed Fuel Use	9,162	CCF	Baseline Fuel Use x Proposed Efficiency
<b>Annual Savings</b>	1,055	<b>CCF</b>	Baseline Fuel - Proposed Fuel

**Savings Summary:**

<b>Utility</b>	<b>Energy Savings</b>
Therms	1,055
\$	\$1,220

**FIM #20**

**Flatbush Annex Tower Motor Replacement & VFD Addition**

**Inputs**

Electricity Usage (\$/kWh)	\$ 0.098	Current Motor Size (HP)	25
Electricity Demand (\$/kW)	\$ 8.00	Current Motor Efficiency	92.4%
		Proposed Motor Size (HP)	7.5
		Proposed Motor Efficiency	92.4%
		Proposed VFD Efficiency	98.5%
		Load Factor	100%
Cooling Capacity	OA Temp		
0%	70		
100%	90		

**Savings**

Electricity Demand (kW)	78.2
Demand Savings (\$)	625.60
Electricity Usage (kWh)	2,664
Usage Savings (\$)	261.07
Total Savings (\$)	886.67

EXISTING CONDITIONS							Notes
Outdoor Air Dry Bulb Temp	Annual Hours	Power Required	Motor Efficiency	VFD Efficiency	Peak Demand (kW)	Annual Usage (kWh)	
71	278	0%	90.3%	95.0%	0.00	-	
73	310	0%	90.3%	95.0%	0.00	-	
75	186	2%	90.3%	95.0%	0.43	79.98	
77	87	4%	90.3%	95.0%	0.87	75.69	
79	151	9%	90.3%	95.0%	1.96	295.96	
81	118	17%	90.3%	95.0%	3.69	435.42	
83	109	27%	90.3%	95.0%	5.87	639.83	
85	59	42%	90.3%	95.0%	9.13	538.67	
87	48	61%	90.3%	95.0%	13.25	636.00	
89	34	86%	90.3%	95.0%	18.69	635.46	
91	18	100%	90.3%	95.0%	21.73	391.14	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
					Total	3728.2	1, 2

PROPOSED CONDITIONS								Notes
Outdoor Air Dry Bulb Temp	Annual Hours	Air Flow Required	Power Required	Motor Efficiency	VFD Efficiency	Peak Demand (kW)	Annual Usage (kWh)	
71	278	5%	0.01%	92.4%	98.5%	0.0	0	1,2
73	310	15%	0.34%	92.4%	98.5%	0.0	0	1,2
75	186	25%	1.56%	92.4%	98.5%	0.1	19	1,2
77	87	35%	4.29%	92.4%	98.5%	0.3	26	1,2
79	151	45%	9.11%	92.4%	98.5%	0.6	91	1,2
81	118	55%	16.64%	92.4%	98.5%	1.0	118	1,2
83	109	65%	27.46%	92.4%	98.5%	1.7	185	1,2
85	59	75%	42.19%	92.4%	98.5%	2.6	153	1,2
87	48	85%	61.41%	92.4%	98.5%	3.8	182	1,2
89	34	95%	85.74%	92.4%	98.5%	5.3	180	1,2
91	18	100%	100.00%	92.4%	98.5%	6.1	110	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
-	-	-	-	-	-	-	-	1,2
TOTALS:							1,064	

**Notes:**

- 1 - Annual Hours are based off of minimum OA Temp for operation
- 2 - Annual hours at temperatures shown are based on Albany NY bin data

Flatbush - Exhaust Ventilation Control.xlsx

**FIM #21**

**Inputs**

Room Temperature Setpoint	67	°F
Heating Below	55	°F (OAT)
Heating Efficiency	82%	
Cost per Therm	\$ 1.156	
Tons of CO2 per Therm	0.0053	
Hours off per year	3900	

OA supplied to space	2800	CFM
Cooling Above	95	°F (OAT)
Cooling COP	3.0	
Cost per kWh	\$ 0.12	
Tons of CO2 per kWh	0.000252	

**Savings**

	Current	Proposed	Savings	Savings	Savings
	btu/yr	btu/yr	btu/yr	kWh/Therms per yr	\$/yr
Cooling	-	-	-	0	\$ -
Heating	165,853,201	-	165,853,201	2035	\$ 2,352.47
				Total	\$ 2,352.47
					Tn CO2 10.8

Current			
% Occupied	0%	>0%	
# hours/year at Occupancy	3900	4860	hours
Outdoor air flow	0	2800	CFM

Weather	
Mid-pts DB	Total Hrs
°F	Hr
89	7
87	16
85	16
83	36
81	40
79	40
77	34
75	63
73	147
71	141
69	186
67	145
65	180
63	186
61	164
59	111
57	185
55	213
53	148
51	136
49	136
47	132
45	131
43	135
41	109
39	167
37	248
35	185
33	199
31	168
29	149
27	153
25	133
23	65
21	98
19	132
17	76
15	58
13	44
11	27
9	30
7	33
5	13
3	20
1	16
-1	5
-3	3
-5	1

Cooling Status	Heating Status	Heating/Cooling Load		Energy
On/Off	On/Off	btu/h		btu
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	1	0	42,532	3,492,285
0	1	0	48,608	3,667,573
0	1	0	54,684	4,126,020
0	1	0	60,760	4,449,630
0	1	0	66,836	4,857,512
0	1	0	72,912	5,460,909
0	1	0	78,988	4,776,610
0	1	0	85,064	7,881,238
0	1	0	91,140	12,539,865
0	1	0	97,216	9,977,957
0	1	0	103,292	11,403,861
0	1	0	109,368	10,193,697
0	1	0	115,444	9,543,107
0	1	0	121,520	10,315,050
0	1	0	127,596	9,415,012
0	1	0	133,672	4,820,432
0	1	0	139,748	7,598,080
0	1	0	145,824	10,679,111
0	1	0	151,900	6,404,770
0	1	0	157,976	5,083,365
0	1	0	164,052	4,004,667
0	1	0	170,128	2,548,424
0	1	0	176,204	2,932,710
0	1	0	182,280	3,337,222
0	1	0	188,356	1,358,485
0	1	0	194,432	2,157,396
0	1	0	200,508	1,779,852
0	1	0	206,584	573,058
0	1	0	212,660	353,948
0	1	0	218,736	121,354
<b>Cooling Total</b>				-
<b>Heating Total</b>				165,853,201

FIM #22

Flatbush Annex Pump Motor Replacement & VFD Retrofit

UTILITY DATA	
Electricity Usage	\$ 0.098 /kWh
Electricity Demand	\$ 8.00 /kW

Cooling Capacity	OA Temp
0%	60
100%	95

Heating Capacity	OA Temp
0%	60
100%	0

Service	Motor Size (HP)	Part of Redundant Pair? (1 - yes, 0 - no)	Purpose (Cooling - C, Heating - H, Both - B)	EXISTING CONDITIONS						Proposed Conditions						Savings				
				Annual Hours	Load Factor	Motor Efficiency	Peak Demand (kW)	Usage (kWh)	Annual Demand (kW)	Load Factor	Motor Efficiency	VFD? (1 - yes, 0 - no)	VFD Efficiency	Annual Demand (kW)	Usage (kWh)	Electricity Demand (kW)	Demand Cost Savings (\$)	Electricity Usage (kWh)	Usage Cost Savings (\$)	Total Cost Savings (\$)
P-1	10.0	1	B	4,380	75.0%	88.0%	6.4	28,032	76.8	75.0%	92.0%	1	98.5%	29.2	5,858	47.6	\$380.80	22,174	\$2,173.05	\$2,553.85
P-1A	10.0	1	B	4,380	75.0%	88.0%	6.4	28,032	76.8	75.0%	92.0%	1	98.5%	29.2	5,858	47.6	\$380.80	22,174	\$2,173.05	\$2,553.85
P-2	7.0	1	B	4,380	75.0%	87.0%	4.5	19,710	54.0	75.0%	91.8%	0	98.5%	51.2	18,684	2.8	\$22.40	1,026	\$100.55	\$122.95
P-2A	7.0	1	B	4,380	75.0%	87.0%	4.5	19,710	54.0	75.0%	91.8%	0	98.5%	51.2	18,684	2.8	\$22.40	1,026	\$100.55	\$122.95
P-3	1.5	1	H	2,964	75.0%	80.0%	1.0	2,964	7.0	75.0%	86.5%	1	98.5%	2.8	729	4.2	\$33.60	2,235	\$219.03	\$252.63
P-3A	1.5	1	H	2,964	75.0%	80.0%	1.0	2,964	7.0	75.0%	86.5%	1	98.5%	2.8	729	4.2	\$33.60	2,235	\$219.03	\$252.63
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
							23.8	101,412	275.6					166.4	50,542	109.2	\$873.60	50,870.0	\$4,985.26	\$5,858.86

Notes:  
 1 - Existing motor load factors based on field measurements  
 2 - Existing motor efficiencies are estimated (no nameplate data was available).

**FIM # 23 Ulster County Flatbush Annex - Weatherization Improvements**

- Notes:
1. The building has heating and cooling. Heating and cooling is supplied by all-electric heat pumps and an electric boiler.
  2. Infiltration CFM is based on an estimated total crack area (to be verified) and calculated using ASHRAE Methods.
  3. All identified infiltration points will be sealed as part of this measure.

- 4.0 ...EXISTING CRACK AREA IN SQ.FT. (AREA from Vendor Data)
- 50% ...% INFILTRATION VS. EXFILTRATION (%INF)
- 2 ...LOCAL SHIELDING CLASS (LSC)
- 3 ...# OF STORIES TO BUILDING (FLOORS)
- 144.0000 ...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)
- 0.0449 ...STACK COEFFICIENT, A (A)
- 0.0143 ...STACK COEFFICIENT, B (B)
- 5.0 ...AVERAGE WIND VELOCITY (VEL)
- 70 ...SPACE HEATING SETPOINT (HTSP)
- 60 ...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)
- 32.1 ...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)
- 4,693 ...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)
- 74 ...SPACE COOLING SETPOINT (CLSP)
- 73.6 ...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)
- 3,135 ...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)
- 50 ...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)

(Heat Leak Occ)	AREA * %INF * EFL * ((A * (HTSP - OAHT)) + (B * VEL^2))^0.5	410.7	HLOCC	(CFM)
(Heat Leak Unocc)	AREA * %INF * EFL * ((A * (HTSPUNOC - OAHT)) + (B * VEL^2))^0.5	363.2	HLUNOCC	(CFM)

(Cool Leak Occ)	AREA * EFL * ((A * (CLSP - OACT)) + (B * VEL^2))^0.5	350.7	CLOCC	(CFM)
-----------------	--	-------	-------	-------

NG (Therm)	...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, KWh)	KWh	3,413	btus in a KWh	OIL	146,000	btus in a gallon of oil
1,156	Fuel Cost						
100,000	...BTUs / UNIT (BTUs/UNIT)						
20%	...LOSSES OF HEATING SYSTEM (EOSH)						

(Occupied Heating)	1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / 168 / (BTUs/UNIT) / (1-EOSH)	293	NG (Therm)	LPG	91,000	btus per Gal	NG	100,000	btus per Therm
	FUELCOST * FUEL SAVED	\$339.3	SAVINGS						
(Unoccupied Heating)	1.08 * HLUNOCC * (HTSPUNOC - OAHT) * (HHPY - (HRSOCC * HHPY / 168)) / (BTUs/UNIT) / (1-EOSH)	451	NG (Therm)						
	FUELCOST * FUEL SAVED	\$521.2	SAVINGS						

- 32,537 ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)
- 1.10 ...Avg. KW/TON OF CHILLER (KW/TON)
- 0.00 ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)
- \$ 0.1240 ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)

(Cooling Savings)	CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000	951	TON-HRS				
	TON-HRS * (KW/TON + KWSUPT)	1,046	kWh				
	ELECCOST * KWH SAVED	\$129.7	SAVINGS				
<b>TOTAL ANNUAL SAVINGS</b>				\$860.5	NG (Therm)		
				\$129.7	kWh		
				\$390.2	TOTAL		

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within tow house heights; typical downtown shielding

**CRACK AREA "A" BASED UPON:**

<b>Total, Vendor Collected Data:</b>	3,9750	Square Ft
	0,3693	Square Meters

**FIM #25 Heavy Vehicle Maintenance Complex Infrared Heat Retrofit**

**Inputs**

Cost/kWh	\$0.086
Cost/kW	\$8.00
Cost/Therm	\$1.174

**Savings**

Total Fuel Saved (Therms)	5,464	\$6,414.81
Total Electric Saved (kWh)	1,969	\$169.35
Total Demand Saved (kW)	10.1	\$81.13
		<u>\$6,665.29</u>

**Current Usage**

Item	Quantity	Operating Hours	Output (BTUH)	Operating Efficiency	Average Operating Capacity	Motor HP	Motor Efficiency	Motor Load Factor	Annual Gas Usage (Therms)	Peak Demand (kW)	Annual Demand (kW)	Annual Usage (kWh)	Total Cost
Large Furnace	2	780	420,000	81%	75.0%	1.5	78.0%	75.0%	6,067	1.1	7.5	1,678	\$7,326.84
Small Furnace	1	780	125,000	80%	75.0%	0.5	75.0%	75.0%	914	0.4	2.6	291	\$2,330.27
<b>Totals:</b>									6,981	1.4	10.1	1,969	\$9,657.12

**Proposed Usage**

Item	Quantity (# of 15' Lengths)	Operating Hours	Input (BTUH)	Operating Efficiency	Average Operating Capacity	Annual Gas Usage (Therms)	Total Cost
Infrared Heating	10	303	50,000	85%	100.0%	1,517	\$1,780.57

**FIM #26 Heavy Vehicle Maintenance - Weatherization Improvements**

Notes:

1. Garages kept at 60 degrees - no cooling
2. Infiltration CFM is based on an estimated total crack area (to be verified) and calculated using ASHRAE Methods.
3. All identified infiltration points will be sealed as part of this measure.

4.4 ...EXISTING CRACK AREA IN SQ.FT. (AREA from Vendor Data)

50% ...% INFILTRATION VS. EXFILTRATION (%INF)

5 ...LOCAL SHIELDING CLASS (LSC)

1 ...# OF STORIES TO BUILDING (FLOORS)

144.0000 ...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)

0.0150 ...STACK COEFFICIENT, A (A)

0.0012 ...STACK COEFFICIENT, B (B)

5.0 ...AVERAGE WIND VELOCITY (VEL)

60 ...SPACE HEATING SETPOINT (HTSP)

60 ...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)

32.1 ...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)

4,693 ...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)

76 ...SPACE COOLING SETPOINT (CLSP)

76 ...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)

2,027 ...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)

45 ...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)

(Heat Leak Occ) AREA \* %INF \* EFL \*((A \* (HTSP - OAHT)) + (B \* VEL^2))^.5 ===== 210.5 HLOCC (CFM)  
 (Heat Leak Unoc) AREA \* %INF \* EFL \*((A \* (HTSPUNOC - OAHT)) + (B \* VEL^2))^.5 ===== 210.5 HLUNOCC (CFM)

(Cool Leak Occ) AREA \* EFL \*((A \* (CLSP - OACT)) + (B \* VEL^2))^.5 ===== 108.9 CLOCC (CFM)

NG (Therm) ...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)

1,174 Fuel Cost

100,000 ...BTUs / UNIT (BTUs/UNIT)

20% ...LOSSES OF HEATING SYSTEM (EOSH)

(Occupied Heating) 1.08 \* HLOCC \* (HTSP - OAHT) \* HRSOCC \* HHPY / 168 / (BTUs/UNIT) / (1-EOSH) ===== 100 NG (Therm)  
 FUELCOST \* FUEL SAVED ===== \$117.0 SAVINGS

(Unoccupied Heating) 1.08 \* HLUNOCC \* (HTSPUNOC - OAHT) \* (HHPY - (HRSOCC \* HHPY / 168)) / (BTUs/UNIT) / (1-EOSH) ===== 272 NG (Therm)  
 FUELCOST \* FUEL SAVED ===== \$319.8 SAVINGS

32,537 ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)

0.00 ...Avg. KW/TON OF CHILLER (KW/TON)

0.00 ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)

\$ 0.1180 ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)

(Cooling Savings) CLOCC \* CBTU / 1000 \* HRSOCC / 50 \* 1,000,000 / 12000 ===== 266 TON-HRS  
 TON-HRS \* (KW/TON + KWSUPT) ===== 0 kWh  
 ELECCOST \* KWH SAVED ===== \$0.0 SAVINGS

**TOTAL ANNUAL SAVINGS** \$436.8 NG (Therm)  
 \$0.0 kWh  
 \$436.8 TOTAL

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
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7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
1	No obstructions or local shielding
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4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within tow house heights; typical downtown shielding

**HOLE AREA "A" BASED UPON:**

Total, Vendor Collected Data:

4.3650	Square Ft
0.4055	Square Meters

KWh **3,413** btus in a KWh OIL **146,000** btus in a gallon of oil

LPG **91,000** btus per Gal NG **100,000** btus per Therm

Information Services - Install Demand Control Vent.xlsx

FIM # 28 - DCV

Inputs

Room Temperature Setpoint	72	°F
Heating Efficiency	85	°F (OAT)
Heating Efficiency	80%	
Cost per Therm	\$ 1.137	
Tons of CO2 per Therm	0.0053	
Hours off per year	4860	

OA supplied to space	3507	CFM
Heating Above Cooling	72	FF (OAT)
Cooling COP	3.5	
Cost per kWh	\$ 0.114	
Tons of CO2 per kWh	0.000252	

Savings

	Current	Proposed	Savings	Savings	Savings	Savings
	btu/yr	btu/yr	btu/yr	kWh/Therms per yr	\$/yr	Tn CO2
Cooling	8,505,407	2,317,034	6,188,373	518	\$ 59.08	0.13
Heating	#####	37,397,790	#####	1269	\$ 1,442.36	6.7
				Total	\$ 1,501.43	6.9

Weather

Mid-pts DB	Total Hrs
°F	Hr
91	18
89	27
87	32
85	43
83	75
81	79
79	116
77	58
75	130
73	176
71	140
69	145
67	141
65	112
63	91
61	92
59	66
57	119
55	139
53	79
51	70
49	79
47	87
45	92
43	106
41	81
39	122
37	177
35	123
33	130
31	122
29	128
27	125
25	93
23	60
21	92
19	112
17	56
15	55
13	32
11	18
9	13
7	14
5	5
3	11
1	6
-1	11
-3	2

Current			
% Occupied	0%	>0%	hours
# hours/year at Occupancy	4860	3900	CFM
Outdoor air flow	0	3507	CFM

Cooling Status	Heating Status	Heating/Cooling Load	Energy	
			On/Off	On/Off
On/Off	On/Off	btu/h	On/Off	On/Off
1	0	0	71,964	576,695
1	0	0	64,389	773,985
1	0	0	56,813	809,396
1	0	0	49,238	942,610
1	0	0	41,663	1,391,150
1	0	0	34,088	1,198,918
1	0	0	26,513	1,369,229
1	0	0	18,938	489,010
1	0	0	11,363	657,635
1	0	0	3,788	296,779
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	0	0	-	-
0	1	0	72,297	2,542,768
0	1	0	79,907	2,490,252
0	1	0	87,517	3,078,087
0	1	0	95,127	3,684,557
0	1	0	102,738	4,208,018
0	1	0	110,348	5,207,507
0	1	0	117,958	4,253,757
0	1	0	125,568	6,820,242
0	1	0	133,178	10,494,634
0	1	0	140,789	7,709,618
0	1	0	148,399	8,588,829
0	1	0	156,009	8,473,634
0	1	0	163,619	9,324,046
0	1	0	171,229	9,529,026
0	1	0	178,839	7,404,689
0	1	0	186,450	4,980,504
0	1	0	194,060	7,948,479
0	1	0	201,670	10,055,876
0	1	0	209,280	5,217,671
0	1	0	216,890	5,310,844
0	1	0	224,501	3,198,365
0	1	0	232,111	1,860,066
0	1	0	239,721	1,387,426
0	1	0	247,331	1,541,585
0	1	0	254,941	567,506
0	1	0	262,552	1,285,783
0	1	0	270,162	1,323,052
0	1	0	277,772	741,994
0	1	0	285,382	254,107
		<b>Cooling Total</b>	<b>8,505,407</b>	
		<b>Heating Total</b>	<b>139,482,934</b>	

Proposed											
% Occupied	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
# hours/year at Occupancy	5059	510	1058	1189	526	295	73	12	12	22	4
Outdoor air flow	0	351	701	1052	1403	1754	2104	2455	2806	3156	3507

Cooling Status	Heating Status		Heating/Cooling Load											Energy		
			On/Off	On/Off	btu/h											On/Off
On/Off	On/Off		On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off
1	0	-	7,196	14,393	21,589	28,785	35,982	43,178	50,375	57,571	64,767	71,964	79,160	86,357	93,554	100,750
1	0	-	6,439	12,878	19,317	25,755	32,194	38,633	45,072	51,511	57,950	64,389	70,828	77,267	83,706	90,145
1	0	-	5,681	11,363	17,044	22,725	28,407	34,088	39,769	45,451	51,132	56,813	62,494	68,175	73,856	79,537
1	0	-	4,924	9,848	14,771	19,695	24,619	29,543	34,467	39,391	44,314	49,238	54,162	59,086	64,010	68,934
1	0	-	4,166	8,333	12,499	16,665	20,832	24,998	29,164	33,331	37,497	41,663	45,829	50,000	54,166	58,332
1	0	-	3,409	6,818	10,226	13,635	17,044	20,453	23,862	27,270	30,679	34,088	37,497	40,906	44,315	47,724
1	0	-	2,651	5,303	7,954	10,605	13,256	15,908	18,559	21,210	23,862	26,513	29,164	31,815	34,466	37,117
1	0	-	1,894	3,788	5,681	7,575	9,469	11,363	13,256	15,150	17,044	18,938	20,832	22,725	24,619	26,513
1	0	-	1,136	2,273	3,409	4,545	5,681	6,818	7,954	9,090	10,226	11,363	12,500	13,637	14,774	15,910
1	0	-	379	758	1,136	1,515	1,894	2,273	2,651	3,030	3,409	3,788	4,167	4,546	4,925	5,304
0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0	1	-	7,230	14,459	21,689	28,919	36,148	43,378	50,608	57,837	65,067	72,297	79,527	86,757	94,000	101,229
0	1	-	7,991	15,981	23,972	31,963	39,953	47,944	55,935	63,926	71,916	79,907	87,898	95,889	103,880	111,871
0	1	-	8,752	17,503	26,255	35,007	43,759	52,510	61,262	70,014	78,765	87,517	96,268	105,020	113,771	122,522
0	1	-	9,513	19,025	28,538	38,051	47,564	57,076	66,589	76,102	85,615	95,127	1,046,743	1,141,994	1,237,245	1,332,496
0	1	-	10,274	20,548	30,821	41,095	51,369	61,643	71,916	82,190	92,464	102,738	113,012	123,286	133,560	143,834
0	1	-	11,035	22,070	33,104	44,139	55,174	66,209	77,243	88,278	99,313	110,348	121,382	132,416	143,451	154,485
0	1	-	11,796	23,592	35,387	47,183	58,979	70,775	82,571	94,366	106,162	117,958	129,754	141,550	153,346	165,142
0	1	-	12,557	25,114	37,670	50,227	62,784	75,341	87,898	100,455	113,011	125,568	138,125	150,682	163,239	175,796
0	1	-	13,318	26,636	39,953	53,271	66,589	79,907	93,225	106,543	119,860	133,178	146,496	159,814	173,132	186,450
0	1	-	14,079	28,158	42,237	56,315	70,394	84,473	98,552	112,631	126,710	140,789	154,868	168,947	183,026	197,105
0	1	-	14,840	29,680	44,520	59,359	74,199	89,039	103,879	118,719	133,559	148,399	163,038	177,678	192,317	206,957
0	1	-	15,601	31,202	46,803	62,404	78,004	93,605	109,206	124,807	140,408	156,009	171,610	187,211	202,812	218,413
0	1	-	16,362	32,724	49,086	65,448	81,810	98,171	114,533	130,895	147,257	163,619	179,981	196,343	212,705	229,067
0	1	-	17,123	34,246	51,369	68,492	85,615	102,738	119,860	136,983	154,106	171,229	188,351	205,474	222,597	239,720
0	1	-	17,884	35,768	53,652	71,536	89,420	107,304	125,188	143,072	160,956	178,839	196,723	214,607	232,491	250,375
0	1	-	18,645	37,290	55,935	74,580	93,225	111,870	130,515	149,160	167,805	186,450	205,095	223,740	242,385	261,270
0	1	-	19,406	38,812	58,218	77,624	97,030	116,436	135,842	155,248	174,654	194,060	213,466	232,872	252,377	271,765
0	1	-	20,167	40,334	60,501	80,668	100,835	121,002	141,169	161,336	181,503	201,670	221,837	242,004	262,172	282,160
0	1	-	20,928	41,856	62,784	83,712	104,640	125,568	146,496	167,422	188,352	209,280	229,707	250,134	270,561	291,549
0	1	-	21,689	43,378	65,067	86,756	108,445	130,134	151,823	173,512	195,201	216,890	238,079	259,268	280,358	300,346
0	1	-	22,450	44,900	67,350	89,800	112,250	134,700	157,150	179,600	202,050	224,500	246,950	269,400	291,350	311,145
0	1	-	23,211	46,422	69,633	92,844	116,055	139,266	162,478	185,689	208,900	232,111	254,522	276,933	299,344	320,540
0	1	-	23,972	47,944	71,916	95,888	119,860	143,833	167,805	191,777	215,749	239,721	263,692	288,363	312,771	331,735
0	1	-	24,733	49,466	74,199	98,932	123,666	148,399	173,132	197,8						



**FIM # 28 Informational Services - Rooftop unit Replacement**

UTILITY DATA		
Electricity Usage Cost	\$ 0.097	\$/kWh
Electricity Demand Cost	\$ 8.00	\$/kW
Natural Gas Cost	\$ 1.137	\$/therm

ENERGY SAVINGS				
Commodity	Existing	Proposed	Savings	Savings (\$)
Electricity Usage (kWh)	40,679	30,818	9,861	\$ 957
Electricity Demand (kW)	231	175	56	\$ 448
Natural Gas Usage (therm)	5,929.0	5,646	283	\$ 322
				\$ 1,727

OPERATING PARAMETERS	
Cooling Hours	4109
Heating Hours	4215
Cooling Utilization	30%
Heating Utilization	25%
Adjusted Heating Hours	1,054
Current Combustion Efficiency	80%
Proposed Combustion Efficiency	84%

EXISTING CONDITIONS										
EQUIPMENT		COOLING						HEATING		
Manufacturer	QTY	Cooling Output (Btu/h)	Coefficient of Performance	Total Cooling Output (Btu/h)	Power Usage (Btu/h)	Demand (kW)	Power Usage (kWh)	Heating Output (Btu/h)	Heating output (MMbtu)	Therms Used
McQuay	1	300,000	2.7	300,000	111,111	33	40,679	450,000	474.30	5,929
						33	40,679.0			5,929.0
						\$ 264	\$ 3,946			\$ 6,741

PROPOSED CONDITIONS										
EQUIPMENT		COOLING						HEATING		
Manufacturer	QTY	Cooling Output (Btu/h)	Coefficient of Performance	Total Cooling Output (Btu/h)	Power Usage (Btu/h)	Demand (kW)	Power Usage (kWh)	Heating Output (Btu/h)	Heating output (MMbtu)	Therms Used
McQuay	1	300,000	3.5	300,000	85,714	25	30,818	450,000	474.30	5,646
						25	30,818			5,646
						\$ 200	\$ 2,989			\$ 6,420

Notes:

1 - Total annual demand assumes operation 7 months per year

**FIM #29 Ulster County Information Services - Weatherization Improvements**

**Notes:**

1. The building has heating and cooling. Heating and cooling is supplied by all-electric heat pumps and an electric boiler.
2. Infiltration CFM is based on an estimated total crack area (to be verified) and calculated using ASHRAE Methods.
3. All identified infiltration points will be sealed as part of this measure.

3.8	...EXISTING CRACK AREA IN SQ.FT. (AREA from Vendor Data)		
50%	...% INFILTRATION VS. EXFILTRATION (%INF)		
2	...LOCAL SHIELDING CLASS (LSC)		
1	...# OF STORIES TO BUILDING (FLOORS)		
144.0000	...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)		
0.0150	...STACK COEFFICIENT, A (A)		
0.0092	...STACK COEFFICIENT, B (B)		
5.0	...AVERAGE WIND VELOCITY (VEL)		
70	...SPACE HEATING SETPOINT (HTSP)		
60	...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)		
23.6	...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)		
4.693	...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)		
70	...SPACE COOLING SETPOINT (CLSP)		
73.6	...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)		
2.027	...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)		
80	...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)		
	(Heat Leak Occ) AREA * %INF * EFL *((A * (HTSP - OAHT)) + (B * VEL^2))^0.5	265.3	HLOCC (CFM)
	(Heat Leak Unoc) AREA * %INF * EFL *((A * (HTSPUNOC - OAHT)) + (B * VEL^2))^0.5	242.9	HLUNOCC (CFM)
	(Cool Leak Occ) AREA * EFL *((A * (CLSP - OACT)) + (B * VEL^2))^0.5	293.9	CLOCC (CFM)
<b>NG (Therm)</b>	...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)		
<b>1.18</b>	<b>Fuel Cost</b>		
<b>100,000</b>	...BTUs / UNIT (BTUs/UNIT)		
<b>20%</b>	...LOSSES OF HEATING SYSTEM (EOSH)		
(Occupied Heating)	1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / 168 / (BTUs/UNIT) / (1-EOSH) =	371	NG (Therm)
	FUELCOST * FUEL SAVED =	\$438.2	SAVINGS
(Unoccupied Heating)	1.08 * HLUNOCC * (HTSPUNOC - OAHT) * (HHPY - (HRSOCC * HHPY / 168)) / (BTUs/UNIT) / (1-EOSH) =	293	NG (Therm)
	FUELCOST * FUEL SAVED =	\$346.2	SAVINGS
<b>32.537</b>	...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)		
<b>1.10</b>	...Avg. KW/TON OF CHILLER (KW/TON)		
<b>0.00</b>	...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)		
<b>\$ 0.1560</b>	...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)		
(Cooling Savings)	CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000 =	1,275	TON-HRS
	TON-HRS * (KW/TON + KWSUPT) =	1,402	kWh
	ELECCOST * KWH SAVED =	\$218.8	SAVINGS
	<b>TOTAL ANNUAL SAVINGS</b>	\$784.4	NG (Therm)
		\$218.8	kWh
		\$1,003.2	TOTAL

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light Local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within tow house heights; typical downtown shielding

**CRACK AREA "A" BASED UPON:**

<b>Total, Vendor Collected Data:</b>	<b>3.8292</b> Square Ft
	<b>0.3557</b> Square Meters

**KWh 3,413 btus in a KWh**      **OIL 146,000 btus in a gallon of oil**

**LPG 91,000 btus per Gal**      **NG 100,000 btus per Therm**

Inputs	
Room Temperature Setpoint	72 °F
Heating Below	60 °F (OAT)
Heating Efficiency	81.5%
Cost per Therm	\$ 1.156
Tons of CO2 per Therm	0.0053
Hours off per year	5120

OA supplied to space	5600 CFM
Cooling Above	70 °F (OAT)
Cooling COP	3.0
Cost per kWh	\$ 0.111
Tons of CO2 per kWh	0.000252
Total Fan Horse Power	8.5 HP

	Savings													
	Current	Heat Exchanger Effect	Proposed	Heat Exchanger Effect	Savings	Savings	Savings	Savings	Savings	Savings	Savings			
	btu/yr	btu/yr	btu/yr	btu/yr	btu/yr	kWh/Therm per yr	\$/yr	Tn CO2		Current	Proposed	Savings	Savings	Savings
Cooling	12,671,029	5,068,412	2,668,949	640,547.75	4,427,864	433	\$ 48.02	0.11		Fan Motor	14,554	13,360	1,4195	\$ 1,575.60
Heating	201,178,108	80,471,243	42,374,939	10,169,983.33	70,301,258	863	\$ 997.16	4.6					Total	\$ 2,620.77
														8.3

Weather	
Mid-pt DB °F	Total Hrs Hr
91	18
89	27
87	32
85	43
83	75
81	79
79	116
77	58
75	130
73	174
71	135
69	138
67	123
65	105
63	82
61	86
59	59
57	104
55	127
53	73
51	63
49	74
47	84
45	85
43	103
41	73
39	112
37	159
35	108
33	122
31	115
29	125
27	111
25	89
23	50
21	89
19	104
17	48
15	50
13	26
11	17
9	12
7	12
5	3
3	9
1	7
-1	5
-3	1

