



Bill Audit & Analysis Report

Client:	City of North Tonawanda
Commodities:	Electricity, Gas
Site:	Multiple
Utility & Account(s):	National Grid, National Fuel; Multiple Accounts
Date Generated:	July 10, 2020
Report Period:	March 2018 – February 2020

Surprises are good in sports and movies. In our industry, they cost people money. So, we created a system that sends surprises into extinction. It's called ControlFreak.

This is how you lead in the Energy Age.



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Bill Audit Process and UBMS

National Grid accounts were provided and added to the National Grid portal allowing for digital bill copies to be retrieved. These digital bill were uploaded into Stark Intel’s proprietary Utility Bill Management System software, Control Freak. This allowed for the information from the utilities bill such as meter reads, line item charges, cost and usage breakdown, and more to be available on a user interface and accessible in a structured database where queries may be run.

129 electric accounts were provided (60 of which were traffic lights/signals) and 24 months of bill data was processed. After a thourough analysis, there were no substancial errors in the bills.

Control Freak Bill Page Example:

Account: 7973745100
Amount Due:
Bill Date:
Due Date:
Type: Old
Bill Id: 1415831

57550105
1583609(Electric)

[+ Add Meter](#)

Service Information

Billing As:

Meter Name: Rate Class:

Service Dates: to Days: Adjustment: Calendar Days:

Type	Start Read	Est.	Meter Reads End Read	Est.	Multi.	Unit
(+) General						

#	Description	Use	Line Items Cost	Mapping
1	Demand	<input type="text" value="56"/> kW		Delivery,Electric, Demand (kW - Metered) ✖
2	Electricity Supply Cost (\$)		\$ <input type="text" value="395.43"/>	Supply,Electric, Supply Cost (\$) ✖
3	Electricity Supply Usage (kWh)	<input type="text" value="16,320"/> kWh		Supply,Electric, Usage ✖
4	Customer		\$ <input type="text" value="52.52"/>	Delivery,Electric, Delivery Cost (\$) ✖
5	Demand		\$ <input type="text" value="651.84"/>	Delivery,Electric, Delivery Cost (\$) ✖
6	Demand (kW - Billed)	<input type="text" value="56"/> kW		Delivery,Electric, Demand (kW - Billed) ✖
7	Consolidated Billing Credit		\$ <input type="text" value="-0.98"/>	Delivery,Electric, Delivery Cost (\$) ✖
8	RDM		\$ <input type="text" value="17.92"/>	Delivery,Electric, Delivery Cost (\$) ✖
9	SBC		\$ <input type="text" value="89.61"/>	Delivery,Electric, Delivery Cost (\$) ✖
1	Legacy Transition Chrg		\$ <input type="text" value="42.27"/>	Delivery,Electric, Delivery Cost (\$) ✖
1	Transmission Rev Adj		\$ <input type="text" value="-31.5"/>	Delivery,Electric, Delivery Cost (\$) ✖
1	Tariff Surcharge		\$ <input type="text" value="8.3"/>	Delivery,Electric, Delivery Cost (\$) ✖
1	Paperless Billing Credit		\$ <input type="text" value="-0.41"/>	Delivery,Electric, Delivery Cost (\$) ✖
1	Delivery Usage	<input type="text" value="16,320"/> kWh		Delivery,Electric, Usage ✖
Total:			\$ <input type="text" value="1,225.00"/>	

(+) Add

▼ Reports ▼ Tools ▼ Account

Profile: City of North Tonawanda
Building: City Hall : 218 Payne Ave, North Tonawanda, NY ...
Vendor: National Grid
Account: 7973745100
Remit To: National Grid : PO Box 11742, Newark, NJ
Last Bill: 1415854, image

1 Alerts [Ticket Control](#) [Final Bill](#)

Meter	Alert
● 1583609	The bill has the lowest known cost. 🌐

Statistics (1)

Id	Type	Usage	Unit Cost
1583609	Electric	16,320	\$0.0751

Attachments

File Name

[1415831.pdf](#) 📄

Alerts

Built into the software is an alert system, that automatically generates alerts with severity, description, and details.

