

# RESILIENT BUILDINGS

— GROUP —  
*Superior energy performance*

## Town of Atkinson-Town Buildings

### Energy Efficiency Recommendations

Atkinson, NH 03811

Prepared by: *Resilient Buildings Group, Inc.*

September 3, 2015



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## Summary:

This brief report assesses the obvious energy efficiency measures possible at the Atkinson NH Town Buildings. The buildings investigated include:

- The Fire Station, located at 1 Academy Avenue
- The Police Station, located at 27 Academy Avenue
- The Library, located at 5 Academy Avenue
- The Town Office Building, located at 21 Academy Avenue
- The Highway Garage, located at 1 Academy Avenue
- The Community Center, located at 4 Main Street

Resilient Buildings Group (RBG) visited in promotion of Unitil's Municipal Energy Efficiency Program to help the Town of Atkinson discover ways to utilize Unitil's program. RBG's Energy Analyst, Alison Keay, visited the sites on June 11, 2015 and toured the building with Town Administrator, Bill Innes and Dave Weymouth, Town Maintenance. RBG did not do a full building energy audit but rather reviewed the conditions of the building and its systems for obvious potential energy upgrades that from our experience would result in quick payback. Please note that the cost estimates are approximate and the rebates are estimated, are time sensitive and are not guaranteed. Run time hours will need to be verified and rebate requirements do have minimum run time hours.

## Fire Station

RBG analyzed the past year's energy consumption of the Fire Station building in order to calculate a Building Benchmarking rating. Building Benchmarking rates your building's performance on two metrics: **Energy Use Intensity (EUI)** and **Cost Use Intensity (CUI)**.

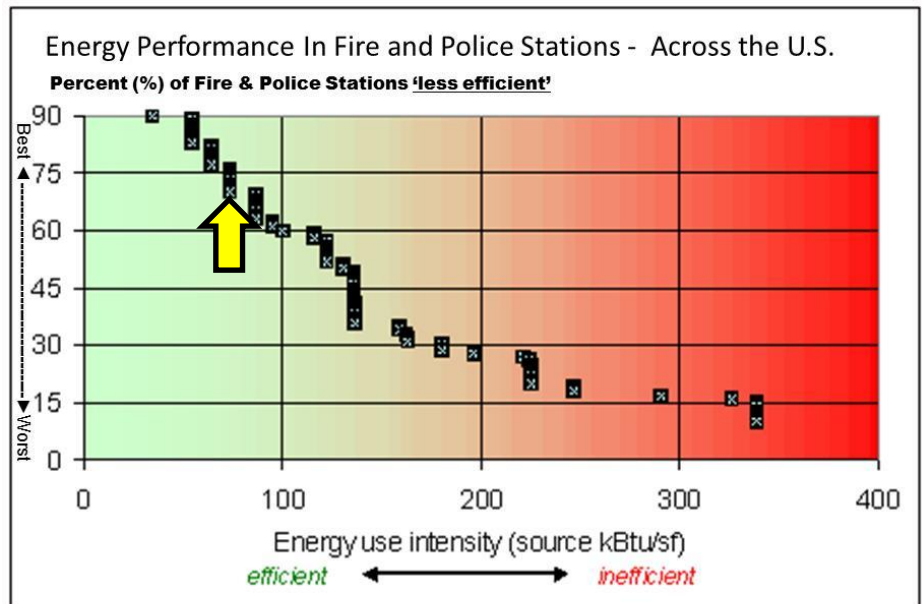
EUI is the annual energy use in BTUs (British Thermal Units, usually displayed as kBTUs to signify thousands of BTUs) per square foot of conditioned space in the building (kBTU/SF). CUI displays the annual energy cost per square foot in the building (\$/SF).

EUI is often split into two numbers, one providing the annual BTUs used at the **site** for all purposes (as used in the previous energy tables), and the other combining the site use figure with the additional BTUs required to generate and transmit electrical energy from its **source**. At RBG, we are chiefly interested in the *source* number because it provides the most accurate accounting for the total greenhouse gas emissions associated with a building's energy consumption.

