



Energy Opportunities Town of Trumbull Program Review

TOWN OF TRUMBULL, CT

March 2, 2016
Therese Keegan
Financial/Accounting Controls Analyst

Table of Contents	Page
Transmittal Letter	2
Background	3
ABS energy audit results	3
Savings implementations	4
Findings and Recommendations	5-8
<ul style="list-style-type: none">• Energy Opportunities Program• Return on Investment• Going forward	
Appendix	9
<ul style="list-style-type: none">• Energy Opportunities incentive structure• Implementation summary• Degree days• Post implementation expense	



tkeegan@trumbull-ct.gov
Phone: 203-452-5072

March 2, 2016

Mrs. Elaine Hammers, Chairperson
Board of Finance
Town of Trumbull
5866 Main Street
Trumbull, CT. 06611

Dear Mrs. Hammers:

I respectfully submit the enclosed report entitled Energy Opportunities – Town of Trumbull Program Review.

This audit examines the energy efficiency of Town locations. It measures the savings of improvements to date, and provides information on remaining equipment and sites.

I would like to thank John Marsilio, Director of Public Works as well as employees of Engineering, Parks and Finance departments for their assistance in providing all requested information.

Respectfully submitted,

Therese Keegan
Financial/Accounting Controls Analyst

Background

The Town of Trumbull operates from multiple physical sites, all of which have multiple utility accounts. As of December, the Town had 116 active electric accounts, which include buildings, traffic lights, streetlights, parks and pumps. Considering the natural aging process of buildings and equipment, incidents of piecemeal construction, and the fact that energy efficient products frequently come to market, each utility account must be monitored for kilowatt/cost drivers, and locations should be audited periodically for efficiency opportunities.

The most recent broad energy audit was performed by Automated Building Systems, Inc. (ABS) in 2011. The report included lighting information and energy related equipment detail for nine Town locations detailed in the following section. Excluded from that report are the following:

- Streetlights
- Sewer/WPCA pumps
- Parks
- Transfer station
- Animal Shelter
- Counseling Center

Energy Audit Results

1. Information related to energy usage/cost (at that time) was gathered:

Summary of Energy Usage

For the 364 days ended July 22, 2011

Town buildings	Sq Ft	Electric		Gas		Total Cost	Cost/Sq Ft
		KWh	Cost	CCF	Cost		
Town Hall	26,062	361,220	61,428	7,894	10,965	72,393	2.78
Town Hall Annex	2,184	17,925	3,887	1,267	1,654	5,541	2.54
Police Department	30,359	566,720	92,309	3,809	5,970	98,279	3.24
Trumbull Library	27,674	326,720	56,007	8,169	12,246	68,253	2.47
EMS Building	6,200	62,640	11,125	5,780	6,280	17,405	2.81
Senior Center	20,224	93,520	18,057	6,452	8,682	26,739	1.32
Helen Plumb Building	2,961	8,111	2,348	1,719	2,704	5,052	1.71
Fairchild Nichols Library	8,100	81,960	15,194	3,530	4,413	19,607	2.42
Public Works yard	17,670	7,047	2,370	13,830	19,083	21,453	1.21
	141,434	1,525,863	262,725	52,450	71,997	334,722	2.37

2. Based on rate data, conversations with employees, inspection of equipment, walk-thru of premises and baseline data from comparable buildings, recommendations were proposed, summarized as follows:

Town of Trumbull
Automated Building Systems, Inc.
Report dated 12/23/11

Location:	Sq. Ft.	Built	Recommendations	Annual savings (kwh)	Annual savings \$	Project cost
Helen Plumb Building	2,961	1891	Automatic temp controls		553	400
Town Hall Annex	2,184	1891	Lighting retrofit Occupancy sensors New LED poles and fixtures	152	561	2,730
Fairchild Nichols Library	8,100	1964	Lighting retrofit Occupancy sensors	33,488	8,806	15,150
Police HQ	30,359	1981	Lighting retrofit Occupancy sensors New Energy Mgmt. System	160,045	31,550	82,128
Revised Trumbull Library	27,674	1974	Lighting retrofit New Energy Mgmt. System New gas boiler New outdoor reset	28,380	26,395	67,500
Trumbull EMS	6,200	1978	Lighting retrofit Occupancy sensors New Energy Mgmt. System Weather strip garage doors Insulate boiler piping	26,959	6,533	24,900
Trumbull Public Works	17,670	5 bldgs	Lighting retrofit Occupancy sensors New Energy Mgmt. System Weather strip garage doors	38,399	19,285	35,505
Trumbull Senior Center	20,224	1981	Lighting retrofit Occupancy sensors New Energy Mgmt. System	25,168	9,011	50,280
Trumbull Town Hall	26,062	1957	Lighting retrofit Occupancy sensors New Energy Mgmt. System	15,255	11,848	61,500
	141,434			327,846	114,542	340,093