Cooling Status	Heating Status	Heating/Cooling Load	Energy	Current	
				% Occupied	>0% hours
On/Off	On/Off	btu/h	btu	0%	CFM
1	0	0	114,912	5120	3640
1	0	0	102,816	5600	5600
1	0	0	90,720	0	0
1	0	0	78,624	0	0
1	0	0	66,528	0	0
1	0	0	54,432	0	0
1	0	0	42,336	0	0
1	0	0	30,240	0	0
1	0	0	18,144	0	0
1	0	0	6,048	0	0
0	0	0	-	0	0
0	0	0	-	0	0
0	0	0	-	0	0
0	0	0	-	0	0
0	0	0	-	0	0
0	0	0	-	0	0
0	0	0	-	0	0
0	0	0	-	0	0
0	1	0	78,988	0	0
0	1	0	91,140	0	0
0	1	0	103,292	0	0
0	1	0	115,444	0	0
0	1	0	127,596	0	0
0	1	0	139,748	0	0
0	1	0	151,900	0	0
0	1	0	164,052	0	0
0	1	0	176,204	0	0
0	1	0	188,356	0	0
0	1	0	200,508	0	0
0	1	0	212,660	0	0
0	1	0	224,812	0	0
0	1	0	236,964	0	0
0	1	0	249,116	0	0
0	1	0	261,268	0	0
0	1	0	273,420	0	0
0	1	0	285,572	0	0
0	1	0	297,724	0	0
0	1	0	309,876	0	0
0	1	0	322,028	0	0
0	1	0	334,180	0	0
0	1	0	346,332	0	0
0	1	0	358,484	0	0
0	1	0	370,636	0	0
0	1	0	382,788	0	0
0	1	0	394,940	0	0
0	1	0	407,092	0	0
0	1	0	419,244	0	0
0	1	0	431,396	0	0
0	1	0	443,548	0	0
0	1	0	455,700	0	0
<b>Cooling Total</b>				<b>12,671,029</b>	
<b>Heating Total</b>				<b>201,178,108</b>	

Cooling Status	Heating Status	Heating/Cooling Load	Energy	Proposed											
				0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	CFM
On/Off	On/Off	btu/h	btu	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	hrs/yr
1	0	-	11,491	22,982	34,474	45,965	57,456	68,947	80,438	91,930	103,421	114,912	114,912	181,035	
1	0	-	10,282	20,563	30,845	41,126	51,408	61,690	71,971	82,253	92,534	102,816	102,816	242,969	
1	0	-	9,072	18,144	27,216	36,288	45,360	54,432	63,504	72,576	81,648	90,720	90,720	254,085	
1	0	-	7,862	15,725	23,587	31,450	39,312	47,174	55,037	62,899	70,762	78,624	78,624	295,903	
1	0	-	6,653	13,306	19,958	26,611	33,264	39,917	46,570	53,222	59,875	66,528	66,528	436,708	
1	0	-	5,443	10,886	16,330	21,773	27,216	32,659	38,102	43,546	48,989	54,432	54,432	376,363	
1	0	-	4,234	8,467	12,701	16,934	21,168	25,402	29,635	33,869	38,102	42,336	42,336	429,827	
1	0	-	3,024	6,048	9,072	12,096	15,120	18,144	21,168	24,192	27,216	30,240	30,240	153,510	
1	0	-	1,814	3,629	5,443	7,258	9,072	10,886	12,701	14,515	16,330	18,144	18,144	206,444	
1	0	-	605	1,210	1,814	2,419	3,024	3,629	4,234	4,838	5,443	6,048	6,048	92,106	
0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	
0	1	-	7,899	15,798	23,696	31,595	39,494	47,393	55,292	63,190	71,089	78,988	78,988	407,886	
0	1	-	9,114	18,228	27,342	36,456	45,570	54,684	63,798	72,912	82,026	91,140	91,140	829,599	
0	1	-	10,329	20,658	30,988	41,317	51,646	61,975	72,304	82,634	92,963	103,292	103,292	1,148,143	
0	1	-	11,544	23,089	34,633	46,178	57,722	69,266	80,811	92,355	103,900	115,444	115,444	737,598	
0	1	-	12,760	25,519	38,279	51,038	63,798	76,558	89,317	102,077	114,836	127,596	127,596	703,563	
0	1	-	13,975	27,950	41,924	55,899	69,874	83,849	97,824	111,798	125,773	139,748	139,748	905,113	
0	1	-	15,190	30,380	45,570	60,760	75,950	91,140	106,330	121,520	136,710	151,900	151,900	1,116,767	
0	1	-	16,405	32,810	49,216	65,621	82,026	98,431	114,836	131,242	147,647	164,052	164,052	1,220,467	
0	1	-	17,620	35,241	52,861	70,482	88,102	105,722	123,343	140,963	158,984	176,204	176,204	1,588,469	
0	1	-	18,836	37,671	56,507	75,343	94,178	113,014	131,849	150,885	169,806	188,356	188,356	1,203,450	
0	1	-	20,051	40,102	60,152	80,203	100,254	120,305	140,356	160,408	180,457	200,508	200,508	1,965,511	
0	1	-	21,266	42,532	63,798	85,064	106,330	127,596	148,862	170,128	191,394	212,660	212,660	2,959,433	
0	1	-	22,481	44,962	67,441	89,925	112,406	134,887	157,368	179,850	202,331	224,812	224,812	2,125,049	
0	1	-	23,696	47,393	71,089	94,786	118,482	142,178	165,875	199,571	213,268	236,964	236,964	2,530,276	
0	1	-	24,912	49,823	74,735	99,646	124,558	149,470	174,381	199,293	224,204	249,116	249,116	2,507,409	
0	1	-	26,127	52,254	78,389	104,507	130,634	156,761	182,888	209,014	235,141	261,268	261,268	2,858,393	
0	1	-	27,342	54,684	82,026	109,368	136,710	164,052	191,394	218,736	246,078	273,420	273,420	2,656,311	
0	1	-	28,557	57,114	85,672	114,229	142,786	171,343	199,900	228,458	257,015	285,572	285,572	2,224,494	
0	1	-	29,772	59,545	89,317	119,090	148,862	178,634	208,407	238,179	267,952	297,724	297,724	1,302,895	
0	1	-	30,988	61,975	92,963	123,950	154,938	185,926	216,913	247,901	278,888	309,876	309,876	2,413,813	
0	1	-	32,203	64,406	96,608	128,811	161,014	193,217	225,420	257,622	289,825	322,028	322,028	2,931,248	
0	1	-	33,418	66,836	100,254	133,672	167,090	200,508	233,926	267,344	300,762	334,180	334,180	1,403,936	
0	1	-	34,633	69,266	103,940	138,533	173,166	207,799	242,432	277,066	311,899	346,332	346,332	1,515,813	
0	1	-	35,848	71,697	107,545	143,394	179,242	215,090	250,939	286,787	322,636	358,484	358,484	815,772	
0	1	-	37,064	74,127	111,191	148,254	185,318	222,382	259,445	296,509	333,572	370,636	370,636	951,470	
0	1	-	38,279	76,558	114,836	153,115	191,394	229,673	267,952	306,230	344,509	382,788	382,788	402,036	
0	1	-	39,494	78,988	118,482	157,976	197,470	236,964	276,458	315,952	355,446	394,940	394,940	414,799	
0	1	-	40,709	81,418	122,128	162,837	203,546	244,255	284,964	325,674	366,383	407,092	407,092	106,891	
0	1	-	41,924	83,849	125,773	167,698	209,622	251,546	293,471	335,395	377,320	419,244	419,244	330,244	
0	1	-	43,140	86,279	129,419	172,559	215,698	258,838	301,977	345,117	388,256	431,396	431,396	264,302	
0	1	-	44,355	88,710	133,064	177,419	221,774	266,129	310,484	354,838	399,193	443,548	443,548	194	



Site Information

Sensor Information

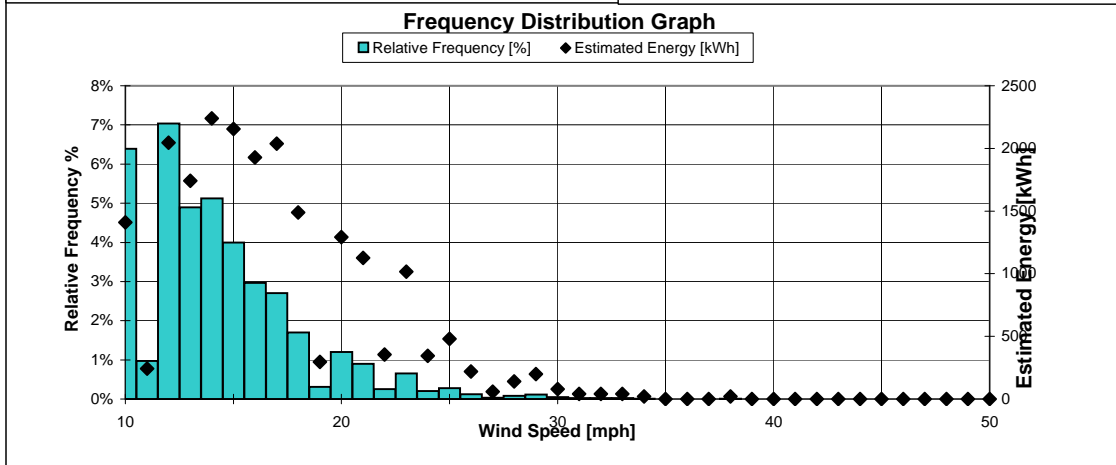
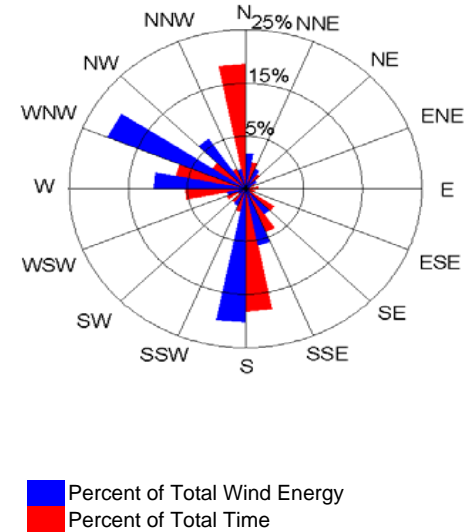
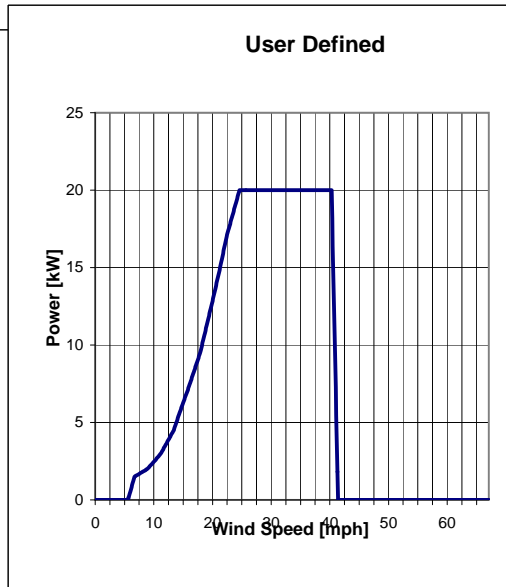
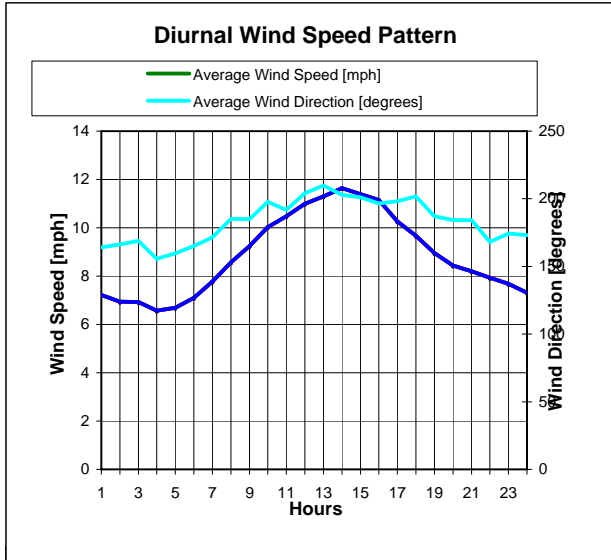
Project: Mental Health Facility  
 Location: Albany Airport  
 Site Elevation: 275 ft  
 Averaging Time: 60 min

Sensor/Tower Height: 33 ft  
 Scaled Height: 100 ft  
 Windvane Offset: 0 degrees

1

Date Range: 1/1/10 0:00-12/31/10 23:00

Wind Rose Graph



Statistics

Days Used in Calculation: 365.00  
 Hours Used in Calculation: 8760.00  
 Gust Speed: 38.03 mph  
 Gust Time: 4/10/2010 12:00  
 Estimated Energy Output: 33875 kWh  
 Calculated Air Density: 1.213 kg/m<sup>3</sup>  
 Average Wind Speed: 8.85 mph  
 Average Wind Direction: 183 degrees  
 Capacity Factor: 0.14  
 Turbine Manufacturer: User Defined  
 Turbine Model: User Defined  
 Turbine Rating: 20 kW  
 Estimated Annual Production: 33875 kWh/Year  
 Annual Maintenance Costs (\$) \$ 500.00  
 Cost per kWh \$ 0.098  
 Annual Savings (\$) \$ 2,819.78

**FIM #34 Mental Health Building Heat Pump Replacement**

Model Parameters/Assumptions	
Cooling Utilization	30%
Heating Utilization	15%
Cooling Hours (OAT >50)	4,109 hours
Heating Hours (OAT <45)	4,213 hours
Adjusted Cooling Hours	1,233 hours
Adjusted Heating Hours	612 hours
Boiler Efficiency	82.0%
Electricity usage Cost	0.087 /kWh
Electricity Demand cost	\$ 8.00 /kW
Gas Cost	\$ 1.156 /therm

Electrical Cost Summary			
	Existing	Proposed	Saving
Electrical Consumption (kWh)	177,225	129,068	48,157
Electrical Consumption Cost (\$)	\$ 15,419	\$ 11,229	\$ 4,190
Electrical Cooling Demand (kW/yr)***	619	475	143
Electrical Cooling Demand Cost (\$)	\$ 4,952	\$ 3,804	\$ 1,148
Total Electrical Savings (\$)		\$5,337	

Natural Gas Cost Summary		
	Existing	Proposed
Gas Use (therms)	6,662	6662
Gas Cost (\$)	7,701	7,701
Total Gas Savings (\$)		\$0

Annual Cost Savings (\$)	
Annual Cost Savings (\$)	5,337
Annual CO2 Savings (Metric Tons)	53

Existing Energy Use																	
Equipment Information				Cooling Performance - Heat Pumps w/ Cooling Tower						Heating Performance - Heat Pumps w/ Boiler							
Unit #	Type	Qty	Cooling Capacity (MBH)	Heating Capacity (MBH)	Total Cooling Capacity (MBH)	*COP	Power Usage (MBH)	Peak Demand (kW)	Energy Usage (kWh)	Total Heating Capacity (MBH)	COP	Power Usage (MBH)	Peak Demand (kW)	Energy Usage (kWh)	Total Heating Output (MBtu)	**Natural Gas Usage (therms)	
1	Heat Pump	30	15.0	17.0	450	3.0	150.0	43.95	54,177	510	4.2	121.4	35.58	21,777	312,162	2,855	
2	Heat Pump	20	30.0	34.0	600	3.0	200.0	58.60	72,236	680	4.2	161.9	47.44	29,036	416,216	3,807	
							Total	102.55	126,412	1,190		283	83.02	50,813	728,379	6,662	

Proposed Energy Use																	
Equipment Information				Cooling Performance						Heating Performance							
Unit #	Type	Qty	Cooling Capacity (MBH)	Heating Capacity (MBH)	Total Cooling Capacity (MBH)	*COP	Power Usage (MBH)	Peak Demand (kW)	Energy Usage (kWh)	Total Heating Capacity (MBH)	cop	Power Usage (MBH)	Peak Demand (kW)	Energy Usage (kWh)	Total Heating Output (MBtu)	Natural Gas Usage (therms)	
1	McQuay Heat Pump	30	21.0	23.6	450	4.5	100.0	29.30	36,118	510	5.0	102.0	29.89	18,293	312,162	2,855	
2	McQuay Heat Pump	20	30.4	36.2	600	4.4	136.4	39.95	49,252	680	4.8	141.7	41.51	25,406	416,216	3,807	
							Total	69.25	85,369	1,190		244	71.39	43,699	728,379	6,662	

\* Includes estimated energy used by cooling tower

\*\* Assumes that 75% of the heat produced comes from the boilers, 25% comes from the heat generated by the heat pump (compressors, motors, friction, etc...)

\*\*\*Assumes peak demand coincidence is 75%.

**FIM #35 Mental Health Pump & Air Handler Motor Replacement & VFD Retrofit**

UTILITY DATA	
Electricity Usage	\$ 0.087 /kWh
Electricity Demand	\$ 8.00 /kW

Cooling Capacity	OA Temp
0%	66
100%	95

Heating Capacity	OA Temp
0%	60
100%	0

Service	EXISTING CONDITIONS									Proposed Conditions						Savings				
	Motor Size (HP)	Part of Redundant Pair? (1 - yes, 0 - no)	Purpose (Cooling - C, Heating - H, Both - B)	Annual Hours	Load Factor	Motor Efficiency	Peak Demand (kW)	Usage (kWh)	Annual Demand (kW)	Load Factor	Motor Efficiency	VFD? (1 - yes, 0 - no)	VFD Efficiency	Annual Demand (kW)	Usage (kWh)	Electricity Demand (kW)	Demand Cost Savings (\$)	Electricity Usage (kWh)	Usage Cost Savings (\$)	Total Cost Savings (\$)
CW Pump 1	7.5	1	b	3,969	75.0%	85.0%	4.9	19,448	58.8	75.0%	91.8%	1	98.5%	22.5	4,073	36.3	\$290.40	15,375	\$1,337.63	\$1,628.03
CW Pump 2	7.5	1	b	3,969	75.0%	85.5%	4.9	19,448	58.8	75.0%	91.8%	1	98.5%	22.5	4,073	36.3	\$290.40	15,375	\$1,337.63	\$1,628.03
Glycol 1	5.0	1	C	1,006	75.0%	85.0%	3.3	3,320	16.5	75.0%	90.4%	1	98.5%	6.0	391	10.5	\$84.00	2,929	\$254.82	\$338.82
Glycol 2	5.0	1	C	1,006	75.0%	85.0%	3.3	3,320	16.5	75.0%	90.4%	1	98.5%	6.0	391	10.5	\$84.00	2,929	\$254.82	\$338.82
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-	-	-	-	-	-	-	16.4	45,536	150.6	-	-	-	-	57.0	8,928	93.6	\$748.80	36,608.0	\$3,184.90	\$3,933.70

**FIM #36 Ulster County Mental Health - Weatherization Improvements**

Notes:

1. The building has heating and cooling.
2. Infiltration CFM is based on an estimated total crack area (to be verified) and calculated using ASHRAE Methods.
3. All identified infiltration points will be sealed as part of this measure.

6.2 ...EXISTING CRACK AREA IN SQ.FT. (AREA from Vendor Data)

50% ...% INFILTRATION VS. EXFILTRATION (%INF)

3 ...LOCAL SHIELDING CLASS (LSC)

2 ...# OF STORIES TO BUILDING (FLOORS)

144.0000 ...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)

0.0299 ...STACK COEFFICIENT, A (A)

0.0086 ...STACK COEFFICIENT, B (B)

5.0 ...AVERAGE WIND VELOCITY (VEL)

70 ...SPACE HEATING SETPOINT (HTSP)

60 ...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)

32.1 ...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)

4,693 ...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)

74 ...SPACE COOLING SETPOINT (CLSP)

73.6 ...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)

2,027 ...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)

80 ...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)

(Heat Leak Occ) AREA \* %INF \* EFL \*((A \* (HTSP - OAHT)) + (B \* VEL^2))^0.5 ===== 517.9 HLOCC (CFM)  
 (Heat Leak Unoc) AREA \* %INF \* EFL \*((A \* (HTSPUNOC - OAHT)) + (B \* VEL^2))^0.5 ===== 456.9 HLUNOCC (CFM)

(Cool Leak Occ) AREA \* EFL \*((A \* (CLSP - OACT)) + (B \* VEL^2))^0.5 ===== 425.0 CLOCC (CFM)

NG (Therm) ...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)

1,156 Fuel Cost

100,000 ...BTUs / UNIT (BTUs/UNIT)

20% ...LOSSES OF HEATING SYSTEM (EOSH)

(Occupied Heating) 1.08 \* HLOCC \* (HTSP - OAHT) \* HRSOCC \* HHPY / 168 / (BTUs/UNIT) / (1-EOSH) ===== 592 NG (Therm)  
 FUELCOST \* FUEL SAVED ===== \$684.5 SAVINGS

(Unoccupied Heating) 1.08 \* HLUNOCC \* (HTSPUNOC - OAHT) \* (HHPY - (HRSOCC \* HHPY / 168)) / (BTUs/UNIT) / (1-EOSH) ===== 423 NG (Therm)  
 FUELCOST \* FUEL SAVED ===== \$489.0 SAVINGS

32,537 ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)

1.10 ...Avg. KW/TON OF CHILLER (KW/TON)

0.00 ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)

\$ 0,1110 ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)

(Cooling Savings) CLOCC \* CBTU / 1000 \* HRSOCC / 50 \* 1,000,000 / 12000 ===== 1,844 TON-HRS  
 TON-HRS \* (KW/TON + KWSUPT) ===== 2,028 kWh  
 ELECCOST \* KWH SAVED ===== \$225.1 SAVINGS

**TOTAL ANNUAL SAVINGS** \$1,173.5 NG (Therm)  
 \$225.1 kWh  
**\$1,398.6 TOTAL**

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within two house heights; typical downtown shielding

**CRACK AREA "A" BASED UPON:**

Total, Vendor Collected Data: 6,1948 Square Ft  
0,5755 Square Meters

KWh 3,413 btus in a KWh OIL 146,000 btus in a gallon of oil

LPG 91,000 btus per Gal NG 100,000 btus per Therm



**Title** Energy Efficient Motor Upgrade  
**Project** Ulster County  
**Site** Pool - 2 motors operated one at a time

**Description** Calculate energy savings with replacement of old, inefficient 3-Phase motors with new, Premium efficient motors.

<b>Given</b>	Electrical Energy Cost	=	\$0.087	\$/kWh	(From Rate Schedule)
	Electrical Demand Cost	=	\$8.00	\$/kW	(From Rate Schedule)
	Existing Motor Size	=	30	hp	(From Site survey)
	Existing Motor Efficiency	=	90%		(From measurement or nameplate)
	Existing Motor Voltage	=	241		(From Site survey or nameplate)
	Existing Load RPM	=	1800		(From measurement or nameplate)
	Existing Hours of use	=	1,964	hrs	(From Site survey)
	Existing Motor kW	=	24	kW	

**Select one method of loading:**

$$\left( \frac{23.6 \text{ kW}}{0.95} \right) \times 0.84 \text{ pf} = 33,443 \text{ kW}$$

	New Motor Size	=	30	hp	(From Site survey)
	New Motor Efficiency	=	94%		(From measurement or nameplate)
	New Motor Voltage	=	241		(From Site survey or nameplate)
	New Load RPM	=	1800		(From measurement or nameplate)
	New Hours of use	=	1,920		(From Site survey)
	New Motor kW	=	24	kW	

**Select one method of loading:**

$$\left( \frac{17,715 \text{ kW}}{0.95} \right) \times 0.84 \text{ pf} = 17,715 \text{ kW}$$

<b>Assumption</b>	Existing Motor Load Factor	=	95%		(Estimated)
	New Motor Load Factor	=	95%		(Estimated)
	Power Factor	=	84%		(Estimated)
	Demand Utilization Factor	=	100%		(Estimated)
	Peak Load Months	=	4	months	(Estimated)

**Formula**

Motor (kW) = (Motor Horsepower x 0.746 (kW/HP) x Load Factor) = or = (Motor Amperage x Volts x 1.732) / (Power Factor)

Speed Ratio Correction Factor = ((New RPM)/(Existing RPM)) ^ 3

Existing Energy Use (kWh) = (Existing kW / Existing Efficiency) x Hours of Use

Existing Demand Use (kW) = (Existing kW / Existing Efficiency) x Peak Load Months x Utilization factor

New Energy Use (kWh) = (New kW / New Efficiency) x Hours of Use x Speed Ratio Correction Factor

New Demand Use (kW) = (New kW / New Efficiency) x Peak Load Months x Utilization factor x Speed Ratio Correction Factor

Total Savings (kWh, kW) = (kWh existing - kWh new) x \$/kWh + (kW existing - kW new) x \$/kW

<b>Calculation</b>	Speed Ratio Correction Factor = ((New RPM) / (Existing RPM)) ^ 3	=	1.00
	Speed Ratio Correction Factor = ((1800) / (1800)) ^ 3	=	1.00
	Existing Energy = Existing kW / Exist. Eff x oper hrs	=	51,788 kWh
	Existing Energy = 23.60 / 0.90 x 1964	=	51,788 kWh
	Existing Demand = Existing kW / Exist. Eff x Pk Load Mo Util factor	=	105.5 kW
	Existing Demand = 23.60 / 0.90 x 4 x 100%	=	105.5 kW
	New Energy = New kW / New Eff x oper hrs Speed Factor	=	48,410 kWh
	New Energy = 23.60 / 0.94 x 1920 x 1.00	=	48,410 kWh
	New Demand = New kW / New Eff x Pk Load Mo Util factor Speed Factor	=	100.9 kW
	New Demand = 23.60 / 0.94 x 4 x 100% x 1.00	=	100.9 kW
	Total Savings = (( Existing Energy - New Energy ) x \$/kWh + ( Ex. Demand - New Demand ) x \$/kW )	=	\$331
	Total Savings = (( 51,788 - 48,410 ) x \$0.09 ) + (( 105.5 - 100.9 ) x \$8.00 )	=	\$331

<b>Result</b>	Annual Existing Costs (kWh)	51,788 kWh/yr	\$4,506
	Annual Existing Costs (kW)	105.5 kW/yr	\$844
	Annual Existing Costs \$		\$5,349
	Annual New Costs (kWh)	48,410 kWh/yr	\$4,212
	Annual New Costs (kW)	100.9 kW/yr	\$807
	Annual New Costs \$		\$5,019
100%	Annual Savings (kWh)	3378 kWh/yr	\$294
	Annual Savings (kW)	4.6 kW/yr	\$37
	Total Savings \$		\$331 6% of existing



**FIM #41 Probation Department - Weatherization Improvements**

Notes:

1. The building has heating and cooling.
2. Approx. 3,000 SF is unoccupied; directly connected to occupied space.
3. Multiple additions; minimal compartmentalization. Significant volume of space above occupied space.

- 8.8 ...EXISTING CRACK AREA IN SQ.FT. (AREA from Vendor Data)
- 50% ...% INFILTRATION VS. EXFILTRATION (%INF)
- 5 ...LOCAL SHIELDING CLASSES (LSC)
- 2 ...# OF STORIES TO BUILDING (FLOORS)
- 144.0000 ...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)
- 0.0299 ...STACK COEFFICIENT, A (A)
- 0.0016 ...STACK COEFFICIENT, B (B)
- 5.0 ...AVERAGE WIND VELOCITY (VEL)
- 70 ...SPACE HEATING SETPOINT (HTSP)
- 55 ...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)
- 32.1 ...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)
- 4,693 ...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)
- 72 ...SPACE COOLING SETPOINT (CLSP)
- 73.6 ...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)
- 2,027 ...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)
- 50 ...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)

(Heat Leak Occ)	AREA * %INF * EFL * ((A * (HTSP - OAHT)) + (B * VEL^2))^0.5	686.3	HLOCC	(CFM)
(Heat Leak Unocc)	AREA * %INF * EFL * ((A * (HTSPUNOC - OAHT)) + (B * VEL^2))^0.5	539.4	HUNOCC	(CFM)

(Cool Leak Occ)	AREA * EFL * ((A * (CLSP - OACT)) + (B * VEL^2))^0.5	375.6	CLOCC	(CFM)
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- NG (Therm) ...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, KWh)
- \$ 1,1640 Fuel Cost
- 100,000 ...BTUs / UNIT (BTUs/UNIT)
- 20% ...LOSSES OF HEATING SYSTEM (EOSH)

(Occupied Heating)	1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / 168 / (BTUs/UNIT) / (1-EOSH)	490	NG (Therm)
	FUELCOST * FUEL SAVED	\$570.9	SAVINGS
(Unoccupied Heating)	1.08 * HUNOCC * (HTSPUNOC - OAHT) * (HHPY - (HRSOCC * HHPY / 168)) / (BTUs/UNIT) / (1-EOSH)	550	NG (Therm)
	FUELCOST * FUEL SAVED	\$639.9	SAVINGS

- 32,537 ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)
- 1.10 ...Avg. KW/TON OF CHILLER (KW/TON)
- 1.00 ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)
- \$ 0.1200 ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)

(Cooling Savings)	CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000	1,018	TON-HRS
	TON-HRS * (KW/TON + KWSUPT)	2,139	kWh
	ELECCOST * KWH SAVED	\$256.6	SAVINGS

<b>TOTAL ANNUAL SAVINGS</b>	\$1,210.8	NG (Therm)
	\$256.6	kWh
	<b>\$1,467.4</b>	<b>TOTAL</b>

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within two house heights; typical downtown shielding

**CRACK AREA "A" BASED UPON:**

<b>Total, Vendor Collected Data:</b>	8.8008	Square Ft
	0.8176	Square Meters

KWh **3,413** btus in a KWh      OIL **146,000** btus in a gallon of oil

LPG **91,000** btus per Gal      NG **100,000** btus per Therm

Inputs		
Room Temperature Setpoint	72	°F
Cooling Above	65	°F (OAT)
Heating Efficiency	81.0%	
Cost per Therm	\$ 1.117	
Tons of CO2 per Therm	0.0063	
Hours off per year	5640	

OA supplied to space	3000	CFM
Cooling Above	72	°F (OAT)
Cooling COP	3.5	
Cost per kWh	\$ 0.130	
Tons of CO2 per kWh	0.000252	
Total fan Horse Power	9.0	HP

Savings		Savings							Current			Proposed			Savings		
	Current	Heat Exchanger Effect	Proposed	Heat Exchanger Effect	Savings	Savings	Savings	Savings		Current	Proposed	Savings	Savings	Savings			
	btu/yr	btu/yr	btu/yr	btu/yr	kWh/Therm per yr	\$/yr	Tn CO2	Fan Motor	kWh/yr	kWh/yr	kWh/yr	kWh/yr	\$/yr	Tn CO2			
Cooling	5,050,938	2,525,469	1,126,787	270,909	2,254,560	189	\$ 24.54	0.05	13986	271	13715	\$ 1,782.89	3.5				
Heating	82,744,954	41,372,477	18,491,897	4,438,055	36,934,422	456	\$ 509.33	2.4			Total	\$ 2,316.76	5.9				
							Total	2.5									

Current			
% Occupied	0%	>0%	
# hours/year at Occupancy	5640	3120	hours
Outdoor air flow	0	3000	CFM
Fan Power Used	0	13986	kWh

Proposed													
% Occupied	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%		
# hours/year at Occupancy	5640	858	1202	629	332	99	0	0	0	0	0	hrs/yr	
Outdoor air flow	0	300	600	900	1200	1500	1800	2100	2400	2700	3000	CFM	
Fan Power Used	0	4	43	75	94	55	0	0	0	0	0	kWh	

Weather		
Mid-pt DB	Total Hrs	
°F	Hr	
91	18	
89	24	
87	30	
85	37	
83	68	
81	70	
79	94	
77	44	
75	104	
73	128	
71	114	
69	109	
67	106	
65	82	
63	71	
61	75	
59	58	
57	98	
55	112	
53	62	
51	59	
49	62	
47	65	
45	75	
43	94	
41	64	
39	96	
37	141	
35	98	
33	99	
31	94	
29	105	
27	107	
25	68	
23	48	
21	73	
19	84	
17	51	
15	41	
13	26	
11	12	
9	10	
7	10	
5	5	
3	10	
1	11	
-1	6	
-3	2	

Cooling Status	Heating Status	Heating/Cooling Load	Energy
On/Off	On/Off	btu/h	btu
1	0	61,560	394,659
1	0	55,080	470,821
1	0	48,600	519,288
1	0	42,120	555,061
1	0	35,640	863,172
1	0	29,160	727,003
1	0	22,680	759,314
1	0	16,200	253,874
1	0	9,720	360,039
1	0	3,240	147,708
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	1	29,295	740,802
0	1	35,805	956,435
0	1	42,315	874,124
0	1	48,825	1,704,193
0	1	55,335	2,207,336
0	1	61,845	1,365,673
0	1	68,355	1,436,391
0	1	74,865	1,653,183
0	1	81,375	1,883,887
0	1	87,885	2,347,613
0	1	94,395	3,160,293
0	1	100,905	2,300,081
0	1	107,415	3,672,710
0	1	113,925	5,721,220
0	1	120,435	4,203,676
0	1	126,945	4,476,115
0	1	133,455	4,468,000
0	1	139,965	5,234,308
0	1	146,475	5,582,102
0	1	152,985	3,705,171
0	1	159,495	2,726,709
0	1	166,005	4,316,130
0	1	172,515	5,161,271
0	1	179,025	3,251,879
0	1	185,535	2,709,319
0	1	192,045	1,778,389
0	1	198,555	848,619
0	1	205,065	730,368
0	1	211,575	753,555
0	1	218,085	388,371
0	1	224,595	799,927
0	1	231,105	905,425
0	1	237,615	507,780
0	1	244,125	173,897
0	1		
0	1		
Cooling Total		5,050,938	82,744,954
Heating Total			

