Town of Perinton Strategic Energy Sustainability Plan

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Town of Perinton Strategic Energy Sustainability Plan

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A. Baseline Inventory

1. Energy Providers

Fairport Electric

The Town of Perinton purchases most of its electricity from Fairport Electric, a municipal electric company owned and operated by the Village of Fairport. Fairport Electric provides electricity to the Town Hall and Community Center, Department of Public Works, various street lighting, and other Town-owned facilities located within the Fairport Municipal Commission (FMC) service area (see Figure 1).

FMC oversees the operation and administration of Fairport Electric. FMC Board members are appointed by the Mayor of Fairport and must be approved by the Village Board of Trustees. The Commission's offices are in the Village Hall and the Operations Center is on Liftbridge Lane East.

Fairport Electric, one of 47 municipally owned power companies in New York, has more than 14,000 customers in the Village of Fairport and the Town of Perinton. Electricity rates for Fairport Electric customers are much lower, by approximately two-thirds, than those charged by privately owned utilities.

Fairport's System Overview:

- Total Customers: 16,474
- Residential Customers: 15,086
- Commercial/Industrial Customers: 1,313
- System Peak: Winter 109 MW
- Average Residential Rate: 3.5¢ / kWh

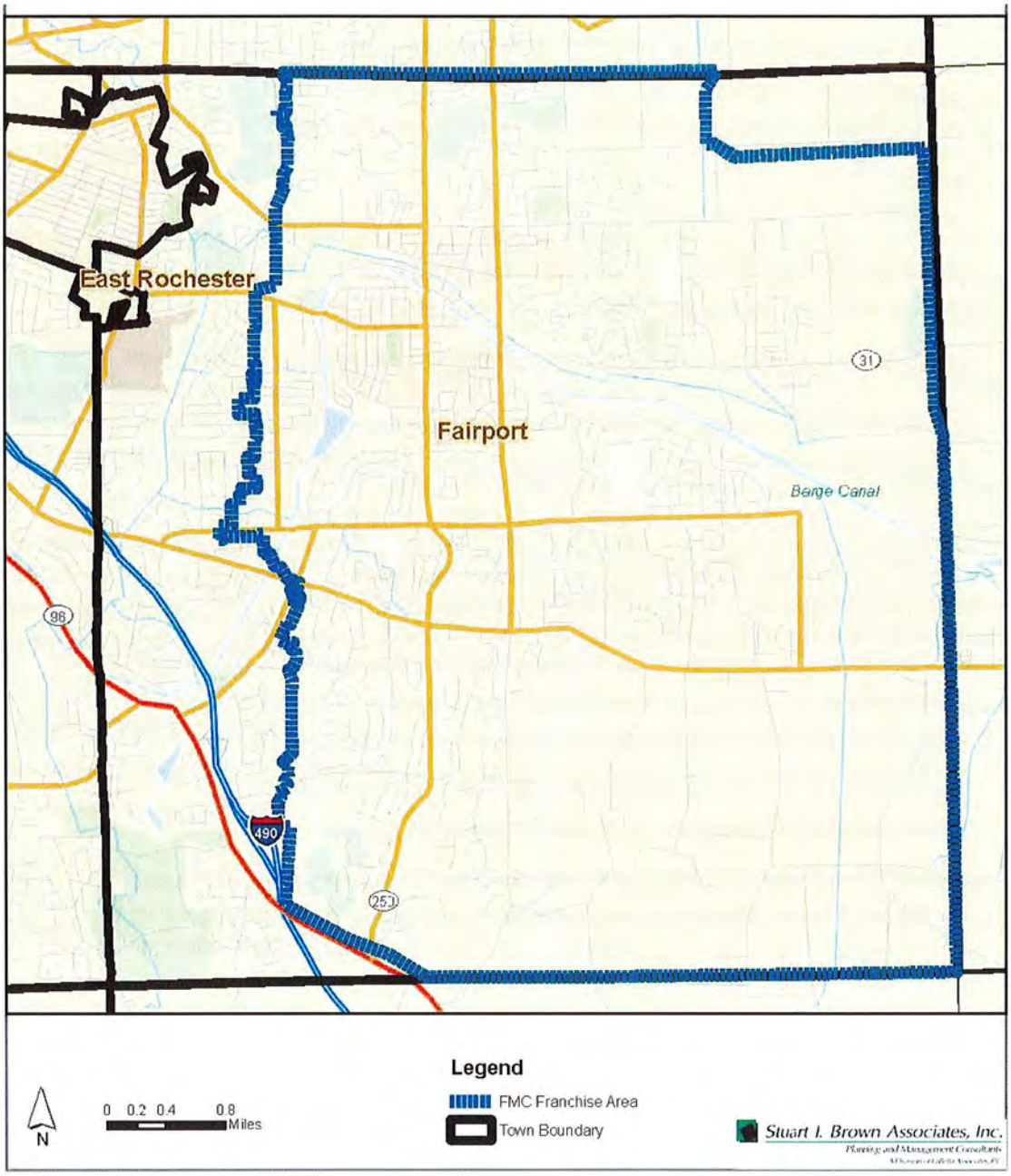
Rochester Gas & Electric

The Town of Perinton purchases all of its natural gas, as well as electricity for facilities outside of the FMC service area, from Rochester Gas & Electric (RG&E). RG&E is a subsidiary of Iberdrola USA. RG&E provides electricity and/or natural gas to more than 300,000 customers in the nine-county region around Rochester.

Vehicular Fuels

The Town of Perinton purchases gasoline and diesel fuel in bulk and maintains a storage and dispensing facility at the Department of Public Works Operations Center on Cobbs Lane.

Figure 1: Fairport Municipal Commission Franchise Area Map



2. Summary of Energy Use, Cost and Greenhouse Gas Emissions

a. Methodology

The total baseline energy use for Town-owned buildings and operations was determined based on an analysis of reported use and expenditures for:

- Electricity
- Natural gas
- Gasoline
- Diesel

The inventory did not address the management of solid waste generated by Town facilities and operations or the energy use and greenhouse gas emissions associated with individual commutes to work by Town personnel.

For electricity and natural gas use, the 12-month period from December 2010 through November 2011 was selected for the baseline year. (In the body of the report, the baseline year is referred to as simply 2011.) Invoices for energy purchased during this period were used to compile annual energy use and billed cost. The baseline year of 2009 was used to compile data for transportation fuels of gasoline and diesel.

Town-wide energy use is summarized by type (electricity, natural gas, gasoline, diesel fuel) and grouped by end use (town buildings, streetlights/traffic signals, sewer pump lift stations, and town park facilities). Energy use is presented separately for the larger buildings: the Town Hall/Community Center, the Department of Public Works, and the Parks Operation Center. Tabular summaries of energy use by facility are included in Appendix A1 for electricity provided by FMC and in Appendix A2 for gas and electricity provided by RG&E. In addition, an inventory of equipment was developed for several of the Town's buildings and park recreational facilities (see Appendix B) based on information collected during site visits.

b. Summary of Perinton's Annual Energy Use

The Town of Perinton expended $595,000 on energy and energy-related charges during the baseline years. As can be seen in Table 1 below, electricity was the largest expense, followed by diesel fuel, natural gas, and gasoline. It should be noted that some of the diesel fuel purchased was pre-blended with kerosene during the winter months.

Table 1: Cost of Energy by Type
Town of Perinton, Baseline

Type	Amount	Units	Cost
Electricity	3,821,500	kilowatt-hours	$261,000
Natural gas	173,800	therms	$129,000
Gasoline	24,440	gallons	$52,700
Diesel Fuel	79,550	gallons	$152,300
		Total =	**$594,000**

c. Greenhouse Gas Emissions Summary

Converting to Common Units:

Different forms of energy are billed using the unit of measure appropriate for each energy type. For example electricity is billed in kilowatt-hours (kWh) whereas natural gas delivery is measured in units of therms. In order to compare overall building consumption among these different types of energy, conversion factors are usually applied to present the amount of energy consumed in the common unit of" million BTU", or "mm BTU".

Site Energy vs. Source Energy:

In order to make a meaningful comparison between the amount of greenhouse gas emissions associated with using different fuel types, it is necessary to compare the amount of energy consumed not just at the building, referred to as "site energy", but the energy required to generate, distribute, and transmit the fuel from the energy source to the end user. This amount is referred to as "source energy". To calculate the source energy from the fuel delivered to the site, national average source-site ratios have been developed.

For example, electricity has a source-site ratio of 3.34 which means that for every 1 kWh delivered to, and used at the site, 3.34 kWh of energy is actually expended to account for the energy needed to generate and distribute the electricity and for energy losses through transmission lines. Natural gas, on the other hand, has a source-site ratio of only 1.047 which reflects the fact that gas is a fuel which is consumed on-site and transmission losses are generally low. Similar losses are also present in gaseous and liquid fuel delivery so the site-source ratios for these fuels are also closer to 1.0 as well. Renewable energies, generated, on or near site, have a ratio of exactly 1.0.

CO_2 Emission Factor: The burning of each type of fuel creates a different amount of carbon dioxide (CO_2) that is emitted into the atmosphere; typically this is termed the "CO_2 Emission Factor". For natural gas, gasoline, and diesel these factors are given standard values derived from national averages based on energy embodied in each fuel. Electricity is not, strictly speaking, a fuel. It is a product typically generated by a mix of different fuels depending on its source utility. A national average of 392.7 lb CO_2 per mmBTU is used for some benchmarking systems, such as Energy Star's Portfolio Manager. For the purpose of this report, however, a factor of 208.8 lb CO_2 per mmBTU was used to reflect the use of hydroelectric power used by the utility grid for the Rochester region.

Table 2 summarizes the energy use, in mmBTU's and the source CO_2 equivalent for each type of energy consumed by the Town of Perinton during the baseline years. As is typical, when considering a mix of fuels, electricity use contributes a greater share to the gas emissions given the higher site-source ratio of electricity. This ratio is a fixed figure that is not under the control of the town however energy conservation, and the purchase of electricity from utilities that utilize a higher portion of renewable energy sources to generate their product, can meaningfully lower greenhouse gas emissions.

Table 2: Summary of Energy Use and Associated Greenhouse Gas Emissions
Town of Perinton, Baseline

Type	Town of Perinton Energy Use			Units	Site mmBTU[1]		Source CO_2 Equivalent	
	FMC	RG&E	Total		Amount	% of Total	Total Lbs Emitted	% of Total
Electricity	3,682,000	139,500	3,821,500	kWh	13,043	29.4%	9,094,900	67.6%
Natural Gas	0	173,800	173,800	therms	17,380	39.2%	2,122,600	15.8%
Gasoline	N/A	N/A	24,440	gallons	2,847	6.4%	449,300	3.3%
Diesel Fuel	N/A	N/A	79,550	gallons	11,031	24.9%	1,797,000	13.3%

[1] 1 mmBTU = 1,000,000 BTU

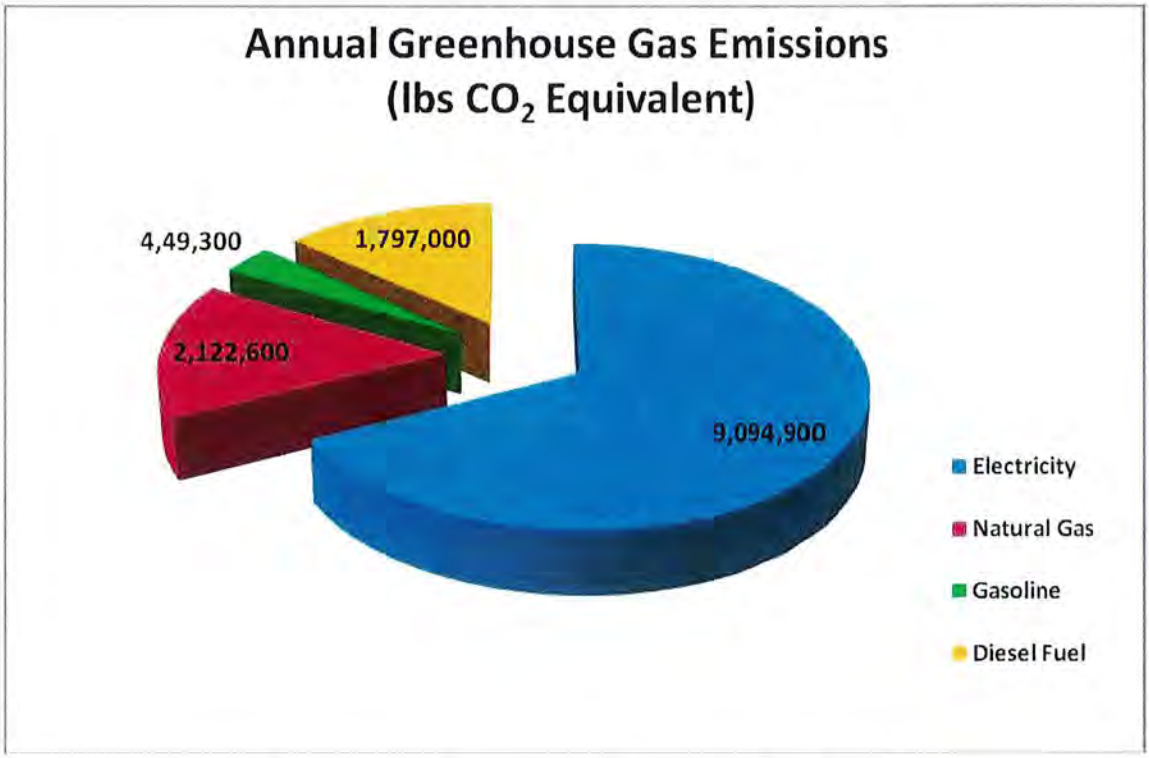


Figure 2: Town of Perinton - Greenhouse Gas Emissions

Note that while electricity accounts for about 30% of all the energy used by the Town, the electricity-associated CO_2 makes up nearly 70% of the total greenhouse gas emissions- even with a lower emission factor for RG&E grid production. Diesel fuel has a 3% higher emissions factor than gasoline but is associated with better fuel mileage and durability.

3. Electricity Use

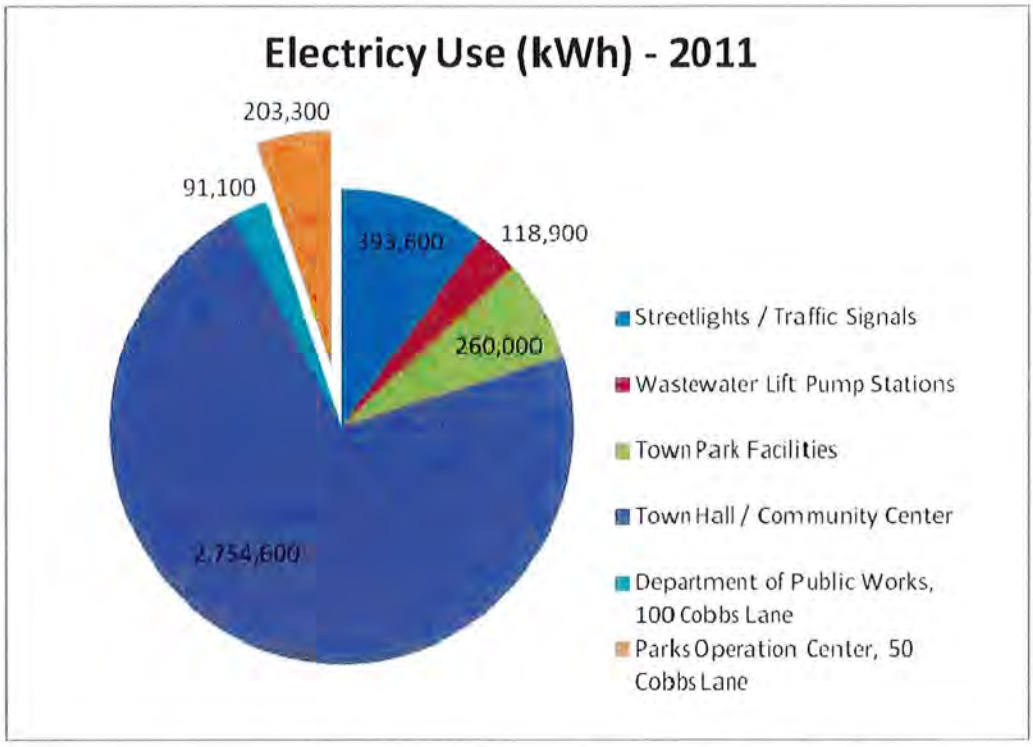


Figure 3: Electricity Use by Facility Group – Baseline 2011

Electricity represents the largest energy expenditure for the Town of Perinton which uses electricity for its buildings, area lighting, streetlights, sewer pumps, and traffic signals. The Town Hall/Community Center consumed the majority share of the electricity followed by streetlights, town park facilities, Perinton DPW, the Parks Operation Center, and lastly, the sewer pump stations. It should be noted that due to the lower cost of electricity from Fairport Municipal Commission, the cost for the Town Hall/Community Center's electricity is only 57% of the total bill, compared to its 72% share of use. Due to several factors discussed later, the total cost of street lighting is nearly 27% of the total electricity bill. See Table 3 on the following page for a breakdown of the exact energy use and cost for each facility.

An interesting note: at over 3,821,500 kWh annually, the amount of electricity used by the Town of Perinton facilities could power nearly 500 homes[1].

[1] Assumes that the average household uses 640 kwh of electricity per month and 7,680 per year

Table 3: Electricity Use and Cost
Town of Perinton, 2011

	kWh	Cost	% of Total Use	% of Total Cost
Town Hall/ Community Center	2,754,600	$147,800	72.1%	57%
Town Park Facilities	260,000	$18,200	6.8%	7%
Department of Public Works (DPW)	91,100	$4,400	2.4%	2%
Parks Operation Center (POC)	203,300	$10,900	5.3%	4%
Streetlights/ Traffic Signals	393,600	$69,500	10.3%	27%
Wastewater Lift Pump Station	118,900	$9,700	3.1%	4%
	3,821,500	$260,500	100.0%	100.0%

A brief description of each of the facilities below will be given below and three of the buildings, The Town Hall/Community Center, Department of Public Works, and the Parks Operation Center, will be looked at in more detail in the Benchmark portions of this study.

a. Town Hall/Community Center

During the study year, the Town Hall/Community Center consumed more than 2,754,600 kWh of electricity, which represents 72% of the Town's total electricity use. The electricity is used for lighting; heating, ventilation and air conditioning (HVAC) including an electric boiler; the swimming pool equipment; and various plug loads such as computers, television, and exercise equipment. A list of the equipment used in the Town Hall/ Community Center is included in Appendix B. Additionally, the energy use intensity for this building (energy use per square foot) is discussed in the analysis later in this report.