Estimated annual savings	\$ 114,542
- Lighting	78,264
- Electric	19,228
- Gas	17,049
Installation cost	\$ 340,000
Payback without incentives	3.48 years
Payback with incentives (30%)	2.07 years

Partnering with United Illuminating, the Town began to take advantage of the savings opportunities recommended in the report.

Energy Savings Implementation

The Connecticut Energy Efficiency Fund was established in 1978 based on the basic premise that the efficient use of energy slows the need to build more power plants. The Fund was created to assist homeowners, renters, businesses, state and local governments to use electricity and natural gas more efficiently. The Energy Efficiency Fund is supported through collections on the monthly billing of each Connecticut rate payer. In turn, the Energy Efficiency Fund supports several programs:

- × Small Business Energy Advantage – program pays incentives for lowering energy costs
- × Energy Management Services – UI team assistance with energy needs
- Energy Opportunities Program - reduces operating costs by retrofitting lighting, heating, air conditioning, ventilation and process systems. A retrofit is defined as replacement of equipment that is operational and that has at least 25% of its useful life remaining. The program incentivizes the purchase and installation of natural gas or electrically driven energy efficient equipment, thereby upgrading the facility’s overall performance. The Town of Trumbull has utilized this program for multiple projects which we will address in detail in this report. The incentive structure is presented for review on page 10 (Appendix).

Energy Opportunities Program Process

1. Energy savings opportunity audit
2. Contractor is selected – provides savings detail and quotes project cost
3. Incentive application paperwork is prepared
4. Work is performed
5. Post-installation inspection, review/monitoring

Findings and Recommendations - Please refer to project summary page 11 (Appendix).

Finding #1: Due to low or no out of pocket requirement and the fact that loan repayments are to be offset by savings, Energy Opportunities is a hard program to turn down. Additionally, the Town received incentives for ~ 32% of project cost.

However, savings are estimates, and may or may not be realized. Data is difficult to analyze as anticipated savings can be distorted by changing rates, periods of unusually warm or cold weather (see page 12, Appendix), snowfall, rainfall, use of space heaters or open windows.

Vendor conveyed to the Town an average 2.26 Return on Investment (ROI) as of 12/31/15. The worksheet was audited for accuracy and project inclusiveness. Analysis was neither all-inclusive nor mathematically accurate. Results by building varied but per page 11 (in Appendix), ROI was recalculated to average 8.9 years.

A \$102k three-year savings to the Town was calculated by multiplying stable rate times actual usage. Savings is offset for most projects by 36 month, zero interest loan payments, which are winding down now; the final \$3k will be paid 2018.

Recommendation: To ensure optimal selection and success of potential future projects it is important that the Town perform its own cost benefit analysis rather than rely on vendor analysis. Although requested, Town has never received a complete and mathematically accurate report from vendor.

The Town prepares their own analysis for monthly monitoring and budgeting purposes.

Finding #2: The following sites or electrical costs were not included in the Automated Building Systems, Inc. analysis dated December 2011.

- Streetlights
- Sewer/WPCA pumps
- Parks
- Transfer station
- Animal Shelter
- Counseling Center

Streetlights:

Average monthly cost, calculated from sample months over a 3 year timeframe approximates \$36,000 (\$432,000 annually). Over a three year period, streetlights represent an average of 42.4% of total Town electricity cost. In December 2015, streetlights comprised 52% of total electric cost.

Streetlights are owned by United Illuminating.

- **Generation** rates are set bi-annually by the State of Connecticut Public Utilities Regulatory Authority (PURA). Rates differ for peak/non-peak use and customer type. Streetlights fall into their own category. (Umetered) **kilowatt hours** billed is a calculation of lumen rating X wattage X burn hours.
- **Distribution** rates are also regulated by PURA. Distribution represents ~ 2/3 of the total bill; charges equal an annual fee based upon lumen rating X number of streetlights. Lumen rates vary from 4,000 to 50,000. The town currently has 2,808 streetlights.