Cooling Status	Heating Status	Heating/Cooling Load								Energy			
On/Off	On/Off	btu/h								btu			
1	0		6,156	12,312	18,468	24,624	30,780	36,936	43,092	49,248	55,404	61,560	88,199
1	0		5,508	11,016	16,524	22,032	27,540	33,048	38,556	44,064	49,572	55,080	105,219
1	0		4,860	9,720	14,580	19,440	24,300	29,160	34,020	38,880	43,740	48,600	116,051
1	0		4,212	8,424	12,636	16,848	21,060	25,272	29,484	33,696	37,908	42,120	124,045
1	0		3,564	7,128	10,692	14,256	17,820	21,384	24,948	28,512	32,076	35,640	192,902
1	0		2,916	5,832	8,748	11,664	14,580	17,496	20,412	23,328	26,244	29,160	162,471
1	0		2,268	4,536	6,804	9,072	11,340	13,608	15,876	18,144	20,412	22,680	169,692
1	0		1,620	3,240	4,860	6,480	8,100	9,720	11,340	12,960	14,580	16,200	56,736
1	0		972	1,944	2,916	3,888	4,860	5,832	6,804	7,776	8,748	9,720	80,462
1	0		324	648	972	1,296	1,620	1,944	2,268	2,592	2,916	3,240	33,010
0	0		-	-	-	-	-	-	-	-	-	-	-
0	0		-	-	-	-	-	-	-	-	-	-	-
0	0		-	-	-	-	-	-	-	-	-	-	-
0	0		-	-	-	-	-	-	-	-	-	-	-
0	0		-	-	-	-	-	-	-	-	-	-	-
0	1		2,930	5,859	8,789	11,718	14,648	17,577	20,507	23,436	26,366	29,295	165,555
0	1		3,581	7,161	10,742	14,322	17,903	21,484	25,064	28,644	32,225	35,805	213,745
0	1		4,232	8,463	12,695	16,926	21,158	25,389	29,621	33,852	38,084	42,315	195,350
0	1		4,883	9,765	14,648	19,530	24,413	29,295	34,178	39,060	43,943	48,825	380,854
0	1		5,534	11,067	16,601	22,134	27,668	33,201	38,735	44,268	49,802	55,335	493,297
0	1		6,185	12,369	18,554	24,738	30,923	37,107	43,292	49,476	55,661	61,845	305,202
0	1		6,836	13,671	20,507	27,342	34,178	41,013	47,849	54,684	61,520	68,355	321,006
0	1		7,487	14,973	22,460	29,946	37,433	44,919	52,406	59,892	67,379	74,865	369,454
0	1		8,138	16,275	24,413	32,550	40,688	48,825	56,963	65,100	73,238	81,375	421,012
0	1		8,789	17,577	26,366	35,154	43,943	52,731	61,520	70,308	79,097	87,885	524,646
0	1		9,440	18,879	28,319	37,758	47,198	56,637	66,077	75,516	84,956	94,395	706,264
0	1		10,091	20,181	30,272	40,362	50,453	60,543	70,634	80,724	90,815	100,905	514,024
0	1		10,742	21,483	32,225	42,966	53,708	64,449	75,191	85,932	96,674	107,415	820,780
0	1		11,393	22,785	34,178	45,570	56,963	68,355	79,748	91,140	102,533	113,925	1,278,582
0	1		12,044	24,087	36,131	48,174	60,218	72,261	84,305	96,348	108,392	120,435	939,440
0	1		12,695	25,389	38,084	50,778	63,473	76,167	88,862	101,556	114,251	126,945	1,000,325
0	1		13,346	26,691	40,037	53,382	66,728	80,073	93,419	106,764	120,110	133,455	998,512
0	1		13,997	27,993	41,990	55,986	69,983	83,979	97,976	111,972	125,969	139,965	1,169,767
0	1		14,648	29,295	43,943	58,590	73,238	87,885	102,533	117,180	131,828	146,475	1,247,492
0	1		15,299	30,597	45,896	61,194	76,493	91,791	107,090	122,388	137,687	152,985	828,034
0	1		15,950	31,899	47,849	63,798	79,748	95,697	111,647	127,596	143,546	159,495	609,367
0	1		16,601	33,201	49,802	66,402	83,003	99,603	116,204	132,804	149,405	166,005	964,572
0	1		17,252	34,503	51,755	69,006	86,258	103,509	120,761	138,012	155,264	172,515	1,153,444
0	1		17,903	35,805	53,708	71,610	89,513	107,415	125,318	143,220	161,123	179,025	726,732
0	1		18,554	37,107	55,661	74,214	92,768	111,321	129,875	148,428	166,982	185,535	605,480
0	1		19,205	38,409	57,614	76,818	96,023	115,227	134,432	153,636	172,841	192,045	397,436
0	1		19,856	39,711	59,567	79,422	99,276	119,133	138,989	158,844	178,700	198,555	189,650
0	1		20,507	41,013	61,520	82,026	102,533	123,039	143,546	164,052	184,559	205,065	163,223
0	1		21,158	42,315	63,473	84,630	105,788	126,945	148,103	169,260	190,418	211,575	168,405
0	1		21,809	43,617	65,426	87,234	109,043	130,851	152,660	174,468	196,277	218,085	86,793
0	1		22,460	44,919	67,379	89,838	112,298	134,757	157,217	179,676	202,136	224,595	178,768
0	1		23,111	46,221	69,332	92,442	115,553	138,663	161,774	184,884	207,995	231,105	202,345
0	1		23,762	47,523	71,285	95,046	118,808	142,569	166,331	190,092	213,854	237,615	113,479
0	1		24,413	48,825									

**FIM #43 Public Works - AHU Replacement**

UTILITY DATA		
Electricity Usage Cost	\$	0.096 \$/kWh
Electricity Demand Cost	\$	8.00 \$/kW
Natural Gas Cost	\$	1.117 \$/therm

ENERGY SAVINGS				
Commodity	Existing	Proposed	Savings	Savings (\$)
Electricity Usage (kWh)	19,230	13,888	5,342	\$ 513
Electricity Demand (kW)	126	91	35	\$ 280
Natural Gas Usage (therm)	4,033.0	3,841	192	\$ 214
				\$ 1,007

OPERATING PARAMETERS	
Cooling Hours	4109
Heating Hours	4215
Cooling Utilization	26%
Heating Utilization	17%
Adjusted Heating Hours	717
Current Combustion Efficiency	80%
Proposed Combustion Efficiency	84%

EXISTING CONDITIONS										
EQUIPMENT		COOLING					HEATING			
Manufacturer	QTY	Cooling Output (Btu/h)	Coefficient of Performance	Total Cooling Output (Btu/h)	Power Usage (Btu/h)	Demand (kW)	Power Usage (kWh)	Heating Output (Btu/h)	Heating output (MMbtu)	Therms Used
McQuay	1	180,000	3	180,000	60,000	18	19,230	450,000	322.65	4,033
						18	19,230.0			4,033.0
						\$ 144	\$ 1,846			\$ 4,505

PROPOSED CONDITIONS										
EQUIPMENT		COOLING					HEATING			
Manufacturer	QTY	Cooling Output (Btu/h)	Coefficient of Performance	Total Cooling Output (Btu/h)	Power Usage (Btu/h)	Demand (kW)	Power Usage (kWh)	Heating Output (Btu/h)	Heating output (MMbtu)	Therms Used
McQuay	1	180,000	4	180,000	45,000	13	13,888	450,000	322.65	3,841
						13	13,888			3,841
						\$ 104	\$ 1,333			\$ 4,290

Notes:

1 - Total annual demand assumes operation 7 months per year

**FIM #44 Public Works Tower Replacement**

**Inputs**

Electricity Usage (\$/kWh)	\$ 0.096	Current Motor Size (HP)	5
Electricity Demand (\$/kW)	\$ 8.00	Current Motor Efficiency	89.0%
		Proposed Motor Size (HP)	5
		Proposed Motor Efficiency	92.8%
		Proposed VFD Efficiency	98.5%
		Load Factor	75%
Cooling Capacity	OA Temp		
0%	70		
100%	95		

**Savings**

Electricity Demand (kW)	18.3
Demand Savings (\$)	146.40
Electricity Usage (kWh)	4,066
Usage Savings (\$)	390.34
Total Savings (\$)	536.74

EXISTING CONDITIONS							Notes
Motor Size (HP)	Annual Hours	Load Factor	Efficiency	Peak Demand	Annual Usage (kWh)	Annual Demand (kW)	
5	1,398	75%	89%	3.1	4,334	24.8	1, 2

PROPOSED CONDITIONS									Notes
Outdoor Air Dry Bulb Temp	Annual Hours	Air Flow Required	Power Required	Motor Efficiency	VFD Efficiency	Peak Demand (kW)	Annual Usage (kWh)		
71	278	4%	0.01%	92.8%	98.5%	0.0	0	1,2	
73	310	12%	0.17%	92.8%	98.5%	0.0	0	1,2	
75	186	20%	0.80%	92.8%	98.5%	0.0	0	1,2	
77	87	28%	2.20%	92.8%	98.5%	0.1	9	1,2	
79	151	36%	4.67%	92.8%	98.5%	0.1	15	1,2	
81	118	44%	8.52%	92.8%	98.5%	0.3	35	1,2	
83	109	52%	14.06%	92.8%	98.5%	0.4	44	1,2	
85	59	60%	21.60%	92.8%	98.5%	0.7	41	1,2	
87	48	68%	31.44%	92.8%	98.5%	1.0	48	1,2	
89	34	76%	43.90%	92.8%	98.5%	1.3	44	1,2	
91	18	84%	59.27%	92.8%	98.5%	1.8	32	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
-	-	-	-	-	-	-	-	1,2	
TOTALS:								268	

**Notes:**  
 1 - Annual Hours are based off of minimum OA Temp for operation  
 2 - Annual hours at temperatures shown are based on Albany NY bin data

**FIM #45 Public Works Motor Replacement & VFD Retrofit**

UTILITY DATA	
Electricity Usage	\$ 0.096 /kWh
Electricity Demand	\$ 8.00 /kW

Cooling Capacity	OA Temp
0%	66
100%	95

Heating Capacity	OA Temp
0%	60
100%	0

Service	EXISTING CONDITIONS									Proposed Conditions						Savings				
	Motor Size (HP)	Part of Redundant Pair? (1 - yes, 0 - no)	Purpose (Cooling - C, Heating - H, Both - B)	Annual Hours	Load Factor	Motor Efficiency	Peak Demand (kW)	Usage (kWh)	Annual Demand (kW)	Load Factor	Motor Efficiency	VFD? (1 - yes, 0 - no)	VFD Efficiency	Annual Demand (kW)	Usage (kWh)	Electricity Demand (kW)	Demand Cost Savings (\$)	Electricity Usage (kWh)	Usage Cost Savings (\$)	Total Cost Savings (\$)
1	1.5	1	B	3,969	75.0%	78.5%	1.1	4,366	13.2	75.0%	86.5%	0	98.5%	11.6	3,850	1.6	\$12.80	516	\$49.54	\$62.34
2	2.0	1	B	3,969	75.0%	81.0%	1.4	5,557	16.8	75.0%	87.0%	0	98.5%	15.4	5,104	1.4	\$11.20	453	\$43.49	\$54.69
3	1.5	0	H	5,927	75.0%	78.5%	1.1	6,520	7.7	75.0%	85.4%	0	98.5%	6.9	5,824	0.8	\$6.40	696	\$66.82	\$73.22
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
							3.6	16,443	37.7					33.9	14,778	3.8	\$30.40	1,665.0	\$159.85	\$190.25

**FIM #46 Public Works - Weatherization Improvements**

Notes:

1. The building has heating and cooling.
2. Infiltration CFM is based on an estimated total crack area (to be verified) and calculated using ASHRAE Methods.
3. All identified infiltration points will be sealed as part of this measure.

5.7	...EXISTING CRACK AREA IN SQ.FT. (from ZeroDraft Audit)		
50%	...% INFILTRATION VS. EXFILTRATION (%INF)		
4	...LOCAL SHIELDING CLASS (LSC)		
2	...# OF STORIES TO BUILDING (FLOORS)		
144.0000	...EFFECTIVE LEAKAGE AREA - IN <sup>2</sup> /FT <sup>2</sup> (EFL)		
0.0299	...STACK COEFFICIENT, A (A)		
0.0051	...STACK COEFFICIENT, B (B)		
5.0	...AVERAGE WIND VELOCITY (VEL)		
70	...SPACE HEATING SETPOINT (HTSP)		
55	...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)		
32.1	...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)		
4.693	...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)		
74	...SPACE COOLING SETPOINT (CLSP)		
73.6	...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)		
2.027	...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)		
45	...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)		
(Heat Leak Occ)	AREA * %INF * EFL * ((A * (HTSP - OAHT)) + (B * VEL <sup>2</sup> )) <sup>0.5</sup> =====	461.3 HLOCC	(CFM)
(Heat Leak Unocc)	AREA * %INF * EFL * ((A * (HTSPUNOC - OAHT)) + (B * VEL <sup>2</sup> )) <sup>0.5</sup> =====	370.3 HLUNOCC	(CFM)
(Cool Leak Occ)	AREA * EFL * ((A * (CLSP - OACT)) + (B * VEL <sup>2</sup> )) <sup>0.5</sup> =====	306.9 CLOCC	(CFM)
NG (Therm)	...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)		
1.117	Fuel Cost		
100,000	...BTUs / UNIT (BTUs/UNIT)		
20%	...LOSSES OF HEATING SYSTEM (EOSH)		
(Occupied Heating)	1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / 168 / (BTUs/UNIT) / (1-EOSH) ===== FUELCOST * FUEL SAVED =====	297 NG (Therm)	
		\$331.4 SAVINGS	
(Unoccupied Heating)	1.08 * HLUNOCC * (HTSPUNOC - OAHT) * (HHPY - HRSOCC * HHPY / 168) / (BTUs/UNIT) / (1-EOSH) ===== FUELCOST * FUEL SAVED =====	393 NG (Therm)	
		\$439.3 SAVINGS	
32.537	...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)		
1.10	...Avg. KW/TON OF CHILLER (KW/TON)		
0.00	...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)		
\$ 0.1300	...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)		
(Cooling Savings)	CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000 ===== TON-HRS * (KW/TON + KWSUPT) ===== ELECCOST * KWH SAVED =====	749 TON-HRS 824 kWh	
		\$107.1 SAVINGS	
<b>TOTAL ANNUAL SAVINGS</b>		\$770.7 NG (Therm) \$107.1 kWh	
		<b>\$877.8 TOTAL</b>	

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within two house heights; typical downtown shielding.

**CRACK AREA "A" BASED UPON:**

<b>Total, Vendor Collected Data:</b>	5.7063 Square Ft
	0.5301 Square Meters

KWh **3,413** btus in a KWh      OIL **146,000** btus in a gallon of oil

LPG **91,000** btus per Gal      NG **100,000** btus per Therm



**TITLE: Electric to Gas Heating Plant Conversion**

**PROJECT:** Ulster County

**SITE:** Old Jail Storage - Electric to LPG Unit Heaters

**DESCRIPTION:** When fuel costs are less expensive than electric, converting from electric to fuel heating results in reduce cost.

<b>GIVEN:</b>	Electrical Energy Cost	=	\$0.096	\$/kWh
	Electrical Demand Cost	=	\$8.00	\$/Kw
	Fuel Energy Cost	=	\$1.50	\$/gal (LP Gas)
	Heating Plant Capacity	=	30	Kw
	Operation (Hours/Week)	=	140.00	Hours/Week
	Operation (Heating Weeks/Year)	=	22.00	Weeks/Year
	Operation (Hours/Year)	=	3080	Hours/Year
	Annual Heating Plant Energy Cost	=	\$7,485	

<b>ASSUMPTION:</b>	Efficiency (Fuel)	=	80%
	Efficiency (Electric)	=	95%
	Operating Months per Year	=	5
	Part Load Factor	=	70%
	Utilization Factor (Demand)	=	70%

**FORMULA:**  
 Energy Use (Kwh) = (Capacity(Kw)) x (Hours of Operation/Year) x (Part Load Factor) / (Electric Efficiency)  
 Fuel Use (Unit) = (Electrical Use(Kwh)) x (3413 btu/kw) x (Electrical Efficiency) / (Fuel Efficiency) / (Heating Value of Fuel)  
 Energy Demand (Kw) = (Capacity (Kw)) x (Months/Year) x (Demand Utilization Factor)  
 Electrical Energy Cost (\$) = (Energy Cost (Kwh) x (\$/Kwh)) + (Demand (Kw) x (\$/Kw))  
 Fuel Energy Cost (\$) = ((Fuel Use(Unit) x Fuel Cost(\$/Unit))

**CALCULATION:**

Electric Usage = (	Capacity	Hours/Year	Part Load Factor	Efficiency (Electric)	) =	<b>68,084 Kwh</b>
	30	3080	70%	95%		

Fuel Usage = (	Electrical Use	Conversion	Efficiency (Electric)	Efficiency (Fuel)	Conversion	) =	<b>3,016 gallons</b>
	68,084	3,413	95%	80%	91,500		

Electric Demand = (	Capacity	Months/Year	Utilization Factor	) =	<b>105 Kw</b>
	30	5	70%		

Existing Energy Cost = (	Kwh	\$/kwh	Kw	\$/Kw	) =	<b>\$ 7,376</b>
	68,084	\$0.096	105	\$8.00		

Proposed Energy Cost = (	gallons	\$/fuel unit	) =	<b>\$ 4,524</b>
	3,016	\$1.500		

<b>Result</b>	<b>Existing Annual Use=</b>	<b>68,084 Kwh</b>	<b>105 Kw</b>	<b>\$ 7,376</b>	<b>99% of utility bill</b>
	<b>Proposed Annual Use=</b>	<b>3,016 gallons</b>		<b>\$ 4,524</b>	

<b>100%</b>	<b>Annual Savings=</b>	<b>68,084 Kwh</b>	<b>105 Kw</b>	<b>\$ 2,852</b>	
	<b>Savings as Percent of Existing</b>	<b>=</b>	<b>(3,016) gallons</b>	<b>39%</b>	<b>38% of utility bill</b>

**FIM #49 Storage Garage at Old Jail - Weatherization Improvements**

**Notes:**

1. Garages kept at 65 degrees - no cooling
2. Infiltration CFM is based on an estimated total crack area and calculated using ASHRAE Methods.
3. All identified infiltration points will be sealed as part of this measure.

1.1	...EXISTING CRACK AREA IN SQ.FT. (AREA from Vendor Data)		
50%	...% INFILTRATION VS. EXFILTRATION (%INF)		
5	...LOCAL SHIELDING CLASS (LSC)		
1	...# OF STORIES TO BUILDING (FLOORS)		
144.0000	...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)		
0.0150	...STACK COEFFICIENT, A (A)		
0.0012	...STACK COEFFICIENT, B (B)		
5.0	...AVERAGE WIND VELOCITY (VEL)		
65	...SPACE HEATING SETPOINT (HTSP)		
65	...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)		
32.1	...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)		
4.693	...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)		
76	...SPACE COOLING SETPOINT (CLSP)		
73.6	...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)		
2.027	...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)		
10	...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)		
(Heat Leak Occ)	AREA * %INF * EFL * ((A * (HTSP - OAHT)) + (B * VEL^2))^.5	56.4	HLOCC (CFM)
(Heat Leak Unocc)	AREA * %INF * EFL * ((A * (HTSPUNOC - OAHT)) + (B * VEL^2))^.5	56.4	HLUNOCC (CFM)
(Cool Leak Occ)	AREA * EFL * ((A * (CLSP - OACT)) + (B * VEL^2))^.5	40.1	CLOCC (CFM)
<b>LPG (gal)</b>	...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, KWh)		KWh
<b>1.5</b>	<b>Fuel Cost</b>		<b>3,413</b> btus in a KWh
<b>91,000</b>	...BTUs / UNIT (BTUs/UNIT)		<b>146,000</b> btus in a gallon of oil
<b>20%</b>	...LOSSES OF HEATING SYSTEM (EOSH)		
(Occupied Heating)	1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / 168 / (BTUs/UNIT) / (1-EOSH)		LPG <b>91,000</b> btus per Gal
	FUELCOST * FUEL SAVED	8	NG <b>100,000</b> btus per Therm
		\$11.5	
(Unoccupied Heating)	1.08 * HLUNOCC * (HTSPUNOC - OAHT) * (HHPY - (HRSOCC * HHPY / 168)) / (BTUs/UNIT) / (1-EOSH)		
	FUELCOST * FUEL SAVED	122	
		\$182.4	
<b>32.537</b>	...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)		
<b>0.00</b>	...Avg. KW/TON OF CHILLER (KW/TON)		
<b>0.00</b>	...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)		
<b>\$ 0.1560</b>	...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)		
(Cooling Savings)	CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000	22	TON-HRS
	TON-HRS * (KW/TON + KWSUPT)	0	kWh
	ELECCOST * KWH SAVED	\$0.0	SAVINGS
	<b>TOTAL ANNUAL SAVINGS</b>	\$193.9	LPG (gal)
		\$0.0	kWh
		\$193.9	TOTAL

**STACK COEFFICIENT**

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1	0.015
2	0.0299
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5	Very heavy shielding; large obstructions surrounding perimeter within tow house heights; typical downtown shielding

**CRACK AREA "A" BASED UPON:**

<b>Total, Vendor Collected Data:</b>	<b>1.0833</b> Square Ft
	<b>0.1006</b> Square Meters

## FIM #50 Trudy Resnick Farber Bldg. - New Oil Fired Boilers

### Inputs

Cost/Gallon Fuel Oil	\$2.21
Cost/Therm	\$1.58
Current Efficiency	70.0%
% used for DHW	0%
BTU/Gallon of Fuel Oil	140,000
Current Overall Fuel Oil Usage (Gal./Year)	8,586
New Boiler Efficiency	83%

### Savings

Total Fuel Saved (gallons)	1,345
Estimated Savings (\$)	2,972.00

### Calculations

Current Cost for Heating	Current BTU/Year Used for Heating	Current BTU/Year Required for Heating	New BTUs Used for Heating	New Cost for Heating
\$18,975.06	1,202,040,000	841,428,000	1,013,768,675	\$16,003.06

Inputs

Room Temperature Setpoint	72	°F
Heating Below	60	°F (OAT)
Heating Efficiency	83%	
Cost per Gallon F	\$ 2.21	
Tons of CO2 per Therm	0.0053	
Hours off per year	5640	

OA supplied to space	1760	CFM
Cooling Above	72	°F (OAT)
Cooling COP	3.2	
Cost per kWh	\$ 0.121	
Tons of CO2 per kWh	0.000252	

Savings

	Current	Proposed	Savings	Savings	Savings
	btu/yr	btu/yr	btu/yr	kWh/Gal per yr	Tn CO2
Cooling	3,190,011	869,019	2,320,992	213	\$ 25.72
Heating	46,116,317	12,562,958	33,553,359	289	\$ 638.15
				Total	\$ 663.87

Mid-pt DB	Total Hrs
°F	Hr
91	18
89	27
87	31
85	40
83	71
81	74
79	105
77	50
75	118
73	140
71	117
69	114
67	98
65	81
63	68
61	73
59	55
57	89
55	109
53	61
51	56
49	61
47	69
45	74
43	95
41	66
39	92
37	135
35	91
33	101
31	94
29	111
27	100
25	73
23	41
21	77
19	82
17	46
15	43
13	20
11	12
9	10
7	8
5	3
3	3
1	7
-1	5
-3	1

Current			
% Occupied	0%	>0%	
# hours/year at Occupancy	5640	3120	hours
Outdoor air flow	0	1760	CFM

Cooling Status	Heating Status	Heating/Cooling Load	Energy
On/Off	On/Off	btu/h	btu
1	0	0	36,115
1	0	0	32,314
1	0	0	28,512
1	0	0	24,710
1	0	0	20,909
1	0	0	17,107
1	0	0	13,306
1	0	0	9,504
1	0	0	5,702
1	0	0	1,901
0	0	0	-
0	0	0	-
0	0	0	-
0	0	0	-
0	0	0	-
0	0	0	-
0	0	0	-
0	0	0	-
0	0	0	-
0	1	0	24,825
0	1	0	28,644
0	1	0	32,463
0	1	0	36,282
0	1	0	40,102
0	1	0	43,921
0	1	0	47,740
0	1	0	51,559
0	1	0	55,378
0	1	0	59,198
0	1	0	63,017
0	1	0	66,836
0	1	0	70,655
0	1	0	74,474
0	1	0	78,294
0	1	0	82,113
0	1	0	85,932
0	1	0	89,751
0	1	0	93,570
0	1	0	97,390
0	1	0	101,209
0	1	0	105,028
0	1	0	108,847
0	1	0	112,666
0	1	0	116,486
0	1	0	120,305
0	1	0	124,124
0	1	0	127,943
0	1	0	131,762
0	1	0	135,582
0	1	0	139,401
0	1	0	143,220
			51,010
			3,190,011
			46,116,317

Proposed												
% Occupied	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
# hours/year at Occupancy	5799	408	847	951	421	235	58	9	9	17	3	hrs/yr
Outdoor air flow	0	176	352	528	704	880	1056	1232	1408	1584	1760	CFM

Cooling Status	Heating Status	Heating/Cooling Load	Energy
On/Off	On/Off	btu/h	btu
1	0	-	3,612
1	0	-	3,231
1	0	-	2,851
1	0	-	2,471
1	0	-	2,091
1	0	-	1,711
1	0	-	1,331
1	0	-	950
1	0	-	570
1	0	-	190
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	1	-	2,482
0	1	-	2,864
0	1	-	3,246
0	1	-	3,628
0	1	-	4,010
0	1	-	4,392
0	1	-	4,774
0	1	-	5,156
0	1	-	5,538
0	1	-	5,920
0	1	-	6,302
0	1	-	6,684
0	1	-	7,066
0	1	-	7,447
0	1	-	7,829
0	1	-	8,211
0	1	-	8,593
0	1	-	8,975
0	1	-	9,357
0	1	-	9,739
0	1	-	10,121
0	1	-	10,503
0	1	-	10,885
0	1	-	11,267
0	1	-	11,649
0	1	-	12,030
0	1	-	12,412
0	1	-	12,794
0	1	-	13,176
0	1	-	13,558
0	1	-	13,940
0	1	-	14,322
			51,010
			869,019
			12,562,958

**TITLE: Boiler Replacement**

**PROJECT:** Ulster County  
**SITE:** 17 Pearl Street

**DESCRIPTION:** Replace existing boiler with new efficient boiler of similar size and operation.

<b>GIVEN:</b>	Fuel Energy Cost	=	\$1.37	\$/CCF (Nat'l Gas)	▼
	Boiler Plant Capacity	=	385	Mbh	
	Operation (Hours/Week)	=	40.00	Hours/Week	
	Operation (Heating Weeks/Year)	=	30.00	Weeks/Year	
	Operation (Hours/Year)	=	1200	Hours/Year	
	Annual Heating Plant Energy Cost	=	\$3,980		

<b>ASSUMPTION:</b>	Existing Efficiency (Combustion)	=	80%
	Existing Efficiency (Dist./Losses)	=	90%
	New Efficiency (Combustion)	=	91%
	New Efficiency (Dist./Losses)	=	90%
	Part Load Factor	=	47%

**FORMULA:** Energy Usage = (Capacity(Mbh)) x (Hours of Operation/Year) x (Part Load Factor) / (Combustion Efficiency x Distribution Efficiency)  
 Fuel Use (Unit) = (Usage (Mbh)) / (Heating Value of Fuel)  
 Fuel Energy Cost (\$) = ((Fuel Use(Unit) x Fuel Cost(\$/Unit))

<b>CALCULATION:</b>	Existing Energy Usage =	$\frac{\text{Capacity} \times \text{Hours/Year} \times \text{Part Load Factor}}{\text{Efficiency (Comb.)} \times \text{Efficiency (Dist.)}}$	$\frac{385 \times 1200 \times 47\%}{80\% \times 90\%} =$	<b>301,583 Mbh</b>
	New Energy Usage =	$\frac{\text{Capacity} \times \text{Hours/Year} \times \text{Part Load Factor}}{\text{Efficiency (Comb.)} \times \text{Efficiency (Dist.)}}$	$\frac{385 \times 1200 \times 47\%}{91\% \times 90\%} =$	<b>265,128 Mbh</b>
	Existing Fuel Usage =	$\frac{\text{Usage (Mbh)}}{\text{Conversion (Mbh/CCF)}}$	$\frac{301,583}{103} =$	<b>2,928 CCF</b>
	New Fuel Usage =	$\frac{\text{Usage (Mbh)}}{\text{Conversion (Mbh/CCF)}}$	$\frac{265,128}{103} =$	<b>2,574 CCF</b>
	Existing Fuel Cost =	$\text{CCF} \times \text{\$/fuel unit}$	$2,928 \times \$1.366 =$	<b>\$ 4,000</b>
	Existing Fuel Cost =	$\text{CCF} \times \text{\$/fuel unit}$	$2,574 \times \$1.366 =$	<b>\$ 3,516</b>
<b>Result</b>	<b>Existing Annual Use =</b>	<b>2,928 CCF</b>	<b>\$ 4,000</b>	<b>100% of utility bill</b>
	<b>Proposed Annual Use =</b>	<b>2,574 CCF</b>	<b>\$ 3,516</b>	
<b>100%</b>	<b>Annual Savings =</b>	<b>354 CCF</b>	<b>\$ 483</b>	
	<b>Savings as Percent of Existing =</b>	<b>=</b>	<b>12%</b>	<b>12% of utility bill</b>

**FIM #54**

**Replace Electric DHW with NG-fired Unit  
Ulster County  
Carr Building**

**Summary:** The existing DHW system is a 40 gallon electric hot water heater with two 4,500 Watt elements. Replace with a NG-fired power-vent unit of same storage capacity.

Employees	5	
Average usage/day	10	gal/person
Total use per day	50	gal/day

Utility Cost Data	
Electric	\$0.099 \$/kWh
	0 \$/kW
Therms	\$1.366 \$/therm

Total Usage/day	50	gal/day
Entering water temp	50	F
Leaving water temp	120	F
Energy per day	29,183	Btu/day
System Losses	20%	
Total Energy per day	35,020	BTU/day

Days of Oper/yr	250	M-F, 10 Holidays
Yearly Heater Input	8,755	Mbtu/yr
	2,565	KWH/yr
Diversity Factor	0.5	
Element Power (one element)	4,500.0	Watts
Demand Contribution	2.3	
Yearly Cost	\$ 254	

New DHW Heater efficiency	85%
New System Efficiency	80%
New Heater Input	42,916 Btu/day
New Yearly Input	107 therm/yr
Annual energy cost	\$147

Savings = **\$107 per year**

**FIM #55 Dept. of Environment - Weatherization Improvements**

Notes:

1. Historic structure - low occupancy
2. Poor air barrier at top plane - cellulose installed in attic.
3. 2nd floor is abandoned - consider moving thermal boundary to ceiling of 1st floor

- 3.7 ...EXISTING CRACK AREA IN SQ.FT. (AREA from Vendor Data)
- 50% ...% INFILTRATION VS. EXFILTRATION (%INF)
- 5 ...LOCAL SHIELDING CLASS (LSC)
- 2 ...# OF STORIES TO BUILDING (FLOORS)
- 144.0000 ...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)
- 0.0299 ...STACK COEFFICIENT, A (A)
- 0.0016 ...STACK COEFFICIENT, B (B)
- 5.0 ...AVERAGE WIND VELOCITY (VEL)
- 68 ...SPACE HEATING SETPOINT (HTSP)
- 55 ...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)
- 23.6 ...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)
- 4.693 ...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)
- 74 ...SPACE COOLING SETPOINT (CLSP)
- 73.6 ...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)
- 2.027 ...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)
- 50 ...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)

(Heat Leak Occ)	AREA * %INF * EFL *((A * (HTSP - OAHT)) + (B * VEL^2))^.5	307.3	HLOCC	(CFM)
(Heat Leak Unocc)	AREA * %INF * EFL *((A * (HTSPUNOC - OAHT)) + (B * VEL^2))^.5	260.0	HLUNOCC	(CFM)

(Cool Leak Occ)	AREA * EFL *((A * (CLSP - OACT)) + (B * VEL^2))^.5	119.8	CLOCC	(CFM)
-----------------	--	-------	-------	-------

NG (Therm)	...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)	KWh	3,413	btus in a KWh	OIL	146,000	btus in a gallon of oil
\$	<b>1,3660</b> Fuel Cost						
	100,000 ...BTUs / UNIT (BTUs/UNIT)						
	20% ...LOSSES OF HEATING SYSTEM (EOSH)						

(Occupied Heating)	1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / 168 / (BTUs/UNIT) / (1-EOSH)	257	NG (Therm)
	FUELCOST * FUEL SAVED	\$351.5	SAVINGS

(Unoccupied Heating)	1.08 * HLUNOCC * (HTSPUNOC - OAHT) * (HHPY - (HRSOCC * HHPY / 168)) / (BTUs/UNIT) / (1-EOSH)	363	NG (Therm)
	FUELCOST * FUEL SAVED	\$496.3	SAVINGS

- 32.537 ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)
- 1.10 ...Avg. KW/TON OF CHILLER (KW/TON)
- 1.00 ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)
- \$ 0.1230 ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)

(Cooling Savings)	CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000	325	TON-HRS
	TON-HRS * (KW/TON + KWSUPT)	682	kWh
	ELECCOST * KWH SAVED	\$83.9	SAVINGS

<b>TOTAL ANNUAL SAVINGS</b>	\$947.7	NG (Therm)
	\$83.9	kWh
	\$931.6	TOTAL

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light Local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within tow house heights; typical downtown shielding

**CRACK AREA "A" BASED UPON:**

<b>Total, Vendor Collected Data:</b>	3.6500	Square Ft
	0.3391	Square Meters

Inputs

Table with 3 columns: Room Temperature Setpoint (72), Heating Below (55), Heating Efficiency (91.0%), Cost per Therm (\$1.110), Tons of CO2 per Therm (0.0053), Hours off per year (4340)

Table with 3 columns: OA supplied to space (12040), Cooling Above (72), Cooling COP (3.5), Cost per kWh (\$0.114), Tons of CO2 per kWh (0.000252)

Savings

Summary table for Savings with columns: Current, Proposed, Savings, Savings, Savings, Savings. Includes sub-totals for Cooling and Heating.