Given the Town Hall/Community Center's prominent energy consumption, particularly in light of the equivalent CO_2 emissions associated with electricity use, particular effort should be made to reduce energy use where possible in this building. Several of the measures recommended in the walk-through energy audit address the Town Hall/Community Center specifically. The energy audit report is included in Appendix E.

b. Town Park Facilities

Recreational town park facilities require electricity primarily for indoor and outdoor lighting. The Town's park facilities used a total of 260,000 kilowatt hours of electricity in 2011, or 7% of the total electricity use with a utility cost of about $18,200. The use and cost for electricity by facility are summarized in Table 4 below:

Table 4: Electricity Use – Town Park Facilities
Town of Perinton, 2011

Facility Description		Electricity Use (kWh)	Cost
555 Kreag Road (Kreag Road Park)		17,820	$4,272
125 Whitney Road West (Spring Lake Park Maint. Bldg)		928	$285
125 Whitney Road West (Spring Lake Park Restroom)		2,439	$332
Perinton Park (Shelter BLDG.)		69,948	$3,856
Fellow Road Park (Shelter BLDG.)		84,840	$4,557
Church Street Potter Park Teen Center (Lion's Den)		44,682	$2,371
Center Park		9,600	$502
Potter Place (Ice / Tennis Court)		4,437	$244
Fairport Crew Club		5,457	$323
White Brook Park		9,989	$518
Egypt Park Pavilion		3,513	$216
Fellows Road Park		2,834	$196
Ayrault Road Boat Launch		1,242	$134
Center Park (Heat & Lights)		2,249	$197
Fairport Crew Club Dock House		45	$75
Howell Barn		5	$73
	Total =	260,033	$18,224

c. Department of Public Works

The Perinton Department of Public Works (DPW) at 100 Cobbs Lane was moved from Parker Street during 2009, so the Parker Street location was not considered in this study. The energy use at 100 Cobbs Lane totaled 91,100 kilowatt-hours and comprised only 2% of the Town's electrical energy costs. The energy use intensity for this building is also looked at later is this report.

d. Parks Operation Center

The Parks Operation Center at 50 Cobbs Lane used about 203,300 kilowatt-hours of electricity which accounted for around 4% of the Town's electrical energy costs during 2011. This building is 100% electric with no natural gas use. The Center's energy use intensity will be compared with similar, all-electric buildings, later in this report.

e. Streetlights, Parking Lot Lights and Traffic Signals

In 2011, streetlights utilized a total of around 393,600 kilowatt-hours of electricity representing 10% of the Town's total electricity use. The total annual cost billed by FMC and RG&E was around $69,520, or about 27% of the Town's total electrical costs.

Depending on where a street light or parking lot is located, the Town purchases electricity from either RG&E or FMC. The single traffic signal along Turk Hill Road at the Town Hall is covered by FMC.

It should be noted that streetlights within the Rochester Gas & Electric service area are owned by the utility which bills the Town fees for lamps, poles, overhead wires, conduit, and cables, in addition to electricity use. **This equipment fee accounted for $12, 730 of the total $65,570 bill in 2009 representing almost 20% of the total street lighting costs for that year.**

A variety of fixture wattage and type are used throughout the town. Appendix A3 summarizes street lighting consumption using data from the 2009 baseline year, the latest year that had reported equipment fees described below. This data was used to calculate the average operating cost per fixture reported in Appendix A3.

f. Wastewater Lift Pump Stations

The wastewater pump stations that are owned and operated by the Town of Perinton are powered by electricity and consumed a total of approximately 118,900 kilowatts during 2011 and the total cost of electricity for the sewage pumps was $9,700. Appendix A4 summarizes the use and cost for the electricity used by wastewater lift pump stations.

Backup generators serving the pump stations utilize natural gas, and are discussed in the following section of this report.

Wastewater treatment and water supply were not addressed in this inventory because these facilities are owned and maintained by Monroe County Pure Waters and the Monroe County Water Authority respectively, and these facilities are not under the Town's jurisdiction.

4. Natural Gas Use

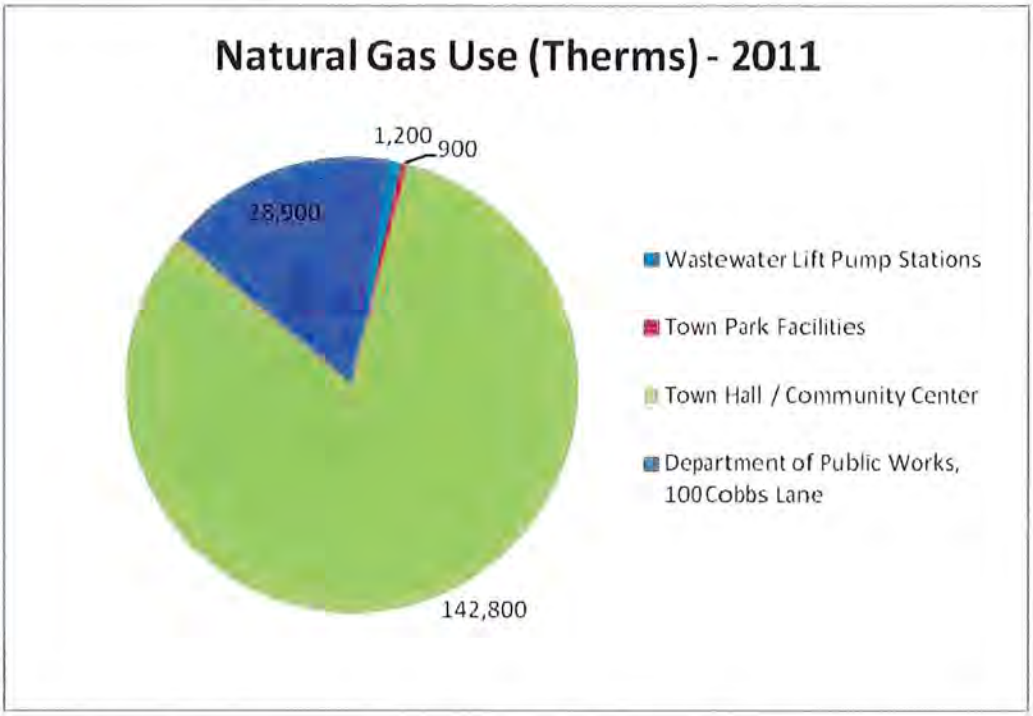


Figure 4: Natural Gas Use by Facility Group – Baseline 2011

Natural gas is primarily used to heat Town facilities and to run the generators at the Town's wastewater pump lift stations. The Town Hall/Community Center, which uses the most natural gas of any Town building, is supplied with gas through the Monroe County Energy Cooperative at a discounted cost. The Town Hall/Community Center used 142,800 therms, representing 82% of the natural gas purchased during the baseline year. Much of this gas is used to provide heating and ventilation of the gymnasium and natatorium and to heat the pool water.

RG&E supplies natural gas for the backup generators for the Town's wastewater lift stations, the Spring Lake Park Maintenance building (included in Town Park Facilities in Table 5 below), and the Department of Public Works facility at 100 Cobbs Lane. The Department of Public Works facility consumed 28,900 therms of natural gas comprising around 17% of the total Town use. The Spring Lake Park building used a minimal amount of gas and the Parks Operation Center at 50 Cobbs Lane is an all-electric facility and therefore did not contribute to natural gas use.

In total, during the baseline year, the Town used a total of 173,800 therms for all the town's facilities. The total cost to the Town for natural gas during the baseline year was $129,000. Table 5 below summarizes the Town's natural gas consumption.

Table 5: Natural Gas Use and Cost
Town of Perinton, Baseline Year 2011

	Therms	Cost	% of Total Usage	% of Total Cost
Wastewater Lift Pump Stations	1,200	$ 1,800	0.7%	1.4%
Town Park Facilities	900	$ 400	0.5%	0.3%
Town Hall / Community Center	142,800	$ 105,300	82.2%	81.7%
Department of Public Works	28,900	$ 21,500	16.6%	16.7%
	173,800	$ 129,000	100.0%	100.0%

SOURCE: Town of Perinton utility invoices

5. Vehicular Fuels

Town vehicles consumed 79,550 gallons of diesel fuel and 24,440 gallons of unleaded gasoline during the baseline year of 2009. Of the diesel consumed, 92% was used by the Highway Department.

Table 6: Vehicular Fuel Use

Diesel Fuel Consumed - 2009

Town Department	Gallons	% of Total
Highway Department	72,800	91.5%
Sewer Department	6,750	8.5%
	79,550	**100.0%**

Unleaded Gasoline consumed - 2009

Town Department	Gallons	% of Total
Highway Department	13,700	56.1%
Sewer Department	8,600	35.3%
Building Department	1,100	4.5%
Animal Control	1,000	4.1%
	24,440	**100.0%**

6. Renewable Energy and Energy Conservation

None of the Town's facilities or vehicles currently utilize sustainable energy sources such as solar, wind, or geothermal, nor is electricity generated from renewable sources currently being purchased by the Town. Although some of the vehicles in the Town's fleet are capable of using biofuels such as biodiesel or E-85, these fuels are not currently purchased by the Town.

The Town has, however, completed an Alternative Energy Feasibility Study which evaluated the potential use of solar, wind and geothermal power in the Town Hall/ Community Center. This study includes recommendations for both energy conservation and the use of sustainable energy sources.

The Conservation measures evaluated included: lighting retrofits, fans for more effective air circulation and de-stratification, and replacement of aging heating equipment. The renewable energy options evaluated included: Geothermal, Wind, Solar Panels and Solar Hot Water Systems. Each measure was evaluated for its feasibility, cost, and energy savings to determine which measure would be the most beneficial on a cost/benefit basis. Specific measures or areas for improvement were evaluated by integrated energy modeling to achieve reasonable estimates of energy savings and are expressed in terms of Return on Investment, Life-cycle cost, and source energy saved.

This study is attached as Appendix F.

B. Benchmarking Current Energy Use

An important step in developing a useful energy plan is to benchmark the Town's current buildings' energy performance against other comparable buildings. This process helps to identify those buildings that deserve more immediate attention than others, as well as to provide insight into the type of energy measures that would best align with this Strategic Plan.

1. Site Energy Intensity for Specific Fuels

Energy use intensity (EUI), is defined as energy used per square foot. Typical units are kilowatt-hr (kWh) per square foot for electricity, and thousand Btu (MBtu or MBH) per square foot. By evaluating individual energy components used by a building, we can sometimes get a better picture of which building component is using the most energy. For example, if the natural gas energy intensity (MBH/sq.ft.) is high, the cause may be inefficient gas-fired heating equipment, such as boilers. Conversely, if the kWh per square foot intensity is high, perhaps lighting or plug loads are excessive. For this purpose, usually site energy is used to calculate the energy intensity.

The 2003 Commercial Buildings Energy Consumption Survey produced for the Department of Energy is the most recent national survey to present summaries for energy use intensity for a wide variety of building types, uses, and geographic locations. We have used this data, where possible, to compare against three of the Town's main buildings; the Town Hall/Community Center, the Parks Operation Center, and the Perinton Department of Public Works.

Buildings that have been nationally surveyed were limited to the most common types and occupancies found in the general building stock. It is important, therefore, to consider how well the facility being considered actually matches up to the average. For example, a building that has an unusual function, configuration, or schedule will not be well represented by the average EUI for the closest type. Given the available categories, each of the Town buildings was compared against a typical "Office" building and variations were noted.

Table 7: Site Energy Use Intensity for Specific Fuels

	Building Square Foot (SF)	Annual Site Energy Use					
		Electricity (kWh)	Energy Intensity Electricity (kWh/SF)	Average EUI for Electricity[1]	Natural Gas (MBtu)	Energy Intensity Gas (MBtu/SF)	Average EUI for Gas[1]
Town Hall / Community Center	75,680	2,754,600	36.4	17.3	14,280,000	189	32.8
Parks Operation Center	22,250	203,300	9.1	17.3	0	0	N/A
Department of Public Works	104,800	91,100	<1.0	17.3	2,890,000	28	32.8

[1] 2003 Commercial Building Energy Consumption Survey: End-Use Consumption Tables for Electricity and Gas Consumption (kWh) Intensity. Principal building activity: Office.

The Town Hall/Community Center contains two separate occupancy types that have very different functions and energy needs. Maintaining a swimming pool and its surrounding environment is very energy intensive and there is no corresponding category within the national survey or other widely published data. The electrical use intensity is twice the national average for an office but this is probably skewed by the lighting and air conditioning needs to maintain the natatorium. The electric boiler for heating on the Town Hall side of the facility, however, may be contributing to the higher electrical intensity.

The natural gas use intensity is nearly six times the national average but again, this is influenced by the pool's space and water heating loads. Separate metering might be considered to help the Town monitor and benchmark energy with greater precision.

The Parks Operation Center uses 100% electricity so only the electrical EUI was considered. The POC's energy intensity of 9.1 appears well below the EUI of 17.3 reported for typical office buildings. It is possible however, that some of the building use may be more similar to storage buildings, which should be compared to an EUI of around 7.6 for that end use.

The Department of Public Works (DPW) may also be more closely aligned with a storage building. If some of the building is vacant or unheated, the electricity EUI of <1 should be compared to an average EUI of 2.4. The heating-related gas EUI of 28 compares favorably with the national average however storage areas may skew the EUI downward suggesting better energy performance than is actually occurring.

2. Source Energy Intensity for Total Building Energy

In order to get a total energy intensity of combined electricity and natural gas that includes all the energy that goes into the building, we need to use the source energy value when looking at energy per square foot. All energy used is converted to a common unit of MBtu per square foot so that buildings can be compared, against national or regional standards. The Department of Energy's Energy Star Portfolio Manager is a common benchmark that can be used to assign a performance "score" for some building types. There is a similar caveat- comparisons should be made within the context of possible deviations from typical building types, but we will use the same methodology in calculating a building source EUI to establish baseline performance that can be used to track improvements.

Table 8: Source Use Energy Intensity

	Energy Star's Portfolio Average Source EUI	Annual Site and Source Energy Use					
		Site Electricity (MBtu)	Site Natural Gas (MBtu)	Source Electricity (MBtu) [1]	Source Natural Gas (MBtu) [2]	Total Source Energy (MBtu)	Source EUI All Fuels (MBtu/SF)
Town Hall / Community Center	**200**	9,398,700	14,280,000	31,391,600	14,951,200	46,342,800	**612**
Parks Operation Center	**143**	693,700	0	2,316,800	0	2,316,800	**104**
Department of Public Works	**181**	310,800	2,890,000	1,038,200	3,025,800	4,064,000	**39**

[1] A site-source ratio of 3.34 was used for electricity.
[2] A site-source ratio of 1.047 was used for natural gas.

The Town Hall/Community Center has a calculated source EUI of 612, three times higher than average, as calculated using Portfolio Manager's Target Finder. This suggests that there is a good deal of opportunity to improve energy performance in this facility. Building construction, heating and cooling equipment efficiencies, environmental controls and water heating losses should all be considered. The installation of a pool cover, recommended in the walk-through audit is a good example- a pool cover, if used consistently, will reduce dehumidification loads, water heating loads, make-up water treatment and air conditioning loads. Similarly, as recommended in the Alternative Energy Feasibility Study, de-stratification of air in the pool area can lower heating loads and reduce energy consumption.

Metering can help track changes and fine-tune controls to optimize energy savings. The energy control systems may also be able to aid in establishing trends, scheduling, and alarms when the building falls outside of expected ranges.

As shown in the above table, the Parks Operation Center appears to be performing better than average although this may be due to areas that do not have high occupancy levels. This building uses only electricity and while its energy performance appears reasonable, further reduction of associated greenhouse gas emissions could be made if high efficiency, gas-fired equipment were installed for heating.

Similarly, the Department of Public Works also appears to be consuming less than average amounts of energy. This may be due to low density and/or fewer operating hours.

C. Findings and Recommendations

1. Buildings

After review of technical data provided by Town personnel and facility walkthroughs, LaBella has developed an inventory of the Town's HVAC and lighting equipment, which is presented in Appendix B. To assist the Town in making energy savings decisions, the inventory includes LaBella's opinion of usable life remaining for the HVAC equipment. In consideration of the project selection criteria above, LaBella has identified the following implementation activities as having a high probability of success. Please note that the recommended activities are based on estimates of future energy savings. A detailed feasibility analysis will be required to determine the actual expected savings and cost effectiveness:

a. Retro-Commissioning of the Department of Public Works Building A, B, C, the Town Hall/ Community Center and the Parks Operations Center

As buildings age, so do their infrastructure, and key systems can start to under-perform. Retro-commissioning is the equivalent of a 'tune-up' to a building's infrastructure. It is a process by which testing and modification to the building's systems bring their performance back up to optimal levels. Observation of the existing conditions of the buildings lead LaBella to believe that retro-commissioning of the DPW and Town Hall buildings would be beneficial to the Town. LaBella's experience has found that buildings in this condition usually experience a 10-15% energy savings when retro-commissioning is performed. Referring back to the energy use information presented earlier in this report, a 10-15% savings would result in approximately $27,900 to $41,850 savings in energy costs. See the following table for a breakout of these savings.

	DPW (Buildings A, B, & C)	Town Hall
Electricity Costs	$4,370	$147,800
Natural Gas Costs	$21,500	$105,300
Total	$25,870	$253,100
10% Savings	$2,590	$25,310
15% Savings	$3,880	$37,970

b. Boiler Replacement at the Town Hall/ Community Center

The two HB Smith gas-fired boilers serving the Community Center are older, non-condensing boilers, with an expected annual fuel utilization rate of 75%. Advancements in natural gas fired boiler technology have produced alternates to this type of boiler that would prove to be a good fit for this facility's applications. LaBella recommends future replacement of these with high-efficiency condensing boilers. Advancements in natural gas-fired boiler technology have produced boilers with higher utilization rates: up to 90% for condensing boilers versus non-condensing boilers. Condensing style boilers are particularly applicable for pool water heating and hot water radiation and take up considerably less space compared with traditional boilers. Referring to the natural gas use for the Town Hall presented in Section 4 of this report, and assuming the existing boilers use about 80% of the natural gas for the building, a 15% gain in fuel utilization would result in a cost reduction of approximately $35,000 per year. Please note that these savings calculations assume that no other upgrades (e.g. retro-commissioning) have been performed. Further savings would likely be realized if the hot water systems in the Town Hall underwent a retro-commission process.

On the Town Hall side, a 1976 electric boiler serves the heat pump loop. This boiler is near the end of its useful life and can be replaced with a more efficient unit, perhaps with more staged controls. The feasibility of serving the Town Hall heat pumps from new condensing boilers on the Community Center side could also be investigated as a more energy efficient system.

c. Lighting Upgrades

Much of the lighting in the Perinton facilities are already energy-efficient. Recommended upgrades include replacing the remaining T12 fluorescent tubes, as well as the high pressure sodium and metal halide fixtures, with more efficient T8 or T5 fluorescent tubes and installing occupancy sensors. These upgrades would increase lighting levels at a reduced wattage. As a result, Perinton will be able to reduce the number of lamp fixtures, improve control of when and how the lighting is switched on and off, and enhance the quality of light with less energy consumption. Bi-annual lighting studies are recommended to identify new cost-effective lighting technology. A list of recommended upgrades for the various lighting fixtures throughout the Town's facilities is included in Appendix C.