Atkinson Fire Station Fuel Use (2014)				
Month	HDD (Heating Degree Days)*		Gallons	Cost
<a href="#">January</a>	1,049	21%	517.62	\$936.90
<a href="#">February</a>	952	19%	469.76	\$850.26
<a href="#">March</a>	900	18%	444.10	\$803.82
<a href="#">April</a>	392	8%	193.43	\$350.11
<a href="#">May</a>	106	2%	52.30	\$94.67
<a href="#">June</a>	2	0%	0.99	\$1.79
<a href="#">July</a>	-	0%	0.00	\$0.00
<a href="#">August</a>	-	0%	0.00	\$0.00
<a href="#">September</a>	58	1%	28.62	\$51.80
<a href="#">October</a>	208	4%	102.64	\$185.77
<a href="#">November</a>	604	12%	298.04	\$539.45
<a href="#">December</a>	776	15%	382.91	\$693.07
Total	5,047		2,490.40	\$4,507.64

Atkinson Fire Station Electric Use (2014)			
Month	kWh	demand	cost
<a href="#">January</a>	6,266	22.2	\$855.39
<a href="#">February</a>	5,305	25.4	\$793.37
<a href="#">March</a>	5,008	20	\$709.92
<a href="#">April</a>	4,428	22.8	\$683.29
<a href="#">May</a>	4,782	19.8	\$692.48
<a href="#">June</a>	5,359	20	\$751.10
<a href="#">July</a>	5,783	28	\$872.42
<a href="#">August</a>	5,275	22.6	\$761.15
<a href="#">September</a>	4,635	17.6	\$647.66
<a href="#">October</a>	5,241	20	\$730.94
<a href="#">November</a>	5,644	23.7	\$808.14
<a href="#">December</a>	6,762	23.7	\$915.96
Total	64,488		\$9,221.82

Electric kBTU	220,033.06
Fuel kBTU	228,239.18
Square Footage	11,447.00
Site EUI	39.16
Source EUI	77.60
CUI	\$1.20



Provided by Oak Ridge National Lab ([www.eber.ed.ornl.gov](http://www.eber.ed.ornl.gov))

\*Heating Degree Days for Atkinson NH were used to appropriate the oil data by weather.

## Significant findings:

- Roof is from 2012, they have been having roof leaks and ice dams over the winters.
- The garage doors are extremely leaky, there are visible air gaps along all edges of the garage doors, though they are insulated.
- There are several light fixtures that are part of the emergency lighting system and therefore are on 24/7.

- There are several sodium light fixtures in the apparatus bay area and the exterior building mounted lighting
- There is a large (100 gallon) domestic hot water storage tank in the basement, which exists only for when the station becomes an emergency shelter for town power outages. Though it is a highly efficient unit, the stand by losses of this unit (according to the manufacturer’s label) is 1043 btu/hr. It uses a lot of energy to keep 100 gallons of water heated at all times, when it is so infrequently utilized.

**Recommended Solutions:**

**Recommendation 1:** Upgrade all emergency lighting fixtures in the apparatus bay to LED. These fixtures are on 24/7 and switching these units to LED could cut their electric use dramatically. Consider upgrading all lighting to LED for even further reduced electric use. Due to the volunteer status of the fire station there are many areas with light fixtures that may not meet the run time hours required for the Unutil rebate program, however the emergency lighting fixtures would qualify. LEDs are processed through the retrofit lighting rebate program.

<b>Recommendation 1:</b>	
Cost to install	\$2,255
kWh per year saved	4,228 kwh
Dollars (\$) per year saved	\$592
Payback	3.8 yrs
Estimated rebate	\$660
Payback after rebate	2.6 yrs

**Recommendation 2:** Update exterior lighting to LED. Keep on photo sensor. These lights are on every day from dusk to midnight and would be eligible for Unutil’s retrofit lighting rebate program as well.

<b>Recommendation 2:</b>	
Cost to install	\$1,230
kWh per year saved	1,052 kwh
Dollars (\$) per year saved	\$147
Payback	8.3 yrs
Estimated rebate	\$380
Payback after rebate	5.7 yrs

**Recommendation 3:** Replace all sodium light fixtures in apparatus bay area with LED fixtures. The sodium light fixtures are so energy intensive that the switch to LED creates a quick payback. This would be part of Unutil’s retrofit lighting rebate program also.