There are 94 standardized alerts that the UBMS software checks against, with several examples below. There were a total of 1033 alerts in the report period, with some bills having multiple alerts. Each of these alerts was reviewed by an Energy Analyst to determine if there were any billing errors.

Example of Alerts

- The rate code on this bill is different from the prior bill.
- Total usage is less than the sum of the line items.
- Delivery usage is not equal to supply usage
- Bill has invalid line items.
- Meter read energy type does not equal Meter energy type

Potential Billing Errors Found

Account Number	Address	Vendor	Bill Alert	Potential Issue Notes
--	1818 Sweeney St, Golf Cart Bldg	National Grid	The bill has a low load factor.	Very low load factor (high demand, low consumption). Likely due to operational usage patterns but could be error in demand readings.
--	Doebler Dr			
--	6 Rumbold Ave			
--	East Ave Pump			
--	18 Main St, (Gateway Park)			
--	81 Old Falls Blvd, Holiday Park			
--	1333 Nash Rd N of Pioneer Dr			
--	187 Divison St			
--	Ward Rd			
--	585 Erie Ave			
--	Doebler Dr	National Grid	The metered demand is the same as the prior bill.	Same billed demand several bills in a row (3-4 month pattern). Meter reading states actual. This is unlikely and may be an issue.

Rate Class

Transmission Operators (utilities) provide multiple rate structures based upon an end-user’s kWh consumption, demand profile, and voltage level. While National Grid only has three rate structures, labelled as service classes, all 129 electric accounts were reviewed for possible alternatives.

National Grid Rate Class Qualifiers

Standard Service (SC-1)	Small General (SC-2)	Large General (SC-3)
Standard electric rate for the majority of residential customers, as other rates require special conditions. Service is also available for church and farm customers.	This service is for commercial or industrial customers whose monthly measured demand is less than 100kW.	This service is for commercial or industrial customers whose monthly measured demand exceeds 100kW in each of the previous 12 consecutive months.
	Customers can be served under the non-demand or demand pricing schedules. A business that uses greater than 2,000 kWh in each month for four consecutive months would be classified as a demand customer.	

Accounts Qualified for Alternative

Account	Address	Vendor	Rate Class	Alternative	Annual Savings
--	Doebler Dr	National Grid	Electric SC2D T&D	Electric SC3 T&D	\$ (2,817.25)

The only account that qualifies for an alternative rate class is [acct # removed]. The estimated annual savings is negative, meaning that the alternative rate would cost more than the current rate. This is largely due Electric SC3 T&D having a higher customer charge (\$337/month higher) that negates the savings from a lower demand charge (about \$97/month).

Rate Analysis

Billed rates are analyzed by the UBMS software and reviewed by the Energy Analyst. These rates are compared against approved utility tariffs (typically released annually) and rate statements (released annually and monthly). Below are the billed line items and the source of the rates reviewed. Supplier rates were analyzed but not compared to contracted rates as no supply contracts were provided for this analysis.

Result

There were no billed rates during the report period that deviated from the utility tariffs or rate statements.

Line Items Reviewed with Source

Line Item	Source
Basic Service (not including usage)	Tariff
Consolidated Billing Credit	Tariff
Customer Charge	Tariff
Delivery Cost	Tariff
Demand Cost	Tariff
Energy Efficiency Project CoPay	Rate Statement
ESRM	Rate Statement
Late Fee	Tariff
Legacy Transition Charge	Rate Statement
Merchant Function	Rate Statement
Minimum Demand	Tariff
Paperless Billing Credit	Tariff
RDM	Rate Statement
Reactive Billed	Rate Statement
SBC	Rate Statement
Tariff Surcharge	Tariff
Transmission Rev Adj	Rate Statement
Electricity Supply Cost	Supplier
Electricity Supply On and Off Peak Cost	Supplier
Sales Tax Cost	Supplier

Meter Reads

Meter reads typically occur every 28-34 days, based on an account’s billing cycle, and can be read by the utility, by the customer, or estimated. When there are consecutive estimated meter reads from one bill to another, there may be an issue with accuracy.