2. Vehicular Fuels

Recommendations for reductions in vehicular fuel use and the incorporation of renewable fuels are presented in the report prepared by Clean Fuels Consulting. This report is included as Appendix D.

a. Short-term Vehicular Fleet Changes and Fueling Options

- **Incorporate Biofuels (E-85 and bio-diesel) into Existing and New Vehicle Fueling**

The most feasible options for the Town fleet were found to be use of fuels that could be used in existing vehicles and in future new vehicles, the purchase of which would incur no incremental extra cost. These are the biofuels E85 and biodiesel.

E85 is a renewable fuel made from 85% ethanol/15% gasoline. Ethanol burns cleaner than gasoline, and is primarily produced in the United States, and helps to meet clean air requirements in reformulated gasoline. *Flexible fuel vehicles or FFV's* run on either regular gasoline or E85.

The cost to purchase Flexible Fuel Vehicles that can operate with E-85 is no higher than comparable vehicles that can only operate on gasoline. However, due to lower gas mileage of E-85 compared to gasoline, replacing 80% of the gasoline used by Town vehicles with E-85 fuel would result in $45,670 additional fuel costs per year. In addition, as the Town does not dispense E-85 at its fueling station at the Department of Public Works, fuel would need to be purchased at a public fueling station.

Biodiesel is a renewable fuel used in diesel engines, and is usually mixed with diesel fuel in some combination from two to twenty percent. It reduces petroleum use and burns more cleanly than standard diesel fuel. An additional benefit is that biodiesel adds lubricity to the ultra low sulfur diesel now required by the federal government.

Biodiesel mixtures can be stored in standard fuel storage tanks, and do not involve any special fuel system modifications to the fueling facility. As biodiesel can gel and clog fuel systems in colder weather, a lower percentage winterized blend should be used during the winter months.

Based on 2011 fuel prices, if the Town replaces 90% of its diesel fuel with B5 biodiesel, and the relative costs remain the same, annual fuel costs would increase by $24,646, or 10%. However, a future rise in diesel costs will make biodiesel fuel a more feasible option.

- **Incorporate Light Duty Hybrid Electric Vehicles into Fleet**

The use of light duty hybrid electric vehicles would result in fuel savings of approximately 24% for SUVs and 36% for sedans. The projected fuel savings are offset by the increased capital cost of approximately $64,000 for the eight vehicles (average of $8,000 additional per vehicle.) Grant funding may be available to finance the higher incremental cost of the hybrids.

- **Incorporate Propane Vehicles into Fleet and Construct a Propane Fueling Station**

The use of propane (also known as liquid petroleum gas or LPG) as a motor fuel appears to be a feasible alternative fuel for Town use. New vehicles can be adapted to utilize propane fuel at point of sale, which is offered by vehicle dealers for approximately $350. The cost of construction of a propane fueling station is approximately $37,000.

Based on 2011 fuel prices, if the Town constructs a propane fueling station and replaces most of its vans, SUVs and light duty trucks in the fleet with vehicles that can be powered with propane, annual fuel costs are projected to be reduced by $12,911 (19.3%). The fuel cost savings would be offset by increased vehicle purchase costs and the cost of constructing a propane fueling station.

b. Administrative Actions and Policy Implementation

- **Establish a Replacement Policy for Acquisition of Flexible Fuel E85 Vehicles Through a NYS Contract for Appropriate Duty Cycles and Fuel at Local Existing Stations**

Numerous flexible fuel E85 compatible vehicles are listed on State Contract. For most of the vehicle models used by the Town presently, the E85 model can be ordered at no extra cost. By replacing existing vehicles with FFV models, the FFV fleet will increase upon each procurement cycle. The FFV's can be fueled at the public E85 station located within the Town, when the vehicles are in the vicinity. Reasons for using E85 include using a domestic alternative fuel to decrease foreign petroleum dependence.

- **Develop and Implement either a "No idle" or Strict Anti-idling Policy**

Idle-reduction has been determined to effect a 10-15% reduction in overall petroleum use. Clear records should be kept in order to measure and report improvements related to operational changes and driver behavior modification. In addition to fuel savings, the lifecycle maintenance costs are reduced and residual vehicle value is increased.

- **Position the Town for Grant Funding Opportunities**

The Town should be aware of near term grant opportunities, which have the potential to assist in meeting extra costs associated with alternative fuel vehicles and fueling station construction costs. Potential funding sources include Federal Congestion Mitigation and Air Quality (CMAQ) grant funding and the New York State Energy Research & Development Authority (NYSERDA). The USEPA Diesel Emissions Reduction grant program has funded alternative fuel investments in the past.

- **Develop Employee Training for Eco-driving**

Driver training/behavior modification programs result in an average 15% decrease in fuel use. If the plan is developed in-house, there should be minimal additional cost. If developed by a consultant, professional services should be about $2,500-4,500.

Additional idle reduction and driver training is expected to result in a decrease of 10% in fuel costs. Projected savings are up to $6,700 for gasoline-powered vehicles and $24,000 for diesel-powered vehicles.

- **Right Sizing Evaluations for New Vehicle Acquisition**

Department heads should ensure that the smallest and most fuel efficient model for each application is ordered.

c. Alternative Fuels to Consider for the Future, should entry costs decrease

- **Compressed Natural Gas**

An extremely clean-burning, mostly domestic fuel, the Town can consider use of natural gas vehicles should a financial opportunity present itself that would cover the high cost of entry.

- **Electric Light Duty Vehicles and Hybrid Electric Heavy Duty Vehicles**

Light duty electric options such as the Nissan Leaf have a high incremental cost, and are not on State Contract at this time. Heavy duty hybrids are available but at a very high (approximately $50K plus) incremental cost.

D. Energy Use Reduction Targets

1. Targets

Savings of between 10-15% of energy used for maintaining and operating the Town's buildings can be targeted if retro-commissioning is undertaken and additional savings will be realized as other energy saving measures are implemented. For buildings that do not currently meet the national average energy use intensity (EUI) figures, such as the Town Hall/Community Center, targets can be established annually to close this gap.

Fuel use reduction targets can be made for both the quantity of fuel consumed (as a function of fuel mileage efficiency) and for the greenhouse gas emissions associated with the type of fuels used (as a function of the actual mix of biodiesel, propane, hybrid-electricity, etc.).

2. Mechanism to Measure Progress

The Town will review its energy use on an annual basis to monitor progress toward its reduction goals. The spreadsheets included in the Appendices will be updated annually so that reductions in energy use associated with lighting, buildings, vehicles, and other Town operations can be monitored. For each facility, the site and source energy use intensity (EUI) will calculated as outlined in this report so that progress can be measured against the benchmarks established in this report.

E. Engage Residents, Businesses and Institutions

This Energy Sustainability Plan identifies actions that the Town can take to reduce fossil fuel usage and utilize more sustainable energy sources. As the Town carries out the actions recommended in this Plan, it encourages Town residents and businesses to take similar steps.

The Energy Fair April 9, 2011 at the Community Center featured a variety of vendors and organizations that provided information to residents about programs and products that would help them reduce fossil fuel usage. The Town should consider holding another such fair, perhaps in collaboration with a neighboring municipality, or work with Monroe County to host is Energy Expo in the future.

The Town should encourage Perinton homeowners and businesses to arrange for an energy audit. Free and reduced-cost energy audits are available to most households through the NY Home Performance with ENERGY STAR program (www.nyserda.ny.gov/en/Page-Sections/Residential/Programs/Existing-Home-Renovations.aspx). A pdf copy of the application form is in the attached CD. Businesses and institutions can arrange for audits and technical assistance through NYSERDA's Energy Audit and Flex Tech programs (see www.nyserda.ny.gov).

Numerous websites, brochures and checklists have been produced to assist building owners, renters and business operators to improve energy efficiency and replace fossil fuels with more sustainable sources. Monroe County's "Green Monroe" website (www.greenmonroe.org) includes information about efficiency measures, financial assistance programs, tax incentives and rebate programs, including links to organizations that provide services, information and incentives. Financial incentives for customers of Fairport Electric and other municipal electric companies are administered by the Independent Energy Efficiency Program (IEEP) (see http://www.greenmonroe.org/IEEP-Fairport.html .)

The NYS Energy Research Development Authority (NYSERDA) provides energy-saving tips on its website (http://www.nyserda.ny.gov/en/Page-Sections/Residential/Energy-Saving-Tips/) and administers numerous incentive programs to encourage energy savings and the use of renewable fuels. Residential programs encourage energy efficiency in new home construction and renovations as well as the use of renewable energy sources (http://www.nyserda.ny.gov/Page-Sections/Residential/Programs.aspx .) Commercial and industrial programs provide incentives for technical investigations as well as the installation of a range of energy efficiency and renewable energy measures.

The Energy Star program, which is administered by the U.S. Environmental Protection Agency, is probably best known for its certification of energy-efficient appliances. The Energy Star website includes extensive information about benchmarking, green buildings, and opportunities to improve energy efficiency in various types of buildings and processes. (See www.energystar.gov .)

Extensive information about efficiency and renewable energy is available at the website of the U.S. Department of Energy's Energy Efficiency & Renewable Energy (EERE) program: http://www.eere.energy.gov . Technical information and reports related to national, State and local energy policy is available at the website of the American Council for and Energy-Efficient Economy: http://www.aceee.org . The brochure "Energy Savers: Tips on Saving Money & Energy at Home" is included as a pdf file in the attached CD.

Local governments around the United States have initiated programs to encourage residents and businesses to reduce the use of fossil fuels. Some communities have developed contests, awards programs and other incentives to encourage participation. The Energy Star program also provides resources to help local governments encourage increased energy efficiency among residents and businesses. For example, many towns, school districts, businesses and institutions have joined the "Energy Star Challenge," which sets community-wide targets to improve the energy efficiency of commercial, industrial and institutional buildings. (See: http://www.energystar.gov/index.cfm?c=challenge.bus_challenge .) The Town should consider implementing a community-wide challenge to encourage energy efficiency and reducing fossil fuel usage.

Town of Perinton Strategic Energy Sustainability Plan

List of Appendices

Appendix A: 1. Summary of Fairport Municipal Commission Bills

2. Summary of Rochester Gas & Electric Bills

3. Annual Street Lighting Electricity Consumption

4. Annual Wastewater Lift Pump Station Electricity Consumption

Appendix B: Inventory of Equipment

Appendix C: Lighting Recommendations

Appendix D: Alternative Fuel Vehicle Options and Petroleum Reduction (*Clean Fuels Consulting*)

Appendix E: Walk-Through Energy Audit Report (*Wendel Energy Services*)

Appendix F: Alternative Energy Feasibility Study (*Larson Engineers*)

Appendix A

1. **Summary of Fairport Municipal Commission Bills**
2. **Summary of Rochester Gas & Electric Bills**
3. **Annual Street Lighting Electricity Consumption**
4. **Annual Wastewater Lift Pump Station Electricity Consumption**

Appendix A1: Fairport Municipal Commission Accounts (2010-2011)

Town of Perinton Strategic Energy Sustainability Plan

		December (2010)		January (2011)		February		March	
Account Description	Meter Number	KWH	Cost	KWH	Cost	KWH	Cost	KWH	Cost
72 Macedon Center Road (San. Pump Station)	1034823	40	$8.01	24	$7.53	26	$7.77	38	$8.50
23 1/2 Great Wood Court (San. Lift Station) (Harts Woods)	382100	1086	$60.60	1042	$72.50	930	$69.11	918	$66.27
Brantley & Brunson Street Lights (26, 150 W HPS Street Lights)	N/A	1690	$280.93	1690	$303.83	1690	$310.65	1690	$306.92
50 Cobb's Lane (Parks Operation Center)	302048	32480	$1,638.70	35920	$2,298.38	30080	$2,047.02	26720	$1,760.11
Fairmont Hills, 100 Cobb's Lane (21, 150W HPS Street Lights)	N/A	1365	$226.90	1365	$245.40	1365	$250.91	1365	$247.90
Deer Run (San. Pump Station)(1 Fairvale)	382257	458	$29.03	380	$30.25	359	$30.36	475	$37.19
Church Street Potter Park Teen Center (Lions Den)	251117	7154	$365.62	7087	$458.29	5630	$388.02	4901	$327.74
4 Portage Circle (Lift Station)	1034109	358	$24.00	328	$26.93	323	$27.92	302	$25.83
Country Downs West (San. Lift Station)	1021803/1034109								
O'Connor Road (17, 150W HPS Street Lights)	N/A	1105	$183.68	1105	$198.66	1105	$203.12	1105	$200.68
1380 O'Connor Road near BOCES (1, 70W HPS Parking Lot Light)	1023358	538	$37.12	460	$39.44	454	$40.88	494	$42.50
Fairpoint Drive Street Lights (Mayfair/Deer Run, Sec. 1) (11, 150 W	N/A	715	$118.85	715	$128.54	715	$131.43	715	$129.85
100 Cobb's Lane (Perinton DPW)	302188	8200	$418.20	8600	$554.84	7400	$508.11	7800	$518.05
100 Cobb's Lane (Perinton DPW)	1030030								
Potter Place (Ice / Tennis Court)	1022612	4	$6.20	3	$6.19	2	$6.14	4	$6.26
Perinton Park (Shelter BLDG.)	302207	11220	$722.05	11940	$816.16	8160	$541.69	7260	$452.34
499 Fellows Road Park	1025407	160	$16.21	141	$15.56	127	$14.34	153	$15.40
58 Furman (San. Pump Station)	382364	291	$24.57	232	$21.74	233	$21.29	264	$22.23
Fellow Road Park (Shelter BLDG.)	302206	14550	$934.57	13350	$911.84	10800	$715.00	9750	$605.44
1399 Fairport Road (Fairport Crew Club)	1034779	379	$30.19	435	$35.52	423	$33.77	447	$33.48
440 Ayrault Road Boat Launch	1022701	140	$14.93	137	$15.29	$133.00	$14.73	108	$12.64
202 Howell Road Barn	1034929	0	$6.00	0	$6.00	0	$6.00	0	$6.00
Fairport Crew Club Dock House	1035329	3	$6.19	3	$6.21	4	$6.26	3	$6.19
1350 Turk Hill Road (Town Hall Community Center)	302035	190800	$8,772.13	214800	$12,498.12	204900	$12,799.53	183000	$11,122.28
McCoord Woods (San. Pump Station) 6 Windsong Trail	1028528	219	$17.01	363	$29.17	268	$24.18	222	$20.58
Deer Run (66, 150W HPS Street Lights)	N/A	4290	$713.12	4290	$771.26	4290	$788.56	4290	$779.10
Highway Lighting (19, 250W / 1, 70W / 78, 150W / 11, 400W Stree	N/A	8435	$1,163.93	11945	$1,909.27	9085	$1,431.74	9085	$1,411.70
Turk Hill Road / Beechwood (2 70W HPS Street Lights)	N/A	60	$13.17	60	$13.98	60	$14.22	60	$14.09
Highway Lighting (68, 100W HPS Street Lights)	N/A	3060	$702.41	3060	$743.88	3060	$756.22	3060	$749.47
1350 Turk Hill Road Signal @ Town Hall / Community Center	1034972	219	$17.01	226	$20.43	233	$21.81	184	$18.08
Misty Meadow (10, 150W HPS Street Lights)	N/A	650	$108.05	650	$116.86	650	$119.48	650	$118.05
Midlands Section 1 (9 150W HPS Street Lights)	N/A	585	$97.24	585	$105.17	585	$107.53	585	$106.24
Egypt Park Pavilion	1023166	45	$8.26	45	$8.87	57	$9.87	177	$17.62
Courtney Drive- RTS Park & Ride (Parking Lot Lights)	1032790	720	$42.19	732	$52.72	758	$57.44	636	$47.75
Center Park	302036	700	$41.19	600	$44.29	700	$53.50	600	$45.39
Center Park (Heat & Lights)	1034552	397	$25.95	461	$35.42	477	$38.36	278	$24.26
250 Aldrich Road @White Brook Park	251169	679	$40.13	601	$44.35	678	$52.01	582	$44.21
210 Aldrich Road (San. Pump Station)	382095	1054	$58.99	1066	$74.04	1191	$86.82	1046	$74.67
30 Shady Lane (San. Pump Station)	1026779	32	$7.61	36	$8.30	66	$10.48	50	$9.29
250 Hogan Road (San. Pump Station)	382063	926	$52.55	811	$57.76	936	$69.51	1141	$80.90
1200 Ayrault Road (San. Lift Station)	382080	3535	$183.70	3468	$227.32	169.38	$217.16	2761	$187.25
Midland Section 2 (9, 150W HPS Street Light)	N/A	585	$97.24	585	$105.17	585	$107.53	585	$106.24
Midlands Section 3 (6, 150W HPS Street Light)	N/A	390	$64.83	390	$70.11	390	$71.69	390	$70.83
Beaumont Section 2 Phase 2 (7, 150W HPS Street Lights)	N/A	455	$75.63	455	$81.80	455	$83.64	455	$82.63
Beaumont Section 3 Pahse 1 (6, 150W HPS Street Lights)	N/A	390	$64.83	390	$70.11	390	$71.69	390	$70.83
20 Lodge Pole (San. Pump Station)	1020377	78	$9.93	116	$13.40	102	$12.93	91	$11.98
30 Rosscommon Crescent (San. Pump Station)	382064	1441	$78.43	1681	$113.28	1454	$104.66	1355	$94.96

