

Energy Audit Report for Unitarian Universalist Congregation of Fairfax (UUCF)

Prepared for:



Executive Summary

Capital Brand Group (CBG) was requested by UUCF to conduct an energy and lighting audit for UUCF, located in Fairfax, Virginia

UUCF has (3) main buildings, the program building, the admin building and the sanctuary. Site lighting upgrades were already completed under a previous project.

The purpose of the analysis is to identify opportunities that could offer persistent reductions in energy usage, water usage and overall utility costs. The audit entailed a field survey of the property's electrical, gas, lighting, water and Heating Ventilation and air conditioning systems. We were provided access to all of the areas and related mechanical and electric equipment.

Utility conservation opportunities identified during the survey are listed in Table 1.

Enclosed you will find Capital Brand Group (CBG) report for UUCF Energy Audit. This report includes findings & recommendations from our recent site visit. A summary of our findings are as follows:

- Identification of 6 Low Cost/No Cost Energy Conservation Measures (ECMs) that can be implemented for nominal operational costs to capture subsequent energy savings opportunities, usually all within a combined 12 month simple payback period.
- Identification of 13 Capital-based ECMs of which have a short payback (1-4 years), medium payback (5-9 years) and long payback (9-20 years)
- 75+ metric ton of Green House Gas (GHG) emission reduction to achieve Paris Pledge goal of 50% reduction by 2030. This can be achieved by implementing all Energy Conservation opportunities under 5 year payback

We appreciate the opportunity with this important assignment and look forward to assisting UUCF in the future. Feel free to contact me should you have any questions or concerns regarding this report.

Best Regards,
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Summary of Findings

The purpose of this study is to assess UUCF's energy and water consumption and identify potential Energy and Water Conservation Measures (ECMs).

The buildings are located at 2709 Hunter Mill Road, Oakton, VA

Description of Building Systems

Systems Narrative

(16) Split residential type AC units with integrated high efficiency gas furnace, and (1) Packaged DX Roof top unit with integrated gas furnace. Each unit has its own individual zone Programmable wireless communicating thermostat. Space conditioning is ducted. Thermostats are connected to a central Honeywell control system. Systems are all constant volume

Domestic Hot Water

(1) Domestic Hot water heater per building, all gas fired, there is one electric Domestic Hot water heater in program building

Lighting

Blend of Compact Fluorescent (CFL), Incandescent bulbs, LED Spots, T8 and T12s in program building. LED and CFL for site and parking lot lighting.

Energy Conservation Measures

The audit surfaced a number of Energy Conservation Measures (ECMs) which are detailed below. These ECMs are divided into low-cost/no-cost ECMs which are largely operational in nature and capital projects.

Site Visit Observations

- Lighting controller for new LED parking lot lights. Parking light was re-done and new LED pole lights installed. Controller can remotely turn lights on/off and schedule.
- All other Metal halide perimeter/site pole lights are being/have been replaced with CFL
- Property has (3) main buildings, Admin, Program and Sanctuary. Admin built 1960, Sanctuary built in 1984. Front addition was added 2008
- Admin occupancy is 12, and there are 2 maintenance staff onsite
- Program building occupancy varies
- HVAC units were upgraded in 2003 and 2007, and were observed to be in good/acceptable working conditions. Units are still with-in useful life.

- Air systems testing and balancing and Retro Commissioning for HVAC systems has never been done, and is highly recommended
- Uninsulated or failed ceiling insulation noted throughout, also serious draft issues with too much outside air infiltration at Sanctuary building.
- Single Pane glazing throughout

Admin Building

- (1) Split AC unit with gas fired furnace. (1) main zone Wireless Programmable Communicating Thermostat tied and controlled via central system with manual override
- (4) ceiling lights in main entrance, INCAN 60W bulbs
- Executive Director office
 - o (2) 2 bulb T8 32W fixtures
 - o (1) PC, and (1) copier
 - o No Occupancy Sensor (OCS)
- Open office
 - o (12) 65W INCAN spot lights
 - o (2) LED exit signs
 - o (6) PCs
 - o (2) Printers
 - o (1) microwave and coffee machine
 - o No Occupancy sensors in any offices
- Associate Minister Office
 - o (3) 2 bulb T8 32W fixtures
 - o No Occupancy Sensor
- Supply air temperature at lobby diffusers was 94 F and 81 F. Too high, typical is 75 F.
- Restroom
 - o (1) Ex. Fan on switch, stand fixtures (1.6 GPM toilet), no Occupancy Sensor
- Copy room
 - o (3) 2 bulb T8 32W fixtures
 - o (2) copiers
 - o No Occupancy Sensors
- Closet
 - o (1) 2 bulb T8 32W fixture
- Side office
 - o (3) PCs
 - o (4) 2 bulb T8 32W fixtures
- Parish Minister
 - o (1) PC
 - o (4) 2 bulb T8 32W fixtures
- Director of religious Exploration
 - o (4) 2 bulb T8 32W fixtures

- Large skylight in open office
- Staircase
 - o (2) ceiling 65 INCAN bulbs
 - o (1) LED exit sign
 - o (4) wall mounted 65W fixtures
 - o Staircase is unconditioned
 - o (2) mobile space electric heaters noted in space
- Basement
 - o (2) 3 bulb T8 32W fixtures in hallways
 - o (7) 4 pin 2 bulb 26W CFL can fixtures
 - o (1) cooled water fountain
 - o (1) Trane Split AC with gas fired furnace
 - o Non insulated ductwork in mechanical room
 - o (1) 60W INCAN bulb in mechanical room
 - o (1) 2 bulb T8 32W fixture in unconditioned IT/Tele room
- Staff Lunch room
 - o (7) 2 bulb T8 32W fixtures
 - o (1) Electric Domestic Hot Water Heater
 - o (1) zone TStat, set at 65 F
- Main room
 - o (12) 3 bulb T8 32W fixtures, no occupancy sensors
 - o (1) PC and (1) Printer
- 2 restrooms
 - o Occupancy sensors in each
 - o (1) 2 bulb T8 32W fixture in each
 - o 1.6 GPM toilets

Pre-School/Program building (3 connected buildings)

- (1) can CFL fixture 13W CFL at entrance
- (7) skylights
- (12) 4 pin CFL Can fixtures, 26W
- Chapel
 - o (24) cove lights, 26W CFL
 - o (2) large pendant fixtures
 - o (2) zone Thermostats, 70 F set point
 - o (10) 150W INCAN spot lights
 - o Underfloor air distribution from units in basement
 - o IT room with skylight
- Elevator
 - o (2) 1 bulb T12 40W lamps
- (1) cooled water fountain
- Janitor closet
 - o (1) 2 bulb T8 32W fixture
- RS supply room
 - o (2) skylights