United Illuminating is in the process of updating fixtures and bulbs in every Connecticut town they service. Order of replacement is towns with oldest bulbs first. UI plans to reach Trumbull 2018/2019, at which time savings should approximate 30%, which translates to over \$130k annually. Additional savings can be achieved by reducing the number of streetlights or by decreasing the lumen rating of all or a portion of bulbs used. As the LED replacement bulbs offer significant improvement in clarity, lumen rate reductions would probably not be noticed. This would only affect 736 streetlights as 74% are currently utilizing the lowest level of lumen rated bulbs.

Sewer/WPCA pumps:

Average monthly cost, calculated from a sample over a 36 month timeframe approximates \$12,000. This represents an average of 14% of total Town electricity cost. The Town operates and maintains approximately 120 miles of sanitary sewers and 13 pumping stations. In 2015 Wright-Pierce assessed the operations and equipment of 11 of the 13 pumping stations (2 were assessed 3/15). Their estimate for full upgrade of the 11 pumping stations exceeds \$7m, and is beyond the scope of this review. The Department is seeking 80/20 DEEP grants to assist in funding the improvements.

Strictly from an energy efficiency perspective it is important to note that 9 of the 11 pump stations Wright-Pierce audited had vital equipment a number of years beyond estimated life. Replacing equipment up to 25 years beyond its estimated life will most certainly reduce energy requirements.

Number of years beyond design life - as of 2015

Pump Station	Pumps	Valves	Instrumentation	Suction & Discharge Piping	Electrical
Buck Hill					
Hawley Lane	9	9	9	4	4
Merritt Blvd. 1	10	10	10	5	5
Merritt Blvd. 2					
Old Town Road			20	25	25
Park Avenue		11		6	
Pinewood Trail					
Scenic Hill	1	1	1		
Trefoil Drive					2
Wildwood Drive		13		8	8
Whitney Avenue	10	10		5	5

Parks:

Average monthly cost of electricity, calculated from a sample over a 36 month timeframe approximates \$6,400. This represents an average of 7.5% of total Town electricity cost. More telling, summer months average \$9,400 while winter months average \$4,200. There are two components to electricity billing – demand and consumption. Once a level of demand is established, the site is charged for that level going forward. If all the lights are on for a two hour ball game, that establishes the level of demand.

Water, which we have not yet taken into consideration, represents a cost equal to electricity for Trumbull’s 2,000 acres of parks:

Park	November 2015	August 2015	May 2015	February 2015	November 2014	August 2014	May 2014	February 2014
OLD MINE COMFT	240.35	741.26	1,064.95	183.37	215.35	315.64	197.08	201.30
335 WHITE PLAINS RD		2,636.22	1,547.49	189.49	1,193.10	2,853.88	396.08	331.95
LARKSPUR DRIVE	1,146.50	1,980.02	238.40	174.73	490.15	679.76	241.53	184.37
OLD DYKE RD	8,414.63	14,626.02	3,693.28	345.32	2,418.27	15,816.25	5,790.77	294.98
CEMETARY DRIVE	67.27	74.16	87.62	53.59	66.74	83.90	65.70	55.95
1856 HUNTINGTON TPKE	81.16	153.95	40.74	35.72	545.77	170.24	50.84	37.29
335 WHITE PLAINS RD								
BAYBERRY LANE	142.35	213.58	148.70	90.65	300.43	506.04	409.72	91.10
BAYBERRY LANE	2,504.51	3,542.51	2,051.33	290.15	2,867.92	4,472.23	2,050.20	308.54
2 SPRING HILL RD (PARK)			89.65	89.69	95.93	96.40	96.40	96.40
INDIAN LEDGE PK	1,065.87	5,223.19	304.87	266.66	1,393.42	4,998.28	388.99	308.54
1 INDIAN LEDGE DR	2,311.76	4,018.69	1,293.35	499.98	1,685.53	3,538.17	1,048.49	578.52
33 QUALITY ST	34.75	35.06	37.50	34.53	40.51	140.61	38.14	36.87
KAECHELE FARM	4,733.99	4,273.12	1,409.15	298.27	1,957.46	5,946.76	379.66	326.31
INDIAN LEDGE PK-TEEN CENTER	264.44	292.17	271.88	251.85	284.44	262.58	286.93	248.04
WILMOT AVE	1,471.41	2,049.45	358.49	183.96	1,043.96	1,687.44	87.84	392.90
TASHUA ROAD	1,446.89	2,277.57	0	1,301.89	519.21	2,999.12	1,003.75	1,023.84
	23,925.88	42,136.97	12,637.40	4,289.85	15,118.19	44,567.30	12,532.12	4,516.90
	82,990.10				76,734.51			