Main simulation table with columns: Weather (Mid-pts DB, Total Hrs), Current (% Occupied, # hours/year at Occupancy, Outdoor air flow), Cooling Status, Heating Status, Heating/Cooling Load, Energy. Rows show hourly data from 91 to -5.

Main simulation table with columns: Proposed (% Occupied, # hours/year at Occupancy, Outdoor air flow), Heating/Cooling Load, Energy. Rows show hourly data for proposed scenarios from 0% to 100% occupancy, and a final summary row.

Summary row for Current state: Cooling Total 28,763,316; Heating Total 670,030,525

Summary row for Proposed state: Cooling Total 6,604,239; Heating Total 153,843,229



## FIM #58 Ulster County Office Building Electric Heat Replacement

### Inputs

Cost/kW	\$8.00
Cost/kWh	\$0.090
Cost/Therm	\$1.110
Current Load (kW)	60
Projected Boiler Efficiency*	91%

### Savings

Total Electricity Saved (kWh)	63,240	\$5,691.60
Total Demand Saved (kW)	420	\$3,360.00
Total Fuel Saved (Therms)	-2,372	-\$2,632.92
Savings/Year	\$6,418.68	

### Calculations

Current Heating Hours	Current Operating Hours	Current Annual Demand (kW)	Current Annual Usage (kWh)	Current Annual Demand Cost	Current Annual Usage Cost	Current Total Annual Cost	Projected Annual Gas Needed (Therms)	Projected Annual Cost
4,215	1,054	420	63,240	\$3,360.00	\$5,691.60	\$9,051.60	2,372	\$2,632.92

\*Note: Assumes installation of new condensing boilers

**FIM #59**  
**UC Office Building**  
**Install Condensing Boilers**

<u>Item</u>	<u>Value</u>	<u>Units</u>	<u>Formula/Comments</u>
Baseline Fuel Use	28,981	CCF	Based on historical utility data
DHW Usage	8%		
Boiler Input	26,663	CCF	
Existing Boiler Plant Efficiency	70%		Name plate
Boiler Output	19,037	Therms	Baseline Fuel Use x Existing Efficiency
Fuel Cost	1.110	\$/CCF	
Proposed Boiler Plant Efficiency	91%		
Proposed Fuel Use	20,920	CCF	Baseline Fuel Use x Proposed Efficiency
<b>Annual Savings</b>	5,743	<b>CCF</b>	Baseline Fuel - Proposed Fuel

**Savings Summary:**

<b>Utility</b>	<b>Energy Savings</b>
Therms	5,743
\$	\$6,374

**FIM #60 Office Buidling - Humidification Replacement**

Cost/kW	\$8.00
Cost/kWh	\$0.089

Current Peak Demand	43	kW
Operating Hours	1,278	
Current Annual Demand	258	
Current Annual Usage	54,933	kWh
Current Cost	\$6,952.99	

Projected Peak Demand	5	Hp motor
Operating Hours	1,278	
Projected Annual Demand	22.38	
Projected Annual Usage	3,927	kWh
Project Heating	2,016	Therms
Project Cost	\$ 2,766	

Savings	\$4,186.71
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**FIM #61 Motors - Ulster County Office Bldg**

UTILITY DATA	
Electricity Usage	\$ 0.089 /kWh
Electricity Demand	\$ 8.00 /kW

Cooling Capacity	OA Temp
0%	66
100%	95

Heating Capacity	OA Temp
0%	60
100%	0

Service	Motor Size (HP)	Part of Redundant Pair? (1 - yes, 0 - no)	Purpose (Cooling - C, Heating - H, Both - B)	EXISTING CONDITIONS						Proposed Conditions						Savings				
				Annual Hours	Load Factor	Motor Efficiency	Peak Demand (kW)	Usage (kWh)	Annual Demand (kW)	Load Factor	Motor Efficiency	VFD? (1 - yes, 0 - no)	VFD Efficiency	Annual Demand (kW)	Usage (kWh)	Electricity Demand (kW)	Demand Cost Savings (\$)	Electricity Usage (kWh)	Usage Cost Savings (\$)	Total Cost Savings (\$)
CW P2-2	15.0	1	C	1,006	75.0%	91.0%	9.2	9,255	46.0	75.0%	92.8%	0	98.5%	45.2	9,097	0.8	\$6.40	158	\$14.06	\$20.46
CW P2-1	15.0	1	C	1,006	75.0%	91.0%	9.2	9,255	46.0	75.0%	92.8%	0	98.5%	45.2	9,097	0.8	\$6.40	158	\$14.06	\$20.46
CHW P1-2	15.0	1	C	1,006	75.0%	91.0%	9.2	9,255	46.0	75.0%	92.8%	0	98.5%	45.2	9,097	0.8	\$6.40	158	\$14.06	\$20.46
CHW P1-1	15.0	1	C	1,006	75.0%	91.0%	9.2	9,255	46.0	75.0%	92.8%	0	98.5%	45.2	9,097	0.8	\$6.40	158	\$14.06	\$20.46
HW P31	7.5	1	H	2,964	75.0%	88.5%	4.7	13,931	32.9	75.0%	91.8%	1	98.5%	14.0	3,454	18.9	\$151.20	10,477	\$932.45	\$1,083.65
HW P32	7.5	1	H	2,964	75.0%	91.7%	4.6	13,634	32.2	75.0%	91.8%	1	98.5%	14.0	3,454	18.2	\$145.60	10,180	\$906.02	\$1,051.62
HW P4-1	2.0	1	H	2,964	75.0%	84.0%	1.3	3,853	9.1	75.0%	87.0%	1	98.5%	4.2	965	4.9	\$39.20	2,888	\$257.03	\$296.23
HW P4-2	2.0	1	H	2,964	75.0%	84.0%	1.3	3,853	9.1	75.0%	87.0%	1	98.5%	4.2	965	4.9	\$39.20	2,888	\$257.03	\$296.23
HW P5-1	3.0	1	H	2,964	75.0%	89.5%	1.9	5,632	13.3	75.0%	89.9%	1	98.5%	5.6	1,394	7.7	\$61.60	4,238	\$377.18	\$438.78
HW P5-2	3.0	1	H	2,964	75.0%	89.5%	1.9	5,632	13.3	75.0%	89.9%	1	98.5%	5.6	1,394	7.7	\$61.60	4,238	\$377.18	\$438.78
Booster P1	7.5	1	B	3,969	75.0%	89.5%	4.7	18,654	56.4	75.0%	91.8%	0	98.5%	54.8	18,140	1.6	\$12.80	514	\$45.75	\$58.55
Booster P2	7.5	1	B	3,969	75.0%	89.5%	4.7	18,654	56.4	75.0%	91.8%	0	98.5%	54.8	18,140	1.6	\$12.80	514	\$45.75	\$58.55
AC-1	40.0	1	B	3,969	75.0%	93.0%	24.1	95,653	289.2	75.0%	94.1%	0	98.5%	285.4	94,383	3.8	\$30.40	1,270	\$113.03	\$143.43
AC-2	5.0	1	B	3,969	75.0%	89.5%	3.1	12,304	37.2	75.0%	90.5%	0	98.5%	37.1	12,267	0.1	\$0.80	37	\$3.29	\$4.09
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							89.1	228,820	733.1					660.5	190,944	72.6	\$580.80	37,876.0	\$3,370.95	\$3,951.75

**FIM #62 Ulster County Office Building - Weatherization Improvements**

Notes:

- The building has heating and cooling.
- Infiltration CFM is based on an estimated total crack area (to be verified) and calculated using ASHRAE Methods.
- All identified infiltration points will be sealed as part of this measure.

- 4.4 ...EXISTING CRACK AREA IN SQ.FT. (AREA from Vendor Data)
- 50% ...% INFILTRATION VS. EXFILTRATION (%INF)
- 3 ...LOCAL SHIELDING CLASS (LSC)
- 6 ...# OF STORIES TO BUILDING (FLOORS)
- 144.0000 ...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)
- 0.0943 ...STACK COEFFICIENT, A (A)
- 0.0156 ...STACK COEFFICIENT, B (B)
- 5.0 ...AVERAGE WIND VELOCITY (VEL)
- 70 ...SPACE HEATING SETPOINT (HTSP)
- 60 ...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)
- 32.1 ...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)
- 4,639 ...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)
- 74 ...SPACE COOLING SETPOINT (CLSP)
- 73.6 ...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)
- 2,027 ...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)
- 60 ...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)

(Heat Leak Occ) AREA * %INF * EFL *((A * (HTSP - OAHT)) + (B * VEL^2))^0.5	627.8	HLOCC	(CFM)
(Heat Leak Unoc) AREA * %INF * EFL *((A * (HTSPUNOC - OAHT)) + (B * VEL^2))^0.5	548.1	HLUNOCC	(CFM)

(Cool Leak Occ) AREA \* EFL \*((A \* (CLSP - OACT)) + (B \* VEL^2))^0.5 = 412.4 CLOCC (CFM)

- NG (Therm) ...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)
- 1.11 Fuel Cost
- 100,000 ...BTUs / UNIT (BTUs/UNIT)
- 20% ...LOSSES OF HEATING SYSTEM (EOSH)

(Occupied Heating) 1.08 \* HLOCC \* (HTSP - OAHT) \* HRSOCC \* HHPY / 168 / (BTUs/UNIT) / (1-EOSH) = 532 NG (Therm)  
 FUELCOST \* FUEL SAVED = \$590.7 SAVINGS

(Unoccupied Heating) 1.08 \* HLUNOCC \* (HTSPUNOC - OAHT) \* (HHPY - (HRSOCC \* HHPY / 168)) / (BTUs/UNIT) / (1-EOSH) = 616 NG (Therm)  
 FUELCOST \* FUEL SAVED = \$683.3 SAVINGS

- 32,537 ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)
- 1.10 ...Avg. KW/TON OF CHILLER (KW/TON)
- 0.00 ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)
- \$ 0.1140 ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)

(Cooling Savings) CLOCC \* CBTU / 1000 \* HRSOCC / 50 \* 1,000,000 / 12000 = 1,342 TON-HRS  
 TON-HRS \* (KW/TON + KWSUPT) = 1,476 kWh  
 ELECCOST \* KWH SAVED = \$168.3 SAVINGS

**TOTAL ANNUAL SAVINGS** \$1,274.0 NG (Therm)  
 \$168.3 kWh  
 \$1,442.3 TOTAL

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light Local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within tow house heights; typical downtown shielding

**CRACK AREA "A" BASED UPON:**

<b>Total, Vendor Collected Data:</b>	4.3788 Square Ft
	0.4068 Square Meters

KWh **3,413** btus in a KWh      OIL **146,000** btus in a gallon of oil

LPG **91,000** btus per Gal      NG **100,000** btus per Therm



## FIM #64Records Building - Rooftop unit Replacement

UTILITY DATA		
Electricity Usage Cost	\$ 0.098	\$/kWh
Electricity Demand Cost	\$ 8.00	\$/kW
Natural Gas Cost	\$ 1.080	\$/therm

ENERGY SAVINGS				
Commodity	Existing	Proposed	Savings	Savings (\$)
Electricity Usage (kWh)	151,492	120,804	30,688	\$ 3,007
Electricity Demand (kW)	679	588	91	\$ 728
Natural Gas Usage (therm)	11,992.0	11,412	580	\$ 626
				\$ 4,361

OPERATING PARAMETERS	
Cooling Hours	4109
Heating Hours	4215
Cooling Utilization	35%
Heating Utilization	25%
Current Combustion Efficiency	80%
Proposed Combustion Efficiency	84%

EXISTING CONDITIONS											
EQUIPMENT		COOLING						HEATING			
Manufacturer	QTY	Cooling Output (Btu/h)	Coefficient of Performance	Total Cooling Output (Btu/h)	Power Usage (Btu/h)	Demand (kW)	Power Usage (kWh)	Heating Output (Btu/h)	Total Heating Output (Btu/h)	Therms Input	Therms Used
McQuay	3	300,000	3	900,000	300,000	88	126,557	250,000	750,000	9.38	9,884
McQuay	1	96,000	3	96,000	32,000	9	12,943	160,000	160,000	2.00	2,108
						97	139,500.0				11,992.0
						\$ 776	\$ 13,671				\$ 12,951

PROPOSED CONDITIONS											
EQUIPMENT		COOLING						HEATING			
Manufacturer	QTY	Cooling Output (Btu/h)	Coefficient of Performance	Total Cooling Output (Btu/h)	Power Usage (Btu/h)	Demand (kW)	Power Usage (kWh)	Heating Output (Btu/h)	Total Heating Output (Btu/h)	Therms Input	Therms Used
McQuay	3	300,000	3.5	900,000	257,143	75	107,861	250,000	750,000	8.93	9,410
McQuay	1	96,000	3.3	96,000	29,091	9	12,943	160,000	160,000	1.90	2,002
						84	120,804				11,412
						\$ 672	\$ 11,839				\$ 12,325

### Notes:

- 1 - Total annual demand assumes operation 7 months per year
- 2 - Total annual usage assumes constant operation 7 months per year

**FIM # 65 Records Storage - Humidification Replacement**

Cost/kW	\$8.00
Cost/kWh	\$0.098

Current Peak Demand	90	kW
Operating Hours	1,314	
Current Annual Demand	540	
Current Annual Usage	118,260	kWh
Current Cost	\$15,909.48	

Projected Peak Demand	5	HP Motor
Operating Hours	1,314	
Projected Annual Demand	22.38	
Projected Annual Usage	4,901	kWh
Projected Heating	4,123	Therms
Projected Costs	\$ 5,195	

Savings	\$10,714.80
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FIM #66 Records Storage - Weatherization Improvements

Notes:

1. The building has heating and cooling.
2. Infiltration CFM is based on an estimated total crack area (to be verified) and calculated using ASHRAE Methods.
3. All identified infiltration points will be sealed as part of this measure.

- 9.1 ...EXISTING CRACK AREA IN SQ.FT. (from ZeroDraft Audit)
- 50% ...% INFILTRATION VS. EXFILTRATION (%INF)
- 4 ...LOCAL SHIELDING CLASS (LSC)
- 1 ...# OF STORIES TO BUILDING (FLOORS)
- 144.0000 ...EFFECTIVE LEAKAGE AREA - IN<sup>2</sup>/FT<sup>2</sup> (EFL)
- 0.0150 ...STACK COEFFICIENT, A (A)
- 0.0039 ...STACK COEFFICIENT, B (B)
- 5.0 ...AVERAGE WIND VELOCITY (VEL)
- 70 ...SPACE HEATING SETPOINT (HTSP)
- 60 ...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)
- 32.1 ...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)
- 4,693 ...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)
- 73.6 ...SPACE COOLING SETPOINT (CLSP)
- 76 ...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)
- 2,027 ...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)
- 80 ...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)

(Heat Leak Occ)	AREA * %INF * EFL *((A * (HTSP - OAHT)) + (B * VEL <sup>2</sup> )) <sup>0.5</sup> =====	535.4	HLOCC	(CFM)
(Heat Leak Unocc)	AREA * %INF * EFL *((A * (HTSPUNOC - OAHT)) + (B * VEL <sup>2</sup> )) <sup>0.5</sup> =====	471.3	HLUNOCC	(CFM)

(Cool Leak Occ) AREA \* EFL \*((A \* (CLSP - OACT)) + (B \* VEL<sup>2</sup>))<sup>0.5</sup> ===== 479.4 CLOCC (CFM)

NG (Therm) ...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)

1.08 Fuel Cost

100,000 ...BTUs / UNIT (BTUs/UNIT)

20% ...LOSSES OF HEATING SYSTEM (EOSH)

(Occupied Heating) 1.08 \* HLOCC \* (HTSP - OAHT) \* HRSOCC \* HHPY / 168 / (BTUs/UNIT) / (1-EOSH) ===== 612 NG (Therm)  
 FUELCOST \* FUEL SAVED ===== \$661.1 SAVINGS

(Unoccupied Heating) 1.08 \* HLUNOCC \* (HTSPUNOC - OAHT) \* (HHPY - (HRSOCC \* HHPY / 168)) / (BTUs/UNIT) / (1-EOSH) ===== 436 NG (Therm)  
 FUELCOST \* FUEL SAVED ===== \$471.2 SAVINGS

32.537 ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)

1.10 ...Avg. KW/TON OF CHILLER (KW/TON)

0.00 ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)

\$ 0.1190 ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)

(Cooling Savings) CLOCC \* CBTU / 1000 \* HRSOCC / 50 \* 1,000,000 / 12000 ===== 2,080 TON-HRS  
 TON-HRS \* (KW/TON + KWSUPT) ===== 2,288 kWh  
 ELECCOST \* KWH SAVED ===== \$270.0 SAVINGS

TOTAL ANNUAL SAVINGS \$1,132.4 NG (Therm)  
 \$270.0 kWh  
 \$1,402.3 TOTAL

STACK COEFFICIENT

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

WIND COEFFICIENT

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.0066	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

LOCAL SHIELDING CLASSES

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light Local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within tow house heights; typical downtown shielding

CRACK AREA "A" BASED UPON:

Total, Vendor Collected Data:

9.1117	Square Ft
0.8463	Square Meters

KWh 3,413 btus in a KWh

OIL 146,000 btus in a gallon of oil

LPG 91,000 btus per Gal

NG 100,000 btus per Therm

Inputs

Room Temperature Setpoint	72	°F
Heating Below	60	°F (OAT)
Heating Efficiency	100%	
Cost per Therm	\$ 3.49	Electric Heat
Tons of CO2 per Therm	0.0053	
Hours off per year	5640	

OA supplied to space	1100	CFM
Cooling Above	72	°F (OAT)
Cooling COP	3.2	
Cost per kWh	\$ 0.12	
Tons of CO2 per kWh	0.000252	

Savings

	Current	Proposed	Savings	Savings	Savings	Savings
	btu/yr	btu/yr	btu/yr	kWh/Therms per yr	\$/yr	Tn CO2
Cooling	1,993,757	543,137	1,450,620	133	\$ 15.81	0.03
Heating	28,822,698	7,851,849	20,970,849	210	\$ 731.18	1.1
				Total	\$ 746.99	1.1

Weather	
Mid-pt DB °F	Total Hrs Hr
91	18
89	27
87	31
85	40
83	71
81	74
79	105
77	50
75	118
73	140
71	117
69	114
67	98
65	81
63	68
61	73
59	55
57	89
55	109
53	61
51	56
49	61
47	69
45	74
43	95
41	66
39	92
37	135
35	91
33	101
31	94
29	111
27	100
25	73
23	41
21	77
19	82
17	46
15	43
13	20
11	12
9	10
7	8
5	3
3	8
1	7
-1	5
-3	1

Current			
% Occupied	0%	>0%	
# hours/year at Occupancy	5640	3120	hours
Outdoor air flow	0	1100	CFM

Cooling Status On/Off	Heating Status On/Off	Heating/Cooling Load btu/h	Energy btu
1	0	22,572	144,708
1	0	20,196	194,214
1	0	17,820	196,752
1	0	15,444	220,024
1	0	13,068	330,459
1	0	10,692	281,800
1	0	8,316	310,996
1	0	5,940	105,781
1	0	3,564	149,786
1	0	1,188	59,237
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	0	-	-
0	1	15,516	303,934
0	1	17,903	567,485
0	1	20,290	787,677
0	1	22,677	492,670
0	1	25,064	499,897
0	1	27,451	596,390
0	1	29,838	733,267
0	1	32,225	849,314
0	1	34,612	1,171,101
0	1	36,999	869,718
0	1	39,386	1,290,550
0	1	41,773	2,008,513
0	1	44,160	1,431,252
0	1	46,547	1,674,399
0	1	48,934	1,638,267
0	1	51,321	2,028,917
0	1	53,708	1,912,870
0	1	56,095	1,458,457
0	1	58,482	853,990
0	1	60,869	1,669,298
0	1	63,256	1,847,407
0	1	65,643	1,075,458
0	1	68,030	1,041,876
0	1	70,417	501,597
0	1	72,804	311,160
0	1	75,191	267,802
0	1	77,578	221,043
0	1	79,965	85,442
0	1	82,352	234,645
0	1	84,739	211,266
0	1	87,126	155,155
0	1	89,513	31,881
Cooling Total			1,993,757
Heating Total			28,822,698

Proposed												
% Occupied	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
# hours/year at Occupancy	5799	408	847	951	421	236	58	9	9	17	3	hrs/yr
Outdoor air flow	0	110	220	330	440	550	660	770	880	990	1100	CFM

Cooling Status On/Off	Heating Status On/Off	Heating/Cooling Load btu/h										Energy btu	
1	0	-	2,257	4,514	6,772	9,028	11,286	13,543	15,800	18,058	20,315	22,572	39,421
1	0	-	2,020	4,039	6,059	8,078	10,098	12,118	14,137	16,157	18,176	20,196	52,907
1	0	-	1,782	3,564	5,346	7,128	8,910	10,692	12,474	14,256	16,038	17,820	53,599
1	0	-	1,544	3,089	4,633	6,178	7,722	9,266	10,811	12,355	13,900	15,444	59,939
1	0	-	1,307	2,614	3,920	5,227	6,534	7,841	9,148	10,454	11,761	13,068	90,023
1	0	-	1,069	2,138	3,208	4,277	5,346	6,415	7,484	8,554	9,623	10,692	76,768
1	0	-	832	1,663	2,495	3,326	4,158	4,990	5,821	6,653	7,484	8,316	84,721
1	0	-	594	1,188	1,782	2,376	2,970	3,564	4,158	4,752	5,346	5,940	28,817
1	0	-	356	713	1,069	1,426	1,782	2,138	2,495	2,851	3,208	3,564	40,804
1	0	-	119	238	356	475	594	713	832	950	1,069	1,188	16,137
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	0	-	-	-	-	-	-	-	-	-	-	-	-
0	1	-	1,552	3,103	4,655	6,206	7,758	9,309	10,861	12,412	13,964	15,516	82,797
0	1	-	1,790	3,581	5,371	7,161	8,951	10,742	12,532	14,322	16,112	17,903	154,594
0	1	-	2,029	4,058	6,087	8,116	10,145	12,174	14,203	16,232	18,261	20,290	214,578
0	1	-	2,268	4,535	6,803	9,071	11,338	13,606	15,874	18,141	20,409	22,677	134,213
0	1	-	2,506	5,013	7,519	10,025	12,532	15,038	17,544	20,051	22,557	25,064	136,181
0	1	-	2,745	5,490	8,235	10,980	13,725	16,470	19,215	21,960	24,705	27,451	162,468
0	1	-	2,984	5,968	8,951	11,935	14,919	17,903	20,886	23,870	26,854	29,838	199,756
0	1	-	3,222	6,445	9,667	12,890	16,112	19,335	22,557	25,780	29,002	32,225	231,369
0	1	-	3,461	6,922	10,383	13,845	17,306	20,767	24,228	27,689	31,150	34,612	319,030
0	1	-	3,700	7,400	11,100	14,799	18,499	22,199	25,899	29,599	33,299	36,999	236,928
0	1	-	3,939	7,877	11,816	15,754	19,693	23,631	27,570	31,508	35,447	39,386	351,570
0	1	-	4,177	8,355	12,532	16,709	20,886	25,064	29,241	33,418	37,595	41,773	547,157
0	1	-	4,416	8,832	13,248	17,664	22,080	26,496	30,912	35,328	39,744	44,160	389,900
0	1	-	4,655	9,309	13,964	18,619	23,273	27,928	32,583	37,373	41,892	46,547	456,138
0	1	-	4,893	9,787	14,680	19,573	24,467	29,360	34,253	39,147	44,040	48,934	446,295
0	1	-	5,132	10,264	15,396	20,528	25,660	30,792	35,924	41,056	46,188	51,321	552,715
0	1	-	5,371	10,742	16,112	21,483	26,854	32,225	37,595	42,966	48,337	53,708	521,102
0	1	-	5,609	11,219	16,828	22,438	28,047	33,657	39,266	44,876	50,485	56,095	397,311
0	1	-	5,848	11,696	17,544	23,393	29,241	35,089	40,937	46,785	52,633	58,482	232,643
0	1	-	6,087	12,174	18,261	24,347	30,434	36,521	42,608	48,695	54,782	60,869	454,748
0	1	-	6,326	12,651	18,977	25,302	31,628	37,953	44,279	50,604	56,930	63,256	503,269
0	1	-	6,564	13,129	19,693	26,257	32,821	39,386	45,950	52,514	59,078	65,643	292,975
0	1	-	6,803	13,606	20,409	27,212	34,015	40,818	47,621	54,424	61,227	68,030	283,827
0	1	-	7,042	14,083	21,125	28,167	35,208	42,250	49,292	56,333	63,375	70,417	136,645
0	1	-	7,280	14,561	21,841	29,121	36,402	43,682	50,962	58,243	65,523	72,804	84,766
0	1	-	7,519	15,038	22,557	30,076	37,595	45,114	52,633	60,152	67,671	75,191	72,954
0	1	-	7,758	15,516	23,273	31,031	38,789	46,547	54,304	62,062	69,820	77,578	60,216
0	1	-	7,996	15,993	23,989	31,986	39,982	47,979	55,975	63,972	71,968	79,965	23,276
0	1	-	8,235	16,470	24,705	32,941	41,176	49,411	57,646	65,881	74,116	82,352	63,922
0	1	-	8,474	16,948	25,422	33,895	42,369	50,843	59,317	67,791	76,265	84,739	57,553
0	1	-	8,713	17,425	26,138	34,850	43,563	52,275	60,988	69,700	78,413	87,126	42,267
0	1	-	8,951	17,903	26,854	35,805	44,756	53,708	62,659	71,610	80,561	89,513	8,685
Cooling Total												543,137	
Heating Total												7,851,849	

**FIM # 69 Ulster County Area Transportation Center - Weatherization Improvements**

Notes:

1. The building has heating and cooling for offices - heating only for shop; all electric in office area
2. All electric space conditioning
3. New facility - ice damming issues; occupancy is for offices only

- 3.5 ...EXISTING CRACK AREA IN SQ.FT. (AREA from Vendor Data)
- 50% ...% INFILTRATION VS. EXFILTRATION (%INF)
- 2 ...LOCAL SHIELDING CLASS (LSC)
- 2 ...# OF STORIES TO BUILDING (FLOORS)
- 144.0000 ...EFFECTIVE LEAKAGE AREA - IN^2/FT^2 (EFL)
- 0.0299 ...STACK COEFFICIENT, A (A)
- 0.0121 ...STACK COEFFICIENT, B (B)
- 5.0 ...AVERAGE WIND VELOCITY (VEL)
- 70 ...SPACE HEATING SETPOINT (HTSP)
- 60 ...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)
- 32.1 ...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)
- 4,693 ...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)
- 74 ...SPACE COOLING SETPOINT (CLSP)
- 73.6 ...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)
- 2,027 ...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)
- 45 ...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)

(Heat Leak Occ) AREA * %INF * EFL *((A * (HTSP - OAHT)) + (B * VEL^2))^.5	300.7	HLOCC	(CFM)
(Heat Leak Unoc) AREA * %INF * EFL *((A * (HTSPUNOC - OAHT)) + (B * VEL^2))^.5	267.5	HLUNOCC	(CFM)

(Cool Leak Occ) AREA * EFL *((A * (CLSP - OACT)) + (B * VEL^2))^.5	281.4	CLOCC	(CFM)
--	-------	-------	-------

Electric KWH ...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)	KWh	3,413	btus in a KWh
\$ 0.1190 Fuel Cost			
3,413 ...BTUs / UNIT (BTUs/UNIT)			
0% ...LOSSES OF HEATING SYSTEM (EOSH)			

(Occupied Heating) 1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / 168 / (BTUs/UNIT) / (1-EOSH)	4,533	Electric KWH	
FUELCOST * FUEL SAVED	\$539.4	SAVINGS	

(Unoccupied Heating) 1.08 * HLUNOCC * (HTSPUNOC - OAHT) * (HHPY - (HRSOCC * HHPY / 168)) / (BTUs/UNIT) / (1-EOSH)	8,115	Electric KWH	
FUELCOST * FUEL SAVED	\$865.7	SAVINGS	

32,537 ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)			
1.10 ...Avg. KW/TON OF CHILLER (KW/TON)			
1.00 ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)			
\$ 0.1190 ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)			

(Cooling Savings) CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000	687	TON-HRS	
TON-HRS * (KW/TON + KWSUPT)	1,442	kWh	
ELECCOST * KWH SAVED	\$171.6	SAVINGS	

<b>TOTAL ANNUAL SAVINGS</b>	\$1,505.1	Electric KWH	
	\$171.6	kWh	
	\$1,676.7	TOTAL	

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
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4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within two house heights; typical downtown shielding

**CRACK AREA "A" BASED UPON:**

<b>Total, Vendor Collected Data:</b>	3.4850	Square Ft
	0.3238	Square Meters

**Inputs**

Room Temperature Setpoint	71	°F	Electric Heat Max Demand	14.5	kW
Heating Below	60	°F (OAT)	Elec. heating max required at	25	°F (OAT)
Electric Heating Efficiency	100%		Cost per kWh	\$ 0.12	
Natural Gas Heating Efficiency	93%		Cost per Therm	\$ 1.12	
Tons of CO2 per kWh	0.000252		Tons of CO2 per Therm	0.0053	

**Savings**

	Current kwh/yr	Proposed therms/yr	Current Cost \$/yr	Proposed Cost \$/yr	Savings \$/yr	Savings Tn CO2
Heating	66,933	2,456	\$ 7,965.02	\$ 2,751.13	\$ 5,213.89	3.85

Weather	
Mid-pt's DB °F	Total Hrs Hr
89	34
87	48
85	59
83	109
81	118
79	151
77	87
75	186
73	310
71	278
69	327
67	286
65	286
63	279
61	257
59	178
57	309
55	357
53	225
51	207
49	217
47	219
45	220
43	245
41	195
39	287
37	435
35	312
33	327
31	285
29	281
27	280
25	226
23	125
21	190
19	242
17	136
15	117
13	77
11	46
9	41
7	47
5	18
3	33
1	30
-1	13
-3	5
-5	2

Heating Status On/Off	Heating Load kW	Existing Electrical kWh	Proposed Therms
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
0	-	-	0
1	6.3	1,118.4	41
1	6.8	2,090.9	77
1	7.3	2,588.3	95
1	7.7	1,740.0	64
1	8.2	1,700.9	62
1	8.7	1,887.9	69
1	9.2	2,011.2	74
1	9.7	2,126.7	78
1	10.2	2,486.8	91
1	10.6	2,073.5	76
1	11.1	3,190.5	117
1	11.6	5,046.0	185
1	12.1	3,770.0	138
1	12.6	4,109.3	151
1	13.1	3,719.3	136
1	13.5	3,802.9	140
1	14.0	3,924.7	144
1	14.5	3,277.0	120
1	14.5	1,812.5	67
1	14.5	2,755.0	101
1	14.5	3,509.0	129
1	14.5	1,972.0	72
1	14.5	1,696.5	62
1	14.5	1,116.5	41
1	14.5	667.0	24
1	14.5	594.5	22
1	14.5	681.5	25
1	14.5	261.0	10
1	14.5	478.5	18
1	14.5	435.0	16
1	14.5	188.5	7
1	14.5	72.5	3
1	14.5	29.0	1
		<b>66,933</b>	<b>2,456</b>

**FIM # 72 Rooftop unit Replacement**

UTILITY DATA		
Electricity Usage Cost	\$	0.084 \$/kWh
Electricity Demand Cost	\$	8.00 \$/kW
Natural Gas Cost	\$	1.170 \$/therm

ENERGY SAVINGS				
Commodity	Existing	Proposed	Savings	Savings (\$)
Electricity Usage (kWh)	320,768	269,216	51,552	\$ 4,330
Electricity Demand (kW)	1,568	1,316	252	\$ 2,016
Natural Gas Usage (therm)	16,516.0	15,725	791	\$ 925
				\$ 7,271

OPERATING PARAMETERS	
Cooling Hours	1432
Heating Hours	2131
Heating Utilization Factor	55%
Current Combustion Efficiency	80%
Proposed Combustion Efficiency	84%

EXISTING CONDITIONS												
RTU Number	EQUIPMENT		COOLING					HEATING				
	Manufacturer	QTY	Cooling Output (Btu/h)	Coefficient of Performance	Total Cooling Output (Btu/h)	Power Usage (Btu/h)	Demand (kW)	Power Usage (kWh)	Heating Output (Btu/h)	Total Heating Output (Btu/h)	Therms Input	Therms Used
1	Carrier	1	180,000	3	180,000	60,000	18	25,776	90,000	49,500	0.62	1,321
2	Carrier	1	180,000	3	180,000	60,000	18	25,776	90,000	49,500	0.62	1,321
7	Carrier	1	180,000	3	180,000	60,000	18	25,776	90,000	49,500	0.62	1,321
7A	Carrier	1	72,000	3	72,000	24,000	7	10,024	36,000	19,800	0.25	533
9	Carrier	1	180,000	3	180,000	60,000	18	25,776	90,000	49,500	0.62	1,321
11	Trane	1	84,000	3	84,000	28,000	8	11,456	42,000	23,100	0.29	618
12	Trane	1	84,000	3	84,000	28,000	8	11,456	42,000	23,100	0.29	618
13	Trane	1	180,000	3	180,000	60,000	18	25,776	90,000	49,500	0.62	1,321
14	Trane	1	120,000	3	120,000	40,000	12	17,184	60,000	33,000	0.41	874
15	Trane	1	120,000	3	120,000	40,000	12	17,184	60,000	33,000	0.41	874
16	Trane	1	120,000	3	120,000	40,000	12	17,184	60,000	33,000	0.41	874
17	Trane	1	120,000	3	120,000	40,000	12	17,184	60,000	33,000	0.41	874
18	Trane	1	120,000	3	120,000	40,000	12	17,184	60,000	33,000	0.41	874
19	Trane	1	120,000	3	120,000	40,000	12	17,184	60,000	33,000	0.41	874
20	Trane	1	120,000	3	120,000	40,000	12	17,184	60,000	33,000	0.41	874
22	Trane	1	96,000	3	96,000	32,000	9	12,888	48,000	26,400	0.33	703
21	Carrier	1	180,000	3	180,000	60,000	18	25,776	90,000	49,500	0.62	1,321
							224	320,768.0				16,516.0
							\$ 1,792	\$ 26,945				\$ 19,324

PROPOSED CONDITIONS												
RTU Number	EQUIPMENT		COOLING					HEATING				
	Manufacturer	QTY	Cooling Output (Btu/h)	Coefficient of Performance	Total Cooling Output (Btu/h)	Power Usage (Btu/h)	Demand (kW)	Power Usage (kWh)	Heating Output (Btu/h)	Total Heating Output (Btu/h)	Therms Input	Therms Used
1	McQuay	015F	180,000	3.5	180,000	51,429	15	21,480	90,000	49,500	0.59	1,257
2	McQuay	015F	180,000	3.5	180,000	51,429	15	21,480	90,000	49,500	0.59	1,257
7	McQuay	015F	180,000	3.5	180,000	51,429	15	21,480	90,000	49,500	0.59	1,257
7A	McQuay	006B	72,000	3.5	72,000	20,571	6	8,592	36,000	19,800	0.24	511
9	McQuay	015F	180,000	3.5	180,000	51,429	15	21,480	90,000	49,500	0.59	1,257
11	McQuay	007B	84,000	3.5	84,000	24,000	7	10,024	42,000	23,100	0.28	597
12	McQuay	007B	84,000	3.5	84,000	24,000	7	10,024	42,000	23,100	0.28	597
13	McQuay	015F	180,000	3.5	180,000	51,429	15	21,480	90,000	49,500	0.59	1,257
14	McQuay	010B	120,000	3.5	120,000	34,286	10	14,320	60,000	33,000	0.39	831
15	McQuay	010B	120,000	3.5	120,000	34,286	10	14,320	60,000	33,000	0.39	831
16	McQuay	010B	120,000	3.5	120,000	34,286	10	14,320	60,000	33,000	0.39	831
17	McQuay	010B	120,000	3.5	120,000	34,286	10	14,320	60,000	33,000	0.39	831
18	McQuay	010B	120,000	3.5	120,000	34,286	10	14,320	60,000	33,000	0.39	831
19	McQuay	010B	120,000	3.5	120,000	34,286	10	14,320	60,000	33,000	0.39	831
20	McQuay	010B	120,000	3.5	120,000	34,286	10	14,320	60,000	33,000	0.39	831
22	McQuay	008B	96,000	3.5	96,000	27,429	8	11,456	48,000	26,400	0.31	661
21	McQuay	015F	180,000	3.5	180,000	51,429	15	21,480	90,000	49,500	0.59	1,257
							188	269,216				15,725
							\$ 1,504	\$ 22,614				\$ 18,398

**Notes:**

- 1 - Total annual demand assumes operation 9 months per year
- 2 - Total annual usage assumes constant operation 9 months per year

**FIM #73 Ulster Avenue Office Complex (DSS) - Weatherization Improvements**

Notes:

1. The building has heating and cooling.
2. Infiltration CFM is based on an estimated total crack area (to be verified) and calculated using ASHRAE Methods.
3. All identified infiltration points will be sealed as part of this measure.