- (3) 2 bulb T8 32W fixtures
- No occupancy Sensors
- Domestic Hot water heater in back of room
 - Normally on from 8-5pm during school hours
 - Now on 24/7 to support space being used as shelter
 - Tank type gas fired with no insulation
- (1) 2 bulb T8 32W fixture
- Side room 1
 - (4) 2 bulb T8 32W fixtures
 - No occupancy Sensors
 - Supply Air temperature at diffusers, 115 F
 - Single pane glazing
- Side room 2
 - (8) 2 bulb T8 32W fixtures
 - No occupancy Sensors
 - Supply Air temperature at diffusers, 115 F
 - Single pane glazing
- Main back room
 - (1) large skylight
 - (6) wall fixtures, 26W CFL
 - (1) cooled Water fountain
- (2) Mechanical rooms with (1) Carrier Split AC with high efficiency gas fired furnace in each
- Office 1 and 2
 - (4) 2 bulb T8 32W fixtures
 - (1) zone TStat set at 70 F
- (2) shower rooms
 - (4) 2 bulb T8 32W fixtures
 - Occupancy Sensors
- Staircase to basement
 - (4) 2 bulb T8 32W fixtures
 - No Occupancy Sensors (OCS), on switch
- Basement
 - (6) can fixtures with (2) 13W CFLs in each
- Fire Sprinkler room
 - (2) 2 bulb T8 32W fixtures
 - No OCS
- Dining room
 - (9) 2 bulb 13W CFL can fixtures
 - (7) 65W INCAN spots
- Kitchen
 - (2) 3 bulb T8 32W fixtures
- Mechanical Room
 - (4) split AC units with integrated gas furnaces serving upstairs chapel and general basement
 - (2) T8 32W fixtures

- No OCS
- Pre-School
 - Hallway
 - (6) skylights
 - (6) 4 pin, 2 bulb CFL, 13 W Cans
 - (1) 2 bulb T8 32W fixture
 - Classroom (1,2,3,4,5)
 - (4) 3 bulb T8 32W fixtures
 - No OCS
 - Zone Tstats in classroom 2 and 3
 - (2) split AC units with integrated gas furnace
 - Back classrooms (3)
 - (8) 2 bulb T8 32W fixtures
 - (1) Zone Tstat
 - (2) printers
 - (1) skylight in main classroom area
 - (2) split AC units with integrated gas furnaces
 - (6) wall fixtures, 26W CFL

Sanctuary

- Commercial Kitchen
 - (8) 3 bulb T8 32W fixtures
 - (2) skylights
 - (2) fridges
 - (2) Stoves
 - (2) Dishwashers, all appliances non Energy Star
 - No OCS
 - (1) zone TStat
 - (1) split AC unit with integrated gas furnaces
 - (1) 2 bulb T8 32W fixture
 - (1) gas fired non insulated domestic hot water heater
 - (1) Kitchen Exhaust Fan
- Main Entrance Lobby
 - (13) LED Spots
 - (36) 4 pin, 2 bulb 13W CFL Cans
 - (8) 100W INCAN spots
- Assembly Hall
 - Comfort issues with high ceiling, would benefit from DE stratifying ceiling fan
 - (16) high bay 150W MH spots
 - (1) TStat
 - (2) non LED exit signs
 - HVAC equip room
 - (3) split AC unit with integrated gas furnaces
 - (1) non insulated gas fired domestic hot water heater

- (2) 2 bulb T12 40W fixtures
- No OCS

- Storage room
 - (4) 2 bulb T8 32W fixtures
 - No OCS
- (1) cooled Water fountain
- Back room
 - (4) 4 pin, 2 bulb 13W CFL can fixtures
- Play room
 - (6) 3 bulb T8 32W fixtures
 - No OCS
- (2) restrooms
 - (4) 2 bulb T8 32W fixtures
 - OCS
- Music room
 - (12) 2 bulb T8 32W fixtures
 - No OCS
 - (1) zone Tstat
 - (1) Packaged DX Roof Top Unit with gas furnace, Unit on HVAC OCS control, issue with OCS sensor control



Single Pane large Skylight with INCAN spots



Single Pane Glazing



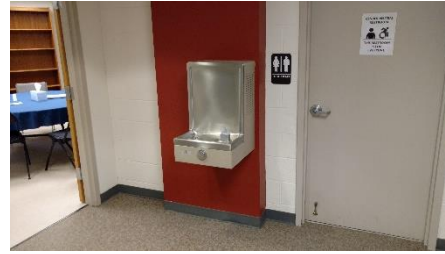
3 bulb T8 32W fixture



Uninsulated Gas Fired Domestic Hot Water Heater



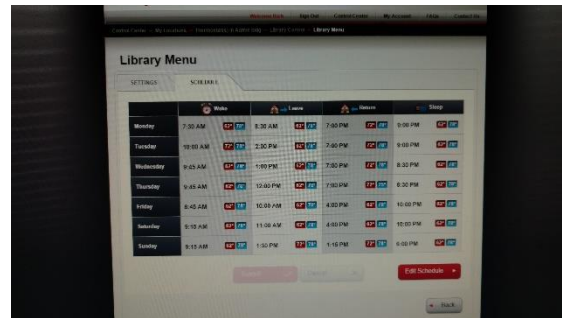
2 bulb T8 32W Fixture



Cooled Water Fountain (typ. 4)



Sanctuary High Bay Spot Lights



Honeywell Central Controller Temp Set points

Low-Cost/No-Cost Energy Efficiency Measures

The following table highlights the low-cost/no-cost ECMs. The list is prioritized based on estimated shortest payback period

Table 1: Low Cost/No Cost Energy Conservation Measures

Measure	Initial Cost (\$)	Annual Savings (\$)	Simple Payback (Years)	Annual CO2 Emissions in Metric Tons (savings)
Implement deeper night time set back temperatures	\$0	\$1,750	0	10.97
Air Handling Unit set point tuning	\$480	\$715	0.67	4.48
Unplug Compressorized Water fountains (4)	\$0	\$346	0	2.17
Enable Economizer controls on Music room Roof Top Unit and disable HVAC Occupancy controls	\$120	\$163	0.74	1.02
Educational campaign, occupant training	\$0	\$130	0	0.815

Capital Projects

In addition to examining the low/no-cost ECMs described above, CBG also examined potential capital projects. The projects are outlined in Table 2, and detailed below. The list is prioritized based on shortest payback period. Important to note that these are estimates and for some measures such as lighting will require vendor/contractor estimates.