Delivery Services

Type of Service	Current Reading	-	Previous Reading	=	Difference	x	Meter Multiplier	=	Total Usage
Energy	57355 <i>Actual</i>		56595 <i>Actual</i>		760		1		760 kWh
Total Energy Usage									760 kWh

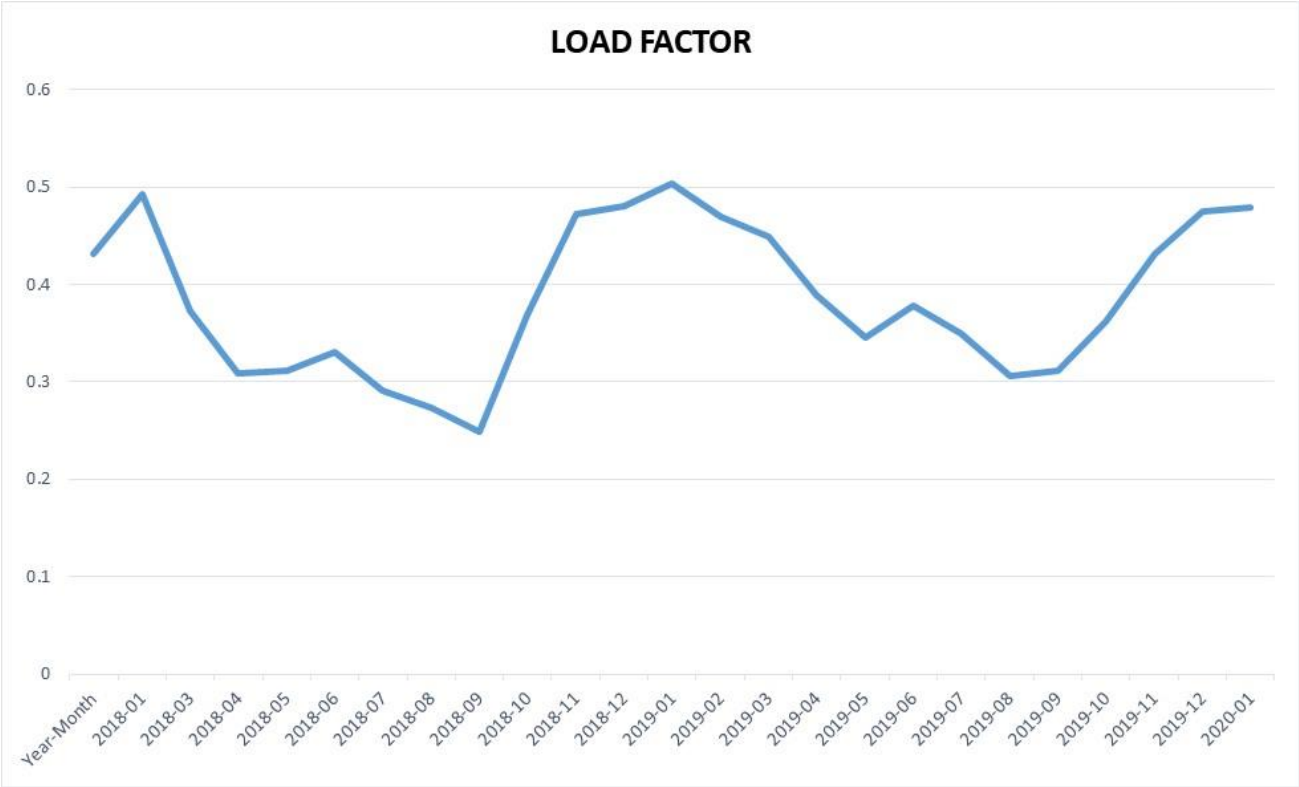
Result

There were 0 instances of consecutive estimated meter reads during the report period.