<b>Recommendation 3:</b>	
Cost to install	\$1,230
kWh per year saved	1,245 kWh
Dollars (\$) per year saved	\$174
Payback	7 yrs
Estimated rebate	\$450

Payback after rebate	4.4 yrs
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**Recommendation 4:** Install commercial grade rubber weather-stripping on all exterior doors and the nine garage bay doors. This will reduce infiltration and lower heating needs for the conditioned spaces as well as the apparatus bay area which is required to maintain 60 degree temperature year round. This is eligible for the Unitil custom rebate program for its energy savings; however the savings may be too minimal to claim for rebate. Costs can be reduced by installing weather-stripping in house.

Recommendation 4:	
Cost to Install	\$1,940 (assumes 9 bay doors and 5 standard doors)
Gallons of fuel per year saved	74.71 Gallons
Dollars (\$) per year saved	\$135.23
Payback	14.35
Estimated rebate	\$0

**Recommendation 5:** We recommend removing the 100 gallon hot water heater from the basement and installing an instant hot water heater to eliminate the standby losses that happen due to 99% of the time when the unit is not calling for hot water. We would recommend moving/installing the high efficiency hot water heater to somewhere else that does have a more constant or high hot water use.

An instant hot water heater eliminates all stand by losses and would be a rebate-able measure through the NH Saves program where Unitil would pay \$500 for an on demand tankless hot water heater that has an energy factor of 0.82 or greater, or \$800 for one with an energy factor of 0.94 or greater. There is a requirement that the unit have an electronic ignition in order to receive the rebate.

Recommendation 5:	
Cost to install	\$1,500
Gallons of fuel per year saved	99.69 gallons
Dollars (\$) per year saved	\$180.45
Payback	8.31 yrs
Estimated Rebate	\$500
Payback after rebate	5.54 yrs

**Recommendation 6:** Address the ice damming and roof leakage issue. The areas of ice damming likely need added air sealing and insulation to prevent the ice damming- which is likely the cause of the roof leak. Air sealing and insulation can be done with a closed cell spray foam, which air seals and insulates all in one products. An R-40 should be the insulation value. The roof leak areas should have damaged materials replaced, ice and water shield installed and new shingles where needed. Because further investigation and measurements are needed to pursue this measure, cost and savings have not been calculated at this time. This added air sealing and insulation could potentially be incentivized through Unitil’s custom rebate program.

## Conclusion:

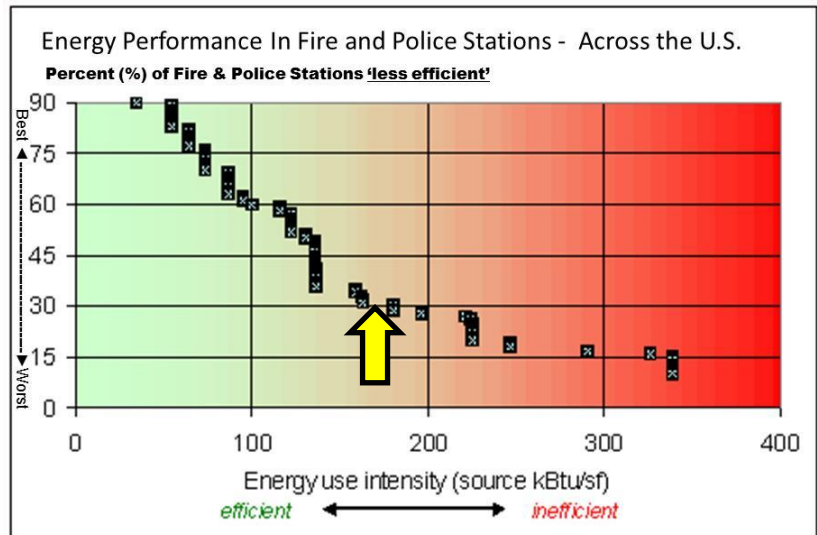
In consultation the Atkinson Fire Station could see energy savings from implementing the above measures. Heating and electrical energy savings are possible.

