COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

THOMAS G. VAUGHN
DEPUTY COMMISSIONER

MEMORANDUM

TO: File

FROM: Peggy C Sutherland, MBA
Senior Energy Coordinator

DATE: March 28, 2017

RE: Interior Lighting Upgrade at the Vector Control Building (C0062); Energy Projections

---

This upgrade was finished in September 2015.

Project Contact: Joe Iannucci		**Assumptions**
Hours of use per year	3120	12 h/day, 5 d/wk
Existing energy use (kWh)	53,764	17.232 kW/h
Proposed energy use(kWh)	33,272	10.664 kW/h
Energy Savings per year (kWh)	20,492	
Cost savings per year	$3,074.	$0.15/kWh
Greenhouse Gas Emissions avoided (TCO_2e/yr)	13	Formula from NYSERDA CEC Calculator

Reference:
EPI-1
Austin Calculations.pdf
TCP E-Series 2x2 and 2x4 LED Troffer.pdf
Email, Project Information, J Iannucci to P Sutherland 3/27/17
Email, RE Project Information, J Ashref to P Sutherland 3/28/2017

cc:
J Ashraf
J Iannuccii

PCS:ps

h:\bdc\projects\energy projects\building specific energy projects\c0062 vector control bldg\interior lighting 2015\epi-1-2015-energyprojections.doc

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

PHILIP A. BERDOLT
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: December 16, 2014

RE: 1664.321 – Energy Conservation at Various County Buildings
Lighting Upgrade at the Police Property Bureau, Yaphank, NY (C0753)
DCxxxx-14

The office areas, vault, lobby, men's and ladies room in the Police Property Building are illuminated with fluorescent T12 fixtures. The fixtures have magnetic ballast and are in extremely poor condition. Some of the fixtures are missing lens cover. The individual offices do not have occupancy sensors to turn the lights off when the rooms are unoccupied. The warehouse has a ceiling height of twenty-eight (28) feet and is illuminated with forty (40) 250-watt high pressure sodium fixtures and sixty-eight (68) four foot fluorescent fixtures with two 40-watt lamps in each fixture. The fixtures are at least 30 years old and have deteriorated to a level that the light output from these fixtures are not adequate for task lighting purposes. In addition, high maintenance cost is incurred every year to keep these fixtures operating.


Shown above is a 2 x 2 U-tube fixture with missing lens.


Shown above is the office area illuminated with 2 x 4 lay-in fixtures


Shown above is general lighting in the vault area


Shown above are the light fixtures in the vault area with missing lens


Shown above is lighting in the Men's Room


Shown above are the lighting in the Ready Room (Mezzanine Level)


Shown above is general lighting in the warehouse area

The lighting inventory for the building is shown in the table below.

LIGTHING SURVEY SHEET								Page #	1	
						CONTROL TYPES		FOR WALL SWITCH	WS	
ADDRESS	County Building CO-753 Yaphank, NY 11980	DATE	10/6/2014					FOR WALL SENSOR	WOS	
								FOR CEILING SENSOR	COS	
			Electric Meter # 99286352					FOR CIRCUIT BREAKER	CB	
								For PHOTOCELL	PC	
S. NO	AREA	FOOT CANDLE (FC)	FIXTURE TYPE	Fixture	WATTS/FIXTURE	# OF FIXTURES	Total Watts	HOURS OF USE	kWh/year	CONTROL TYPE
1	Office Area	31.1	2 x 4 Layin Prismatic	4F40T12	168	11	1,848	2,080	3,844	WS
2	Office Area	31.1	2 x 4 Layin Prismatic	4F40T12	168	5	840	8,760	7,358	WS
3	Entrance	9.7	2 x 2 U-Tube Layin Prismatic	2F40T12	88	1	88	8,760	771	CB
4	Lobby	33.6	2 x 2 U-Tube Layin Prismatic	2F40T12	88	4	352	2,080	732	CB
5	Vault - Lower Level	13.1	Wrap - Surface Mount	2F40T12	88	27	2,376	2,080	4,942	WS
6	Vault - Upper Level	7.6	Wrap - Surface Mount	2F40T12	88	30	2,640	2,080	5,491	WS
7	Commanding Officer	38	2 x 4 Layin Prismatic	4F40T12	168	2	336	2,080	699	WS
8	Custodian Room	16.1	2 x 4 Layin Prismatic	4F40T12	168	1	168	2,080	349	WS
9	Mens Room	17.35	1 x 4 Fixture with lens in Concealed spline ceiling	2F40T12	88	1	88	2,080	183	WS
10	Mens Room	17.35	Above Vanity	1F20T12	21.2	1	21	2,080	44	WS
11	Womens Room	17.35	1 x 4 Fixture with lens in Concealed spline ceiling	2F40T12	88	1	88	2,080	183	WS
12	Womens Room	17.35	Above Vanity	1F40T12	51	1	51	2,080	106	WS
13	Lobby Bathrooms	8.1	Wrap - Surface Mount	2F20T12	51	2	102	2,080	212	WS
14	Vestibule	-	2 x 2 U-Tube Layin Prismatic	2F40T12	88	1	88	3,650	321	PC
15	Ready Room	8.62	Wrap - Surface Mount	2F40T12	88	8	704	2,080	1,464	WS
16	Ready Room Mezzanine	10.78	1 x 4 Industrial Fixture	2F40T12	88	21	1,848	2,080	3,844	WS
17	Warehouse	46.4	HPS (hi-bay 208 volts) (Mogul base)	HPS	295	40	11,800	2,080	24,544	CB
18	Warehouse	46.4	1 x 4 Industrial Fixture	2F40T12	88	68	5,984	2,080	12,447	WS
19	Mezzanine/Gym	21.9	1 x 4 Industrial Fixture	2F40T12	88	30	2,640	1,040	2,746	WS
20	Auction Room	13.98	1 x 4 Wraps	2F40T12	88	23	2,024	2,080	4,210	WS
21	Envelope Room	10.46	1 x 4 Wraps	2F40T12	88	30	2,640	2,080	5,491	WS
22	Boiler Room	-	1 x 4 Industrial Fixture	2F40T12	88	3	264	500	132	WS
23	Viewing Room	39.1	2 x 4 Layin Prismatic	4F40T12	168	6	1,008	2,080	2,097	WS
24	Total					317	37,998		82,211	

It is proposed that all interior lighting in the building be replaced with LED fixtures as shown in the table below. In addition, it is recommended that occupancy sensors be installed in individual offices to turn off the lights when the spaces are unoccupied. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently.

The operating cost savings is shown in the table below:

Proposed Installation Cost	$	113,000	Simple payback (years)		8.83
PSEGLI Rebate	$	28,420	Savings to investment ratio (SIR)		1.97
Material cost after rebate	$	84,580.00	Life-cycle cost savings (LCS)	$	82,143
Annual energy savings, kWh		34,712	Life of equipment (years)		25
Monthly demand savings, kW		15	Discount rate (%)		3%
Annual energy cost savings $	$	6,074.53	CO_2 reduction (lbs)		52,762
Annual maintenance cost savings $	$	3,500.00	Nox reduction (lbs)		97
Total Annual Cost Savings $	$	9,574.53	Sox reduction (lbs)		226

JA:ba
cc: Phil Berdolt, Deputy Commissioner DPW
Jay Abbott

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

PHILIP A. BERDOLT
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: November 10, 2015

RE: 1664.322 – Energy Conservation at Various County Buildings
Lighting Upgrade at the DPW Yard Building, Southold, NY (C0329)
DC XXXX-15 – All Service Electric, Inc.

The 3,300 square feet facility includes a large office space, workshop, storage room, locker room and two toilet rooms. In addition, there are three 150-watt metal halide wall packs that illuminate the front of the building. The interior spaces are predominantly illuminated with fluorescent T12 fixtures with magnetic ballast and are in extremely poor condition that it cannot be repaired. Some of the fixtures are missing lens covers.

There are no vacancy sensors in the building to turn the lights off when the rooms are unoccupied. The fixtures are at least 30 years old and have deteriorated to a level that the light output from these fixtures are not adequate for task lighting purposes. In addition, high maintenance cost is incurred every year to keep these fixtures operating.

It is proposed that all interior lighting in the building be replaced with LED fixtures as shown in the table below. In addition, it is recommended that vacancy sensors be installed in office space, locker room, and toilets to turn off the lights when the spaces are unoccupied. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently.

The replacement T12 lamps are no longer manufactured and it is almost impossible to replace burnt out lamps. The lighting inventory for the building is shown in the following table:

Shown above is lighting in Dan's Office

Shown above is lighting in workshop

Shown above is lighting in the Workshop

Shown above are three exterior wall pack fixtures

Upgrade interior lighting (CO329)						Account #: 9634351702 - Rate 281 (Electric)										
Discount Rate	4%					Bi-Level Characteristics:										
Cost of Electricity:	0.2016	$/kWh				Hi level on time:		30%	10%	Bi-level factor:	51%	(Hallways)				
						Low level power:		30%	5%	Bi-level fac	15%	(Stairwells)				
	Existing					**Recommended**								**Retrofit**		
Location	Fixt. Type	Watts/ Fixt.	# of Fixt.	Hours	Total kWh	Fixt. Type	Catalog #	Watts/ Fixt.	# of Fixt.	Vacancy Sensor	Hours	# Emer. Batteries	Fixt. Retr. Cost	Occ. Sensor Cost $	Savings kWh/year	Savings $/year	Retrofit Cost $
Hi-bay Area	2F40T12	88	30	2080	5,491	Hibay LED Fixture	CHB-95WLED-UNIV-5000K-FIOS	95	9	Y	936	0	$310.59	$0.00	4,691	$946	$2,795
Boiler Room	PR38 Halogen	90	2	50	9	BR40	BR40G4DIM/830	14	2	N	50	0	$19.90	$0.00	8	$2	$40
Office	2F40T12	88	10	2080	1,830	Mercury	LW25-4-4500-35K-HTA-UNI DLC # PBWK1HXP	25	10	Ceiling	624	0	$168.23	$90.00	1,674	$338	$1,682
Bathroom	2F40T12	88	4	2080	732	Mercury	LW25-4-4500-35K-HTA-UNI DLC # PBWK1HXP	25	4	Y	416	0	$168.23	$0.00	691	$139	$673
Bathroom	Incandescent	60	2	2080	250	Screw-in LED	8.5A19G4/827	8.5	2	Y	416	0	$30.00	$0.00	243	$49	$60
Water Heater Room	PR38 Halogen	90	1	50	5	BR40	BR40G4DIM/830	14	1	N	50	0	$19.90	$0.00	4	$1	$20
Exit Lights	Incandescent	40	2	8760	701	LED	NXP3GWH	4	2	N	8760	0	$18.00	$0.00	631	$127	$36
Exterior Wall Packs	Metal Halide	175	2	4380	1,533	LED Wall Packs	LNC-12LU-5K-3-1-PC1	20.6	2	N	4380	0	$232.10	$0.00	1,353	$273	$464
Total					10,551										9,293	$1,873	$5,770

The operating cost savings is shown in the table below.

Proposed Installed Cost	$23,500	Simple Payback after rebate (years)	5.8
Estimated PSEGLI Rebate $	$3,855	Savings to investment ratio	1.9
Proposed Installed Cost w/rebate	$19,645	Life-cycle cost savings (LCS)	$ 17,860
Annual Energy Savings (kWh)	9,293	Discount rate	4%
Annual Energy Cost Savings $	$1,873	Equipment Life (years)	15
Annual Maintenance Cost Savings $	$1,500		
Annual Operating Cost Savings $	$3,373		

JA:ba

cc: Phil Berdolt, Deputy Commissioner DPW
Jay Abbott, Special Project Coordinator

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

PHILIP A. BERDOLT
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: January 12, 2016

RE: 1664.322 – Energy Conservation at Various County Buildings
Lighting Upgrade at the Probations Building, Yaphank, NY (C0110)
DC0003-16

The office areas, hallways, lobby and the men's and ladies rooms in the Probations Building are illuminated with fluorescent T8 fixtures with electronic ballast. The individual offices have occupancy sensors to turn the lights off when the rooms are unoccupied. The fixtures are in good condition and it was determined that it will be cheaper and faster to upgrade these fixtures by replacing the fluorescent T8 lamps with LED T8 lamps rather than replace the entire fixture.

The exterior lighting is a combination of mercury vapor, metal halide and flood lights that illuminate the perimeter of the building and the parking lot. It is recommended that all exterior fixtures be replaced with LED fixtures and/or lamps.

It is proposed to retrofit the interior fixtures with DLA approved Instant Fit LED lamps which will reduce annual energy consumption and monthly demand by 144,566 kWh and 41-kW respectively resulting in annual cost savings of $26,709.00. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently.

Upgrading exterior light fixtures with LED will result in annual energy and cost savings of 28,444 kWh and $7,335.00 respectively.

The overall energy and cost savings for the project is shown in the table below.

Installed Cost	$	128,000	Simple Payback (years)		3.8
Annual Electric Savings (kWh)		173,010	Savings to Investment Ratio, SIR		3.0
Annual Energy Cost Savings ($)	$	30,857	Life-cycle Costs Savings (LCC $)	$	250,523
Annual Maintenance Cost Savings ($)	$	3,188	Life of Fixtures (years)		15
Annual Operating Cost Savings ($)	$	34,045	Discount rate (%)		4%
Annual Emission Reduction (CO2) lbs		179,238	Return on Investment (ROI)		27%

The tables below show the cost-benefit analysis for the interior and exterior lighting upgrade.

Summary of Interior Lighting Upgrade @ Probation Building (C0110)				
	Existing	Proposed	Savings	
Annual Energy Use (kWh)	208,644	64,079	144,566	
Monthly Demand Savings (kW)	58	17	41	
Estimated Annual Energy Cost ($)	$ 32,497	$ 9,980	$ 26,022	
Estimated Annual Lamp Replacement Cost ($)	$ 688	$ -	$ 688	
Total Annual O&M Cost Savings ($)				**$ 26,709**
Material Cost for Lighting Upgrade ($)				$ 45,988.23
Labor Cost for Lighting Upgrade ($)				$ 51,880.00
Total Cost for Lighting Upgrade w/o PSEGLI Rebate ($)				**$ 97,868.23**
Estimated PSEGLI Rebate ($)				$ 16,414.00
Total Cost for Lighting Upgrade with PSEGLI Rebate ($)				**$ 81,454.23**
Simple Payback with PSEGLI Rebate (years)				3.05
Savings to Investment Ratio (SIR)				31.69
Return on Investment (ROI)				33%
Life-cycle Cost Savings (LCS $)				$ 196,116
Life of Lamps (years)				13.7
Discount Rate (%)				4%
CO2 Reduction (lbs)				149,770
Nox Reduction (lbs)				405
Sox Reduction (lbs)				940

Exterior Lighting Upgrade

AREA	Floor	Existing Lamp	Existing Watts/Fixture	Proposed Lamp	Proposed Watts/Fixture	# of Fixtures	Total Watts Saved	Hours	kWh/year Saved	Material Cost $	Labor Cost $
NE Corner	Exterior	PAR 38	90	8BR30G4DIM/830	8	2	164	4,380	718	$ 22.93	$ 10.00
NE Corner	Exterior	Quartz	300	8BR30G4DIM/830	8	1	292	4,380	1,279	$ 11.47	$ 10.00
Exterior Perimeter	Exterior	Mercury Vapor	75	8BR30G4DIM/830	8	15	1,005	4,380	4,402	$ 171.98	$ 100.00
Parking Lot (Long Pole)	Exterior	Metal Halide	460	CL1-A-90LU-XX-X-XX	90	6	2,220	4,380	9,724	$ 6,892.41	$ 4,000.00
Parking Lot (Short Pole)	Exterior	Metal Halide	295	CL1-A-60LU-XX-X-XX	60	5	1,175	4,380	5,147	$ 4,020.57	$ 3,000.00
Parking Lot (Flood)	Exterior	Metal Halide	460	FXL-56L	187	6	1,638	4,380	7,174	$ 6,892.41	$ 5,000.00
Total						35	6,494		28,444	$ 18,011.77	$ 12,120.00

Installed Cost	$ 30,132	Simple Payback (years)	4.1
Annual Electric Savings (kWh)	28,444	Savings to Investment Ratio, SIR	3.3
Annual Energy Cost Savings ($)	$ 4,835	Life-cycle Costs Savings (LCC $)	$ 69,559
Annual Maintenance Cost Savings ($)	$ 2,500	Life of Fixtures (years)	20
Annual Operating Cost Savings ($)	$ 7,335	Discount rate (%)	4%
Annual Emission Reduction (CO2) lbs	29,468		

It is recommended that this project should be implemented and paid for from CP1664.322.

JA:ba
cc: Phil Berdolt, Deputy Commissioner DPW
Jay Abbott

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

PHILIP A. BERDOLT
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: March 22, 2016

RE: 1664.322 – Energy Conservation at Various County Buildings
Lighting Upgrade at the Yaphank Garage, Yaphank, NY (C0342)
DCxxxx-16

The office areas, hallways, storage rooms, lobby, men's and ladies room in the Yaphank Garage Building are illuminated with fluorescent T8 and T12 fixtures. Some of the fixtures have magnetic ballast and are in extremely poor condition with missing lens cover. The individual offices do not have occupancy sensors to turn the lights off when the rooms are unoccupied. The fixtures are at least 30 years old and have deteriorated to a level that the light output from these fixtures are not adequate for task lighting purposes. In addition, repair area is illuminated with 465-watt metal halide fixtures which are costly to operate and maintain.

The replacement T12 lamps are no longer manufactured and it is almost impossible to replace burnt out lamps.

The lighting inventory for the building is shown in the table below.

S. NO	AREA	FIXTURE TYPE	Manufacturer	Fixture Part #	DLC #	WATTS/FIXTURE	# OF FIXTURES	Total Watts
1	Garage Area High Bay Area	LED High Bay	Lithonia	IBH 24000LM SD080 MD MVOLTS OZ10 40K 80 CRI WH	PYKBJDYB	216	36	7,776
2	Tire Area	ZL1N L48 5000LM FST MVOLT 40 K 80 CRI WH	Lithonia	ZL1N L48 5000LM FST MVOLT 40 K 80 CRI WH	P000003L1	42	16	672
3	Manual Room Office	2 x 4 Layin Prismatic	Lithonia	2GTL4 LP840	P000001PK	39	2	78
4	Parts Department	LED High Bay	Lithonia	IBH 24000LM SD080 MD MVOLTS OZ10 40K 80 CRI WH	PYKBJDYB	216	4	864
5	Parts Department	2 x 4 Layin Prismatic	Lithonia	2GTL4 LP840	P000003L1	39	4	156
6	Parts Department	DMW2 L24 3000LM AFL WD MVOLT GZ1 40K	Lithonia	DMW2 L24 3000LM AFL WD MVOLT GZ1 40K 80 CRI	P44CYM2C	27	1	27
7	Dispatch	2 x 4 Layin Prismatic	Lithonia	2GTL4 LP840	P000001PK	39	3	117
8	Dispatch	2 x 2 Layin Prismatic	Lithonia	2GTL2 LP840	P000001PM	39.6	1	40
9	Radio Room	2 x 4 Layin Prismatic	Lithonia	2GTL4 LP840	P000001PK	39	4	156
10	Gas Pump Office	2 x 4 Layin Prismatic	Lithonia	2GTL4 LP840	P000001PK	39	2	78
11	Ladies Room	2 x 2 Layin Prismatic	Lithonia	2GTL2 LP840	P000001PM	39.6	1	40
12	Hallway to Locker Room	2 x 4 Layin Prismatic	Lithonia	2GTL4 LP840	P000001PK	39	6	234
13	Mens Locker Room	2 x 4 Layin Prismatic	Lithonia	2GTL4 LP840	P000001PK	39	3	117
14	Ed Kennedy's Office					45		0
15	Mike James/Brenda Office					45		0
16	Cafeteria					45		0
17	Boiler Room	DMW2 L24 3000LM AFL WD MVOLT GZ1 40K	Lithonia	DMW2 L24 3000LM AFL WD MVOLT GZ1 40K 80 CRI	P44CYM2C	27	7	189
18	Highway Inventory	LED High Bay	Lithonia	IBH 24000LM SD080 MD MVOLTS OZ10 40K 80 CRI WH	PYKBJDYB	216	8	1,728
19	Shawn's Office	2 x 4 Layin Prismatic	Lithonia	2GTL4 LP840	P000001PK	39	12	468
20	Sign Shop	2 x 4 Layin Prismatic	Lithonia	2GTL4 LP840	P000001PK	39	8	312
21	Storage Area	LED High Bay	ILP	IBH 24000LM SD080 MD MVOLTS OZ10 40K 80 CRI WH	PYKBJDYB	216	1	216
22	Total						119	13,267

It is proposed that all interior lighting in the building be replaced with LED fixtures as shown in the table above. In addition, it is recommended that occupancy sensors be installed in individual offices to turn off the lights when the

spaces are unoccupied. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently.

The operating cost savings is shown in the table below:

Proposed Installation Cost	$	102,215	Simple payback (years)		7.41
PSEGLI Rebate	$	15,200	Savings to investment ratio (SIR)		1.61
Project Cost after rebate	$	87,015	Life-cycle cost savings (LCS)	$	53,239
Annual energy savings, kWh		50,296	Life of equipment (years)		15
Monthly demand savings, kW		10	Discount rate (%)		3%
Annual energy cost savings $	$	8,248.60	CO_2 reduction (lbs)		52,107
Annual maintenance cost savings $	$	3,500.00	Nox reduction (lbs)		141
Total Annual Cost Savings $	$	11,748.60	Sox reduction (lbs)		327

JA:ba

cc: Phil Berdolt, Deputy Commissioner DPW
Jay Abbott, Special Projects Supervisor, DPW
Michael James, Fleet Services, DPW
Cliff Mitchell, Highway Supervisor, DPW

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

THOMAS G. VAUGHN
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: September 20, 2016

RE: 1664.323 – Energy Conservation at Various County Buildings
Lighting Upgrade at the Special Patrol Bureau (C0752)
DC0XXX-16

The above referenced building is located at the MacArthur Airport in Islip. The front of the building comprises office spaces whereas the rear of the building is helicopter hangar. The facility is used by SCPD with 24-hour occupancy. The light fixtures in the offices are T8 fixtures with electronic ballasts. The lighting in helicopter hangar was upgraded from metal halide fixtures to high output T5 fixtures in 2009.

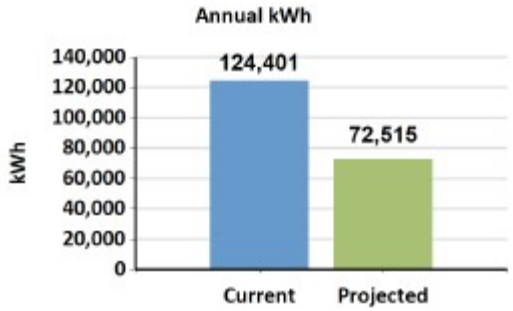
It is proposed to replace existing T8 fixtures in the office areas with new LED fixtures and replace high output T5 fixtures in the hangar with new high bay LED fixtures. The proposed lighting upgrade will reduce energy consumption by 42% and reduce GHG by over 73,000 lbs. per year. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently. The table below shows the cost-benefit analysis for the project.

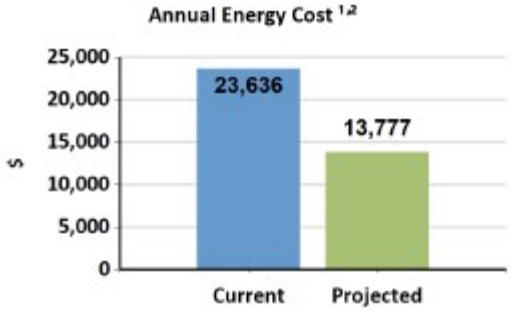
It is recommended that this project should be implemented and paid for from CP1664.323. The proposed cost including labor and material is $81,176.00.

Annual Energy Usage

Current Usage (kWh)	Projected Usage (kWh)	Reduction (%)	Current Cost ($) [1,2]	Projected Cost ($) [1,2]	Savings ($)	Savings (%)
124,401	72,515	42	23,636	13,777	9,858	42

Energy Comparison





Bill of Materials

Products

Fixtures

Part Number	Short Description	Qty	Cost ($)	Extended ($)
WPLED2T50Y	LED Wallpack 3000K	3	510.00	1,530.00
Lithonia ZL1N L48 3000LM FST MVOLT 40K 80CRI WH	LED 4' Strip with Lens	13	85.50	1,111.50
LIN-024	LED 36W Amber Wallpack w/photocell	2	317.00	634.00
IBH 15000LM	LED Highbay 15000LM	25	211.50	5,287.50
Lithonia TZL1N L96 6000LM FST MVOLT 40K 80CRI WH	LED 8' Strip with Lens 6000LM	9	175.00	1,575.00
WPLED10Y	LED Wallpack 3000K	3	145.00	435.00
Lithonia 2BLT2 33L ADP EZ1 LP835	LED 2X2 Volumetric	22	100.00	2,200.00
Litetronics RF32UQT240	LED 2X2 Retro-fit Kit	18	82.35	1,482.30
PAL-RU	LED Exit Sign	0	30.00	0.00
Total				**14,255.30**

Lamps

Part Number	Short Description	Qty	Cost ($)	Extended ($)
97829	LED 4' Tube - Ballast Bypass HO	18	17.75	319.50
97722	LED 4' Tube - Ballast Bypass	169	16.50	2,788.50
9.5A19/LED/827-22 DIM	9.5W A19	5	6.00	30.00
97726	LED 2' Tube with ballast bypass	0	12.50	0.00
76858	LED A21 Lamp 15W	1	10.95	10.95
Total				**3,148.95**

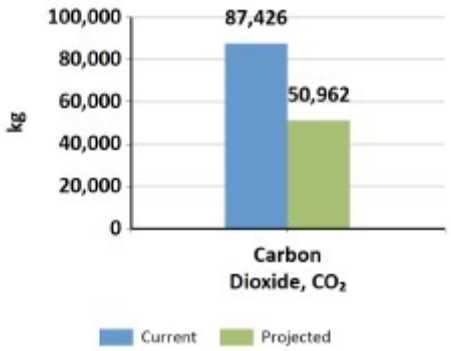
Environmental Impact

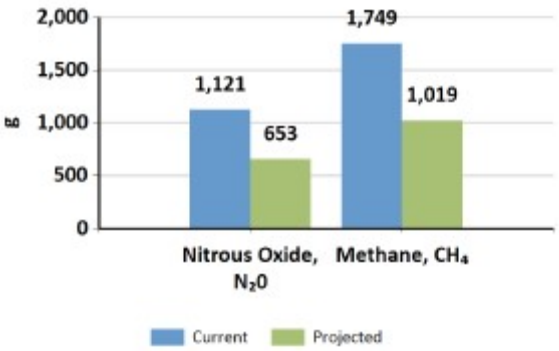
Greenhouse Gas Analysis

Greenhouse Gas Comparisons[1]

Greenhouse Gas	Current[1]	Projected[1]	Avoided	Environmental Effect
Carbon Dioxide, CO_2 (kg)	87,426	50,962	36,464	Greenhouse Gas, Global Warming
Nitrous Oxide, N_20 (g)	1,121	653	468	Greenhouse Gas, Global Warming
Methane, CH_4 (g)	1,749	1,019	730	Greenhouse Gas, Global Warming
Nitrogen Oxides, NOx (g)	76,487	44,585	31,902	Smog, Acid rain, Global Warming
Sulfur Oxides, SOx (g)	165,428	96,430	68,998	Acid rain

1. Average emission rates per kWh are based on estimates from eGrid 2012





Incentives

Part Number Description	Incentive Description	Amount ($)	Est. Receipt Date
9.5W A19		60.00	Immediate
LED 2X2 Retro-fit Kit		900.00	Immediate
LED 2X2 Volumetric		1,320.00	Immediate
LED 4' Strip with Lens		650.00	Immediate
LED 4' Tube - Ballast Bypass		216.00	Immediate
LED 4' Tube - Ballast Bypass		1,800.00	Immediate
LED 4' Tube - Ballast Bypass		12.00	Immediate
LED 4' Tube - Ballast Bypass HO		216.00	Immediate
LED 8' Strip with Lens 6000LM		1,350.00	Immediate
LED A21 Lamp 15W		12.00	Immediate
LED Highbay 15000LM		5,000.00	Immediate
Total		11,536.00	

Lighting Wattage Comparison

Area :								
Space	Existing Fixture	Qty	Watts	Total Watts	Proposed Solution	Qty	Watts	Total Watts
1st Floor :								
Back Entrance	2x2, 2 Lamp F17 Prismatic	1	33	33	LED 2x2 Fixture	1	30	30
1st Floor :								
Boiler Room	4ft, F32 T8 2 Lamp Industrial	2	60	120	LED 4' Tube 2 Lamp HO	2	35	70
1st Floor :								
Door 103	2x4, 2 Lamp, F32 T8 Parabolic	4	60	240	LED 4' Tube - 2 Lamp	4	29	116

1st Floor :								
Door 103	4ft, F32 T8 1 Lamp Strip	1	28	28	LED 4' Tube 1 Lamp	1	14	14
1st Floor :								
Door 104	2x4, 2 Lamp, F32 T8 Parabolic	4	60	240	LED 4' Tube - 2 Lamp	4	29	116
1st Floor :								
Door 105	2x4, 2 Lamp, F32 T8 Parabolic	4	60	240	LED 4' Tube - 2 Lamp	4	29	116
1st Floor :								
Door 107 - Evidence Room	CFL 26W	1	26	26	LED 15W A21 Lamp	1	15	15
1st Floor :								
Door 107 - Evidence Room	4ft, F32 T8 2 Lamp Strip	6	60	360	LED 4' Tube 2 Lamp HO	6	35	210
1st Floor :								
Door 111	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 4' Tube - 2 Lamp	1	29	29
1st Floor :								
Door 112	2x4, 2 Lamp, F32 T8 Parabolic	4	60	240	LED 4' Tube - 2 Lamp	4	29	116
1st Floor :								
Door 113	2x4, 2 Lamp, F32 T8 Parabolic	4	60	240	LED 4' Tube - 2 Lamp	4	29	116
1st Floor :								
Door 114	2x4, 2 Lamp, F32 T8 Parabolic	4	60	240	LED 4' Tube - 2 Lamp	4	29	116
1st Floor :								
Door 115	2x2, 2 Lamp F17 Prismatic	1	33	33	LED 2x2 Fixture	1	30	30
1st Floor :								
Door 115	2x4, 2 Lamp, F32 T8 Parabolic	6	60	360	LED 4' Tube - 2 Lamp	6	29	174
1st Floor :								