Table 2: Potential capital investments

Measure	Initial Cost (\$)	Annual Savings (\$)	Simple Payback (Years)	Annual CO2 Emissions in Metric Tons (savings)
Provide and install insulated jacket on Domestic Hot Water (DHW) heater/per heater (total 3)	\$99	\$60	1.7	0.375
Provide and install Low E coating on glazing, specifically areas and that have excessive Solar Heat Gain and single pane glazing	\$10,000	\$5,142	1.9	32.23
Provide and install instantaneous tankless domestic hot water heaters/per heater (total 3)	\$2,475	\$870	2.9	5.46
Provide and Install modlets/smartlets on copiers/PCs/Fax machines for plug load control	\$1,000	\$324	3.09	2.03
Occupancy Sensors (OCS) in all spaces that don't have OCS (all spaces)	\$5,775	\$1,556	3.7	9.75
Provide and Install LED lighting throughout(interior spaces)	\$10,000	\$2,500	4.0	15.7
Water Conservation measures, low flow and ultra low flow fixtures and flow sensors/per bathroom	\$334	\$76	4.4	0.48
Daylight Dimming in areas with sufficient daylight (perimeter window spaces)	\$3,000	\$667	4.5	4.18
Retro Commission and Testing And Balancing of All HVAC Systems	\$10,500	\$1,850	5.67	11.59
Install Photo Voltaic System	\$133,354	13,894	9.60	87.09
Install Solar Thermal System to provide DWH	\$1,375	\$125	11.01	0.78
Provide and Install Destratifying Ceiling fan at Sanctuary	Needs Further Analysis	Needs Further Analysis	Needs Further Analysis	
Reinsulate at Ceiling for all spaces	Needs Further Analysis	Needs Further Analysis	Needs Further Analysis	

Energy Conservation Opportunities (ECO)

ECO-1 Educational Campaign, occupant training

- Train building occupants to be responsible for turning lights and equipment off in unoccupied areas or when not in use whenever possible, develop and disseminate lighting and equipment shut off policies

Training may include locating appropriate light switches and focusing on turning lights off after a task has been completed

ECO-2 Implement deeper night time set back temperatures

Currently the unoccupied temperature set backs are set at 62 F in winter and 78F in summer. This ECO recommends pushing the setbacks to 60 F in winter and 85F in summer.

For every degree change in temperature set point, energy savings are 2%/degree

ECO-3 Air Handling Unit set point tuning

- The current pressure setting in most AHUs is approximately 1.5. It is recommended to reduce the static pressure set point for the air handlers that appear to have more than adequate flow.
- Take an incremental approach to reducing the set point. Try a 5% reduction to start unless you are confident that greater reductions are possible.
- Choose the air handlers after careful review of the space temperatures in combination with the chilled water temperature being used that day as well as the building cooling loads.
- This ECM will provide both a demand reduction and energy savings.

ECO-4 Shut off/disconnect Compressors on Water Fountains

- Water fountains with compressors typically run 24/7. Substantial savings will be realized by disconnecting the compressors for each water fountain. The fountain will supply non refrigerated water.

ECO-5 Enable Economizer controls on Music room Roof Top Unit and disable HVAC Occupancy controls

- Benefits of Outside Air economization is to provide “free air side Cooling” when ambient condition allow. The OA damper will open to allow OA into the building to cool the space as opposed to mechanical cooling.

Enthalpy is used in cooling coil calculations since total cooling load is increased by bringing in additional outside air. Sensible load calculations are used when the OA coincident Wet bulb goes below the assumed supply air enthalpy of 23.8 btu/lb or about 90% RH for a supply air temperature of 55 F.

ECO-6 Provide and Install Domestic Hot Water tank insulation Jacket

If Existing tanked Domestic hot water heaters (DHW) are to remain, we recommend installing an insulation jacket on each unit to retain heat in tank

- a. Benefits include reducing electric usage, by reducing heat loss in water in tank requiring less heating by unit to bring it up to required temperature

ECO-7 Low E coating window film

- Apply low E coating window film on inside of window pane. Low E coating redirects solar and radiant energy back to their source
- The film is applied to the inside surface of the existing windows, the film adds as much as 92% more insulating power to your window glass, effectively taking a single pane window to double pane
- Sunlight still enters, but harmful UV rays, discomforting heat and glare are substantially reduced

ECO-8 Replace domestic hot water heaters with tank less instantaneous heaters

Instantaneous point of use electric heaters, provide energy savings, water savings and improved occupant experience.

- a. Benefits include reducing electric usage, by having to continuously reheat water stored in tanked type heaters
- b. Water savings are derived from not having to run water for extended period waiting for hot water

ECO-9 Provide and Install modlets/smartlets on copiers/PCs/Fax machines for plug load control

Modlets or Smartlets are devices that plug into wall outlets which you use to plug office equipment to. These devices can be programmed by user to ensure equipment is safely powered off when not in use.

- a. Benefits include reducing electric usage, by eliminating vampire/parasitic energy consumption when equipment is left in standby mode
- b. Occupancy sensors can be integrated for deeper savings to power down equipment when occupancy is not detected

ECO-10 Occupancy Sensors (OCS) in all spaces that don't have OCS

Occupancy sensors can be utilized to turn on lights when spaces are being used and to turn them off when not in use. In main office it was noted that there were no Occupancy Sensors and that spaces were periodically left unoccupied with lights remaining on, namely in unused offices, and library

- a. Benefits include reducing electric usage.
- b. Increase life of lamps, as lamps do not last as long when they are on 24/7. Note that occupancy sensors should keep lamps on for a minimum of 15 minutes after entering occupied mode, as lamps tend not to last as long when they are rapidly turned on-and-off.

ECO-11 Water Conservation measures, low flow and ultra low flow fixtures with sensors

Retrofit any regular flow shower heads, faucets and toilets with low flow units with no more than 1.5 gpm max. capacity, for showers, 0.5 gpm for faucets and 1.0 gpm for toilets. Original shower heads are 2.5 gpm, faucets 2.2 gpm and toilets 1.6 gpf.

ECO-12 Daylight Dimming in areas with sufficient daylight (perimeter window spaces)

- Provide, install and connect photo sensors on all perimeter lighting. The photocells dim and/or switch off the perimeter lighting based on available daylight levels.

ECO-13 Retro Commission and TAB of All HVAC Systems

Retro commissioning (RCx) is a process of ensuring that systems are being operated and maintained in accordance with original design and the current needs of the facility. While there are various potential areas of focus when performing retro commissioning, CBG recommends the testing and balancing of all Air handling Units, Roof top unit and total system testing and balancing (TAB)

- a. The potential benefits of retro-commissioning are numerous. As mentioned on Energy Star's website:

Researchers at three of the foremost building-commissioning think tanks in the U.S. including Lawrence Berkeley National Laboratory, published a study in 2004 analyzing more than 220 new and existing buildings that had been commissioned, totaling over 30 million square feet of commissioned floor space (73% existing buildings and 27% new construction). The results revealed the most common problem areas and showed that both energy and non-energy benefits were achieved. Analysis of commissioning projects for existing buildings showed a median commissioning cost of US\$0.27 per ft², energy savings of 15 percent, and a simple payback period of 0.7 years. The most cost-effective commissioning projects are typically in energy-intensive buildings such as hospitals.