Load Factor

This ratio represents the efficiency at which you utilize the power you receive from the utility company. The higher the ratio (up to 1.0), the more efficient the electricity has been used. The load factor varies throughout the year, decreasing in the summer and increasing in the winter. This can be efficiency rating can be increased by spreading out demand, which will in turn lower the bill costs. Improvements can be made through measures such as more efficient cooling systems, staggering pump schedules, strategic cooling zones and set points, etc.

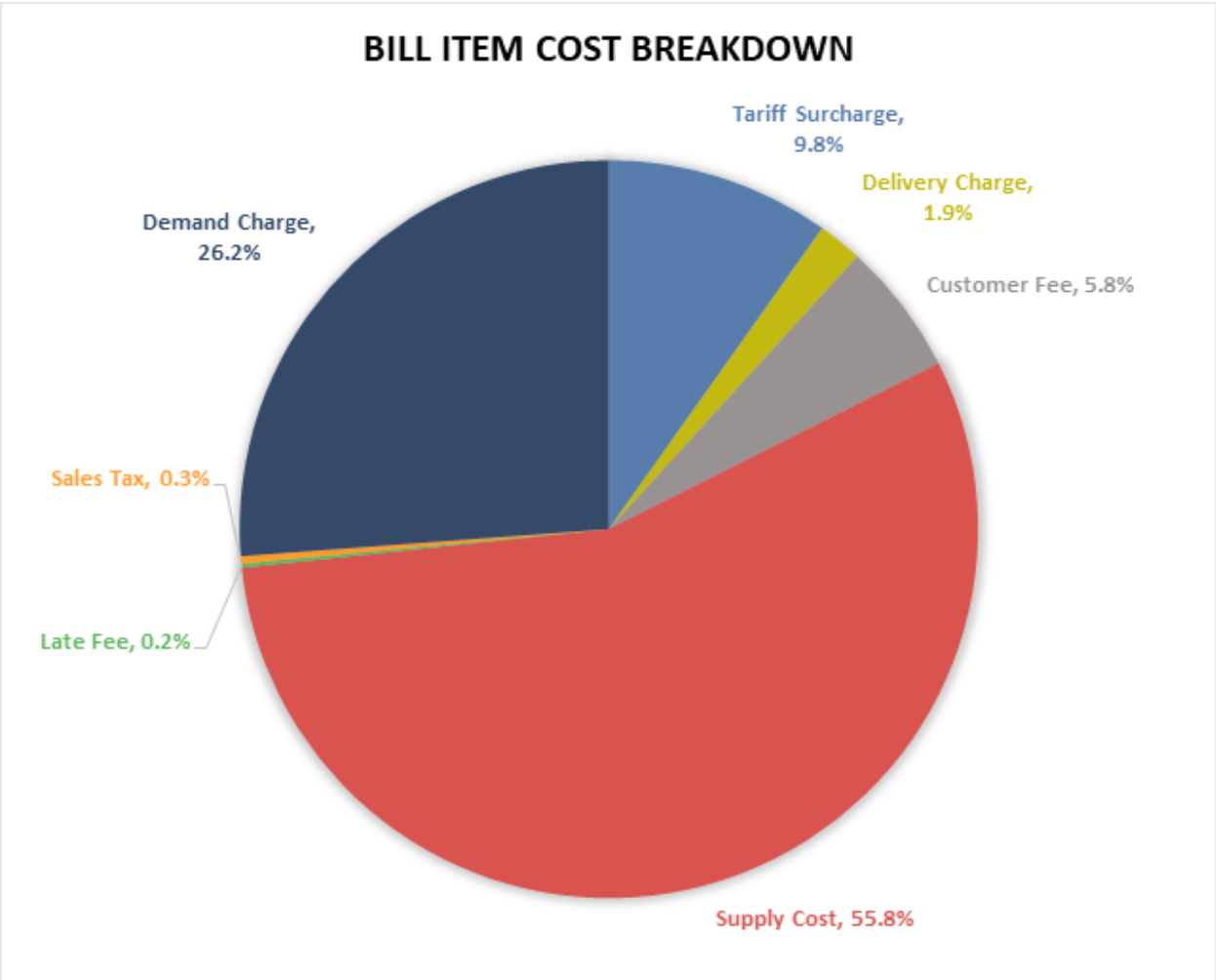
	Account	Address	Average LF
Minimum	--	Doebler Dr	0.096168404
Median	--	585 Erie Ave	0.370883502
Maximum	--	1357 Erie Ave	0.793989538