Door 117	2x4, 2 Lamp, F32 T8 Parabolic	6	60	360	LED 4' Tube - 2 Lamp	6	29	174
1st Floor :								
Entrance	2x2, 2 Lamp F17 Prismatic	2	33	66	LED 2x2 Fixture	2	30	60
1st Floor :								
Hall	2x2, 2 Lamp F17 Prismatic	11	33	363	LED 2x2 Fixture	11	30	330
1st Floor :								
Hangar	70w Metal Halide	3	95	285	LED 12W Wallpack	3	12	36
1st Floor :								
Hangar	4ft, FP28 T5 1 Lamp	4	33	132	LED 4' Strip	4	31	124
1st Floor :								
Hangar	4ft, FP54 HO T5 4 Lamp	25	229	5,725	LED Highbay	25	140	3,500
1st Floor :								
Hangar - Door 121	4ft, F32 T8 2 Lamp Vapor Tight	1	60	60	LED 4' Tube 2 Lamp HO	1	35	35
1st Floor :								
Hangar - Entrances	4ft, 2 Lamp, F32 T8 Wrap	2	60	120	LED 4' Tube - 2 Lamp	2	29	58
1st Floor :								
Men's Room	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 4' Tube - 2 Lamp	1	29	29
1st Floor :								
Stairwell	2x2, 2 Lamp U Tube F32 Prismatic	6	60	360	LED 2x2 Retrofit	6	32	192
1st Floor :								
Tool Room - Door 108	4ft, FP28 T5 1 Lamp	19	33	627	LED Lowbay Strip	9	64	576
1st Floor :								
Tool Room - Door 118	4ft, FP28 T5 1 Lamp	5	33	165	LED 4' Strip	5	31	155
1st Floor :								

Tool Room - Electrical Room	4ft, FP28 T5 1 Lamp	4	33	132	LED 4' Strip	4	31	124
1st Floor :								
Women's Room	1x4, 2 Lamp, F32 T8 Prismatic	2	60	120	LED 4' Tube - 2 Lamp	2	29	58
2nd Floor :								
Door 203	2x4, 2 Lamp, F32 T8 Parabolic	6	60	360	LED 4' Tube - 2 Lamp	6	29	174
2nd Floor :								
Door 204	2x4, 2 Lamp, F32 T8 Parabolic	4	60	240	LED 4' Tube - 2 Lamp	4	29	116
2nd Floor :								
Door 205	4ft, F32 T8 2 Lamp Strip	2	60	120	LED 4' Tube - 2 Lamp	2	29	58
2nd Floor :								
Door 206	2x2, 2 Lamp U Tube F32 Prismatic	2	60	120	LED 2x2 Retrofit	2	32	64
2nd Floor :								
Door 206	2x4, 2 Lamp, F32 T8 Prismatic	7	60	420	LED 4' Tube - 2 Lamp	7	29	203
2nd Floor :								
Door 206	60w Incandescent	2	60	120	LED 9.5W A19 Lamp	2	10	20
2nd Floor :								
Door 207	60w Incandescent	1	60	60	LED 9.5W A19 Lamp	1	10	10
2nd Floor :								
Door 208 - Back Staircase	2x2, 2 Lamp U Tube F32 Prismatic	4	60	240	LED 2x2 Retrofit	4	32	128
2nd Floor :								
Door 209	2x2, 2 Lamp U Tube F32 Prismatic	6	60	360	LED 2x2 Retrofit	6	32	192
2nd Floor :								
Door 209	60w Incandescent	2	60	120	LED 9.5W A19 Lamp	2	10	20

2nd Floor :								
Door 210	2x4, 2 Lamp, F32 T8 Parabolic	4	60	240	LED 4' Tube - 2 Lamp	4	29	116
2nd Floor :								
Door 211	2x4, 2 Lamp, F32 T8 Parabolic	2	60	120	LED 4' Tube - 2 Lamp	2	29	58
2nd Floor :								
Door 212	2x4, 3 Lamp, F32 T8 Parabolic	6	85	510	LED 4' Tube - 3 Lamp	6	44	264
2nd Floor :								
Door 213	2x4, 2 Lamp, F32 T8 Parabolic	8	60	480	LED 4' Tube - 2 Lamp	8	29	232
2nd Floor :								
Hall	2x2, 2 Lamp F17 Prismatic	7	33	231	LED 2x2 Fixture	7	30	210
Outdoor :								
Over Hangar Doors	250w Metal Halide	3	285	855	LED 52W Wallpack	3	52	156
Outdoor :								
Side Gas Pump and Rear	150w Metal Halide	2	185	370	LED 36W Wallpack	2	36	72
Total			2970	16,001			1434	8,812

JA:ba
cc: Jay Abbott, BD&C DPW
Judd Classie, Buildings O&M, Hauppauge Complex

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

THOMAS G. VAUGHN
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: November 28, 2016

RE: 1664.323 – Energy Conservation at Various County Buildings
Lighting Upgrade at the First Precinct Building (C0354)
DC0XXX-16

The above referenced building is located on Route 109 in Lindenhurst. The building is approximately 20,000 square feet and lighting has not been renovated in twenty-five years. The indoor lighting is predominantly fluorescent with T12 fixtures. To further reduce energy consumption and cost and make the building more energy efficient it is proposed that all T12, T8, CFL and incandescent fixtures be replaced with LED fixtures.

In the past few years DPW has implemented the following energy efficiency measures at this facility:

a. Replace oil fired boilers with high efficiency gas fired condensing boilers
b. Replace air cooled electric chiller
c. Upgraded Building Management System

The proposed replacement will reduce annual energy usage by 61% and reduce GHG by over 106,000 lbs. per year. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently. The table below shows the cost-benefit analysis for the project.

It is recommended that this project should be implemented and paid for from CP1664.323. The proposed cost including labor and material is $125,790.00.

Energy Usages and Costs

Annual Energy Usage

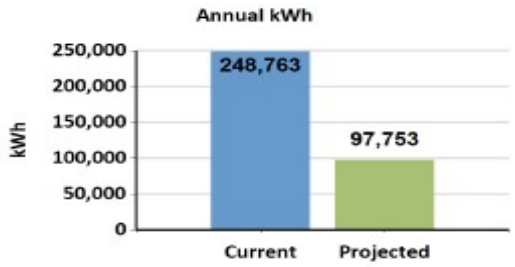
Current Usage (kWh)	Projected Usage (kWh)	Reduction (%)	Current Cost ($) [1,2]	Projected Cost ($) [1,2]	Savings ($)	Savings (%)
248,763	97,753	61	47,265	18,573	28,692	61

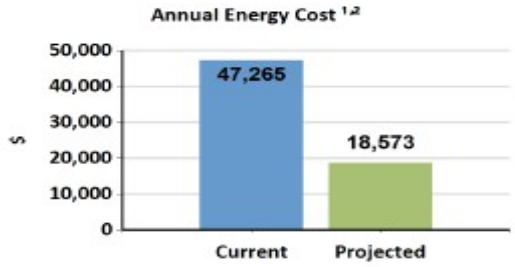
1. Energy cost ($) = 0.1900/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

Annual Energy Usage Reduction

Current Usage (kWh)	Projected Usage (kWh)	Reduction (kWh)	Reduction (%)
248,763	97,753	151,010	61

Energy Comparison





1. Energy Cost ($) = 0.1900/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

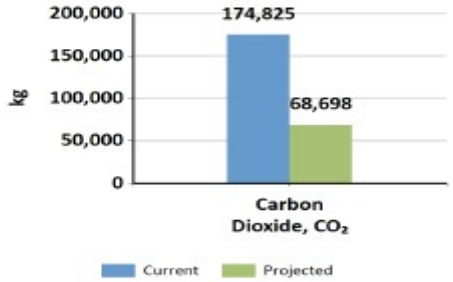
Environmental Impact

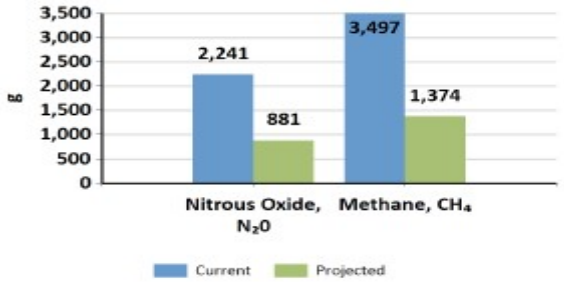
Greenhouse Gas Analysis

Greenhouse Gas Comparisons[1]

Greenhouse Gas	Current[1]	Projected[1]	Avoided	Environmental Effect
Carbon Dioxide, CO_2 (kg)	174,825	68,698	106,127	Greenhouse Gas, Global Warming
Nitrous Oxide, N_20 (g)	2,241	881	1,360	Greenhouse Gas, Global Warming
Methane, CH_4 (g)	3,497	1,374	2,123	Greenhouse Gas, Global Warming
Nitrogen Oxides, NOx (g)	152,949	60,102	92,847	Smog, Acid rain, Global Warming
Sulfur Oxides, SOx (g)	330,805	129,992	200,813	Acid rain

1. Average emission rates per kWh are based on estimates from eGrid 2012





Bill of Materials

Products

Fixtures

Part Number	Short Description	Qty	Cost ($)	Extended ($)
EZPAN2x4	LED 2x4 Edgelit Flat Panel	201	88.25	17,738.25
ZL!N L48 5000LM	LED 4' Strip 5000LM	6	92.00	552.00
73700	LED 4' Utility Wrap	2	97.50	195.00
EZPAN2x2	LED 2x2 Edgelit Flat Panel	75	59.00	4,425.00
GUS4-36Y	LED 4' Wrap	26	97.85	2,544.10
Lithonia ZL1N L48 3000LM FST MVOLT 40K 80CRI WH	LED 4' Strip with Lens	48	85.50	4,104.00
Total				**29,558.35**

Lamps

Part Number	Short Description	Qty	Cost ($)	Extended ($)
97722	LED 4' Tube - Ballast Bypass	37	16.50	610.50
Philips 120V A19 E26 14.5W 2700K 455683	LED A-Lamp HO	7	7.00	49.00
Total				**659.50**

Controls

Part Number	Short Description	Qty	Cost ($)	Extended ($)
WS1001W	Wall Vacancy Sensor	25	24.50	612.50
Hubbell ATD2000C	Sensor, Dual Technology, Ceiling, 2000 sqft.	1	95.50	95.50
Total				**708.00**

Additional Items

Part Number	Short Description	Qty	Cost ($)	Extended ($)
CU300A	Control Unit for Ceiling Sensor	1	21.00	21.00
Total				**21.00**

Appendix

Incentives

Part Number Description	Incentive Description	Amount ($)	Est. Receipt Date
LED 2x2 Edgelit Flat Panel		4,500.00	Immediate
LED 2x4 Edgelit Flat Panel		16,080.00	Immediate
LED 4' Strip 5000LM		300.00	Immediate
LED 4' Strip with Lens		2,400.00	Immediate
LED 4' Tube - Ballast Bypass		324.00	Immediate
LED 4' Tube - Ballast Bypass		24.00	Immediate
LED 4' Tube - Ballast Bypass		96.00	Immediate
LED 4' Utility Wrap		100.00	Immediate
LED 4' Wrap		1,300.00	Immediate
LED A-Lamp HO		84.00	Immediate
Total		**25,208.00**	

Lighting Wattage Comparison

Area :									
Space	Existing Fixture	Qty	Watts	Total Watts	Proposed Solution	Qty	Watts	Total Watts	Scheduled Hours
1st Floor :									
102 Executive Office	2x4, 4 Lamp, F32 T8 Prismatic	4	111	444	LED 2x4 Panel	4	39	156	8760
1st Floor :									
104 Commanding Officer	2x4, 4 Lamp, F32 T8 Prismatic	4	111	444	LED 2x4 Panel	4	39	156	8760
1st Floor :									
104 Commanding Officer Bath	2x4, 4 Lamp, F32 T8 Prismatic	1	111	111	LED 2x4 Panel	1	39	39	2868
1st Floor :									
Admin	2x4, 4 Lamp, F32 T8 Prismatic	3	111	333	LED 2x4 Panel	3	39	117	8760
1st Floor :									
Back Entrance	2x4, 4 Lamp, F32 T8 Prismatic	2	111	222	LED 2x4 Panel	2	39	78	8760
1st Floor :									
Captain's Office	2x4, 4 Lamp, F32 T8 Prismatic	2	111	222	LED 2x4 Panel	2	39	78	8760
1st Floor :									
Closet by Juvenile	2x2, 2 Lamp U Tube F32 Prismatic	1	60	60	LED 2x2 Panel	1	27	27	2868
1st Floor :									
Commanding Office	2x4, 4 Lamp, F32 T8 Prismatic	4	111	444	LED 2x4 Panel	4	39	156	8760
1st Floor :									
Commanding Officer Secretary	2x4, 4 Lamp, F32 T8 Prismatic	4	111	444	LED 2x4 Panel	4	39	156	8760

1st Floor :									
Crime Control	2x2, 2 Lamp U Tube F32 Prismatic	2	60	120	LED 2x2 Panel	2	27	54	8760
1st Floor :									
Crime Control	2x4, 4 Lamp, F32 T8 Prismatic	10	111	1,110	LED 2x4 Panel	10	39	390	8760
1st Floor :									
Custodial Closet	75w A19 Incandescent	1	75	75	LED A Lamp	1	14	14	2868
1st Floor :									
Entry	2x4, 4 Lamp, F32 T8 Prismatic	1	111	111	LED 2x4 Panel	1	39	39	2868
1st Floor :									
Female Cell	2x4, 3 Lamp, F32 T8 Prismatic	2	85	170	LED 4' Tube - 3 Lamp T8	2	44	88	8760
1st Floor :									
Field Cope Office	2x4, 4 Lamp, F32 T8 Prismatic	4	111	444	LED 2x4 Panel	4	39	156	2868
1st Floor :									
Forger PF	2x4, 4 Lamp, F32 T8 Prismatic	1	111	111	LED 2x4 Panel	1	39	39	2868
1st Floor :									
Front Lobby	2x2, 2 Lamp U Tube F32 Prismatic	8	60	480	LED 2x2 Panel	8	27	216	8760
1st Floor :									
Front Lobby	2x4, 4 Lamp, F32 T8 Prismatic	6	111	666	LED 2x4 Panel	6	39	234	8760

1st Floor :									
Front Lobby-Mens Room	2x4, 4 Lamp, F32 T8 Prismatic	1	111	111	LED 2x4 Panel	1	39	39	8760
1st Floor :									
Front Lobby-Womens Room	2x4, 4 Lamp, F32 T8 Prismatic	1	111	111	LED 2x4 Panel	1	39	39	8760
1st Floor :									
Hallways	2x2, 2 Lamp U Tube F32 Prismatic	21	60	1,260	LED 2x2 Panel	21	27	567	8760
1st Floor :									
Interview Room 1	4ft, 2 Lamp, F32 T8 Wrap	2	60	120	LED 4' Wrap	2	38	76	2868
1st Floor :									
Interview Room 2	4ft, 2 Lamp, F32 T8 Wrap	2	60	120	LED 4' Wrap	2	38	76	2868
1st Floor :									
Interview Room 3	4ft, 2 Lamp, F32 T8 Wrap	2	60	120	LED 4' Wrap	2	38	76	2868
1st Floor :									
Interview Room 4	2x4, 4 Lamp, F32 T8 Prismatic	2	111	222	LED 2x4 Panel	2	39	78	2868
1st Floor :									
Juvenile Room	2x4, 4 Lamp, F32 T8 Prismatic	3	111	333	LED 2x4 Panel	3	39	117	2868
1st Floor :									
Kitchen	2x4, 4 Lamp, F32 T8 Prismatic	2	111	222	LED 2x4 Panel	2	39	78	8760
1st Floor :									

Lieutenant's Office	2x4, 4 Lamp, F32 T8 Prismatic	4	111	444	LED 2x4 Panel	4	39	156	8760
1st Floor :									
Men's Cell	2x4, 3 Lamp, F32 T8 Prismatic	7	85	595	LED 4' Tube - 3 Lamp T8	7	44	308	8760
1st Floor :									
Men's Cell	2x4, 4 Lamp, F32 T8 Prismatic	2	111	222	LED 4' Tube - 4 Lamp T8	2	58	116	8760
1st Floor :									
Men's Cell - Storage	75w A19 Incandescent	4	75	300	LED A Lamp	4	14	56	2868
1st Floor :									
Men's Staff Restroom	2x2, 2 Lamp U Tube F32 Prismatic	1	60	60	LED 2x2 Panel	1	27	27	2868
1st Floor :									
Mens Toilet	2x4, 4 Lamp, F32 T8 Prismatic	3	111	333	LED 2x4 Panel	3	39	117	8760
1st Floor :									
Mens Toilet	4ft, F32 T8 2 Lamp Industrial	1	60	60	LED 4' Utility Wrap	1	20	20	8760
1st Floor :									
Printer Room	2x4, 4 Lamp, F32 T8 Prismatic	4	111	444	LED 2x4 Panel	4	39	156	8760
1st Floor :									
Prisoner Processing	2x4, 4 Lamp, F32 T8 Prismatic	10	111	1,110	LED 2x4 Panel	10	39	390	8760
1st Floor :									

Property Closet	75w A19 Incandescent	1	75	75	LED A Lamp	1	14	14	2868
1st Floor :									
Property Storage	75w A19 Incandescent	1	75	75	LED A Lamp	1	14	14	2868
1st Floor :									
Restroom	2x4, 4 Lamp, F32 T8 Prismatic	1	111	111	LED 2x4 Panel	1	39	39	2868
1st Floor :									
Room 8147	2x4, 4 Lamp, F32 T8 Prismatic	6	111	666	LED 2x4 Panel	6	39	234	8760
1st Floor :									
Secretary	2x2, 2 Lamp U Tube F32 Prismatic	2	60	120	LED 2x2 Panel	2	27	54	8760
1st Floor :									
Secretary	2x4, 4 Lamp, F32 T8 Prismatic	7	111	777	LED 2x4 Panel	7	39	273	8760
1st Floor :									
Sergeant	2x4, 4 Lamp, F32 T8 Prismatic	4	111	444	LED 2x4 Panel	4	39	156	8760
1st Floor :									
Squad Room	2x2, 2 Lamp U Tube F32 Prismatic	6	60	360	LED 2x2 Panel	6	27	162	8760
1st Floor :									
Squad Room	2x4, 4 Lamp, F32 T8 Prismatic	11	111	1,221	LED 2x4 Panel	11	39	429	8760
1st Floor :									

SS Administration	2x4, 4 Lamp, F32 T8 Prismatic	20	111	2,220	LED 2x4 Panel	20	39	780	8760
1st Floor :									
Video Room	2x4, 4 Lamp, F32 T8 Prismatic	1	111	111	LED 2x4 Panel	1	39	39	8760
1st Floor :									
Witness/Victim Interview	2x4, 4 Lamp, F32 T8 Prismatic	2	111	222	LED 2x4 Panel	2	39	78	2868
1st Floor :									
Women's Staff Restroom	2x2, 2 Lamp U Tube F32 Prismatic	1	60	60	LED 2x2 Panel	1	27	27	2868
1st Floor :									
Womens Toilet	2x4, 4 Lamp, F32 T8 Prismatic	2	111	222	LED 2x4 Panel	2	39	78	8760
1st Floor :									
Womens Toilet	4ft, F32 T8 2 Lamp Industrial	1	60	60	LED 4' Utility Wrap	1	20	20	8760
Basement :									
1st PB - Gang Office	2x4, 4 Lamp, F32 T8 Prismatic	6	111	666	LED 2x4 Panel	6	39	234	2868
Basement :									
Aux	4ft, F32 T8 2 Lamp Strip	4	60	240	LED 4' Strip	4	31	124	2868
Basement :									
Boiler and Generator	4ft, F32 T8 2 Lamp Strip	4	60	240	LED 4' Strip	4	31	124	2868
Basement :									

Break Room/Kitchen	2x2, 2 Lamp U Tube F32 Prismatic	1	60	60	LED 2x2 Panel	1	27	27	8760
Basement :									
Break Room/Kitchen	2x4, 4 Lamp, F32 T8 Prismatic	5	111	555	LED 2x4 Panel	5	39	195	8760
Basement :									
Cope Office	2x4, 4 Lamp, F32 T8 Prismatic	6	111	666	LED 2x4 Panel	6	39	234	2868
Basement :									
Custodian Closet	4ft, F32 T8 2 Lamp Strip	2	60	120	LED 4' Strip	2	31	62	2868
Basement :									
Elevator	4ft, F32 T8 2 Lamp Strip	1	60	60	LED 4' Tube - 2 Lamp T8	1	29	29	8760
Basement :									
Elevator Machine Room	4ft, F32 T8 2 Lamp Strip	1	60	60	LED 4' Strip	1	31	31	2868
Basement :									
Gym	2x2, 2 Lamp U Tube F32 Prismatic	2	60	120	LED 2x2 Panel	2	27	54	8760
Basement :									
Gym	2x4, 4 Lamp, F32 T8 Prismatic	15	111	1,665	LED 2x4 Panel	15	39	585	8760
Basement :									
Hallway	2x2, 2 Lamp U Tube F32 Prismatic	19	60	1,140	LED 2x2 Panel	19	27	513	8760
Basement :									

Line Up Room	4ft, 2 Lamp, F32 T8 Wrap	4	60	240	LED 4' Wrap	4	38	152	2868
Basement :									
Locker Entry	4ft, 2 Lamp, F32 T8 Wrap	2	60	120	LED 4' Wrap	2	38	76	8760
Basement :									
Locker Room	4ft, F32 T8 2 Lamp Strip	1	60	60	LED 4' Strip	1	31	31	8760
Basement :									
Locker Room	4ft, 2 Lamp, F32 T8 Wrap	14	60	840	LED 4' Wrap	14	38	532	8760
Basement :									
Mechanical Room 1	4ft, F32 T8 2 Lamp Strip	6	60	360	LED 4' Strip	6	31	186	2868
Basement :									
Mechanical Room 2	4ft, F32 T8 2 Lamp Strip	5	60	300	LED 4' Strip	5	31	155	2868
Basement :									
Mechanical Room 3	4ft, F32 T8 2 Lamp Strip	9	60	540	LED 4' Strip	9	31	279	2868
Basement :									
Mechanical Room 4	4ft, F32 T8 2 Lamp Strip	4	60	240	LED 4' Strip	4	31	124	2868
Basement :									
Mechanical Room 5	4ft, F32 T8 2 Lamp Strip	2	60	120	LED 4' Strip	2	31	62	2868
Basement :									
Meeting Room	2x4, 4 Lamp, F32 T8 Prismatic	15	111	1,665	LED 2x4 Panel	15	39	585	8760
Basement :									

Men's Locker	2x2, 2 Lamp U Tube F32 Prismatic	5	60	300	LED 2x2 Panel	5	27	135	8760
Basement :									
Men's Locker	2x4, 4 Lamp, F32 T8 Prismatic	12	111	1,332	LED 2x4 Panel	12	39	468	8760
Basement :									
Men's Toilet	2x2, 2 Lamp U Tube F32 Prismatic	1	60	60	LED 2x2 Panel	1	27	27	2868
Basement :									
Men's Toilet	2x4, 4 Lamp, F32 T8 Prismatic	1	111	111	LED 2x4 Panel	1	39	39	2868
Basement :									
PBA Office	2x2, 2 Lamp U Tube F32 Prismatic	1	60	60	LED 2x2 Panel	1	27	27	8760
Basement :									
PBA Office	2x4, 4 Lamp, F32 T8 Prismatic	5	111	555	LED 2x4 Panel	5	39	195	8760
Basement :									
Property Storage	4ft, F32 T8 2 Lamp Industrial	2	60	120	LED 4' Strip	2	31	62	2868
Basement :									
Stairwell	2x2, 2 Lamp U Tube F32 Prismatic	1	60	60	LED 2x2 Panel	1	27	27	8760
Basement :									
Stairwell	2x4, 4 Lamp, F32 T8 Prismatic	1	111	111	LED 2x4 Panel	1	39	39	8760
Basement :									

Storage	4ft, F32 T8 2 Lamp Strip	1	60	60	LED 4' Strip	1	31	31	2868
Basement :									
Telephone Equipment	4ft, F32 T8 2 Lamp Strip	7	60	420	LED 4' Strip	7	31	217	2868
Basement :									
Women's Locker Room	2x2, 2 Lamp U Tube F32 Prismatic	3	60	180	LED 2x2 Panel	3	27	81	8760
Basement :									
Women's Locker Room	2x4, 4 Lamp, F32 T8 Prismatic	5	111	555	LED 2x4 Panel	5	39	195	8760
Garage :									
Shop	4ft, F32 T8 2 Lamp Industrial	6	60	360	LED 4' Strip 5000LM	6	42	252	8760
Total			7472	33,303			2975	13,271	

JA:ba
cc: Jay Abbott, BD&C DPW
Ed Farrell, Jr., Buildings O&M DPW

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

THOMAS G. VAUGHN
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: November 28, 2016

RE: 1664.323 – Energy Conservation at Various County Buildings
Exterior Lighting Upgrade at the Second Precinct Building (C0037)
DC0XXX-16

The above referenced building is located on Park Avenue in Huntington. The building is approximately 20,000 square feet and lighting has not been renovated in twenty-five years. The exterior lighting comprises metal halide (MH) fixtures. Due to high cost of replacing metal halide lamps every 10,000 to 15,000 hours it is recommended that the fixtures be replaced from MH to LED as the industry has transitioned over to LED technology.

In the past few years DPW has implemented the following energy efficiency measures at this facility:

a. Upgraded Building Management System

The proposed replacement will reduce annual energy usage by 81% and reduce GHG by 11,000 lbs. per year. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently. The table below shows the cost-benefit analysis for the project.

It is recommended that this project should be implemented and paid for from CP1664.323. The proposed cost including labor and material is $ 29,899.20.

Energy Usages and Costs

Annual Energy Usage

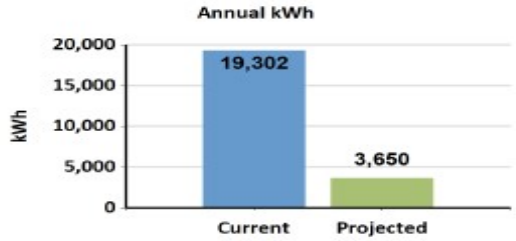
Current Usage (kWh)	Projected Usage (kWh)	Reduction (%)	Current Cost ($) [1,2]	Projected Cost ($) [1,2]	Savings ($)	Savings (%)
19,302	3,650	81	3,667	693	2,973	81

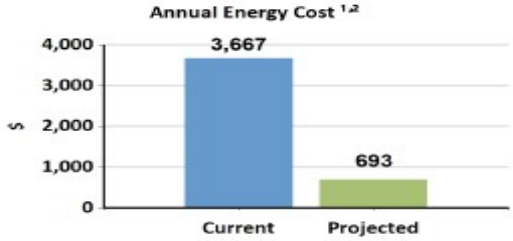
1. Energy cost ($) = 0.1900/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

Annual Energy Usage Reduction

Current Usage (kWh)	Projected Usage (kWh)	Reduction (kWh)	Reduction (%)
19,302	3,650	15,651	81

Energy Comparison





1. Energy Cost ($) = 0.1900/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

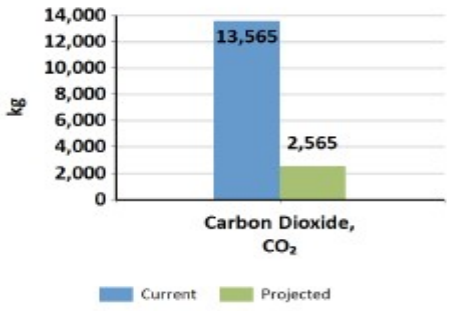
Environmental Impact

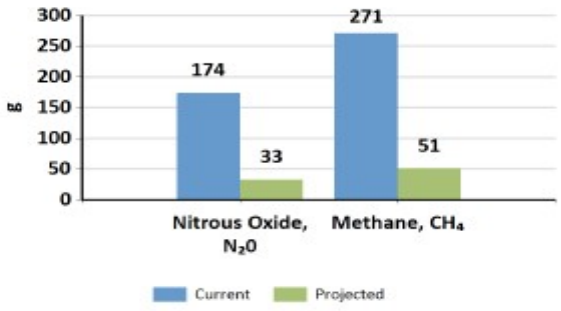
Greenhouse Gas Analysis

Greenhouse Gas Comparisons[1]

Greenhouse Gas	Current[1]	Projected[1]	Avoided	Environmental Effect
Carbon Dioxide, CO_2 (kg)	13,565	2,565	11,000	Greenhouse Gas, Global Warming
Nitrous Oxide, N_20 (g)	174	33	141	Greenhouse Gas, Global Warming
Methane, CH_4 (g)	271	51	220	Greenhouse Gas, Global Warming
Nitrogen Oxides, NOx (g)	11,868	2,244	9,624	Smog, Acid rain, Global Warming
Sulfur Oxides, SOx (g)	25,668	4,854	20,814	Acid rain

1. Average emission rates per kWh are based on estimates from eGrid 2012





Bill of Materials

Products

Fixtures

Part Number	Short Description	Qty	Cost ($)	Extended ($)
101055 - 100	LED Gas Canopy Light	2	159.00	318.00
RAB WP2LED37	Wall Pack Medium	1	212.00	212.00
FFLED39/PC	LED 39w Floodlight with photo cell	1	261.00	261.00
74173	LED Canopy Fixture	4	159.00	636.00
ALED2T50/PC	LED 50W Area Light	17	487.50	8,287.50
Total				9,714.50

Lighting Wattage Comparison

Area :									
Space	Existing Fixture	Qty	Watts	Total Watts	Proposed Solution	Qty	Watts	Total Watts	Scheduled Hours
Outdoor :									
Canopy Lighting	70w Metal Halide	4	95	380	LED Canopy Light	4	40	160	2868
Outdoor :									
Canopy Lighting-Gas Pumps	150w Metal Halide	2	185	370	LED Gas Canopy	2	25	50	8760
Outdoor :									
Flag Lights	70w Metal Halide	2	95	190	LED Flood Light	1	39	39	2868
Outdoor :									
Pole Lighting	250w Metal Halide	17	285	4,845	LED 50W Area Light	17	52	884	2868
Outdoor :									
Wall Mounted	150w Metal Halide	1	185	185	LED Wallpack	1	37	37	2868
Total			845	5,970			193	1,170	

MaxLiTe
A NEW WAVE OF LIGHT

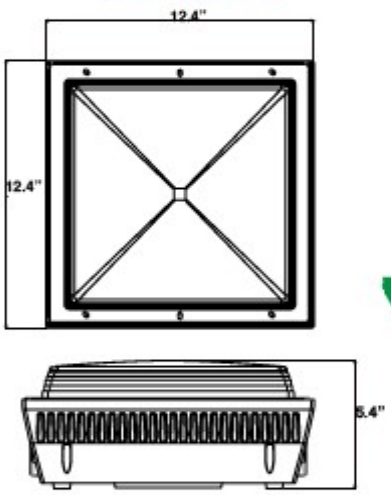
PROJECT NAME:_____ CATALOG NUMBER:_____

NOTES:_____ FIXTURE SCHEDULE:_____

LED GARAGE & CANOPY LUMINAIRE

CP SERIES

DIMENSIONS:



PRODUCT DESCRIPTION:

The surface mounted canopy fixture, with a shatter- and UV-resistant polycarbonate lens, can be mounted to a J-box or directly to non-combustible surfaces. The LEDs are proprietary binned for color consistency, highlighting a 96 percent power factor and 120° beam angle LED.