## Police Station

Atkinson Police Station 2014 Propane Data				
Month	HDD		Gallons	Cost
<a href="#">January</a>	1049	21%	459.71	\$827.42
<a href="#">February</a>	952	19%	417.20	\$750.91
<a href="#">March</a>	900	18%	394.42	\$709.89
<a href="#">April</a>	392	8%	171.79	\$309.20
<a href="#">May</a>	106	2%	46.45	\$83.61
<a href="#">June</a>	2	0%	0.88	\$1.58
<a href="#">July</a>	0	0%	0.00	\$0.00
<a href="#">August</a>	0	0%	0.00	\$0.00
<a href="#">September</a>	58	1%	25.42	\$45.75
<a href="#">October</a>	208	4%	91.15	\$164.06
<a href="#">November</a>	604	12%	264.70	\$476.42
<a href="#">December</a>	776	15%	340.07	\$612.09
Annual Total	5047	1	2211.8	\$3,980.92

Atkinson Police Station 2014 electric data			
Month	kwh	demand	cost
<a href="#">January</a>	2810	9.4	\$ 387.86
<a href="#">February</a>	3307	11	\$ 542.66
<a href="#">March</a>	3032	10	\$ 415.65
<a href="#">April</a>	2672	9.3	\$ 373.33
<a href="#">May</a>	2351	8.8	\$ 337.71
<a href="#">June</a>	3169	17.6	\$ 511.54
<a href="#">July</a>	4502	18	\$ 646.35
<a href="#">August</a>	5048	16.6	\$ 682.62
<a href="#">September</a>	4223	16.3	\$ 594.45
<a href="#">October</a>	3251	15.2	\$ 489.32
<a href="#">November</a>	3241	15.7	\$ 493.52
<a href="#">December</a>	3344	12.7	\$ 472.42
Annual Total	40,950		\$ 5,947.43

SF	3575
Site EUI	95.78
Source EUI	173.95
CUI	\$ 2.78



Provided by Oak Ridge National Lab ([www.eber.ed.ornl.gov](http://www.eber.ed.ornl.gov))

## Significant findings:

- There have been significant indoor air quality issues at the station, which are currently being addressed by the town.
- There are issues with the distribution system and its dampers which create hot and cold spots throughout the Police Station.
- It is believed that the existing air handler has the ability to bring in fresh air, but that it is not working.

## Recommended Solutions:

**Recommendation 1:** In combination with addressing the indoor air quality issues, we recommend retro commissioning of the building’s heating system and distribution system. This should include testing and balancing of the distribution system as well. Savings figures are hard to estimate at this point, as we don’t know what the retro commissioning will find. Retro commissioning often results in findings that once repaired save 15- 40% of energy use of the systems commissioned. This could potentially be covered as a “Technical Study” and partially rebated by Unutil.

Recommendation 1:	
Cost to install	Estimated \$3,000-\$5,000
Gallons of fuel per year saved	n/a
Dollars (\$) per year saved	n/a
Payback	n/a
Estimated rebate	Up to 50% of the cost of the study

## Conclusion:

In consultation the Atkinson Police Station could see energy savings from implementing the above retro commissioning measure. Retro commissioning would investigate the existing systems to find issues and create a plan for resolving them so that the system works properly. It does not include the actual work of fixing the issues found, a HVAC mechanical contractor would be hired to implement the fixes to the issues found. Heating and electrical energy savings are possible.