Source: Energy Star - Retrocommissioning

<http://www.energystar.gov/ia/business/EPA BUM CH5 RetroComm.pdf>

In addition to energy savings, this will improve operational and maintenance (O&M) procedures by identifying which equipment can no longer perform as originally intended as well as prolonging equipment life by bringing operation back in line with the original design

ECO-14 Solar Photo Voltaic

Install polycrystalline Photo Voltaic Solar panels on roof of the building. Panels will be connected to grid for net metering and will offset a percentage of the buildings electrical consumption.

ECO-15 Install Solar Thermal System to provide DWH

- Solar thermal energy would be a very efficient way to help facility meet its domestic hot water heating needs. Solar thermal panels convert more than 50% of the solar energy that makes contact the panel into heat. Solar thermal panels contain an antifreeze solution that is pumped to a heat exchanger, where the heat is transferred to your domestic hot water supply. The heated water is then kept in an insulated storage tank until it is used.
- Install Solar Thermal panels on roof of the building. Panels will be concentrating panels used to heat circulating hot water. This will offset the requirement for a domestic hot water heater and will/should provide the entire hot water heating load for the building

ECO-16 Provide and Install Destratifying Ceiling fan at Sanctuary

- Technically, destratification means the strata – or layers – of air are blended together to create a uniform temperature throughout a space.
- Because hot air rises, the heat you pay for rises to the ceiling, leaving colder air at floor level. Your thermostat feels the colder air and has to work harder to reach its setpoint, costing you money
- Large ceiling fans set on slow — never reverse — are efficiently designed to move air down and around a space without creating any unwanted breeze.
- Destratification blends the different layers into a uniform temperature.
- The hotter, lighter air is pushed off the ceiling and mixes with the cooler, heavier air below to create the perfect environment for comfort and savings

Further analysis is required by fan specialist to determine extent and cost of required fans, which in turn will determine energy savings and ROI.

ECO-17 Reinsulate at Ceiling for all spaces

It was noted and observed that there were considerable draft issues at the sanctuary building and admin building due to lack of or failed ceiling insulation. Insulation will help retain heat and enable deeper unoccupied setbacks, as per ECO 2 above.

Further analysis is required by insulation specialist to determine extent and cost of required insulation, which in turn will determine energy savings and ROI.

Lighting Retrofit Summary

One of the highest energy users for property's electricity is lighting. This assessment provides a quick summary of the most common fixtures and the impact of installing higher efficiency lighting in terms of cost, energy savings and ROI.

Our analysis focused on converting INCAN bulbs/fixtures and CFL bulbs and fixtures to LED. This was recommended for all interior spaces. Exterior lighting upgrades was done under a previous project

Operations and maintenance savings were not factored into our analysis. O&M savings would further increased ROI and reduce payback period