Line Item Breakdown

Your utility costs are comprised of different components. Knowing the major components will allow you to focus on the right areas to quickly produce savings without the need for additional projects. Please note that this is an aggregate breakdown of the total values in the report period and vary by account.

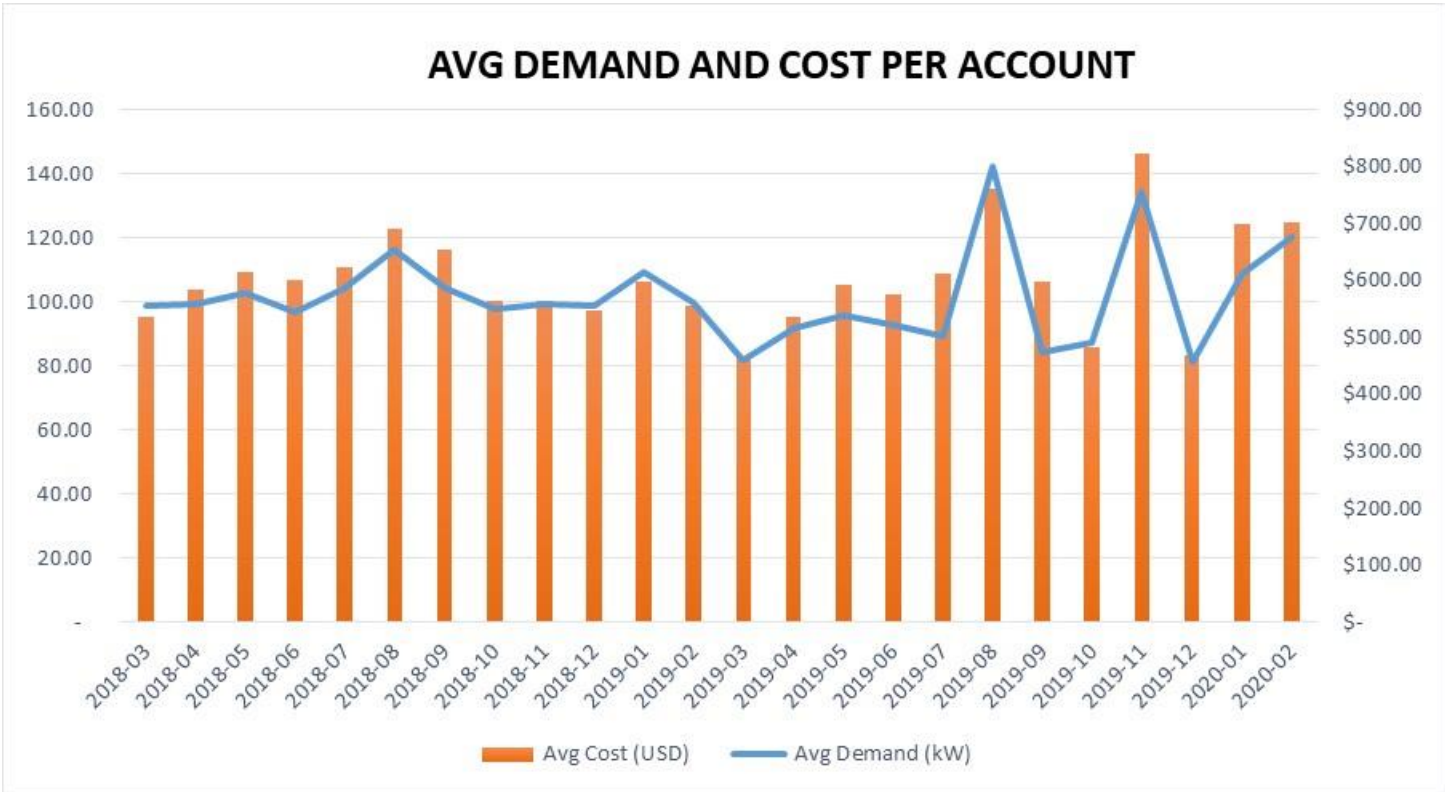
The two largest components, supply costs and demand charges, fall into the acceptable range of 49-58% and 21-29%, respectively.