FEATURES:

- 25W replaces up to 150 watt metal halide
- 40W replaces up to 175 watt metal halide
- 55W replaces up to 250 watt metal halide
- Universal 120- 277V operation
- Maintenance free and constructed without any hazardous materials
- Dusk-to-dawn and occupancy sensor compatible
- Greater than 100,000 hour L70 lifetime at TM-21 standards, 25°C
- 0-10V dimming driver standard
- 5 Year Limited Warranty

CONTROLS:

120VAC/208-277VAC Photocontrol:

Voltage-specific photocontrols power the fixture when light levels reach 20 lux or below, and turn it off at 80 lux or higher. The operating temperature of the photocontrols are -30°F- 120°F. Photocell mounted externally.

Motion/Daylight Sensor:

Motion/Daylight Sensor: 0-10V passive infrared-based motion sensor with integral photocontrol, allowing for three output states: 100%; 10/20/30/40/50% output; or 0% output. Detection area, hold time, daylight threshold, and dimming level can be adjusted via the accessible push-button. the operating temperature of the sensor is -40°F- 161°F. At its maximum mounting height of 20 feet, the sensor can detect motion up to 35 feet away. Sensor mounted externally, embedded within fixture backhousing.

MODEL SELECTION (Full list of order codes on pg. 2) — Typical order example: CP40AUTP50B000

CP		A	U		50		
FAMILY	WATTAGE, EQUIVALENCY	GENERATION	VOLTAGE	DISTRIBUTION	CCT	FINISH	OPTIONS
CP= Canopy	25= 25W, replaces up to 150W MH 40= 40W, replaces up to 175W MH 55= 55W, replaces up to 250 W MH	A= Generation A	U= 120-277V	TP= Parking Garage Distribution TC= Canopy Distribution	50= 5000K	B= Bronze, std W= White	(BLANK)= None 100= 120V Photocell 200= 208-277V Photocell 300= Internal Battery Backup[1] 400= Motion/Daylight Sensor

[1] In the event of a power failure, the battery backup units switch to emergency mode (1400 lumen output) and operates the fixture for a minimum of 90 minutes.

SPECIFICATIONS:

ITEM	SPECIFICATION	DETAILS	CP25AUTX50XXXX	CP40AUTX50XXXX	CP55AUTX50XXXX
GENERAL PERFORMANCE	Distribution	Parking Garage, Canopy			
	Input Power (W)		25	39	52
	Lumens Delivered Parking Distribution (lm)		2,850	4,015	4,990
	Lumens Delivered Canopy Distribution (lm)		2,795	4,290	5,290
	Efficacy (lm/W)		106-111	100-110	95-101
	Color Temperature	5000K			
	CRI	≥80			
	Lumen Maintenance (L70, TM-21 @ 25° C)	≥100,000			
ELECTRICAL	Input Voltage	120-277V			
	Power Factor (277V)	>0.95			
PHYSICAL	Housing	Powder-coated painted aluminum			
	Lens	High-impact, UV-resistant polycarbonate			
	Operating Temperature	-30°F to 122°F/-34°C to 50°C (Internal Battery Backup models limited to: 32°F to 95°F/0°C to 35°C)			
	Humidity	20-85% RH, non-condensing			
	Weight	5.25 lbs (2.38 kg)			
CERTIFICATION	Certifications	DLC Premium, LM-79, FCC, cETLus, T24 compliant			
	Environment	Outdoor, wet location			
	Warranty	5 Years			

ORDERING*:

ORDER CODE	MODEL	NOMINAL WATTAGE	INPUT VOLTAGE	COLOR TEMPERATURE (CCT)
100458	CP25AUTP50B	25	120-277V	5000K
99910	CP40AUTP50B	40		
99911	CP55AUTP50B	52		
101055	CP25AUTC50B	25		
101093	CP40AUTC50B	40		
101132	CP55AUTC50B	52		

Lighting layouts and spacing criteria available upon request
*Please contact your MaxLite representative to order products that don't have order codes listed here.

WP2LED37/PC

LED Wallpacks. Patent Pending thermal management system. 100,000 hour L70 lifespan. 5 Year Warranty.

Color: Bronze

Weight: 9.6 lbs

Project:	Type:
Prepared By:	Date:

Driver Info		LED Info	
Type:	Constant Current	Watts:	37W
120V:	0.31A	Color Temp:	5000K (Cool)
208V:	N/A	Color Accuracy:	82 CRI
240V:	N/A	L70 Lifespan:	100000
277V:	N/A	Lumens:	4,329
Input Watts:	39W	Efficacy:	111 LPW
Efficiency:	95%		

Technical Specifications

Listings

UL Listing:

Suitable for wet locations. Wall mount only.

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label.

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: P163JKD4

Electrical

Driver:

Constant Current, Class 2, 450mA, 50/60 Hz. 100 - 277V, 4kV surge protection

Power Factor:

98.9% at 120V

THD:

7.9% at 120V

Optical

BUG Rating:

B1 U4 G3

Construction

Thermal Management:

Superior thermal management with die-cast aluminum heatsink

Ambient Temperature:

Suitable for use in 40°C (104°F) ambient temperatures.

Cold Weather Starting:

The minimum starting temperature is -40°F/-40°C.

Housing:

Precision die-cast aluminum housing.

Mounting:

Die-cast backbox with four (4) conduit entry points and knockout pattern for junction box or direct wall mounting. Hinged door for easy re-assembly.

Lens:

Prismatic, heat-resistant borosilicate glass

Reflector:

High-gloss white aluminum

Gaskets:

High-temperature silicone gaskets.

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

Green Technology:

Mercury and UV free, and RoHS compliant. Polyester powder coat finish formulated without the use of VOC or toxic heavy metals.

Other

WP2LED with Photocell:

120V Button Photocell Included. Photocell is only compatible with 120V.

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. See our full warranty

Country of Origin:

Designed by RAB in New Jersey and assembled in the USA by RAB's IBEW Local 3 workers.

Buy American Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Buy American Act.

Recovery Act (ARRA) Compliant:

This product complies with the 52.225-21 "Required Use of American Iron, Steel, and Manufactured Goods-- Buy American Act-- Construction Materials (October 2010).

Trade Agreements Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Trade Agreements Act.

GSA Schedule:

Suitable in accordance with FAR Subpart 25.4.

LED Characteristics

Color Stability:

LED color temperature is warrantied to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

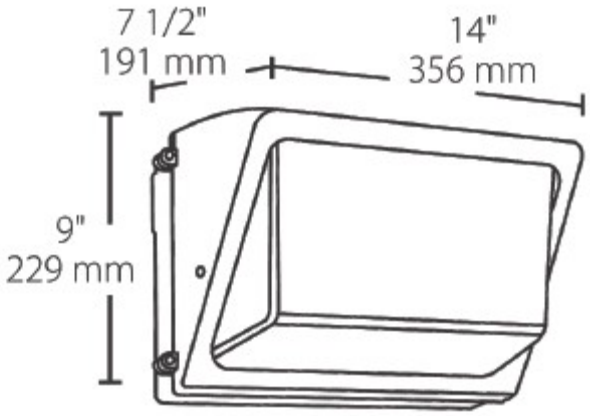
RAB's range of CCT (Correlated color temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2015.

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

WP2LED37/PC

RAB LIGHTING

Dimensions



Features

- Affordable wallpack with traditional look
- Covers footprint of traditional HID wallpacks
- WP2LED replaces up to 175W MH
- 100,000-Hour LED lifespan
- Cutoff glare shield for "friendly" lighting

Ordering Matrix

Family	Watts	Color Temp	Finish	White	Voltage	Photocell
WP2LED						
	24 = 24W 37 = 37W	= 5000K (Cool) Y = 3000K (Warm) N = 4000K (Neutral)	= Bronze W = White	W = White	= 120-277V /480 = 480V (Only available for 37W)	/PC = 120V Button /PCS = 120V Swivel /PC2 = 277V Button /PCS2 = 277V Swivel /PCS4 = 480V Swivel

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

FFLED39/PC

Rectangular shaped LED floodlight designed to replace 150W Metal Halide. Patent Pending airflow technology ensures long LED and driver lifespan. Use for building facade lighting, sign lighting, LED landscape lighting and instant-on security lighting.

Color: Bronze Weight: 12.5 lbs

Project:	Type:
Prepared By:	Date:

Driver Info		LED Info	
Type:	Constant Current	Watts:	39W
120V:	0.35A	Color Temp:	5000K
208V:	N/A	Color Accuracy:	65 CRI
240V:	N/A	L70 Lifespan:	100000
277V:	N/A	Lumens:	4,596
Input Watts:	41W	Efficacy:	112 LPW
Efficiency:	95%		

Technical Specifications

Electrical

Photocell:

120V Button Photocell included. Photocell is only compatible with 120V.

Driver:

Constant Current, Class 2, 1050mA, 100-277V, 50/60Hz, 0.6A, Power Factor 99%

THD:

7.7% at 120V, 6.8% at 277V

Surge Protection:

4kV

Listings

UL Listing:

Suitable For Wet Locations. Suitable for ground mounting.

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label.

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: P00001709

Optical

Lumen Maintenance:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

NEMA Type:

NEMA Beam Spread of 7H x 6V

Construction

IP Rating:

Ingress Protection rating of IP65 for dust and water.

Ambient Temperature:

Suitable for use in 40°C ambient temperatures.

Cold Weather Starting:

The minimum starting temperature is -40°C/-40°F

Thermal Management Housing:

Superior heat sinking with external Air-Flow fins.

Mounting:

Heavy-duty mounting arm with "O" ring seal & stainless steel screw.

Effective Projected Area:

EPA = 0.65

Reflector:

Specular vacuum-metallized polycarbonate

Gaskets:

High-temperature silicone gaskets.

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

Green Technology:

Mercury and UV free.

Threaded Size:

1/2" threaded arm.

LED Characteristics

LEDs:

Two multi-chip, 26Watt high performance LEDs.

Color Consistency:

7-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color.

Color Stability:

LED color temperature is warrantied to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for (SSL) Products, ANSI C78.377-2015.

Other

Equivalency:

The FFLED39 is Equivalent in delivered lumens to a 150W Metal Halide.

California Title 24:

Select an FFLED39 model equipped with 0-10V driver (look for /D10 in the catalog #) for a 2013 California Title 24 compliant model.

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

FFLED39/PC

Technical Specifications (continued)

Other

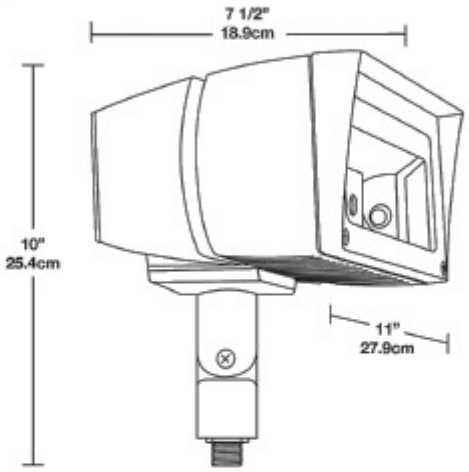
Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Patents:

The FFLED design is protected by U.S. Pat. D643,147, Canada Pat. 140798, China Pat. ZL201130171304.1, Mexico Pat. 38757 and pending patent in Taiwan.

Dimensions



Features

- Ultra efficient LED and optical design
- Replaces 150W MH floodlights
- 100,000 hour life based on LM-80 tests
- Air-flow technology heatsink
- 5-year warranty

Ordering Matrix

Family	Watts	Mount	Color Temp	Beam Spread	Finish	Dimming	Voltage	Photocell
FFLED								
	39 = 39W	= Arm T = Trunnion SF = Slipfitter	= 5000K (Cool) Y = 3000K (Warm) N = 4000K (Neutral)	= 7H x 6V B44 = 4H x 4V B55 = 5H x 5V	= Bronze W = White	= No Dimming /D10 = Dimmable	= 120-277V /480 = 480 Volt	= No Photocell /PC = 120V Button /PC2 = 277V Button /PCS = 120V Swivel /PCS2 = 277V Swivel

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

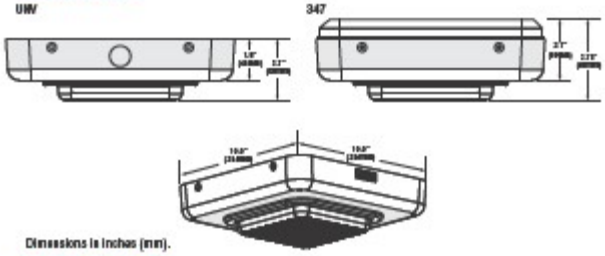
SYLVANIA

LEDVANCE Luminaires

Canopy

Catalog #	Type
Project	
Notes	
Date	
Prepared by	

Dimensions



Dimensions in inches (mm).

Product Features

The Canopy luminaires are environmentally preferable LED alternatives to traditional HID luminaires, offering up to 78% in energy savings. Ideal in place of traditional luminaires, or as new installations, the Canopy series is offered in two wattages/lumen packages for use in canopies, entryways, parking garages and stairwells.

The slim design of these extremely durable luminaires is beneficial for installation in tight ceilings spaces, and aesthetically pleasing. LEDVANCE luminaires assure optimum light engine performance for extended service and rated life (≥125,000 hours L_{70}).

Wattage Comparison Chart

Traditional Source	Traditional System Wattage	LED System Wattage	Energy Savings
70W HPS	91	40	56%
100W HPS	120	40	65%
100W MH	130	40	68%
150W HPS	170	40	75%
150W MH	188	40	78%
150W HPS	170	55	66%
150W MH	188	55	69%
175W MH	210	55	72%

Specifications

Weight: UNV: 4lbs (1.81kg) 347V: 6.6lbs (3kg).

Construction: One-piece cast aluminum alloy housing with polyester powder coat paint finish and acrylic lens. The standard color is white. The top plate is UV stabilized polycarbonate and the standard color is black.

LED System: LED system with a life rating of ≥125,000 hours at L_{70} @25°C. Luminaire efficacy up to 117 LPW.

Electrical: Offered in 40 and 55 Watts, the luminaire is designed to operate through the 120-277 Vac universal voltage range (45 and 60 Watts in 347 Vac). The LED driver has a 1.5kV inherent surge suppression and is a constant current device. The fixture power factor is ≥90% and THD is ≤20%.

Dimming: The driver is 0-10V dimmable (down to 12%). Please reference the dimmer compatibility document (LEDLUM012).

Color Characteristics: CRI>70; CCT of 4000K and 5000K.

Optics: Type V distribution with a single-piece, UV stabilized polycarbonate drop refractor lens.

Installation: Luminaire mounts to recessed outlet box or can be pendant mounted (accessories not included).

Operating Temperature: -40°F to +104°F (-40°C to +40°C).

Listings: cETLus listed to UL1598 standards for wet locations.

Warranty: Standard 5-year luminaire warranty (LEDLUM001).

Note: Specifications subject to change without notice. IES files available online.

*DLC Premium only applicable on UNV version. DLC standard only applicable to 347V version.

Ordering Guide

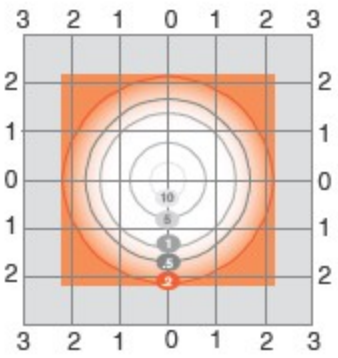
Item Number:

CANOPY	A	/	XXX	XXX	D	7	XX	/	10	C5	/	WH
Product Name	Generation		Wattage (UNV)	Voltage	Dimming	CRI	Color Temp (CCT)		Size	Optics/Mounting		Color/Finish
CANOPY	A		040 = 40 Watts	UNV = 120-277V	D = 0-10V	7 = >70	40 = 4000K		10 = 10 Inch	C5 = Canopy Type V		WH = White
			055 = 55 Watts	347 = 347V			50 = 5000K			Distribution		
			Wattage (347V)									
			045 = 45 Watts									
			060 = 60 Watts									

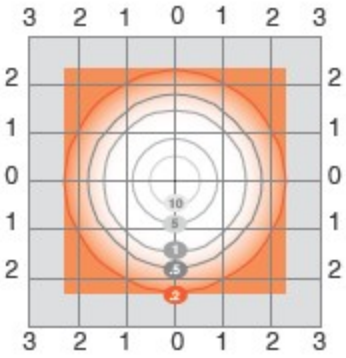
LEDLUM006R3 10-16

Photometric Data (UNV/347V)

CANOPYA/040UNVD740/10C5
Isofootcandle Lines at 12' Mounting Height



CANOPYA/055UNVD740/10C5
Isofootcandle Lines at 12' Mounting Height



For other mounting heights apply the following multipliers:

Mounting Height	8'	10'	12'	15'	18'
Multiplier	2.25	1.44	1.00	0.64	0.44

Mounting Height	10'	12'	15'	18'	20'
Multiplier	1.44	1.00	0.64	0.44	0.36

Ordering Information

Item Number	Ordering Abbreviation	Power (W)	Input Voltage	Dimming	CRI	Color Temp (CCT)	Distribution	Total Fixture Lumens	LPW*
74171	CANOPYA/040UNVD740/10C5/WH	40	120-277	0-10V	>70	4000K	TypeV	4800	115
74172	CANOPYA/055UNVD740/10C5/WH	55	120-277	0-10V	>70	4000K	TypeV	6000	105
74173	CANOPYA/040UNVD750/10C5/WH	40	120-277	0-10V	>70	5000K	TypeV	4900	117
74174	CANOPYA/055UNVD750/10C5/WH	55	120-277	0-10V	>70	5000K	TypeV	6200	108
74273	CANOPYA/045347D740/10C5/WH	45	347	0-10V	>70	4000K	TypeV	4800	100
74274	CANOPYA/060347D740/10C5/WH	60	347	0-10V	>70	4000K	TypeV	6000	95
74275	CANOPYA/045347D750/10C5/WH	45	347	0-10V	>70	5000K	TypeV	4900	102
74276	CANOPYA/060347D750/10C5/WH	60	347	0-10V	>70	5000K	TypeV	6200	98

*LPW per LM79 report.
For further information and to learn more about utility rebates, contact your local SYLVANIA sales representative.

LEDVANCE LLC
200 Ballardvale Street
Wilmington, MA 01887 USA
Phone 1-800-LIGHTBULB (1-800-544-4828)
www.sylvania.com

SYLVANIA and LEDVANCE are registered trademarks.
All other trademarks are those of their respective owners.
Product Licensee of Trademark SYLVANIA in General Lighting.
Specifications subject to change without notice.

/sylvania /sylvania

© 2018 LEDVANCE

ALED2T50N/PC

Specification grade area lights available in IES Type II distributions. For use in parking lots, roadways, pathways and general area lighting. Mounts to 4" square steel poles at 20-35'. 5 Year Warranty.

Color: Bronze Weight: 32.0 lbs

Project:	Type:
Prepared By:	Date:

Driver Info		LED Info	
Type:	Constant Current	Watts:	50W
120V:	0.46A	Color Temp:	4000K
208V:	N/A	Color Accuracy:	82 CRI
240V:	N/A	L70 Lifespan:	100000
277V:	N/A	Lumens:	4,386
Input Watts:	52W	Efficacy:	85 LPW
Efficiency:	97%		

Technical Specifications

Electrical

Photocell:

Button Photocell 120V included. Photocell is only compatible with 120V.

Driver:

Constant Current, Class 2, 1400mA, 100-277V, 50-60Hz, 0.8A, Power Factor 99%

THD:

7.0% at 120V, 7.8% at 277V

Surge Protection:

6kV surge suppression protection tested in accordance with IEEE/ANSI C62.41.2.

Listings

UL Listing:

Suitable for wet locations as a downlight.

IESNA LM-79 & IESNA LM-80 Testing:

RAB LED fixtures have been tested by an independent laboratory in accordance with IESNA LM-79 and 80, and have received the Department of Energy "Lighting Facts" label.

Dark Sky Approved:

The International Dark Sky Association has approved this product as a full cutoff, fully shielded luminaire.

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: P0000178R

LED Characteristics

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

LEDs:

Multi-chip, high-output, long-life LEDs

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color.

Color Stability:

LED color temperature is warrantied to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2011.

Construction

IES Classification:

The Type II distribution is ideal for wide walkways, on ramps and entrance roadways, bike paths and other long and narrow lighting applications. This type is meant for lighting larger areas and usually is located near the roadside. This type of lighting is commonly found on smaller side streets or jogging paths.

Effective Projected Area:

EPA = 0.75

IP Rating:

Ingress Protection rating of IP66 for dust and water.

Ambient Temperature:

Suitable for use in 40°C ambient temperatures.

Cold Weather Starting:

The minimum starting temperature is -40°C/-40°F

Thermal Management:

Superior patent pending thermal management design with external Air-Flow fins provides maximum operational life, even in high ambient temperature environments.

Housing:

Die cast aluminum housing, lens frame and mounting arm.

Mounting:

Heavy-duty mounting arm with "O" ring seal & stainless steel screws.

Reflector:

Specular vacuum-metallized polycarbonate

Gaskets:

High temperature silicone gaskets

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

Green Technology:

Mercury and UV free, and RoHS compliant. Polyester powder coat finish formulated without the use of VOC or toxic heavy metals.

Other

Equivalency:

ALED™ 50W replaces 200W metal halide

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

ALED2T50N/PC

Technical Specifications (continued)

Other

California Title 24:

ALED2T50/PC with the button photocell option complies with 2013 California Title 24 building and electrical codes as a commercial outdoor pole-mounted fixture ≤75 Watts.

Patents:

The ALED™ design is protected by patents pending in the U.S., Canada, China, Taiwan and Mexico.

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Country of Origin:

Designed by RAB in New Jersey and assembled in the USA by RAB's IBEW Local 3 workers.

Buy American Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Buy American Act.

Recovery Act (ARRA) Compliant:

This product complies with the 52.225-21 "Required Use of American Iron, Steel, and Manufactured Goods-- Buy American Act-- Construction Materials (October 2010).

Trade Agreements Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Trade Agreements Act.

GSA Schedule:

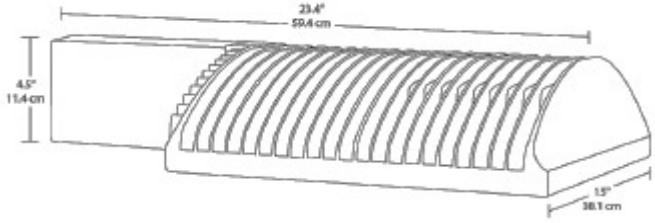
Suitable in accordance with FAR Subpart 25.4.

Optical

BUG Rating:

B1 U0 G1

Dimensions



Features

- 66% energy cost savings vs. HID
- 100,000-hour LED lifespan
- Type II distribution
- 5-year warranty

Ordering Matrix

Family	Distribution	Watts	Mount	Color Temp	Finish	Voltage	Photocell	Dimming	Sensor	Bi-Level
ALED										
	2T = Type II 3T = Type III 4T = Type IV	50 = 50W	Blank = Arm SF = Slipfitter	Blank = 5000K (Cool) Y = 3000K (Warm) N = 4000K (Neutral)	Blank = Bronze W = White RG = Gray	Blank = 120-277V /480 = 480V	Blank = No Photocell /PC = 120V Button /PC2 = 277V Button /PCS = 120V Swivel /PCS2 = 277V Swivel /PCT = 120-277V Twistlock /PCS4 = 480V Swivel /PCT4 = 480V Twistlock	Blank = No Dimming /D10 = Dimmable	/WS2 = Multi-Level Motion Sensor (Only available for 120-277V with /D10 for 50W)	Blank = No Bi-Level /BL = Bi-Level

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

JA:ba
cc: Jay Abbott, BD&C DPW
Judd Classie., Buildings O&M DPW

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

THOMAS G. VAUGHN
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: May 11, 2017

RE: 1664.314 – Energy Conservation at Various County Buildings
Interior Lighting Upgrade at the Tow and Recovery Building (C0202)
DC0XXX-17

The above referenced building is located at the Bomarc facility in Westhampton. The building is used by the Sheriff's Office and SCPD for Tow and Recovery. Over the years lighting has deteriorated and some of the fixtures are broken. Furthermore lighting is below the levels recommended by IES.

It is proposed to replace these fixtures with LED fixtures which will reduce energy consumption by over 80% and reduce GHG by over 17,000 lbs. per year. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently. The table below shows the cost-benefit analysis for the project.

It is recommended that this project should be implemented and paid for from CP1664.314. The proposed cost including labor and material is $24,214.40.

ALL SERVICE ELECTRIC INC.
CONTRACTING / DESIGN / ENGINEERING / MAINTENANCE

May 10, 2017

Suffolk County Department of Public Works
335 Yaphank Avenue
Yaphank, NY 11980
Attn. Javed Ashraf, P.E., C.E.M

Contract # ESNC-060013

RE: Bldg. CO202
SC Sheriff Dept. Storage & SCPD Tow & Recovery
New LED Lighting
Bomarc Center
110 Old Country Rd.
Westhampton, NY

PROPOSAL

Furnish and install the necessary materials and labor for the complete electrical installation of new LED lighting and proper environmental disposal of lighting fixtures and lamps.

Scope of Work

1. Removal of existing lighting.
2. Installation of Bill of Materials as per attachment.
3. All rebate incentives to be applied by the lighting vendor direct.