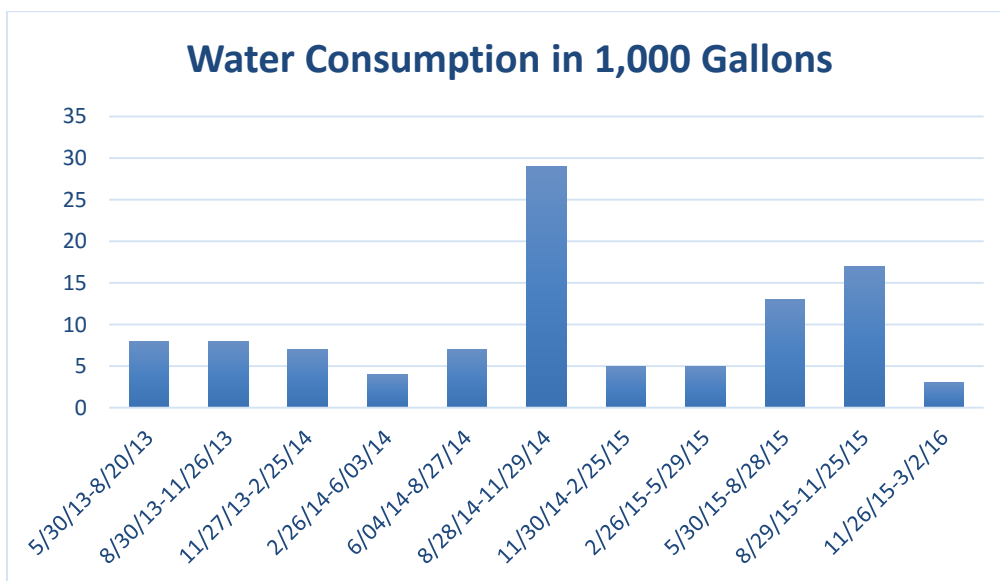
LOCATION	EXISTING FIXTURE	QTY	HRS	WATTS	kWh	PROPOSED FIXTURE	QTY	HRS	WATTS	kWh	MATERIAL COST	LABOR COST	TOTAL L&M	Rebate	Adjusted Cost	ANNUAL ENERGY SAVINGS	PAYBACK/YRS w/out Rebates	Payback/Yrs w/Rebates	
Admin Building																			
ED Office	4'2L F32T8 32W	2	2600	128	332.8	2L TLED	2	2600	72	187.2	\$64.00	\$0.00	\$64.00	\$10.00	\$54.00	\$16.60	3.9	3.3	
Open Office	Hanging Lights 65W BR30	12	2600	780	2028	TCP	12	2600	120	312	\$90.00	\$0.00	\$90.00	\$0.00	\$90.00	\$195.62	0.5	0.5	
Associate Minister Office	4'2L F32T8 32W	3	2600	192	499.2	2L TLED	3	2600	108	280.8	\$96.00	\$0.00	\$96.00	\$15.00	\$81.00	\$24.90	3.9	3.3	
Copy Room	4'2L F32T8 32W	3	2600	192	499.2	2L TLED	3	2600	108	280.8	\$96.00	\$0.00	\$96.00	\$15.00	\$81.00	\$24.90	3.9	3.3	
Closet	4'2L F32T8 32W	1	2600	64	166.4	2L TLED	1	2600	36	93.6	\$32.00	\$0.00	\$32.00	\$5.00	\$27.00	\$8.30	3.9	3.3	
Side Office	4'2L F32T8 32W	4	2600	256	665.6	2L TLED	4	2600	144	374.4	\$128.00	\$0.00	\$128.00	\$20.00	\$108.00	\$33.20	3.9	3.3	
Parish Minister	4'2L F32T8 32W	4	2600	256	665.6	2L TLED	4	2600	144	374.4	\$128.00	\$0.00	\$128.00	\$20.00	\$108.00	\$33.20	3.9	3.3	
Director of Religious Exp	4'2L F32T8 32W	4	2600	256	665.6	2L TLED	4	2600	144	374.4	\$128.00	\$0.00	\$128.00	\$20.00	\$108.00	\$33.20	3.9	3.3	
Staircase	INCAN Flood 65	6	2600	390	1014	LED Flood	6	2600	72	187.2	\$144.00	\$570.00	\$714.00	\$60.00	\$654.00	\$94.26	7.6	6.9	
Basement Hallway	4'3L F32T8 32W	2	2600	192	499.2	3L TLED	2	2600	108	280.8	\$96.00	\$0.00	\$96.00	\$10.00	\$86.00	\$24.90	3.9	3.5	
Basement IT Rm	4'2L F32T8 32W	1	2600	64	166.4	2L TLED	1	2600	36	93.6	\$32.00	\$0.00	\$32.00	\$5.00	\$27.00	\$8.30	3.9	3.3	
Staff Lunch Rm	4'2L F32T8 32W	7	1300	448	582.4	2L TLED	7	1300	252	327.6	\$224.00	\$0.00	\$224.00	\$35.00	\$189.00	\$29.05	7.7	6.5	
Main Room	4'2L F32T8 32W	12	1300	768	998.4	2L TLED	12	1300	432	561.6	\$384.00	\$0.00	\$384.00	\$60.00	\$324.00	\$49.80	7.7	6.5	
Pre School/Multi Function Bldg																			
Chapel	INCAN 150	10	1042	5400	5626.8	LED Down	10	1042	1152	1200.384	\$1,000.00	\$0.00	\$1,000.00	\$190.00	\$810.00	\$504.61	2.0	1.6	
Elevator	4'2L F32T8 32W	1	8760	64	560.64	2L TLED	1	8760	36	315.36	\$32.00	\$0.00	\$32.00	\$5.00	\$27.00	\$27.96	1.1	1.0	
Janitor Closet	4'2L F32T8 32W	1	1300	64	83.2	2L TLED	1	1300	36	46.8	\$32.00	\$0.00	\$32.00	\$5.00	\$27.00	\$4.15	7.7	6.5	
RS Supply Room	4'2L F32T8 32W	4	1300	256	332.8	2L TLED	4	1300	144	187.2	\$128.00	\$0.00	\$128.00	\$20.00	\$108.00	\$16.60	7.7	6.5	
Side room 1	4'2L F32T8 32W	4	2600	256	665.6	2L TLED	4	2600	144	374.4	\$128.00	\$0.00	\$128.00	\$20.00	\$108.00	\$33.20	3.9	3.3	
Side room 2	4'2L F32T8 32W	8	2600	512	1331.2	2L TLED	8	2600	288	748.8	\$256.00	\$0.00	\$256.00	\$40.00	\$216.00	\$66.39	3.9	3.3	
Mechanical Room 1,2	4'2L F32T8 32W	4	1300	256	332.8	2L TLED	4	1300	144	187.2	\$128.00	\$0.00	\$128.00	\$20.00	\$108.00	\$16.60	7.7	6.5	
Staircase to basement	4'2L F32T8 32W	4	2600	256	665.6	2L TLED	4	2600	144	374.4	\$128.00	\$0.00	\$128.00	\$20.00	\$108.00	\$33.20	3.9	3.3	
Fire sprinkler room	4'2L F32T8 32W	2	1300	128	166.4	2L TLED	2	1300	72	93.6	\$64.00	\$0.00	\$64.00	\$10.00	\$54.00	\$8.30	7.7	6.5	
Dining room	Hanging Lights 65W BR30	7	1300	455	591.5	TCP	7	1300	70	91	\$52.50	\$0.00	\$52.50	\$0.00	\$52.50	\$57.06	0.9	0.9	
Kitchen	4'2L F32T8 32W	2	1300	128	166.4	2L TLED	2	1300	72	93.6	\$64.00	\$0.00	\$64.00	\$10.00	\$54.00	\$8.30	7.7	6.5	
Mechanical room 3	4'2L F32T8 32W	2	1300	128	166.4	2L TLED	2	1300	72	93.6	\$64.00	\$0.00	\$64.00	\$10.00	\$54.00	\$8.30	7.7	6.5	
Pre-school Hallway	4'2L F32T8 32W	1	2600	64	166.4	2L TLED	1	2600	36	93.6	\$32.00	\$0.00	\$32.00	\$5.00	\$27.00	\$8.30	3.9	3.3	
Classroom 1-5	4'3L F32T8 32W	20	2600	1920	4992	3L TLED	20	2600	1080	2808	\$960.00	\$0.00	\$960.00	\$100.00	\$860.00	\$248.98	3.9	3.5	
Back Classrooms 1-3	4'2L F32T8 32W	24	2600	1536	3993.6	2L TLED	24	2600	864	2246.4	\$768.00	\$0.00	\$768.00	\$120.00	\$648.00	\$199.18	3.9	3.3	
Sanctuary																			
Kitchen	4'3L F32T8 32W	8	1300	768	998.4	3L TLED	8	1300	432	561.6	\$384.00	\$0.00	\$384.00	\$40.00	\$344.00	\$49.80	7.7	6.9	
Kitchen Mech Rm	4'2L F32T8 32W	1	1300	64	83.2	2L TLED	1	1300	36	46.8	\$32.00	\$0.00	\$32.00	\$5.00	\$27.00	\$4.15	7.7	6.5	
Main Entrance Lobby	INCAN 100	8	1300	800	1040	A19 LED	8	1300	96	124.8	\$80.00	\$0.00	\$80.00	\$0.00	\$80.00	\$104.33	0.8	0.8	
Assembly Hall	INCAN 150	16	1042	5400	5626.8	LED Down	16	1042	1152	1200.384	\$1,600.00	\$0.00	\$1,600.00	\$304.00	\$1,296.00	\$504.61	3.2	2.6	
HVAC Equip Room	4'2L F40T12 40W	2	1300	160	208	2L TLED	2	1300	72	93.6	\$64.00	\$0.00	\$64.00	\$10.00	\$54.00	\$13.04	4.9	4.1	
Storage room	4'2L F32T8 32W	4	1300	256	332.8	2L TLED	4	1300	144	187.2	\$128.00	\$0.00	\$128.00	\$20.00	\$108.00	\$16.60	7.7	6.5	
Play room	4'3L F32T8 32W	6	1300	576	748.8	3L TLED	6	1300	324	421.2	\$288.00	\$0.00	\$288.00	\$30.00	\$258.00	\$37.35	7.7	6.9	
Music Room	4'2L F32T8 32W	12	1300	768	998.4	2L TLED	12	1300	432	561.6	\$384.00	\$0.00	\$384.00	\$60.00	\$324.00	\$49.80	7.7	6.5	
Total											\$8,438.50	\$570.00	\$9,008.50	\$1,319.00	\$7,689.50	\$2,596.99	3.5	3.0	