- Beaches Pool requires 485K gallons of water just to startup. The park is capable of full recovery; alternatively, Indian Ledge recovers no water. Infrastructure upgrades or total redesign would be required to increase recovery of pool/irrigation flows at our parks.
- Town may consider “levels” of park/field maintenance based on use rather than consistent irrigation and maintenance programs for all parks.
- In many circumstances irrigation/pool pumps and lighting can be automated via occupancy sensors, photosensors or timers. Similar to recent BOE implementations, Parks should constantly consider.

Transfer Station:

Average monthly cost, calculated from a sample over a 36 month timeframe approximates \$1,800. This represents an average of 2% of total Town electricity cost. Savings may not be realized until there is a need for updated equipment. ~40% of Transfer Station operating costs are allocated to Easton and Monroe.

Animal Shelter:

Average monthly cost, calculated from a sample over a 36 month timeframe approximates \$563. This represents an average of .66% of total Town electricity cost. Some lighting was recently updated. Occupancy sensors and timers should be considered here.

Counseling Center:

Average monthly cost, calculated from a sample over a 36 month timeframe approximates \$175. This represents an average of .2% of total Town electricity cost.

Appendix

Energy Opportunities Incentive Structure

C0124 Rev. 01/16

2016 Project Caps & Incentive Structure for UI (Effective 01/01/2016)

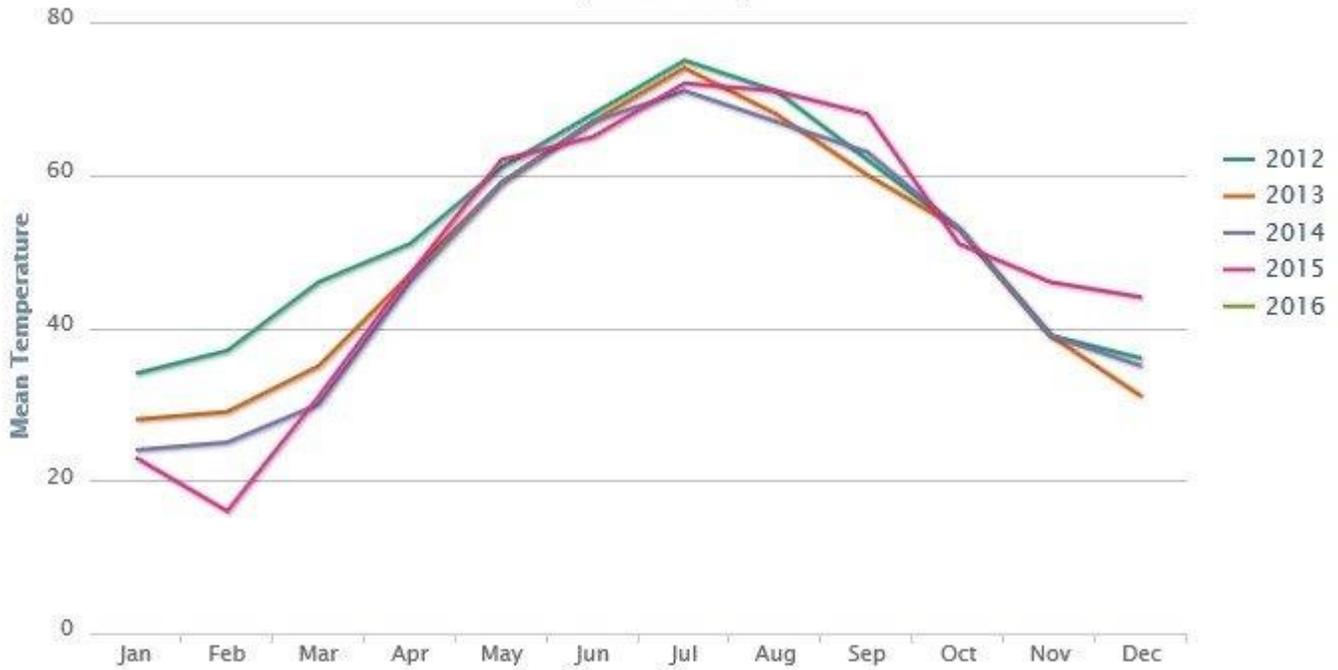
Retrofit Measures	Energy Opportunities (EO)	Small Business Energy Advantage (SBEA)	Operations & Maintenance (O&M) (includes RetroCx where applicable)
Cumulative Cap per Federal Tax ID	\$2,000,000.00	\$2,000,000.00	\$2,000,000.00
Program Caps per metered site	N/A	N/A	N/A
Municipal Finance Cap (project /cumulative total per municipality)	\$100,000.00 / \$400,000.00	N/A	N/A
Lighting Measures			
Interior & Exterior Lighting Measures (the lesser of)			
% of installed cost	35%	35%	N/A
Measure Cap (greater of)	\$0.30 / kWh OR \$800.00 per summer peak kW	\$0.30/ kWh OR \$800.00 per summer peak kW	N/A
High Performance Lighting - LED, Daylighting or Induction Lighting Measures; Advanced Lighting Controls (the lesser of)			
% of installed cost	40%	40%	N/A