Labor: Foreman 96 hrs. @ 97.80 p/h	9,388.80
Mechanic 88 hrs. @ 96.70	8,509.60
Materials:	5,500.00
Electric Scaffold 24 hrs. @ 34.00 p/h	816.00
Total:	$24,214.40

Qualifications:

1. All work to be performed during normal working horus.

57 Aberdeen Road | Smithtown, New York 11787 | P: 631.265.6800 | F: 631.265.6959
WWW.ALLSERVICEELECTRIC.US

Tow & Recovery Side

Energy Usages and Costs

Annual Energy Usage

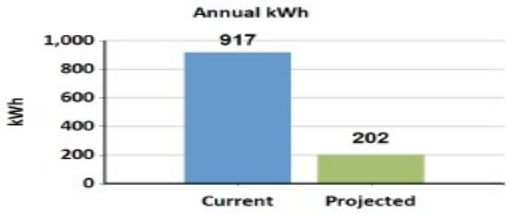
Current Usage (kWh)	Projected Usage (kWh)	Reduction (%)	Current Cost ($) [1,2]	Projected Cost ($) [1,2]	Savings ($)	Savings (%)
917	202	78	137	30	107	78

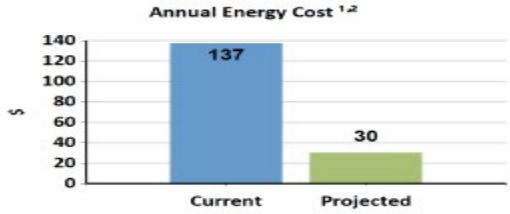
1. Energy cost ($) = 0.1500/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

Annual Energy Usage Reduction

Current Usage (kWh)	Projected Usage (kWh)	Reduction (kWh)	Reduction (%)
917	202	715	78

Energy Comparison





1. Energy Cost ($) = 0.1500/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

Sheriff's Side

Energy Usages and Costs

Annual Energy Usage

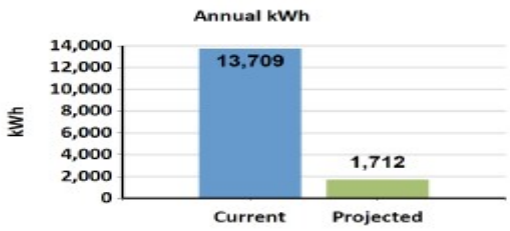
Current Usage (kWh)	Projected Usage (kWh)	Reduction (%)	Current Cost ($) [1,2]	Projected Cost ($) [1,2]	Savings ($)	Savings (%)
13,709	1,712	88	2,056	256	1,799	88

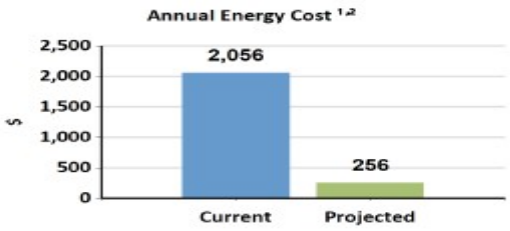
1. Energy cost ($) = 0.1500/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

Annual Energy Usage Reduction

Current Usage (kWh)	Projected Usage (kWh)	Reduction (kWh)	Reduction (%)
13,709	1,712	11,996	88

Energy Comparison





1. Energy Cost ($) = 0.1500/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

Tow & Recovery Side

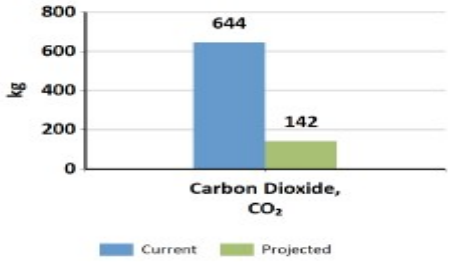
Environmental Impact

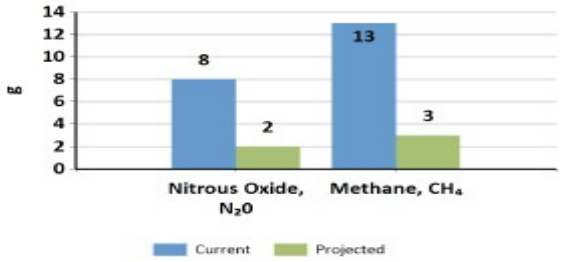
Greenhouse Gas Analysis

Greenhouse Gas Comparisons[1]

Greenhouse Gas	Current[1]	Projected[1]	Avoided	Environmental Effect
Carbon Dioxide, CO_2 (kg)	644	142	502	Greenhouse Gas, Global Warming
Nitrous Oxide, N_20 (g)	8	2	6	Greenhouse Gas, Global Warming
Methane, CH_4 (g)	13	3	10	Greenhouse Gas, Global Warming
Nitrogen Oxides, NOx (g)	564	124	440	Smog, Acid rain, Global Warming
Sulfur Oxides, SOx (g)	1,219	269	950	Acid rain

1. Average emission rates per kWh are based on estimates from eGrid 2012





Sheriff's Side

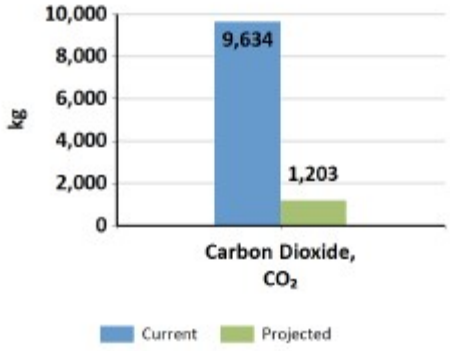
Environmental Impact

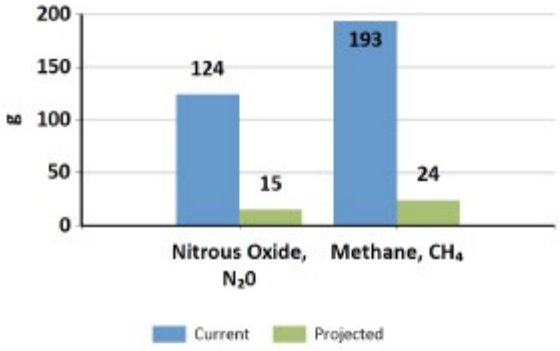
Greenhouse Gas Analysis

Greenhouse Gas Comparisons[1]

Greenhouse Gas	Current[1]	Projected[1]	Avoided	Environmental Effect
Carbon Dioxide, CO_2 (kg)	9,634	1,203	8,431	Greenhouse Gas, Global Warming
Nitrous Oxide, N_20 (g)	124	15	109	Greenhouse Gas, Global Warming
Methane, CH_4 (g)	193	24	169	Greenhouse Gas, Global Warming
Nitrogen Oxides, NOx (g)	8,429	1,053	7,376	Smog, Acid rain, Global Warming
Sulfur Oxides, SOx (g)	18,230	2,277	15,953	Acid rain

1. Average emission rates per kWh are based on estimates from eGrid 2012





Tow & Recovery Side

Bill of Materials

Products

Fixtures

Part Number	Short Description	Qty	Cost ($)	Extended ($)
RAB GUS4-36NW/D10	LED 4' Wrap	4	97.50	390.00
Total				390.00

Controls

Part Number	Short Description	Qty	Cost ($)	Extended ($)
WS1001W	Wall Vacancy Sensor	2	25.37	50.74
Total				50.74

Appendix

Incentives

Part Number Description	Incentive Description	Amount ($)	Est. Receipt Date
Custom	Controls	30.00	Immediate
LED 4' Wrap		200.00	Immediate
Total		230.00	

Sheriff's Side

Bill of Materials

Products

Fixtures

Part Number	Short Description	Qty	Cost ($)	Extended ($)
GUS4-50NW	LED 4' Wrap 50W	10	103.75	1,037.50
RAB GUS4-36NW/D10	LED 4' Wrap	2	97.50	195.00
Maxlite ML2LA17MAWHP927	LED Round	2	45.00	90.00
EZPAN2X4-50N/D10	LED 2X4 EDGELIT PANEL	12	104.00	1,248.00
GUS2-18NW-D10	LED 2' Wrap	10	61.00	610.00
Total				3,180.50

Lamps

Part Number	Short Description	Qty	Cost ($)	Extended ($)
Philips 14A21/LED/827-22 DIM 120V	LED A-Lamp	4	10.75	43.00
Total				43.00

Controls

Part Number	Short Description	Qty	Cost ($)	Extended ($)
Hubbell ATP1500C	Ceiling Sensor	3	60.21	180.63
WS1001W	Wall Vacancy Sensor	5	25.37	126.85
Total				307.48

Additional Items

Part Number	Short Description	Qty	Cost ($)	Extended ($)
CU300A	Control Unit for Ceiling Sensor	3	21.56	64.68
Total				64.68

Appendix

Incentives

Part Number Description	Incentive Description	Amount ($)	Est. Receipt Date
Custom	Controls Rebate	180.00	Immediate
LED 2' Wrap		250.00	Immediate
LED 2X4 EDGELIT PANEL		960.00	Immediate
LED 4' Wrap		100.00	Immediate
LED 4' Wrap 50W		500.00	Immediate
LED A-Lamp		48.00	Immediate
Total		2,038.00	

Tow & Recovery Side

Lighting Wattage Comparison

Area :									
Space	Existing Fixture	Qty	Watts	Total Watts	Proposed Solution	Qty	Watts	Total Watts	Scheduled Hours
C0202 Tow And Recovery :									
Office	1x4, 2 Lamp, F34 T12 Prismatic	2	80	160	LED 4' Wrap	2	36	72	2868
C0202 Tow And Recovery :									
Side Locker	1x4, 2 Lamp, F34 T12 Prismatic	2	80	160	LED 4' Wrap	2	36	72	2868
Total			160	320			72	144	

Sheriff's Side

110 Old Country Rd Westhampton NY 11977

Bathroom	60w A19 Incandescent	1	60	60	LED A-Lamp	1	14	14	2868
C0202 :									
Bathroom	60w A19 Incandescent	6	60	360	LED Round Fixture	2	17	34	2868
C0202 :									
Boiler Side Room	300w Incandescent	1	300	300	LED 2' Wrap	1	19	19	2868
C0202 :									
Garage Room	60w A19 Incandescent	2	60	120	LED A-Lamp	2	14	28	2868
C0202 :									
Garage Space	300w Incandescent	6	300	1,800	LED 2X4 FLAT PANEL 50W	6	50	300	2868
C0202 :									
Room 1	4ft, F34 T12 2 Lamp Industrial	9	80	720	LED 4' WRAP	9	50	450	2868
C0202 :									
Room 2	4ft, F34 T12 2 Lamp Industrial	2	80	160	LED 4' WRAP 36W	2	36	72	2868
C0202 :									
Side Entry	300w Incandescent	1	300	300	LED 4' WRAP	1	50	50	2868
C0202 :									
Slop Sink	60w A19 Incandescent	1	60	60	LED A-Lamp	1	14	14	2868
C0202 :									
Storage Room	100w Incandescent	9	100	900	LED 2' Wrap	9	19	171	2868
Total			1400	4,780			283	1,152	

GUS4-36NW/D10

The affordable LED GUS is designed to deliver general ambient lighting for surface-mount ceiling or pendant mount applications. Diffusion lens delivers improved visual performance and a more refined look. Replaces traditional 4' linear fluorescent wraparound fixtures.

Color: White Weight: 17.9 lbs

Project:	Type:
Prepared By:	Date:

Driver Info		LED Info	
Type:	Constant Current	Watts:	36W
120V:	0.31A	Color Temp:	4000K
208V:	0.19A	Color Accuracy:	83 CRI
240V:	0.17A	L70 Lifespan:	100000
277V:	0.14A	Lumens:	4,437
Input Watts:	38W	Efficacy:	117 LPW
Efficiency:	95%		

Technical Specifications

Listings

UL Listing:

Suitable for damp locations

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: PWJ8PHRN

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy 'Lighting Facts' label.

LED Characteristics

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

LEDs:

Long-life, high-efficiency surface mount LEDs

Color Stability:

LED Color temperature is warrantied to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated color temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2015.

Other

Driver:

Class 2, Constant Current, 100-277VAC, 50-60Hz, 4kV, 120V: 0.31A, 208V: 0.19A, 240V: 0.17A., 277V: 0.14A

Equivalency:

GUS 36W equivalent to (2) F32T8W

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Electrical

THD:

11.0% at 120V, 14.6% at 277V

Power Factor:

99.3% at 120V, 94.3% at 277V

Minimum Starting Temperature:

0° to 40°C

Dimming Driver:

Driver includes dimming control for 0-10V dimming systems. Requires separate 0-10V DC dimming circuit. Dims as low as 10%.

Construction

Housing:

Die-formed 22 gauge, cold-rolled, post-painted steel. Post painting improves durability of the finish and eliminates the sharp edges making handling and installation safer.

Mounting:

Surface mount. Can be mounted with chains or v-hooks by others.

Lens:

Acrylic lens with diffusion for enhanced optical performance

Reflector:

Aluminum with high-reflectance (91%) powder coat applied post production for a more durable finish

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

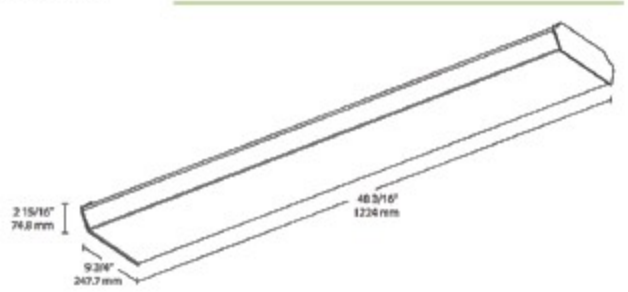
Green Technology:

Mercury and UV free, and RoHS compliant. Polyester powder coat finish formulated without the use of VOC or toxic heavy metals.

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

GUS4-36NW/D10

Dimensions



Features

- Energy-efficient, maintenance-free LED wrap fixture
- Multiple mounting options: surface, pendant or chain
- High-reflectance white finish for optimal output
- Diffusion wrap-around lens for smooth light distribution
- 0-10V dimming standard
- 100,000-Hour LED lifespan

Ordering Matrix

Family	Length	Watts	Color Temp	Finish	Dimming
GUS	4	36	N	W	/D10
	4 = 4 ft	36 = 36W 50 = 50W	Y = 3000K (Warm) YN = 3500K (Warm Neutral) N = 4000K (Neutral)	W = White	= No Dimming /D10 = Dimmable

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

EZPAN2X4-50N/D10

RAB LIGHTING

2' x 4' EZPAN edgelit LED panel lights provide smooth and uniform light edge-to-edge for a clean, modern look.

Color: White Weight: 26.4 lbs

Project:	Type:
Prepared By:	Date:

Driver Info

Type:	Constant Current
120V:	0.43A
208V:	0.24A
240V:	0.22A
277V:	0.20A
Input Watts:	50W
Efficiency:	99%

LED Info

Watts:	50W
Color Temp:	4000K
Color Accuracy:	82 CRI
L70 Lifespan:	60000
Lumens:	5902
Efficacy:	117 LPW

Technical Specifications

Listings

UL Listing:

Suitable for damp locations

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: P8W2DQSW

IESNA LM-79 & LM-80 Testing:

RAB LED luminaries have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label.

LED Characteristics

Lifespan:

60,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

LEDs:

Long-life, High efficiency, micro-power, surface mount LEDs; binned and mixed for uniform light output and color.

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color.

Electrical

Driver:

100-277V, 50/60Hz, THD <15%, Power Factor > 90%, Surge Protection 1 kV

Dimming Driver:

Driver includes dimming control wiring for 0-10V dimming systems. Requires separate 0-10V DC dimming circuit. Dims as low as 10%.

THD:

6.9% at 120V, 13.6% at 277V

Power Factor:

99.1% at 120V, 90.4% at 277V

Construction

Maximum Ambient Temperature:

Suitable for use in 104° F (40°C) ambient temperatures

IC Rating:

Suitable for insulated ceilings

Lens:

Frosted polystyrene

Cold Weather Starting:

The minimum starting temperature is -4° F/-20° C.

Mounting:

Recessed ceiling

Housing:

Lightweight aluminum housing, steel pan and junction box

Installation:

Standard integral T-bar clips secure the fixture to T-bars and prevent T-system separation.

Finish:

Formulated for high-durability and long lasting color.

Green Technology:

Mercury and UV free. RoHS compliant components. Polyester powder coat finish formulated without the use of VOC or toxic heavy metals.

Other

Warranty:

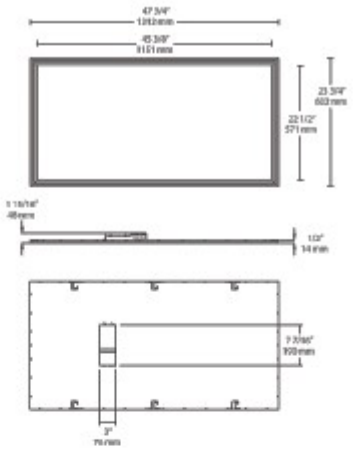
RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

EZPAN2X4-50N/D10

RAB LIGHTING

Dimensions



Features

Perfect for shallow plenums

Even and diffuse ambient illumination, ideal for spaces where glare-free lighting is required

0-10V dimmable driver, standard

Ordering Matrix

Family	Size	Watts	Color Temp	Dimming	Lightcloud
EZPAN	2X4	50	N	/D10	
	2X4 = 2' x 4'	40 = 40W 50 = 50W	Y = 3000K (Warm) YN = 3500K (Warm Neutral) N = 4000K (Neutral) Blank = 5000K (Cool)	/D10 = Dimmable	Blank = No Lightcloud /LC = Lightcloud

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

GUS4-36NW/D10

The affordable LED GUS is designed to deliver general ambient lighting for surface-mount ceiling or pendant mount applications. Diffusion lens delivers improved visual performance and a more refined look. Replaces traditional 4' linear fluorescent wraparound fixtures.

Color: White Weight: 17.9 lbs

Project:	Type:
Prepared By:	Date:

Driver Info		LED Info	
Type:	Constant Current	Watts:	36W
120V:	0.31A	Color Temp:	4000K
208V:	0.19A	Color Accuracy:	83 CRI
240V:	0.17A	L70 Lifespan:	100000
277V:	0.14A	Lumens:	4,437
Input Watts:	38W	Efficacy:	117 LPW
Efficiency:	95%		

Technical Specifications

Listings

UL Listing:

Suitable for damp locations

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: PWJ8PHRN

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label.

LED Characteristics

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

LEDs:

Long-life, high-efficiency surface mount LEDs

Color Stability:

LED Color temperature is warrantied to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated color temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2015.

Other

Driver:

Class 2, Constant Current, 100-277VAC, 50-60Hz, 4kV, 120V: 0.31A, 208V: 0.19A, 240V: 0.17A,, 277V: 0.14A

Equivalency:

GUS 36W equivalent to (2) F32T8W

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Electrical

THD:

11.0% at 120V, 14.6% at 277V

Power Factor:

99.3% at 120V, 94.3% at 277V

Minimum Starting Temperature:

0° to 40°C

Dimming Driver:

Driver includes dimming control for 0-10V dimming systems. Requires separate 0-10V DC dimming circuit. Dims as low as 10%.

Construction

Housing:

Die-formed 22 gauge, cold-rolled, post-painted steel. Post painting improves durability of the finish and eliminates the sharp edges making handling and installation safer.

Mounting:

Surface mount. Can be mounted with chains or v-hooks by others.

Lens:

Acrylic lens with diffusion for enhanced optical performance

Reflector:

Aluminum with high-reflectance (91%) powder coat applied post production for a more durable finish

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

Green Technology:

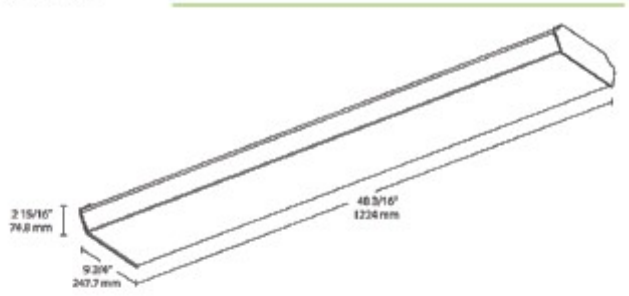
Mercury and UV free, and RoHS compliant. Polyester powder coat finish formulated without the use of VOC or toxic heavy metals.

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

GUS4-36NW/D10

RAB LIGHTING

Dimensions



Features

- Energy-efficient, maintenance-free LED wrap fixture
- Multiple mounting options: surface, pendant or chain
- High-reflectance white finish for optimal output
- Diffusion wrap-around lens for smooth light distribution
- 0-10V dimming standard
- 100,000-Hour LED lifespan

Ordering Matrix

Family	Length	Watts	Color Temp	Finish	Dimming
GUS	4	36	N	W	/D10
	4 = 4 ft	36 = 36W 50 = 50W	Y = 3000K (Warm) YN = 3500K (Warm Neutral) N = 4000K (Neutral)	W = White	= No Dimming /D10 = Dimmable

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

GUS4-50NW/D10

RAB LIGHTING

The affordable LED GUS is designed to deliver general ambient lighting for surface-mount ceiling/wall or pendant mount applications. Diffusion lens delivers improved visual performance and a more refined look. Replaces traditional 4' linear fluorescent wraparound fixtures.

Color: White Weight: 17.9 lbs

Project:	Type:
Prepared By:	Date:

Driver Info		LED Info	
Type:	Constant Current	Watts:	50W
120V:	0.43A	Color Temp:	4000K
208V:	0.27A	Color Accuracy:	84 CRI
240V:	0.23A	L70 Lifespan:	100000
277V:	0.20A	Lumens:	5,456
Input Watts:	50W	Efficacy:	109 LPW
Efficiency:	N/A		

Technical Specifications

Listings

UL Listing:

Suitable for damp locations

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: PRKFYEK9

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy 'Lighting Facts' label.

LED Characteristics

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

LEDs:

Long-life, high-efficiency surface mount LEDs

Color Stability:

LED Color temperature is warrantied to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2011.

Electrical

Driver:

Class 2, Constant Current, 100-277VAC, 50-60Hz, 4kV, 120V:0.43A, 0208V: 0.27A, 240V: 0.23A, 277V: 0.20A

THD:

11.8% at 120V, 14.7% at 277V

Power Factor:

99.0% at 120V, 90.4% at 277V

Minimum Starting Temperature:

0° to 40°C

Dimming Driver:

Driver includes dimming control for 0-10V dimming systems. Requires separate 0-10V DC dimming circuit. Dims as low as 10%.

Construction

Housing:

Die-formed 22 gauge, cold-rolled, post-painted steel. Post painting improves durability of the finish and eliminates the sharp edges making handling and installation safer.

Mounting:

Surface mount. Can be mounted with chains or v-hooks by others.

Lens:

Acrylic lens with diffusion for enhanced optical performance

Reflector:

Aluminum with high-reflectance (91%) powder coat applied post production for a more durable finish

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

Green Technology:

Mercury and UV free. RoHS compliant components. Polyester powder coat finish formulated without the use of VOC or toxic heavy metals.

Other

Replacement:

GUS 50W replaces up to (3) F32T8

Warranty:

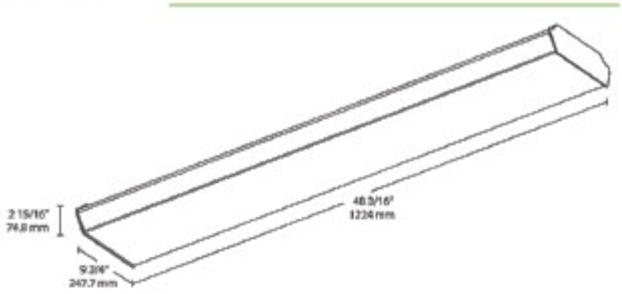
RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

GUS4-50NW/D10

RAB LIGHTING

Dimensions



Features

- Energy-efficient, maintenance-free LED wrap fixture
- Multiple mounting options: surface, pendant or chain
- High-reflectance white finish for optimal output
- Diffusion wrap-around lens for smooth light distribution
- 0-10V dimming standard
- 100,000-Hour LED lifespan

Ordering Matrix

Family	Length	Watts	Color Temp	Finish	Dimming
GUS	4	50	N	W	/D10
	4 = 4 ft	36 = 36W 50 = 50W	Blank = 5000K (Cool) N = 4000K (Neutral) YN = 3500K (Warm Neutral) Y = 3000K (Warm)	W = White	Blank = No Dimming /D10 = Dimmable

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

GUS2-18NW/D10

RAB LIGHTING

The affordable LED GUS is designed to deliver general ambient lighting for surface-mount ceiling/wall or pendant mount applications. Diffusion lens delivers improved visual performance and a more refined look. Replaces traditional 2' linear fluorescent wraparound fixtures.

Color: White

Weight: 9.3 lbs

Project:	Type:
Prepared By:	Date:

Driver Info

Type:	Constant Current
120V:	0.15A
208V:	0.09A
240V:	0.08A
277V:	0.07A
Input Watts:	19W
Efficiency:	94%

LED Info

Watts:	18W
Color Temp:	4000K
Color Accuracy:	84 CRI
L70 Lifespan:	100000
Lumens:	2,140
Efficacy:	111 LPW

Technical Specifications

Listings

UL Listing:

Suitable for damp locations

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: PC3P6QT3

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label.

LED Characteristics

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

LEDs:

Long-life, high-efficiency surface mount LEDs

Color Stability:

LED Color temperature is warrantied to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2015.

Electrical

Driver:

Class 2, Constant Current, 100-277VAC, 50-60Hz, 4kV, 120V: 0.15A, 208V: 0.09A, 240V: 0.08A, 277V: 0.07A

THD:

7.4% at 120V, 7.5% at 277V

Power Factor:

98.8% at 120V, 94.8% at 277V

Minimum Starting Temperature:

-20°C to 40°C

Dimming Driver:

Driver includes dimming control wiring for 0-10V dimming systems. Requires separate 0-10V DC dimming circuit. Dims as low as 10%.

Construction

Housing:

Die-formed 22 gauge, cold-rolled, post-painted steel. Post painting improves durability of the finish and eliminates the sharp edges making handling and installation safer.

Mounting:

Surface mount. Can be mounted with chains or v-hooks by others.

Lens:

Acrylic lens with diffusion for enhanced optical performance

Reflector:

Aluminum with high-reflectance (91%) powder coat applied post production for a more durable finish

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

Green Technology:

Mercury and UV free. RoHS compliant components. Polyester powder coat finish formulated without the use of VOC or toxic heavy metals.

Other

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Replacement:

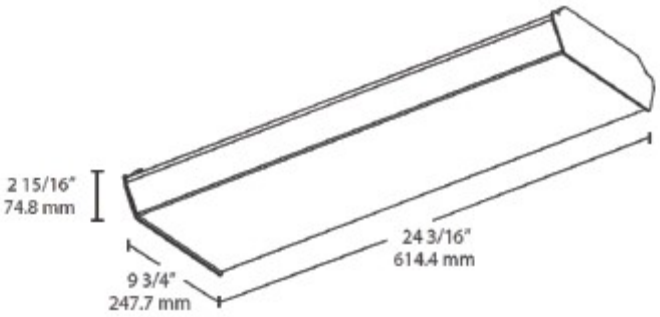
Replaces up to (1) F32T8

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

GUS2-18NW/D10

RAB LIGHTING

Dimensions



Features

- Energy-efficient, maintenance-free LED wrap fixture
- Multiple mounting options: surface, pendant or chain
- High-reflectance white finish for optimal output
- Diffusion wrap-around lens for smooth light distribution
- 0-10V dimming standard
- 100,000-Hour LED lifespan

Ordering Matrix

Family	Length	Watts	Color Temp	Finish	Dimming
GUS	2	18	N	W	/D10
	2 = 2 ft	18 = 18W 25 = 25W	Blank = 5000K (Cool) N = 4000K (Neutral) YN = 3500K (Warm Neutral) Y = 3000K (Warm)	W = White	Blank = No Dimming /D10 = Dimmable

Copyright © 2014 RAB Lighting Inc. All Rights Reserved Note: Specifications are subject to change at any time without notice

MaxLite
A NEW WAVE OF LIGHT

PROJECT NAME:_____ CATALOG NUMBER:_____

NOTES:_____ FIXTURE SCHEDULE:_____

LED FLUSH MOUNT CEILING FIXTURES

PRBNI Shown

Pearl Series

TRBNI Shown

Traditional Series

ALBNI Shown

Alabaster Series

ABNIP Shown

Architectural Series

TNBNI Shown

Transitional Series

CBNIP Shown

Contemporary Series

PRODUCT DESCRIPTION:

These LED Flush Mount Ceiling Fixtures are ideal for corridor and accent lighting in homes, hotels, motels and property management applications. MaxLite's LED Flush Mount Ceiling Fixtures feature "Driverless" DOB technology for improved reliability. Available in traditional, alabaster art glass, and pearl diffusers; paired with traditional, and transitional brushed nickel trim styles.

FEATURES:

- Wide variety of finishes and styles available
- Multiple wattages available
- Can operate on many commercially available dimming controls
- 90 CRI versions support Calif. T24-2015 compliance

CONSTRUCTION:

- Using "Driver on Board Technology, no typical LED power supply is needed.
- 22Gage Spun Cold rolled Steel, plated after fab
- Diffusers: Etched Ribbed, Alabaster art glass, or White acrylic polymer depending on style.
- PCBA uses UL Recognized FR4 materials

CONTROL:

- Dimming – Operates when paired with ELV type dimmers
- Dimming from 100% to <10%
- Dedicated 120V, 60Hz Operation only

DIMMER CONTROLS	
Lutron	CTELV-303P
Lutron	LGCL-153PL
Lutron	Diva DVELV-300

LED FLUSH MOUNT CEILING FIXTURES

ML2LA SERIES

ORDERING:

ORDER CODE	MODEL	DESCRIPTION	DIMENSIONS (D" X H")	WEIGHT (LBS)	SOURCE LUMEN (Nominal	WATTS (W)	CCT
76451	ML2LA17MABNIP927	Medium, Architectual Series - Brushed Nickel finish - Plastic Diff	14.6" x 3.9"	2.98	1,241	17W	2700K
75353	ML2LA17MALBNI927	Medium, Alabaster Series - Brushed Nickel finish	13.6" x 4.7"	3.73	1,124		
76839	ML2LA17MAWHP927	Medium, Architectual Series - White finish - Plastic Diff	14.6" x 3.9"	3.02	1,224		
76751	ML2LA17PRWHP927	Medium, Pearl Series - White finish - PMMA Diff.	13.6" x 4.7"	1.75	1,232		
76741	ML2LA17MTNBNI927	Medium, Transitional Series - Brushed Nickel finish	12.7" x 5.7"	2.75	1,104		
76743	ML2LA17MTNWH927	Medium, Transitional Series - White finish	12.7" x 5.7"	2.83	1,104		
75351	ML2LA17MTRBNI927	Medium, Traditonal Series - Brushed Nickel finish	12.7" x 5.7"	2.53	1,127		
76739	ML2LA17MTROB927	Medium, Traditional Series - ORB finish	12.7" x 5.7"	2.59	1,127		
76737	ML2LA17MTRWH927	Medium, Traditional Series - White finish	12.7" x 5.7"	2.65	1,127		
76734	ML2LA17SABNIP927	Small, Architectual Series - Brushed Nickel finish - Plastic Diff.	11.7" x 3.6"	1.98	1,142		
75343	ML2LA17SCBNIP927	Small, Contemporary Series- Brushed Nickle finish Acrylic	13.00" x 3.8"	1.98	1,102		
75345	ML2LA17MCBNIP927	Small, Contemporary Series- Brushed Nickle finish Acrylic	13.00" x 3.8"	1.98	1,115		
76447	ML2LA23LABNIP927	Large, Architectual Series - Brushed Nickel finish Plastic Diff	16.0" x 4.3"	4.08	1,829	23W	
75349	ML2LA23LCBNIP927	Large, Contemporary Series - Brushed Nickel finish Acrylic	16.5" x 4.3"	3.34	1,814		
76770	ML2LA23LCWHP927	Large, Contemporary Series- Brushed Nickle Acrylic	16.5" x 4.3"	3.34	1,814		
76759	ML2LA23LTRORB927	Large, Traditional Series- ORB finish	15.20" x 6.10"	3.95	1,617		
76444	ML2LA23LTRBNI927	Large Traditional Series, Brushed Nickle finish	15.20" x 6.10"	3.95	1,617		
76757	ML2LA23LTRWH927	Large Traditional Series, White finish	15.20" x 6.10"	3.95	1,617		
76761	ML2LA23LTNBNI927	Large, Transitional Series- Brushed Nickle	15.20" x 6.10"	3.80	1,469		
76765	ML2LA23LNORB927	Large, Transitional Series- ORB Finish	15.20" x 6.10"	3.80	1,469		
76763	ML2LA23LTNWH927	Large, Contemporary Series-Brushed Nickle Acrylic	13.00" x 3.80"	1.99	1,102		
76449	ML2LA23LPRNIP927	Extra Large, Pearl Series- Brushed Nickle Finish	17.2" x 4.7"	2.92	1,670		
76753	ML2LA23XABNIP927	Extra Large, Architectual Series - Brushed Nickel finish - Plastic Diff.	17.80" x 4.30"	4.83	1,664		
97523	ML2LS12XSMBN927	Large, Mushroom Series- Brushed Nickle	9.00" x 5.00"	1.75	695	12W	
96970	ML2LS12XSMOR927	Large, Mushroom Series- ORB Finish	9.00" x 5.00"	1.75	695		

H-MOSS® Occupancy Sensors

Wall Switch Occupancy Sensors - Passive Infrared

HUBBELL® Wiring Device-Kellems

H-MOSS® Hubbell Motion Sensing Switches

Key Features

Common Features

- Passive infrared sensing technology
- LED lighting compatible
- No neutral required
- 1200 sq. ft. coverage
- Tamper resistant lens
- Metal mounting strap
- Shallow 1" depth
- Nylon wallplate included
- cUL Listed, cULus, OEO Title 24 Certified

WS1000 Series

- 120V AC operation
- Manual adjustment time delay (20 sec. to 30 min.)

WS2000 Series

- Dual 120/277V AC operation
- 3-way capable
- Selectable manual/auto-on operation
- Built in photocell for daylight harvesting
- Manual adjustment time delay (20 sec. to 30 min.)