Utility Information

Water Consumption Data

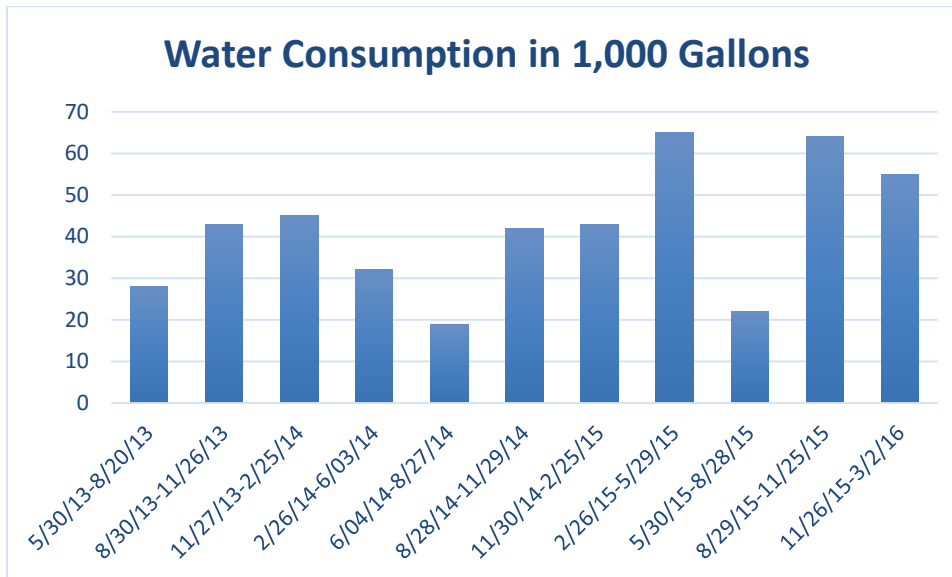
Meter 301219796

Period	Consumption in 1,000 gallons	Water Cost	Rate/1000 gallon(water)
5/30/13-8/20/13	8	\$51.27	\$6.41
8/30/13-11/26/13	8	\$51.27	\$6.41
11/27/13-2/25/14	7	\$48.98	\$7.00
2/26/14-6/03/14	4	\$33.87	\$8.47
6/04/14-8/27/14	7	\$50.29	\$7.18
8/28/14-11/29/14	29	\$174.53	\$6.02
11/30/14-2/25/15	5	\$45.45	\$9.09
2/26/15-5/29/15	5	\$46.10	\$9.22
5/30/15-8/28/15	13	\$73.60	\$5.66
8/29/15-11/25/15	17	\$98.00	\$5.76
11/26/15-3/2/16	3	\$41.00	\$13.67



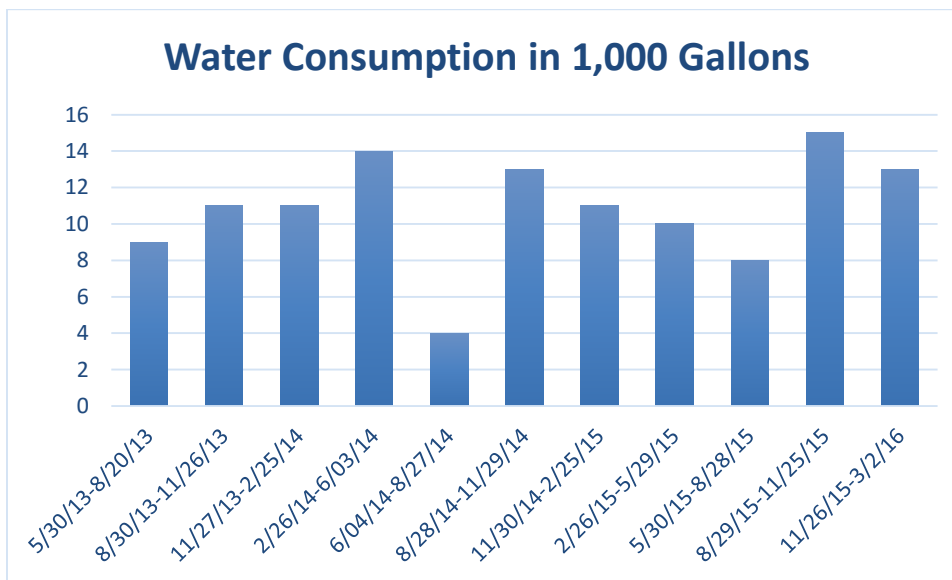
Meter 303254742

Period	Consumption in 1,000 gallons	Water Cost	Rate/1000 gallon(water)
5/30/13-8/20/13	28	\$89.37	\$3.19
8/30/13-11/26/13	43	\$123.72	\$2.88
11/27/13-2/25/14	45	\$128.30	\$2.85
2/26/14-6/03/14	32	\$103.09	\$3.22
6/04/14-8/27/14	19	\$71.63	\$3.77
8/28/14-11/29/14	42	\$127.29	\$3.03
11/30/14-2/25/15	43	\$129.71	\$3.02
2/26/15-5/29/15	65	\$191.40	\$2.94
5/30/15-8/28/15	22	\$81.75	\$3.72
8/29/15-11/25/15	64	\$217.25	\$3.39
11/26/15-3/2/16	55	\$165.90	\$3.02