Measure Cap (greater of)	\$0.30 / kWh OR \$800.00 per summer peak kW	\$0.30 / kWh OR \$800.00 per summer peak kW	N/A
Express Lighting Rebate (includes LEDs) Refer to Website			
	\$10.00 - \$180.00 / fixture	\$10.00 - \$180.00 / fixture	N/A
Non-Lighting Measures			
Custom Measures (the lesser of)			
% of installed cost	40%	40%	40%
Measure Cap (greater of)	\$0.30 / kWh OR \$800.00 per summer peak kW	\$0.30 / kWh OR \$800.00 per summer peak kW	\$0.30 / kWh OR \$800.00 per summer peak kW
Prescriptive Values - if applicable	\$\$/unit	\$\$/unit	\$\$/unit
EMS System (the lesser of)			
% of installed cost	40%	40%	40%
Measure Cap (greater of)	\$0.30 / kWh OR \$800.00 per summer peak kW	\$0.30 / kWh OR \$800.00 per summer peak kW	\$0.30 / kWh OR \$800.00 per summer peak kW
Cap per point	\$500.00 / pt	\$500.00 / pt	\$500.00 / pt
EMS incentives will be prorated based on energy savings by fuel			
Comprehensive Project Initiative - Project must contain at least 2 End Uses (Heating, Cooling, Lighting, Process, Refrigeration, and Motors) *			
No one End Use can exceed	85% of the energy savings values using the caps below	85% of the energy savings values using the caps below	85% of the energy savings values using the caps below
Comprehensive Bonus *	Up to 50% Installed Cost	Up to 50% Installed Cost	Up to 50% Installed Cost
Comprehensive 'Project' Cap for all measures (greater of)	(greater of) \$0.40 / kWh OR \$1,000.00 per summer peak kW	(greater of) \$0.40 / kWh OR \$1,000.00 per summer peak kW	(greater of) \$0.40 / kWh OR \$1,000.00 per summer peak kW
PLUS \$6.00 / CCF (ECB Measures) (EO Measures)	PLUS \$6.00 / CCF (ECB Measures) (EO Measures)	PLUS \$6.00 / CCF (ECB Measures) (EO Measures)	PLUS \$6.00 / CCF (ECB Measures) (EO Measures)
Other Prescriptive Caps to be evaluated against the energy & demand caps above (the lesser of):			
Pool Covers - automated	\$12.00 / sf	\$12.00 / sf	N/A
Window Film	\$2.00 /sf	\$2.00 /sf	\$2.00 /sf
PC Network Controls	\$20.00 / PC controlled	\$20.00 / PC controlled	\$20.00 / PC controlled
PRIME (Events per customer over 2 years)			
Events 1 & 2	N/A	N/A	100%
Events 3 & 4	N/A	N/A	50%
RetroCx will use the same Measure Caps as EO and O&M			
Scoping Study	N/A	N/A	\$1,000.00
Investigative Study	N/A	N/A	50%
Custom Non-Lighting Measures (the lesser of)			
% of installed cost	N/A	N/A	40%
Measure Cap (greater of)	N/A	N/A	\$0.30/ kWh OR \$800.00 per summer peak kW