4.8	...EXISTING CRACK AREA IN SQ.FT. (AREA from Vendor Data)		
50%	...% INFILTRATION VS. EXFILTRATION (%INF)		
2	...LOCAL SHIELDING CLASS (LSC)		
1	...# OF STORIES TO BUILDING (FLOORS)		
144.0000	...EFFECTIVE LEAKAGE AREA - IN <sup>2</sup> /FT <sup>2</sup> (EFL)		
0.0150	...STACK COEFFICIENT, A (A)		
0.0092	...STACK COEFFICIENT, B (B)		
5.0	...AVERAGE WIND VELOCITY (VEL)		
70	...SPACE HEATING SETPOINT (HTSP)		
60	...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)		
32.1	...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)		
4,693	...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)		
74	...SPACE COOLING SETPOINT (CLSP)		
73.6	...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)		
2,027	...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)		
80	...HRS/YK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)		
	(Heat Leak Occ) AREA * %INF * EFL *((A * (HTSP - OAHT)) + (B * VEL^2))^.5 =====	309.6	HLOCC (CFM)
	(Heat Leak Unocc) AREA * %INF * EFL *((A * (HTSPUNOC - OAHT)) + (B * VEL^2))^.5 =====	279.0	HLUNOCC (CFM)
	(Cool Leak Occ) AREA * EFL *((A * (CLSP - OACT)) + (B * VEL^2))^.5 =====	336.6	CLOCC (CFM)
	NG (Therm) ...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, KWH)		KWh
1,165	Fuel Cost		3,413 btus in a KWh
100,000	...BTUs / UNIT (BTUs/UNIT)		OIL 146,000 btus in a gallon of oil
20%	...LOSSES OF HEATING SYSTEM (EOSH)		
(Occupied Heating)	1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / 168 / (BTUs/UNIT) / (1-EOSH) ===== FUELCOST * FUEL SAVED =====	354 NG (Therm) \$412.4 SAVINGS	LPG 91,000 btus per Gal
(Unoccupied Heating)	1.08 * HLUNOCC * (HTSPUNOC - OAHT) * (HHPY - (HRSOCC * HHPY / 168)) / (BTUs/UNIT) / (1-EOSH) ===== FUELCOST * FUEL SAVED =====	258 NG (Therm) \$300.9 SAVINGS	NG 100,000 btus per Therm
32,537	...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)		
1.10	...Avg. KW/TON OF CHILLER (KW/TON)		
0.00	...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)		
\$ 0,1110	...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)		
(Cooling Savings)	CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000 ===== TON-HRS * (KW/TON + KWSUPT) ===== ELECCOST * KWH SAVED =====	1,460 TON-HRS 1,606 kWh \$178.3 SAVINGS	
	<b>TOTAL ANNUAL SAVINGS</b>	\$713.3 NG (Therm) \$178.3 KWh \$891.6 TOTAL	

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within two house heights; typical downtown shielding

**Total, Vendor Collected Data:**

4.8117	Square Ft
0.4470	Square Meters

OIL 146,000 btus in a gallon of oil

NG 100,000 btus per Therm

KWh 3,413 btus in a KWh

LPG 91,000 btus per Gal



**Title** Unoccupied Space Temperature Setpoint Adjustment  
**Project:** Ulster County  
**Site:** Boiceville Substation Bay Area - Programable T-Stat - Unoccupied from 5 PM to 8 AM

**Description** Reset unoccupied space temperature setpoint up in summer and down in winter.

<b>Given</b>	Heating Energy Cost	\$1.59	\$/gal (LP Gas)	(From Bills)
	Electric Energy Cost	\$0.084	\$/kWh	(From Bills)
	Wall Area	4,200	square feet	(From survey)
	Window Area	-	square feet	(From survey)
	Roof Area	3,600	square feet	(From survey)
	Total Envelope Area	7,800	square feet	
	Building Heating Costs	\$ 5,708		(From Bills)
	Window U factor	0.55	Btu/(h*sqt*degf)	(From window survey)
	Wall U factor	0.09	Btu/(h*sqt*degf)	(From wall survey)
	Roof U factor	0.07	Btu/(h*sqt*degf)	(From roof survey)
	Cooling Conversion	12	Mbh/Ton	
	Heating Btu Conversion	91.5	Mbh/gallon	

<b>Assumptions</b>	Boiler Efficiency	80%	(Assumption)
	Chiller Efficiency	-	(Assumption)
	Air Infiltration & Leakage	0.16	cfm/ft2 (Assumption)
	Occupied Indoor Heating Temperature Setpoint	60	Degrees F (Assumption)
	Unoccupied Indoor Heating Temperature Setpoint	50	Degrees F (Assumption)
	Occupied Indoor Cooling Temperature Setpoint	80	Degrees F (Assumption)
	Unoccupied Indoor Cooling Temperature Setpoint	80	Degrees F (Assumption)

**Formula**  
 Overall U Factor = ((Window U factor x Window Area) + (Wall U factor x Wall Area) + (Roof U factor x Roof Area)) / (Total Envelope Area)  
 Cooling Conduction (MBH) = Overall U Factor x Area x ((OA Temperature - Occupied Temperature) \* Occupied Hours) + (OA Temperature - Unoccupied Temperature) \* Unoccupied Hours) / 1,000 btu/MBH  
 Heating Conduction (MBH) = Overall U Factor x Area x ((Occupied Temperature - OA Temperature) \* Occupied Hours) + (Unoccupied Temperature - OA Temperature) \* Unoccupied Hours) / 1,000 btu/MBH  
 Cooling Infiltration (MBH) = Air Infiltration & Leakage x Area x ((OA Temperature - Occupied Temperature) \* Occupied Hours) + (Unoccupied Temperature - OA Temperature) \* Unoccupied Hours) / 1,000 btu/MBH  
 Heating Infiltration (MBH) = Air Infiltration & Leakage x Area x ((Occupied Temperature - OA Temperature) \* Occupied Hours) + (Unoccupied Temperature - OA Temperature) \* Unoccupied Hours) / 1,000 btu/MBH  
 Heat loss = (Heating Conduction) + (Heating Infiltration) Heating Energy = (Heat Loss) / ((Boiler Efficiency) x (Conversion Factor))  
 Cooling loss = (Cooling Conduction) + (Cooling Infiltration) Cooling Energy = (Cooling Loss) \* (Chiller Efficiency) / (Conversion Factor)

**Calculations**  
 Overall U Factor = (( Window U factor x Window Area) + ( Wall U factor x Wall Area) + ( Roof U factor x Roof Area )) / ( Total Envelope Area )  
 Overall U Factor = (( 0.55 x 0 ) + ( 0.09 x 4200 ) + ( 0.07 x 3600 )) / ( 7800 ) = **0.081 Btu/(h\*sqt\*degf)**

OA Temp	Unoccupied Hours	Total Hours	Cooling Conduction (MBH)	Heating Conduction (MBH)	Cooling Infiltration (MBH)	Heating Infiltration (MBH)
92	2	0	0	0	0	0
87	17	0	0	0	0	0
82	65	0	0	0	0	0
77	153	0	0	0	0	0
72	331	0	0	0	0	0
67	443	0	0	0	0	0
62	616	0	0	0	0	0
57	503	0	0	0	0	0
52	389	0	0	0	0	0
47	404	544	0	4,455	0	9,532
42	361	552	0	6,260	0	13,392
37	628	874	0	12,664	0	27,094
32	539	772	0	13,618	0	29,135
27	435	670	0	13,929	0	29,801
22	315	432	0	10,342	0	22,126
17	336	442	0	11,974	0	25,617
12	135	176	0	5,322	0	11,387
7	92	106	0	3,539	0	7,572
2	57	63	0	2,302	0	4,925
-3	19	20	0	794	0	1,698
<b>Subtotal =</b>	<b>5840 Hours</b>	<b>4651 Hours</b>	<b>0 MBH</b>	<b>84,406 MBH</b>	<b>0 MBH</b>	<b>180,581 MBH</b>

OA Temp	Unoccupied Hours	Total Hours	Cooling Conduction (MBH)	Heating Conduction (MBH)	Cooling Infiltration (MBH)	Heating Infiltration (MBH)
92	2	0	0	0	0	0
87	17	0	0	0	0	0
82	65	0	0	0	0	0
77	153	0	0	0	0	0
72	331	0	0	0	0	0
67	443	0	0	0	0	0
62	616	0	0	0	0	0
57	503	0	0	0	0	0
52	389	0	0	0	0	0
47	404	544	0	1,910	0	4,087
42	361	552	0	3,985	0	8,526
37	628	874	0	8,708	0	18,630
32	539	772	0	10,222	0	21,870
27	435	670	0	11,189	0	23,938
22	315	432	0	8,358	0	17,880
17	336	442	0	9,857	0	21,088
12	135	176	0	4,472	0	9,567
7	92	106	0	2,960	0	6,332
2	57	63	0	1,943	0	4,157
-3	19	20	0	674	0	1,442
<b>Subtotal =</b>	<b>5840 Hours</b>	<b>4651 Hours</b>	<b>0 MBH</b>	<b>63,604 MBH</b>	<b>0 MBH</b>	<b>136,075 MBH</b>

Existing Heat loss=( Existing Heating Conduction) + ( Existing Heating Infiltration )	84,406 ) + ( 180,581 ) =	<b>264,987 MBH</b>
Proposed Heat loss=( Proposed Heating Conduction)+( Existing Cooling Conduction)+( Existing Cooling Infiltration)	63,604 ) + ( 136,075 ) =	<b>199,679 MBH 24.6% Reduction</b>
Proposed Cooling loss=( Proposed Cooling Conduction)+( Existing Heating Infiltration)	0 ) + ( 0 ) =	<b>0 MBH</b>
Proposed Cooling loss=( Existing Heat Loss)/(( Boiler Efficiency)*( Conversion Factor ) =	264,987 )/(( 80% )*( 92 ) =	<b>3,620 gallons</b>
Proposed Heating Energy =( Proposed Heat Loss)/(( Boiler Efficiency)*( Conversion Factor ) =	199,679 )/(( 80% )*( 92 ) =	<b>2,728 gallons 24.6% Reduction</b>
Proposed Cooling Energy =( Existing Cooling Loss) x ( Chiller Efficiency)/( Conversion Factor ) =	0 )*( - )/( 12 ) =	<b>0 kWh</b>
Proposed Cooling Energy =( Proposed Cooling Loss) x Chiller Efficiency)/( Conversion Factor ) =	0 )*( - )/( 12 ) =	<b>0 kWh #DIV/0! Reduction</b>

<b>Annual Existing Heating</b>	<b>3,620 gallons</b>	<b>=&gt;</b>	<b>\$ 5,756</b>
<b>Annual Existing Cooling</b>	<b>- kWh</b>	<b>=&gt;</b>	<b>\$ -</b>
<b>TOTAL EXIST COST PER YEAR</b>	<b>=====</b>	<b>=&gt;</b>	<b>\$ 5,756</b>
<b>Annual Proposed Heating</b>	<b>2,728 gallons</b>	<b>=&gt;</b>	<b>\$ 4,337</b>
<b>Annual Proposed Cooling</b>	<b>- kWh</b>	<b>=&gt;</b>	<b>\$ -</b>
<b>TOTAL PROPOSED COST PER YEAR</b>	<b>=====</b>	<b>=&gt;</b>	<b>\$ 4,337</b>
<b>SAVINGS AT 100% GUARANTEE</b>			
<b>Annual Heating Savings:</b>	<b>892 gallons</b>	<b>=&gt;</b>	<b>\$ 1,419 24.65% of existing</b>
<b>Annual Cooling Savings:</b>	<b>- kWh</b>	<b>=&gt;</b>	<b>\$ - #DIV/0! of existing</b>
<b>TOTAL EXIST COST SAVINGS PER YEAR</b>	<b>=====</b>	<b>=&gt;</b>	<b>\$ 1,419 24.65% Reduction</b>



**FIM #78**

**Replace Electric DHW with LPG-fired Unit  
Ulster County  
Carr Building**

**Summary:** The existing DHW system is a 30 gallon electric hot water heater with two 4,500 Watt elements. Replace with a LPG-fired power-vent unit .

Employees	5	
Average usage/day	10	gal/person
Total use per day	50	gal/day

Utility Cost Data		
Electric	\$0.084	\$/kWh
	8	\$/kW
Propane	\$1.590	\$/gallon
	\$17.36	\$/Million BTU

Total Usage/day	50	gal/day
Entering water temp	50	F
Leaving water temp	120	F
Energy per day	29,183	Btu/day
System Losses	20%	
Total Energy per day	35,020	BTU/day

Days of Oper/yr	250	M-F, 10 Holidays
Yearly Heater Input	8,755	Mbtu/yr
	2,565	KWH/yr
Diversity Factor	0.5	
Element Power (one element)	4,500.0	Watts
Demand Contribution	2.3	
Yearly Cost	\$ 431	

New DHW Heater efficiency	85%
New System Efficiency	80%
New Heater Input	42,916 Btu/day
New Yearly Input	11 Million BTL
Annual energy cost	\$186
Savings =	\$245 per year

J/yr

**Title** Unoccupied Space Temperature Setpoint Adjustment  
**Project:** Ulster County  
**Site:** Boiceville Substation Office Area - Programmable T-Stat - Unoccupied from 5 PM to 8 AM

**Description** Reset unoccupied space temperature setpoint up in summer and down in winter.

<b>Given</b>	Heating Energy Cost	\$1.59	\$/gal (LP Gas)		(From Bills)
	Electric Energy Cost	\$0.084	\$/kWh		(From Bills)
	Window Area	1,700	square feet		(From survey)
	Roof Area	76	square feet		(From survey)
	Total Envelope Area	1,080	square feet		(From survey)
	Building Heating Costs	2,856	square feet		(From Bills)
	Window U factor	\$ 1,427			(From window survey)
	Wall U factor	0.35	Btu/(h*sqft*degf)		(From wall survey)
	Roof U factor	0.09	Btu/(h*sqft*degf)		(From roof survey)
	Cooling Conversion	0.05	Btu/(h*sqft*degf)		
	Heating Btu Conversion	12	Mbh/Ton		
		91.5	Mbh/gallon		

<b>Assumptions</b>	Boiler Efficiency	85%		(Assumption)
	Chiller Efficiency	-	kWh/Ton	(Assumption)
	Air Infiltration & Leakage	0.10	cfm/ft2	(Assumption)
	Occupied Indoor Heating Temperature Setpoint	65	Degrees F	(Assumption)
	Unoccupied Indoor Heating Temperature Setpoint	50	Degrees F	(Assumption)
	Occupied Indoor Cooling Temperature Setpoint	80	Degrees F	(Assumption)
	Unoccupied Indoor Cooling Temperature Setpoint	80	Degrees F	(Assumption)

**Formula**  
 Overall U Factor = ((Window U factor x Window Area) + (Wall U factor x Wall Area) + (Roof U factor x Roof Area)) / (Total Envelope Area)  
 Cooling Conduction (MBH) = Overall U Factor x Area x ((OA Temperature - Occupied Temperature) \* Occupied Hours) + (OA Temperature - Unoccupied Temperature) \* Unoccupied Hours) / 1,000 btu/MBH  
 Heating Conduction (MBH) = Overall U Factor x Area x ((Occupied Temperature - OA Temperature) \* Occupied Hours) + (Unoccupied Temperature - OA Temperature) \* Unoccupied Hours) / 1,000 btu/MBH  
 Cooling Infiltration (MBH) = Air Infiltration & Leakage x Area x ((OA Temperature - Occupied Temperature) \* Occupied Hours) + (OA Temperature - Unoccupied Temperature) \* Unoccupied Hours) / 1,000 btu/MBH  
 Heating Infiltration (MBH) = Air Infiltration & Leakage x Area x ((Occupied Temperature - OA Temperature) \* Occupied Hours) + (Unoccupied Temperature - OA Temperature) \* Unoccupied Hours) / 1,000 btu/MBH  
 Heat loss = (Heating Conduction) + (Heating Infiltration) Heating Energy = (Heat Loss) / ((Boiler Efficiency) x (Conversion Factor))  
 Cooling loss = (Cooling Conduction) + (Cooling Infiltration) Cooling Energy = (Cooling Loss) / (Chiller Efficiency) / (Conversion Factor)

**Calculations**  
 Overall U Factor = ((Window U factor x Window Area) + (Wall U factor x Wall Area) + (Roof U factor x Roof Area)) / (Total Envelope Area)  
 Overall U Factor = (( 0.35 x 1,700 ) + ( 0.09 x 76 ) + ( 0.05 x 1,080 )) / ( 2856 ) = **0.082 Btu/(h\*sqft)**

OA Temp	Unoccupied Hours	Total Hours	Cooling Conduction (MBH)	Heating Conduction (MBH)	Cooling Infiltration (MBH)	Heating Infiltration (MBH)
92	2	0	0	0	0	0
87	17	0	0	0	0	0
82	65	0	0	0	0	0
77	153	0	0	0	0	0
72	331	0	0	0	0	0
67	443	0	0	0	0	0
62	616	0	0	0	0	0
57	503	0	0	0	0	0
52	389	0	0	0	0	0
47	404	544	0	2,287	0	3,020
42	361	552	0	2,966	0	3,916
37	628	874	0	5,717	0	7,548
32	539	772	0	5,951	0	7,858
27	435	670	0	5,947	0	7,853
22	315	432	0	4,339	0	5,730
17	336	442	0	4,956	0	6,544
12	135	176	0	2,179	0	2,877
7	92	106	0	1,436	0	1,896
2	57	63	0	927	0	1,224
-3	19	20	0	318	0	419
<b>Subtotal =</b>	<b>5840 Hours</b>	<b>4651 Hours</b>	<b>0 MBH</b>	<b>36,706 MBH</b>	<b>0 MBH</b>	<b>48,467 MBH</b>

OA Temp	Unoccupied Hours	Total Hours	Cooling Conduction (MBH)	Heating Conduction (MBH)	Cooling Infiltration (MBH)	Heating Infiltration (MBH)
92	2	0	0	0	0	0
87	17	0	0	0	0	0
82	65	0	0	0	0	0
77	153	0	0	0	0	0
72	331	0	0	0	0	0
67	443	0	0	0	0	0
62	616	0	0	0	0	0
57	503	0	0	0	0	0
52	389	0	0	0	0	0
47	404	544	0	872	0	1,151
42	361	552	0	1,701	0	2,246
37	628	874	0	3,516	0	4,643
32	539	772	0	4,063	0	5,364
27	435	670	0	4,423	0	5,840
22	315	432	0	3,236	0	4,272
17	336	442	0	3,779	0	4,989
12	135	176	0	1,706	0	2,253
7	92	106	0	1,114	0	1,471
2	57	63	0	727	0	961
-3	19	20	0	251	0	332
<b>Subtotal =</b>	<b>5840 Hours</b>	<b>4651 Hours</b>	<b>0 MBH</b>	<b>25,136 MBH</b>	<b>0 MBH</b>	<b>33,190 MBH</b>

Existing Heat loss=( Existing Heating Conduction) + ( Existing Heating Infiltration )			
Existing Heat loss=( 36,706 ) + ( 48,467 ) =		<b>85,174 MBH</b>	
Proposed Heat loss=( Proposed Heating Conduction)+( Proposed Heating Infiltration )			
Proposed Heat loss=( 25,136 ) + ( 33,190 ) =		<b>58,326 MBH</b>	<b>31.5% Reduction</b>
Existing Cooling loss=( Existing Cooling Conduction)+( Existing Cooling Infiltration )			
Existing Cooling loss=( 0 ) + ( 0 ) =		<b>0 MBH</b>	
Proposed Cooling loss=( Proposed Cooling Conduction)+( Proposed Cooling Infiltration )			
Proposed Cooling loss=( 0 ) + ( 0 ) =		<b>0 MBH</b>	<b>#DIV/0! Reduction</b>
Existing Heating Energy = ( Existing Heat Loss)/(( Boiler Efficiency)*( Conversion Factor ) =			
Existing Heating Energy = ( 85,174 )/(( 85% )*( 92 ) =		<b>1,095 gallons</b>	
Proposed Heating Energy = ( Proposed Heat Loss)/(( Boiler Efficiency)*( Conversion Factor ) =			
Proposed Heating Energy = ( 58,326 )/(( 85% )*( 92 ) =		<b>750 gallons</b>	<b>31.5% Reduction</b>
Existing Cooling Energy = ( Existing Cooling Loss) x ( Chiller Efficiency)/( Conversion Factor ) =			
Existing Cooling Energy = ( 0 )*( - )/( 12 ) =		<b>0 kWh</b>	
Proposed Cooling Energy = ( Proposed Cooling Loss) x (Chiller Efficiency)/( Conversion Factor ) =			
Proposed Cooling Energy = ( 0 )*( - )/( 12 ) =		<b>0 kWh</b>	<b>#DIV/0! Reduction</b>

<b>Results</b>	Annual Existing Heating	1,095 gallons	=>	\$ 1,741
	Annual Existing Cooling	- kWh	=>	\$ -
	<b>TOTAL EXIST COST PER YEAR</b>			<b>\$ 1,741</b>
	Annual Proposed Heating	750 gallons	=>	\$ 1,192
	Annual Proposed Cooling	- kWh	=>	\$ -
	<b>TOTAL PROPOSED COST PER YEAR</b>			<b>\$ 1,192</b>
	<b>SAVINGS AT 100% GUARANTEE</b>			
	Annual Heating Savings	345 gallons	=>	\$ 549
	Annual Cooling Savings	- kWh	=>	\$ -
	<b>TOTAL EXIST COST SAVINGS PER YEAR</b>			<b>\$ 549</b>

## FIM # 81 Saugerties Substation Garage Infrared Heating

### Inputs

FO Cost/Gallon	\$2.04
LPG Cost/Gallon	\$1.50

### Savings

#2 Fuel Oil Saved (gallons)	2,383	\$4,861.81
Propane Usage (gallons)	1,947	\$2,920.53
		\$1,941.28

### Current Usage

Item	Quantity	Operating Hours	Input (BTUH)	Operating Efficiency	Average Operating Capacity	Annual Fuel Oil Usage (gallons)
Furnace	1	4,693	240,000	85%	25.0%	2,383

### Proposed Usage

Item	Quantity	Operating Hours	Input (BTUH)	Operating Efficiency	Average Operating Capacity	Annual Propane Usage (Gal)
Infrared Heating	2	3497	50,000	85%	51.0%	1,947

**Title** Unoccupied Space Temperature Setpoint Adjustment  
**Project:** Ulster County  
**Site:** Saugerties Substation Office Area - Programable T-Stat - Unoccupied from 5 PM to 8 AM - Assumes Infrared in Bay area implemented

**Description** Reset unoccupied space temperature setpoint up in summer and down in winter.

<b>Given</b>	Heating Energy Cost	\$2.04	\$/gal (Fuel Oil #2)	(From Bills)
	Electric Energy Cost	\$0.084	\$/kWh	(From Bills)
	Wall Area	1,584	square feet	(From survey)
	Window Area	10	square feet	(From survey)
	Roof Area	1,080	square feet	(From survey)
	Total Envelope Area	2,674	square feet	
	Building Heating Costs	\$ 1,427		(From Bills)
	Window U factor	0.35	Btu/(h*sqft*degf)	(From window survey)
	Wall U factor	0.09	Btu/(h*sqft*degf)	(From wall survey)
	Roof U factor	0.05	Btu/(h*sqft*degf)	(From roof survey)
	Cooling Conversion	12	Mbh/Ton	
	Heating Btu Conversion	139	Mbh/gallon	

<b>Assumptions</b>	Boiler Efficiency	85%		(Assumption)
	Chiller Efficiency	-	kWh/Ton	(Assumption)
	Air Infiltration & Leakage	0.14	cfm/ft2	(Assumption)
	Occupied Indoor Heating Temperature Setpoint	65	Degrees F	(Assumption)
	Unoccupied Indoor Heating Temperature Setpoint	50	Degrees F	(Assumption)
	Occupied Indoor Cooling Temperature Setpoint	80	Degrees F	(Assumption)
	Unoccupied Indoor Cooling Temperature Setpoint	80	Degrees F	(Assumption)

**Formula**  
 Overall U Factor = ((Window U factor x Window Area) + (Wall U factor x Wall Area) + (Roof U factor x Roof Area)) / (Total Envelope Area)  
 Cooling Conduction (MBH) = Overall U Factor x Area x ((OA Temperature - Occupied Temperature) \* Occupied Hours) + (OA Temperature - Unoccupied Temperature) \* Unoccupied Hours / 1,000 btu/MBH  
 Heating Conduction (MBH) = Overall U Factor x Area x ((Occupied Temperature - OA Temperature) \* Occupied Hours) + (Unoccupied Temperature - OA Temperature) \* Unoccupied Hours / 1,000 btu/MBH  
 Cooling Infiltration (MBH) = Air Infiltration & Leakage x Area x ((OA Temperature - Occupied Temperature) \* Occupied Hours) + (OA Temperature - Unoccupied Temperature) \* Unoccupied Hours / 1,000 btu/MBH  
 Heating Infiltration (MBH) = Air Infiltration & Leakage x Area x ((Occupied Temperature - OA Temperature) \* Occupied Hours) + (Unoccupied Temperature - OA Temperature) \* Unoccupied Hours / 1,000 btu/MBH  
 Heat loss = (Heating Conduction) + (Heating Infiltration) Heating Energy = (Heat Loss) / ((Boiler Efficiency) x (Conversion Factor))  
 Cooling loss = (Cooling Conduction) + (Cooling Infiltration) Cooling Energy = (Cooling Loss) / (Chiller Efficiency) / (Conversion Factor)

**Calculations**  
 Overall U Factor = (( Window U factor x Window Area ) + ( Wall U factor x Wall Area ) + ( Roof U factor x Roof Area )) / ( Total Envelope Area )  
 Overall U Factor = ( ( 0.35 x 10 ) + ( 0.09 x 1584 ) + ( 0.05 x 1080 ) ) / ( 2674 ) = **0.075 Btu/(h\*sqft\*degf)**

Total Envelope energy loss per year without temperature setback						
OA Temp	Unoccupied Hours	Total Hours	Cooling Conduction (MBH)	Heating Conduction (MBH)	Cooling Infiltration (MBH)	Heating Infiltration (MBH)
92	2	0	0	0	0	0
87	17	0	0	0	0	0
82	65	0	0	0	0	0
77	153	0	0	0	0	0
72	331	0	0	0	0	0
67	443	0	0	0	0	0
62	616	0	0	0	0	0
57	503	0	0	0	0	0
52	389	0	0	0	0	0
47	404	544	0	1,959	0	3,959
42	361	552	0	2,540	0	5,133
37	628	874	0	4,896	0	9,894
32	539	772	0	5,097	0	10,300
27	435	670	0	5,094	0	10,294
22	315	432	0	3,716	0	7,510
17	336	442	0	4,244	0	8,578
12	135	176	0	1,866	0	3,771
7	92	106	0	1,230	0	2,486
2	57	63	0	794	0	1,605
-3	19	20	0	272	0	550
<b>Subtotal =</b>	<b>5840 Hours</b>	<b>4651 Hours</b>	<b>0 MBH</b>	<b>31,436 MBH</b>	<b>0 MBH</b>	<b>63,530 MBH</b>

Total Envelope energy loss per year with temperature setback						
OA Temp	Unoccupied Hours	Total Hours	Cooling Conduction (MBH)	Heating Conduction (MBH)	Cooling Infiltration (MBH)	Heating Infiltration (MBH)
92	2	0	0	0	0	0
87	17	0	0	0	0	0
82	65	0	0	0	0	0
77	153	0	0	0	0	0
72	331	0	0	0	0	0
67	443	0	0	0	0	0
62	616	0	0	0	0	0
57	503	0	0	0	0	0
52	389	0	0	0	0	0
47	404	544	0	747	0	1,509
42	361	552	0	1,457	0	2,944
37	628	874	0	3,011	0	6,086
32	539	772	0	3,479	0	7,031
27	435	670	0	3,788	0	7,656
22	315	432	0	2,771	0	5,600
17	336	442	0	3,236	0	6,540
12	135	176	0	1,461	0	2,953
7	92	106	0	954	0	1,928
2	57	63	0	623	0	1,259
-3	19	20	0	215	0	435
<b>Subtotal =</b>	<b>5840 Hours</b>	<b>4651 Hours</b>	<b>0 MBH</b>	<b>21,527 MBH</b>	<b>0 MBH</b>	<b>43,505 MBH</b>

Existing Heat loss=( Existing Heating Conduction) + ( Existing Heating Infiltration )			
Existing Heat loss=( 31,436 ) + ( 63,530 ) =			<b>94,966 MBH</b>
Proposed Heat loss=( Proposed Heating Conduction)+( Proposed Heating Infiltration )			
Proposed Heat loss=( 21,527 ) + ( 43,505 ) =			<b>65,032 MBH 31.5% Reduction</b>
Existing Cooling loss=( Existing Cooling Conduction)+( Existing Cooling Infiltration )			
Existing Cooling loss=( 0 ) + ( 0 ) =			<b>0 MBH</b>
Proposed Cooling loss=( Proposed Cooling Conduction)+( Proposed Cooling Infiltration )			
Proposed Cooling loss=( 0 ) + ( 0 ) =			<b>0 MBH #DIV/0! Reduction</b>
Existing Heating Energy = ( Existing Heat Loss)/(( Boiler Efficiency) * ( Conversion Factor )) =			
Existing Heating Energy = ( 94,966 )/(( 85% ) * ( 139 )) =			<b>804 gallons</b>
Proposed Heating Energy = ( Proposed Heat Loss)/(( Boiler Efficiency) * ( Conversion Factor )) =			
Proposed Heating Energy = ( 65,032 )/(( 85% ) * ( 139 )) =			<b>550 gallons 31.5% Reduction</b>
Existing Cooling Energy = ( Existing Cooling Loss ) x ( Chiller Efficiency )/ ( Conversion Factor ) =			
Existing Cooling Energy = ( 0 ) * ( - ) / ( 12 ) =			<b>0 kWh</b>
Proposed Cooling Energy = ( Proposed Cooling Loss ) x ( Chiller Efficiency )/ ( Conversion Factor ) =			
Proposed Cooling Energy = ( 0 ) * ( - ) / ( 12 ) =			<b>0 kWh #DIV/0! Reduction</b>

<b>Results</b>	Annual Existing Heating	804 gallons	=>	\$ 1,640
	Annual Existing Cooling	- kWh	=>	\$ -
	<b>TOTAL EXIST COST PER YEAR</b>			<b>\$ 1,640</b>
	Annual Proposed Heating	550 gallons	=>	\$ 1,123
	Annual Proposed Cooling	- kWh	=>	\$ -
	<b>TOTAL PROPOSED COST PER YEAR</b>			<b>\$ 1,123</b>
	<b>SAVINGS AT 100% GUARANTEE</b>			
	Annual Heating Savings	253 gallons	=>	\$ 517 31.52% of existing
	Annual Cooling Savings	- kWh	=>	\$ - #DIV/0! of existing
	<b>TOTAL EXIST COST SAVINGS PER YEAR</b>			<b>\$ 517 31.52% Reduction</b>

FIM # 84 AHU-22, Sheriff's Wing, 1st Floor

Title Time of Day Equipment Scheduling (TOD)

Project Ulster County
Site Ulster County Jail

Description Equipment currently operates more than required based on occupancy. If the equipment operation is properly scheduled to meet occupancy need, it will greatly reduce energy costs.