Meter 301222394

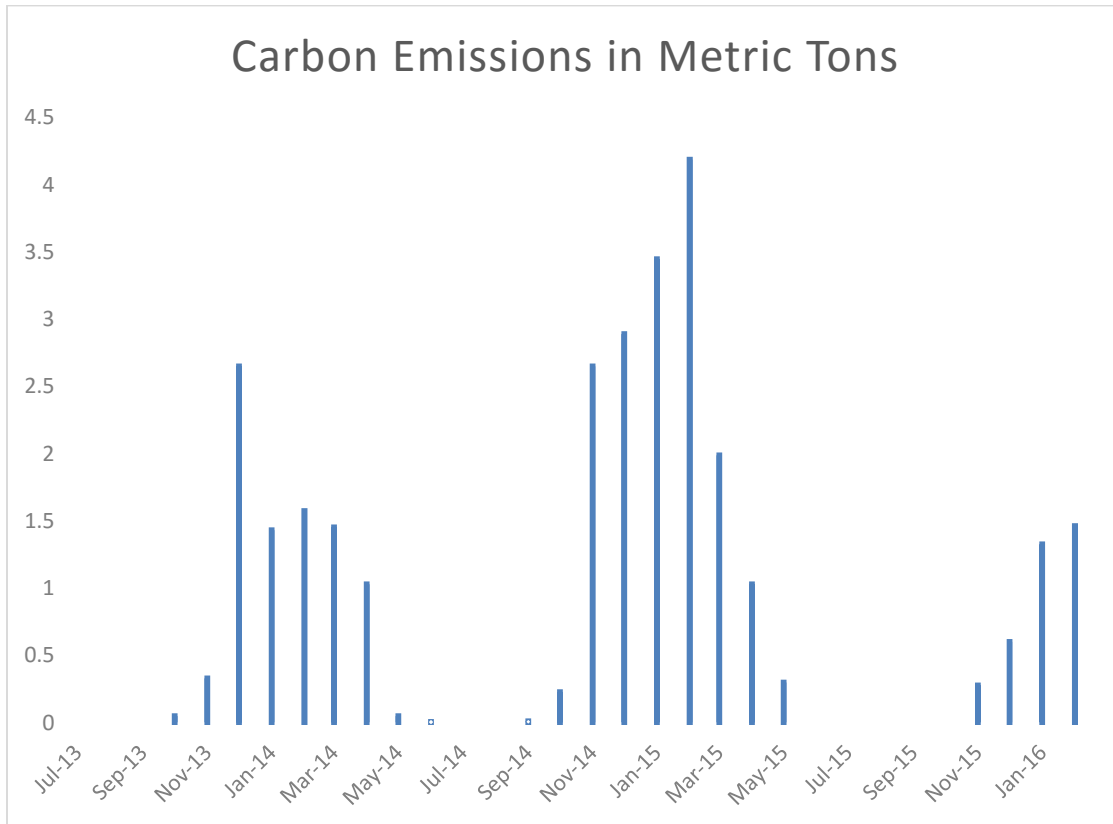
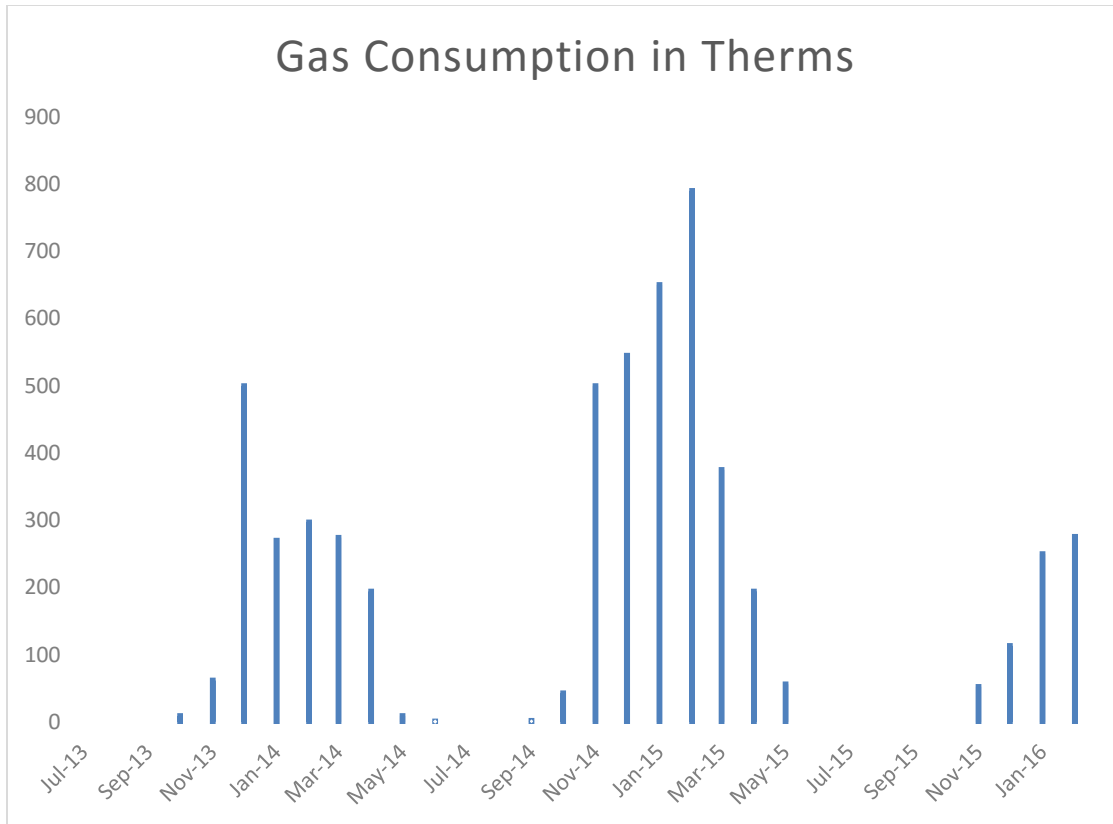
Period	Consumption in 1,000 gallons	Water Cost	Rate/1000 gallon(water)
5/30/13-8/20/13	9	\$36.91	\$4.10
8/30/13-11/26/13	11	\$41.49	\$3.77
11/27/13-2/25/14	11	\$41.49	\$3.77
2/26/14-6/03/14	14	\$51.13	\$3.65
6/04/14-8/27/14	4	\$26.93	\$6.73
8/28/14-11/29/14	13	\$48.71	\$3.75
11/30/14-2/25/15	11	\$43.87	\$3.99
2/26/15-5/29/15	10	\$42.75	\$4.28
5/30/15-8/28/15	8	\$37.65	\$4.71
8/29/15-11/25/15	15	\$55.50	\$3.70
11/26/15-3/2/16	13	\$50.40	\$3.88