NOTES:

1. All calculated incentives for State "Lead by Example" bond funded projects will be reduced by 50%
2. * Overall Comprehensive Project Incentives not to exceed 50% of the total installed costs and contain 2 end uses.
3. All references to kWh savings shall refer to annual savings
4. Electric Distribution Company shall have final determination of Annual Energy Savings
5. Summer Peak kW reduction shall be coincident with: Mon - Fri, non-Holiday from 1pm - 5 pm, June-July-August

Date Compl.	Project	Actual													Calculated savings (not actual): Gas + Electric						Town ROI				
		Project Cost	Utility Incentive	Cust. Out Of Pocket	UI Loan	Total Town Investment	Monthly payment	Payments 2012	Payments 2013	Payments 2014	Payments 2015	Payments 2016	Payments 2017	Payments 2018	For illustrative purposes only (use times fixed rate)										
															2012	2013	2014	2015	Total Savings	3 yr savings		3 yr average			
1	12-Nov	Trumbull Town Hall Lighting & Controls - 2012 EwOU	171,399.00	76,706.00	-	94,692.46	94,692.46	(2,630.35)	(5,260.70)	(31,564.20)	(31,564.20)	(26,303.50)			-		10,487.48	35,891.83	28,560.14	35,375.82	110,315.27	99,827.79	33,275.93		
2	14-Nov	Trumbull Town Hall RTU Replacement - 2014 UI NPzW	225,529.00	32,676.00	92,553.00	100,000.00	192,553.00	(2,777.78)			(13,888.90)	(33,333.36)	(33,333.36)	(19,444.38)											
3	14-Sep	Trumbull Town Hall RTU VFD 2014 NbNs	36,798.00	14,716.00	-	22,073.00	22,073.00	(613.14)			(1,226.28)	(7,357.68)	(7,357.68)	(6,131.36)											
			433,726.00	124,098.00	92,553.00	216,765.46	309,318.46	(6,021.27)	(5,260.70)	(31,564.20)	(46,679.38)	(66,994.54)	(40,691.04)	(25,575.74)			10,487.48	35,891.83	28,560.14	35,375.82	110,315.27	99,827.79	33,275.93	9.30	
4	13-Nov	Capital Boiler Project 2013	66,539.56	16,000.00	50,539.56	-	50,539.56	-	-	-	-	-	-	-	-	-	4,744.31	18,275.44	19,662.26	32,766.26	75,448.27	70,703.96	23,567.99		
5	14-Dec	Library Lighting Lighting and Controls Phase 1 2014 N8wJ	184,135.00	60,022.00	24,113.00	100,000.00	124,113.00	(2,777.78)			(19,444.46)	(80,555.54)	Paid off 6/15												
6	14-Dec	Library RTU Replacement 2014 UI Nd3G	223,680.00	32,676.00	92,553.00	100,000.00	192,553.00	(2,777.78)			(13,888.90)	(86,111.10)	Paid off 6/15												
			474,354.56	108,698.00	167,205.56	200,000.00	367,205.56	(5,555.56)	-	-	(33,333.36)	(166,666.64)	-	-			4,744.31	18,275.44	19,662.26	32,766.26	75,448.27	70,703.96	23,567.99	15.58	
7	12-Nov	PD Lighting 2012 UI FB2z	165,537.00	82,769.00	-	82,768.00	82,768.00	(2,299.11)	(27,589.32)	(27,589.32)	(27,589.32)	-	-	-			11,517.74	27,541.47	28,117.93	32,154.41	99,331.56	87,813.81	29,271.27		