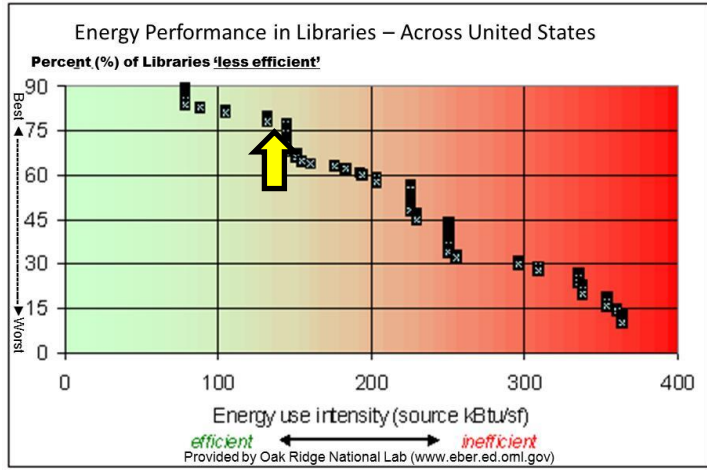
## Library

Kimball Library, Atkinson NH

Atkinson Library 2014 Propane Data				
Month	HDD		Gallons	Cost
<a href="#">January</a>	1049	21%	1725.041	\$3,169.18
<a href="#">February</a>	952	19%	1565.528	\$2,876.13
<a href="#">March</a>	900	18%	1480.016	\$2,719.03
<a href="#">April</a>	392	8%	644.6291	\$1,184.29
<a href="#">May</a>	106	2%	174.313	\$320.24
<a href="#">June</a>	2	0%	3.288924	\$6.04
<a href="#">July</a>	0	0%	0	\$0.00
<a href="#">August</a>	0	0%	0	\$0.00
<a href="#">September</a>	58	1%	95.3788	\$175.23
<a href="#">October</a>	208	4%	342.0481	\$628.40
<a href="#">November</a>	604	12%	993.2551	\$1,824.77
<a href="#">December</a>	776	15%	1276.103	\$2,344.41
Annual Total	5047	1	8299.6	\$15,247.70

Atkinson Library 2014 Electric Data				
Month	kwh	demand	cost	Cost per kWh
<a href="#">January</a>	9920	32.9	\$ 1,223.17	\$ 0.12
<a href="#">February</a>	8200	29.1	\$ 1,114.36	\$ 0.14
<a href="#">March</a>	8240	30	\$ 1,127.32	\$ 0.14
<a href="#">April</a>	8120	27.2	\$ 1,089.83	\$ 0.13
<a href="#">May</a>	9120	49.2	\$ 1,422.57	\$ 0.16
<a href="#">June</a>	9960	47.5	\$ 1,487.28	\$ 0.15
<a href="#">July</a>	10720	44.9	\$ 1,528.92	\$ 0.14
<a href="#">August</a>	9520	44	\$ 1,392.12	\$ 0.15
<a href="#">September</a>	8640	40	\$ 1,265.82	\$ 0.15
<a href="#">October</a>	8760	35.6	\$ 1,231.87	\$ 0.14
<a href="#">November</a>	8960	30.6	\$ 1,199.41	\$ 0.13
<a href="#">December</a>	9600	27.3	\$ 1,226.97	\$ 0.13
Annual Total	109,760.00		\$ 15,309.64	\$ 0.14

Electric kBTU	374,501.12
SF	11,000.00
Site EUI	103.19
Source EUI	171.29
CUI	\$ 2.78



## Significant findings:

- There are sodium light fixtures in the current parking lot lighting poles, they are on each day from dusk to 10 pm.
- T-8 fluorescent lighting is throughout. All lighting in the Library is used and on all day.
- There are a few areas that utilize MR16 track lighting

## Recommended Solutions:

**Recommendation 1:** Due to the high use of the lighting in the Library, a lighting conversion to LED should be considered. By converting to LED fixtures and bulbs (with whole retrofit kits which include lamp/bulb and ballast), the Library could reduce its electric use by 18%, saving 20,200 kWh per year, equivalent to \$2,816/year. Unitol's prescriptive lighting rebate program for retrofits can be applied here for an estimated rebate of \$7,440 (106 evo kits at \$60 per fixture, and 42 recessed kits at \$25 per fixture).

It should be noted that the cost of replacing the whole fixture including ballasts is worthwhile for the town (as described above, and estimates for this are in the table below). While another option is LED replacement tubes, where the ballast remains, we have found that the ballasts then need replacement soon after. You are then left with the cost to replace the whole fixture again. Replacing the whole LED fixture will prolong the life, and realize the actual life of LED fixtures. This cost is usually much higher and initial payback is more, but extended lifetime and reduced maintenance costs prove it worthwhile for the Town.

Recommendation 1:	
Cost to install	\$24,982
kWh per year saved	20,200 kWh
Dollars (\$) per year saved	\$2,828
Payback	8.83 yrs
Estimated rebate	\$7,440
Payback after rebate	6.20 yrs

## Conclusion:

The Atkinson Library should consider an LED lighting conversion to reduce electric use at the building. The HVAC seemed to be in good condition and working order, and the insulation was of acceptable levels as well.