Demand Charges

Demand charges comprise approximately 26% of your electricity bills. The demand (blue line with kilo-watt values on the left-hand y-axis) directly correlates with the demand charge (orange bars with the dollar costs on the right-hand y-axis).

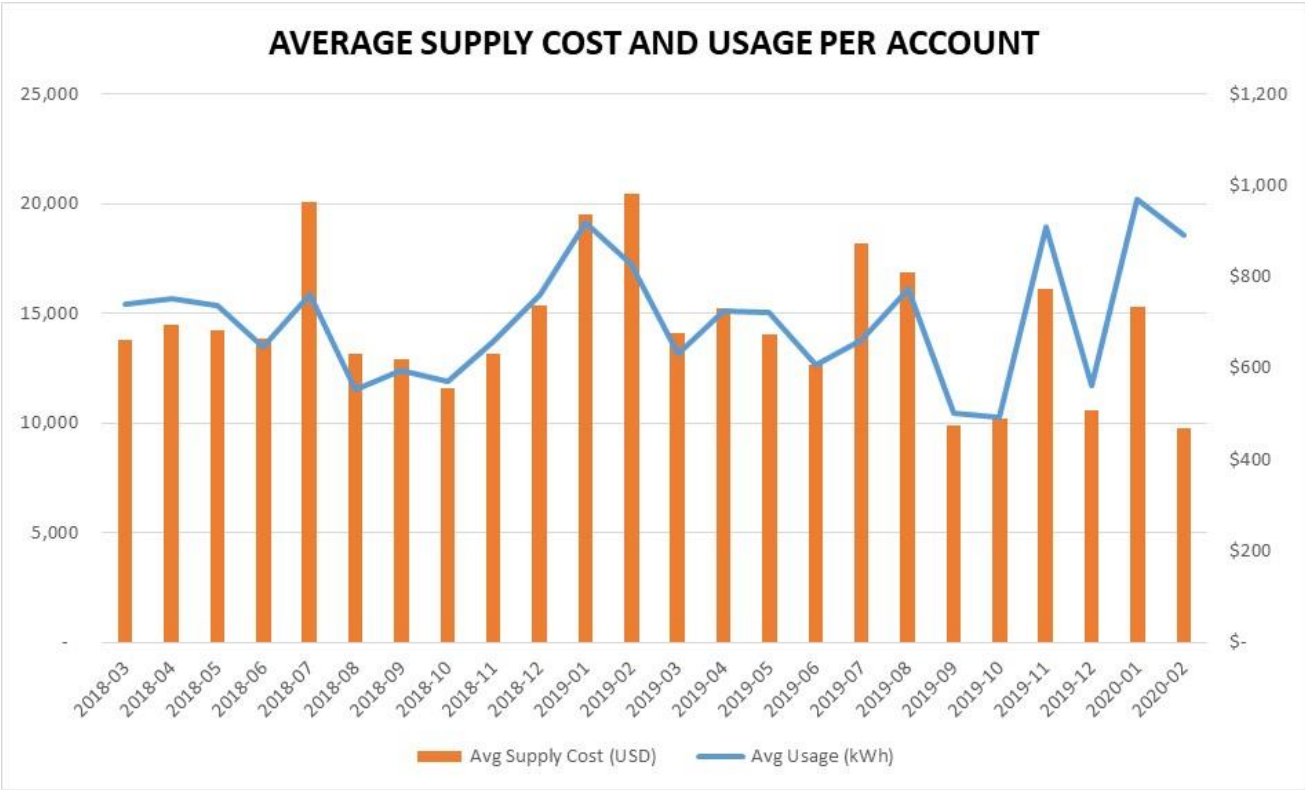
Demand is relatively consistent throughout the year, albeit this is largely due to the steady load profile of the Wastewater Treatment Plant, which covers up to 70% of the total monthly kW demand.