8	15-Dec	PD Controls NmuC	14,729.00	14,729.00			-	-																	
			180,266.00	97,498.00	-	82,768.00	82,768.00	(2,299.11)	(27,589.32)	(27,589.32)	(27,589.32)						11,517.74	27,541.47	28,117.93	32,154.41	99,331.56	87,813.81	29,271.27	2.83	
9	13-Aug	Senior Center Phase 1 Lighting and Controls N8IG	58,605.00	29,303.00	-	29,302.00	29,302.00	(813.98)		(4,883.88)	(9,767.76)	(9,767.76)	(4,882.60)				13,590.47	15,454.16	11,585.15	12,557.95	53,187.73	39,597.26	13,199.09	2.22	
10	15-Jul	EMS Boiler / LED - NkAz	64,332.00	15,297.00	30,000.00	19,035.00	49,035.00	(528.75)	-	-	-	(3,172.50)	(6,345.00)	(6,345.00)	(3,172.50)					2,584.91	2,584.91	5,169.82	5,169.82	9.48	
11	13-Aug	Town Garage 1 UI N6YZ	44,943.00	21,602.00	-	23,341.00	23,341.00	(648.37)	(4,536.00)	(7,776.00)	(7,776.00)	(3,253.00)					1,998.55	(2,142.14)	(3,732.45)	(3,089.27)	(6,965.32)	(8,963.86)	(2,987.95)	(7.81)	
12	13-Aug	Town Garage 2,10 N6YK	9,053.00	3,213.00	-	5,840.00	5,840.00	(162.23)	(1,135.61)	(1,946.76)	(1,946.76)	(810.87)					(1,275.64)	(413.14)	(1,004.28)	(2,106.47)	(4,799.52)	(3,523.88)	(1,174.63)	(4.97)	
13	13-Aug	Town Garage 3,4 N6YQ	14,698.00	4,781.00	-	9,917.00	9,917.00	(275.48)	(1,928.36)	(3,305.76)	(3,305.76)	(1,377.12)					1,126.40	1,126.40	(1,419.60)	(333.42)	499.77	(626.63)	(208.88)	(47.48)	
14	13-Aug	Town Garage 6,7 N6YW	16,269.00	5,047.00	-	11,222.00	11,222.00	(311.81)	(2,182.67)	(3,741.72)	(3,741.72)	(1,555.89)					330.51	372.37	(222.77)	1,003.18	1,483.30	1,152.79	384.26	29.20	
15	13-Aug	Town Garage 8 N6Y9	10,045.00	3,736.00	-	6,309.00	6,309.00	(175.25)	(1,226.75)	(2,103.00)	(2,103.00)	(876.25)					640.64	2,176.72	4,382.56	4,196.92	11,396.84	10,756.20	3,585.40	1.76	
16	13-Aug	Town Garage 9,11 N6YT	14,907.00	5,218.00	-	9,689.00	9,689.00	(269.14)	(1,876.98)	(3,217.68)	(3,217.68)	(1,376.66)					(1,662.39)	(319.05)	(2,891.62)	(3,183.83)	(8,056.88)	(6,394.49)	(2,131.50)	(4.55)	
			109,915.00	43,597.00	-	66,318.00	66,318.00	(1,842.28)	(12,886.37)	(22,090.92)	(22,090.92)	(9,249.79)	-	-			1,158.07	801.16	(4,888.15)	(3,512.88)	(6,441.80)	(7,599.87)	(2,533.29)		
		Totals	1,321,198.56	418,491.00	289,758.56	614,188.46	903,947.02	(17,060.95)	(45,736.39)	(86,128.32)	(139,460.74)	(255,851.23)	(51,918.64)	(31,920.74)	(3,172.50)		41,498.07	97,964.06	83,037.33	111,926.47	334,425.93	295,512.77	101,950.80	8.87	
				31.68%																					

Average Daily Temperature (Station: CT76)



[Average Daily Temperature \(Station: CT76 View Map\)](#)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	34	37	46	51	61	68	75	71	62	53	39	36
2013	28	29	35	47	59	67	74	68	60	53	39	31
2014	24	25	30	46	59	67	71	67	63	53	39	35
2015	23	16	31	47	62	65	72	71	68	51	46	44
2016	30											