## Town Offices

**Atkinson Town Offices 2014 Oil Data**

Month	HDD		Gallons	Cost
<a href="#">January</a>	917	20%	35.49	\$72.70
<a href="#">February</a>	818	18%	31.66	\$64.85
<a href="#">March</a>	698	15%	27.01	\$55.33
<a href="#">April</a>	323	7%	12.50	\$25.61
<a href="#">May</a>	101	2%	3.91	\$8.01
<a href="#">June</a>	5	0%	0.19	\$0.40
<a href="#">July</a>	0	0%	0.00	\$0.00
<a href="#">August</a>	0	0%	0.00	\$0.00
<a href="#">September</a>	34	1%	1.32	\$2.70
<a href="#">October</a>	224	5%	8.67	\$17.76
<a href="#">November</a>	577	13%	22.33	\$45.74
<a href="#">December</a>	915	20%	35.41	\$72.54
Annual Total	4612		178.5	\$365.62

**Atkinson Town Offices 2014 Electric Data**

Month	kwh	demand	cost
<a href="#">January</a>	9205.00	27.3	\$1194.76
<a href="#">February</a>	8732.00	26	\$1135.32
<a href="#">March</a>	7085.00	26.4	\$977.92
<a href="#">April</a>	5942.00	24.3	\$846.91
<a href="#">May</a>	4868.00	20.5	\$708.16
<a href="#">June</a>	5179.00	20.5	\$738.65
<a href="#">July</a>	5991.00	20.8	\$818.09
<a href="#">August</a>	5228.00	20.4	\$733.84
<a href="#">September</a>	4500.00	20.1	\$660.52
<a href="#">October</a>	4965.00	25.2	\$758.16
<a href="#">November</a>	6224.00	24.7	\$874.43
<a href="#">December</a>	7799.00	25.9	\$1038.78
Annual Total	75,718.00		\$10,485.54

### Significant Findings:

- The town office building utilizes a water ground source heat pump, which significantly lowers the heating use and cost at the building.
- The building is used for approximately 55 hours per week
- The entry lobby has a large skylight that provides excellent natural light to the space. However, the lighting in the entry way is on the same switch as the lighting that is need in the hallways past the entry area. This requires that all the lights in the entry way be on, even when not needed.

### Recommended Solutions:

Recommendation 1: Since the Town Office utilizes lighting for 55 hours per week, an LED lighting upgrade should be considered. An LED conversion would save 8,036 kWh per year, and \$1,125 per year. This is 11% of the current electric use; with an installation cost of approximately \$6,867 it has a 6.10 year payback. The Unitil prescriptive rebate for lighting would rebate approximately \$4,020 (67 evo kits at \$60 per fixture).

Recommendation 1:	
Cost to install	\$6,867
kWh per year saved	2,934 kWh
Dollars (\$) per year saved	\$1,125
Payback	6.10 yrs
Estimated rebate	\$4,020

Payback after rebate	2.53 yrs
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## Conclusion:

The Town Office’s energy use is predominantly electrical and an LED lighting conversion could reduce the electric use as well as lengthen the life of the bulbs reduce maintenance costs as well. If planned or designed well the lighting quality can also be improved.

## Highway Garage

### Atkinson Highway Garage 2014 Propane Data

Month	HDD		Gallons	Cost
<a href="#">January</a>	1049	21%	268.89	\$478.76
<a href="#">February</a>	952	19%	244.02	\$434.49
<a href="#">March</a>	900	18%	230.69	\$410.75
<a href="#">April</a>	392	8%	100.48	\$178.91
<a href="#">May</a>	106	2%	27.17	\$48.38
<a href="#">June</a>	2	0%	0.51	\$0.91
<a href="#">July</a>	0	0%	0	\$0.00
<a href="#">August</a>	0	0%	0	\$0.00
<a href="#">September</a>	58	1%	14.86	\$26.47
<a href="#">October</a>	208	4%	53.31	\$94.93
<a href="#">November</a>	604	12%	154.82	\$275.66
<a href="#">December</a>	776	15%	198.91	\$354.16
Annual Total	5047	1	1293.7	\$ 2,303.42