Table with 3 columns: Group #1, Group #2, Group #3. Rows include Electric Energy Costs, Heating Energy Costs, Summer Indoor Temperature Setpoint, Winter Indoor Temperature Setpoint, Multiple System Operation, Total Fan System Load, Existing Operating Hours per Week, Operating Weeks per Year, Cooling Season Operating Weeks, Heating Season Operating Weeks, Cooling Conversion, Heating Value of Fuel.

Table with 3 columns: Group #1, Group #2, Group #3. Rows include Chiller Efficiency, Heating Plant Efficiency, Summer Unoccupied Temperature, Winter Unoccupied Temperature, Multiple System Operation, Reduction in Runtime Hours, CFM per motor HP, Cycling Factor for off hours runtime, Fan System Load Factor, Fan System Motor Efficiency.

Formula Motor Energy Use = (HorsePower x Load Factor x 0.746 x operating hours x operating weeks )
Motor Energy Savings = (HorsePower x Load Factor x 0.746 x reduced hours x operating weeks ) x ( 1 - Cycling Factor )
Cooling Energy Use = (Fan HorsePower x (cfm/hp) x 1.08 x (Avg Summer Unoccupied Temp. - Summer Indoor Setpoint (Td)) x Operating Hours x operating Weeks x Cooling eff.)/(btu/ton)
Cooling Energy Savings = (Fan HorsePower x (cfm/hp) x 1.08 x (Avg Summer Unoccupied Temp. - Summer Indoor Setpoint (Td)) x Reduced Hours x operating Weeks x Cooling eff.)/(btu/ton)
Existing Heating Use = ((Fan HorsePower x (cfm/hp) x 1.08 x Temperature Difference x Operating Hours x Heating Weeks)/(Btu/unit heating x Heating Eff))
Heating Energy Savings = ((Fan HorsePower x (cfm/hp) x 1.08 x Temperature Difference x Reduced Operating Hours x Heating Weeks)/(Btu/unit heating x Heating Eff)) x (1-Cycling Factor)

Calculation table for Existing Motor Use. Columns: HP, Load Factor, Conversion, Existing Hrs, Operating Weeks, CyclingFactor. Rows for Group #1, #2, #3. Total Existing Motor Use: 98257 Kwh.

Calculation table for Motor Savings. Columns: HP, Load Factor, Conversion, Reduced Hrs, Operating Weeks, CyclingFactor. Rows for Group #1, #2, #3. Total Motor Savings: 32752 Kwh.

Calculation table for Existing Cooling Use. Columns: HP, CFM/HP, Conversion, Unoccupied Temperature, Occupied Temperature, Operating Hours, Cooling Weeks, Cooling Efficiency, Conversion. Rows for Group #1, #2, #3. Total Existing Cooling Use: 10535 Kwh.

Calculation table for Cooling Savings. Columns: HP, CFM/HP, Conversion, Unoccupied Temperature, Occupied Temperature, Reduced Hours, Cooling Weeks, Cooling Efficiency, Conversion. Rows for Group #1, #2, #3. Total Cooling Savings: 4390 Kwh.

Calculation table for Existing Heating Use. Columns: HP, CFM/HP, Conversion, Temperature Difference, Existing Hours, Htg Wks, Conversion, Heating Efficiency, Cycling Factor. Rows for Group #1, #2, #3. Total Existing Heating Use: 3045 gallons.

Calculation table for Heating Savings. Columns: HP, CFM/HP, Conversion, Temperature Difference, Reduced Hrs, Htg Wks, Conversion, Heating Efficiency, Cycling Factor. Rows for Group #1, #2, #3. Total Heating Savings: 1015 gallons.

Existing Use summary table. Rows: Existing Annual Motor Use= 98257 Kwh, Existing Annual Cooling Use= 10535 Kwh, Existing Annual Heating Use= 3045 gallons, Existing Annual Cost Use= \$ 18,834.

Result @ 100% summary table. Rows: Annual Motor Savings= 32752 Kwh (\$ 3,177, 33% of existing use), Annual Cooling Savings= 4390 Kwh (\$ 426, 42% of existing use), Annual Heating Savings= 1015 gallons (\$ 2,761, 33% of existing use), Annual Cost Savings= \$ 6,363, 34% of existing use.

Result @ 80% summary table. Rows: Annual Motor Savings= 26202 Kwh (\$ 2,542, 27% of existing use), Annual Cooling Savings= 3512 Kwh (\$ 341, 33% of existing use), Annual Heating Savings= 812 gallons (\$ 2,208, 27% of existing use), Annual Cost Savings= \$ 5,091, 27% of existing use.

Comments

FIM # 84 AHU-23, Sheriff's Wing, 2nd Floor

Title Time of Day Equipment Scheduling (TOD)  
 Project Ulster County  
 Site Ulster County Jail

Description Equipment currently operates more than required based on occupancy. If the equipment operation is properly scheduled to meet occupancy need, it will greatly reduce energy costs.

Given	Electric Energy Costs	\$ 0.0970 \$/kWh
	Heating Energy Costs	\$ 2.72 \$/gal (Fuel Oil #2)
	Summer Indoor Temperature Setpoint	72 degF
	Winter Indoor Temperature Setpoint	72 degF
	Multiple System Operation	Group #1 Group #2 Group #3
	Total Fan System Load	40 HP 0 HP 0 HP
	Existing Operating Hours per Week	168 hours/week 0 hours/week 0 hours/week
	Operating Weeks per Year	32 weeks 45 weeks 44 weeks
	Cooling Season Operating Weeks	12 weeks 10 weeks 8 weeks
	Heating Season Operating Weeks	20 weeks 35 weeks 36 weeks
	Cooling Conversion	12,000 btu/Ton
	Heating Value of Fuel	139,000 btu/gallons

Assumptions	Chiller Efficiency	0.85 kW/ton
	Heating Plant Efficiency	82%
	Summer Unoccupied Temperature	77 degF
	Winter Unoccupied Temperature	65 degF
	Multiple System Operation	Group #1 Group #2 Group #3
	Reduction in Runtime Hours	70 hours/week 0 hours/week 0 hours/week
	CFM per motor HP	510.55 cfm/hp 800 cfm/hp 600 cfm/hp
	Cycling Factor for off hours runtime	20% 15% 20%
	Fan System Load Factor	70% 65% 60%
	Fan System Motor Efficiency	90% 85% 80%

Formula  
 Motor Energy Use = (HorsePower x Load Factor x 0.746 x operating hours x operating weeks )  
 Motor Energy Savings = (HorsePower x Load Factor x 0.746 x reduced hours x operating weeks ) x ( 1 - Cycling Factor )  
 Cooling Energy Use = (Fan HorsePower x (cfm/hp) x 1.08 x (Avg Summer Unoccupied Temp. - Summer Indoor Setpoint (Td)) x Operating Hours x operating Weeks x Cooling eff.)/(btu/ton)  
 Cooling Energy Savings = (Fan HorsePower x (cfm/hp) x 1.08 x (Avg Summer Unoccupied Temp. - Summer Indoor Setpoint (Td)) x Reduced Hours x operating Weeks x Cooling eff.)/(btu/ton)  
 Existing Heating Use = ((Fan HorsePower x (cfm/hp) x 1.08 x Temperature Difference x Operating Hours x Heating Weeks)/(Btu/unit heating x Heating Eff))  
 Heating Energy Savings = ((Fan HorsePower x (cfm/hp) x 1.08 x Temperature Difference x Reduced Operating Hours x Heating Weeks)/(Btu/unit heating x Heating Eff)) x (1-Cycling Factor)

HP	Load Factor	Conversion	Existing Hrs	Operating Weeks	CyclingFactor		
Existing Motor Use Group #1	= ( 40 x 70% x	0.746 x	168 x	32 )	=	On time	112294 Kwh
	= ( 40 x 70% x	0.746 x	0 x	32 )x(	20% )	Off time	0 Kwh
Existing Motor Use Group #2	= ( 0 x 65% x	0.746 x	0 x	45 )	=	On time	0 Kwh
	= ( 0 x 65% x	0.746 x	168 x	45 )x(	15% )	Off time	0 Kwh
Existing Motor Use Group #3	= ( 0 x 60% x	0.746 x	0 x	44 )	=	On time	0 Kwh
	= ( 0 x 60% x	0.746 x	168 x	44 )x(	20% )	Off time	0 Kwh
							<b>112294</b> Kwh

HP	Load Factor	Conversion	Reduced Hrs	Operating Weeks	CyclingFactor		
Motor Savings Group #1	= ( 40 x 70% x	0.746 x	70 x	32 )x(	1 - 20% )		37431 Kwh
Motor Savings Group #2	= ( 0 x 65% x	0.746 x	0 x	45 )x(	1 - 15% )		0 Kwh
Motor Savings Group #3	= ( 0 x 60% x	0.746 x	0 x	44 )x(	1 - 20% )		0 Kwh
							<b>37431</b> Kwh

HP	CFM/HP	Conversion	Unoccupied Temperature	Occupied Temperature	Operating Hours	Cooling Weeks	Cooling Efficiency	Conversion	
Existing Cooling Use Group #1	= ( 40 x 510.55 x	1.08 x (	77 -	72 ) x	168 x	12 x	0.85 )/	12,000 =	15747.81264 Kwh
Existing Cooling Use Group #2	= ( 0 x 800 x	1.08 x (	77 -	72 ) x	0 x	10 x	0.85 )/	12,000 =	0 Kwh
Existing Cooling Use Group #3	= ( 0 x 600 x	1.08 x (	77 -	72 ) x	0 x	8 x	0.85 )/	12,000 =	0 Kwh
									<b>15748</b> Kwh

HP	CFM/HP	Conversion	Unoccupied Temperature	Occupied Temperature	Reduced Hours	Cooling Weeks	Cooling Efficiency	Conversion	
Cooling Savings Group #1	= ( 40 x 510.55 x	1.08 x (	77 -	72 ) x	70 x	12 x	0.85 )/	12,000 =	6561.5886 Kwh
Cooling Savings Group #2	= ( 0 x 800 x	1.08 x (	77 -	72 ) x	0 x	10 x	0.85 )/	12,000 =	0 Kwh
Cooling Savings Group #3	= ( 0 x 600 x	1.08 x (	77 -	72 ) x	0 x	8 x	0.85 )/	12,000 =	0 Kwh
									<b>6562</b> Kwh

HP	CFM/HP	Conversion	Temperature Difference	Existing Hours	Htg Wks	Conversion	Heating Efficiency	Cycling Factor	
Existing Heating Use Group #1	= ( 40 x 510.55 x	1.08 x	7 x	168 x	20 )/(	139,000 x	82%		4551 gallons
	= ( 40 x 510.55 x	1.08 x	7 x	0 x	20 )/(	139,000 x	82%)x(	20% )	0 gallons
Existing Heating Use Group #2	= ( 0 x 800 x	1.08 x	7 x	0 x	35 )/(	139,000 x	82%		0 gallons
	= ( 0 x 800 x	1.08 x	7 x	168 x	35 )/(	139,000 x	82%)x(	15% )	0 gallons
Existing Heating Use Group #3	= ( 0 x 600 x	1.08 x	7 x	0 x	36 )/(	139,000 x	82%		0 gallons
	= ( 0 x 600 x	1.08 x	7 x	168 x	36 )/(	139,000 x	82%)x(	20% )	0 gallons
									<b>4551</b> gallons

HP	CFM/HP	Conversion	Temperature Difference	Reduced Hrs	Htg Wks	Conversion	Heating Efficiency	Cycling Factor	
Heating Savings Group #1	= ( 40 x 510.55 x	1.08 x	7 x	70 x	20 )/(	139,000 x	82%)x(	1 - 20% )	1517 gallons
Heating Savings Group #2	= ( 0 x 800 x	1.08 x	7 x	0 x	35 )/(	139,000 x	82%)x(	1 - 15% )	0 gallons
Heating Savings Group #3	= ( 0 x 600 x	1.08 x	7 x	0 x	36 )/(	139,000 x	82%)x(	1 - 20% )	0 gallons
									<b>1517</b> gallons

Existing Heating and Cooling Use are approximate and used for comparison purposes only. Calculation does not account for heat loss and ventilation, but only reset temperature differences.

Existing Use	Existing Annual Motor Use=	112294 Kwh	\$ 10,893
	Existing Annual Cooling Use=	15748 Kwh	\$ 1,528
	Existing Annual Heating Use=	4551 gallons	\$ 12,379
	Existing Annual Cost Use=		\$ 24,799

Result @ 100%	Annual Motor Savings=	37431 Kwh	\$ 3,631	33% of existing use
	Annual Cooling Savings=	6562 Kwh	\$ 636	42% of existing use
	Annual Heating Savings=	1517 gallons	\$ 4,126	33% of existing use
	Annual Cost Savings=		\$ 8,394	34% of existing use

Result @ 80%	Annual Motor Savings=	29945 Kwh	\$ 2,905	27% of existing use
	Annual Cooling Savings=	5249 Kwh	\$ 509	33% of existing use
	Annual Heating Savings=	1214 gallons	\$ 3,301	27% of existing use
	Annual Cost Savings=		\$ 6,715	27% of existing use

Comments

FIM # **84 AHU-24, Lower Security Wing C, 1st Floor**

Title **Time of Day Equipment Scheduling (TOD)**  
 Project **Ulster County**  
 Site **Ulster County Jail**

Description Equipment currently operates more than required based on occupancy. If the equipment operation is properly scheduled to meet occupancy need, it will greatly reduce energy costs.

Given	Electric Energy Costs	\$ 0.0970 \$/kWh
	Heating Energy Costs	\$ 2.72 \$/gal (Fuel Oil #2)
	Summer Indoor Temperature Setpoint	72 degF
	Winter Indoor Temperature Setpoint	72 degF
	Multiple System Operation	Group #1 Group #2 Group #3
	Total Fan System Load	30 HP 0 HP 0 HP
	Existing Operating Hours per Week	168 hours/week 0 hours/week 0 hours/week
	Operating Weeks per Year	32 weeks 45 weeks 44 weeks
	Cooling Season Operating Weeks	12 weeks 10 weeks 8 weeks
	Heating Season Operating Weeks	20 weeks 35 weeks 36 weeks
	Cooling Conversion	12,000 btu/Ton
	Heating Value of Fuel	139,000 btu/gallons

Assumptions	Chiller Efficiency	0.85 kW/ton
	Heating Plant Efficiency	82%
	Summer Unoccupied Temperature	77 degF
	Winter Unoccupied Temperature	65 degF
	Multiple System Operation	Group #1 Group #2 Group #3
	Reduction in Runtime Hours	70 hours/week 0 hours/week 0 hours/week
	CFM per motor HP	296.83333 cfm/hp 800 cfm/hp 600 cfm/hp
	Cycling Factor for off hours runtime	20% 15% 20%
	Fan System Load Factor	70% 65% 60%
	Fan System Motor Efficiency	90% 85% 80%

Formula  
 Motor Energy Use = (HorsePower x Load Factor x 0.746 x operating hours x operating weeks )  
 Motor Energy Savings = (HorsePower x Load Factor x 0.746 x reduced hours x operating weeks ) x ( 1 - Cycling Factor )  
 Cooling Energy Use = (Fan HorsePower x (cfm/hp) x 1.08 x (Avg Summer Unoccupied Temp. - Summer Indoor Setpoint (Td)) x Operating Hours x operating Weeks x Cooling eff.)/(btu/ton)  
 Cooling Energy Savings = (Fan HorsePower x (cfm/hp) x 1.08 x (Avg Summer Unoccupied Temp. - Summer Indoor Setpoint (Td)) x Reduced Hours x operating Weeks x Cooling eff.)/(btu/ton)  
 Existing Heating Use = ((Fan HorsePower x (cfm/hp) x 1.08 x Temperature Difference x Operating Hours x Heating Weeks)/(Btu/unit heating x Heating Eff))  
 Heating Energy Savings = ((Fan HorsePower x (cfm/hp) x 1.08 x Temperature Difference x Reduced Operating Hours x Heating Weeks)/(Btu/unit heating x Heating Eff)) x (1-Cycling Factor)

	HP	Load Factor	Conversion	Existing Hrs	Operating Weeks	CyclingFactor	
Existing Motor Use Group #1	=( 30 x	70% x	0.746 x	168 x	32 )	=	On time 84220 Kwh
	=( 30 x	70% x	0.746 x	0 x	32 )x(	20% )	Off time 0 Kwh
Existing Motor Use Group #2	=( 0 x	65% x	0.746 x	0 x	45 )	=	On time 0 Kwh
	=( 0 x	65% x	0.746 x	168 x	45 )x(	15% )	Off time 0 Kwh
Existing Motor Use Group #3	=( 0 x	60% x	0.746 x	0 x	44 )	=	On time 0 Kwh
	=( 0 x	60% x	0.746 x	168 x	44 )x(	20% )	Off time 0 Kwh
							<b>84220</b> Kwh

	HP	Load Factor	Conversion	Reduced Hrs	Operating Weeks	CyclingFactor	
Motor Savings Group #1	=( 30 x	70% x	0.746 x	70 x	32 )x(	1 - 20% )	28073 Kwh
Motor Savings Group #2	=( 0 x	65% x	0.746 x	0 x	45 )x(	1 - 15% )	0 Kwh
Motor Savings Group #3	=( 0 x	60% x	0.746 x	0 x	44 )x(	1 - 20% )	0 Kwh
							<b>28073</b> Kwh

	HP	CFM/HP	Conversion	Unoccupied Temperature	Occupied Temperature	Operating Hours	Cooling Weeks	Cooling Efficiency	Conversion	
Existing Cooling Use Group #1	=( 30 x	296.83333 x	1.08 x (	77 -	72 ) x	168 x	12 x	0.85 )/	12,000 =	6866.8236 Kwh
Existing Cooling Use Group #2	=( 0 x	800 x	1.08 x (	77 -	72 ) x	0 x	10 x	0.85 )/	12,000 =	0 Kwh
Existing Cooling Use Group #3	=( 0 x	600 x	1.08 x (	77 -	72 ) x	0 x	8 x	0.85 )/	12,000 =	0 Kwh
										<b>6867</b> Kwh

	HP	CFM/HP	Conversion	Unoccupied Temperature	Occupied Temperature	Reduced Hours	Cooling Weeks	Cooling Efficiency	Conversion	
Cooling Savings Group #1	=( 30 x	296.83333 x	1.08 x (	77 -	72 ) x	70 x	12 x	0.85 )/	12,000 =	2861.1765 Kwh
Cooling Savings Group #2	=( 0 x	800 x	1.08 x (	77 -	72 ) x	0 x	10 x	0.85 )/	12,000 =	0 Kwh
Cooling Savings Group #3	=( 0 x	600 x	1.08 x (	77 -	72 ) x	0 x	8 x	0.85 )/	12,000 =	0 Kwh
										<b>2861</b> Kwh

	HP	CFM/HP	Conversion	Temperature Difference	Existing Hours	Htg Wks	Conversion	Heating Efficiency	Cycling Factor	
Existing Heating Use Group #1	=( 30 x	296.83333 x	1.08 x	7 x	168 x	20 )/(	139,000 x	82%		)= 1985 gallons
	=( 30 x	296.83333 x	1.08 x	7 x	0 x	20 )/(	139,000 x	82%) x(	20% )	= 0 gallons
Existing Heating Use Group #2	=( 0 x	800 x	1.08 x	7 x	0 x	35 )/(	139,000 x	82%		)= 0 gallons
	=( 0 x	800 x	1.08 x	7 x	168 x	35 )/(	139,000 x	82%) x(	15% )	= 0 gallons
Existing Heating Use Group #3	=( 0 x	600 x	1.08 x	7 x	0 x	36 )/(	139,000 x	82%		)= 0 gallons
	=( 0 x	600 x	1.08 x	7 x	168 x	36 )/(	139,000 x	82%) x(	20% )	= 0 gallons
										<b>1985</b> gallons

	HP	CFM/HP	Conversion	Temperature Difference	Reduced Hrs	Htg Wks	Conversion	Heating Efficiency	Cycling Factor	
Heating Savings Group #1	=( 30 x	296.83333 x	1.08 x	7 x	70 x	20 )/(	139,000 x	82%) x(	1 - 20% )	= 662 gallons
Heating Savings Group #2	=( 0 x	800 x	1.08 x	7 x	0 x	35 )/(	139,000 x	82%) x(	1 - 15% )	= 0 gallons
Heating Savings Group #3	=( 0 x	600 x	1.08 x	7 x	0 x	36 )/(	139,000 x	82%) x(	1 - 20% )	= 0 gallons
										<b>662</b> gallons

Existing Heating and Cooling Use are approximate and used for comparison purposes only. Calculation does not account for heat loss and ventilation, but only reset temperature differences.

Existing Use	Existing Annual Motor Use=	84220 Kwh	\$ 8,169
	Existing Annual Cooling Use=	6867 Kwh	\$ 666
	Existing Annual Heating Use=	1985 gallons	\$ 5,398
	Existing Annual Cost Use=		\$ 14,233

Result @ 100%	Annual Motor Savings=	28073 Kwh	\$ 2,723	33% of existing use
	Annual Cooling Savings=	2861 Kwh	\$ 278	42% of existing use
	Annual Heating Savings=	662 gallons	\$ 1,799	33% of existing use
	Annual Cost Savings=		\$ 4,800	34% of existing use

Result @ 80%	Annual Motor Savings=	22459 Kwh	\$ 2,179	27% of existing use
	Annual Cooling Savings=	2289 Kwh	\$ 222	33% of existing use
	Annual Heating Savings=	529 gallons	\$ 1,439	27% of existing use
	Annual Cost Savings=		\$ 3,840	27% of existing use

Comments



FIM # 84 AHU-25, Upper Security Wing, 2nd Floor

Title Time of Day Equipment Scheduling (TOD)

Project Ulster County  
 Site Ulster County Jail

Description Equipment currently operates more than required based on occupancy. If the equipment operation is properly scheduled to meet occupancy need, it will greatly reduce energy costs.

**Given**

Electric Energy Costs \$ 0.0970 \$/kWh  
 Heating Energy Costs \$ 2.72 \$/gal (Fuel Oil #2)

Summer Indoor Temperature Setpoint 72 degF  
 Winter Indoor Temperature Setpoint 72 degF

	Group #1	Group #2	Group #3
Multiple System Operation	Group #1	Group #2	Group #3
Total Fan System Load	35 HP	0 HP	0 HP
Existing Operating Hours per Week	168 hours/week	0 hours/week	0 hours/week
Operating Weeks per Year	32 weeks	45 weeks	44 weeks
Cooling Season Operating Weeks	12 weeks	10 weeks	8 weeks
Heating Season Operating Weeks	20 weeks	35 weeks	36 weeks
Cooling Conversion	12,000 btu/Ton		
Heating Value of Fuel	139,000 btu/gallons		

**Assumptions**

Chiller Efficiency 0.85 kW/ton  
 Heating Plant Efficiency 82%  
 Summer Unoccupied Temperature 77 degF  
 Winter Unoccupied Temperature 65 degF

	Group #1	Group #2	Group #3
Multiple System Operation	Group #1	Group #2	Group #3
Reduction in Runtime Hours	70 hours/week	0 hours/week	0 hours/week
CFM per motor HP	292.14286 cfm/hp	800 cfm/hp	600 cfm/hp
Cycling Factor for off hours runtime	20%	15%	20%
Fan System Load Factor	70%	65%	60%
Fan System Motor Efficiency	90%	85%	80%

**Formula**

Motor Energy Use = (HorsePower x Load Factor x 0.746 x operating hours x operating weeks )  
 Motor Energy Savings = (HorsePower x Load Factor x 0.746 x reduced hours x operating weeks ) x ( 1 - Cycling Factor )  
 Cooling Energy Use = (Fan HorsePower x (cfm/hp) x 1.08 x (Avg Summer Unoccupied Temp. - Summer Indoor Setpoint (Td)) x Operating Hours x operating Weeks x Cooling eff.)/(btu/ton)  
 Cooling Energy Savings = (Fan HorsePower x (cfm/hp) x 1.08 x (Avg Summer Unoccupied Temp. - Summer Indoor Setpoint (Td)) x Reduced Hours x operating Weeks x Cooling eff.)/(btu/ton)  
 Existing Heating Use = ((Fan HorsePower x (cfm/hp) x 1.08 x Temperature Difference x Operating Hours x Heating Weeks)/(Btu/unit heating x Heating Eff))  
 Heating Energy Savings = ((Fan HorsePower x (cfm/hp) x 1.08 x Temperature Difference x Reduced Operating Hours x Heating Weeks)/(Btu/unit heating x Heating Eff)) x (1-Cycling Factor)

**Calculation**

HP	Load Factor	Conversion	Existing Hrs	Operating Weeks	CyclingFactor	
Existing Motor Use Group #1	=( 35 x 70% x	0.746 x	168 x	32 )	=	On time 98257 Kwh
	=( 35 x 70% x	0.746 x	0 x	32 )x(	20% )	Off time 0 Kwh
Existing Motor Use Group #2	=( 0 x 65% x	0.746 x	0 x	45 )	=	On time 0 Kwh
	=( 0 x 65% x	0.746 x	168 x	45 )x(	15% )	Off time 0 Kwh
Existing Motor Use Group #3	=( 0 x 60% x	0.746 x	0 x	44 )	=	On time 0 Kwh
	=( 0 x 60% x	0.746 x	168 x	44 )x(	20% )	Off time 0 Kwh
						<b>98257</b> Kwh

HP	Load Factor	Conversion	Reduced Hrs	Operating Weeks	CyclingFactor	
Motor Savings Group #1	=( 35 x 70% x	0.746 x	70 x	32 )x( 1 -	20% )	32752 Kwh
Motor Savings Group #2	=( 0 x 65% x	0.746 x	0 x	45 )x( 1 -	15% )	0 Kwh
Motor Savings Group #3	=( 0 x 60% x	0.746 x	0 x	44 )x( 1 -	20% )	0 Kwh
						<b>32752</b> Kwh

HP	CFM/HP	Conversion	Unoccupied Temperature	Occupied Temperature	Operating Hours	Cooling Weeks	Cooling Efficiency	Conversion	
Existing Cooling Use Group #1	=( 35 x 292.14286 x	1.08 x (	77 -	72 ) x	168 x	12 x	0.85 )/	12,000 =	7884.702 Kwh
Existing Cooling Use Group #2	=( 0 x 800 x	1.08 x (	77 -	72 ) x	0 x	10 x	0.85 )/	12,000 =	0 Kwh
Existing Cooling Use Group #3	=( 0 x 600 x	1.08 x (	77 -	72 ) x	0 x	8 x	0.85 )/	12,000 =	0 Kwh
									<b>7885</b> Kwh

HP	CFM/HP	Conversion	Unoccupied Temperature	Occupied Temperature	Reduced Hours	Cooling Weeks	Cooling Efficiency	Conversion	
Cooling Savings Group #1	=( 35 x 292.14286 x	1.08 x (	77 -	72 ) x	70 x	12 x	0.85 )/	12,000 =	3285.2925 Kwh
Cooling Savings Group #2	=( 0 x 800 x	1.08 x (	77 -	72 ) x	0 x	10 x	0.85 )/	12,000 =	0 Kwh
Cooling Savings Group #3	=( 0 x 600 x	1.08 x (	77 -	72 ) x	0 x	8 x	0.85 )/	12,000 =	0 Kwh
									<b>3285</b> Kwh

HP	CFM/HP	Conversion	Temperature Difference	Existing Hours	Htg Wks	Conversion	Heating Efficiency	Cycling Factor	
Existing Heating Use Group #1	=( 35 x 292.14286 x	1.08 x	7 x	168 x	20 )/(	139,000 x	82% )	20% )	2279 gallons
	=( 35 x 292.14286 x	1.08 x	7 x	0 x	20 )/(	139,000 x	82% )x(	20% )	0 gallons
Existing Heating Use Group #2	=( 0 x 800 x	1.08 x	7 x	0 x	35 )/(	139,000 x	82% )		0 gallons
	=( 0 x 800 x	1.08 x	7 x	168 x	35 )/(	139,000 x	82% )x(	15% )	0 gallons
Existing Heating Use Group #3	=( 0 x 600 x	1.08 x	7 x	0 x	36 )/(	139,000 x	82% )		0 gallons
	=( 0 x 600 x	1.08 x	7 x	168 x	36 )/(	139,000 x	82% )x(	20% )	0 gallons
									<b>2279</b> gallons

HP	CFM/HP	Conversion	Temperature Difference	Reduced Hrs	Htg Wks	Conversion	Heating Efficiency	Cycling Factor	
Heating Savings Group #1	=( 35 x 292.14286 x	1.08 x	7 x	70 x	20 )/(	139,000 x	82% )x( 1 -	20% )	760 gallons
Heating Savings Group #2	=( 0 x 800 x	1.08 x	7 x	0 x	35 )/(	139,000 x	82% )x( 1 -	15% )	0 gallons
Heating Savings Group #3	=( 0 x 600 x	1.08 x	7 x	0 x	36 )/(	139,000 x	82% )x( 1 -	20% )	0 gallons
									<b>760</b> gallons

Existing Heating and Cooling Use are approximate and used for comparison purposes only. Calculation does not account for heat loss and ventilation, but only reset temperature differences.

**Existing Use**

Existing Annual Motor Use=	98257 Kwh	\$ 9,531
Existing Annual Cooling Use=	7885 Kwh	\$ 765
Existing Annual Heating Use=	2279 gallons	\$ 6,198
Existing Annual Cost Use=		\$ 16,494

**Result @ 100%**

Annual Motor Savings=	32752 Kwh	\$ 3,177	33% of existing use
Annual Cooling Savings=	3285 Kwh	\$ 319	42% of existing use
Annual Heating Savings=	760 gallons	\$ 2,066	33% of existing use
Annual Cost Savings=		\$ 5,562	34% of existing use

**Result @ 80%**

Annual Motor Savings=	26202 Kwh	\$ 2,542	27% of existing use
Annual Cooling Savings=	2628 Kwh	\$ 255	33% of existing use
Annual Heating Savings=	608 gallons	\$ 1,653	27% of existing use
Annual Cost Savings=		\$ 4,449	27% of existing use

Comments

FIM # 84 AHU-26, Lower Security Wing C, 1st Floor

Title Time of Day Equipment Scheduling (TOD)
Project Ulster County
Site Ulster County Jail

Description Equipment currently operates more than required based on occupancy. If the equipment operation is properly scheduled to meet occupancy need, it will greatly reduce energy costs.

Table with columns for Electric Energy Costs, Heating Energy Costs, Summer Indoor Temperature Setpoint, Winter Indoor Temperature Setpoint, Multiple System Operation, Total Fan System Load, Existing Operating Hours per Week, Operating Weeks per Year, Cooling Season Operating Weeks, Heating Season Operating Weeks, Cooling Conversion, Heating Value of Fuel.

Table with columns for Chiller Efficiency, Heating Plant Efficiency, Summer Unoccupied Temperature, Winter Unoccupied Temperature, Multiple System Operation, Reduction in Runtime Hours, CFM per motor HP, Cycling Factor for off hours runtime, Fan System Load Factor, Fan System Motor Efficiency.

Formula Motor Energy Use = (HorsePower x Load Factor x 0.746 x operating hours x operating weeks )
Motor Energy Savings = (HorsePower x Load Factor x 0.746 x reduced hours x operating weeks ) x ( 1 - Cycling Factor )
Cooling Energy Use = (Fan HorsePower x (cfm/hp) x 1.08 x (Avg Summer Unoccupied Temp. - Summer Indoor Setpoint (Td) x Operating Hours x operating Weeks x Cooling eff.)/(btu/ton)
Cooling Energy Savings = (Fan HorsePower x (cfm/hp) x 1.08 x (Avg Summer Unoccupied Temp. - Summer Indoor Setpoint (Td) x Reduced Hours x operating Weeks x Cooling eff.)/(btu/ton)
Existing Heating Use = ((Fan HorsePower x (cfm/hp) x 1.08 x Temperature Difference x Operating Hours x Heating Weeks)/(Btu/unit heating x Heating Eff))
Heating Energy Savings = ((Fan HorsePower x (cfm/hp) x 1.08 x Temperature Difference x Reduced Operating Hours x Heating Weeks)/(Btu/unit heating x Heating Eff)) x (1-Cycling Factor)

Table for Existing Motor Use Group #1, #2, #3. Columns: HP, Load Factor, Conversion, Existing Hrs, Operating Weeks, CyclingFactor. Results: 22459 Kwh.