Electrical - KWh/Cost Summary

Dept. description	December 2015		KWh Inc (Dec)	% of	June 2015		December 2014		June 2014		December 2013		June 2013		December 2012		% of	Ave \$/Mo
	Kilowatt Hrs	Amount	from 12/12	total \$	Kilowatt Hrs	Amount	Kilowatt Hrs	Amount	Kilowatt Hrs	Amount	Kilowatt Hrs	Amount	Kilowatt Hrs	Amount	Kilowatt Hrs	Amount	total \$	
Town Hall	22,478.0	3,594.92	(1,078.0)	4.70%	20,202.0	3,927.02	31,721.0	6,012.48	21,888.0	4,986.76	33,995.0	5,443.36	23,069.0	5,251.25	23,556.0	4,188.27	5.23%	4,772.01
Police	35,514.0	5,384.30	4,344.0	7.04%	32,324.0	5,627.51	39,976.0	6,845.15	37,364.0	6,587.31	38,835.0	6,704.04	41,064.0	7,165.51	31,170.0	5,246.02	6.55%	6,222.83
Animal Shelter	2,754.0	544.84	177.0	0.71%	2,156.0	520.16	3,201.0	699.63	1,530.0	449.25	3,663.0	736.24	1,773.0	450.08	2,577.0	542.38	0.68%	563.23
Highway	18,409.0	4,520.89	(11,722.0)	5.91%	11,368.0	3,302.26	33,031.0	6,424.72	10,512.0	3,067.65	28,368.0	5,891.87	12,391.0	3,258.09	30,131.0	5,732.00	7.16%	4,599.64
Street lights	117,420.0	39,834.18	12,779.0	52.06%	68,026.0	34,266.19	115,997.0	40,647.22	66,829.0	32,098.00	110,823.0	36,758.03	73,453.0	33,199.77	104,641.0	36,451.70	45.50%	36,179.30
Sewer/WPCA	42,329.0	7,407.53	(21,396.0)	9.68%	60,770.0	11,732.56	74,531.0	14,507.63	62,976.0	12,198.43	58,991.0	11,274.13	84,080.0	15,472.25	63,725.0	11,237.63	14.03%	11,975.74
Sr. Center	5,061.0	944.50	(72.0)	1.23%	4,151.0	980.26	5,061.0	1,137.03	4,070.0	1,015.31	5,852.0	1,273.80	4,087.0	993.31	5,133.0	1,027.35	1.28%	1,053.08
Library	17,367.0	2,805.71	(11,037.0)	3.67%	20,444.0	3,997.78	24,911.0	4,747.29	24,328.0	4,766.89	28,525.0	5,107.95	31,809.0	6,193.43	28,404.0	4,832.66	6.03%	4,635.96
EMS	3,280.0	583.85	(1,320.0)	0.76%	3,920.0	784.78	5,200.0	1,004.99	5,560.0	1,059.39	4,560.0	855.42	6,400.0	1,175.08	4,600.0	838.91	1.05%	900.35
Tashua Knolls	20,759.0	4,588.21	1,053.0	6.00%	33,419.0	6,782.21	25,160.0	5,323.24	38,615.0	7,991.89	23,816.0	5,126.00	38,133.0	7,597.34	19,706.0	3,980.24	4.97%	5,912.73
Health	1,473.0	313.94	1,473.0	0.41%														
Counseling Center	921.0	199.33	315.0	0.26%	1,069.0	256.76	299.0	89.17	869.0	217.48	595.0	152.99	735.0	180.64	606.0	141.55	0.18%	176.85
Parks	13,278.0	4,041.92	(4,980.3)	5.28%	22,262.7	9,556.69	14,106.0	4,159.33	39,166.0	9,551.11	11,069.0	4,577.79	42,880.0	9,136.86	18,258.3	3,881.26	4.84%	6,414.99
Transfer Station	5,640.0	1,745.80	(2,080.0)	2.28%	4,360.0	1,603.76	8,920.0	2,244.87	4,040.0	1,495.64	8,120.0	2,169.66	4,160.0	1,419.49	7,720.0	2,010.51	2.51%	1,812.82
Municipal Energy Program		6,575.82				5,950.23		16,532.06		13,141.16		7,585.62		4,929.45		4,929.45		
	306,683.0	83,085.7	(33,544.3)	100.0%	284,471.70	89,288.17	382,114.0	110,374.81	317,747.0	98,626.27	357,212.0	93,656.90	364,034.0	96,422.55	340,227.3	85,039.93	100.0%	

TC + UI

Key:

- Project complete
- Favorable reduction
- Unfavorable result
- Street lights cost noted
- Summer month
- Winter month