Supply Charges

Supply Charges comprise approximately 56% of your electricity bills.

The average electric supply rate during the report period is .04301. New York State is deregulated for electric and gas, electric supply can be “shopped” to find the best price.



Taxes

No tax-exempt forms were provided for this audit. The majority of the accounts reviewed appear to be tax exempt for both delivery and supply portions of the bill. Below are four accounts charged sales tax during the report period on the supply purchased through New Wave Energy Corp. This could be in error. To rectify any misbilling, the supplier must be contacted. A customer is often able to recoup these charges.

Accounts with Taxes Paid

Account	Address	Tax Rate	Total Taxes Paid during Report Period	Note
--	1357 Erie Ave	8%	\$ 228.09	Currently being charged
--	585 Erie Ave	8%	\$ 292.29	Currently being charged
--	1 Archer Street	8%	\$ 2,831.57	Last Charged August 2019
--	1000 River Rd	8%	\$ 22.47	Last charged July 2018

Example

Supply Services

SUPPLIER NEW WAVE ENERGY CORP
 434 DELAWARE AVE
 BUFFALO NY 14202
 PHONE 716-887-9700 ACCOUNT NO ~~#####~~

Additional Supply

Electricity Supply	0.02423 x 3639 kWh	88.17
Sales Tax	8.0 %	7.05
Total Additional Supply		\$ 95.22
Total Supply Services		\$ 95.22

Operational Cost Savings Opportunities

The cheapest energy is the energy that is never consumed. Adjusting the way your location uses both energy and demand can add up to large amounts of savings over years. Below is a simple breakdown of what savings look like for each category.

Savings from Power and Energy Reductions

Power Demand – kW

Reduction %	Estimated Savings
2%	\$ 3,060 / year
6%	\$ 9,216 / year
8%	\$ 12,300 / year
12%	\$ 18,456 / year

Energy Consumption - kWh

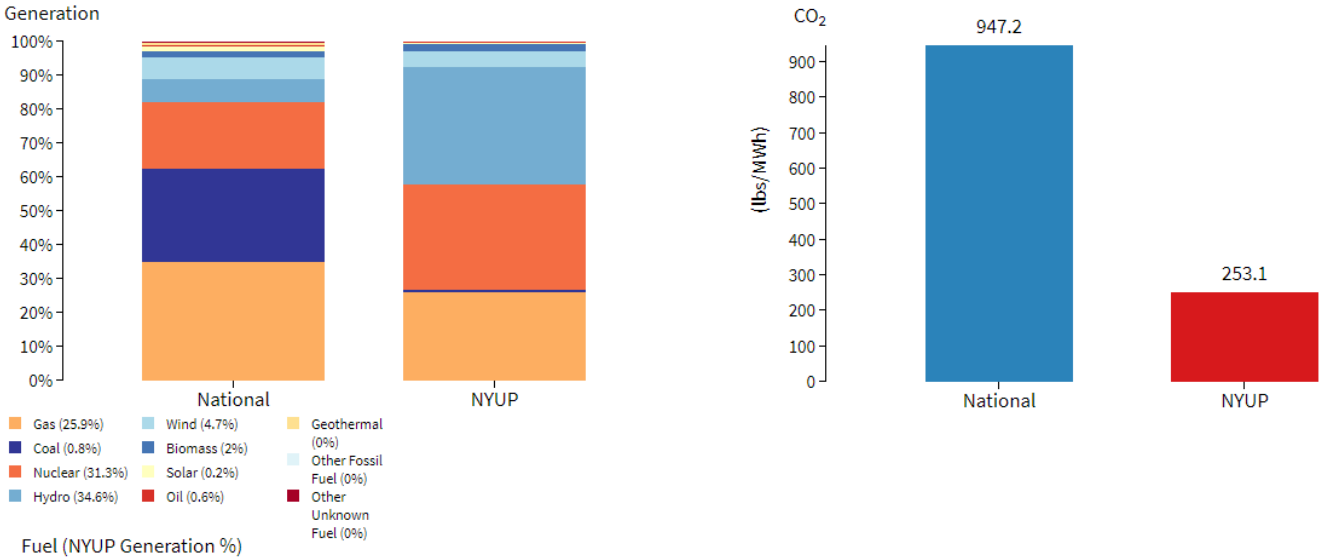
Reduction %	Estimated Savings
2%	\$ 5,256 / year
6%	\$ 16,440 / year
8%	\$ 22,044 / year
12%	\$ 33,240 / year