ATP Series

All WS2000 series features plus:

- Adaptive technology - "Install and forget" operation

Applications

- Private Offices
- Small Restrooms
- Break Areas
- Classrooms
- Closets and Storage Areas

Hubbell WS/ATP series wall switches combine PIR sensing technology, photocell control, and Hubbell's patented three wire method to provide the perfect light switch replacement solution. These sensors do not require a neutral connection and they have no minimum load requirements. The WS series has manual timer adjustment while the ATP series incorporates Hubbell's patented adaptive technology to automatically set timing and eliminate manual adjustments.

The sensors come supplied with color matched faceplates. Manual-on versions are available for enhanced savings. Four wire models support installations that require a neutral connection.

Features and Benefits

Features	Benefits
Device depth of 1"	Utilize with any existing wall switch box.
No Neutral Required	No need to pull neutrals - makes retrofits simple.
Neutral Option Available	Comply with NEC® 2011 and local codes.
Photocell Included (ATP/WS2000 series)	Utilizing available light enables additional savings.
Patented adaptive technology (ATP series)	Eliminates the need for manual adjustments and enhances installation efficiency.

NEC® is a registered trademark of the National Fire Protection Association (NFPA).

H-MOSS® Occupancy Sensors

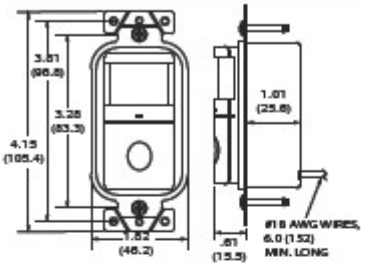
Wall Switch Occupancy Sensors - Passive Infrared

HUBBELL® Wiring Device-Kellems

Adaptive Technology, Passive Infrared

Description	Color	Standard	w/ Nightlight	w/ Neutral	w/ Nightlight and Neutral
Adaptive auto-adjusting; selectable manual/auto-on operation; dual-voltage 120/277V; 3-way capable	Gray	ATP2000GY	ATP2000NGY		
	Ivory	ATP2000I	ATP2000NI	ATP2004I	ATP2004NI
	Light Almond	ATP2000LA	ATP2000NLA		
	White	ATP2000W	ATP2000NW	ATP2004W	ATP2004NW
Manual adjusting; selectable manual/auto-on operation; dual-voltage 120/277V; 3-way capable	Gray	WS2000GY	WS2000NGY		
	Ivory	WS2000I	WS2000NI	WS2004I	WS2004NI
	Light Almond	WS2000LA	WS2000NLA		
	White	WS2000W	WS2000NW	WS2004W	WS2004NW
Manual adjusting; auto-on operation; 120V AC only	Ivory	WS1000I	WS1000NI		
	White	WS1000W	WS1000NW		
Manual adjusting; Manual-on operation; 120V AC only	Ivory	WS1001I	WS1001NI		
	White	WS1001W	WS1001NW		

Dimensions Inches (mm)



Specifications

Electrical	ATP/WS2000 Series	WS1000 Series
Power Supply	120/277V AC, 60Hz	120V AC, 60Hz
Load Capacity		
Incandescent	0 to 1000 watts	0 to 500 watts
120V Ballast	0 to 1000 watts	0 to 500 watts
277V Ballast	0 to 1800 watts	N/A
Agency Approvals	cUL Listed	UL Listed, cULus Certified
Warranty	5 years	5 years

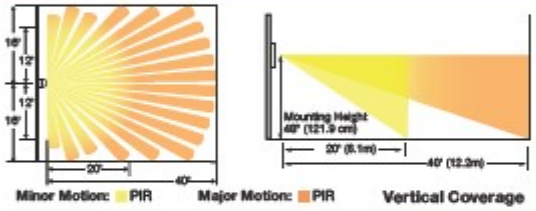
Physical	ATP/WS2000 and WS1000 Series
Housing	Flame retardant UL 94 V-0 ABS
Lens	Polyethylene
Dimensions	Face 2.59"H x 1.30"W, 0.61"D (from wall out)
Mounting Height	42 to 54 inches above floor

Sensing Indicator	ATP/WS2000 and WS1000 Series
Passive Infrared	Red LED

Environmental	ATP/WS2000 and WS1000 Series
Operating	32°F to 122°F (0°C to 50°C) with rate of change not exceeding 20°F (11°C) per hour; 20% to 90% non-condensing relative humidity
Storage	-40°F to 150°F (-40°C to 65°C); 20% to 90% non condensing relative humidity

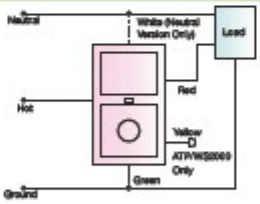
Controls	ATP/WS2000 Series	WS1000 Series
Time Delay	ATP: auto WS: Manual 20s - 30min	Manual 20 seconds to 30 minutes
Ambient Light	Digital, pushbutton, 10 to 500 foot candles	n/a
Front Press Switch	On/Off	On/Off
Service Switch	Off (service) Vac (manual-on) Occ (auto-on)	Off (service) On (normal operation)

Coverage Patterns

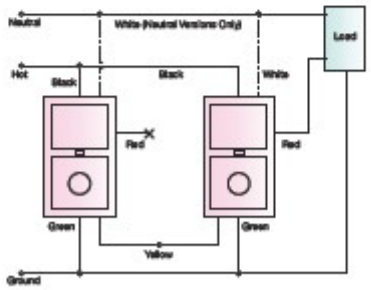


Wiring Schematics

Normal Wiring



Sensors Wired as 3-Way Sensors* (ATP/WS2000 Only)



Note: * Load can not exceed the rating of one switch.

HUBBELL® Wiring Device-Kellems

www.hubbell-wiring.com

Hubbell Wiring Systems • Hubbell Incorporated (Delaware) • 40 Waterview Drive • Shelton, CT 06484 • Phone (800) 288-6000 • FAX (800) 255-1091
Printed in U.S.A. Specifications subject to change without notice.
H-MOSS® is a registered trademark of Hubbell Incorporated.
WLDSHM028 4/13

JA:ba
cc: Jay Abbott, BD&C DPW
Brian Darwell, Buildings O&M, DPW

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

THOMAS G. VAUGHN
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: September 16, 2016

RE: 1664.323 – Energy Conservation at Various County Buildings
Indoor Lighting Upgrade at SC Impound Yard Building (C0207)
DC0XXX-16

The interior of the above referenced building is illuminated by T12 fluorescent and incandescent fixtures. The lighting levels are inadequate for the task and some of the fixtures are in very poor condition.

To improve lighting levels in the building it is proposed to T12 and incandescent fixtures with LED T8 wrap fixtures. This will reduce energy consumption by 90% and reduce GHG by 46,000 lbs. per year. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently. The table below shows the cost-benefit analysis for the project.

It is recommended that this project should be implemented and paid for from CP1664.323. The proposed cost including labor and material is $27,575.00.

Operational Savings Summary

Operational Area	Current Annual ($)	Projected Annual ($)	Reduction (%)	Current 10 Year ($)	Projected 10 Year ($)	Reduction (%)
Energy [1,2]	6,985	692	90	69,858	6,929	90
Maintenance [3]	1,453	0	100	14,536	0	100
Total	8,439	692	92	84,394	6,929	92

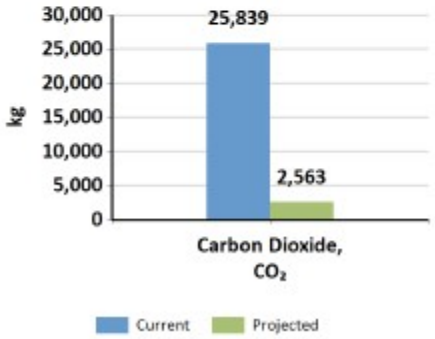
Environmental Impact

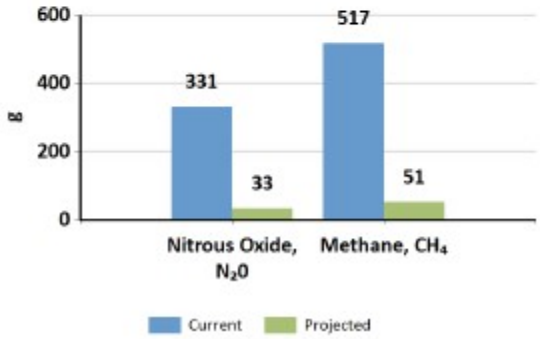
Greenhouse Gas Analysis

Greenhouse Gas Comparisons[1]

Greenhouse Gas	Current[1]	Projected[1]	Avoided	Environmental Effect
Carbon Dioxide, CO_2 (kg)	25,839	2,563	23,276	Greenhouse Gas, Global Warming
Nitrous Oxide, N_20 (g)	331	33	298	Greenhouse Gas, Global Warming
Methane, CH_4 (g)	517	51	466	Greenhouse Gas, Global Warming
Nitrogen Oxides, NOx (g)	22,606	2,242	20,364	Smog, Acid rain, Global Warming
Sulfur Oxides, SOx (g)	48,893	4,850	44,043	Acid rain

1. Average emission rates per kWh are based on estimates from eGrid 2012





Bill of Materials

Products

Fixtures

Part Number	Short Description	Qty	Cost ($)	Extended ($)
GUS2-25NW	LED 2' 25W Wrap	8	68.00	544.00
GUS4-50NW	LED 4' Wrap 50W	5	103.75	518.75
IBH 12000LM	LED IBH 12000LM Highbay	15	186.25	2,793.75
GUS4-36Y	LED 4' Wrap	6	97.85	587.10
Total				4,443.60

Controls

Part Number	Short Description	Qty	Cost ($)	Extended ($)
Hubbell ATD2000C	Sensor, Dual Technology, Ceiling, 2000 sqft.	2	109.75	219.50
Lithonia LXSR	Fixture Sensor	15	43.75	656.25
Total				875.75

JA:ba
cc: Jay Abbott, BD&C DPW
Brian Darwell, Buildings O&M, Riverhead Complex

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

THOMAS G. VAUGHN
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: November 28, 2016

RE: 1664.323 – Energy Conservation at Various County Buildings
Lighting Upgrade at the Third Precinct Building (C0068)
DC0XXX-16

The above referenced building is located on the Fifth Avenue in Bay Shore. The building is approximately 36,000 square feet and lighting has not been renovated in twenty-five years. The indoor lighting is predominantly fluorescent with T8 fixtures. To further reduce energy consumption and cost and make the building more energy efficient it is proposed that all T8, CFL and incandescent fixtures be replaced with LED fixtures.

In the past few years DPW has implemented the following energy efficiency measures at this facility:

a. Upgraded Building Management System
b. Replace boilers with high efficiency condensing boilers
c. Replace water heaters with high efficiency heat pump water heaters

The proposed replacement will reduce annual energy usage by 51% and reduce GHG by over 94,000 lbs. per year. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently. The table below shows the cost-benefit analysis for the project.

It is recommended that this project should be implemented and paid for from CP1664.323. The proposed cost including labor and material is $136,720.00.

Energy Usages and Costs

Annual Energy Usage

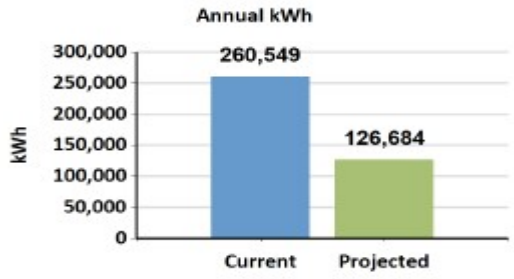
Current Usage (kWh)	Projected Usage (kWh)	Reduction (%)	Current Cost ($) [1, 2]	Projected Cost ($) [1, 2]	Savings ($)	Savings (%)
260,549	126,684	51	49,504	24,070	25,434	51

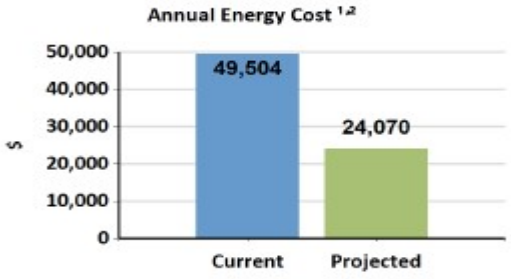
1. Energy cost ($) = 0.1900/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

Annual Energy Usage Reduction

Current Usage (kWh)	Projected Usage (kWh)	Reduction (kWh)	Reduction (%)
260,549	126,684	133,865	51

Energy Comparison





1. Energy Cost ($) = 0.1900/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

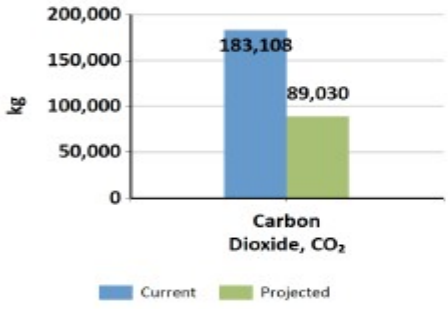
Environmental Impact

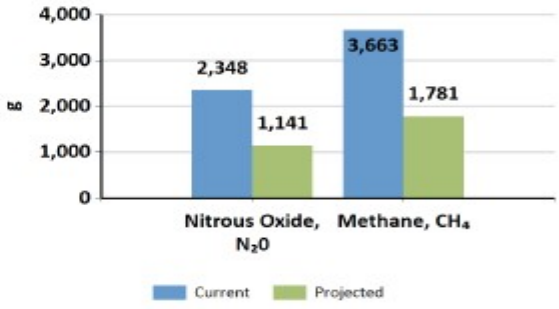
Greenhouse Gas Analysis

Greenhouse Gas Comparisons[1]

Greenhouse Gas	Current[1]	Projected[1]	Avoided	Environmental Effect
Carbon Dioxide, CO_2 (kg)	183,108	89,030	94,078	Greenhouse Gas, Global Warming
Nitrous Oxide, N_20 (g)	2,348	1,141	1,207	Greenhouse Gas, Global Warming
Methane, CH_4 (g)	3,663	1,781	1,882	Greenhouse Gas, Global Warming
Nitrogen Oxides, NOx (g)	160,196	77,890	82,306	Smog, Acid rain, Global Warming
Sulfur Oxides, SOx (g)	346,478	168,464	178,014	Acid rain

1. Average emission rates per kWh are based on estimates from eGrid 2012





Bill of Materials

Products

Fixtures

Part Number	Short Description	Qty	Cost ($)	Extended ($)
57871	6" Innofit Downlight	2	52.95	105.90
Litetronics RF32UQT240	LED 2X2 Retro-fit Kit	57	82.35	4,693.95
Total				4,799.85

Lamps

Part Number	Short Description	Qty	Cost ($)	Extended ($)
97722	LED 4' Tube - Ballast Bypass	932	16.50	15,378.00
Philips 120V A19 E26 14.5W 2700K 455683	LED A-Lamp HO	12	7.00	84.00
Total				15,462.00

Controls

Part Number	Short Description	Qty	Cost ($)	Extended ($)
WS1001W	Wall Vacancy Sensor	26	24.50	637.00
Total				637.00

Additional Items

Part Number	Short Description	Qty	Cost ($)	Extended ($)
CU300A	Control Unit for Ceiling Sensor	2	21.00	42.00
Total				42.00

Appendix

Incentives

Part Number Description	Incentive Description	Amount ($)	Est. Receipt Date
6" Innofit Downlight		70.00	Immediate
LED 2X2 Retro-fit Kit		2,850.00	Immediate
LED 4' Tube - Ballast Bypass		4,104.00	Immediate
LED 4' Tube - Ballast Bypass		6,264.00	Immediate
LED 4' Tube - Ballast Bypass		528.00	Immediate
LED 4' Tube - Ballast Bypass		288.00	Immediate
LED A-Lamp HO		144.00	Immediate
Total		14,248.00	

Lighting Wattage Comparison

Area :									
Space	Existing Fixture	Qty	Watts	Total Watts	Proposed Solution	Qty	Watts	Total Watts	Scheduled Hours
1st Floor :									
100 Meeting Room	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 4' Tube - 3 Lamp T8	4	44	176	
1st Floor :									
101 Precinct CO	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 4' Tube - 3 Lamp T8	4	44	176	
1st Floor :									
102 Secretary	2x4, 3 Lamp, F32 T8 Parabolic	6	85	510	LED 4' Tube - 3 Lamp T8	6	44	264	
1st Floor :									
103 Executive Office	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 4' Tube - 3 Lamp T8	4	44	176	
1st Floor :									
104 Juvenile	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 4' Tube - 3 Lamp T8	2	44	88	
1st Floor :									
105 Evidence	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 4' Tube - 2 Lamp T8	1	29	29	
1st Floor :									
111 Captian	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 4' Tube - 3 Lamp T8	4	44	176	
1st Floor :									
112 Administrative	2x2, 3 Lamp 40w Biax, Parabolic	2	102	204	LED 2X2 Kit	2	32	64	
1st Floor :									
112 Administrative	2x4, 3 Lamp, F32 T8 Parabolic	17	85	1,445	LED 4' Tube - 3 Lamp T8	17	44	748	
1st Floor :									
114 Office	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 4' Tube - 3 Lamp T8	4	44	176	
1st Floor :									
116 Precinct Desk	2x2, 2 Lamp 40W Biax, Parabolic	2	72	144	LED 2X2 Kit	2	32	64	

1st Floor :								
116 Precinct Desk	2x4, 3 Lamp, F32 T8 Parabolic	5	85	425	LED 4' Tube - 3 Lamp T8	5	44	220
1st Floor :								
121 Crime Section	2x2, 3 Lamp 40w Biax, Parabolic	1	102	102	LED 2X2 Kit	1	32	32
1st Floor :								
121 Crime Section	2x4, 3 Lamp, F32 T8 Parabolic	8	85	680	LED 4' Tube - 3 Lamp T8	8	44	352
1st Floor :								
121A Interview 1	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 4' Tube - 3 Lamp T8	1	44	44
1st Floor :								
121A Interview 2	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 4' Tube - 3 Lamp T8	1	44	44
1st Floor :								
121B	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 4' Tube - 3 Lamp T8	1	44	44
1st Floor :								
122 Duty Lieutenant	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 4' Tube - 3 Lamp T8	4	44	176
1st Floor :								
124 Staff Womens Room	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 4' Tube - 3 Lamp T8	2	44	88
1st Floor :								
125 Viewing Room	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 4' Tube - 3 Lamp T8	2	44	88
1st Floor :								
126ADetective Computer	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 4' Tube - 3 Lamp T8	2	44	88
1st Floor :								

126C Detective Secretary	2x2, 3 Lamp 40w Biax, Parabolic	2	102	204	LED 2X2 Kit	2	32	64
1st Floor :								
126C Detective Secretary	2x4, 3 Lamp, F32 T8 Parabolic	6	85	510	LED 4' Tube - 3 Lamp T8	6	44	264
1st Floor :								
129D Detect Admin	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 4' Tube - 3 Lamp T8	2	44	88
1st Floor :								
129E Detective CO	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 4' Tube - 3 Lamp T8	2	44	88
1st Floor :								
131 Conference Room	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 4' Tube - 3 Lamp T8	4	44	176
1st Floor :								
132 Detective Squad	2x2, 3 Lamp 40w Biax, Parabolic	1	102	102	LED 2X2 Kit	1	32	32
1st Floor :								
132 Detective Squad	2x2, 2 Lamp 40W Biax, Parabolic	2	72	144	LED 2X2 Kit	2	32	64
1st Floor :								
132 Detective Squad	2x4, 3 Lamp, F32 T8 Parabolic	18	85	1,530	LED 4' Tube - 3 Lamp T8	18	44	792
1st Floor :								
133 Storage	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 4' Tube - 3 Lamp T8	1	44	44
1st Floor :								
134 Female Cell Anteroom	1x4, 2 Lamp, F32 T8 Parabolic	1	60	60	LED 4' Tube - 2 Lamp T8	1	29	29
1st Floor :								
134 Female Cell Anteroom	27W A19 CFL	1	27	27	LED A Lamp	1	14	14
1st Floor :								

134A/135A Cell Block	1x4, 1 Lamp, Recessed Prismatic	24	31	744	LED 4' Tube - 1 Lamp T8	24	14	336
1st Floor :								
134A/135A Cell Block	1x4, 2 Lamp, F32 T8 Prismatic	15	60	900	LED 4' Tube - 2 Lamp T8	15	29	435
1st Floor :								
135 Male Cell Anteroom	1x4, 2 Lamp, F32 T8 Parabolic	1	60	60	LED 4' Tube - 2 Lamp T8	1	29	29
1st Floor :								
138 Female Prison RR	1x4, 2 Lamp, F32 T8 Prismatic	3	60	180	LED 4' Tube - 2 Lamp T8	3	29	87
1st Floor :								
138 Male Prison RR	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 4' Tube - 2 Lamp T8	1	29	29
1st Floor :								
138 Uniform Squad Room	2x4, 3 Lamp, F32 T8 Parabolic	9	85	765	LED 4' Tube - 3 Lamp T8	9	44	396
1st Floor :								
139 Line up/Print	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 4' Tube - 3 Lamp T8	4	44	176
1st Floor :								
Community Liason	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 4' Tube - 3 Lamp T8	4	44	176
1st Floor :								
Desk Supervisor	2x2, 2 Lamp 40W Biax, Parabolic	1	72	72	LED 2X2 Kit	1	32	32
1st Floor :								
Desk Supervisor	2x4, 3 Lamp, F32 T8 Parabolic	3	85	255	LED 4' Tube - 3 Lamp T8	3	44	132
1st Floor :								
Detective Kitchen	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 4' Tube - 3 Lamp T8	4	44	176

1st Floor :								
Hallway	2x2, 2 Lamp 40W Biax, Parabolic	30	72	2,160	LED 2X2 Kit	30	32	960
1st Floor :								
PCS Lieutenant	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 4' Tube - 3 Lamp T8	2	44	88
1st Floor :								
Research Analyst	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 4' Tube - 3 Lamp T8	2	44	88
1st Floor :								
Sergeant's Office	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 4' Tube - 3 Lamp T8	4	44	176
1st Floor :								
West Entrance	2x2, 2 Lamp 40W Biax, Parabolic	1	72	72	LED 2X2 Kit	1	32	32
Basement :								
B11 Lunch Room	2x4, 3 Lamp, F32 T8 Prismatic	12	85	1,020	LED 4' Tube - 3 Lamp T8	12	44	528
Basement :								
B12 Telephone Closet	4ft, F32 T8 2 Lamp Strip	1	60	60	LED 4' Tube - 2 Lamp T8	1	29	29
Basement :								
B13 Male Locker Room	4ft, F32 T8 2 Lamp Vapor Tight	2	60	120	LED 4' Tube - 2 Lamp T8	2	29	58
Basement :								
B13 Male Locker Room	4ft, 2 Lamp, F32 T8 Wrap	26	60	1,560	LED 4' Tube - 2 Lamp T8	26	29	754
Basement :								
B13 Male Locker Room	CFL 13W 2-Lamp	1	29	29	LED 6" Retrofit	1	21	21
Basement :								
B15 Mechanical	4ft, F32 T8 2 Lamp Strip	5	60	300	LED 4' Tube - 2 Lamp T8	5	29	145
Basement :								

B16 Drying	4ft, F32 T8 2 Lamp Strip	1	60	60	LED 4' Tube - 2 Lamp T8	1	29	29
Basement :								
B18 Female Locker	4ft, F32 T8 2 Lamp Vapor Tight	2	60	120	LED 4' Tube - 2 Lamp T8	2	29	58
Basement :								
B18 Female Locker	1x4, 2 Lamp, F32 T8 Prismatic	3	60	180	LED 4' Tube - 2 Lamp T8	3	29	87
Basement :								
B18 Female Locker	4ft, 2 Lamp, F32 T8 Wrap	12	60	720	LED 4' Tube - 2 Lamp T8	12	29	348
Basement :								
B19 Janitor	4ft, F32 T8 2 Lamp Strip	1	60	60	LED 4' Tube - 2 Lamp T8	1	29	29
Basement :								
B2 Telephone/Radio	4ft, 2 Lamp, F32 T8 Wrap	5	60	300	LED 4' Tube - 2 Lamp T8	5	29	145
Basement :								
B20 Exercise Room	4ft, 2 Lamp, F32 T8 Wrap	27	60	1,620	LED 4' Tube - 2 Lamp T8	27	29	783
Basement :								
B23 Mechincal Room	4ft, F32 T8 2 Lamp Strip	2	60	120	LED 4' Tube - 2 Lamp T8	2	29	58
Basement :								
B24 Boiler	4ft, F32 T8 2 Lamp Strip	4	60	240	LED 4' Tube - 2 Lamp T8	4	29	116
Basement :								
B25	4ft, F32 T8 2 Lamp Strip	4	60	240	LED 4' Tube - 2 Lamp T8	4	29	116
Basement :								
B26 Electrical	4ft, F32 T8 2 Lamp Strip	4	60	240	LED 4' Tube - 2 Lamp T8	4	29	116
Basement :								
B3 Server Room	1x4, 2 Lamp, F32 T8 Parabolic	2	60	120	LED 4' Tube - 2 Lamp T8	2	29	58
Basement :								

B3 Storage/Property	2x4, 3 Lamp, F32 T8 Parabolic	13	85	1,105	LED 4' Tube - 3 Lamp T8	13	44	572
Basement :								
B5 Mechanical	4ft, F32 T8 2 Lamp Strip	4	60	240	LED 4' Tube - 2 Lamp T8	4	29	116
Basement :								
Crime Section	4ft, 2 Lamp, F32 T8 Wrap	4	60	240	LED 4' Tube - 2 Lamp T8	4	29	116
Basement :								
Gang Locker Rm	2x4, 3 Lamp, F32 T8 Prismatic	4	85	340	LED 4' Tube - 3 Lamp T8	4	44	176
Basement :								
Gang Office	2x4, 3 Lamp, F32 T8 Prismatic	9	85	765	LED 4' Tube - 3 Lamp T8	9	44	396
Basement :								
Hallway	2x2, 2 Lamp 40W Biax, Parabolic	15	72	1,080	LED 2X2 Kit	15	32	480
Basement :								
Hallway	4ft, 2 Lamp, F32 T8 Wrap	15	60	900	LED 4' Tube - 2 Lamp T8	15	29	435
Basement :								
Locker Room by Boiler	4ft, 2 Lamp, F32 T8 Wrap	6	60	360	LED 4' Tube - 2 Lamp T8	6	29	174
Basement :								
Locker/Squad Room	2x4, 4 Lamp, F32 T8 Prismatic	11	111	1,221	LED 4' Tube - 4 Lamp T8	11	58	638
Basement :								
Meeting Room	4ft, 2 Lamp, F32 T8 Wrap	16	60	960	LED 4' Tube - 2 Lamp T8	16	29	464
Basement :								
Stairwell 4	4ft, 2 Lamp, F32 T8 Wrap	3	60	180	LED 4' Tube - 2 Lamp T8	3	29	87
Basement :								
Stairwell 4	CFL 13W 2-Lamp	1	29	29	LED 6" Retrofit	1	21	21
Outdoor :								
Down Lights	100w A19 Incandescent	11	100	1,100	LED A Lamp	11	14	154
Total			**5822**	**32,484**			**2814**	**15,623**

JA:ba
cc: Jay Abbott, BD&C DPW
Ed. Farrell Jr., Buildings O&M DPW

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

PHILIP A. BERDOLT
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: January 21, 2016

RE: 1664.322 – Energy Conservation at Various County Buildings
Lighting Upgrade at the Dennison Building Basement (C0140)
DC0XXX-16

Various rooms located in the basement of the Dennison Building are illuminated with five hundred and four 2F32T8 fixtures with electronic ballasts. These lights lit 24-hours a day, seven days a week and consume over 136,000 kWh of electricity per year at a cost of $25,320.00.

To complete the project additional 160 12-watt LED lamps and 70 electronic ballasts are required. Once the project is complete the new lamps and ballasts will reduce energy consumption by 7,904 kWh per year and result in annual cost savings of $1,304.00. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently.

The table below shows the cost-benefit analysis for the project.

It is recommended that this project should be implemented and paid for from CP1664.322.

	Installed Cost	$6,000	Simple Payback w/rebate (years)		3.1
	Annual Energy Savings (kWh)	7,904	Savings to investment ratio		3.6
	Annual Cost Savings $	$1,304	Life-cycle cost savings (LCS)	$	10,420
	LIPA/PSEGLI Rebate	$1,920	Discount rate		4%
	Net Cost after Rebate $	$4,080	Equipment Life (years)		15

JA:ba
cc: Phil Berdolt, Deputy Commissioner DPW
Jay Abbott, BD&C DPW

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

` VINCENT FALKOWSKI, P.E.
CHIEF DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

PHILIP A. BERDOLT
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: April 22, 2013

RE: CP #1664 – Energy Conservation at Various County Buildings
Lighting Retrofit Upgrade
H. Lee Dennison Building, Hauppauge, NY 11788

Existing Conditions
The H. Lee Dennison Building is twelve (12) stories high with approximately 238,000 square feet of gross floor area. The current fixtures in place in the corridors, bathrooms, stairwells and elevator cars are fluorescent fixtures which are not energy efficient.

Proposed Conditions
To reduce the electric consumption and the carbon footprint of the Dennison Building it is proposed that the fixtures in the corridors, bathrooms, stairwells and elevator cars be replaced with LED fixtures which use two-thirds less energy than the current fixtures. The life of the LED fixtures is 50,000 hours which goes well beyond many fixtures on the market today.

Proposed Cost
The cost for this project is $124,350.00 with an estimated rebate LIPA rebate of $36,830.00. Annual energy and cost savings are estimated to be 147,203 kWh and $22,080.00 respectively; simple payback is 3.96 years. Assuming equipment life of 10 years the life cycle cost savings is estimated to be $240,981.00. If this project is implemented it will reduce the CO2 footprint of the Dennison Building by 76 tons annually (see Table 1).

SUFFOLK COUNTY IS AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

335 YAPHANK AVENUE ■ YAPHANK, N.Y. 11980 ■ (631) 852-4225
FAX (631) 852-4246

Table 1

Proposed Installed Cost	$124,350	Simple Payback (years)	3.96
Installed Cost After LIPA Rebate of $36,830.00	$87,520	Savings to investment ratio	3.75
Estimated Annual Energy Savings, kWh	$147,203	Life Cycle Cost Savings	$240,981.40
Operations & Maintenance Savings	$0	Discount Rate %	3%
Total Annual Savings	$22,080	CO2 Saved (tons)	76

It is recommended the County move forward with this project for the cost and environmental savings proposed.

cc: Vincent Falkowski, P.E., Chief Deputy Commissioner
Philip Berdolt, Deputy Commissioner
Craig Rhodes, Director of Buildings Operations
Robert Frevele, Assistant Director of Buildings Operations
Judd Classie, Maintenance Mechanic IV

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

PHILIP A. BERDOLT
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: December 22, 2014

RE: 1664.321 – Energy Conservation at Various County Buildings
Lighting Upgrade at the Dennison Building Mechanical Room (C0140)
DC0157-14

The mechanical room located in the basement of the Dennison Building is illuminated with one hundred and five 2F32T8 fixtures with electronic ballasts. The lights in the mechanical room stay lit 24-hours a day, seven days a week and consume over 57,000 kWh of electricity per year at a cost of $10,550.00.