	Appendix A1: Fairport Municipal Commission Accounts (2010-2011)							
	Town of Perinton Strategic Energy Sustainability Plan							
	April		May		June		July	
Account Description	KWH	Cost	KWH	Cost	KWH	Cost	KWH	Cost
72 Macedon Center Road (San. Pump Station)	41	$7.81	32	$7.14	21	$6.80	18	$6.68
23 1/2 Great Wood Court (San. Lift Station) (Harts Woods)	744	$38.72	601	$27.32	516	$25.61	463	$23.52
Brantley & Brunson Street Lights (26, 150 W HPS Street Lights)	1690	$299.88	1690	$285.50	1690	$289.79	1690	$289.49
50 Cobb's Lane (Parks Operation Center)	15040	$667.46	9760	$352.21	9280	$358.72	8800	$338.97
Fairmont Hills, 100 Cobb's Lane [21, 150W HPS Street Lights]	1365	$242.21	1365	$230.59	1365	$234.06	1365	$233.82
Deer Run (San. Pump Station)(1 Fairvale)	465	$26.46	453	$22.07	315	$17.98	245	$15.28
Church Street Potter Park Teen Center (Lions Den)	3241	$148.54	2625	$99.12	1914	$78.75	2210	$89.62
4 Portage Circle (Lift Station)	218	$15.59	181	$12.43	167	$12.35	181	$12.85
Country Downs West (San. Lift Station)								
O'Connor Road (17, 150W HPS Street Lights)	1105	$196.07	1105	$186.67	1105	$189.47	1105	$189.28
1380 O'Connor Road near BOCES (1, 70W HPS Parking Lot Light)	469	$31.23	416	$25.35	398	$25.73	416	$26.35
Fairpoint Drive Street Lights (Mayfair/Deer Run, Sec. 1) (11, 150 W	715	$126.87	715	$120.79	715	$122.60	715	$122.48
100 Cobb's Lane (Perinton DPW)	6800	$305.06	7000	$254.30	7200	$279.66	7000	$270.86
100 Cobb's Lane (Perinton DPW)								
Potter Place (Ice / Tennis Court)	3	$6.14	774	$33.46	503	$25.12	625	$29.65
Perinton Park (Shelter BLDG.)	1800	$176.27	4020	$158.80	3780	$149.02	3720	$168.40
499 Fellows Road Park	167	$11.93	311	$17.83	288	$16.90	365	$21.94
58 Furman (San. Pump Station)	265	$15.41	255	$15.70	142	$11.37	145	$12.33
Fellow Road Park (Shelter BLDG.)	5250	$192.23	3750	$148.53	3600	$142.21	4050	$182.80
1399 Fairport Road (Fairport Crew Club)	495	$23.56	470	$23.86	422	$21.97	475	$26.74
440 Ayrault Road Boat Launch	92	$9.26	92	$9.50	84	$9.18	92	$10.02
202 Howell Road Barn	0	$6.00	1	$6.04	0	$6.00	3	$6.14
Fairport Crew Club Dock House	4	$6.14	4	$6.15	4	$6.15	4	$6.17
1350 Turk Hill Road (Town Hall Community Center)	203700	$11,917.03	213300	$10,663.08	260100	$13,504.14	279900	$14,367.88
McCoord Woods (San. Pump Station) 6 Windsong Trail	173	$13.61	171	$12.07	157	$11.97	141	$11.34
Deer Run (66, 150W HPS Street Lights)	4290	$761.22	4290	$724.72	4290	$735.61	4290	$734.87
Highway Lighting (19, 250W / 1, 70W / 78, 150W / 11, 400W Stree	9085	$1,373.84	9085	$1,296.55	9075	$1,319.60	9280	$1,351.44
Turk Hill Road / Beechwood (2 70W HPS Street Lights)	60	$13.84	60	$13.33	60	$13.48	60	$13.47
Highway Lighting (68, 100W HPS Street Lights)	3060	$736.72	3060	$710.68	3060	$718.45	3060	$717.92
1350 Turk Hill Road Signal @ Town Hall / Community Center	168	$13.39	100	$9.55	100	$9.80	89	$9.37
Misty Meadow (10, 150W HPS Street Lights)	650	$115.34	650	$109.81	650	$111.46	650	$111.34
Midlands Section 1 (9 150W HPS Street Lights)	585	$103.80			585	$100.31	585	$100.21
Egypt Park Pavilion	378	$22.62	413	$20.65	475	$24.06	398	$21.06
Courtney Drive- RTS Park & Ride (Parking Lot Lights)	655	$34.81	597	$27.18	631	$29.66	562	$27.26
Center Park	600	$32.39	1200	$48.57	700	$32.61	800	$36.27
Center Park (Heat & Lights)	199	$14.76	46	$7.63	30	$7.14	24	$6.91
250 Aldrich Road @White Brook Park	540	$29.75	479	$23.00	1268	$54.20	1795	$73.92
210 Aldrich Road (San. Pump Station)	1065	$52.84	824	$35.23	582	$28.12	343	$18.98
30 Shady Lane (San. Pump Station)	131	$11.77	31	$7.10	30	$7.14	19	$6.72
250 Hogan Road (San. Pump Station)	1267	$61.73	964	$40.20	650	$30.71	359	$19.59
1200 Ayrault Road (San. Lift Station)	2762	$127.47	2336	$88.66	2095	$85.63	1643	$68.17
Midland Section 2 (9, 150W HPS Street Light)	585	$103.80	585	$98.83	585	$100.31	585	$100.21
Midlands Section 3 (6, 150W HPS Street Light)	390	$69.20	390	$65.88	380	$66.87	390	$66.81
Beaumont Section 2 Phase 2 (7, 150W HPS Street Lights)	455	$80.74	455	$76.86	455	$78.02	455	$77.94
Beaumont Section 3 Pahse 1 (6, 150W HPS Street Lights)	390	$69.20	390	$65.88	390	$66.87	390	$66.81
20 Lodge Pole (San. Pump Station)	83	$9.66	80	$8.84	67	$8.55	58	$8.19
30 Rosscommon Crescent (San. Pump Station)	1407	$67.88	1323	$52.93	1073	$46.79	712	$32.94
								Page A-2

Appendix A1: Fairport Municipal Commission Accounts (2010-2011)

Town of Perinton Strategic Energy Sustainability Plan

Account Description	August		September		October		November		December	
	KWH	Cost	KWH	Cost	KWH	Cost	KWH	Cost	KWH	Cost
72 Macedon Center Road (San. Pump Station)	17	$6.75	19	$6.70	22	$6.86	26	$8.23		
23 1/2 Great Wood Court (San. Lift Station) (Harts Woods)	514	$28.44	584	$27.26	655	$31.57	786	$37.88		
Brantley & Brunson Street Lights (26, 150 W HPS Street Lights)	1690	$299.33	1690	$287.07	1690	$291.52	2028	$349.82		
50 Cobb's Lane (Parks Operation Center)	8400	$372.70	7120	$265.20	8960	$355.74	10752	$426.89		
Fairmont Hills, 100 Cobb's Lane (21, 150W HPS Street Lights)	1365	$241.76	1365	$231.87	1365	$235.46	1638	$282.55		
Deer Run (San. Pump Station)(1 Fairvale)	272	$17.87	303	$17.04	324	$18.65	388.8	$22.38		
Church Street Potter Park Teen Center (Lions Den)	1959	$91.53	2263	$88.39	2590	$107.10	3108	$128.52		
4 Portage Circle (Lift Station)	191	$14.34	173	$12.30	175	$12.84	210	$15.41		
Country Downs West (San. Lift Station)										
O'Connor Road (17, 150W HPS Street Lights)	1105	$195.71	1105	$187.70	1105	$190.61	1326	$228.73		
1380 O'Connor Road near BOCES (1, 70W HPS Parking Lot Light)	446	$30.07	479	$28.04	451	$28.21	541.2	$33.85		
Fairpoint Drive Street Lights (Mayfair/Deer Run, Sec. 1) (11, 150 W	715	$126.64	715	$121.45	715	$123.33	858	$148.00		
100 Cobb's Lane (Perinton DPW)	7800	$346.51	6600	$246.27	7600	$302.65	9120	$363.18		
100 Cobb's Lane (Perinton DPW)										
Potter Place (Ice / Tennis Court)	863	$43.68	1005	$42.59	296	$17.55	355.2	$21.06		
Perinton Park (Shelter BLDG.)	3840	$145.80	4440	$179.31	4440	$157.38	5328	$188.86		
499 Fellows Road Park	359	$19.07	380	$20.83	174	$11.93	208.8	$14.32		
58 Furman (San. Pump Station)	143	$11.21	155	$12.06	179	$12.11	214.8	$14.53		
Fellow Road Park (Shelter BLDG.)	3600	$137.06	3600	$146.52	5700	$200.34	6840	$240.41		
1399 Fairport Road (Fairport Crew Club)	341	$18.42	549	$27.43	464	$21.82	556.8	$26.18		
440 Ayrault Road Boat Launch	90	$9.28	94	$9.67	82	$8.80	98.4	$10.56		
202 Howell Road Barn	1	$6.04	0	$6.00	0	$6.00	0	$7.20		
Fairport Crew Club Dock House	3	$6.11	4	$6.16	4	$6.14	4.8	$7.37		
1350 Turk Hill Road (Town Hall Community Center)	307200	$17,442.82	267300	$13,163.66	223500	$11,831.58	206100	$9,750.17		
McCoord Woods (San. Pump Station) 6 Windsong Trail	225	$15.83	153	$11.57	155	$12.06	150	$11.00		
Deer Run (66, 150W HPS Street Lights)	4290	$759.83	4290	$728.73	4290	$740.00	4290	$718.81		
Highway Lighting (19, 250W / 1, 70W / 78, 150W / 11, 400W Stree	9150	$1,382.40	9150	$1,316.06	9150	$1,340.11	9150	$1,294.92		
Turk Hill Road / Beechwood (2 70W HPS Street Lights)	60	$13.82	60	$13.38	60	$13.54	60	$13.25		
Highway Lighting (68, 100W HPS Street Lights)	3060	$735.72	3060	$713.54	3060	$721.58	3060	$706.47		
1350 Turk Hill Road Signal @ Town Hall / Community Center	93	$10.06	97	$9.54	94	$9.67	144	$10.91		
Misty Meadow (10, 150W HPS Street Lights)	650	$115.13	650	$110.41	650	$112.12	650	$108.91		
Midlands Section 1 (9 150W HPS Street Lights)	585	$103.61	585	$99.37	585	$100.91	585	$98.02		
Egypt Park Pavilion	452	$25.73	436	$21.87	318	$18.41	319	$16.88		
Courtney Drive- RTS Park & Ride (Parking Lot Lights)	640	$33.94	716	$32.07	708	$33.64	894	$36.48		
Center Park	1100	$54.02	1000	$42.41	900	$41.13	700	$29.87		
Center Park (Heat & Lights)	30	$7.31	34	$7.24	42	$7.64	231	$13.88		
250 Aldrich Road @White Brook Park	1372	$65.89	859	$37.28	457	$23.84	679	$29.15		
210 Aldrich Road (San. Pump Station)	386	$22.85	495	$24.03	574	$28.40	861	$35.36		
30 Shady Lane (San. Pump Station)	1	$6.92	26	$6.95	25	$6.98	28	$6.95		
250 Hogan Road (San. Pump Station)	406	$23.72	423	$21.40	768	$35.98	732	$30.96		
1200 Ayrault Road (San. Lift Station)	1809	$84.98	1735	$69.17	2279	$94.96	2428	$88.78		
Midland Section 2 (9, 150W HPS Street Light)	585	$103.61	585	$99.37	585	$100.91	585	$98.02		
Midlands Section 3 (6, 150W HPS Street Light)	390	$69.08	390	$66.25	390	$67.27	390	$65.35		
Beaumont Section 2 Phase 2 (7, 150W HPS Street Lights)	455	$80.59	455	$77.29	455	$78.49	455	$76.24		
Beaumont Section 3 Pahse 1 (6, 150W HPS Street Lights)	390	$69.08	390	$66.25	390	$67.27	390	$65.35		
20 Lodge Pole (San. Pump Station)	64	$8.79	60	$8.18	62	$8.42	63	$8.15		
30 Rosscommon Crescent (San. Pump Station)	718	$37.34	829	$36.18	795	$37.04	1068	$42.41		

Note: Numbers in red estimated u erage increase in Nov./Oct. ratio

Appendix A2: RG&E Accounts (2010-2011)

Town of Perinton Strategic Energy Sustainability Plan

Type	Account Description	Account Number	Meter Number	December (2010) KWH	December (2010) Cost	January (2011) KWH	January (2011) Cost	February KWH	February Cost
ELECTRIC	555 Kreag Road (Kreag Road Park)	2001-1803-333	95880620	96	$319.25	0	$104.32	48	$319.51
	555 Kreag Road (Kreag Road Park)	2001-1803-416	59627875	180	$27.56	168	$26.38	156	$25.27
	125 Whitney Road West (Spring Lake Park Maint. Bldg)	2001-1803-515	59721934	78	$24.05	31	$22.31	37	$22.31
	125 Whitney Road West (Spring Lake Park Restroom)	2001-1803-614	73468446	123	$25.60	105	$24.52	14	$21.75
	40 1/2 Fair Oakes Drive	2001-0815-692	76374526	528	$39.30	168	$26.55	168	$25.64
	6 1/2 Crossover Road (San. Pump Station)	2001-4405-136	79029695	168	$27.20	192	$26.87	216	$26.59
	2 1/2 Lake Crescent Drive	2001-0815-593	55329981	72	$23.86	168	$26.55	168	$25.64
	101 Sully's Trail (San. Pump Station)	2001-1802-186	17855551	14	$21.87	11	$21.71	12	$21.69
	45 Brooktree (San. Pump Station)	2001-1802-277	75644842	172	$27.25	234	$28.45	187	$26.09
	49 Brooktree (San. Pump Station)	2001-1802-632	52603592	15	$21.90	101	$24.44	53	$22.71
	10 Brooktree (San Pump Station)	2001-1802-442	52603431	125	$25.66	314	$30.87	202	$26.47
	54 Brooktree (San. Pump Station)	2001-1802-533	46262427	24	$22.20	18	$21.92	19	$21.86
	7 Brooktree (San. Pump Station)	2001-1802-368	57466002	17	$21.95	33	$22.38	23	$21.95
	2230 Baird Road (San. Pump Station)	2001-1802-723	50991533	1992	$89.49	2016	$82.23	1872	$68.46
	339 Whitney Road (San. Pump Station)	2001-1802-822	78713245	29	$22.37	32	$22.34	28	$22.09
	477 Whitney Road (San. Pump Station)	2001-1802-905	78713243	93	$24.57	117	$24.92	92	$23.69
	31 Little Brook (San. Pump Station)	2001-1802-996	48185319	79	$24.07	84	$23.90	83	$23.46
	Lancashire Way (San. Pump Station)	2001-1803-127	04838417	131	$25.87	121	$25.02	265	$27.99
	Street Lighting (Town at Large)	2001-1309-927	N/A						
	Street Lighting (Lake Lacoma Area)	2001-1309-992	N/A	61	$15.47	60	$15.67	51	$13.64
	Street Lighting (Meadows Area)	2001-1330-063	N/A	907	$460.64	883	$462.95	755	$433.36
	Street Lighting (Deer Run Area)	2001-1330-147	N/A	427	$47.62	416	$48.25	355	$31.66
	Street Lighting (Fairmont Hills Area)	2001-1330-246	N/A	315	$35.12	306	$35.49	262	$23.37
	Street Lighting (HPS-TN@LGE)	2001-1330-337	N/A	6183	$1,015.40	6022	$1,031.32	5146	$829.32
	Street Lighting (FAC-TN@ LGE) - Pole, wire Charge no Usage	2001-1330-402	N/A						
	Street Lighting (2 HPS Tn @ LG)	2001-1330-485	N/A						
	Street Lighting (Pinecrest Area)	2001-0617-005	N/A	14	1.56	13	$1.51	11	$0.98
	640 1/2 Pittsford Victor Road	2002-1102-429	13151311						
	2.5 Marsh Road - Canal Path	2002-1216-021	18836669						

Type	Account Description	Account Number	Meter Number	December (2010) Therm	December (2010) Cost	January (2011) Therm	January (2011) Cost	February Therm	February Cost
GAS	100 Cobb's Lane (DPW Facility)	2001-7781-566	00709051	525.9	$4,029.80	737.30	$5,571.94	823.00	$5,661.65
	250 Aldrich Road (Back-Up Generator: Sewer Pump Sta.)	2001-0673-844	00551642	203.3	$201.46	240.8	$232.46	235.3	$63.29
	125 Whitney Road West (Spring Lake Park Maint. Bldg)	2001-1803-515	00692301	31.7	$22.60	167.4	$49.73		
	23 1/2 Greatwood Court (Back-Up Gen.: Sewer Pump Sta.)	2001-7162-171	00691174	4.1	$19.62	3.1	$18.66	3.1	$16.49
	1126 Ayrault Rd. (Back-Up Generator: Sewer Pump Sta.)	2001-0413-571	00718912	3.1	$18.69	3.1	$18.66	1.0	$16.36
	248 1/2 Aldrich Rd. (Back-Up Generator: Sewer Pump Sta.)	2001-7760-149	00718938	3.1	$18.69	3.1	$18.66	3.1	$16.49
	2230 Baird Rd. (Back-Up Generator: Sewer Pump Sta.)	2001-1802-723	00694749	2	$17.86	2	$17.78	2.0	$17.79
	30 1/2 Rosscommon (Back-Up Gen.: Sewer Pump Sta.)	2001-5850-058	00711049	0	$16.30	2.00	$17.78	3.10	$18.63
	1350 Turk Hill Road (Community Center / Town Hall)	300085	N/A	1670	$12,705.71	1812.80	$13,698.38	1,911.40	$13,122.47

Appendix A2: RG&E Accounts (2010-2011)

Town of Perinton Strategic Energy Sustainability Plan

Type	Account Description	March KWH	March Cost	April KWH	April Cost	May KWH	May Cost	June KWH	June Cost
ELECTRIC	555 Kreag Road (Kreag Road Park)	0	$104.32	0	$104.32	816	$351.76	2160	$420.53
	555 Kreag Road (Kreag Road Park)	108	$24.09	96	$24.01	672	$41.77	1236	$61.28
	125 Whitney Road West (Spring Lake Park Maint. Bldg)	86	$23.53	41	$22.50	121	$25.03	129	$25.55
	125 Whitney Road West (Spring Lake Park Restroom)	103	$23.94	541	$35.94	339	$31.55	409	$34.54
	40 1/2 Fair Oakes Drive	144	$24.93	192	$26.57	600	$39.25	528	$38.32
	6 1/2 Crossover Road (San. Pump Station)	192	$26.22	144	$25.43	144	$25.88	144	$26.05
	2 1/2 Lake Crescent Drive	120	$24.34	120	$24.62	96	$24.31	48	$22.95
	101 Sully's Trail (San. Pump Station)	12	$21.68	25	$22.06	18	$21.93	29	$22.30
	45 Brooktree (San. Pump Station)	250	$27.56	208	$27.04	211	$27.76	238	$29.04
	49 Brooktree (San. Pump Station)	127	$24.53	86	$23.74	31	$22.32	35	$22.51
	10 Brooktree (San Pump Station)	286	$28.45	232	$27.70	196	$27.30	244	$29.25
	54 Brooktree (San. Pump Station)	26	$22.02	21	$21.94	32	$22.34	30	$22.36
	7 Brooktree (San. Pump Station)	20	$21.86	20	$21.92	28	$22.23	27	$22.25
	2230 Baird Road (San. Pump Station)	2064	$72.43	1656	$66.52	1632	$70.73	1536	$70.89
	339 Whitney Road (San. Pump Station)	72	$23.17	48	$22.68	80	$23.80	73	$23.74
	477 Whitney Road (San. Pump Station)	124	$24.45	104	$24.21	118	$24.95	126	$25.44
	31 Little Brook (San. Pump Station)	75	$23.25	75	$23.43	68	$23.44	91	$23.99
	Lancashire Way (San. Pump Station)	178	$25.81	110	$24.38	144	$25.74	99	$24.57
	Street Lighting (Town at Large)								
	Street Lighting (Lake Lacoma Area)	48	$14.03	41	$13.83	37	$13.35	33	$13.43
	Street Lighting (Meadows Area)	718	$439.70	603	$435.84	542	$428.90	485	$429.95
	Street Lighting (Deer Run Area)	338	$33.95	284	$29.84	255	$25.31	228	$24.64
	Street Lighting (Fairmont Hills Area)	249	$25.01	209	$21.95	188	$18.67	168	$18.15
	Street Lighting (HPS-TN@LGE)	4893	$872.61	4112	$846.42	3697	$799.20	3305	$806.13
	Street Lighting (FAC-TN@ LGE) - Pole, wire Charge no Usage								
	Street Lighting (2 HPS Tn @ LG)								
	Street Lighting (Pinecrest Area)	11	$1.11	9	$0.93	8	$0.80	7	$0.75
	640 1/2 Pittsford Victor Road								
	2.5 Marsh Road - Canal Path								