SF	2970
Site EUI	46.84
Source EUI	60.68
CUI	\$1.20

### Atkinson Highway Garage 2014 electric data

Month	kwh	demand	cost
<a href="#">January</a>	1027	5.5	173.84
<a href="#">February</a>	872	4.8	151.61
<a href="#">March</a>	832	4.6	145.69
<a href="#">April</a>	469	4.7	111.67
<a href="#">May</a>	307	3.3	82.72
<a href="#">June</a>	223	3.7	78.62
<a href="#">July</a>	263	2.8	73.08
<a href="#">August</a>	276	2.9	75.05
<a href="#">September</a>	262	2.1	65.4
<a href="#">October</a>	271	3	75.61
<a href="#">November</a>	649	3.9	121.38
<a href="#">December</a>	571	3.7	111.78
Annual Total	6022		\$1,266.45

## Significant Findings:

- The highway Garage has entirely T-12 lighting.
- The building’s lighting is in adequate for working on trucks
- The building is used for approximately 40 or more hours per week
- There is a need for explosion proof fixtures at this building
- Town is looking to install a generator for this building

## Recommended Solutions:

**Recommendation 1:** An LED lighting upgrade should be considered at the Highway garage. An LED conversion would save 1,593 kWh per year, and \$223.06 per year. This is 26% of the current electric use; with installation cost of approximately \$2,255 it has a 10.11 year payback. The Unitol prescriptive rebate for lighting would rebate approximately \$600 (10 evo kits at \$60 per fixture), making for a 7.42 year payback

Recommendation 1:	
Cost to install	\$2,255
kWh per year saved	1,593 kWh
Dollars (\$) per year saved	\$223.06
Payback	10.11 yrs
Estimated rebate	\$600
Payback after rebate	7.42 yrs

## Conclusion:

The Highway Garage's energy use is predominantly electrical and an LED lighting conversion could reduce the electric use as well as lengthen the life of the bulbs reduce maintenance costs as well. If planned or designed well the lighting quality can also be improved.

## Community Center

### Atkinson Community Center 2014 Propane Data

Month	HDD		Gallons	Cost
<a href="#">January</a>	1049	21%	484.98	\$891.94
<a href="#">February</a>	952	19%	440.14	\$809.47
<a href="#">March</a>	900	18%	416.10	\$765.25
<a href="#">April</a>	392	8%	181.23	\$333.31
<a href="#">May</a>	106	2%	49.00	\$90.13
<a href="#">June</a>	2	0%	0.92	\$1.70
<a href="#">July</a>	0	0%	0	\$0.00
<a href="#">August</a>	0	0%	0	\$0.00
<a href="#">September</a>	58	1%	26.81	\$49.32
<a href="#">October</a>	208	4%	96.16	\$176.86
<a href="#">November</a>	604	12%	279.24	\$513.57
<a href="#">December</a>	776	15%	358.7	\$659.82
Annual Total	5047		2333.4	\$4,291.36

### Atkinson Community Center 2014 Electric data

Month	kwh	demand	cost
<a href="#">January</a>	1435	9.7	\$256.09
<a href="#">February</a>	1432	9.1	\$159.77
<a href="#">March</a>	1657	8.6	\$266.79
<a href="#">April</a>	1606	11	\$287.01
<a href="#">May</a>	1577	9.1	\$267.36
<a href="#">June</a>	1732	10.5	\$297.07
<a href="#">July</a>	2055	11.4	\$336.93
<a href="#">August</a>	1690	13.9	\$325.3
<a href="#">September</a>	1318	9.6	\$244.9
<a href="#">October</a>	1552	8.1	\$251.94
<a href="#">November</a>	1730	8.6	\$274.29
<a href="#">December</a>	2034	10.6	\$324.32
Annual Total	19,818.00		\$3,291.77

SF	6826
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Site EUI	41.23
Source EUI	61.05
CUI	\$1.11

## Significant Findings:

- The Community Center is one of the most used buildings owned by the Town.
- The building is used for approximately 55 hours per week
- The entry lobby has a large skylight that provides excellent natural light to the space. However, the lighting in the entry way is on the same switch as the lighting that is need in the hallways past the entry area. This requires that all the lights in the entry way be on, even when not needed.

## Recommended Solutions:

**Recommendation 1:** LED lighting conversion. This could save the building 5,242 kWh per year and result in an 8.3 year payback. This could result in a \$1,800 rebate (\$60 per fixture) from the Unutil prescriptive lighting rebate program, which improves the payback.