Table for Motor Savings Group #1, #2, #3. Columns: HP, Load Factor, Conversion, Reduced Hrs, Operating Weeks, CyclingFactor. Results: 7486 Kwh.

Table for Existing Cooling Use Group #1, #2, #3. Columns: HP, CFM/HP, Conversion, Unoccupied Temperature, Occupied Temperature, Operating Hours, Cooling Weeks, Cooling Efficiency, Conversion. Results: 3420 Kwh.

Table for Cooling Savings Group #1, #2, #3. Columns: HP, CFM/HP, Conversion, Unoccupied Temperature, Occupied Temperature, Reduced Hours, Cooling Weeks, Cooling Efficiency, Conversion. Results: 1425 Kwh.

Table for Existing Heating Use Group #1, #2, #3. Columns: HP, CFM/HP, Conversion, Temperature Difference, Existing Hours, Htg Wks, Conversion, Heating Efficiency, Cycling Factor. Results: 1177 gallons.

Table for Heating Savings Group #1, #2, #3. Columns: HP, CFM/HP, Conversion, Temperature Difference, Reduced Hrs, Htg Wks, Conversion, Heating Efficiency, Cycling Factor. Results: 392 gallons.

Existing Heating and Cooling Use are approximate and used for comparison purposes only. Calculation does not account for heat loss and ventilation, but only reset temperature differences.

Table for Existing Use: Existing Annual Motor Use= 22459 Kwh, Existing Annual Cooling Use= 3420 Kwh, Existing Annual Heating Use= 1177 gallons, Existing Annual Cost Use= \$ 5,711.

Table for Result @ 100%: Annual Motor Savings= 7486 Kwh (\$ 726), Annual Cooling Savings= 1425 Kwh (\$ 138), Annual Heating Savings= 392 gallons (\$ 1,067), Annual Cost Savings= \$ 1,931.

Table for Result @ 80%: Annual Motor Savings= 5989 Kwh (\$ 581), Annual Cooling Savings= 1140 Kwh (\$ 111), Annual Heating Savings= 314 gallons (\$ 854), Annual Cost Savings= \$ 1,545.

Comments

FIM # 84 AHU-27, Security Lockers, 1st Floor

Title Time of Day Equipment Scheduling (TOD)
Project Ulster County
Site Ulster County Jail

Description Equipment currently operates more than required based on occupancy. If the equipment operation is properly scheduled to meet occupancy need, it will greatly reduce energy costs.

Table with columns for Given, Electric Energy Costs, Heating Energy Costs, Summer Indoor Temperature Setpoint, Winter Indoor Temperature Setpoint, Multiple System Operation, Total Fan System Load, Existing Operating Hours per Week, Operating Weeks per Year, Cooling Season Operating Weeks, Heating Season Operating Weeks, Cooling Conversion, Heating Value of Fuel.

Table with columns for Assumptions, Chiller Efficiency, Heating Plant Efficiency, Summer Unoccupied Temperature, Winter Unoccupied Temperature, Multiple System Operation, Reduction in Runtime Hours, CFM per motor HP, Cycling Factor for off hours runtime, Fan System Load Factor, Fan System Motor Efficiency.

Formula Motor Energy Use = (HorsePower x Load Factor x 0.746 x operating hours x operating weeks )
Motor Energy Savings = (HorsePower x Load Factor x 0.746 x reduced hours x operating weeks ) x ( 1 - Cycling Factor )
Cooling Energy Use = (Fan HorsePower x (cfm/hp) x 1.08 x (Avg Summer Unoccupied Temp. - Summer Indoor Setpoint (Td) ) x Operating Hours x operating Weeks x Cooling eff.)/(btu/ton)
Cooling Energy Savings = (Fan HorsePower x (cfm/hp) x 1.08 x (Avg Summer Unoccupied Temp. - Summer Indoor Setpoint (Td) ) x Reduced Hours x operating Weeks x Cooling eff.)/(btu/ton)
Existing Heating Use = ((Fan HorsePower x (cfm/hp) x 1.08 x Temperature Difference x Operating Hours x Heating Weeks)/(Btu/unit heating x Heating Eff))
Heating Energy Savings = ((Fan HorsePower x (cfm/hp) x 1.08 x Temperature Difference x Reduced Operating Hours x Heating Weeks)/(Btu/unit heating x Heating Eff)) x (1-Cycling Factor)

Calculation table for Existing Motor Use, showing HP, Load Factor, Conversion, Existing Hrs, Operating Weeks, CyclingFactor, and resulting Kwh for Groups #1, #2, and #3.

Calculation table for Motor Savings, showing HP, Load Factor, Conversion, Reduced Hrs, Operating Weeks, CyclingFactor, and resulting Kwh for Groups #1, #2, and #3.

Calculation table for Existing Cooling Use, showing HP, CFM/HP, Conversion, Unoccupied Temperature, Occupied Temperature, Operating Hours, Cooling Weeks, Cooling Efficiency, Conversion, and resulting Kwh for Groups #1, #2, and #3.

Calculation table for Cooling Savings, showing HP, CFM/HP, Conversion, Unoccupied Temperature, Occupied Temperature, Reduced Hours, Cooling Weeks, Cooling Efficiency, Conversion, and resulting Kwh for Groups #1, #2, and #3.

Calculation table for Existing Heating Use, showing HP, CFM/HP, Conversion, Temperature Difference, Existing Hrs, Htg Wks, Conversion, Heating Efficiency, Cycling Factor, and resulting gallons for Groups #1, #2, and #3.

Calculation table for Heating Savings, showing HP, CFM/HP, Conversion, Temperature Difference, Reduced Hrs, Htg Wks, Conversion, Heating Efficiency, Cycling Factor, and resulting gallons for Groups #1, #2, and #3.

Existing Heating and Cooling Use are approximate and used for comparison purposes only. Calculation does not account for heat loss and ventilation, but only reset temperature differences.

Summary table for Existing Use, showing Existing Annual Motor Use, Existing Annual Cooling Use, Existing Annual Heating Use, and Existing Annual Cost Use.

Summary table for Result @ 100%, showing Annual Motor Savings, Annual Cooling Savings, Annual Heating Savings, and Annual Cost Savings.

Summary table for Result @ 80%, showing Annual Motor Savings, Annual Cooling Savings, Annual Heating Savings, and Annual Cost Savings.

Comments

## FIM #85 Nursing Home Hot Water Reset

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### Inputs

Fuel Cost (\$/MMBtu)	\$ 13.43
Existing Boiler Efficiency	70.0%
Avg Boiler Heat Loss	5%
Existing Average HW Set Point	180
New Average HW Set Point	150
Peak Heating Load (MMBtu/hr)	2
Average Boiler Load Factor	20%

### Savings

Total Fuel Saved (MMBtu)	40.09
Estimated Savings (\$)	769.12

### Calculations

Avg. HW Temp Reduction	Increase in Boiler Combustion Eff.	Decrease in Boiler Radiant Heat Losses	Net Increase in System Eff.	Heating Hours/Year
30	0.75%	0.83%	1.58%	4,215

\*Boiler efficiency improvement based on 1% per 40 degree F reduction

\*\*Radiant loss based on linear digression of loss vs. temperature

**FIM #86 Golden Hill Nursing Home- VFD on exhaust hood**

Electric cost	0.11 \$/kWh	Heating setpoint	60 F
Fuel Cost	13.43 \$/MMBTU	Cooling setpoint	25 BTU/lb (70 DB, 50% RH)
			65 F
<b>Efficiencies</b>			
Heating	83%		
Cooling	1.00 kW/ton		
Heat recovery efficiency	40%		
		Rated Exhaust CFM	Supply Fan HP
		Exhaust Fan HP	Max fan power HP
		Exhaust Air Flow CFM	Utilize in Calc?
		Main Kitchen	6,000
			10
			8
			18
			6,000
			1
			6,000
			18
			6,000

**Savings**

	kWh	MMBTU	\$
Motor power	17,463	0	1,921
Ventilation	2,114	46	857
Total	19,577	46	2,778

**Motor energy savings**

Rated CFM	Resulting Hood Exhaust CFM	Resulting total exhaust CFM	Current				Proposed					
			Estimated operation	Resulting Hours	Motor Power HP	Electrical Usage kW	Estimated operation	Resulting Hours	Motor Power HP	Electrical Usage kW		
100	6,000	6,000	75%	3,011	17.5	13.1	39,307	25%	1,004	17.5	13.1	13,102
80	4,800	4,800	0%	-	9.0	6.7	-	25%	1,004	9.0	6.7	6,708
60	3,600	3,600	0%	-	3.8	2.8	-	15%	602	3.8	2.8	1,698
40	2,400	2,400	0%	-	1.1	0.8	-	10%	402	1.1	0.8	335
20	1,200	1,200	0%	-	0.1	0.1	-	0%	-	0.1	0.1	-
0	-	-	25%	1,004	0.0	0.0	-	25%	1,004	0.0	0.0	-
	Total		100%	4,015			39,307	100%	4,015			21,844

**Ventilation energy savings**

Current Average ventilation					Current					Proposed												
Proposed average ventilation					Load Before Recovery					Load after recovery					Energy Usage							
DB Temp	Enthalpy	Total	Hrs	Operating Status	Heat	Cool Total	Cool Sens	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling			
F	BTU/lb			0	BTU/hr	BTU/hr	BTU/hr	MMBTU	BTU/hr	MMBTU	BTU/hr	MMBTU	BTU/hr	MMBTU	BTU/hr	MMBTU	BTU/hr	MMBTU	BTU/hr	MMBTU		
91	40	11		1	-	303,750	126,360	-	253,206	-	232	-	234,900	97,718	-	195,813	-	179	-	179		
89	38.3	40		1	-	269,325	116,640	-	222,669	-	742	-	208,278	90,202	-	172,197	-	574	-	574		
87	37.6	25		1	-	255,150	106,920	-	212,382	-	442	-	197,316	82,685	-	164,242	-	342	-	342		
85	37	30		1	-	243,000	97,200	-	204,120	-	510	-	187,920	75,168	-	157,853	-	395	-	395		
83	34	57		1	-	182,250	87,480	-	147,258	-	699	-	140,940	67,651	-	113,880	-	541	-	541		
81	33.2	63		1	-	166,050	77,760	-	134,946	-	708	-	128,412	60,134	-	104,358	-	548	-	548		
79	32.6	87		1	-	153,900	68,040	-	126,684	-	918	-	119,016	52,618	-	97,969	-	710	-	710		
77	31.6	57		1	-	133,650	58,320	-	110,322	-	524	-	103,356	45,101	-	85,316	-	405	-	405		
75	30.8	103		1	-	117,450	48,600	-	98,010	-	841	-	90,828	37,584	-	75,794	-	651	-	651		
73	29.8	200		0	-	97,200	38,880	-	97,200	-	1,620	-	75,168	30,067	-	75,168	-	1,253	-	1,253		
71	28.8	145		0	-	76,950	29,160	-	76,950	-	930	-	59,508	22,550	-	59,508	-	719	-	719		
69	27.6	124		0	-	52,650	19,440	-	52,650	-	544	-	40,716	15,034	-	40,716	-	421	-	421		
67	26.8	138		0	-	36,450	9,720	-	36,450	-	419	-	28,188	7,517	-	28,188	-	324	-	324		
65	25.9	129		0	-	18,225	-	-	18,225	-	196	-	-	-	-	14,094	-	152	-	152		
63	24.5	122		0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
61	24	122		0	-	(4,860)	-	-	(4,860)	-	(1)	-	(3,758)	-	-	(3,758)	-	(1)	-	(1)		
59	22.8	52		0	-	4,860	-	-	4,860	-	0	-	3,758	-	-	3,758	-	0	-	0		
57	22.1	113		0	-	14,580	-	-	14,580	-	2	-	11,275	-	-	11,275	-	2	-	2		
55	20.4	159		1	0	24,300	-	-	24,300	-	3	-	18,792	-	-	18,792	-	2	-	2		
53	19.3	106		1	0	34,020	-	-	20,412	-	3	-	26,309	-	-	15,785	-	2	-	2		
51	18.4	138		1	0	43,740	-	-	26,244	-	4	-	35,826	-	-	20,295	-	3	-	3		
49	17.4	102		0	1	53,460	-	-	32,076	-	4	-	41,342	-	-	24,805	-	3	-	3		
47	16.7	92		1	0	63,180	-	-	37,908	-	4	-	48,859	-	-	29,316	-	3	-	3		
45	16	153		1	0	72,900	-	-	43,740	-	8	-	56,376	-	-	33,826	-	6	-	6		
43	14.8	130		1	0	82,620	-	-	49,572	-	8	-	63,893	-	-	38,336	-	6	-	6		
41	14.2	68		1	0	92,340	-	-	55,044	-	5	-	71,410	-	-	42,846	-	4	-	4		
39	13.4	93		1	0	102,060	-	-	61,236	-	7	-	78,926	-	-	47,356	-	5	-	5		
37	12.7	183		1	0	111,780	-	-	67,068	-	15	-	86,443	-	-	51,866	-	11	-	11		
35	12.1	169		1	0	121,500	-	-	72,900	-	15	-	93,960	-	-	56,376	-	11	-	11		
33	11.2	134		1	0	131,220	-	-	78,732	-	13	-	101,477	-	-	60,886	-	10	-	10		
31	10.4	149		1	0	140,940	-	-	84,564	-	15	-	108,994	-	-	65,396	-	12	-	12		
29	9.7	106		1	0	150,660	-	-	90,396	-	12	-	116,510	-	-	69,906	-	9	-	9		
27	8.9	103		1	0	160,380	-	-	96,228	-	12	-	124,027	-	-	74,416	-	9	-	9		
25	8.3	76		1	0	170,100	-	-	102,060	-	9	-	131,544	-	-	78,926	-	7	-	7		
23	7.6	62		1	0	179,820	-	-	107,892	-	8	-	139,061	-	-	83,436	-	6	-	6		
21	6.9	84		1	0	189,540	-	-	113,724	-	12	-	146,578	-	-	87,947	-	9	-	9		
19	6.2	100		1	0	199,260	-	-	119,556	-	14	-	154,094	-	-	92,457	-	11	-	11		
17	5.5	32		1	0	208,980	-	-	125,388	-	5	-	161,611	-	-	96,967	-	4	-	4		
15	4.8	28		1	0	218,700	-	-	131,220	-	4	-	169,128	-	-	101,477	-	3	-	3		
13	4.3	23		1	0	228,420	-	-	137,052	-	4	-	176,645	-	-	105,987	-	3	-	3		
11	3.7	24		1	0	238,140	-	-	142,884	-	4	-	184,162	-	-	110,497	-	3	-	3		
9	3.1	15		1	0	247,860	-	-	148,716	-	3	-	191,678	-	-	115,007	-	2	-	2		
7	2.6	16		1	0	257,580	-	-	154,548	-	3	-	199,195	-	-	119,517	-	2	-	2		
5	2	8		1	0	267,300	-	-	160,380	-	2	-	206,712	-	-	124,027	-	1	-	1		
3	1.4	14		1	0	277,020	-	-	166,212	-	3	-	214,229	-	-	128,537	-	2	-	2		
1	0.9	8		1	0	286,740	-	-	172,044	-	2	-	221,746	-	-	133,047	-	1	-	1		
-1	0.3	6		1	0	296,460	-	-	177,876	-	1	-	229,262	-	-	137,557	-	1	-	1		
-3	-0.2	4		1	0	306,180	-	-	183,708	-	1	-	236,779	-	-	142,068	-	1	-	1		
-5	-0.7	4		1	0	315,900	-	-	189,540	-	1	-	244,296	-	-	146,578	-	1	-	1		
-7	-1.3	2		1	0	325,620	-	-	195,372	-	0	-	251,813	-	-	151,088	-	0	-	0		
-9	-1.7	1		1	0	335,340	-	-	201,204	-	-	-	259,330	-	-	155,598	-	-	-	-		
-11	-2.3	1		1	0	345,060	-	-	207,036	-	0	-	266,846	-	-	160,108	-	0	-	0		
-13	-2.8	1		1	0	354,780	-	-	212,868	-	0	-	274,363	-	-	164,618	-	0	-	0		
-15	-3.3	1		1	0	364,500	-	-	218,700	-	0	-	281,880	-	-	169,128	-	0	-	0		
-17	-3.8	2		1	0	374,220	-	-	224,532	-	1	-	289,397	-	-	173,638	-	0	-	0		
-19	-4.3	1		1	0	383,940	-	-	230,364	-	0	-	296,914	-	-	178,148	-	0	-	0		
Total					4,015						205.0	9,327.7					158.6	7,213.5				

## FIM # 87 Nursing Home NG-Fired Condensing Boilers

### Inputs

Cost/Gallon Fuel Oil	\$1.88
Cost/Therm Gas	\$1.10
Current Efficiency	70.0%
% used for DHW	25%
BTU/Gallon of Fuel Oil	140,000
Current Overall Fuel Oil Usage (Gal./Year)	65,980
New Boiler Efficiency	91%

### Savings

Total Fuel Saved (Therms)	15,987
Estimated Savings (\$)	34,411.11

### Calculations

Current Cost for Heating	Current BTU/Year Used for Heating	Current BTU/Year Required for Heating	New BTUs Used for Heating	New Cost for Heating
\$93,031.80	6,927,900,000	4,849,530,000	5,329,153,846	\$58,620.69

**FIM #88 Nursing Home Instantaneous Domestic Hot Water**

Cost/Gallon Fuel Oil      \$1.88

**Stand by loss**

Vertical Surface Area	25.12	
Horizontal Surface Area	100.48	
Number of Tanks	2.00	
Total Surface Area	251.20	
Insulation R Value	15.00	ft <sup>2</sup> * F * hr / btu
Loss per hour w/ blr eff.	2,512.00	Btu /hr
Loss per year	22.01	MMBtu /yr
Cost per year	\$295.50	

**Efficiency Improvement**

Current Total Consumption	65,980	Gallons/ yr
Percent utilized for DHW	25%	Percent
Current DHW Consumption	16,495	Gallons/ yr
Current DHW Energy Input	23,093	Therms / yr
Current DHW Energy Output	16,165	Therms / yr
Proposed NG Consumption	17,382	Therms / yr
Savings per year	\$ 11,891	

Total Saved \$ 12,186.09





**FIM #90 Golden Hill Health Care - Weatherization Improvements**

Notes:

1. The building has heating and cooling
2. Room level PTAC/ Univent one half of building
3. NG heating other half of building

24.5	...EXISTING CRACK AREA IN SQ.FT. (AREA from Vendor Data)		
50%	...% INFILTRATION VS. EXFILTRATION (%INF)		
2	...LOCAL SHIELDING CLASS (LSC)		
2	...# OF STORIES TO BUILDING (FLOORS)		
144.0000	...EFFECTIVE LEAKAGE AREA - IN <sup>2</sup> /FT <sup>2</sup> (EFL)		
0.0299	...STACK COEFFICIENT, A (A)		
0.0121	...STACK COEFFICIENT, B (B)		
9.0	...AVERAGE WIND VELOCITY (VEL)		
70	...SPACE HEATING SETPOINT (HTSP)		
60	...UNOCCUPIED SPACE HEATING SETPOINT (HTSPUNOC)		
25	...AVERAGE O.A. TEMP. DURING HEATING SEASON (OAHT)		
5.623	...HRS/YR OF HEATING SEASON FROM WEATHER DATA (HHPY)		
74	...SPACE COOLING SETPOINT (CLSP)		
76	...AVERAGE O.A. TEMP. DURING COOLING SEASON (OACT)		
3.135	...HRS/YR OF COOLING SEASON FROM WEATHER DATA (CHPY)		
168	...HRS/WK OF ACTUAL BUILDING OCCUPANCY (HRSOCC)		
(Heat Leak Occ) AREA * %INF * EFL *(A * (HTSP - OAHT)) + (B * VEL <sup>2</sup> ) <sup>0.5</sup> =====		2,686.3	HLOCC (CFM)
(Heat Leak Unocc) AREA * %INF * EFL *(A * (HTSPUNOC - OAHT)) + (B * VEL <sup>2</sup> ) <sup>0.5</sup> =====		2,507.7	HLUNOCC (CFM)
(Cool Leak Occ) AREA * EFL *(A * (CLSP - OACT)) + (B * VEL <sup>2</sup> ) <sup>0.5</sup> =====		3,592.7	CLOCC (CFM)
<b>Elec &amp; NG</b> ...TYPE OF FUEL (GAS CCF, OIL GAL, LPG, kWh)		KWh	<b>3,413</b> btus in a KWh
<b>\$ 23,2700</b> Fuel Cost (\$/MMBTU)		OIL	<b>146,000</b> btus in a gallon of oil
<b>1,000,000</b> ...BTUs / UNIT (BTUs/UNIT)		LPG	<b>91,000</b> btus per Gal
<b>0%</b> ...LOSSES OF HEATING SYSTEM (EOSH)		NG	<b>100,000</b> btus per Therm
(Occupied Heating)	1.08 * HLOCC * (HTSP - OAHT) * HRSOCC * HHPY / 168 / (BTUs/UNIT) / (1-EOSH) =====	734	Elec & NG SAVINGS
	FUELCOST * FUEL SAVED =====	\$17,082.8	SAVINGS
(Unoccupied Heating)	1.08 * HLUNOCC * (HTSPUNOC - OAHT) * (HHPY - (HRSOCC * HHPY / 168)) / (BTUs/UNIT) / (1-EOSH) =====	0	Elec & NG SAVINGS
	FUELCOST * FUEL SAVED =====	\$0.0	SAVINGS
<b>32,537</b> ...COOLING BTU REQUIRED TO COOL 1000 CFM/YR (CBTU)		32.730	TON-HRS
<b>1.10</b> ...Avg. KW/TON OF CHILLER (KW/TON)		42,549	kWh
<b>0.20</b> ...AVG. KW/TON OF SUPPORT EQUIPMENT (KWSUPT)			
<b>\$ 0.1130</b> ...ELECTRICITY UNIT (\$) COST/KWHR (ELECCOST)		\$4,808.1	SAVINGS
(Cooling Savings)	CLOCC * CBTU / 1000 * HRSOCC / 50 * 1,000,000 / 12000 =====	32.730	TON-HRS
	TON-HRS * (KW/TON + KWSUPT) =====	42,549	kWh
	ELECCOST * KWH SAVED =====	\$4,808.1	SAVINGS
<b>TOTAL ANNUAL SAVINGS</b>		\$17,082.8	Elec & NG
		\$4,808.1	kWh
		<b>\$21,890.9</b>	<b>TOTAL</b>

**STACK COEFFICIENT**

# of Stories	Coeff A
1	0.015
2	0.0299
3	0.0449
4	0.0628333
5	0.0785833
6	0.0943333
7	0.1100833
8	0.1258333
9	0.1415833
10	0.1573333

**WIND COEFFICIENT**

# of Stories	Shielding Class				
	1	2	3	4	5
1	0.0119	0.0092	0.0065	0.0039	0.0012
2	0.0157	0.0121	0.0086	0.0051	0.0016
3	0.0184	0.0143	0.0101	0.006	0.0018
4	0.0218333	0.0169667	0.012	0.0071	0.0021333
5	0.0250833	0.0195167	0.0138	0.00815	0.0024333
6	0.0283333	0.0220667	0.0156	0.0092	0.0027333
7	0.0315833	0.0246167	0.0174	0.01025	0.0030333
8	0.0348333	0.0271667	0.0192	0.0113	0.0033333
9	0.0380833	0.0297167	0.021	0.01235	0.0036333
10	0.0413333	0.0322667	0.0228	0.0134	0.0039333

**LOCAL SHIELDING CLASSES**

CLASS	DESCRIPTION
1	No obstructions or local shielding
2	Light Local shielding; few obstructions, few trees, or small shed
3	Moderate local shielding, some obstructions within two house heights, thick hedge, solid fence, or one neighboring house
4	Heavy shielding; obstructions around most of perimeter, buildings or trees within 30 ft in most directions; typical suburban shielding.
5	Very heavy shielding; large obstructions surrounding perimeter within tow house heights; typical downtown shielding

**CRACK AREA "A" BASED UPON:**

<b>Total, Vendor Collected Data:</b>	<b>24.4657</b> Square Ft
	<b>2.2729</b> Square Meters

**FIM #92 Nursing Home PTAC Replacement**

Model Parameters/Assumptions	
Cooling Utilization	80%
Heating Utilization	75%
Cooling Hours (OAT >50)	4,109 hours
Heating Hours (OAT <45)	4,215 hours
Adjusted Cooling Hours	3,287 hours
Adjusted Heating Hours	3,161 hours
Electricity usage Cost	0.094 /kWh
Electricity Demand cost	\$ 8.00 /kW

Electrical Cost Summary			
	Existing	Proposed	Saving
Electrical Consumption (kWh)	1,589,374	1,131,877	457,496
Electrical Consumption Cost (\$)	149,401	106,396	43,005
Electrical Cooling Demand (kW)	1,016	831	185
Electrical Cooling Demand Cost (\$)	8,129	6,651	1,478
Total Electrical Savings (\$)	\$44,483		

Annual Cost Savings (\$)	
Annual Cost Savings (\$)	44,483
Annual CO2 Savings (Metric Tons)	115

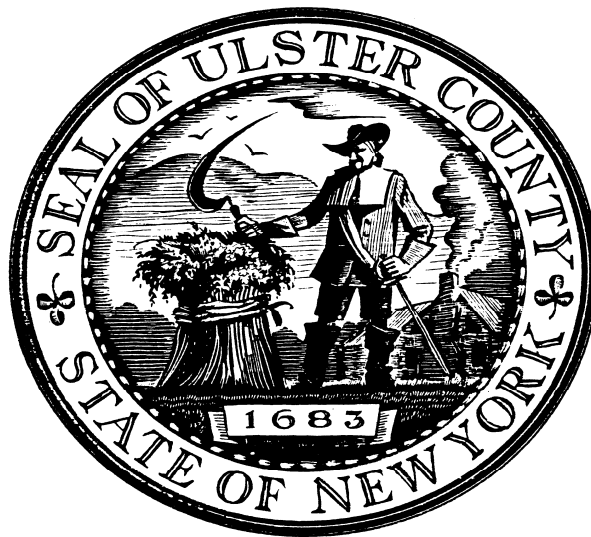
Existing Energy Use																
Equipment Information			Cooling Performance							Heating Performance						
Unit #	Type	Qty	Cooling Capacity	Heating Capacity	Total Cooling Capacity	COP	Power Usage	Peak Demand	Power Usage	Total Heating Capacity	COP	Power Usage	Peak Demand	Power Usage	Additional Heating Input	Oil Usage
			(MBH)	(MBH)	(MBH)		(MBH)	(kW)	(kWh)	(MBH)		(MBH)	(kW)	(kWh)	Btu	Gal.
1	Carrier Heat Pump	152	8.8	7.9	1,338	2.7	495.4	145.15	477,147	1,201	1.0	1,200.8	351.83	1,112,226	0	0
			Total					145.15	477,147	1,201		1,201	351.83	1,112,226.49	0	0

Proposed Energy Use																
Equipment Information			Cooling Performance							Heating Performance						
Unit #	Type	Qty	Cooling Capacity	Heating Capacity	Total Cooling Capacity	COP	Power Usage	Peak Demand	Power Usage	Total Heating Capacity	COP	Power Usage	Peak Demand	Power Usage	Additional Heating Input	Oil Usage
			(MBH)	(MBH)	(MBH)		(Btu/h)	(kW)	(kWh)	(MBH)		(MBH)	(kW)	(kWh)	Btu	Gal.
1	Trane	152	8.8	7.9	1,338	3.3	405.3	118.76	390,393	1,201	1.5	800.5	234.55	741,484	0	0
			Total					118.76	390,393	1,201		801	234.55	741,484	0	0

# **Preliminary Alternative Energy Analysis**

for

**Ulster County**  
New York



Prepared by:

**Siemens Building Technologies, Inc.**  
6 British American Blvd  
Latham, NY

**May 18, 2009**

## **PROPRIETARY INFORMATION**

This information is confidential and proprietary and is not to be distributed or shared with those outside of Ulster County.



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## 1.0 EXECUTIVE SUMMARY

The purpose of this report is to provide a preliminary summary of **alternative energy improvements** at the following Ulster County facilities:

- Ulster County Area Transit Building
- Ulster County Law Enforcement Center
- Golden Hill Healthcare Center
- Ulster County Office Building
- New Paltz Substation (Salt Storage)

This preliminary alternative energy study is performed in conjunction with the Ulster County Energy Conservation & Efficiency Study and Implementation Project (RFP-UC08-86) which was recently awarded to Siemens following a Request for Proposal process. This report is limited to just alternative energy and presented in advance of the main study to assist the County in applying for Energy Efficiency and Conservation Block Grants through US DOE Funding Opportunity: DE-FOA-0000013.

A preliminary walk through of the above facilities was conducted to determine potential facility upgrades related to alternative energy improvements. These improvements will result in reduced operational costs. In addition, these projects will showcase Ulster County as a leader in environmental stewardship for the region.

Based on our preliminary projections, the savings potential at the five facilities chosen for this preliminary study are indicated in the table below. Final savings and cost required to achieve the estimated savings will be determined during the completion of the detailed audit. **Note that the DOE funding being applied for is NOT included in the projected costs shown below.** Please reference the *Potential Facility Improvement Measures* (FIMs) section later in this report for a description of the identified opportunities.

**Table 1.1: Executive Summary Table – Preliminary Project Economics**

<i>Facility</i>	<i>Estimated Annual Energy Savings</i>	<i>Projected Cost of Upgrades</i>	<i>Estimated NYSERDA Rebates</i>	<i>Net Simple Payback</i>
<i>Ulster County Area Transit</i>	\$496	\$41,025	\$16,667	49.1
<i>Ulster County Law Enforcement Center</i>	\$10,927	\$756,738	\$225,000	48.9
<i>Golden Hill Healthcare Center</i>	\$83,954	\$3,475,501	\$337,195	37.4
<i>Ulster County Office Building</i>	\$2,291	\$201,184	\$83,333	51.4
<i>New Paltz Substation</i>	\$3,584	\$300,000	\$125,000	48.8
<b>TOTAL</b>	\$101,252	\$4,774,448	\$787,195	39.4

The figures listed in Table 1.1 above are to be considered preliminary in nature, and may vary based on the findings of the Detailed Energy Analysis, utility rates, and the final scope of work. Savings numbers will be measured and validated during that assessment and may increase or decrease. Similarly, costs will be confirmed through detailed site visits with project managers and subcontractors and may vary from the preliminary projections.



## 2.0 FACILITY DESCRIPTION:

The buildings that were included in this energy analysis, along with square footages and primary purpose are listed in the table below.

**Table 2.1: General Building Information**

Facility	Square Footage	Building Type
Ulster County Area Transit	24,000	Garage, repair
Ulster County Law Enforcement Center	275,000	Jail
Golden Hill Healthcare Center	155,000	Nursing Home
Ulster County Office Building	43,000	Office, 6 story
New Paltz Substation	5,500	Salt Storage

### Summary of Building Energy Usage and Cost

Table 2.2 provides a summary of annual utility usage and cost for the facilities considered in this preliminary alternative energy study. Based on current utility rates the avoided cost was determined to be \$0.1155/kWh for electricity, \$1.25/therm for natural gas, and \$2/gallon for #2 fuel oil.

**Table 2.2: Utility Information**

Facility	Electricity		Natural Gas	
	kWh	Electric Cost	Therm	NG Cost
Ulster County Area Transit	402,800	\$48,145	19,500	\$28,062
Ulster County Law Enforcement Center	5,094,400	\$616,915	0	\$0
Golden Hill Healthcare Center	3,837,200	\$488,990	0	\$0
Ulster County Office Building	944,160	\$125,776	28,433	\$40,776
New Paltz Substation	Unknown	Unknown	Unknown	Unknown
TOTALS (Excluding New Paltz)	10,278,560	\$1,279,826	47,933	\$68,838

Facility	#2 Fuel Oil		Total Cost
	Gallons	FO Cost	
Ulster County Area Transit	0	\$0	\$76,207
Ulster County Law Enforcement Center	108,008	\$294,000	\$910,915
Golden Hill Healthcare Center	32,938	\$100,206	\$589,196
Ulster County Office Building	0	\$0	\$166,552
New Paltz Substation	Unknown	Unknown	Unknown
TOTALS (Excluding New Paltz)	140,946	\$394,206	\$1,742,870



### 3.0 POTENTIAL FACILITY IMPROVEMENT MEASURES (FIMs)

As a result of the preliminary alternative energy site investigation, Siemens has identified the following potential Facility Improvement Measures (FIMs) at your facility. Please note, at this time it is not known if all of the improvements listed below can be supported by the energy savings generated from the program. The final scope of work will depend on the contract term, financing rates, utility rates and many other variables that will be addressed during the Detailed Analysis phase. Other alternative energy savings infrastructure improvements can also be analyzed during the Detailed Analysis.

## Ulster County Area Transit

### FIM #1: Solar Photovoltaic

It is proposed that photovoltaic panels be installed to produce electricity for the UCAT. The roof of the UCAT is a standing seam metal roof. There is a portion of the roof that is South facing with a 12° pitch.

It is proposed to mount 220 sq-ft of PV on the South facing roof in order to reduce the electrical consumption of that building.

### Energy/Cost Savings

General Info:		
System Size (kW)	3.7	kW
System Size (sq-ft)	220	sq-ft

Energy Savings from System:		
Insolation for Ulster County	0.4013	kWh/sq-ft/day
Solar panel Efficiency	17.3%	
Transmission/conversion losses	77%	
Shading From Obstructions	100%	
Power Produced	4293	kWh/year
Electricity cost	0.1155	\$/kWh
System Savings	<b>\$ 496</b>	Annually

### Project Costs

The estimated installed cost for the photovoltaic project including NYSERDA incentive is shown below:

Cost of System:		
System Cost	\$41,025	
NYSERDA Rebate	\$(16,667)	
Net Cost	\$27,777	
Simple Payback	<b>49.1</b>	<b>Years</b>

### Assumptions

- NYSERDA incentive of \$5/Watt from PON 1050 - Solar Electric Incentive Program
- Insolation and transmission/conversion losses from PV Watts Version 2.
- Shading from obstructions measured in field.