Type	Account Description	March Therm	March Cost	April Therm	April Cost	May Therm	May Cost	June Therm	June Cost
GAS	100 Cobb's Lane (DPW Facility)	377.6	$2,742.79	253.9	$1,926.09	66.9	$571.04	9.9	$111.02
	250 Aldrich Road (Back-Up Generator: Sewer Pump Sta.)	164.8	$51.83	90.0	$34.09	23.6	$21.11	1.0	$16.37
	125 Whitney Road West (Spring Lake Park Maint. Bldg)	288.8	$76.81	155.5	$49.13	42.0	$25.01	32.8	$24.90
	23 1/2 Greatwood Court (Back-Up Gen.: Sewer Pump Sta.)	4.1	$16.69	4.1	$16.76	4.1	$16.78	4.1	$16.74
	1126 Ayrault Rd. (Back-Up Generator: Sewer Pump Sta.)	0.0	$16.30	2.0	$16.44	4.1	$16.78	5.1	$16.98
	248 1/2 Aldrich Rd. (Back-Up Generator: Sewer Pump Sta.)	3.1	$16.49	3.1	$16.56	2.0	$16.44	2.0	$16.42
	2230 Baird Rd. (Back-Up Generator: Sewer Pump Sta.)	2.0	$17.72	2.0	$17.75	2.0	$17.80	2.0	$17.76
	30 1/2 Rosscommon (Back-Up Gen.: Sewer Pump Sta.)	3.1	$18.53	2.0	$17.75	4.1	$19.53	3.1	$18.62
	1350 Turk Hill Road (Community Center / Town Hall)	1408.7	$9,985.24	1,299	$9,722.63	926.5	$7,248.92	849	$6,526.80

Appendix A2: RG&E Accounts (2010-2011)

Town of Perinton Strategic Energy Sustainability Plan

		July		August		September		October		November	
Type	Account Description	KWH	Cost	KWH	Cost	KWH	Cost	KWH	Cost	KWH	Cost
ELECTRIC	555 Kreag Road (Kreag Road Park)	1824	$407.30	1008	$378.41	1872	$435.81	2592	$467.03	816	$389.20
	555 Kreag Road (Kreag Road Park)	960	$53.82	1020	$57.38	996	$56.56	792	$44.80	204	$27.48
	125 Whitney Road West (Spring Lake Park Maint. Bldg)	191	$27.82	30	$22.45	10	$21.74	40	$22.58	134	$25.33
	125 Whitney Road West (Spring Lake Park Restroom)	163	$26.87	227	$29.37	232	$29.58	177	$26.75	6	$21.56
	40 1/2 Fair Oakes Drive	528	$39.11	504	$39.05	480	$38.38	552	$38.38	264	$29.13
	6 1/2 Crossover Road (San. Pump Station)	144	$26.29	168	$27.38	168	$27.31	144	$25.33	168	$26.49
	2 1/2 Lake Crescent Drive	48	$23.01	48	$23.09	48	$23.07	72	$23.54	48	$22.86
	101 Sully's Trail (San. Pump Station)	23	$22.15	13	$21.84	20	$22.08	37	$22.50	27	$22.18
	45 Brooktree (San. Pump Station)	109	$25.06	160	$27.01	141	$26.37	141	$25.57	159	$26.09
	49 Brooktree (San. Pump Station)	7	$21.61	6	$21.59	7	$21.62	6	$21.55	10	$21.69
	10 Brooktree (San Pump Station)	36	$22.60	129	$25.93	142	$26.39	127	$25.17	148	$25.76
	54 Brooktree (San. Pump Station)	5	$21.55	16	$21.94	19	$22.05	16	$21.86	12	$21.75
	7 Brooktree (San. Pump Station)	5	$21.55	15	$21.91	18	$22.01	15	$21.82	19	$21.94
	2230 Baird Road (San. Pump Station)	1152	$60.26	1152	$61.94	1392	$70.63	1296	$59.91	1488	$65.50
	339 Whitney Road (San. Pump Station)	29	$22.35	27	$22.33	21	$22.11	22	$22.03	20	$21.98
	477 Whitney Road (San. Pump Station)	15	$21.89	14	$21.89	7	$21.62	10	$21.68	27	$22.18
	31 Little Brook (San. Pump Station)	30	$22.40	56	$23.35	62	$23.57			92	$24.13
	Lancashire Way (San. Pump Station)	118	$25.37	200	$28.43	162	$27.10	89	$24.00	130	$25.25
	Street Lighting (Town at Large)										
	Street Lighting (Lake Lacoma Area)	35	$13.55	40	$13.81	45	$14.19	53	$14.85	56	$15.06
	Street Lighting (Meadows Area)	521	$432.24	592	$435.95	661	$447.87	779	$457.56	836	$461.51
	Street Lighting (Deer Run Area)	245	$26.45	278	$29.58	311	$31.64	367	$38.68	393	$41.63
	Street Lighting (Fairmont Hills Area)	181	$19.53	205	$21.82	229	$23.29	270	$28.46	290	$30.71
	Street Lighting (HPS-TN@LGE)	3549	$821.66	4032	$846.80	4502	$867.36	5310	$933.61	5699	$960.48
	Street Lighting (FAC-TN@ LGE) - Pole, wire Charge no Usage										
	Street Lighting (2 HPS Tn @ LG)										
	Street Lighting (Pinecrest Area)	8	$0.86	9	$0.95	10	$1.01	12	$1.28	13	$1.38
	640 1/2 Pittsford Victor Road	1588	$182.43	1594	$181.30	1133	$127.09	906	$107.73	1318	$147.95
	2.5 Marsh Road - Canal Path	909	$113.18	682	$84.43	682	$80.16	705	$82.30	177	$58.30

		July		August		September		October		November	
Type	Account Description	Therm	Cost	Therm	Cost	Therm	Cost	Therm	Cost	Therm	Cost
GAS	100 Cobb's Lane (DPW Facility)	5.4	$61.53	5.3	$60.24	10.8	$104.45	32.9	$296.31	39.5	$355.57
	250 Aldrich Road (Back-Up Generator: Sewer Pump Sta.)	0.0	$16.30	0.0	$16.30	1.0	$16.37	5.1	$17.43	91.4	$40.56
	125 Whitney Road West (Spring Lake Park Maint. Bldg)	32.8	$23.33	37.0	$24.30	26.7	$22.49	35.0	$25.94	33.9	$24.84
	23 1/2 Greatwood Court (Back-Up Gen.: Sewer Pump Sta.)	3.1	$16.52	4.1	$16.73	4.1	$16.79	2.1	$16.44	4.1	$16.78
	1126 Ayrault Rd. (Back-Up Generator: Sewer Pump Sta.)	2.1	$16.43	0.0	$16.30	1.0	$16.37	0.0	$16.30	1.0	$16.37
	248 1/2 Aldrich Rd. (Back-Up Generator: Sewer Pump Sta.)	3.1	$16.52	2.1	$16.43	4.1	$16.79	3.1	$16.53	3.1	$16.52
	2230 Baird Rd. (Back-Up Generator: Sewer Pump Sta.)	2.1	$17.80	2.1	$17.79	2.1	$17.74	8.2	$22.79	16.4	$29.87
	30 1/2 Rosscommon (Back-Up Gen.: Sewer Pump Sta.)	3.1	$18.54	3.1	$18.53	3.1	$18.62	2.1	$17.69	3.1	$18.39
	1350 Turk Hill Road (Community Center / Town Hall)	816	$6,193.00	729.2	$5,503.19	950.5	$6,924.24	866	$6,202.10	1038.7	$7,442.52

Appendix A3: Annual Street Lighting Electricity Consumption - 2009 Baseline Year

Town of Perinton Strategic Energy Sustainability Plan

Facility	Description	Provider	kWh	Pole/Wiring Fees	Electricity Cost	Total Cost	Avg. Cost Per Fixture	Cost Per kWH (Electric Only)	Cost Per kWH (Incl. Eqmp. Fees)
Town at Large	11, 175W / 4, 250W / 12, 400W Merc Vapor Street Lights	RGE	37,756	$3,066.95	$1,766.59	$4,833.54	$179.02	$0.05	$0.1280
Lake Lacoma Area	1, 100W Merc Vapor	RGE	560	$132.78	$33.54	$166.32	$166.32	$0.06	$0.2970
Meadows Area	17, 100W HPS Street Lights	RGE	8,282	$4,683.29	$393.30	$5,076.59	$298.62	$0.05	$0.6130
Deer Run Area	8, 100W HPS Street Lights	RGE	3,559	$0.00	$327.62	$327.62	$40.95	$0.09	$0.0921
Fairmont Hills Area	4, 150W HPS Street Lights	RGE	2,623	$0.00	$243.41	$243.41	$60.85	$0.09	$0.0928
2 HPS Tn @ LG	4, 250 W HPS Street Lights	RGE	5,041	$425.76	$242.35	$668.11	$334.06	$0.05	$0.1325
FAC-TN@ LGE	14, Poles & Overhead wiring charge (No Usage)	RGE	0	$910.20	$0.00	$910.20	$65.01		
HPS-TN@LGE	3, 70W / 9, 100W / 9, 150W / 7, 250W / 3, 400W HPS Srreet Lights	RGE	24,222	$3,510.86	$1,272.61	$4,783.47	$154.31	$0.05	$0.1975
Pinecrest Area	2, 15W Flourescent Street Lights	RGE	35	$0.00	$4.81	$4.81	$2.41	$0.14	$0.1374
Highway Lighting	19, 250W / 1, 70W / 78, 150W / 11, 400W Street Lights	FMC	103,040	$0.00	$14,845.88	$14,845.88	$136.20	$0.14	$0.1441
Deer Run	66, 150W HPS Street Lights	FMC	51,480	$0.00	$8,841.77	$8,841.77	$133.97	$0.17	$0.1718
Highway Lighting	68, 100W HPS Street Lights	FMC	33,660	$0.00	$7,894.32	$7,894.32	$116.09	$0.23	$0.2345
Brantley & Brunson Street Lights	26, 150 W HPS Street Lights	FMC	20,280	$0.00	$3,488.36	$3,488.36	$134.17	$0.17	$0.1720
Fairmont Hills	21, 150W HPS Street Lights	FMC	15,015	$0.00	$2,685.96	$2,685.96	$127.90	$0.18	$0.1789
O'Connor Road	17, 150W HPS Street Lights	FMC	13,260	$0.00	$2,280.83	$2,280.83	$134.17	$0.17	$0.1720
Mayfair PK / Deer Run	11, 150W HPS Street Lights	FMC	8,580	$0.00	$1,475.83	$1,475.83	$134.17	$0.17	$0.1720
Misty Meadow	10, 150W HPS Street Lights	FMC	7,800	$0.00	$1,339.67	$1,339.67	$133.97	$0.17	$0.1718
Midlands Section 1	9, 150W HPS Street Lights	FMC	7,020	$0.00	$1,205.70	$1,205.70	$133.97	$0.17	$0.1718
Midland Section 2	9, 150W HPS Street Light	FMC	6,435	$0.00	$1,099.74	$1,099.74	$122.19	$0.17	$0.1709
Beaumont Section 2 Phase 2	7, 150W HPS Street Lights	FMC	8,065	$0.00	$856.91	$856.91	$122.42	$0.11	$0.1063
Midlands Section 3	6, 150W HPS Street Light	FMC	4,290	$0.00	$734.50	$734.50	$122.42	$0.17	$0.1712
Beaumont Section 3 Pahse 1	6, 150W HPS Street Lights	FMC	4,290	$0.00	$803.78	$803.78	$133.96	$0.19	$0.1874
Courtney Drive park & Ride	Parking Lot Lights	FMC	9,538	$0.00	$506.05	$506.05		$0.05	$0.0531
O'Connor Road near BOCES	1, 70W HPS Parking Lot Light	FMC	1,513	$0.00	$197.36	$197.36	$197.36	$0.13	$0.1304
Turk Hill Road / Beechwood	2, 70W HPS Street Lights	FMC	660	$0.00	$148.48	$148.48	$74.24	$0.22	$0.2250
Turk Hill Road Signal @ Town Hall		FMC	1,607	$0.00	$150.76	$150.76	$75.38	$0.09	$0.0938
		Total =	378,611	$12,729.84	$52,840.13	$65,569.97			
		Fees As % of Total =		19.41%	80.59%				

Appendix A4: Annual Wastewater Lift Pump Station Electricity Consumption - 2011

Town of Perinton Strategic Energy Sustainability Plan

Facility Description	Electricity Use (kWh)	Cost
Ayrault Road (San. Lift Station)	27,020	$1,523
Rosscommon Crescent (San. Pump Station)	13,856	$745
Aldrich Road (San. Pump Station)	9,487	$540
Hogan Road (San. Pump Station)	9,383	$525
23 1/2 Great Wood Court (San. Lift Station)	8,839	$509
Deer Run (San. Pump Station)	4,438	$285
Lodge Pole (San. Pump Station)	924	$117
4 Portage Circle (Lift Station)	2,807	$213
Fellows / Furman (San. Pump Station)	2,519	$195
McCoord Woods (San. Pump Station)	2,397	$190
Shady Lane (San. Pump Station)	475	$96
Macedon Center Road (San. Pump Station)	324	$89
40 1/2 Fair Oakes Drive	4656	$405
6 1/2 Crossover Road (San. Pump Station)	1992	$317
2 1/2 Lake Crescent Drive	1056	$288
101 Sully's Trail (San. Pump Station)	241	$264
45 Brooktree (San. Pump Station)	2210	$323
49 Brooktree (San. Pump Station)	484	$270
10 Brooktree (San Pump Station)	2181	$322
54 Brooktree (San. Pump Station)	238	$264
7 Brooktree (San. Pump Station)	240	$264
2230 Baird Road (San. Pump Station)	19248	$839
339 Whitney Road (San. Pump Station)	481	$271
477 Whitney Road (San. Pump Station)	847	$281
31 Little Brook (San. Pump Station)	795	$259
Lancashire Way (San. Pump Station)	1747	$310
Total =	118,900	$9,700

Appendix B

Inventory of Equipment

Appendix B: Inventory of Equipment

Facility	Energy Type	Description	Quantity	Expected Life Remaining (Years)	Other info
555 Kreag Road (Kreag Road Park)					
Storage Bldg					
	Electricity	1-Bulb, T-12, 4'	2		
	Electricity	60-W Incan.	1		
Restrooms					
	Electricity	2-Bulb, T-8	3		
Softball Field					
	Electricity	Field Lights			Computerized controls Installed 2010
Tennis Court					
	Electricity	1000-W Multi-vapor	8		
Whitney Road West (Spring Lake Park Maint. Bldg, 1968, 1920 sq ft)					
Vehicle Garage					
	Electricity	2-Bulb, T-12, 8'	7		
	Electricity	4-Bulb, T-12, 4'	2		
	Electricity	2-Bulb, T-12, 4'	2		
	Natural Gas	Gas Heater	1	5	55 deg F setpoint, 80% efficient
	Natural Gas	Gas HW Heater (not used)	1	-	Turned off, not serviceable
Whitney Road West (Spring Lake Park Restroom)					
	Electricity	75-W Incan.	2		
	Electricity	2-Bulb, T-8	6		
	Electricity	Hand Dryer	2		Assumed 1 in each restroom, 2 restrooms total

Appendix B: Inventory of Equipment

Facility	Energy Type	Description	Quantity	Expected Life Remaining (Years)	Other info
Perinton Park (Shelter Bldg)					
Main area					
	Electricity	250-W Muli-vapor	6		
	Electricity	90-W Flourescent	10		
	Electricity	1000-W Multi-vapor	24		
Storage area					
	Electricity	2-Bulb, T-12, 4'	1		
Heater Room					
	Electricity	Forced Air Furnace	1	5-10	Carrier Model FH4ANA003, 3/4 hp fan, 208/220 Vac, 6.9A, 3ph, KFAEH1001F24
	Electricity	208Vac, 10 gal HW Heater	1	5-10	
	Electricity	2-Bulb, T-12, 4'	1		
Vestibule					
	Electricity	Electric ceiling heater	1	10	
Bathrooms					
	Electricity	Electric ceiling heater	2	10	1 in each bathroom
	Electricity	Electric hand dryer	2	-	1 in each bathroom
Maintenance building					
	Electricity	1-Bulb, T-12, 12'	2		
	Electricity	1-Bulb, T-12, 4'	2		
Fellow Road Park					
Shelter Building, main area					
	Electricity	1000-W Electric Heater	16	10	
	Electricity	10 gal HW Heater	1	5	
	Electricity	20 gal HW Heater	1	5	
	Electricity	2-Bulb, T-12, 4'	8		
Shelter Building, restroom					
	Electricity	Electric Unit Heater	1	5-10	
	Electricity	1-Bulb, T-12, 4'	6		
	Electricity	26-W CFL	14		7 in each restroom
Tennis Court					
	Electricity	1000-W Multi-vapor	8		
Handball Court					
	Electricity	400-W	8		
Basketball Court					
	Electricity	400-W Multi-vapor	8		

Appendix B: Inventory of Equipment

Facility	Energy Type	Description	Quantity	Expected Life Remaining (Years)	Other info
Church Street Potter Park Teen Center (Lion's Den)					
Ground Level					
	Electricity	CFL	8		
	Electricity	2-Bulb, T-12, 4'	10		
	Electricity	4-Bulb, T-12, 4'	1		
Upstairs					
	Electricity	CFL	4		
Hallway					
	Electricity	2-Bulb, T-12, 4'	3		
Basement					
	Electricity	1-Bulb, T-12, 8'	10		
Basement Restrooms					
	Electricity	2-Bulb, T-12, 4'	2		1 in each restroom
Furnace Room					
	Electricity	2-Bulb, T-12, 4'	1		
	Electricity	Furnace w/ heat pump	2	5-10	
	Electricity	Electric Heater	1	5	Carrier Model #4A4CNF048
	Electricity	Electric HW tank, 40 gal		5	Richmond Model#8V40-2
Outside Restrooms (2 total)					
	Electricity	Electric Heater	2	10	1 in each restroom
	Electricity	2-Bulb, T-12, 4'	4		2 in each restroom
Outside					
	Electricity	35-W Flourescent	2		
	Electricity	35-W High pressure sodium	2		
	Electricity	70-W High pressure sodium	6		
	Electricity	100-W High pressure sodium	1		
	Electricity	100-W Multi-vapor	1		
Maintenance Bldg					
	Electricity	3000-W Electric Heater	1	10	
	Electricity	2-Bulb, T-12, 8'	2		
Center Park East					
Meter Room					
	Electricity	Electric heater	1	10	
	Electricity	2-Bulb, T-12, 4'	1		
Restrooms					
	Electricity	Hand Dryer	1	-	
	Electricity	CFL	2		1 in each restroom