It is proposed to retrofit the existing fixtures with Philips Instant Fit LED lamps will reduce energy consumption by 49,820 kWh per year and result in annual cost savings of $9,217.00. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently. In addition, we also propose to install a time clock to turn the lights on and off automatically.

The table below shows the cost-benefit analysis for the project.

It is recommended that this project should be implemented and paid for from CP1664.321.

Installed Cost	$5,389	Simple Payback w/rebate (years)	0.2
Annual Energy Savings (kWh)	49,820	Savings to investment ratio	42.2
Annual Cost Savings $	$9,217	Life-cycle cost savings (LCS)	$ 93,514
LIPA/PSEGLI Rebate	$3,120	Discount rate	4%
Net Cost after Rebate $	$2,269	Equipment Life (years)	13.7

JA:ba
cc: Phil Berdolt, Deputy Commissioner DPW
Jay Abbott, BD&C DPW

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

THOMAS G. VAUGHN
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: November 28, 2016

RE: 1664.320 – Energy Conservation at Various County Buildings
Lighting Upgrade at the Bomarc Records Storage Building (C0209)
DC0XXX-17

The above referenced building is located in Westhampton and is approximately 34,000 square feet. The indoor lighting is predominantly fluorescent with T8 fixtures. To further reduce energy consumption and cost and make the building more energy efficient it is proposed that all T8 fixtures be replaced with LED fixtures.

The proposed replacement will reduce annual energy usage by 32% and reduce GHG by over 34,500 lbs. per year. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently. The table below shows the cost-benefit analysis for the project.

It is recommended that this project should be implemented and paid for from CP1664.320. The proposed cost including labor and material is $260,036.00.

Energy Usages and Costs

Annual Energy Usage

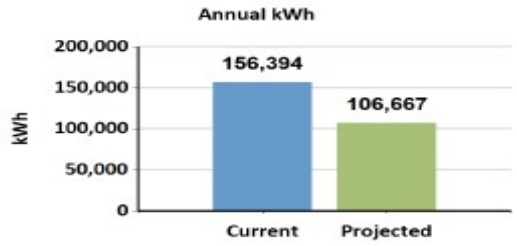
Current Usage (kWh)	Projected Usage (kWh)	Reduction (%)	Current Cost ($) [1,2]	Projected Cost ($) [1,2]	Savings ($)	Savings (%)
156,394	106,667	32	29,715	20,266	9,448	32

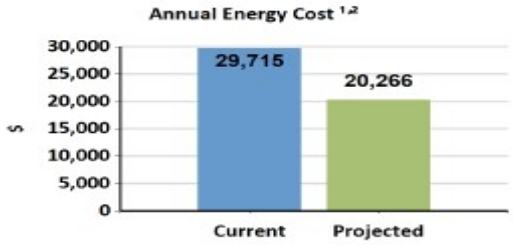
1. Energy cost ($) = 0.1900/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

Annual Energy Usage Reduction

Current Usage (kWh)	Projected Usage (kWh)	Reduction (kWh)	Reduction (%)
156,394	106,667	49,727	32

Energy Comparison





1. Energy Cost ($) = 0.1900/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

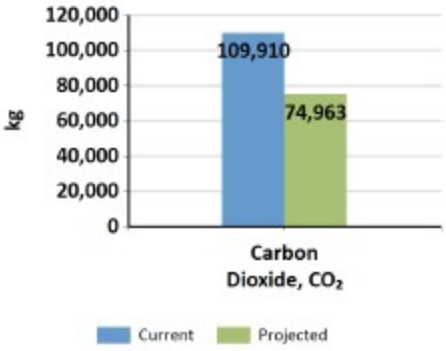
Environmental Impact

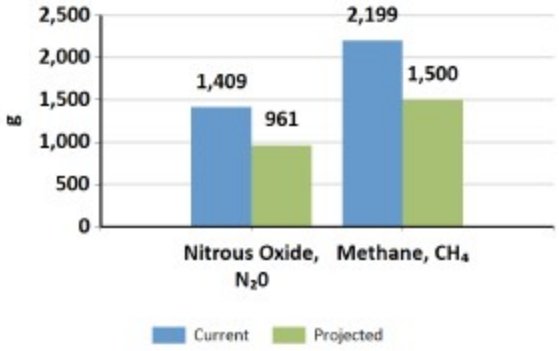
Greenhouse Gas Analysis

Greenhouse Gas Comparisons[1]

Greenhouse Gas	Current[1]	Projected[1]	Avoided	Environmental Effect
Carbon Dioxide, CO_2 (kg)	109,910	74,963	34,947	Greenhouse Gas, Global Warming
Nitrous Oxide, N_20 (g)	1,409	961	448	Greenhouse Gas, Global Warming
Methane, CH_4 (g)	2,199	1,500	699	Greenhouse Gas, Global Warming
Nitrogen Oxides, NOx (g)	96,157	65,583	30,574	Smog, Acid rain, Global Warming
Sulfur Oxides, SOx (g)	207,973	141,846	66,127	Acid rain

1. Average emission rates per kWh are based on estimates from eGrid 2012





Bill of Materials

Products

Fixtures

Part Number	Short Description	Qty	Cost ($)	Extended ($)
Encore LPCX-RU	Combo Exit	13	65.00	845.00
Lithonia 2GTL4 4400LM LP840	LED 2X4 4400 Lumen	79	100.00	7,900.00
Lithonia ZL1N 10000LM	LED Highbay Strip	309	193.75	59,868.75
Lithonia TZL1N L96 10000LM FST MVOLT 40K 80CRI E7W WH PLR22	LED Strip (Highbay)	79	350.00	27,650.00
2GTL2 LP840	LED 2x2 Prismatic Layin	5	81.25	406.25
Lithonia ZL1N L48 5000LM FST	LED 5000L Strip	43	92.00	3,956.00
Total				100,626.00

Lamps

Part Number	Short Description	Qty	Cost ($)	Extended ($)
9.5A19/LED/827-22 DIM 120V	9.5A19/LED	4	6.00	24.00
Total				24.00

Additional Items

Part Number	Short Description	Qty	Cost ($)	Extended ($)
Lithonia EL7L	EM Pack	10	156.00	1,560.00
Total				1,560.00

Additional Items

Part Number	Short Description	Qty	Cost ($)	Extended ($)
CU300A	Control Unit for Ceiling Sensor	2	21.00	42.00
Total				42.00

Appendix

Incentives

Part Number Description	Incentive Description	Amount ($)	Est. Receipt Date
2X4 LED Flat Panel		9,360.00	Immediate
6" Innofit Downlight		980.00	Immediate
LED 2x2 Edgelit Flat Panel		2,580.00	Immediate
LED 4' Strip with Lens		1,650.00	Immediate
LED 4' Tube - Ballast Bypass		336.00	Immediate
LED 4' Vaportight		150.00	Immediate
LED 4' Wrap		6,050.00	Immediate
LED 4' Wrap 50W		450.00	Immediate
LED 8' Strip with Lens 6000LM		300.00	Immediate
LED A-Lamp		72.00	Immediate
LED A-Lamp 6W		72.00	Immediate
LED Exit Sign 6" Red Letters		234.00	Immediate
LED Highbay 15000LM		800.00	Immediate
Total		**23,034.00**	

Lighting Wattage Comparison

Area :									
Space	Existing Fixture	Qty	Watts	Total Watts	Proposed Solution	Qty	Watts	Total Watts	Scheduled Hours
1st Floor :									

110 Old Country Rd West Hampton NY

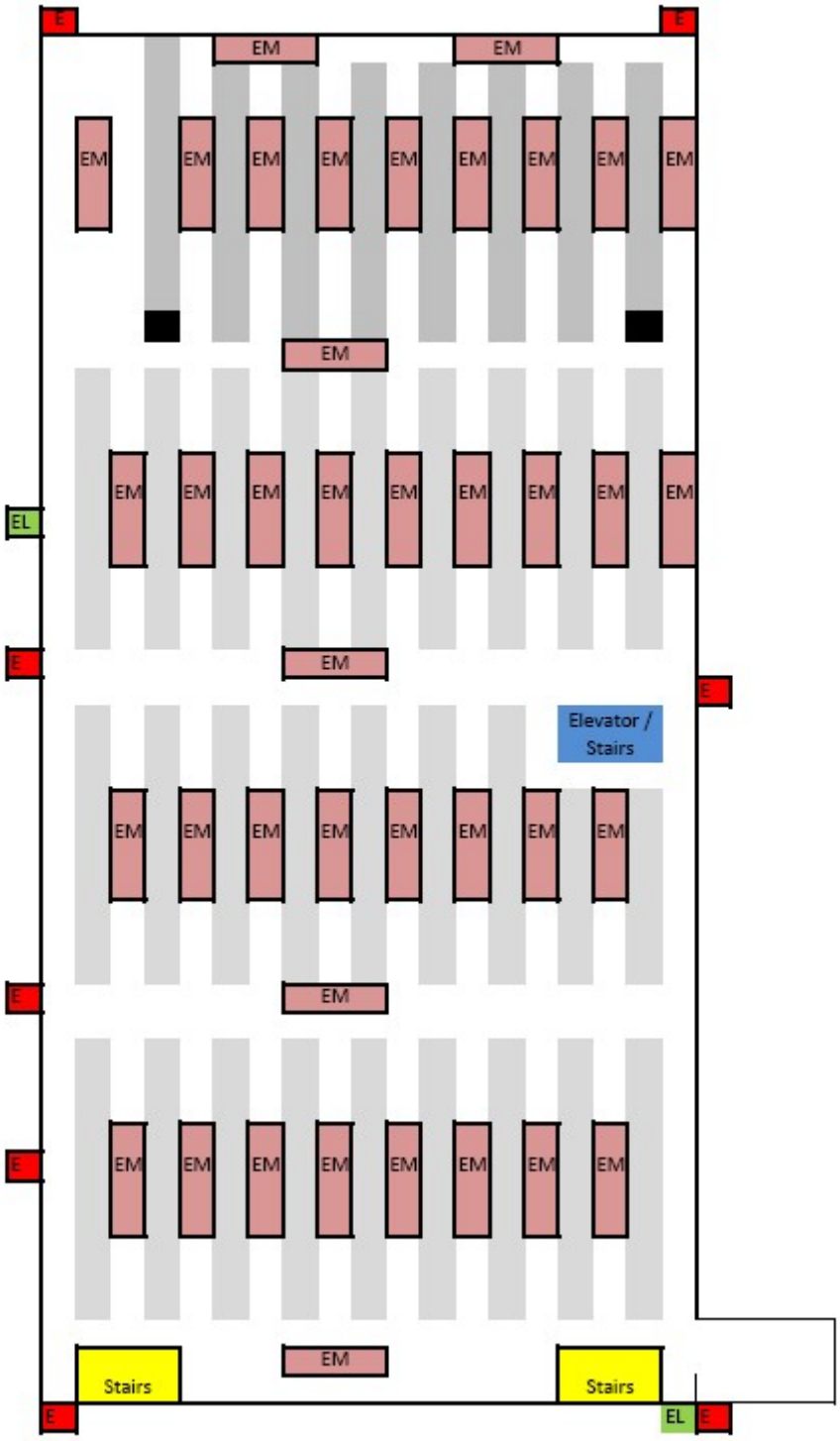
Archieve hall	2x4, 3 Lamp, F32 T8 Prismatic	4	85	340	LED 2x4 Layin M	4	37	148	2868
1st Floor :									
Archieve room 1 North	4ft, F32 T8 2 Lamp Industrial	12	60	720	LED 4' Strip 5000LM	12	41	492	2868
1st Floor :									
Archieve room 1 North	8ft, F32 T8 4 Lamp Industrial	76	111	8,436	LED HB 8' Strip	76	83	6,308	2868
1st Floor :									
Archieve room south	4ft, F32 T8 2 Lamp Industrial	1	60	60	LED 4' Strip 5000LM	1	41	41	2868
1st Floor :									
Archieve room south	8ft, F32 T8 4 Lamp Industrial	31	111	3,441	LED HB 8' Strip	31	83	2,573	2868
1st Floor :									
Conference room	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 2x4 Layin M	4	37	148	2868
1st Floor :									
Copy room	2x4, 3 Lamp, F32 T8 Prismatic	6	85	510	LED 2x4 Layin M	6	37	222	2868
1st Floor :									
East custion closet / hallway	2x4, 3 Lamp, F32 T8 Prismatic	2	85	170	LED 2x4 Layin M	2	37	74	2868
1st Floor :									
East hall storage	2x4, 3 Lamp, F32 T8 Prismatic	4	85	340	LED 2x4 Layin M	4	37	148	2868
1st Floor :									

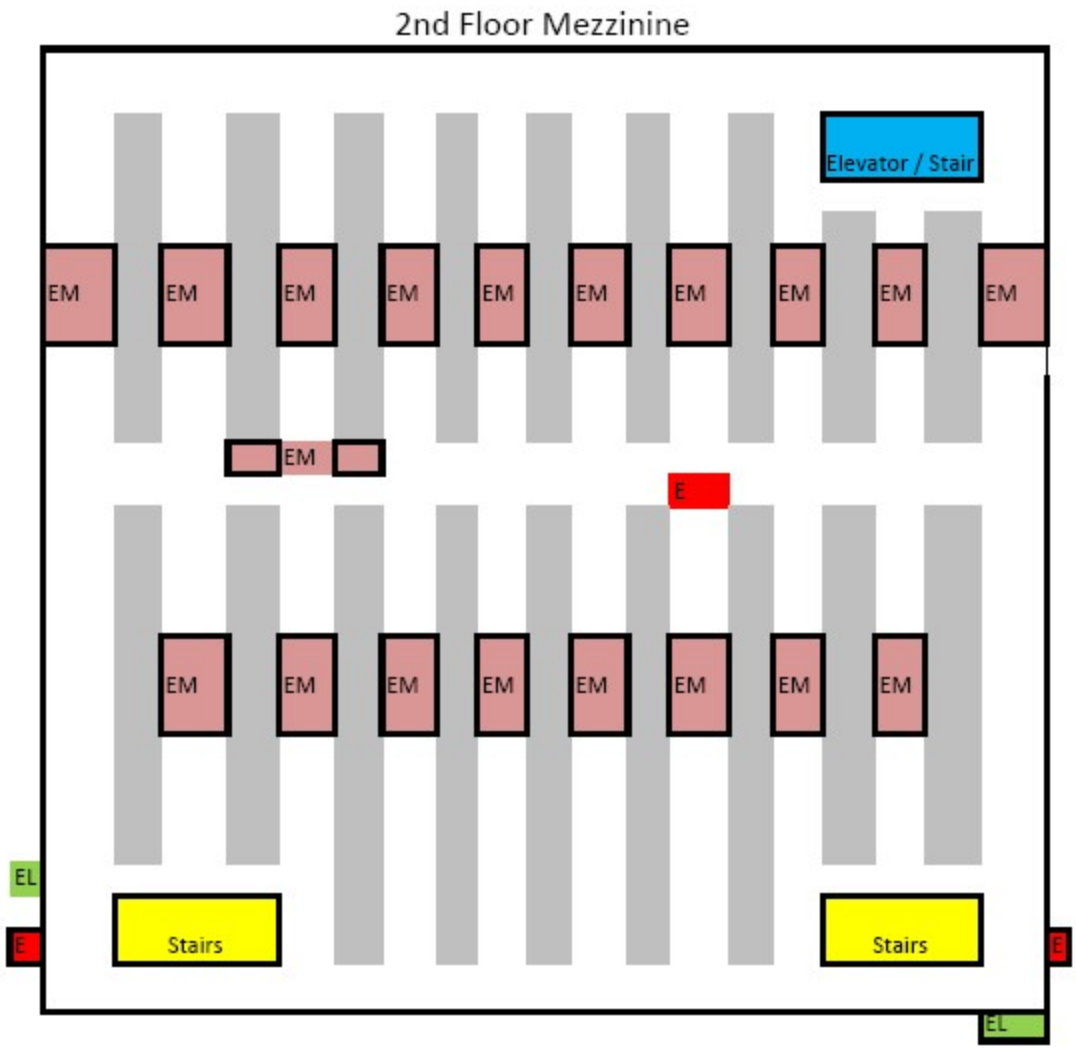
East hall video storage	2x4, 3 Lamp, F32 T8 Prismatic	6	85	510	LED 2x4 Layin M	6	37	222	2868
1st Floor :									
East storage 2	2x4, 3 Lamp, F32 T8 Prismatic	5	85	425	LED 2x4 Layin M	5	37	185	2868
1st Floor :									
East storage 3	2x4, 3 Lamp, F32 T8 Prismatic	14	85	1,190	LED 2x4 Layin M	14	37	518	2868
1st Floor :									
East storage rm 1	2x4, 3 Lamp, F32 T8 Prismatic	10	85	850	LED 2x4 Prismatic EM	10	35	350	2868
1st Floor :									
Empty box storage	2x4, 3 Lamp, F32 T8 Prismatic	2	85	170	LED 2x4 Layin M	2	37	74	2868
1st Floor :									
Entry	2x4, 4 Lamp, F40 T12 Prismatic	2	188	376	LED 2x4 Layin M	2	37	74	2868
1st Floor :									
Kitchen	2x4, 4 Lamp, F40 T12 Prismatic	6	188	1,128	LED 2x4 Layin M	6	37	222	2868
1st Floor :									
Ladies room	2x2, 2 Lamp U Tube F32 Prismatic	2	60	120	LED 2x2 Layin M	2	33	66	2868
1st Floor :									
Mens room	2x2, 2 Lamp U Tube F32 Prismatic	3	60	180	LED 2x2 Layin M	3	33	99	2868

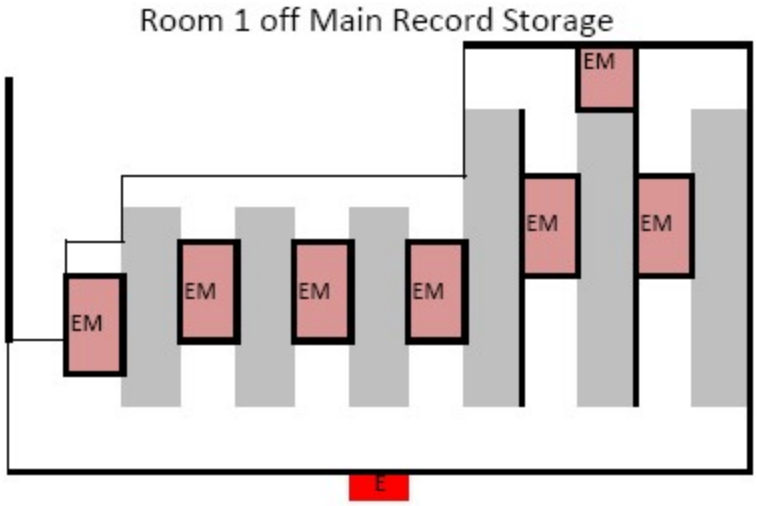
1st Floor :									
North hallway	2x4, 3 Lamp, F32 T8 Prismatic	5	85	425	LED 2x4 Layin M	5	37	185	2868
1st Floor :									
Office 1	2x4, 4 Lamp, F40 T12 Prismatic	4	188	752	LED 2x4 Layin M	4	37	148	2868
1st Floor :									
Reception	2x4, 4 Lamp, F40 T12 Prismatic	3	188	564	LED 2x4 Layin M	3	37	111	2868
1st Floor :									
Record Storage main	4ft, F40 T12 2 Lamp Industrial	1	94	94	LED 4' Strip 5000LM	1	41	41	2868
1st Floor :									
Record Storage main	4ft, F34 T12 2 Lamp Industrial	17	80	1,360	LED 4' Strip 5000LM	17	41	697	2868
1st Floor :									
Record Storage main	New Lighting				LED Exit Combo	10	3	30	0
1st Floor :									
Record Storage main	8ft, F32 T8 4 Lamp Industrial	117	111	12,987	LED HB 8' Strip	121	83	10,043	2868
1st Floor :									
Record Storage main	8ft, F32 T8 4 Lamp Industrial	60	111	6,660	LED Highbay Strip w/EM	60	83	4,980	2868
1st Floor :									
Shredding room	8ft, F32 T8 4 Lamp Industrial	3	111	333	LED 4' Strip 5000LM	3	41	123	2868
1st Floor :									

Small office north	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 2x4 Layin M	2	37	74	2868
1st Floor :									
Video rm 1	60w A19 Incandescent	2	60	120	LED A Lamp	2	10	20	2868
1st Floor :									
Video rm 2	60w A19 Incandescent	2	60	120	LED A Lamp	2	10	20	2868
2nd floor :									
Main record storage	4ft, F32 T8 2 Lamp Industrial	9	60	540	LED 4' Strip 5000LM	9	41	369	2868
2nd floor :									
Main record storage	New Lighting				LED Exit Combo	3	3	9	0
2nd floor :									
Main record storage	8ft, F32 T8 4 Lamp Industrial	81	111	8,991	LED HB 8' Strip	81	83	6,723	2868
2nd floor :									
Main record storage	8ft, F32 T8 4 Lamp Industrial	19	111	2,109	LED Highbay Strip w/EM	19	83	1,577	2868
Total			**3143**	**54,531**			**1426**	**37,114**	

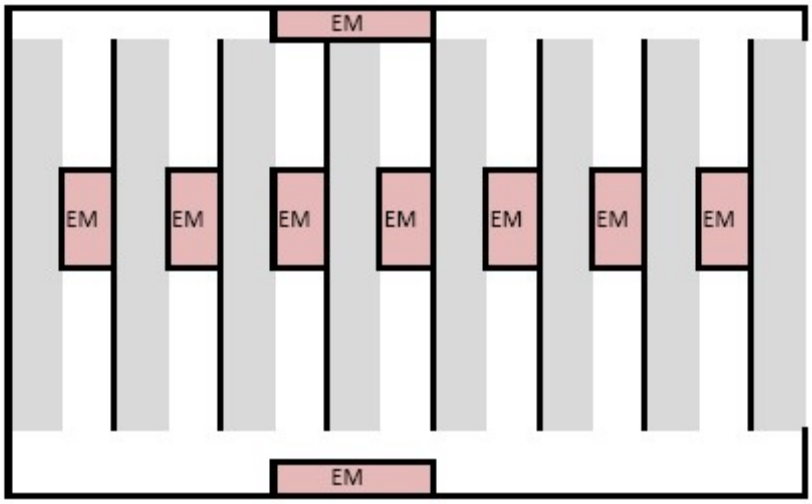
1st Floor Main Record Storage




2nd Floor Mezzinine
Elevator / Stair
EM
EM
EM
EM
EM
EM
EM
EM
EM
EM
EM
E
EM
EM
EM
EM
EM
EM
EM
EM
EL
E
Stairs
Stairs
E
EL


Room 1 off Main Record Storage
EM
EM
EM
EM
EM
EM
EM
E

Room 2 From Main Record Storage



ALL SERVICE ELECTRIC INC.
CONTRACTING / DESIGN / ENGINEERING / MAINTENANCE

January 3, 2017

Suffolk County Department of Public Works
335 Yaphank Avenue
Yaphank, NY 11980
Attn. Javed Ashraf, P.E., C.E.M.

Contract # ESNC-060113

RE: Suffolk County Record Storage
Bomarc Center
110 Old Country Road
Westhampton, NY 11977
New LED Lighting

PROPOSAL

Furnish and install the necessary materials, and labor for the complete installation of new LED lighting for interior of the building as per survey. Provide the necessary disposal and environmental disposal.

Scope of Work

1. Thirteen (13) Encore LPCX-RU Combination Exit/Emergency fixtures.
2. Seventy-nine (79) LIT. 2GTL4 4400LMLP840 – LED 2X4 4400 Lumen fixtures.
3. Three Hundred Nine (309) LIT. ZL1N 10000LM – LED High Bay Strip fixtures.
4. Seventy-nine (79) LIT. TZL1N L9610000LM FST MVOLT 40K80CRI E7W WH PLR22 – LED High Bay Strip fixtures.
5. Five (5) LIT. 2GTL2 LP840 2X2 – LED fixtures.
6. Forty-three (43) LIT. ZL1N L48 5000LMFST – LED 5000L Strip fixtures.
7. Four (4) 9Watt LED Lamps
8. Ten (10) LIT. EL71 Emergency Pack fixtures.

Labor: Foreman 420 hrs. @ 97.80 p/h	41,076.00
Mechanic 800 hrs. @ 96.70 p/h	77,360.00
Materials:	136,600.00
Equipment:	5,000.00
Total:	$260,036.00

Qualifications:

1. All work to be performed during normal working hours.

JA:ba
cc: Jay Abbott, BD&C DPW
Brian Darwell, Buildings O&M DPW

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

THOMAS G. VAUGHN
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: November 28, 2016

RE: 1664.323 – Energy Conservation at Various County Buildings
Lighting Upgrade at the Sixth Precinct Building (C0967)
DC0XXX-16

The above referenced building is located on Middle Country Road in Selden. The building is approximately 36,000 square feet. The indoor lighting is predominantly fluorescent with T8 fixtures. To further reduce energy consumption and cost and make the building more energy efficient it is proposed that all T8, CFL and incandescent fixtures be replaced with LED fixtures.

In the past few years DPW has implemented the following energy efficiency measures at this facility:

a. Upgraded Building Management System

The proposed replacement will reduce annual energy usage by 47% and reduce GHG by over 70,600 lbs. per year. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently. The table below shows the cost-benefit analysis for the project.

It is recommended that this project should be implemented and paid for from CP1664.323. The proposed cost including labor and material is $157,560.00.