## Ulster County Law Enforcement Center

### FIM #1: Solar Photovoltaic

It is proposed that photovoltaic panels be installed to produce electricity for the Ulster County Jail. The roof of the Ulster County Jail is a large, flat, black EPDM roof. There are several proposed options for different sized photovoltaic systems that could be installed. Each option assumes panels mounted to ballasted racks tilted at an elevation of 20°.

### Energy/Cost Savings

The avoided cost savings from this measure are associated with decreasing the electrical consumption of the building via net metering.

General Info:	Option 1		Option 2		Option 3	
System Size (kW)	25.0	kW	50.0	kW	100.0	kW
System Size (sq-ft)	1500	sq-ft	3000	sq-ft	6000	sq-ft

Energy Savings from System:	Option 1		Option 2		Option 3	
*Insolation for Ulster County	0.4162	kWh/sq-ft/day	0.4162	kWh/sq-ft/day	0.4162	kWh/sq-ft/day
Solar panel Efficiency	17.3%		17.3%		17.3%	
Transmission/conversion losses	77%		77%		77%	
Shading From Obstructions	100%		100%		100%	
Shading From Panels	98%		98%		98%	
Power Produced	29748	kWh/year	59496	kWh/year	118991	kWh/year
Electricity cost	0.1155	\$/kWh	0.1155	\$/kWh	0.1155	\$/kWh
System Savings	\$ 3,436	Annually	\$ 6,872	Annually	\$ 13,743	Annually

### Project Costs

Based on the presented project economics as presented below it is recommended to install a 50 kW system.

Cost of System:	Option 1		Option 2		Option 3	
System Cost	\$306,923		\$613,846		\$1,227,692	
NYSERDA Rebate	\$(125,000.00)		\$(225,000.00)		\$(225,000.00)	
Net Cost	\$181,923		\$388,846		\$1,002,692	
Simple Payback	52.9	Years	56.6	Years	72.9	Years

### Assumptions

- NYSERDA incentive of \$5/Watt from PON 1050 - Solar Electric Incentive Program.
- Insolation and transmission/conversion losses from PV Watts Version 2.
- Shading from obstructions measured in field.
- Shading from panels assumes 7ft. spacing between.





## FIM #2: Solar Thermal Heating of Domestic Hot Water

It is proposed that Evacuated Tube Solar Collectors be installed to heat domestic hot water for the Ulster County Jail. The roof of the Ulster County Jail is a large, flat, black EPDM roof. There are six sets of domestic hot water tanks located on the top floor of the jail with recirculation loops that serve the jail. The domestic hot water tanks are heated by boiler water which flows through a heat exchanger in each tank.

It is proposed that ballasted racks be used to mount evacuated tubes at a 20° angle. The Solar collectors will tap into the domestic hot water recirculation loops, with one grouping of evacuated tubes per recirculation loop. There will be glycol flowing through the evacuated tubes, with a heat exchanger between the domestic hot water loop and the glycol loop. The glycol loop will be circulated by a ~1/16<sup>th</sup> HP pump that will run only when the temperature in the collectors is sufficient to add heat to the domestic hot water recirculation loop.

### Energy/Cost Savings

The avoided cost savings from this measure are associated with decreasing the fuel consumption of the boilers.

General Info:		
System Size (tubes)	1080	Tubes
System Size (collector area)	928.8	sq-ft
Average Daily Gallons of Hot Water Produced	4593.56	Gal (20 °F ΔT)
Circ Pump power (HP)	1/16	HP
Number of Pumps	6	
Circ Pump power (W)	279.6	Watts
Average Daily Running Time	4.48	hours
Average Daily Electrical Usage	1.253	kWh/day
Annual Electrical Use	457.2	kWh/Year
Electricity Cost (per kWh)	0.1155	\$/kWh
Total Electrical Cost	\$53	Annually

Energy Savings from System:		
Insolation for Ulster County	1420.608	btu/sq-ft/day
Average Collector Efficiency	58.0%	
Heat Output	824	btu/sq-ft/day
Average Daily BTU Generated	765287	btu/day
Days of operation	365	Days
Annual BTU Generated	279,329,832	btu/year
Boiler Efficiency	85%	
Therms of Natural Gas Avoided	3286	Therms
Natural Gas Cost per Therm	1.25	\$/therm
System Savings	\$4,108	Annually

### Project Costs

The projected costs are shown in the table below:

System Cost	\$142,892	
Net System Savings	\$4,055	
<b>Simple Payback</b>	<b>35.2</b>	<b>Years</b>



## Assumptions

- Hot water usage based on the following table:

Water Usage Estimate					
Fixture	Daily Usage	Flowrate (GPM)	Duration (sec)	Occupants	Water Usage (Gal/day)
Lavatory	5	2.5	15	600	1875
Shower	1	2.5	300	600	7500
Total					9375

- To be conservative this estimate does not include: Employee use, kitchen use, maintenance use etc...
- System is sized to make a maximum of 100% of the estimated domestic hot water usage. Average hot water production is ~40% of usage.
- Insolation from PV Watts Version 2.

## Golden Hill Healthcare Facility

### FIM #1: Solar Photovoltaic

It is proposed that photovoltaic panels be installed to produce electricity for the Ulster County Nursing Home. The roof of the Nursing Home is a large, flat, built up roof.

There are several proposed options for different sized photovoltaic systems that could be installed at the Ulster County Nursing Home. Each option assumes a ballasted system with panels mounted to racks tilted at an elevation of 20°.

### Energy/Cost Savings

The avoided cost savings from this measure are associated with decreasing the electrical consumption of the building via net metering.

General Info:	Option 1		Option 2		Option 3	
System Size (kW)	25.0	kW	50.0	kW	100.0	kW
System Size (sq-ft)	1500	sq-ft	3000	sq-ft	6000	sq-ft
Energy Savings from System:	Option 1		Option 2		Option 3	
Insolation for Ulster County	0.4162	kWh/sq-ft/day	0.4162	kWh/sq-ft/day	0.4162	kWh/sq-ft/day
Solar panel Efficiency	17.3%		17.3%		17.3%	
Transmission/conversion losses	77%		77%		77%	
Shading From Obstructions	100%		100%		100%	
Shading From Panels	98%		98%		98%	
Power Produced	29748	kWh/year	59496	kWh/year	118991	kWh/year
Electricity cost	0.1155	\$/kWh	0.1155	\$/kWh	0.1155	\$/kWh
System Savings	\$3,436	Annually	\$6,872	Annually	\$13,743	Annually

### Project Costs

The preliminary cost estimate is presented in the table below. It is assumed Option 2 would be implemented.

Cost of System:	Option 1		Option 2		Option 3	
System Cost	\$306,923		\$613,846		\$1,227,692	
NYSERDA Rebate	\$(125,000.00)		\$(225,000.00)		\$(225,000.00)	
Net Cost	\$181,923		\$388,846		\$1,002,692	
Simple Payback	52.9	Years	56.6	Years	73.0	Years



### Assumptions

- NYSERDA incentive of \$5/Watt from PON 1050 - Solar Electric Incentive Program
- Insolation and transmission/conversion losses from PV Watts Version 2.
- Shading from obstructions measured in field.
- Shading from panels assumes 7ft. spacing between panels based on the “Sustainable by Design” Panel Shading calculator.

### FIM #2: Geothermal Heating and Cooling System

The Ulster County Nursing Home facility is a 155,000 square foot facility that houses approximately 280 beds spread throughout 160 separate rooms. Heating and cooling to each individual room is provided by a package terminal air conditioning (PTAC) unit. Several package terminal air conditioning units provide conditioned air to the hallway areas and common spaces within the facility. Several large air handling units serve the kitchen and dining areas and utilize DX cooling.

The facility current has approximately 198 PTAC units spread throughout the facility. Of the 198 units, 160 units serve individual client rooms, while the remainder serves hallways and common areas. Each individual package terminal air conditioning unit utilizes electric heat as well as electric cooling. Electric heat and electric cooling tends to be very expensive to operate.

The replacement of the existing package terminal air conditioning units serving the individual occupant rooms as well as the common areas with ground source heat pumps was evaluated. Implementation of this measure would require installation of a geothermal well field, as well as installation of heat pump water loop piping throughout the facility.

### Energy/Cost Savings

Energy and cost savings for this measure would result from the reduction in electrical consumption during the heating season as well as in the cooling season. This is because the heat for the facility would be provided via the GSHP system as opposed to electric resistance coils, and the cooling for the facility would be provided by a water-cooled GSHP system as opposed to an air-cooled PTAC unit. A summary of the preliminary cost savings estimate is provided in the following table:

Energy Usage/Cost Summary	
Current Electrical Use (kWh)	944,191
Current HVAC Cost	\$109,054
Proposed Electrical Use (kWh)	409,229
Proposed Fuel Oil Use (gal)	2,112
Proposed HVAC Cost	\$51,490
<b>Estimated Energy Cost Savings</b>	<b>\$57,564</b>

### Project Costs

A preliminary cost estimate using our experience with similar installations is shown in the table below:

Cost of System:		
System Cost	\$2,187,069	
NYSERDA Rebate	\$(64,195)	
Net Cost	\$2,122,874	
Simple Payback	36.9	Years



### Assumptions

The following assumptions were used in assessing this energy conservation measure:

- Average existing PTAC unit size of 2 tons
- 198 PTACs total within the facility
- Removal of existing parking lot, and repaving after installation of well field
- Replacement of heating only PTACs with heating only Heat Pumps
- The well field is sized based upon 160 cooling units at 2 tons per unit.

### FIM #3: Solar Thermal Heating of Domestic Hot Water

It is proposed that Evacuated Tube Solar Collectors be installed to heat domestic hot water for the Ulster County Nursing Home. The roof of the Ulster County Nursing Home is a large, flat, built up roof.

It is proposed that ballasted racks be used to mount evacuated tubes at an elevation of 20°. The Solar collectors will tap into the domestic hot water recirculation loops, with one grouping of evacuated tubes per recirculation loop. There will be glycol flowing through the evacuated tubes, with a heat exchanger between the domestic hot water loop and the glycol loop. The glycol loop will be circulated by a ~1/16<sup>th</sup> HP pump that will run only when the temperature of the coils is sufficient to add heat to the domestic hot water recirculation loop.

### Energy/Cost Savings

The avoided cost savings in this measure are associated with decreasing the energy consumption of the boilers. A preliminary energy savings estimate is shown in the table that follows:

General Info:		
System Size (tubes)	4500	Tubes
System Size (collector area)	3870	sq-ft
Average Daily Gallons of Hot Water Produced	19139.84	Gal (20 °F ΔT)
Circ Pump power (HP)	1/2	HP
Number of Pumps	3	
Circ Pump power (W)	1,118.4	Watts
Average Daily Running Time	4.48	hours
Average Daily Electrical Usage	5.010	kWh/day
Annual Electrical Use	1,828.8	kWh/Year
Electricity Cost (per kWh)	0.1155	\$/kWh
Total Electrical Cost	\$211	Annually
Energy Savings from System:		
Insolation for Ulster County	1420.608	btu/sq-ft/day
Average Collector Efficiency	58.0%	
Heat Output	824	btu/sq-ft/day
Average Daily BTU Generated	3188697	btu/day
Days of operation	365	Days
Annual BTU Generated	1163874302	btu/year
Boiler Efficiency	80%	
Therms of Natural Gas Avoided	14548	Therms
Natural Gas Cost per Therm	1.25	\$/therm
System Savings	\$18,186	Annually



## Project Costs

A preliminary estimate of project costs is provided in the following table:

Cost of System:		
System Cost	\$549,586	
Net System Savings	\$17,974	
<b>Simple Payback</b>	<b>30.6</b>	<b>Years</b>

## Assumptions

- Hot water usage based on the following table:

Water Usage Estimate					
Fixture	Daily Usage	Flowrate (GPM)	Duration (sec)	Occupants	Water Usage (Gal/day)
Lavatory	5	2.5	15	280	875
Shower	1	2.5	300	280	3500
<b>Total</b>					<b>4375</b>

- To be conservative this estimate does not include: Employee use, kitchen use, maintenance use etc...
- System is sized to make a maximum of 100% of the estimated domestic hot water usage. Average hot water production is ~40% of usage.
- Insolation from PV Watts Version 2.

## FIM #4: Wind Turbine

It is proposed that a wind turbine be installed to produce electricity for the Golden Hills Healthcare Facility. The Nursing Home is located on a hill and has an average wind speed is about 12 mph.

## Energy/Cost Savings

The avoided cost savings from this measure are associated with decreasing the electrical consumption of the building via net metering.

General Info:		
System Size (kW)	20.0	kW
Tower Height	100	ft
Energy Savings from System:		
Average Wind Speed	12	mph
Annual Electrical Production	17,700	kWh
Electricity cost	0.1155	\$/kWh
System Savings	\$ 2,044	Annually
Maintenance Costs	\$ 500	Annually
Net Annual Savings	\$ 1,544	



### Project Costs

A preliminary cost estimate is provided in the table below:

Cost of System:		
System Cost	\$ 125,000	
NYSERDA Rebate	\$ (48,000)	
Net Cost	\$ 77,000	
<b>Simple Payback</b>	<b>49.9</b>	<b>Years</b>

### Assumptions

Wind data for this location shows an average wind speed of about 12 mph and a power density of about 100 W/m<sup>2</sup>. Wind map data from [www.AWSTruewind.com](http://www.AWSTruewind.com). Energy production based on REDriven wind turbine calculator.

## Ulster County Office Building

### FIM #1: Solar Photovoltaic

It is proposed that photovoltaic panels be installed to produce electricity for the Ulster County Office Building. The roof of the Ulster County Office Building is a flat, black EPDM roof.

It is proposed to install panels mounted to ballasted racks tilted at an elevation of 20°. The available roof area is limited versus the size of the building which limits the size of the PV array possible at the Ulster County Office Building.

### Energy/Cost Savings

The avoided cost savings from this measure are associated with decreasing the electrical consumption of the building via net metering.

General Info:		
System Size (kW)	16.7	kW
System Size (sq-ft)	1000	sq-ft
Energy Savings from System:		
Insolation for Ulster County	0.4162	kWh/sq-ft/day
Solar panel Efficiency	17.3%	
Transmission/conversion losses	77%	
Shading From Obstructions	100%	
Shading From Panels	98%	
Power Produced	19832	kWh/year
Electricity cost	0.1155	\$/kWh
<b>System Savings</b>	<b>\$2,291</b>	<b>Annually</b>

### Project Costs

A preliminary estimate of the project cost is presented in the table below:

Cost of System:		
System Cost	\$201,184	
NYSERDA Rebate	\$(83,333)	
Net Cost	\$117,851	
<b>Simple Payback</b>	<b>51.4</b>	<b>Years</b>



## Assumptions

- NYSERDA incentive of \$5/Watt from PON 1050 - Solar Electric Incentive Program
- Insolation and transmission/conversion losses from PV Watts Version 2.
- Shading from obstructions measured in field.
- Shading from panels assumes 7ft. spacing between panels based on the “Sustainable by Design” Panel Shading calculator.

## New Paltz Substation

### FIM #1: Solar Photovoltaic

It is proposed that photovoltaic panels be installed to produce electricity for the New Paltz Substation. There are two South facing roofs at the Salt Storage building, one with a 10° pitch and one with a 32° pitch.

There are two proposed options for different sized Photovoltaic systems that could be installed at the Ulster County Salt Storage building. Both options assume a system with panels mounted to the South facing roof with the 32° pitch. Option 1 assumes a smaller electric demand than Option 2.

### Energy/Cost Savings

The avoided cost savings in this measure are associated with decreasing the electrical consumption of the building via net metering.

General Info:	Option 1		Option 2	
System Size (kW)	10.0	kW	25.0	kW
System Size (sq-ft)	600	sq-ft	1500	sq-ft
Energy Savings from System:	Option 1		Option 2	
Insolation for Ulster County	0.4255	kWh/sq-ft/day	0.4255	kWh/sq-ft/day
Solar panel Efficiency	17.3%		17.3%	
Transmission/conversion losses	77%		77%	
Shading From Obstructions	100%		100%	
Power Produced	12413	kWh/year	31032	kWh/year
Electricity cost	0.1155	\$/kWh	0.1155	\$/kWh
System Savings	\$1,434	Annually	\$3,584	Annually

### Project Costs

A preliminary estimate of the project cost are summarized in the table that follows:

Cost of System:	Option 1		Option 2	
System Cost	\$120,000		\$300,000	
NYSERDA Rebate	\$(50,000)		\$(125,000)	
Net Cost	\$70,000		\$175,000	
<b>Simple Payback</b>	<b>48.8</b>	<b>Years</b>	<b>48.8</b>	<b>Years</b>

### Assumptions

- NYSERDA incentive of \$5/Watt from PON 1050 - Solar Electric Incentive Program
- Insolation and transmission/conversion losses from PV Watts Version 2.
- Shading from obstructions measured in field.



**Other Measures Considered but Not Recommended**

The following is a list of Facility Improvement Measures (FIMs) that were investigated but are not recommended for implementation:

- UCAT – Geothermal heat pumps
- UCAT – Solar thermal heating
- New Paltz Substation – Geothermal heat pumps
- New Paltz Substation – Solar thermal heating

These FIMs have much longer payback periods than the other measures investigated and are not likely to be economically viable. These measures could be considered at the direction of the County. The applicability of these FIMs will depend on the amount of positive cash flow generated by the previously described FIMs and additional measures identified in the Comprehensive Energy Audit and/or the availability of budgeted capital monies to help offset the costs either as an equipment buy-down or capital cost avoidance.





## PROJECT SUMMARY SHEET

Customer Name and Address:

Ulster County  
Department of the Environment  
17 Pearl Street – PO Box 1800  
Kingston, NY 12402

Customer Contact and Title: Amanda LaValle, Coordinator

Telephone #: (845) 338-7455

Facility	Measure Description	Measure Status (See Notes)	Fuel Type (See Notes)	Energy Saved in kWh	Energy Saved in kW	Energy Saved in MMBTUs	Annual Dollars Saved	Estimated Costs for Implementation	Simple Payback Period (Years)
Carr Building	Replace Steam Boiler with HW Boiler	RS	NGas			191	\$2,322	\$192,352	82.8
Carr Building	DHW Heater Replacement	R	Elec, NGas	5,130	2.3	-21.5	\$463	\$4,846	10.5
Carr Building	Weatherization Improvements	R	Elec, NGas	652	0.3	35	\$522	\$7,741	14.8
Carr Building	Lighting Upgrade	R	Elec	2,237	1.4	0	\$377	\$5,018	13.3
Community Corrections	Demand Control Ventilation	R	Elec, LPG	211	0.0	43.51	\$724	\$22,293	30.8
Community Corrections	Modify Electric Heat Controls	R	Elec	7,742	0.0	0	\$952	\$1,787	1.9
Community Corrections	Weatherization Improvements	R	Elec, LPG	1,471	0.6	55.2348	\$1,067	\$17,555	16.5
Community Corrections	Lighting Upgrade	R	Elec	3,514	0.1	0	\$368	\$6,773	18.4
Court House	Boiler Replacement	R	NGas			144.9	\$1,658	\$280,792	169.4
Court House	Cooling Tower VFD	R	Elec	13,735	6.6	0	\$1,756	\$20,817	11.9
Court House	Heat Pump Replacement	R	Elec	56,041	65.4	0	\$8,739	\$720,100	82.4
Court House	Weatherization Improvements	R	Elec, NGas	2,639	1.0	263.8	\$3,347	\$101,961	30.5
Court House	Lighting Upgrade	R	Elec	19,222	2.6	0	\$2,221	\$21,921	9.9

Facility	Measure Description	Measure Status (See Notes)	Fuel Type (See Notes)	Energy Saved in kWh	Energy Saved in kW	Energy Saved in MMBTUs	Annual Dollars Saved	Estimated Costs for Implementation	Simple Payback Period (Years)
Emergency Managment	Replace Liebert	R	Elec	2,381	0.6	0	\$264	\$22,620	85.7
Emergency Managment	Lighting Upgrade	R	Elec, NGas	1,238	0.2	8	\$121	\$879	7.3
Emergency Managment	Weatherization Improvements	R	Elec	992	0.1	0	\$265	\$11,948	45.1
Flatbush Annex	Demand Control Ventilation	R	Elec, NGas	27,710	0.0	56.4	\$4,087	\$51,950	12.7
Flatbush Annex	Hot Water Reset Controls	R	NGas			54.7	\$632	\$20,498	32.4
Flatbush Annex	Boiler Replacement	R	NGas			105.5	\$1,220	\$276,022	226.2
Flatbush Annex	Cooling Tower Replacement	R	Elec	2,664	9.8	0	\$887	\$171,195	193.0
Flatbush Annex	Exhaust Fan Control Modification	R	NGas			203.5	\$2,352	\$8,223	3.5
Flatbush Annex	Pump Motor/VFD Replacement	R	Elec	50,870	9.1	0	\$5,859	\$52,923	9.0
Flatbush Annex	Weatherization Improvements	R	Elec, NGas	1,046	0.4	74.4	\$990	\$12,797	12.9
Flatbush Annex	Lighting Upgrade	R	Elec	473	0.0	0	\$63	\$1,852	29.4
Heavy Vehicle Maintenance	Infrared Heaters	R	Elec, NGas	1,969	1.4	546.4	\$6,665	\$124,866	18.7
Heavy Vehicle Maintenance	Weatherization Improvements	R	NGas			37.2	\$437	\$4,346	9.9
Heavy Vehicle Maintenance	Lighting Upgrade	R	Elec	41,717	17.9	0	\$5,571	\$69,145	12.4
Information Services	AHU and DCV	R	Elec, NGas	10,379	8.0	155.4	\$3,228	\$111,053	34.4
Information Services	Weatherization Improvements	R	Elec, NGas	1,402	0.3	66.4	\$1,003	\$10,616	10.6
Information Services	Lighting Upgrade	R	Elec	14,020	4.5	0	\$1,882	\$27,684	14.7
Mental Health	Demand Control Ventilation	R	Elec, NGas	14,628	0.0	86.3	\$2,621	\$92,685	35.4
Mental Health	Cooling Tower Replacement	R	Elec	14,208	8.5	0	\$1,777	\$145,128	81.7
Mental Health	Wind Turbine	RS	Elec	33,875	20.0	0	\$2,447	\$132,630	54.2
Mental Health	Heat Pump Replacement	R	Elec	48,157	33.3	0	\$5,337	\$475,835	89.2
Mental Health	Pump Motor/VFD Replacement	R	Elec	36,608	10.2	0	\$3,934	\$44,244	11.2
Mental Health	Weatherization Improvements	R	Elec, NGas	2,028	0.5	101.5	\$1,399	\$19,411	13.9
Mental Health	Lighting Upgrade	R	Elec	42,721	15.7	0	\$5,485	\$71,227	13.0
Pool	Motor Replacement	R	Elec	3,378	1.2	0	\$331	\$5,027	15.2

Facility	Measure Description	Measure Status (See Notes)	Fuel Type (See Notes)	Energy Saved in kWh	Energy Saved in kW	Energy Saved in MMBTUs	Annual Dollars Saved	Estimated Costs for Implementation	Simple Payback Period (Years)
Pool	Lighting Upgrade	R	Elec	2,357	2.5	0	\$490	\$6,178	12.6
Probation Dept	Demand Control Ventilation	R	Elec, NGas	465	0.0	84.8	\$1,044	\$69,396	66.5
Probation Dept	Weatherization Improvements	R	Elec, NGas	2,139	0.8	104	\$1,467	\$53,873	36.7
Probation Dept	Lighting Upgrade	R	Elec	4,555	0.2	0	\$484	\$9,732	20.1
Public Works	Replace AC Unit and Install DCV	R	Elec, NGas	19,246	5.0	64.8	\$3,324	\$145,743	43.8
Public Works	Cooling Tower Replacement	R	Elec	4,066	2.3	0	\$537	\$136,067	253.4
Public Works	Pump Motor Replacement	R	Elec	1,665	0.5	0	\$190	\$2,179	11.5
Public Works	Weatherization Improvements	R	Elec, NGas	824	0.4	69	\$878	\$10,255	11.7
Public Works	Lighting Upgrade	R	Elec	15,510	6.1	0	\$2,180	\$26,727	12.3
Old Jail Storage Garage	Replace Unit Heaters	R	Elec, LPG	68,084	21.0	276.2656	\$2,852	\$21,197	7.4
Old Jail Storage Garage	Weatherization Improvements	R	LPG			11.908	\$194	\$1,285	6.6
Trudy Resnick Farber	Boiler Replacement	R	NGas			188.3	\$2,972	\$87,278	29.4
Trudy Resnick Farber	Demand Control Ventilation	R	Elec, Oil2	213	0.0	40.46	\$664	\$9,724	14.6
Trudy Resnick Farber	Lighting Upgrade	R	Elec, Oil2	11,439	3.3	0	\$1,497	\$15,513	10.4
Dept of Environment (17 Pearl)	Boiler Replacement	R	NGas			35.4	\$483	\$36,708	76.0
Dept of Environment (17 Pearl)	DHW Heater Replacement	R	Elec, NGas	2,565	2.3	-10.7	\$107	\$4,978	46.5
Dept of Environment (17 Pearl)	Weatherization Improvements	R	Elec, NGas	682	0.3	62	\$932	\$21,833	23.4
Dept of Environment (17 Pearl)	Lighting Upgrade	R	Elec	1,491	1.4	0	\$155	\$6,722	43.3
UC Office Building	Demand Control Ventilation	R	Elec, NGas	1,856	0.0	567.2	\$6,508	\$74,188	11.4
UC Office Building	Replace Electric Heat in AC-4	R	Elec, NGas	63,240	60.0	-237.2	\$6,419	\$172,712	26.9
UC Office Building	Boiler Replacement	R	NGas			574.3	\$6,374	\$458,330	71.9
UC Office Building	Humidification Replacement	R	Elec	51,006	38.0	0	\$4,187	\$207,081	49.5
UC Office Building	Pump Motor/VFD Replacement	R	Elec	37,876	8.8	0	\$3,952	\$91,961	23.3
UC Office Building	Weatherization Improvements	R	Elec, NGas	1,476	0.5	114.8	\$1,442	\$16,409	11.4
UC Office Building	Lighting Upgrade	R	Elec	53,279	12.7	0	\$6,259	\$67,023	10.7

Facility	Measure Description	Measure Status (See Notes)	Fuel Type (See Notes)	Energy Saved in kWh	Energy Saved in kW	Energy Saved in MMBTUs	Annual Dollars Saved	Estimated Costs for Implementation	Simple Payback Period (Years)
Record Storage	RTU and DCV	R	Elec, NGas	31,640	13.0	279.9	\$6,869	\$314,215	45.7
Record Storage	Humidification Replacement	R	Elec, NGas	113,359	85.0	-412.3	\$10,715	\$179,923	16.8
Record Storage	Weatherization Improvements	R	Elec, NGas	2,288	1.1	104.8	\$1,402	\$27,017	19.3
Record Storage	Lighting Upgrade	R	Elec	42,021	10.8	0	\$5,413	\$93,336	17.2
UCAT	Demand Control Ventilation	R	Elec	6,279	0.0	0	\$747	\$10,215	13.7
UCAT	Weatherization Improvements	R	Elec	12,668	6.0	0	\$1,678	\$49,042	29.2
UCAT	Lighting Upgrade	R	Elec	31,276	6.3	0	\$3,821	\$34,277	9.0
UCAT	Remove Electric Heat	R	Elec	66,933	14.5	-245.6	\$5,214	\$106,806	20.5
Ulster Ave Office (DSS)	Replace RTUs	R	Elec	51,552	36.0	79.1	\$7,271	\$617,855	85.0
Ulster Ave Office (DSS)	Weatherization Improvements	R	Elec	2,742	0.4	500	\$803	\$15,410	19.2
Ulster Ave Office (DSS)	Lighting Upgrade	R	Elec	1,606	8.1	61.2	\$4,148	\$43,123	10.4
Ulster Ave Office (DSS)	Demand Control Ventilation	R	Elec, NGas	32,706	0.0	0	\$6,129	\$126,757	20.7
Accord Substation	Lighting Upgrade	R	Elec	858	2.5	0	\$158	\$2,760	17.5
Boiceville Substation	Bay Area Thermostat Replacment	R	LPG			78.9592	\$1,419	\$1,101	0.8
Boiceville Substation	DHW Heater Replacement	R	Elec, LPG	2,565	2.3	-10.7172	\$245	\$4,831	19.7
Boiceville Substation	Office Area Thermostat Replacement	R	LPG			31.602	\$549	\$1,101	2.0
Boiceville Substation	Lighting Upgrade	R	Elec	2,982	3.5	0	\$615	\$1,624	2.6
Saugerties Substation	Infrared Heaters	R	Oil2, LPG			155.2748	\$1,941	\$28,735	14.8
Saugerties Substation	Office Area Thermostat Replacement	R	Oil2			35.42	\$517	\$147	0.3
UCLEC	Lighting Sensor Upgrade	R	Elec	127,985	0.0	0	\$12,415	\$70,067	5.6
UCLEC	Building Scheduling	R	Elec, Oil2	162,854	0.0	652.96	\$28,482	(\$19,542)	-0.7
Golden Hill Nursing Home	Hot Water Reset Controls	R	Oil2			57.26	\$769	\$25,872	33.6
Golden Hill Nursing Home	Kitchen Exhaust Hood Controls	R	Elec, Oil2	17,463	0.0	64.26	\$2,836	\$26,684	9.4
Golden Hill Nursing Home	Boiler Replacement - NG	RS	Oil2, NGas			1598.7	\$34,411	\$323,768	9.4
Golden Hill Nursing Home	Instantaneous DHW Heater	RS	Oil2, NGas			571.1	\$12,186	\$144,983	11.9

Facility	Measure Description	Measure Status (See Notes)	Fuel Type (See Notes)	Energy Saved in kWh	Energy Saved in kW	Energy Saved in MMBTUs	Annual Dollars Saved	Estimated Costs for Implementation	Simple Payback Period (Years)
Golden Hill Nursing Home	Pump Motor/VFD Replacement	R	Elec	43,564	14.0	0	\$4,773	\$57,507	12.0
Golden Hill Nursing Home	Weatherization Improvements	R	Elec, Oil2	150,111	4.9	703.78	\$21,891	\$129,299	5.9
Golden Hill Nursing Home	Lighting Upgrade	R	Elec	76,281	14.3	0	\$8,970	\$85,847	9.6
Golden Hill Nursing Home	PTAC Replacement	R	Elec	457,496	26.4	0	\$44,483	\$380,642	8.6
TOTALS				2,246,321	637.2	7,906	\$369,833	\$8,005,256	21.6

Notes: Please fill in applicable boxes.

Measure Status: Implemented (I), Recommended (R), Further Study Recommended (RS)

Fuel Saved: Elec, NGas, Oil2, LPG. MMBtu=1,000,000 Btu

## Ulster County New York

### Background

Ulster County worked with Siemens Industry, Inc. Building Technologies Division through NYSERDA's Technical Assistance Program to conduct --a comprehensive energy study at 27 County owned facilities. The study detailed various Facility Improvement Measures (FIMs) that would help improve the efficiency, health, and comfort of the facilities. The study included a benchmarking analysis utilizing EPA's EnergyStar Portfolio Manager to compare the County's buildings to similar commercial buildings.

### Results and Benefits

As a result of the study nearly 100 FIMs were identified. The County is working with Siemens to determine which improvements will be considered for implementation. FIMs being considered include:

- Lighting Retrofits
- Lighting Occupancy Controls
- Boiler Replacements
- Cooling Tower Replacements
- Building Weatherization Improvements
- Building Control Improvements
- Motor and VFD Upgrades
- Installation of Infrared Heating
- Use of Demand Control Ventilation
- AHU and RTU Replacements

Other Energy Conservation Measures that were identified but not recommended include:

- Installation of Geothermal Heat Pumps
- Solar Photovoltaic Installation.
- Economizer Installation at a Data Center
- Use of Microturbines



Based on the recommended FIMs, it is estimated that the total annual cost savings is approximately \$370,000 per year. The estimated implementation cost if all measures were implemented is about \$8.3 million resulting in a simple payback of 21.6 years including available NYSERDA incentives.

The benefit of implementing these measures would greatly decrease Greenhouse Gas Emissions. The three key areas are Carbon Dioxide (CO<sub>2</sub>), Nitrogen Oxides (NO<sub>x</sub>) and Sulfur Dioxide (SO<sub>2</sub>). Saving 2,241,191 kWh of electricity, 7,906 MMBtu of fossil fuels (Natural Gas, #2 Fuel Oil, and LPG) will save about 4,826,050 pounds of Carbon Dioxide (CO<sub>2</sub>), 5,185 pounds of Nitrogen Oxide (NO<sub>x</sub>) and 16,360 pounds of Sulfur Dioxide (SO<sub>2</sub>).

This is equivalent to removing 401 cars from the road for one year, saving 15.4 Acres of forest, and saving 11.5 Railcars of coal.

For more information about these services, contact NYSERDA  
toll free 1-866-NYSERDA, locally (518) 862-1090, or e-mail:  
[info@nyserdera.org](mailto:info@nyserdera.org) or [www.nyserdera.org/funding/1746pon.asp](http://www.nyserdera.org/funding/1746pon.asp)