Appendix B: Inventory of Equipment

Facility	Energy Type	Description	Quantity	Expected Life Remaining (Years)	Other info
Center Park West					
Storage area					
	Electricity	2-Bulb, T-8, 4'			Lights on motion detector
Shelter area					
	Electricity	100-W Metal Halide	3		Lights on motion detector
Restrooms					
	Electricity	2-Bulb, T-8, 4'	4		Lights on motion detector
Concession area					
	Electricity	2-Bulb, T-8, 4'	2		Lights on motion detector
Potter Place (Ice / Tennis Court)					
	Electricity	1000-W Multi-vapor	8		
Fairport Crew Club					
White Brook Park					
Main Area					
	Electricity	4-Bulb, T-8, 4'	15		
	Natural Gas	Gas furnace, w/ A/C	1	5-10	York high efficiency model, 100,000 Btu/hr
	Electricity / Natur	Air Handling Unit (heat & A/C)	1	5-10	Carrier model 38CKW060, 5-ton condensing unit
Restrooms					
	Electricity	CFL	2		
	Electricity	3-Bulb, T-12, 2'	1		
Egypt Park Pavilion					
	Electricity	70-W high pressure sodium	1		
	Electricity	500-W Mult-vapor	5		
	Electricity				
Fellows Road Park					
Ayrault Road Boat Launch					
	Electricity	400-W Mercury-Vapor	3		
	Electricity	500-W Halogen	2		
Center Park (Heat & Lights)					

Appendix B: Inventory of Equipment

Facility	Energy Type	Description	Quantity	Expected Life Remaining (Years)	Other info
Fairport Crew Club Dock House					
DPW Offices, Building A, 100 Cobbs Lane (2008)					
Administrative Wing (6,578 sq ft)					Programmable T-Stats for FCUs, Occupancy sensors in all rooms
	Electricity	Fan Coil Unit	1	5-10	Carrier model CNPHP 6024ACAABAA, 5 ton nominal capacity, R410A, 0409X35731
	Natural Gas	Gas-fired Furnace	1	5-10	Carrier model 58MVB080 Condensing gas furnace, 15"wc s.p., 1-HP fan motor, 80 MBH input, 75 MBH output
	Natural Gas	Gas-fired Boiler	1		Weil-McLain Ultra 230 (Series II) 90% efficient boiler, 230 MBH input/207 MBH output, Tekmar controls. Serves fin-tube on perimeter, 2 fan coils in vestibule, and radiant floor loop. HW system is constant speed pumping primary/secondary w/ zone pumps
	Electricity	Exhaust Fan for Server Room	1	10	Air conditioning off common system w/ exhaust fan
	Electricity	3-Bulb, T-12, 4' (2 per office)			
	Electricity	Computer Server	1		
	Electricity	Electrical Transformer	1		GE 9T83B3875, 112.5 kVA, 3ph, 480Vac
Crew Area (7,000 sq ft)					Occupancy Sensors for lights
	Electricity/NG	Air Handling Unit	1	5-10	Rooftop unit with manual Renew Aire EV450 plate to plate ERV. ERV1 for conference lunch room, ERV2 for back room. On timer when large occupancy is present
	Electricity	3-Bulb, T-12, 4'			
	Natural gas	Tank style domestic water heater	1		Lochinvar PRN0756, 75 gallon, 70 MBH input
Garage (24,000 sq ft)					Ventilation controlled by CO & NOX detectors, lights on occupancy sensors
	Natural Gas	Infrared Radiant Heater	12	10	CoRayVac
	Electricity	Direct connect vehicle exhaust system	1	10-15	Dedicated roof exhaust
	Electricity	Ceiling fans	3	10-15	Big Ass Fans (manufacturer)
	Electricity	Flourenscent 6-lamp fixtures			

Appendix B: Inventory of Equipment

Facility	Energy Type	Description	Quantity	Expected Life Remaining (Years)	Other info
DPW Offices, Building B, 100 Cobbs Lane (2008, 41,609 sq ft)					
Administrative Wing					Programmable T-Stats for FCUs, Occupancy sensors in all rooms
	Electricity	Fan Coil Unit	1	5-10	Carrier model CNPHP 6024ACAABAA, 5 ton nominal capacity, R410A, 0409X35731
	Natural Gas	Gas Furnace	1	5-10	15"wc s.p., 1-HP fan motor, 80 MBH input, 75 MBH output
	Natural Gas	Gas Boiler	1	5-10	Weil-McLain Ultra 230 (Series II) 90% efficient boiler, 230 MBH input/207 MBH output, Tekmar controls.
Truck Bay					Ventilation controlled by CO & NOX detectors, lights on occupancy sensors
	Electricity	T-5	6		
	Electricity	Ceiling fans	3	10-15	Big Ass Fans (manufacturer)
Salt Barn					
	Electricity	Metal Halide	6		Manual switch control
DPW Offices, Building C, 100 Cobbs Lane (25,614 sq ft)					
	Electricity	Metal Halide			
	Natural Gas	Gas-fired unit	1	5-10	For office
	Electricity	Split-System AC Units	1	5-10	
	Natural Gas	Gas Boiler	1	10-15	Weil-McLain Ultra 310 90% efficient HW boiler, 310 MBH input (62 MHB low-fire), 289 MBH output, Tekmar control. Servers CoRayVac radiant floor heat system, constant speed zone pumping
Parks Operation Center, 50 Cobbs Lane (1960, 22,100 sq ft)					Lights on timer, 5:30am - 10:00pm
Garage					
	Electricity	Roof Top Unit (heat only)	3	3-5	Packaged units, 80% efficient, constant volume, controlled on T-stats
	Electricity	2-Bulb, 32-W, T-8 fixures			
Loading Dock					
	Electricity	Electric Unit Heater	2	10	
Shop					
	Electricity	roof top unit & electric fan coils	1	3-5	
Office					
	Electricity	T-5 fixures		3-5	
	Electricity	AC system			
Hallway					
	Electricity	T-12 fixtures			

Appendix B: Inventory of Equipment

Facility	Energy Type	Description	Quantity	Expected Life Remaining (Years)	Other info
Town Hall (1979, 1997, & 2004, 75,677 sq ft)					DDC system controls for HVAC equipment
	Electricity	Electric Boiler	1	Operable, but past useful life	Megatherm 90B16, 90kW input, 307 MBH output, 3 steps @ 30kW. Serves heat pump loop
	Electricity	T-12 fixtures			No occupancy sensors
	Electricity	Water heater	1	5	two 4.5 kW elements, 40 gallon
	Electricity	Baseboard electric radiators		10	
	Natural gas	gas-fired boiler	1	5-10	HB Smith 28A-12, 3844 MBH input, 2353 MBH output (IBR). Serves fin tube radiators and AHU
	Natural gas	gas-fired boiler	1	5-10	HB Smith 28A-17, 5525 MBH input, 3793 MBH output (IBR), Burner B10-2-6-50
	Electricity	Secondary zone pump	1	5	Armstrong 4030 5x4x8, 250 gpm @ 50' TDH, 7.5 HP @ 1760 rpm, 230 Vac, 3ph
	Electricity	Boiler loop pumps	2	5	Armstrong 4030 6x5x10, 740 gpm @ 30' TDH, 10 HP @ 1180 rpm, 230 Vac (Baldor), 91.7% NEMA eff, 0.72 PF
	Electricity	zone pumps	2	5	Armstrong 4030 3x2x10, 290 gpm @ 85' TDH, 15 HP @ 1800 rpm, 230 Vac (Baldor), 93.0% NEMA eff.Seimens Apogee automation
	Natural Gas	gas-fired domestic water heater	2	5	AO Smith Burkay HW225M, 225MBH input, 219.3 gph
	Electricity	glycol pumps			Constant speed glycol pumps for ventilation AHU
	Electricity/NG	AHU	12	10 (indoor units), 5 (outdoor units)	12 AHU total. 3 inside, 9 outside RTUs. RTU-1 & RTU-7 are gas fired. AHU for pool has VSD on supply/return fans
Howell Road Barn					
	Electricity	Unit Heater (not used)	1	-	
	Electricity	1-Bulb, T-12, 8'	4	-	
	Electricity	Infrared radiator (not used)			

Appendix C

Lighting Recommendations

Appendix C: Lighting Recommendations

Facility	Energy Type	Description	Quantity	Recommended Lighting Upgrade
555 Kreag Road (Kreag Road Park)				
Storage Bldg				
	Electricity	1-Bulb, T-12, 4'	2	1 lamp t8 retrofit
	Electricity	60-W Incan.	1	bi pin cfl retrofit
Restrooms				
	Electricity	2-Bulb, T-8	3	
Softball Field				
	Electricity	Field Lights		
Tennis Court				
	Electricity	1000-W Multi-vapor	8	
Whitney Road West (Spring Lake Park Maint. Bldg, 1968, 1920 sq ft)				
Vehicle Garage				
	Electricity	2-Bulb, T-12, 8'	7	4 lamp t8 retrofit
	Electricity	4-Bulb, T-12, 4'	2	2 lamp t8 retrofit
	Electricity	2-Bulb, T-12, 4'	2	1 lamp t8 retrofit
	Natural Gas	Gas Heater	1	
	Natural Gas	Gas HW Heater (not used)	1	
Whitney Road West (Spring Lake Park Restroom)				
	Electricity	75-W Incan.	2	bi pin cfl retrofit
	Electricity	2-Bulb, T-8	6	
	Electricity	Hand Dryer	2	

Appendix C: Lighting Recommendations

Facility	Energy Type	Description	Quantity	Recommended Lighting Upgrade
Perinton Park (Shelter Bldg)				
Main area				
	Electricity	250-W Muli-vapor	6	4 lamp t8 new fixture
	Electricity	90-W Flourescent	10	
	Electricity	1000-W Multi-vapor	24	6 lamp t5 if indoor, if outdoor, keep
Storage area				
	Electricity	2-Bulb, T-12, 4'	1	1 lamp t8 retrofit
Heater Room				
	Electricity	Forced Air Furnace	1	
	Electricity	208Vac, 10 gal HW Heater	1	
	Electricity	2-Bulb, T-12, 4'	1	1 lamp t8 retrofit
Vestibule				
	Electricity	Electric ceiling heater	1	
Bathrooms				
	Electricity	Electric ceiling heater	2	
	Electricity	Electric hand dryer	2	
Maintenance building				
	Electricity	1-Bulb, T-12, 12'	2	2 lamp t8 retrofit, check length
	Electricity	1-Bulb, T-12, 4'	2	1 lamp t8 retrofit
Fellow Road Park				
Shelter Building, main area				
	Electricity	1000-W Electric Heater	16	
	Electricity	10 gal HW Heater	1	
	Electricity	20 gal HW Heater	1	
	Electricity	2-Bulb, T-12, 4'	8	1 lamp t8 retrofit
Shelter Building, restroom				
	Electricity	Electric Unit Heater	1	
	Electricity	1-Bulb, T-12, 4'	6	1 lamp t8 retrofit
	Electricity	26-W CFL	14	bi pin cfl retrofit
Tennis Court				
	Electricity	1000-W Multi-vapor	8	indoors 6 lamp t5ho, outdoors keep
Handball Court				
	Electricity	400-W	8	indoors 4 lamp t5ho, outdoors keep
Basketball Court				
	Electricity	400-W Multi-vapor	8	indoors 4 lamp t5ho, outdoors keep

Appendix C: Lighting Recommendations

Facility	Energy Type	Description	Quantity	Recommended Lighting Upgrade
Church Street Potter Park Teen Center (Lion's Den)				
Ground Level				
	Electricity	CFL	8	bi pin retrofit
	Electricity	2-Bulb, T-12, 4'	10	1 lamp t8 retrofit
	Electricity	4-Bulb, T-12, 4'	1	2 lamp t8 retrofit
Upstairs				
	Electricity	CFL	4	bi pin cfl retrofit
Hallway				
	Electricity	2-Bulb, T-12, 4'	3	1 lamp t8 retrofit
Basement				
	Electricity	1-Bulb, T-12, 8'	10	2 lamp t8 retrofit
Basement Restrooms				
	Electricity	2-Bulb, T-12, 4'	2	1 lamp t8 retrofit
Furnace Room				
	Electricity	2-Bulb, T-12, 4'	1	1 lamp t8 retrofit
	Electricity	Furnace w/ heat pump	2	
	Electricity	Electric Heater	1	
	Electricity	Electric HW tank, 40 gal		
Outside Restrooms (2 total)				
	Electricity	Electric Heater	2	
	Electricity	2-Bulb, T-12, 4'	4	1 lamp t8 retrofit
Outside				
	Electricity	35-W Flourescent	2	led flood
	Electricity	35-W High pressure sodium	2	led flood
	Electricity	70-W High pressure sodium	6	led flood
	Electricity	100-W High pressure sodium	1	led flood
	Electricity	100-W Multi-vapor	1	led flood
Maintenance Bldg				
	Electricity	3000-W Electric Heater	1	
	Electricity	2-Bulb, T-12, 8'	2	2 lamp t8 retrofit
Center Park East				
Meter Room				
	Electricity	Electric heater	1	
	Electricity	2-Bulb, T-12, 4'	1	1 lamp t8 retrofit
Restrooms				
	Electricity	Hand Dryer	1	
	Electricity	CFL	2	bi-pin cfl

Appendix C: Lighting Recommendations

Facility	Energy Type	Description	Quantity	Recommended Lighting Upgrade
Center Park West				
Storage area				
	Electricity	2-Bulb, T-8, 4'		1 lamp t8 retrofit
Shelter area				
	Electricity	100-W Metal Halide	3	led flood
Restrooms				
	Electricity	2-Bulb, T-8, 4'	4	1 lamp t8 retrofit
Concession area				
	Electricity	2-Bulb, T-8, 4'	2	1 lamp t8 retrofit
Potter Place (Ice / Tennis Court)				
	Electricity	1000-W Multi-vapor	8	
Fairport Crew Club				
White Brook Park				
Main Area				
	Electricity	4-Bulb, T-8, 4'	15	2 lamp t8 retrofit
	Natural Gas	Gas furnace, w/ A/C	1	
	Electricity / Natural Gas	Air Handling Unit (heat & A/C)	1	
Restrooms				
	Electricity	CFL	2	bi pin cfl retrofit
	Electricity	3-Bulb, T-12, 2'	1	2 lamp 17w t8 retrofit/new fixture
Egypt Park Pavilion				
	Electricity	70-W high pressure sodium	1	led flood
	Electricity	500-W Mult-vapor	5	
	Electricity			
Fellows Road Park				
Ayrault Road Boat Launch				
	Electricity	400-W Mercury-Vapor	3	
	Electricity	500-W Halogen	2	
Center Park (Heat & Lights)				

Appendix C: Lighting Recommendations

Facility	Energy Type	Description	Quantity	Recommended Lighting Upgrade
Fairport Crew Club Dock House				
DPW Offices, Building A, 100 Cobbs Lane (2008)				
Administrative Wing (6,578 sq ft)				
	Electricity	Fan Coil Unit	1	
	Natural Gas	Gas-fired Furnace	1	
	Natural Gas	Gas-fired Boiler	1	
	Electricity	Exhaust Fan for Server Room	1	
	Electricity	3-Bulb, T-12, 4' (2 per office)		2 lamp t8 retrofit
	Electricity	Computer Server	1	
	Electricity	Electrical Transformer	1	
Crew Area (7,000 sq ft)				
	Electricity/NG	Air Handling Unit	1	
	Electricity	3-Bulb, T-12, 4'		2 lamp t8 retrofit
	Natural gas	Tank style domestic water heater	1	
Garage (24,000 sq ft)				
	Natural Gas	Infrared Radiant Heater	12	
	Electricity	Direct connect vehicle exhaust systen	1	
	Electricity	Ceiling fans	3	
	Electricity	Flourenscent 6-lamp fixtures		if t8 leave alone, if not 4-6 lamp t8 conversion unless high ceiling then 4 lamp t5ho conversion
DPW Offices, Building B, 100 Cobbs Lane (2008, 41,609 sq ft)				
Administrative Wing				
	Electricity	Fan Coil Unit	1	
	Natural Gas	Gas Furnace	1	
	Natural Gas	Gas Boiler	1	
Truck Bay				
	Electricity	T-5	6	
	Electricity	Ceiling fans	3	
Salt Barn				
	Electricity	Metal Halide	6	
DPW Offices, Building C, 100 Cobbs Lane (25,614 sq ft)				
	Electricity	Metal Halide		if indoor high bay 4 lamp t5ho or 6 lamp t8 conversion
	Natural Gas	Gas-fired unit	1	
	Electricity	Split-System AC Units	1	
	Natural Gas	Gas Boiler	1	

Appendix C: Lighting Recommendations

Facility	Energy Type	Description	Quantity	Recommended Lighting Upgrade
Parks Operation Center, 50 Cobbs Lane (1960, 22,100 sq ft)				
Garage				
	Electricity	Roof Top Unit (heat only)	3	
	Electricity	2-Bulb, 32-W, T-8 fixures		
Loading Dock				
	Electricity	Electric Unit Heater	2	
Shop				
	Electricity	roof top unit & electric fan coils	1	
Office				
	Electricity	T-5 fixures		
	Electricity	AC system		
Hallway				
	Electricity	T-12 fixtures		t8 conversion
Town Hall (1979, 1997, & 2004, 75,677 sq ft)				
	Electricity	Electric Boiler	1	
	Electricity	T-12 fixtures		t8 conversion
	Electricity	Water heater	1	
	Electricity	Baseboard electric radiators		
	Natural gas	gas-fired boiler	1	
	Natural gas	gas-fired boiler	1	
	Electricity	Secondary zone pump	1	
	Electricity	Boiler loop pumps	2	
	Electricity	zone pumps	2	
	Natural Gas	gas-fired domestic water heater	2	
	Electricity	glycol pumps		
	Electricity/NG	AHU	12	
Howell Road Barn				
	Electricity	Unit Heater (not used)	1	
	Electricity	1-Bulb, T-12, 8'	4	2 lamp t8 retrofit
	Electricity	Infrared radiator (not used)		

Appendix D

Alternative Fuel Vehicle Options and Petroleum Reduction

Alternative Fuel Vehicle Options and Petroleum Reduction

Town of Perinton
Department of Public Works

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Draft Report of Recommendations
Alternative Fuel Vehicle Options and Petroleum Reduction

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Draft Report of Recommendations
Alternative Fuel Vehicle Options and Petroleum Reduction

Method of Evaluation

Fleet information including spreadsheets of fuel usage and vehicle information for Town vehicles was provided to the study team by Town staff. Vehicles listed on the spreadsheets were evaluated based on gross vehicle weight/vehicle size, engine size/type, usage patterns, and duty cycles. These parameters were compared with potential alternative fuel applications, available alternative fuel vehicle model availability, and the feasibility of each alternative fuel in the specific duty categories (light, medium and heavy duty). Feasibility of use was evaluated based on a number of factors, primarily based upon cost of installation of infrastructure, existing alternative fuel infrastructure in the vicinity, fuel availability, overall ease of introducing a new fuel into the existing fleet, and ease of integration of new vehicles and fuels into on-going operations.