Energy Usages and Costs

Annual Energy Usage

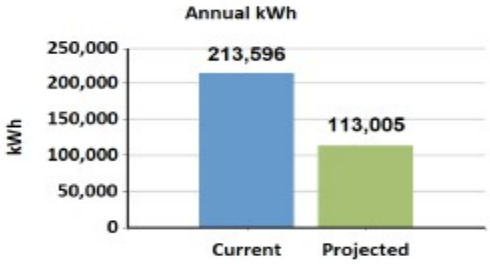
Current Usage (kWh)	Projected Usage (kWh)	Reduction (%)	Current Cost ($) [1, 2]	Projected Cost ($) [1, 2]	Savings ($)	Savings (%)
213,596	113,005	47	40,583	21,471	19,112	47

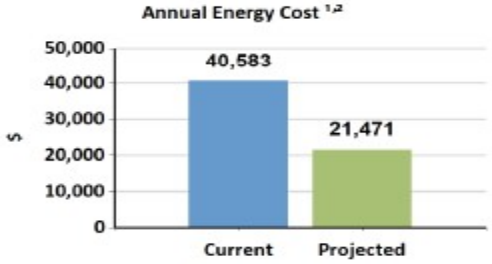
1. Energy cost ($) = 0.1900/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

Annual Energy Usage Reduction

Current Usage (kWh)	Projected Usage (kWh)	Reduction (kWh)	Reduction (%)
213,596	113,005	100,591	47

Energy Comparison





1. Energy Cost ($) = 0.1900/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

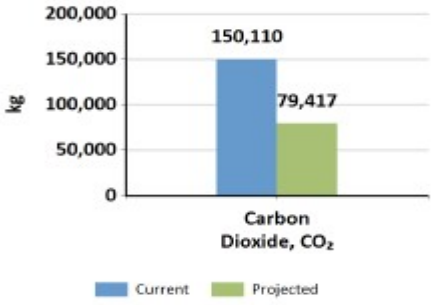
Environmental Impact

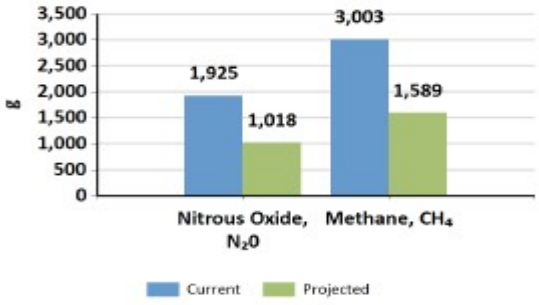
Greenhouse Gas Analysis

Greenhouse Gas Comparisons[1]

Greenhouse Gas	Current[1]	Projected[1]	Avoided	Environmental Effect
Carbon Dioxide, CO_2 (kg)	150,110	79,417	70,693	Greenhouse Gas, Global Warming
Nitrous Oxide, N_20 (g)	1,925	1,018	907	Greenhouse Gas, Global Warming
Methane, CH_4 (g)	3,003	1,589	1,414	Greenhouse Gas, Global Warming
Nitrogen Oxides, NOx (g)	131,327	69,480	61,847	Smog, Acid rain, Global Warming
Sulfur Oxides, SOx (g)	284,040	150,274	133,766	Acid rain

1. Average emission rates per kWh are based on estimates from eGrid 2012





Bill of Materials

Products

Fixtures

Part Number	Short Description	Qty	Cost ($)	Extended ($)
RAB TRLED2X4-37N/D10	LED 2X4 Prismatic	154	100.00	15,400.00
Lithonia ZL1N L48 3000LM FST MVOLT 40K 80CRI WH	LED 4' Strip with Lens	50	85.50	4,275.00
GTL4 33L LP840	LED Recessed 1x4 Prismatic	157	89.00	13,973.00
GUS4-36Y	LED 4' Wrap	7	97.85	684.95
ZL!N L48 5000LM	LED 4' Strip 5000LM	11	92.00	1,012.00
RAB TRLED-37N/D10	LED 2X2 Prismatic	89	81.25	7,231.25
57871	6" Innofit Downlight	24	52.95	1,270.80
Total				43,847.00

Lamps

Part Number	Short Description	Qty	Cost ($)	Extended ($)
435438	LED Par 38 17W Lamp	2	18.50	37.00
97722	LED 4' Tube - Ballast Bypass	69	16.50	1,138.50
Total				1,175.50

Controls

Part Number	Short Description	Qty	Cost ($)	Extended ($)
WS1001W	Wall Vacancy Sensor	44	24.50	1,078.00
Total				1,078.00

Additional Items

Part Number	Short Description	Qty	Cost ($)	Extended ($)
CU300A	Control Unit for Ceiling Sensor	2	21.00	42.00
Total				42.00

Appendix

Incentives

Part Number Description	Incentive Description	Amount ($)	Est. Receipt Date
6" Innofit Downlight		840.00	Immediate
LED 2X2 Prismatic		5,340.00	Immediate
LED 2X4 Prismatic		12,320.00	Immediate
LED 4' Strip 5000LM		550.00	Immediate
LED 4' Strip with Lens		2,500.00	Immediate
LED 4' Tube - Ballast Bypass		36.00	Immediate
LED 4' Tube - Ballast Bypass		792.00	Immediate
LED 4' Wrap		350.00	Immediate
LED Par 38 17W Lamp		24.00	Immediate
LED Recessed 1x4 Prismatic		9,420.00	Immediate
Total		32,172.00	

Lighting Wattage Comparison

Area :									
Space	Existing Fixture	Qty	Watts	Total Watts	Proposed Solution	Qty	Watts	Total Watts	Scheduled Hours
1st Floor :									

Admin 69	1x4, 2 Lamp, F32 T8 Prismatic	20	60	1,200	LED 1x4 Layin	20	35	700
1st Floor :								
Admin 75	2x4, 3 Lamp, F32 T8 Parabolic	8	85	680	LED 2x4 Layin	8	37	296
1st Floor :								
Advocate 66	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								
Auxiliary Police 64	2x4, 3 Lamp, F32 T8 Parabolic	3	85	255	LED 2x4 Layin	3	37	111
1st Floor :								
Captain 74	2x2, 2 Lamp U Tube F32 Parabolic	4	60	240	LED 2x2 Layin	4	37	148
1st Floor :								
Cell Block	1x4, 2 Lamp, F32 T8 Prismatic	5	60	300	LED 4' Tube - 2 Lamp T8	5	29	145
1st Floor :								
Cell Block-Female Cells	1x4, 2 Lamp, F32 T8 Prismatic	5	60	300	LED 4' Tube - 2 Lamp T8	5	29	145
1st Floor :								
Cell Block-Male Cells	1x4, 2 Lamp, F32 T8 Prismatic	23	60	1,380	LED 4' Tube - 2 Lamp T8	23	29	667
1st Floor :								
Cell Block-Utility Closets	4ft, 2 Lamp, F32 T8 Wrap	3	60	180	LED 4' Strip	3	31	93
1st Floor :								
Cell Block-Viewing 56	2x4, 3 Lamp, F32 T8 Prismatic	1	85	85	LED 4' Tube - 3 Lamp T8	1	44	44
1st Floor :								
Civilian ID	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								

Clerical Office 21	2x4, 3 Lamp, F32 T8 Parabolic	7	85	595	LED 2x4 Layin	7	37	259
1st Floor :								
Commander 18	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 2x4 Layin	4	37	148
1st Floor :								
Commanding Officer 73	2x2, 2 Lamp U Tube F32 Parabolic	5	60	300	LED 2x2 Layin	5	37	185
1st Floor :								
Community 39	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 2x4 Layin	4	37	148
1st Floor :								
Conference 35	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								
Conference 77	2x2, 2 Lamp U Tube F32 Parabolic	6	60	360	LED 2x2 Layin	6	37	222
1st Floor :								
Cope 78	2x2, 2 Lamp U Tube F32 Parabolic	9	60	540	LED 2x2 Layin	9	37	333
1st Floor :								
Crime Section - Men's Room	2x2, 2 Lamp U Tube F32 Prismatic	1	60	60	LED 2x2 Layin	1	37	37
1st Floor :								
Crime Section - Men's Room	2x4, 3 Lamp, F32 T8 Prismatic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								
Crime Section - Women's Room	2x2, 2 Lamp U Tube F32 Prismatic	1	60	60	LED 2x2 Layin	1	37	37
1st Floor :								
Crime Section - Women's Room	2x4, 3 Lamp, F32 T8 Prismatic	2	85	170	LED 2x4 Layin	2	37	74

1st Floor :								
Crime Section 41	2x4, 3 Lamp, F32 T8 Parabolic	14	85	1,190	LED 2x4 Layin	14	37	518
1st Floor :								
Crossing Guard 86	2x4, 3 Lamp, F32 T8 Parabolic	3	85	255	LED 2x4 Layin	3	37	111
1st Floor :								
CS Interview 1 42	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
CS Interview 2 43	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Data/Comm	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 1x4 Layin	1	35	35
1st Floor :								
Data/Comm 12	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 1x4 Layin	1	35	35
1st Floor :								
Desk Sergeant	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								
Detective Squad 17	2x4, 3 Lamp, F32 T8 Parabolic	18	85	1,530	LED 2x4 Layin	18	37	666
1st Floor :								
Detective Squad 17 Rear	2x4, 3 Lamp, F32 T8 Prismatic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								
Detective Squad Men's Rm	2x4, 3 Lamp, F32 T8 Prismatic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								

Detective Squad Women's Rm	2x4, 3 Lamp, F32 T8 Prismatic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								
Electric Closet 10	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 1x4 Layin	1	35	35
1st Floor :								
Evidence	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 1x4 Layin	1	35	35
1st Floor :								
Evidence 62	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 1x4 Layin	1	35	35
1st Floor :								
Executive Office 72	2x2, 2 Lamp U Tube F32 Parabolic	4	60	240	LED 2x2 Layin	4	37	148
1st Floor :								
File Supply 40	1x4, 2 Lamp, F32 T8 Prismatic	2	60	120	LED 1x4 Layin	2	35	70
1st Floor :								
File Supply 76	1x4, 2 Lamp, F32 T8 Prismatic	2	60	120	LED 1x4 Layin	2	35	70
1st Floor :								
Front Desk	2x2, 2 Lamp U Tube F32 Parabolic	1	60	60	LED 2x2 Layin	1	37	37
1st Floor :								
Front Desk	2x4, 3 Lamp, F32 T8 Parabolic	5	85	425	LED 2x4 Layin	5	37	185
1st Floor :								
Front Desk	60w PAR38 Incandescent	2	60	120	LED Par 38 Lamp	2	17	34
1st Floor :								
Garage 33	4ft, F32 T8 2 Lamp Industrial	11	60	660	LED 4' Strip 5000L	11	42	462
1st Floor :								

Garage 33-Rest Room	2x4, 3 Lamp, F32 T8 Prismatic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Garage 33-Storage	4ft, F32 T8 2 Lamp Industrial	1	60	60	LED 4' Strip	1	31	31
1st Floor :								
Hallway	2x2, 2 Lamp U Tube F32 Prismatic	42	60	2,520	LED 2x2 Layin	42	37	1,554
1st Floor :								
Interview 1	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Interview 1 22	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Interview 2	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Interview 2 23	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Interview 3 24	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Janitor 88	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 1x4 Layin	1	35	35
1st Floor :								
Juvenile 1 50	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Juvenile 2 51	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37

1st Floor :								
Liententant 45	2x4, 3 Lamp, F32 T8 Parabolic	3	85	255	LED 2x4 Layin	3	37	111
1st Floor :								
Line Up 29	1x4, 2 Lamp, F32 T8 Prismatic	6	60	360	LED 1x4 Layin	6	35	210
1st Floor :								
Lobby	2x2, 2 Lamp U Tube F32 Prismatic	10	60	600	LED 2x2 Layin	10	37	370
1st Floor :								
Lobby - Men's Room	2x4, 3 Lamp, F32 T8 Prismatic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Lobby - Women's Room	2x4, 3 Lamp, F32 T8 Prismatic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Office 32	2x4, 3 Lamp, F32 T8 Prismatic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
OIC Lt 47	2x4, 3 Lamp, F32 T8 Parabolic	4	85	340	LED 2x4 Layin	4	37	148
1st Floor :								
Operations Lt 68	2x4, 3 Lamp, F32 T8 Parabolic	3	85	255	LED 2x4 Layin	3	37	111
1st Floor :								
Parole and Probation	2x4, 3 Lamp, F32 T8 Parabolic	3	85	255	LED 2x4 Layin	3	37	111
1st Floor :								
Patrol Sergeant 09	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								

Pct Research 79	2x4, 3 Lamp, F32 T8 Parabolic	3	85	255	LED 2x4 Layin	3	37	111
1st Floor :								
Police Office 08	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								
Prisoner Processing	2x4, 3 Lamp, F32 T8 Parabolic	12	85	1,020	LED 2x4 Layin	12	37	444
1st Floor :								
Prisoner Processing-Finger Print	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Prisoner Processing-Rest Room	2x4, 3 Lamp, F32 T8 Prismatic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								
Sergeant 38	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								
Staff & Duty 19	2x4, 3 Lamp, F32 T8 Parabolic	3	85	255	LED 2x4 Layin	3	37	111
1st Floor :								
Staff Men's Room	2x2, 2 Lamp U Tube F32 Prismatic	1	60	60	LED 2x2 Layin	1	37	37
1st Floor :								
Staff Men's Room	2x4, 3 Lamp, F32 T8 Prismatic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								
Staff Women's Room	2x2, 2 Lamp U Tube F32 Prismatic	1	60	60	LED 2x2 Layin	1	37	37
1st Floor :								
Staff Women's Room	2x4, 3 Lamp, F32 T8 Prismatic	2	85	170	LED 2x4 Layin	2	37	74

1st Floor :								
Stair A	4ft, 2 Lamp, F32 T8 Wrap	5	60	300	LED 4' Wrap	5	38	190
1st Floor :								
Stair B	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 1x4 Layin	1	35	35
1st Floor :								
Stair B	4ft, 2 Lamp, F32 T8 Wrap	2	60	120	LED 4' Wrap	2	38	76
1st Floor :								
Storage/Supply 36	2x4, 2 Lamp, F32 T8 Prismatic	2	60	120	LED 2x4 Layin	2	37	74
1st Floor :								
Supervisor 71	2x2, 2 Lamp U Tube F32 Parabolic	4	60	240	LED 2x2 Layin	4	37	148
1st Floor :								
Toilet	2x4, 3 Lamp, F32 T8 Prismatic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Training 63	2x4, 3 Lamp, F32 T8 Parabolic	3	85	255	LED 2x4 Layin	3	37	111
1st Floor :								
Video 16	2x4, 3 Lamp, F32 T8 Parabolic	2	85	170	LED 2x4 Layin	2	37	74
1st Floor :								
Video 44	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								
Viewing 28	27W A19 CFL	4	27	108	LED Downlight	4	21	84
1st Floor :								
Witness Room 1 27	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
1st Floor :								

Witness Room 2 26	2x4, 3 Lamp, F32 T8 Parabolic	1	85	85	LED 2x4 Layin	1	37	37
Basement :								
Archive 1 15	1x4, 2 Lamp, F32 T8 Prismatic	4	60	240	LED 1x4 Layin	4	35	140
Basement :								
Archive 2 14	1x4, 2 Lamp, F32 T8 Prismatic	4	60	240	LED 1x4 Layin	4	35	140
Basement :								
Bike Room	4ft, F32 T8 2 Lamp Industrial	8	60	480	LED 4' Strip	8	31	248
Basement :								
Boiler 17	4ft, F32 T8 2 Lamp Industrial	7	60	420	LED 4' Strip	7	31	217
Basement :								
Chiller 12	4ft, F32 T8 2 Lamp Industrial	4	60	240	LED 4' Strip	4	31	124
Basement :								
Community room 03	1x4, 2 Lamp, F32 T8 Prismatic	19	60	1,140	LED 1x4 Layin	19	35	665
Basement :								
Data/Comm 27	1x4, 2 Lamp, F32 T8 Prismatic	5	60	300	LED 1x4 Layin	5	35	175
Basement :								
Dusting/Photo 04	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 1x4 Layin	1	35	35
Basement :								
Electrical 09	4ft, F32 T8 2 Lamp Industrial	8	60	480	LED 4' Strip	8	31	248
Basement :								
Elevator	4ft, F32 T8 2 Lamp Strip	1	60	60	LED 4' Strip	1	31	31
Basement :								

Evidence 03	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 1x4 Layin	1	35	35
Basement :								
Exercise Room 01	1x4, 2 Lamp, F32 T8 Prismatic	22	60	1,320	LED 1x4 Layin	22	35	770
Basement :								
Hallway	1x4, 2 Lamp, F32 T8 Prismatic	14	60	840	LED 1x4 Layin	14	35	490
Basement :								
Janitor 10	1x4, 2 Lamp, F32 T8 Prismatic	1	60	60	LED 1x4 Layin	1	35	35
Basement :								
Lunch Room 26	1x4, 2 Lamp, F32 T8 Prismatic	11	60	660	LED 1x4 Layin	11	35	385
Basement :								
Maintenance 08	4ft, F32 T8 2 Lamp Industrial	10	60	600	LED 4' Strip	10	31	310
Basement :								
Mechanical 05	4ft, F32 T8 2 Lamp Industrial	8	60	480	LED 4' Strip	8	31	248
Basement :								
Mechanical 16	4ft, F32 T8 2 Lamp Industrial	6	60	360	LED 1x4 Layin	6	35	210
Basement :								
Men's Locker Room	1x4, 2 Lamp, F32 T8 Prismatic	24	60	1,440	LED 1x4 Layin	24	35	840
Basement :								
Men's Locker Room	27W A19 CFL	10	27	270	LED Downlight	10	21	210
Basement :								
Storage 11	1x4, 2 Lamp, F32 T8 Prismatic	2	60	120	LED 1x4 Layin	2	35	70
Basement :								
Women's Locker Room	1x4, 2 Lamp, F32 T8 Prismatic	6	60	360	LED 1x4 Layin	6	35	210
Basement :								
Women's Locker Room	2x4, 3 Lamp, F32 T8 Prismatic	3	85	255	LED 2x4 Layin	3	37	111
Basement :								
Women's Locker Room	27W A19 CFL	10	27	270	LED Downlight	10	21	210
Total			7886	34,713			3925	18,303

JA:ba
cc: Jay Abbott, BD&C DPW

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

PHILIP A. BERDOLT
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

EPI-155

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: June 6, 2016

RE: 1664.322 – Energy Conservation at Various County Buildings
Lighting Upgrade at the Riverhead County Center, Riverhead, NY (C0001)
DCxxxx-16

The office areas, hallways, lobby, record storage, auditorium, men's and ladies room in the Riverhead County Center Building are illuminated with fluorescent T8 and T5 fixtures with electronic ballast. The individual offices have occupancy sensors to turn the lights off when the rooms are unoccupied.

Replacing 32-watt T8 lamps and 54-watt T5 lamps with 12-watt LED lamps will reduce energy consumption and cost. In addition, high maintenance cost is incurred every year to replace burnt-out T8 lamps.

LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently.

The operating cost savings is shown in the table below:

Installed Cost $	$	178,556.00	Simple Payback (Years)		4.8
Annual Energy Savings (kWh)		198,542	Savings to investment ratio (SIR)		2.32
Annual Energy Cost Savings $	$	32,759.42	Life-cycle Cost Savings (LCS $)	$	235,709
Annual Maintenance Cost Savings $	$	4,500.00	Life of Equipment (years)		15
Total Cost Savings $	$	37,259.42	Discount Rate (%)		4%
Estimated PSEGLI Rebate $	$	26,786.00			

JA:ba
cc: Phil Berdolt, Deputy Commissioner DPW
Jay Abbott

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

THOMAS G. VAUGHN
DEPUTY COMMISSIONER

MEMORANDUM

EPI-156

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: November 16, 2016

RE: 1664.323 – Energy Conservation at Various County Buildings
Lobby Lighting Upgrade at the Riverhead County Center, Riverhead, NY (C0001)
DCxxxx-16

The lobby in the Riverhead County Center Building is illuminated with twenty four high output T5 fixtures with four 54-watt lamps and electronic ballast. These lights stay on 24-hours a day.

Replacing 54-watt T5 fixtures with 2 x 4 LED 37-watt fixtures will reduce energy consumption and cost. In addition, high maintenance cost is incurred every year to replace burnt-out T5 lamps as it requires a lift to which costs $1,350 per day.

LED fixtures have a life span of fifteen (15) years and the proposed RAB fixtures come with ten year full warranty. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently.

The operating cost savings is shown in the table below:

JA:ba
cc: Jay Abbott, DPW
Brian Darwell, Buildings Maintenance Manager, Buildings O&M

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

THOMAS G. VAUGHN
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: April 18, 2017

RE: 1664.314 – Energy Conservation at Various County Buildings
Lighting Upgrade at the Marine Science Center (C0906)
DC0XXX-17

The above referenced building is located in Southold on Cedar Beach Road. The building is approximately 8,658 square feet and lighting has not been renovated in over twenty-five years. The indoor lighting is predominantly fluorescent with T12 fixtures. To further reduce energy consumption and cost and make the building more energy efficient it is proposed that all T12, CFL and incandescent fixtures be replaced with LED fixtures.

The proposed replacement will reduce annual energy usage by 74% and reduce GHG by over 25,000 lbs. per year. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently. The table below shows the cost-benefit analysis for the project.

It is recommended that this project should be implemented and paid for from CP1664.314. The proposed cost including labor and material is $40.896.00.

ALL SERVICE ELECTRIC INC.
CONTRACTING / DESIGN / ENGINEERING / MAINTENANCE

March 13, 2017

Suffolk County Department of Public Works
335 Yaphank Avenue
Yaphank, NY 11980
Attn. Javed Ashraf, P.E., C.E.M.

Contract # ESNC-060113

RE: Cornell Cooperative Bldg. C906
Marine Science Center
3690 Cedar Beach Road
Southold, NY
Indoor LED Lighting

PROPOSAL

Furnish and install the necessary materials and labor for the complete installation of new LED lighting with storage, disposal, and environmental disposal as per attached area by area survey:

Labor: Foreman 128 hrs. @ 97.80 p/h	12,518.40
Mechanic 128 hrs. @ 96.70 p/h	12,377.60
Materials:	16,000.00
Total:	$40,896.00

Qualifications:

1. All work to be performed during normal working hours.
2. PSEG rebate incentive to be assigned to vendor.

57 Aberdeen Road | Smithtown, New York 11787 | P: 631.265.6800 | F: 631.265.6959
WWW.ALLSERVICEELECTRIC.US

Energy Usages and Costs

Annual Energy Usage

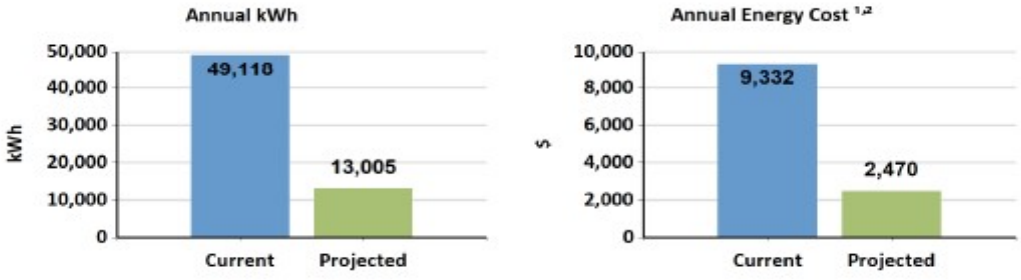
Current Usage (kWh)	Projected Usage (kWh)	Reduction (%)	Current Cost ($) [1, 2]	Projected Cost ($) [1, 2]	Savings ($)	Savings (%)
49,118	13,005	74	9,332	2,470	6,861	74

1. Energy cost ($) = 0.1900/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

Annual Energy Usage Reduction

Current Usage (kWh)	Projected Usage (kWh)	Reduction (kWh)	Reduction (%)
49,118	13,005	36,113	74

Energy Comparison



1. Energy Cost ($) = 0.1900/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

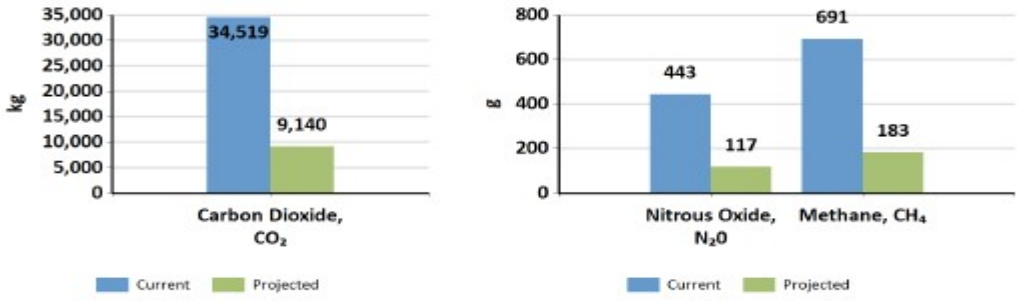
Environmental Impact

Greenhouse Gas Analysis

Greenhouse Gas Comparisons[1]

Greenhouse Gas	Current[1]	Projected[1]	Avoided	Environmental Effect
Carbon Dioxide, CO_2 (kg)	34,519	9,140	25,379	Greenhouse Gas, Global Warming
Nitrous Oxide, N_20 (g)	443	117	326	Greenhouse Gas, Global Warming
Methane, CH_4 (g)	691	183	508	Greenhouse Gas, Global Warming
Nitrogen Oxides, NOx (g)	30,200	7,996	22,204	Smog, Acid rain, Global Warming
Sulfur Oxides, SOx (g)	65,317	17,294	48,023	Acid rain

1. Average emission rates per kWh are based on estimates from eGrid 2012



Products

Fixtures

Part Number	Short Description	Qty	Cost ($)	Extended ($)
101636	LED 4' Vaportight Vandal Fixture	23	109.00	2,507.00
101638	LED 4' Vaportight Vandal 60W Fixture	1	122.00	122.00
GUS2-18NW-D10	LED 2' Wrap	1	62.50	62.50
RAB EZPAN2X4-40N/D10	LED 2X4 Flat Panel	4	88.25	353.00
LRT10	LED 10" Retrofit Downlight	9	168.01	1,512.09
GUS2-25NW	LED 2' 25W Wrap	8	68.00	544.00
GUS4-50NW	LED 4' Wrap 50W	4	103.75	415.00
Lithonia ZL1N L48 3000LM FST MVOLT 40K 80CRI WH	LED 4' Strip with Lens	1	85.50	85.50
RAB TRLED2X4-37N/D10	LED 2X4 Prismatic	44	100.00	4,400.00
RAB TRLED-37N/D10	LED 2X2 Prismatic	26	81.25	2,112.50
LPE-RU	LED Exit Sign 6" Red Letters	4	22.50	90.00
Lithonia TZL1N L96 6000LM FST MVOLT 40K 80CRI WH	LED 8' Strip with Lens 6000LM	1	175.00	175.00
Total				12,378.59

Lamps

Part Number	Short Description	Qty	Cost ($)	Extended ($)
455683	LED 14.5W A Lamp	1	6.00	6.00
Total				6.00

Controls

Part Number	Short Description	Qty	Cost ($)	Extended ($)
WS1001W	Wall Vacancy Sensor	11	24.50	269.50
Hubbell ATP1500C	Ceiling Sensor	4	60.25	241.00
Total				510.50

Additional Items

Part Number	Short Description	Qty	Cost ($)	Extended ($)
CU300A	Control Unit for Ceiling Sensor	4	21.00	84.00
LRT1000H-W	LED 10" Reflector	9	90.00	810.00
Total				894.00

Incentives

Part Number Description	Incentive Description	Amount ($)	Est. Receipt Date
LED 10" Retrofit Downlight		315.00	Immediate
LED 14.5W A Lamp		12.00	Immediate
LED 2' 25W Wrap		200.00	Immediate
LED 2' Wrap		25.00	Immediate
LED 2X2 Prismatic		1,560.00	Immediate
LED 2X4 Prismatic		3,520.00	Immediate
LED 4' Vaportight Vandal 60W Fixture		50.00	Immediate
LED 4' Vaportight Vandal Fixture		1,150.00	Immediate
LED 4' Wrap 50W		200.00	Immediate
Total		7,032.00	

Algae Room	2x4, 4 Lamp, F40 T12 Prismatic	3	188	564	LED 2x4 Layin	3	37	111	2868
Main Building :									
Back Hall	2x2, 2 Lamp U Tube F40 Prismatic	5	94	470	LED 2x2 Layin	5	37	185	2868
Main Building :									
Back Hall	30W Exit Sign	2	30	60	LED Exit	2	2	4	8760
Main Building :									
Boiler Room	CFL 42W	5	42	210	LED 2' Wrap 25W	5	25	125	2868
Main Building :									
Chris' Office	2x4, 4 Lamp, F40 T12 Prismatic	2	188	376	LED 2x4 Layin	1	37	37	2868
Main Building :									
Classroom	2x4, 4 Lamp, F40 T12 Prismatic	8	188	1,504	LED 2x4 Layin	8	37	296	2868
Main Building :									
Dive Locker Room	CFL 42W	1	42	42	LED 2' Wrap	1	19	19	2868
Main Building :									
Entrance	100w BR30 Incandescent	2	100	200	LED 10" Downlight	2	30	60	2868
Main Building :									
Greenhouse	4ft, F40 T12 2 Lamp Vapor Tight	6	94	564	LED 4' Vaportite	6	39	234	2868
Main Building :									

Greg's Office	2x2, 2 Lamp U Tube F40 Prismatic	4	94	376	LED 2x2 Layin	4	37	148	2868
Main Building :									
Hatchery	4ft, F40 T12 2 Lamp Vapor Tight	11	94	1,034	LED 4' Vaportite	11	39	429	2868
Main Building :									
Hatchery Annex	4ft, F40 T12 2 Lamp Vapor Tight	6	94	564	LED 4' Vaportite	6	39	234	2868
Main Building :									
Kim's Office	2x4, 4 Lamp, F40 T12 Prismatic	2	188	376	LED 2x4 Layin	1	37	37	2868
Main Building :									
Kitchen/Meeting Room	2x4, 4 Lamp, F40 T12 Prismatic	6	188	1,128	LED 2x4 Layin	6	37	222	2868
Main Building :									
Lab Office	4ft, 2 Lamp, F40 T12 Wrap	8	94	752	LED 4' Wrap	4	50	200	2868
Main Building :									
Lobby	100w BR30 Incandescent	5	100	500	LED 10" Downlight	5	30	150	2868
Main Building :									
Lobby	30W Exit Sign	1	30	30	LED Exit	1	2	2	8760
Main Building :									
Main Hall	100w BR30 Incandescent	2	100	200	LED 10" Downlight	2	30	60	2868
Main Building :									

Main Hall	2x2, 2 Lamp U Tube F40 Prismatic	6	94	564	LED 2x2 Layin	6	37	222	2868
Main Building :									
Main Hall	30W Exit Sign	1	30	30	LED Exit	1	2	2	8760
Main Building :									
Mark's Office	2x4, 4 Lamp, F40 T12 Prismatic	2	188	376	LED 2x4 Layin	1	37	37	2868
Main Building :									
Meeting Room	2x4, 4 Lamp, F40 T12 Prismatic	2	188	376	LED 2x4 Layin	2	37	74	2868
Main Building :									
Men's Bathroom	2x2, 2 Lamp U Tube F40 Prismatic	3	94	282	LED 2x2 Layin	3	37	111	2868
Main Building :									
Men's Restroom	2x2, 2 Lamp U Tube F32 Prismatic	2	60	120	LED 2x2 Layin	2	37	74	2868
Main Building :									
Panel Room	CFL 42W	2	42	84	LED 2' Wrap 25W	2	25	50	2868
Main Building :									
Reception	2x4, 4 Lamp, F40 T12 Prismatic	2	188	376	LED 2x4 Layin	2	37	74	2868
Main Building :									
Shower	100w A19 Incandescent	1	100	100	LED A Lamp	1	15	15	2868
Main Building :									
Spat Shack	8ft, F96 T12 2 Lamp Strip	1	138	138	LED 4' Vaportite 60W	1	62	62	2868

Main Building :									
Steve's Office	2x4, 4 Lamp, F40 T12 Prismatic	2	188	376	LED 2x4 Layin	1	37	37	2868
Main Building :									
Touch Tank Room	2x4, 4 Lamp, F40 T12 Prismatic	15	188	2,820	LED 2x4 Layin	15	37	555	2868
Main Building :									
Utility Shop	100w BR30 Incandescent	1	100	100	LED 2' Wrap 25W	1	25	25	2868
Main Building :									
Utility Shop	4ft, F34 T12 1 Lamp Strip	1	50	50	LED 4' Strip	1	31	31	2868
Main Building :									
Utility Shop	8ft, F96 T12 2 Lamp Strip	1	138	138	LED 8' Strip	1	64	64	2868
Main Building :									
Water Quality Lab	2x4, 4 Lamp, F40 T12 Prismatic	4	188	752	LED 2x4 Panel	4	39	156	2868
Main Building :									
Women's Bathroom	2x2, 2 Lamp U Tube F40 Prismatic	3	94	282	LED 2x2 Layin	3	37	111	2868
Main Building :									
Women's Restroom	2x2, 2 Lamp U Tube F32 Prismatic	2	60	120	LED 2x2 Layin	2	37	74	2868
Main Building :									
Youth Ed Office	2x2, 2 Lamp U Tube F40 Prismatic	1	94	94	LED 2x2 Layin	1	37	37	2868
Main Building :									

Marine Science Center Southold NY 11971

Youth Ed Office	2x4, 4 Lamp, F40 T12 Prismatic	4	188	752	LED 2x4 Layin	4	37	148	2868
Total			**4358**	**16,880**			**1271**	**4,512**	

JA:ba
cc: Jay Abbott, BD&C DPW
Brian Darwell, Buildings O&M DPW

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

THOMAS G. VAUGHN
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: December 20, 2016

RE: 1664.321 – Energy Conservation at Various County Buildings
Lighting Upgrade at the Pump Test Building (C1030)
DC0XXX-16

The above referenced building is located in Yaphank County Center. The indoor lighting is predominantly fluorescent with T5 fixtures. To further reduce energy consumption and cost and make the building more energy efficient it is proposed that all T5, CFL and incandescent fixtures be replaced with LED fixtures.

The proposed replacement will reduce annual energy usage by 54% and reduce GHG by over 11,000 lbs. per year. LED fixtures have a life span of fifteen (15) years. The extended life of these fixtures will lower maintenance costs because we will not need to replace the lamps and ballasts frequently. The table below shows the cost-benefit analysis for the project.

It is recommended that this project should be implemented and paid for from CP1664.321. The proposed cost including labor and material is $66,120.00.