Generation Profile

Your regional power generation is comprised fairly equally by hydro, nuclear, and gas. Since there is opportunity to shop for supply in the deregulated state of New York, there are opportunities to utilize more sustainable options such as green supply contracts or even behind the meter renewable generation.

Generation profiles are established by eGrid subregion (sections of the electric grid as determined by the EPA). The subregion for City of North Tonawanda is NYUP.

Total tons of CO2 during the report period is 6,316 or an average 263 tons per month.



Gas

Overview

Bills for 19 subaccounts under the Niagara County Aggregation Group through Fluent Energy as well as 5 accounts through National Fuel were reviewed.

Rate Class

Rate classes are not listed on the Niagara County aggregation bills. The National Fuel accounts are all currently under the most beneficial rate class available for each account.

Billed rates

National Fuel's historic pricing is available and all bills match the delivery rates listed.

Supply is billed separately for choice providers and are under different suppliers as of August 2019:

Account	Address	Vendor	Rate Class	Supplier
--	18 Main St	National Fuel	06-SC03 - NY GEN NON-RES SALES	Utility
--	1333 Nash Road	National Fuel	06-SC03 - NY GEN NON-RES SALES	Utility
--	830 River Rd	National Fuel	48-SC18 - TC-1.1M DUAL	EnergyMark LLC
--	585 Erie Ave	National Fuel	06-SC03 - NY GEN NON-RES CHOICE	New Wave Energy
--	1 Archer Street	National Fuel	06-SC03 - NY GEN NON-RES CHOICE	New Wave Energy
Multiple	Multiple	County of Niagara	Not Listed	Fluent Energy

Additional

Account (830 River Rd) has many estimated reads in a row. Concurrent estimated reads can lead to incorrect usage quantities and are often caused by faulty meters or inaccessibility to the meter for the utility. Especially considering that this account consumes the most gas out of the portfolio, accurate meter reads are necessary.

Summary

Focus Points

- Billed rates during the report period are accurate according to tariffs and rate schedules
- A potential issue with the demand readings for (Doebler Dr)
 - Repeated demand readings may indicate that readings were not actual and/or accurate
- Bill items comprise acceptable portions
- Four accounts were charged sales tax for the supply portion, two of which are currently being charged. This may be in error and the sales tax paid may be recoverable
 - This would be taken up with your electricity supplier, New Wave Energy
- Late fees total \$1,944 over report period
- Current rate classes are optimal
 - Only (Doebler Dr) qualifies for an alternative rate class. The annual cost would be substantially higher under this alternative. Recommended to not move.
- Median average load Factor of 37% is less than ideal
 - To improve load factor, more efficient use of equipment is recommended, such as staggering start-ups to reduce peak demand
 - Will save on demand costs (26% of costs)

Opportunities

- Update supply tax rate
 - Potentially recoup \$168 for past 12 months, or \$3,374 for entire report period
 - Potential future savings of \$22/month
- Paying bills promptly would save \$81/month in avoided late fees
- Reduction of 2% power and consumption
 - Would result in \$8,316 annual savings
- Determine if National Fuel is able to read meters for 830 River Rd. Ensure that actual meter reads occur in the future
- Determine if National Grid is able to read meters for (Doebler Dr). Ensure that actual meter reads occur in the future