Recommendation 1:	
Cost to Install	\$6,150
kWh per year saved	5,242 kWh
Dollars (\$) per year saved	\$733
Payback	8.3 yrs
Estimated rebate	\$1,800
Payback after rebate	5.93 yrs

Est. Rebate: \$1,200

**Recommendation 2:** Weather strip double doors and all exterior doors. This is eligible for the Unutil custom rebate program for its energy savings; however the savings may be too minimal to claim for rebate. Costs can be reduced by installing weather-stripping in house.

Recommendation 2:	
Cost to Install	\$500
Gallons propane per year saved	46.67 gallons
Dollars (\$) per year saved	\$84.47
Payback	5.9 yrs
Estimated rebate	\$0

**Recommendation 3:** Install air conditioning via air source heat pump systems. The town is interested in upgrading to “central” air conditioning for the building. A mini split heat pump system may be the most energy efficient option for the Town to install. This falls under the Unutil new construction rebate program, because no AC system is existing. Below are the requirements for rebates for heat pump system rebates through the Unutil commercial new construction program:

## MINIMUM EFFICIENCY LEVELS & REBATES

Tons	BTUH	Tier 1		Tier 2	
		Minimum Efficiency for Rebate	Tier 1 Rebate \$/ton	Minimum Efficiency for Rebate	Tier 2 Rebate \$/ton
<b>Unitary AC and Split Systems (new condenser and new coil)</b>					
< 5.4	< 65,000 Split System Packaged System	14.0 SEER or 12.0 EER 14.0 SEER or 11.6 EER	\$70	15.0 SEER or 12.5 EER 15.0 SEER or 12.0 EER	\$125
≥ 5.4 to < 11.25	≥ 65,000 to < 135,000	11.5 EER and 12.8 IEER	\$50	12.0 EER and 13.8 IEER	\$80
≥ 11.25 to < 20	≥ 135,000 to < 240,000	11.5 EER and 12.3 IEER	\$50	12.0 EER and 13.2 IEER	\$80
≥ 20 to < 63	≥ 240,000 to < 760,000	10.3 EER and 11.1 IEER	\$30	10.6 EER and 12.1 IEER	\$50
≥ 63	≥ 760,000	10.2 EER and 11.4 IEER	\$50	N/A	N/A
<b>Air to Air Heat Pump Systems</b>					
< 5.4	< 65,000 Split System Packaged System	14.0 SEER and 8.5 HSPF 14.0 SEER and 8.0 HSPF	\$70	15.0 SEER and 9.0 HSPF 15.0 SEER and 8.5 HSPF	\$125
≥ 5.4 to < 11.25	≥ 65,000 to < 135,000	11.1 EER and 3.4 COP	\$50	12.0 EER and 3.4 COP	\$80
≥ 11.25 to < 20	≥ 135,000 to < 240,000	11.5 EER and 3.2 COP	\$50	12.0 EER and 3.2 COP	\$80
≥ 20	≥ 240,000	10.5 EER and 3.2 COP	\$30	10.8 EER and 3.2 COP	\$50

Recommendation 3:	
Cost to Install	\$25,000-\$34,000
kWh per year saved	n/a, no system is in place, approximately 20% savings over standard roof top unit or air handler systems.
Dollars (\$) per year saved	n/a
Payback	n/a
Estimated rebate	Rebate depends on sizing, but estimated at \$680 (\$50 per ton, at 13.6 tons)

**Recommendation 4:** Install wirelessly controlled thermostats. This measure was discussed at the site visit, and would allow for more controllability of the building's HVAC. It will allow for the input of more detailed schedules that in turn will save energy. This is also a convenience and ease of access for the staff who manage the building, saving time on their end. The cost is estimated for 4 zones.

Recommendation 4:	
Cost to install	\$700
Gallons propane per year saved	93.34 gallons
Dollars (\$) per year saved	\$168.94
Payback	4.1 yrs
Estimated rebate	\$100 (\$25 per t stat)
Payback after rebate	3.5 yrs

## **Conclusion:**

The Community Center is one of the towns most used buildings, however not the most expensive energy cost wise. These measures make sense to implement when work is being done to the building. Insulating the crawlspace and the original “house” section of the building were investigated but due to high cost of installation the measures did not generate worthwhile paybacks at this time.