As the Town orders vehicles primarily off of the New York State Office of General Services (OGS) vehicle contracts, a full review of options for alternative fuel models was made in comparison with the Town's current vehicles, usage patterns and replacement options. Vehicle availability was compared against the existing contract models and the extra "incremental" costs of an alternative fuel model versus a standard model. Use of the NYSOGS contracts eliminates the need to generate procurement specifications, as the items have already been publicly offered for bid and the lowest compliant bidders appear on the State Contract. In limited applications, recommended alternatives were not on State Contract, such as propane powered pickup trucks and vans. However, in the future, or with a direct request to NYSOGS, the propane option for these items may become available (for example, propane buses are listed on State Contract), or the Town may consider developing its own specifications if a certain vehicle is desired.

Eleven (11) preliminary findings are hereby presented to Town staff for review and assessment. This list of preliminary findings is presented in **table format** for ease of review, and is found at the end of this narrative report.

Objectives of Study

The Town of Perinton on-road vehicular fleet was examined to determine the feasibility of incorporating alternative fuels into the Town fleet and improving energy efficiency. The main goals of the fleet study were to examine which alternative fuels could best provide the Town with a substantial petroleum reduction, and what administrative controls or organizational measures could be enacted to increase energy efficiency in the fleet.

Petroleum use can be reduced by use of a non-petroleum based fuel and/or by use of higher fuel economy vehicles. Alternative fuels examined were the nationally recognized clean fuels recognized by the federal government under the defining statute, the EPAct law, first passed in 1992 and re-issued in subsequent iterations. The federally recognized alternative fuels and accepted technologies are: electricity, hybrid technologies, E85 (85% ethanol/15% gasoline), biodiesel, compressed natural gas and propane. Hydrogen is also an accepted fuel under EPAct,

but due to the lack of vehicles, extremely high infrastructure installation cost, and continuing prototypical status of the technology, it was deemed not practical for Town use and is not included as an option.

Fleet Description

The Town of Perinton's fleet inventory is based on three fleet inventory lists that were supplied to the consultant by the Town: Highway Department General Equipment Inventory, Perinton Sewer Equipment Inventory, and Perinton Recreation and Parks Vehicle Numbers. The inventory does not include off-road construction vehicles or landscape equipment such as bulldozers, sidewalk plows, mowers and trimmers or other equipment such as generators. Based on the information provided, as of the date of reporting, the fleet is broken down as follows:

Light Equipment –Sedans, SUVs, Vans and Pickups

	Number of Units - 2011			
Type	Highway Dept.	Sewer Dept.	Parks/ Recreation	Total
Sedans			2	2
Vans	1	2		3
SUVs		2	3	5
½ ton pickups	1	10	2	13
¾ ton pickups	10	3	6	19
				42

Medium and Heavy-Duty Equipment

	Number of Units - 2011			
Type	Highway Dept.	Sewer Dept.	Parks/ Recreation	Total
One-Ton Trucks, including 550 dumps	5	4	2	11
Six-wheel dump trucks	25		1	26
Ten-wheel dump trucks	4	1		5
25 yard packers	5			5
E350 Senior Transport Bus/Van			1	1
Vacuum Trucks	2			2
				50

It should be noted that exact numbers of rolling stock are subject to change as some vehicles go out of service and other vehicles are acquired.

Fuel Usage- Based on information provided to the consultant team, the Town consumed 79,375 gallons of diesel fuel and 24,437 gallons of unleaded gasoline in 2009 and 80,509.5 gallons of diesel and 26,711 of gasoline in 2010 for the study's baseline time span of 2009 and 2010. Fuel records for 2008 were also reviewed for comparative purposes.

Discussion of Findings

Background and Organizational Priorities

Incorporation of alternative fuels into a fleet is influenced by many factors. Certain fleets seek to be "on the cutting edge" of technology, or the first to incorporate some new fuel. Other fleets seek to incorporate green improvements on a more incremental basis, thereby lessening uncertainty associated with operational changes. In the case of the Town of Perinton, the primary organizational imperatives are fleet efficiency, cost parity with conventional vehicles and fueling, the dependability of vehicles, and cold weather reliability. The fleet also was noted to contain numerous relatively new vehicles, and all the vehicles in the fleet were observed to be in exceptionally good condition and well maintained. Overall concerns on maintaining tight control over cost outlays influenced the consultant team to identify as many low or no cost administrative options for petroleum reduction as possible, rather than concentrating on the feasibility of technologies and alternative fuel types which present high capital costs. Certain alternative fuel technologies can require significant cost expenditures; this is best exemplified by compressed natural gas, which requires a high level of expenditure for both fueling capacity and vehicles. Others are more prototypical and lack vehicle choices, such as hydrogen.

I. Vehicular Fleet Changes and Fueling Options Deemed Feasible and Within Reasonable Levels of Cost

A. Incorporation of Biofuels into Existing and New Vehicle Fueling

The most feasible options for the Town fleet were found to be use of fuels that could be used in existing vehicles and in future new vehicles, the purchase of which would incur no incremental extra cost. These are the biofuels E85 and biodiesel.

E85 is a renewable fuel made from 85% ethanol/15% gasoline. Ethanol is an alcohol, burns cleaner than gasoline, and is primarily produced in the United States, including at a plant in Medina, New York. It is considered to increase national energy security, defers petroleum usage and is the oxygenate of choice for meeting clean air requirements in reformulated gasoline. E10, 10% ethanol/90% gasoline is now commonly found at most gas stations in New York State. Domestic auto manufacturers produce large numbers of vehicles able to run on either regular gasoline or E85. These vehicles are referred to as *flexible fuel vehicles or FFV's.* These vehicles include such models as the Chevrolet Impala sedan, Silverado pickup truck and

Ford Escape SUV, models similar to those already in use by the Town. Numerous FFV's are available on the New York State OGS contract, and their purchase involves no additional incremental cost. Other FFV models include both Ford and General Motors models such as the F-150 and the Tahoe, respectively, as well as numerous vans such as the Uplander, which can be equipped to accommodate wheelchairs for Senior services use. Chrysler also has numerous FFV's such as the Grand Caravan and Town and Country mini-vans and various sedans. Each model year, the availability of new FFV models increases, providing additional options for Town vehicle choices.

Most importantly, a public E85 station exists in the Town, allowing for Town vehicles to fuel in the Village when they are in the vicinity. The availability of a public E85 station would save the Town the necessity of building its own fueling station, which could cost upwards of $180,000. The vehicles can fuel at the public station, and a non-taxable organization account created for billing purposes. The FFV's can run on any mix of E85 and gasoline, so they can fuel between the public E85 station and the Town's own gasoline station, based upon location. There is no requirement that once an FFV uses E85 that it must continue to do so; it can switch between both fuels. A blend of approximately 30% is considered the "sweet spot" for attaining optimal fuel efficiency.

Ethanol has a lower energy content than gasoline, approximately thirty percent less in BTU value. However, its use in nearby fleets in New York and Pennsylvania has shown an approximately 11-15% decrease in fuel economy, likely due to the specific manufacturers' engineering done on the FFV engines. Because of this lower BTU content, E85 generally has a lower price point than gasoline.. E85 is in use by the Monroe County fleet, which has its own station in Henrietta, on Scottsville Road near the Airport. New York State also makes use of the fuel, and the OGS has had a number of fueling facilities installed. E85 uses the same type of tank and piping as regular gasoline, though certain fittings, valves and seals are different and stainless steel valving is preferred; the major fuel dispenser manufacturers (Dresser Wayne, Gilbarco) have E85 models incorporating these differences.

Biodiesel is a renewable fuel used in diesel engines, and is usually mixed with diesel fuel in some combination from two to twenty percent. It reduces petroleum use and burns more cleanly than standard diesel fuel. Biodiesel is available on the state fuel contract, but is more expensive than diesel fuel. A check of the state contract in early 2011 indicated that B20 biodiesel at $3.42 was noticeably more expensive than diesel fuel, which was $2.89 on state contract. However, a future rise in diesel costs will make biodiesel fuel a more feasible option.

Biodiesel is widely used around the country, and certain states, including Minnesota and Pennsylvania, have biodiesel mandates requiring its use. An additional benefit is that biodeisel adds lubricity to the ultra low sulfur diesel now required by the federal government. Sulfur also adds lubricity, and its decreasing proportion in current diesel fuels means that fuel suppliers must use additives to raise the lubricity. Biodiesel, even at a low 2% blend, accomplishes this.

Biodiesel mixtures can be stored in standard fuel storage tanks, and do not involve any special fuel system modifications to the fueling facility. As biodiesel can gel and clog fuel systems in colder weather, a lower percentage winterized blend should be used during the winter months. Alternatively, a simple tank heating system can be installed on the biodiesel tank, an approach used by other State fleets. Or the use of biodiesel can be phased out around mid to late September each year, and re-instituted in late spring, thereby eliminating any uncertainty over the fuel's cold weather effects.

A pilot test can be carried out by renting a small temporary tank (1,000 gallons) and utilizing a biodiesel blend in some portion of the diesel engine vehicles. The test should utilize ten or more vehicles to ensure a reliable sample size.

B. Incorporation of Light Duty Hybrid Electric Vehicles into Fleet

Light Duty hybrid electric vehicles are available on State Contract, and are also in use by the Fairport Electric Commission. Such vehicles can meet any vehicle requirement for small and medium sized sedans, and also for small SUV's similar to those currently in use by the Town, specifically in the case of the Ford Escapes. Though they sell at a premium (up to $9,500 more), the extra cost of the hybrids may be met via grant funding from the upcoming Congestion Mitigation and Air Quality grant program explained later in this report.

Currently the Nissan Altima is the hybrid electric model listed on the State Contract. An evaluation should be performed to determine if procurement of non-domestic vehicles is appropriate for the Town. Should procurement of other vehicles such as the Ford Escape, the Ford Fusion, or the General Motors Malibu hybrid be desired, the Town will have to utilize in house procurement procedures, or could possibly make use of other vetted procurement avenues such as the General Service Administration contracts or the National Joint Powers Alliance.

C. Incorporation of Propane Vehicles into Fleet and Construction of a Propane Fueling Station

The current constraint on municipal spending necessitated careful consideration of potential near, mid and long term asset allocation for greening the fleet. Based on overall cost of infrastructure construction, propane as a motor fuel appears as a very feasible alternative fuel for Town use. Further, the fleet composition, in comparison with available propane vehicles, fits well with Town duty cycles. The high number of Ford 250 series trucks currently in the fleet matches well with the availability of a commensurate propane Ford 250 model pickup, which has a USEPA and California Air Resource Board (CARB) engine emissions certification. Further, the other Ford models including 250 and 350 series vans and trucks with current model year CARB certification would be good fits for the Town's vehicle duty cycle. Likely, Roush will also seek to again certify future 150 model pickups, having certified the 2007.5-2008 models. The cost of construction of a propane fueling station is considerable less than other alternative fuels

and could likely be accomplished for approximately $30,000 for a well outfitted station, plus any necessary engineering services.

Infrastructure:
The cost of engineering could be eliminated by utilizing a contractor familiar with propane fueling with a specified level of experience required in the RFP. At all costs, the Town should AVOID paying for the learning curve of an engineering firm to "design" a station, when a contractor with experience would perform the task more effectively. Such charges could easily exceed the cost of a station as the engineer charges time to learn how to perform the task at hand.

A national information source on propane as a motor vehicle fuel, and appropriate installation contractor sources, is found in the Propane Education Research Council (PERC), whose funding and mission is intended to assist in this type of educational process. The state association of propane retailers, the New York Propane Gas Association, could also be of assistance in determining a list of qualified installation contractors. The County of Monroe will shortly complete installation of a propane fueling station, and fleet contacts there would likely provide information on the process.

Vehicles:
Background
Ford, in conjunction with Roush, has been the leading original equipment manufacturer (OEM) to pursue creating a line of propane vehicles[7]. Though currently these vehicles are not on State Contract, they may be added should requests be made to OGS. There are propane buses on the state contract. The process for obtaining a Ford propane vehicle is to ensure the dealer adds the propane option at point of sale, which is offered at approximately $350. The vehicle is fabricated, and sent to a designated Ford dealership that has received special and specific training to add the Roush propane components. In the case of our area, that dealer is Ferrario Ford in Elmira, New York.

Emissions Considerations and Appropriate Engine Applications
Use of alternative fuel applications requires, in New York State, the highest and most stringent level of engine emissions certification. New York is known as a CARB state, meaning that it, as numerous other states in the Northeast, follows the requirements of the California Air Resources Board. The US Environmental Protection Agency also certifies engines, but EPA certification does NOT constitute CARB certification; these are two separate certifications. To legally register a vehicle in New York, the engine must be CARB certified.

Engine Certification Outlook

The consultant team does not recommend any product, manufacturer, or business, nor give preference of one over another. Due to the limited availability of propane vehicles and certified engine families, Ford and Roush are noted herein as the primary source of vehicles.

As was noted, Ford and Roush have worked to create a line of propane trucks and vans that are EPA and CARB certified. The product line and certified engine model/s changes each year, so care must be taken to only utilize CARB certified models for that specific model year. Monroe County is in fact upfitting existing units in its fleet to propane, specifically model year 2007-8 F150's. Though this is an option for the Town, and the vehicles would probably work well, the consultant team leans towards propane applications for new procurement.

As of this writing, the Ford F250 pickup, a model widely utilized in the Town fleet, is both EPA and CARB certified, as is the Ford 350 pickup. Other models, such as Ford's 150, 250 and 350 vans, are in the process of being CARB certified.

The best way to track the certification process, and determine which future vehicles are slated for certification, is to maintain good contact with both Roush and Ferrario Ford, its designated propane upfitter in the Northeast.

II. Administrative Actions and Policy Implementation of Low or No Cost Alternatives:

A. Replacement Policy for Acquisition of Flexible Fuel E85 vehicles off of NYS Contract for Appropriate Duty Cycles and Fueling at local existing station

Numerous flexible fuel E85 compatible vehicles are listed on State Contract. These vehicles are often the exact same models being used by the Town presently, such as the Ford Escape and F150, and the Chevrolet Impala and Silverado. A number of E85 vans (passenger and cargo) are also listed. A close review of the State Contract choices should be performed by the fleet director and department heads, and an e-copy kept by staff. The following Internet link is included which will link to all the alternative fuel vehicles listed in state contract: http://www.ogs.state.ny.us/purchase/spg/pdfdocs/CL708.pd

The E85 model can be ordered at no extra cost, and in this manner the FFV fleet will increase upon each procurement cycle. The FFV's can be fueled at the public E85 station located within the Town, when the vehicles are in the vicinity.

A written standard should be set by fleet staff to define what is "in the vicinity" -- for example, if the vehicle is within a half mile of the station on its daily route. Unless some clear directive is given, drivers may choose to not go out of their daily routine to use the biofuel. Continued reminders and friendly competition can be used to bump up usage. Reasons for using E85 should be clearly articulated on a regular basis, and the importance of using domestic fuel to decrease petroleum dependence should be stressed.

B. Development and Implementation of either a "no idle" or strict anti-idling policy

If the plan is developed in-house, there will be minimal cost. Anti-idling policies may be viewed on-line from other municipalities, or reviewed from federal sources such as the USEPA. If a plan is developed by a consultant, professional services should be about $2,500-5,000. Numerous large municipalities have set anti-idling regulations.

Idle-reduction has been determined to effect a 10-15% reduction in overall petroleum use. Clear records should be kept in order to measure and report improvements related to operational changes and driver behavior modification. In addition to fuel savings, the lifecycle maintenance costs are reduced and residual vehicle value is increased.

Purchase of Anti-Idling Technology such as In-Cab Heaters

The Town's main heavy duty vehicles are the large and mid-sized dump trucks, most of which are used for snowplowing in the winter. These units need to be warmed up in the morning before use, and also are subject to idling throughout the day. The consultant team sought a way to determine how these units could save fuel based upon their idling requirements.

Though the consultant team does not advocate use of any manufacturer or brand over another, limited manufacturers' options sometimes require indication of a brand name in discussing fleet fuel reduction technologies. The team investigated a number of options including the Webasto line of idle reduction units, which were identified to have a product that was affordable, did not require use of batteries, reduced fuel use, and has a long track record of use. The Webasto Air Top 2000 is an in-cab heater that is manually turned on, and serves to warm the cab at the start of the day, thereby reducing initial "start of duty" idling, and can be used to maintain cabin warmth when needed. This unit uses one gallon of diesel for every 15-20 hours of idling time, an exponential reduction in fuel use versus idling the diesel engine to maintain cabin warmth. It is a small unit which mounts beside the passenger seat, is self-cleaning, and is installed by the dealer. The units are $2,100 a piece installed, but for purchases of over fifteen units, the installation costs can be reduced, according to the local supplier/installer. A test unit can be brought out for Town examination, and such a field test is recommended in order for fleet staff to become more familiar with the units.

C. Positioning the Town for Grant Funding Opportunities

The Town should be aware of near term grant opportunities, which have the potential to assist in meeting extra costs associated with alternative fuel vehicles and fueling station construction costs. Specifically, in the next quarter (i.e. Q1 2011), the US Department of Energy Clean Cities program will have a grant funding solicitation. The Town should partner within a larger application which may be put together regionally or statewide. One source for partnering information is the Genesee Region Clean Communities. The GRCC is part of the USDOE national Clean Cities program, which has the mission of decreasing petroleum usage and improving air quality through the increase in use of alternative fuel vehicles and associated infrastructure. This organization can provide information on the status of an application opportunity.

Generally, with grant opportunities, the most successful approach involves clear planning for what alternative fuel project/s the Town wishes to pursue. If a plan is in place prior to a grant opportunity opening, then estimates can quickly be prepared, and the grant application prepared and submitted with all the required documentation.

Federal Congestion Mitigation and Air Quality (CMAQ) grant funding opportunities are expected to become available in the near future (next 12 months). This source of funding will potentially cover incremental costs for vehicles and infrastructure, which the Town can make use of; this will be a competitive grant program released some time in 2011.

Due to the current budget situation in New York State, continued grant funding via NYSERDA is uncertain, and the elimination of that source of extra funds to "green the fleet" may or may not be available in the next few fiscal years. The USEPA Diesel Emissions Reduction grant programs recently closed for 2011, and will not open again until likely Q4 2011. Such DERA grant applications usually require a substantial cash match and track record for alternative fuel vehicle implementation, neither of which the Town possesses.