Energy Usages and Costs

Annual Energy Usage

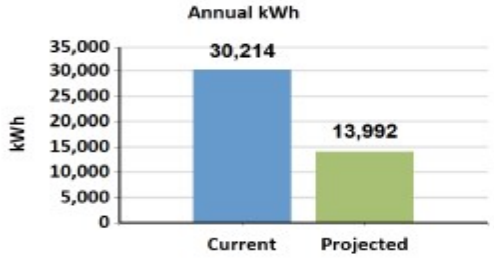
Current Usage (kWh)	Projected Usage (kWh)	Reduction (%)	Current Cost ($) [1, 2]	Projected Cost ($) [1, 2]	Savings ($)	Savings (%)
30,214	13,992	54	5,136	2,378	2,757	54

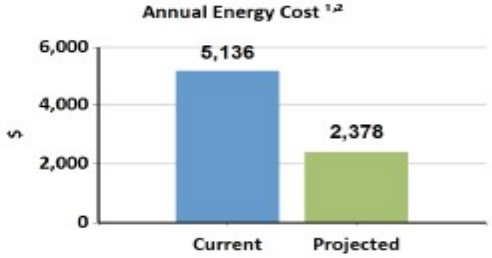
1. Energy cost ($) = 0.1700/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

Annual Energy Usage Reduction

Current Usage (kWh)	Projected Usage (kWh)	Reduction (kWh)	Reduction (%)
30,214	13,992	16,222	54

Energy Comparison





1. Energy Cost ($) = 0.1700/kWh; Annual energy cost escalation (%) = 0.00
2. Energy costs are averaged over 10 year analysis period

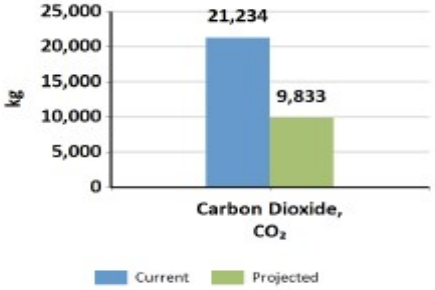
Environmental Impact

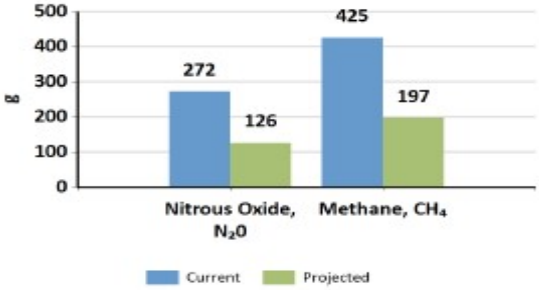
Greenhouse Gas Analysis

Greenhouse Gas Comparisons[1]

Greenhouse Gas	Current[1]	Projected[1]	Avoided	Environmental Effect
Carbon Dioxide, CO_2 (kg)	21,234	9,833	11,401	Greenhouse Gas, Global Warming
Nitrous Oxide, N_20 (g)	272	126	146	Greenhouse Gas, Global Warming
Methane, CH_4 (g)	425	197	228	Greenhouse Gas, Global Warming
Nitrogen Oxides, NOx (g)	18,577	8,603	9,974	Smog, Acid rain, Global Warming
Sulfur Oxides, SOx (g)	40,179	18,607	21,572	Acid rain

1. Average emission rates per kWh are based on estimates from eGrid 2012





Bill of Materials

Products

Fixtures

Part Number	Short Description	Qty	Cost ($)	Extended ($)
Lithonia 2BLT2 33L ADP EZ1 LP835	LED 2X2 Volumetric	6	87.50	525.00
GUS4-36W W/EM	LED4' WRAP WITH STANDBY BATTERY BACKUP	2	467.50	935.00
IBG 15000LM	LED 15L Highbay	36	190.01	6,840.36
Green Creative 27CDLA8/840/277V	8" Hi-Hat Retro-fit	6	65.00	390.00
Lithonia 2BLT4	LED 2x4 Volumetric Layin	31	100.00	3,100.00
GUS4-50NW	LED 4' Wrap 50W	9	106.25	956.25
Total				12,746.61

Additional Items

Part Number	Short Description	Qty	Cost ($)	Extended ($)
Lithonia PS10250 Battery Pack	EM Pack	10	218.75	2,187.50
EL7L Emergency Pack	EM Pack 700 Lumen	8	156.25	1,250.00
Lithonia EL7L	EM Pack	2	156.25	312.50
Total				3,750.00

Additional Items

Part Number	Short Description	Qty	Cost ($)	Extended ($)
CU300A	Control Unit for Ceiling Sensor	2	21.00	42.00
Total				42.00

Appendix

Incentives

Part Number Description	Incentive Description	Amount ($)	Est. Receipt Date
8" Hi-Hat Retro-fit		210.00	Immediate
LED 15L Highbay		2,000.00	Immediate
LED 15L Highbay		5,200.00	Immediate
LED 2X2 Volumetric		240.00	Immediate
LED 2X2 Volumetric		120.00	Immediate
LED 2x4 Volumetric Layin		1,840.00	Immediate
LED 2x4 Volumetric Layin		640.00	Immediate
LED 4' Wrap 50W		450.00	Immediate
LED4' WRAP WITH STANDBY BATTERY BACKUP		100.00	Immediate
Total		10,800.00	

Lighting Wattage Comparison

Area :									
Space	Existing Fixture	Qty	Watts	Total Watts	Proposed Solution	Qty	Watts	Total Watts	Scheduled Hours
1st Floor :									
Electric Room	4ft, FP54 HO T5 2 lamp	1	117	117	LED 4' Wrap	1	50	50	2868
1st Floor :									
Field Office	2X4 Volumetric 2-Lamp T5	11	63	693	LED 2X4 Volumetric Troffer	11	34	374	2868
1st Floor :									
Field Office	2X4 Volumetric 2-Lamp T5	3	63	189	LED 2X4 Volumetric Troffer w/ EM	3	34	102	2868
1st Floor :									
Field Office Entry	2X4 Volumetric 2-Lamp T5	1	63	63	LED 2X4 Volumetric Troffer w/ EM	1	34	34	2868
1st Floor :									
Fire Marshal Garage Bay	4ft, FP54 HO T5 2 lamp	24	117	2,808	LED Highbay 15K Lumens	12	97	1,164	2868
1st Floor :									
Fire Marshal Garage Bay	4ft, FP54 HO T5 2 lamp	8	117	936	LED Highbay 15K Lumens with EM	4	97	388	2868
1st Floor :									
Gear Room	4ft, FP54 HO T5 2 lamp	8	117	936	LED 4' Wrap	8	50	400	2868
1st Floor :									
Gear Room	4ft, FP54 HO T5 2 lamp	2	117	234	LED 4' Wrap with EM	2	36	72	2868
1st Floor :									
Hallway	2X2 Volumetric 2-Lamp T5	4	35	140	LED 2X2 Volumetric Troffer	4	30	120	2868
1st Floor :									

Hallway	2X2 Volumetric 2-Lamp T5	1	35	35	LED 2X2 Volumetric Troffer w/ EM	1	30	30	2868
1st Floor :									
Mens Locker Room	2X4 Volumetric 2-Lamp T5	8	63	504	LED 2X4 Volumetric Troffer	8	34	272	2868
1st Floor :									
Mens Locker Room	2X4 Volumetric 2-Lamp T5	2	63	126	LED 2X4 Volumetric Troffer w/ EM	2	34	68	2868
1st Floor :									
Mens Locker Room	32w 4 pin CFL	4	32	128	LED 8" Hi-Hat Retro-Fit	4	27	108	2868
1st Floor :									
Pump Test Bay	4ft, FP54 HO T5 2 lamp	30	117	3,510	LED Highbay 15K Lumens	14	97	1,358	2868
1st Floor :									
Pump Test Bay	4ft, FP54 HO T5 2 lamp	8	117	936	LED Highbay 15K Lumens with EM	6	97	582	2868
1st Floor :									
Pump Test Bay Office	2X4 Volumetric 2-Lamp T5	1	63	63	LED 2X4 Volumetric Troffer	1	34	34	2868
1st Floor :									
Pump Test Bay Office	2X4 Volumetric 2-Lamp T5	1	63	63	LED 2X4 Volumetric Troffer w/ EM	1	34	34	2868
1st Floor :									
Womens Locker Room	2X2 Volumetric 2-Lamp T5	1	35	35	LED 2X2 Volumetric Troffer w/ EM	1	30	30	2868

Down Lights	100w A19 Incandescent	11	100	1,100	LED A Lamp	11	14	154
Total			**5822**	**32,484**			**2814**	**15,623**

JA:ba
cc: Jay Abbott, BD&C DPW

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

ERIC M. HOFMEISTER
DEPUTY COMMISSIONER

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: April 3, 2018

RE: 1817.313 – Energy Efficiency Upgrades
Lighting Upgrade @ 4 Udall Road (C0351)
DC0017-18 – Turtle & Hughes @ Health, 4 Udall Road, West Islip

---

The County building located at 4 Udall Road will be renovated which will require new ceiling, lighting, boiler upgrade and air-conditioning.

The existing fixtures are T12 fluorescent lamps with magnetic ballast that are obsolete and replacement lamps and ballasts are no longer available. Most of the interior fixtures will be replaced with flat panel 2 x 4 LED fixtures with surface mount kits. The make, model and price per fixture after rebate are shown in the attached proposal.

These fixtures are available through the County contract from Turtle and Hughes. The supplier has agreed to deduct the rebate amount from the fixture cost which will reduce the initial cost for the County.

It is recommended that we move forward with the replacement of T12 fixtures with LED fixtures and pay from CP1817.313.

cc: Gerald Anderus, RA, Assistant County Architect

SUFFOLK COUNTY IS AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER
335 YAPHANK AVENUE YAPHANK, N.Y. 11980 (631) 852-4010 FAX (631) 852-4150

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
ACTING COMMISSIONER

ERIC M. HOFMEISTER
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E.
Chief Engineer

FROM: Javed Ashraf, P.E.
Principal Mechanical Engineer

DATE: June 12, 2019

RE: CP 1664.325 – Energy Conservation @ Various County Bldgs.
DC00XX-19 – Turtle & Hughes @ Supreme Court Bldg. (C0981)

The chiller and boiler rooms are illuminated by forty T8 fluorescent fixtures which stay lit 24-hours a day.

To ensure reliability and reduce annual operating cost, Facilities Engineering is proposing to replace these fixtures with eight feet LED strip fixtures with lens.

The estimated savings by implementing the proposed upgrade is shown in the table below.

Installed Cost		$4,279	Simple Payback (years)		1.2
Annual Energy Savings (kWh)		19,447	Savings to investment ratio		9.0
Annual Maintenance Cost $	$	500	Life-cycle cost savings (LCS)	$	34,264
Annual Cost Savings $		$3,709	Equipment Life (years)		13.7
Discount rate		4%	Estimated CO2 reduction (tons)		5.6

It is proposed that the procurement of the fixtures should be paid from CP1664.325. Installation will be by Buildings O&M.

JA:ba
Attachment
cc: Jay Abbott, Special Projects Coordinator
Scott Sinnickson, Special Projects Coordinator
Peggy Sutherland, MBA, Sr. Energy Coordinator
Brian Darwell, Buildings O&M

SUFFOLK COUNTY IS AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

335 YAPHANK AVENUE ■ **YAPHANK, N.Y. 11980** ■ **(631) 852-4690**
FAX (631) 852-4246

QUOTE

TURTLE & HUGHES INC. FIRST IN THE LONG RUN
ELECTRICAL & INDUSTRIAL DISTRIBUTOR

T&H HAUPPAUGE
1000 PRIME PL
HAUPPAUGE, NY 11788-4821

Quote #	3587605-00
Via	HOUSETRUCK
Terms	prox 30 nm
Enter Dt	06/12/19
Print Dt	06/12/19 13:50
Expire Dt	

Bill To 400047	SUFFOLK COUNTY DPW APPROPRIATIONS & ACCOUNTING 335 YAPHANK AVE YAPHANK, NY 11980-9736	Ship To	SUFFOLK COUNTY DPW SUPREME COURT BUILDING 1 COURT STREET RIVERHEAD, NY 11901

P.O. #	C0981 Chiller / Boiler	Reference	
Placed By	Javed	Instructions	

Ln #	Quantity Ordered	Qty UM	Product And Description	Item#	Unit Price	Price UM	Disc Mult	Amount (Net)	Est Deliv Date
			PRICING PER CONTRACT ES-030317						
1	20	each	LIT TZL1D L96 10000LM FST MVOLT 40K 80CRI WH 8' Strip Round Lens PN: UPC:00000000000	1	213.94000	each	0.00	4,278.80	06/12/19

1 Lines Total

Sub-Total	4,278.80
Order Total	4,278.80

Turtle & Hughes standard terms and conditions apply to all sales. A copy can be found at http://www.turtle.com/terms-and-conditions

Notes:		Taken By:	Eric Pucci Ph: 631-864-4242 Fx: 631-864-6644 epucci@turtle.com

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
DEPUTY COMMISSIONER

GILBERT ANDERSON, P.E.
COMMISSIONER

ERIC M. HOFMEISTER
DEPUTY COMMISSIONER

MEMORANDUM

To: Michael J. Monaghan, P.E.
Chief Engineer, Facilities Engineering

From: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

Date: September 4, 2018

Re: Capital Program No. 1664.324 – Energy Conservation at Various County Facilities
Replace all Fluorescent T8/T5 and Incandescent lamps with LED T8 lamps
DC0123-18 @ Turtle & Hughes, Inc. @ Yaphank Jail (C0012) - Lighting

---

Yaphank Jail is illuminated by a combination of T8, T5 and screw-in incandescent fixtures. Most of the fixtures are lit 24-hours a day. The table below show energy and cost savings if all fluorescent and incandescent fixtures are retrofitted with LED lamps.

Installed Cost	$47,468	Simple Payback (years)	0.2
Annual Energy Savings (kWh)	1,520,386	Savings to investment ratio	29.7
Annual Increase in Gas Use (Therms)		Life-cycle cost savings (LCS)	$ 1,362,932
Annual Cost Savings $	$281,271.34	Equipment Life (years)	5.707762557
Discount rate	4%	Monthly demand savings (kW)	173.56

The counts for the LED Lamps for Yaphank Jail are as follows:

QTY	MFG	Catalog Number
6,600	Philips	470112 14T8PROLED/48-4000 IF G 10/1 (on contract – Turtle & Hughes)
1,600	Philips	467142 24T5LED/48-4000 IF 10/1 (on contract – Turtle & Hughes)

The proposed cost for this project is as follows:

a. 6,600 LED T8 lamps @ $4.89 per lamp = $32,274.00
b. 1,600 LED T5 lamps @ $9.24 per lamp = $14,784.00
c.

The total cost for the above is $47,058.00 which is based on the bid results and should be funded from CP1664.324. Buildings O&M will use in-house labor for installation.

JA/ba
Enclosure
cc: Craig Rhodes, Director of Bldgs. O&M
Chris Rupolo, Buildings O&M, DPW
Peggy Sutherland, MBA, Sr. Energy Coordinator

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
ACTING COMMISSIONER

ERIC M. HOFMEISTER
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E.
Chief Engineer

FROM: Javed Ashraf, P.E.

DATE: April 24, 2019

RE: CP 1664.322 – Energy Conservation @ Various County Bldgs.
DC00XX-19 – Turtle & Hughes @ Interior Lighting in Room 208 (C0010)
DC00XX-19 – All Service Electric @ Interior Lighting in Room 208 (C0010)

There are one hundred thirty 2 x 2 LEDT8 fixtures with electronic ballast that illuminate Room 208 located in the DPW Office Building. The fixtures were retrofitted with LED T8 lamps few years ago but the electronic ballasts are failing and group replacement of ballasts will cost as much as the flat panel LED fixtures after the rebate. Furthermore, the existing fixtures have prismatic lens with non-dimmable ballasts that were installed in 2004 under NYPA Energy Performance Contract.

To ensure reliability and reduce annual operating cost, Facilities Engineering is proposing to replace the existing fixtures with 2 x 2 flat panel LED fixtures. The fixtures will be procured using County contract and will be installed by the contractor.

The table below shows the quantities and product description.

Ln #	Quantity Ordered	Qty UM	Product And Description	Item#	Unit Price	Price UM	Disc Mult	Amount (Net)	Est Delv Date
			PRICING PER CONTRACT ES-030317						
1	130	each	LIT 2BLT2-33L-ADP-LP840		91.38000	each	0.00	11,879.40	04/09/19
			2X2 Vol LED Troff UPC# 19088752973						
			PN: UPC:00000000000						
2	6	EA	LUT MS-Z101-WH		0.00	EA	0.00	0.00	04/09/19
			MAESTRO 0-10V DMR SENSOR DIMME WHITE						
			PN:M4579058 UPC:78427609984						

2 Lines Total

Sub-Total 11,879.40
Order Total 11,879.40

The estimated savings by implementing the proposed upgrade is shown in the table below:

Installed Cost	$40,151	Simple Payback (years)	18.2
Annual Energy Savings (kWh)	4,312	Savings to investment ratio	0.6
Annual Maintenance Cost $	$ 1,500	Life-cycle cost savings (LCS)	$ (17,170)
Annual Cost Savings $	$2,211	Equipment Life (years)	13.7
Discount rate	4%		

The project should be implemented using funds from CP1664.322.

JA:ba
Attachment
cc: Jay Abbott, Special Projects Coordinator
Scott Sinnickson, Special Projects Coordinator
Peggy Sutherland, MBA, Senior Energy Coordinator
Mike Cuomo, Buildings O&M

QUOTE

TURTLE & HUGHES INC. FIRST IN THE LONG RUN
ELECTRICAL & INDUSTRIAL DISTRIBUTOR

T&H HAUPPAUGE
1000 PRIME PL
HAUPPAUGE, NY 11788-4821

Quote #	3469899-00
Via	HOUSETRUCK
Terms	prox 30 nm
Enter Dt	04/09/19
Print Dt	04/09/19 11:13
Expire Dt	

Bill To 400047	SUFFOLK COUNTY DPW APPROPRIATIONS & ACCOUNTING 335 YAPHANK AVE YAPHANK, NY 11980-9736	Ship To	SUFFOLK COUNTY DPW DPW MAINTENANCE BLDG C14 360 YAPHANK AVE YAPHANK, NY 11980-9651

P.O. #	335 Yaphank Ste 208	Reference	
Placed By		Instructions	

Ln #	Quantity Ordered	Qty UM	Product And Description	Item#	Unit Price	Price UM	Disc Mult	Amount (Net)	Est Delv Date
			PRICING PER CONTRACT ES-030317						
1	130	each	LIT 2BLT2-33L-ADP-LP840		91.38000	each	0.00	11,879.40	04/09/19
			2X2 Vol LED Troff UPC# 19088752973						
			PN: UPC:00000000000						
2	6	EA	LUT MS-Z101-WH		0.00	EA	0.00	0.00	04/09/19
			MAESTRO 0-10V DMR SENSOR DIMME WHITE						
			PN:M4579058 UPC:78427609984						

2 Lines Total

Sub-Total	11,879.40
Order Total	11,879.40

Turtle & Hughes standard terms and conditions apply to all sales. A copy can be found at http://www.turtle.com/terms-and-conditions

Notes:		Taken By:	Eric Pucci Ph: 631-864-4242 Fx: 631-864-6644 epucci@turtle.com

ALL SERVICE ELECTRIC INC.
CONTRACTING / DESIGN / ENGINEERING / MAINTENANCE

April 19, 2019

Suffolk County Department of Public Works
335 Yaphank Avenue
Yaphank, NY 11980
Attn. Javed Ashraf, P.E. C.E.M.

Contract # ESNC-080118

RE: SCDPW Building
335 Yaphank Avenue
Yaphank, NY
Second Floor – Design & Construction
New LED Lighting

PROPOSAL

Furnish and install the necessary labor and miscellaneous materials for the installation of new LED lighting fixtures as supplied by SCDPW to include 130 – 2'X2' LED lay in fixtures and 6 – LED dimmers. Provide the necessary debris removal and environmental removal.

Labor: Foreman 112 hrs. @ 104.00 p/h	11,648.00
Mechanic 112 hrs. @ 102.00 p/h	11,424,00
Proj. Supv. 20 hrs.@ 110.00 p/h	2,200.00
Materials:	3,000.00
Total:	$28,272.00

Qualifications:

1. All work to be performed during normal working hours.
2. New fixtures to be stored in basement
3. Fiber barrels to be supplied to accommodate environmental disposal of old fluorescent lamps.
4. Old fixtures to be brought out to dumpster for metal disposal.

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF PUBLIC WORKS

DARNELL TYSON, P.E.
ACTING COMMISSIONER

ERIC M. HOFMEISTER
DEPUTY COMMISSIONER

MEMORANDUM

TO: Michael J. Monaghan, P.E., Chief Engineer
Facilities Engineering

FROM: Javed Ashraf, P.E., C.E.M.
Principal Mechanical Engineer

DATE: September 25, 2019

RE: 1664.314 – Energy Conservation at Various County Buildings
Replace T12 Lamps with LED T8 Lamps in POD Housing at the Riverhead Jail (C0141)
DC0193-19 – AC Electric @ Riverhead Jail

Retrofitting existing interior T12 fluorescent lamps with T8 LED lamps at the Riverhead Jail will result in annual electric and operating cost savings of over 256,329 kWh and $47,294 respectively.

It is recommended that the proposed project be implemented utilizing funds from CP1664.314 with Buildings O&M providing labor to replace the lamps. The table below shows cost/benefit for the project.

Installed Cost Wihtout Rebate	$13,668	Simple Payback W/O Rebate (years)	0.3
Installed Cost After Rebate		Simple Payback After Rebate (years)	
Annual Energy Savings (kWh)	295,854	Savings to investment ratio	31.9
Annual Maintenance Cost $	$ 5,000	Life-cycle cost savings (LCS)	$ 422,827
Annual Cost Savings $	$53,816	Equipment Life (years)	10.00
Discount rate	4%	Reeduction in CO2e (tons)	85

JA:ts
cc: Jay Abbott, Special Projects Supervisor
Peggy Sutherland, Senior Energy Coordinator
John Driver, Buildings O&M DPW

SUFFOLK COUNTY IS AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

335 YAPHANK AVENUE ■ **YAPHANK, N.Y. 11980** ■ **(631) 852-4010**
FAX (631) 852-4150

DATE: 08/26/19
QUOTE#: CM82519RJ
JOB NAME: Riverhead Jail

A/C ELECTRIC
741 SMITHTOWN BYPASS
SMITHTOWN, NY 11787
(P)631-265-2252
(F)631-265-2488

TO: Suffolk County
ATTN: Javed

WE THANK YOU FOR YOUR INQUIRY AND ARE PLEASED TO QUOTE AS FOLLOWS

QTY	FIXT TYPE	DESCRIPTION / CAT#	MFG	NOTES	UNIT	EXT
1600	2X4 lamp	T8 10.5 46G 840 SD BYP	RAB		$8.40	$13,440.00
30	2x2 lamp	T8 9 24G 840SD BYP	RAB		$7.61	$228.30
		TOTAL LOT PRICE : $13,668.30				$13,668.30
		Pricing as per Suffolk County Contract #L-072817				

T8-10.5-48G-840-SD-BYP

RAB | Lamps

Project:	Type:	Prepared By:	Date:

UPC: 19813833378

Features and Benefits

FLUORESCENT REPLACEMENT - Replace conventional fluorescent T8 and T12 linear tubes

EASY TO INSTALL - Simply cut the ballast out, and rewire sockets directly to line voltage

SAVE ENERGY AND MONEY - Provides same output as fluorescent but uses far less energy

SAVE ENERGY AND MONEY - Provides same output as fluorescent but uses far less energy

ENCLOSED FIXTURE RATED - May be used in enclosed and open fixtures

DIFFUSION COATING - Will maintain the same light quality over time and won't yellow, shrink, or wrinkle

BALLAST BYPASS - Internal driver eliminates the need for external ballasts or drivers

INSTANT ON - No warmup time required, full brightness instantly

LOW FLICKER - Less than 5% flicker

MERCURY FREE - Environmentally friendly vs fluorescent technologies

SHUNTED AND NON-SHUNTED - Works on shunted and non-shunted sockets

SINGLE OR DOUBLE-ENDED WIRING - Can be wired using either single-ended or double-ended method for maximum flexibility

Technical Specifications

Product Type	Linear
Bulb Shape	T8
Nominal Length	4FT
Finish	Frosted
Wattage	10.5W
Wattage Equivalency	25W/26W/30W/32W Fluorescent
Typical Lumen Output	1700
Efficacy	160 lm/W
Color Temperature	4000K Cool White
CRI	82
Base Type	G13
L70 Lifespan	50,000 hours
Operating Temperature	-20°C - 45°C
Dimmable	No
Beam Angle	220°
Warranty	5-Year, No-Compromise Warranty
Installation Type	Type B, Single or Double Ended wiring
For Use in Emergency Fixtures	No
For Use Outdoors in Open Fixtures	No

Electrical Characteristics

Input Voltage	120-277V
Power Factor	>0.9
Operating Frequency	50 / 60 Hz
Input Current @ 120V	106mA
Input Current @ 277V	44mA

Listings

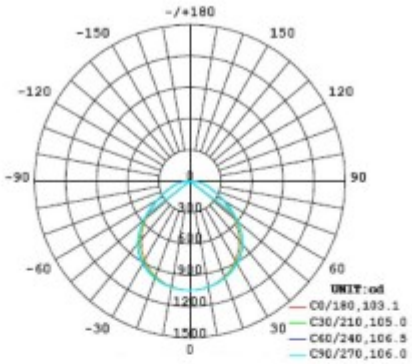
UL Recognized	Yes
UL Classified	Yes
NSF Listing	Meets NSF/ANSI standards for use in Food Zone (non-contact), Splash, and Non-Food Zones
DLC Listed	This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Model Number	T10047
DLC Product Code	PLJCU2N7A1YY
CEC Status	Lawful for sale in California

Copyright © 2019 RAB Lighting All Rights Reserved Note: Specifications are subject to change at any time without notice

T8-10.5-48G-840-SD-BYP

RAB | Lamps

Light Distribution



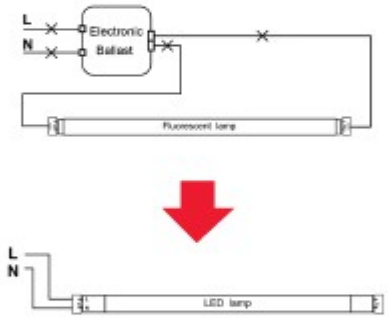
Minimum Compartment Size

Length x Width x Height [mm]	Lamp Quantity
47.6 x 23.8 x 3.0	4

Case and Pallet Dimensions

	QTY	LENGTH	WIDTH	HEIGHT
CASE	25	48.8	5.9	5.9
PALLET	1200	47.2	40	51.3

Wiring Diagram



Dimension

Need help? Tech help line: (888) 722-1000 Email: custserv@rablighting.com Website: www.rablighting.com
Copyright © 2019 RAB Lighting All Rights Reserved Note: Specifications are subject to change at any time without notice

T8-9-24G-840-SD-BYP

RAB | Lamps

Project:	Type:	Prepared By:	Date:

UPC: 19813751771

Features and Benefits

FLUORESCENT REPLACEMENT - Replace conventional fluorescent T8 and T12 linear tubes

EASY TO INSTALL - Simply cut the ballast out, and rewire sockets directly to line voltage

SAVE ENERGY AND MONEY - Provides same output as fluorescent but uses far less energy

SAVE ENERGY AND MONEY - Provides same output as fluorescent but uses far less energy

ENCLOSED FIXTURE RATED - May be used in enclosed and open fixtures

DIFFUSION COATING - Will maintain the same light quality over time and won't yellow, shrink, or wrinkle

BALLAST BYPASS - Internal driver eliminates the need for external ballasts or drivers

INSTANT ON - No warmup time required, full brightness instantly

LOW FLICKER - Less than 5% flicker

MERCURY FREE - Environmentally friendly vs fluorescent technologies

SHUNTED AND NON-SHUNTED - Works on shunted and non-shunted sockets

SINGLE OR DOUBLE-ENDED WIRING - Can be wired using either single-ended or double-ended method for maximum flexibility

Technical Specifications

Product Type	Linear
Bulb Shape	T8
Nominal Length	2FT
Finish	Frosted
Wattage	9W
Wattage Equivalency	17W Fluorescent
Typical Lumen Output	1150
Efficacy	128 lm/W
Color Temperature	4000K Cool White
CRI	82
Base Type	G13
L70 Lifespan	50,000 hours
Operating Temperature	-20°C - 45°C
Dimmable	No
Beam Angle	240°
Warranty	5-Year, No-Compromise Warranty
Installation Type	Type B, Single or Double Ended wiring
For Use in Emergency Fixtures	No
For Use Outdoors in Open Fixtures	No

Electrical Characteristics

Input Voltage	120-277V
Power Factor	0.9
Operating Frequency	50 / 60 Hz
THDI	<20%

Listings

UL Recognized	Yes
UL Classified	Yes
NSF Listing	Meets NSF/ANSI standards for use in Food Zone (non-contact), Splash, and Non-Food Zones
DLC Listed	This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Model Number	T8-9-24G-840-SD-BYP
DLC Product Code	PROTUT1T
CEC Status	Lawful for sale in California

Need help? Tech help line: **(888) 722-1000** Email: **custserv@rablighting.com** Website: **www.rablighting.com**

Copyright © 2019 RAB Lighting All Rights Reserved Note: Specifications are subject to change at any time without notice

T8-9-24G-840-SD-BYP

RAB | Lamps

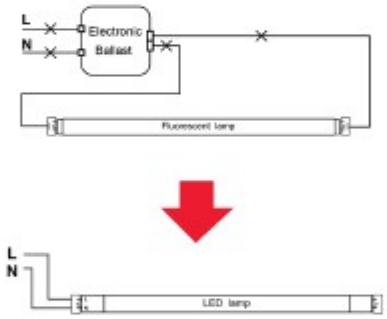
Minimum Compartment Size

Length x Width x Height [mm]	Lamp Quantity
24.0 x 23.9 x 3.4	4

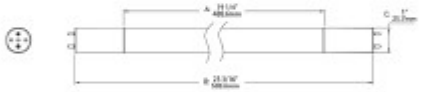
Case and Pallet Dimensions

	QTY	LENGTH	WIDTH	HEIGHT
CASE	25	25	6.3	6.5
PALLET	1750	49.2	39.4	50.2

Wiring Diagram



Dimension



Copyright © 2019 RAB Lighting All Rights Reserved Note: Specifications are subject to change at any time without notice