D. Develop employee training for Eco-driving

Though a newer development in green fleet efforts, this is a basic outgrowth of driver training/behavior modification efforts. Other fleets have seen an average 15% decrease in fuel use. This strategy seeks to provide educational materials and training, and set organizational imperatives to save fuel via modification of driver behavior.

If the plan is developed in-house, there should be minimal additional cost.
If developed by a consultant, professional services should be about $2,500-4,500. Lower range includes policy assistance and development of basic educational presentation; higher range includes two (2) in-house training sessions.

E. Right Sizing Evaluations for New Vehicle Acquisition

A simple yet effective method to control procurement of unduly large vehicles for a set of work tasks is to institute an evaluation process for new vehicle orders on a per department, per vehicle basis. A fleet "point of contact" can be designated to confer with specific department heads to insure that the smallest and most fuel efficient model for each application is ordered. Larger municipal fleets utilize a more formalized set of written guidelines to perform such evaluations, but in the case of Perinton, it is reasonable to recommend that a per vehicle category evaluation can be performed without generating excessive bureaucratic procedures. Specific care should be taken in the case of the ½ ton versus ¾ ton pickup trucks. On-site evaluation of the consultant team indicated that the larger trucks have been carefully selected and appear necessary for their work tasks; however, continued scrutiny should be applied this area.

End Note on Methodology of Evaluation:

As indicated, the targeted options outlined provide both reduction in petroleum use, and energy efficiency improvements. The targeted recommendations were vetted using cost considerations, ease of introduction, and synergy with current operations for the listed options.

III. Alternative Fuels to Consider for the Future, should entry costs decrease:

A. Compressed Natural Gas

An extremely clean-burning, mostly domestic fuel, the Town can consider use of natural gas vehicles should a financial opportunity present itself that would cover the high cost of entry. The extra cost of heavy duty engine applications can be well over $30,000 per vehicle, and for light duty applications, up to $15,000 per vehicle. One light duty vehicle, the Honda GX, is found on New York State contract at (INSERT), including a more reasonable incremental cost. Another common application of CNG is for refuse vehicles, but Perinton does not collect its own refuse, and contracts out that service. The cost of construction of a CNG station varies based upon size and the amount and speed of fueling (time fill versus fast fill), but would be expected to cost hundreds of thousands of dollars. Use of natural gas requires a long term commitment to the fuel, and application of municipal funds to match any grants that might help pay the extra costs of vehicles and infrastructure. For the reasons of cost, CNG was not selected as a short or medium term fuel application for Perinton. Should another organization in the vicinity choose to build a station, then the Town could acquire vehicles and make use of a partner station.

B. Electric Light Duty Vehicles and Hybrid Electric Heavy Duty Vehicles

Again, based upon high costs of entry, these very clean fuel vehicle choices are deferred for selection until costs of entry decrease and overall availability increases. Light duty electric options exist, such as the Nissan Leaf, but have a high incremental cost, and are not on State Contract at this time. If more electric vehicles are incorporated into the State Contract at a reasonable cost, this option will present with much stronger viability.

Heavy duty hybrids are available but at a very high (approximately $50K plus) incremental cost. Application of such vehicles, even if the extra cost was viable, would be very minimal, creating a "one of a kind" application that does not appear to suit Town organizational goals.

Certain small transport vehicles are available on State Contract at a reasonable cost, but these types of vehicles are more appropriate for a "campus like" setting, and do not fit the types of work that the Town's vehicles perform. Others listed on State Contract are no longer in production.

IV. Financial Analysis

Sustainable fueling recommendations include increasing the numbers of Flexible Fuel Vehicles (FFV) that can operate on E-85, replacing some sedans and SUVs with hybrid vehicles, and introducing propane fueling capability. These recommendations may be implemented incrementally over the next 5-8 years. The following analysis is based on a scenario that assumes aggressive implementation of these recommendations and no increase in the size or composition of the Town's fleet.

Type of Vehicle	Total # Units – 2011	Alternative Fuel Replacement Options
Sedans	2	Hybrid Electric or FFV-E85
Vans	3	Propane or FFV-E85
SUVs	5	Hybrid Electric or FFV-E85
		Propane
½ ton pickups	13	Propane
¾ ton pickups	19	Propane
Diesel-powered vehicles	50	Biodiesel – B 5-20

The following analysis projects the financial impacts of three alternative scenarios:

Scenario A: Replace Gasoline with Propane

In this scenario, the Town would construct a propane fueling station and replace its vans, SUVs and light duty trucks in the fleet with vehicles that can be powered with propane. A total of 75% of the gasoline currently utilized by the Town would be replaced by propane.

The introduction of propane fuel will require the construction of a fueling station at a cost of approximately $30,000.

Ford 250-series pickups are available and 350-series pickups are expected to become available, although they are not currently listed for purchase under state contract. The additional cost of propane compatibility in new vehicles is approximately $350 per vehicle. The cost to convert

an existing vehicle is approximately $10,000. Approximately 30 of the 42 gasoline-powered vehicles in the fleet could be replaced by propane-powered vehicles.

Fuel cost is lower for propane than for gasoline. The NYS Contract price per gallon of bulk propane is $1.80, compared to $2.91/ gallon for regular unleaded gasoline. Propane fuel is estimated to get approximately 90% of the miles per gallon of regular gasoline.

If Perinton replaces 75% of its gasoline with propane, annual fuel costs are projected to be reduced by $16,139 (24%), assuming that the difference in cost between gasoline and propane remains the same. This projection also assumes that propane-fueled vehicles will require 10% more gallons of fuel than comparable gasoline-powered vehicles.

Scenario A: 75% of gasoline replaced by propane

	Gasoline	Propane		
Cost per Gallon - 2011	$2.91	$1.80		
Annual Usage - Baseline	23,000	0		
Annual Fuel Cost - Baseline	$67,034	$0	$67,034	
Projected Usage - Sustainability Scenario	5,750	18,975		
Projected Annual Fuel Cost - Sustainability Scenario	$16,758	$34,136	$50,894	
Projected Annual Fuel Cost Savings			$16,139	24.1%

Gasoline price from State Contract award for Monroe County issued 7/21/11.
Propane price from State Contract award for Monroe County issued 6/30/11.

The fuel cost savings would be offset by increased vehicle purchase costs of approximately $10,500 ($350 @ for 30 vehicles) and the cost of installing a propane fueling station, estimated at $30,000.

Scenario B: Replace gasoline with E-85

The cost to purchase Flexible Fuel Vehicles that can operate with E-85 is no higher than comparable vehicles that can only operate on gasoline.

In recent years, the price of E-85 fuel has been typically lower than that for regular unleaded gasoline, although the gas mileage is also lower. However, current NYS Contract prices show higher prices for E-85 than for regular gasoline. For this analysis, we have used current State Contract prices but assumed that the operating costs for the two fuels are the same. At current prices, replacing 80% of the gasoline used by Town vehicles with E-85 fuel would result in $45,670 additional fuel costs per year. In addition, as the Town does not dispense E-85 at its fueling station at the Department of Public Works, fuel would need to be purchased at a public fueling station.

Scenario B: 80% of gasoline replaced by E-85

	Gasoline	E-85		
Cost per Gallon - 2011	$2.91	$3.55		
Annual Usage - Baseline	80,000	0		
Annual Fuel Cost - Baseline	$233,160	$0	$233,160	
Projected Usage - Scenario B	8,000	72,000		
Projected Annual Fuel Cost - Scenario B	$23,316	$255,514	$278,830	
Projected Annual Fuel Cost Increase			$45,670	19.6%

Gasoline price from State Contract award for Monroe County issued 7/21/11.
Gasoline and E-85 prices from Erie County State Contract issued 6/30/11. None listed for Monroe or adjoining counties.

Scenario C: Replace diesel fuel with 5% bio-diesel

The current (October 2011) State Contract price for B5 biodiesel is $3.3736, compared to $3.0313 for regular grade D1 diesel fuel. If the Town replaces 90% of its diesel fuel with B5 biodiesel, and the relative costs remain the same, annual fuel costs would increase by $24,646, or 10%.

Scenario C: 90% of diesel replaced by B5 biodiesel

	Diesel	B-5		
Cost per Gallon - 2011	$3.03	$3.37		
Annual Usage - Baseline	80,000	0		
Annual Fuel Cost - Baseline	$242,504	$0	$242,504	
Projected Usage - Scenario C	8,000	72,000		
Projected Annual Fuel Cost - Scenario C	$24,250	$242,899	$267,150	
Projected Annual Fuel Cost Increase			$24,646	10.2%

Diesel and B5 biodiesel prices from State Contract award for Monroe County issued 8/30/11.

Scenario D: Reduce gasoline by utilizing hybrid electric vehicles

Replacing the existing sedans and SUVs with hybrid electric vehicles would cost up to $9,500 more per unit than replacing them with regular gasoline or flexible fuel vehicles. Fuel savings is approximately 24% for SUVs and 36% for sedans.

Assuming that the eight sedans and SUVs in the fleet (of a total of 42 gasoline-powered vehicles) utilize 10% of the gasoline purchased each year, annual fuel costs are projected to be approximately 28% lower, yielding a savings of $6,528/year.

	Gasoline	
Cost per Gallon - 2011	$2.91	
Annual Usage - Baseline for sedans and SUVs (10% of total)	8,000	
Annual Fuel Cost - Baseline for sedans and SUVs (10% of total)	$23,316	
Projected Usage - Scenario D	5,760	
Projected Annual Fuel Cost - Scenario C	$16,788	
Projected Annual Fuel Cost Savings	$6,528	28.0%

The projected fuel savings are offset by the increased capital cost of approximately $64,000 for the eight vehicles (average of $8,000 additional per vehicle.)

Scenario E: Idle reduction and driver training

This scenario assumes that additional idle reduction and driver training will result in a decrease of 10% in fuel costs. Projected savings are up to $6,700 for gasoline-powered vehicles and $24,000 for diesel-powered vehicles.

Scenario E: Idle Reduction

	Gasoline	Diesel	Total	
Cost per Gallon - 2011	$2.91	$3.03		
Annual Usage - Baseline	23,000	80,000		
Annual Fuel Cost - Baseline	$67,034	$242,400	$309,434	
Projected Annual Fuel Cost Savings	$6,703.35	$24,240.0	$30,943	10.0%

Gasoline price from State Contract award for Monroe County issued 7/21/11.
Diesel fuel price from State Contract award for Monroe County issued 8/30/11.

Appendix E

Walk-Through Energy Audit Report

WENDEL ENERGY SERVICES

October 6, 2006

Dave Laney
New York Power Authority
2468 Brookside Drive
Walworth, NY 14568

Subject: Walk-Through Audit Report
Town of Perinton

Dear Dave:

Dominic Insinna from Wendel Energy Services, LLC and Dave Laney from NYPA met with the Town of Perinton on August 10, 2006 to review the ESP program, introduce Wendel to the customer, and conduct a preliminary walk through of the buildings. During the initial meeting, the customer indicated they were concerned about the higher than expected energy costs associated with the pool/water park and community center. They looking to reduce energy costs, but were unsure about what payback or financing terms they would be willing to except.

The following provides a summary of the preliminary assessment performed by Wendel for Town of Perinton:

BACKGROUND

Town of Perinton is located east of Rochester in Monroe County. The Town has approximately (12) buildings including park pavilions totaling approximately 100,000 square feet.

Most of the Town's electricity is purchased from the Fairport Municipal Commission (FMC). RG&E delivers some additional electricity and natural gas which is supplied by Energetix. The total annual electric cost is approximately $285,000. The total annual natural gas cost is approximately $165,000. The Town Hall / Community Center and Park Operations Center are the only significant buildings in terms of utility usage, square footage, and operating hours.

140 John James Audubon Parkway • Suite 201 Amherst • New York 14228
P 716.688.0766 F 716.625.6825 W www.wendelenergy.com

POTENTIAL MEASURES

1. Lighting Upgrades (Town Hall & Community Center)

   Most of the fluorescent Lights Community center and Parks Operations Building utilize T8 lamps and electronic ballasts. The potential may exist to replace/retrofit any remaining T12 fixtures in the Town Hall with T8 lamps and electronic ballasts. There appear to some limited applications to de-lamp fixtures and install reflectors in the Community Center. Also, there appears to be some applications for the installation of occupancy sensors at the Town Hall and Community Center Complex. It may be possible to retrofit the existing pool lights with pulse start metal halides in conjunction with new bi-level lighting controls based on daylighting. The existing up-light gym fixtures could be replaced with T5 HO fluorescent fixtures with occupancy controls.

   - Estimated Total Cost = $75,000 to $100,000
   - Estimated Annual Cost Savings = $5,000 to $8,000
   - Estimated Payback = 10 to 15 years

2. HVAC Upgrades (Town Hall)

   Space conditioning at Town Hall is accomplished with approximately (25) water source heat pumps. An electric boiler and cooling tower are used to add and reject heat fro the loop. Wall thermostats are used to control the heat pumps. The heat pumps are 26 years old and at the end of their useful life. Replacement of the existing heat pumps system with new high efficiency heat pumps should be studied.

   - Estimated Total Cost = $150,000 to $200,000
   - Estimated Annual Cost Savings = $6,000
   - Estimated Payback = 25 to 35 years

3. Pool Cover (Community Center)

   The pool area consists of a spa, water park pool, and standard swimming pool. The standard pool and water park pool water are maintained at 84°F. The space temperature and humidity levels are set at 86°F and 50% respectively. It may be feasible to install automatic or manual pool covers on the standard pool and spa. This would reduce evaporation loss during unoccupied hours.

- Estimated Total Cost = $60,000
- Estimated Annual Cost Savings = $6,000
- Estimated Payback = 8 to 15 years

4. HVAC Controls Upgrades (Community Center)

   The building has a modern Siemens energy management system in place. A number of upgrades to the existing system may be possible to produce additional energy savings. These include: demand controlled ventilation controls for AHU-7 (Gym), occupancy based control of VAV boxes serving AHU-12 (North –end Addition), and reduced ventilation/night setback for AHU-8/9 (Pool).

   - Estimated Total Cost = $30,000
   - Estimated Annual Cost Savings = $5,000
   - Estimated Payback = 5 to 15 years

CONCLUSION

There were some energy-related opportunities identified as a result of the walk-through and preliminary assessment. However, without significant low payback measures and the relatively low electric cost from FMC, the simple payback for all of the measures listed above would most likely be in the 13 to 20 year range. The total project cost would be in the range of $300,000 to $400,000.

Sincerely,
WENDEL

Dominic Insinna, CEM
Project Manager

Town Of Perinton
ESP Project Summary
10/16/2006

10 Year Financing

Equipment + Fees:	$195,000
Labor + Fees:	$195,000
Sub-Total:	$390,000

ECM	Cost	Savings	Payback
Lighting:	$100,000	$8,000	
Heating:	$200,000	$6,000	
Pool Cvr.:	$60,000	$6,000	
Controls:	$30,000	$5,000	
Total:	$390,000	$25,000	16

L&M + Fees Total:	$390,000
Contingency: 10%	$39,000
Revised Total:	$429,000
Bonds: 1%	$3,900
IDC: 4% 1 Year	$17,160
Revised Project Cost:	$450,060
IC Fee: 12%	$0
NYPA Fee: 12.50%	$0
Total Project Cost:	$450,060
Financing: 4% For 10 Yrs.	$96,737
Total Cost After Financing:	$546,797
Monthly Payment:	$4,557
Annual Payment:	$54,680
Monthly Savings:	$2,083
Monthly Cash Flow:	-$2,473
Annual Savings:	$25,000
Annual Cash Flow:	-$29,680
Payback Years:	21.87

Perinton ESP Project 10 Years Financing

Loan Information	
Loan principal amount	$450,060.00
Annual interest rate	4.000%
Loan period in years	10
Base year of loan	2007
Base month of loan	January

Key Figures	
Annual loan payments	$54,679.68
Monthly payments	$4,556.64
Interest in first calendar year	$17,322.45
Interest over term of loan	$96,736.80
Sum of all payments	$546,796.80

Payments in First 12 Months

Year	Month	Beginning Balance	Payment	Principal	Interest	Cumulative Principal	Cumulative Interest	Ending Balance
2007	Jan	$450,060.00	$4,556.64	$3,056.44	$1,500.20	$3,056.44	$1,500.20	$447,003.56
	Feb	$447,003.56	$4,556.64	$3,066.63	$1,490.01	$6,123.07	$2,990.21	$443,936.93
	Mar	$443,936.93	$4,556.64	$3,076.85	$1,479.79	$9,199.92	$4,470.00	$440,860.08
	Apr	$440,860.08	$4,556.64	$3,087.11	$1,469.53	$12,287.03	$5,939.53	$437,772.97
	May	$437,772.97	$4,556.64	$3,097.40	$1,459.24	$15,384.43	$7,398.77	$434,675.57
	Jun	$434,675.57	$4,556.64	$3,107.72	$1,448.92	$18,492.15	$8,847.69	$431,567.85
	Jul	$431,567.85	$4,556.64	$3,118.08	$1,438.56	$21,610.23	$10,286.25	$428,449.77
	Aug	$428,449.77	$4,556.64	$3,128.47	$1,428.17	$24,738.70	$11,714.42	$425,321.30
	Sep	$425,321.30	$4,556.64	$3,138.90	$1,417.74	$27,877.60	$13,132.16	$422,182.40
	Oct	$422,182.40	$4,556.64	$3,149.37	$1,407.27	$31,026.97	$14,539.43	$419,033.03
	Nov	$419,033.03	$4,556.64	$3,159.86	$1,396.78	$34,186.83	$15,936.21	$415,873.17
	Dec	$415,873.17	$4,556.64	$3,170.40	$1,386.24	$37,357.23	$17,322.45	$412,702.77

Yearly Schedule of Balances and Payments

Year	Beginning Balance	Payment	Principal	Interest	Cumulative Principal	Cumulative Interest	Ending Balance
2008	$412,702.77	$54,679.68	$38,879.07	$15,800.61	$76,236.30	$33,123.06	$373,823.70
2009	$373,823.70	$54,679.68	$40,463.21	$14,216.47	$116,699.51	$47,339.53	$333,360.49
2010	$333,360.49	$54,679.68	$42,111.74	$12,567.94	$158,811.25	$59,907.47	$291,248.75
2011	$291,248.75	$54,679.68	$43,827.44	$10,852.24	$202,638.69	$70,759.71	$247,421.31
2012	$247,421.31	$54,679.68	$45,613.04	$9,066.64	$248,251.73	$79,826.35	$201,808.27
2013	$201,808.27	$54,679.68	$47,471.38	$7,208.30	$295,723.11	$87,034.65	$154,336.89
2014	$154,336.89	$54,679.68	$49,405.44	$5,274.24	$345,128.55	$92,308.89	$104,931.45
2015	$104,931.45	$54,679.68	$51,418.29	$3,261.39	$396,546.85	$95,570.27	$53,513.15
2016	$53,513.15	$54,679.68	$53,513.15	$1,166.53	$450,060.00	$96,736.80	$0.00

Appendix F

Alternative Energy Feasibility Study