Gas Consumption Data

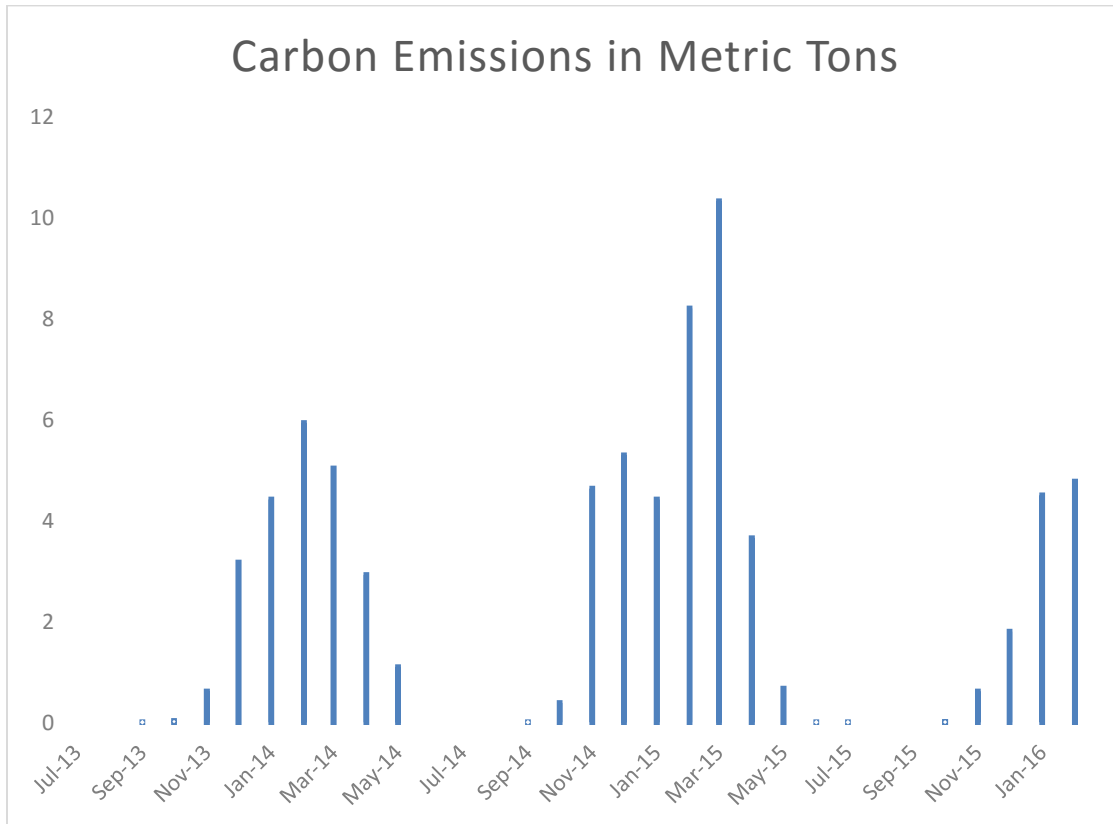
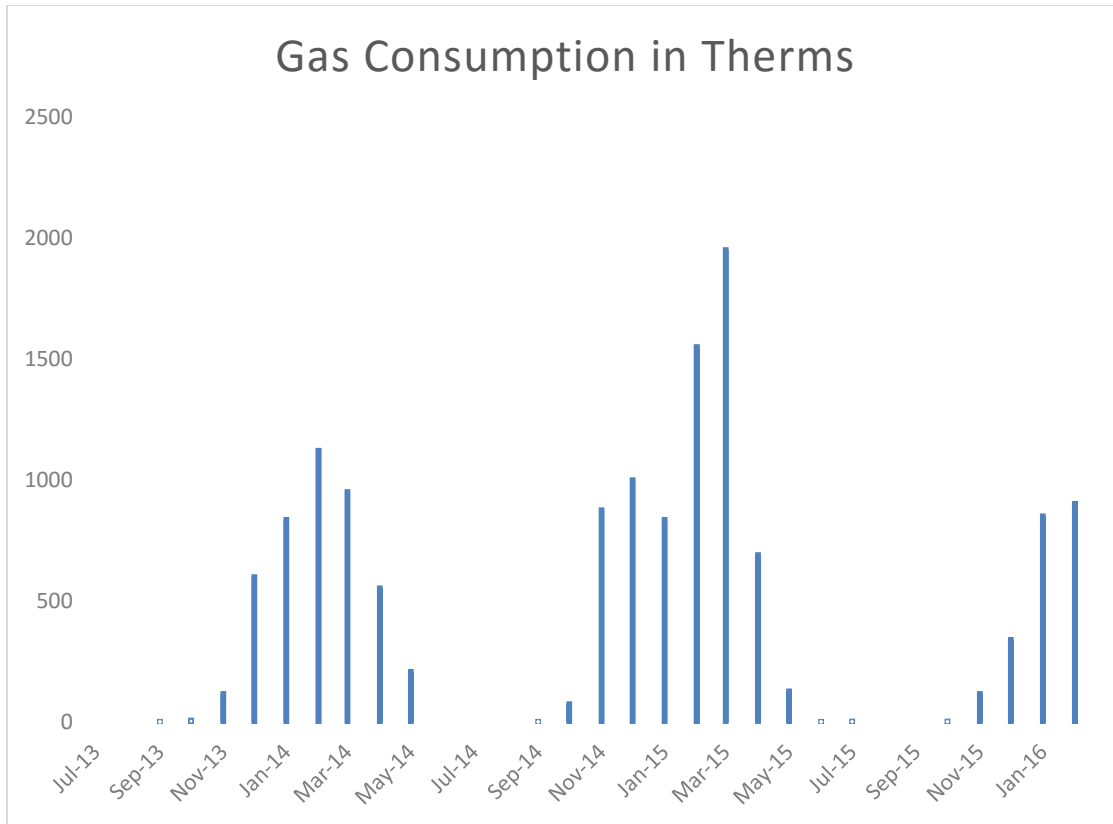
Meter 353509

Month	Consumption in Therms	Cost	Rate/Therm	Month	CO2 in Tons
Jul-13	0	\$21.30		Jul-13	0
Aug-13	0	\$21.60		Aug-13	0
Sep-13	0	\$21.30		Sep-13	0
Oct-13	9	\$25.16	\$2.80	Oct-13	0.047718
Nov-13	62	\$46.71	\$0.75	Nov-13	0.328724
Dec-13	500	\$222.56	\$0.45	Dec-13	2.651
Jan-14	270	\$120.66	\$0.45	Jan-14	1.43154
Feb-14	297	\$127.83	\$0.43	Feb-14	1.574694
Mar-14	274	\$120.63	\$0.44	Mar-14	1.452748
Apr-14	194	\$93.04	\$0.48	Apr-14	1.028588
May-14	9	\$25.16	\$2.80	May-14	0.047718
Jun-14	1	\$21.68	\$21.68	Jun-14	0.005302
Jul-14	0	\$21.30		Jul-14	0
Aug-14	0	\$21.30		Aug-14	0
Sep-14	2	\$24.60	\$12.30	Sep-14	0.010604
Oct-14	43	\$38.44	\$0.89	Oct-14	0.227986
Nov-14	500	\$230.75	\$0.46	Nov-14	2.651
Dec-14	545	\$251.52	\$0.46	Dec-14	2.88959
Jan-15	650	\$298.93	\$0.46	Jan-15	3.4463
Feb-15	790	\$364.35	\$0.46	Feb-15	4.18858
Mar-15	375	\$172.39	\$0.46	Mar-15	1.98825
Apr-15	194	\$93.04	\$0.48	Apr-15	1.028588
May-15	56.3	\$42.66	\$0.76	May-15	0.298503
Jun-15	0	\$21.15		Jun-15	0
Jul-15	0	\$8.59		Jul-15	0
Aug-15	0	\$21.30		Aug-15	0
Sep-15	0	\$21.30		Sep-15	0
Oct-15	0	\$31.52		Oct-15	0
Nov-15	52.3	\$42.04	\$0.80	Nov-15	0.277295
Dec-15	113.5	\$66.01	\$0.58	Dec-15	0.601777
Jan-16	250	\$177.00	\$0.71	Jan-16	1.3255
Feb-16	275.6	\$198.76	\$0.72	Feb-16	1.461231



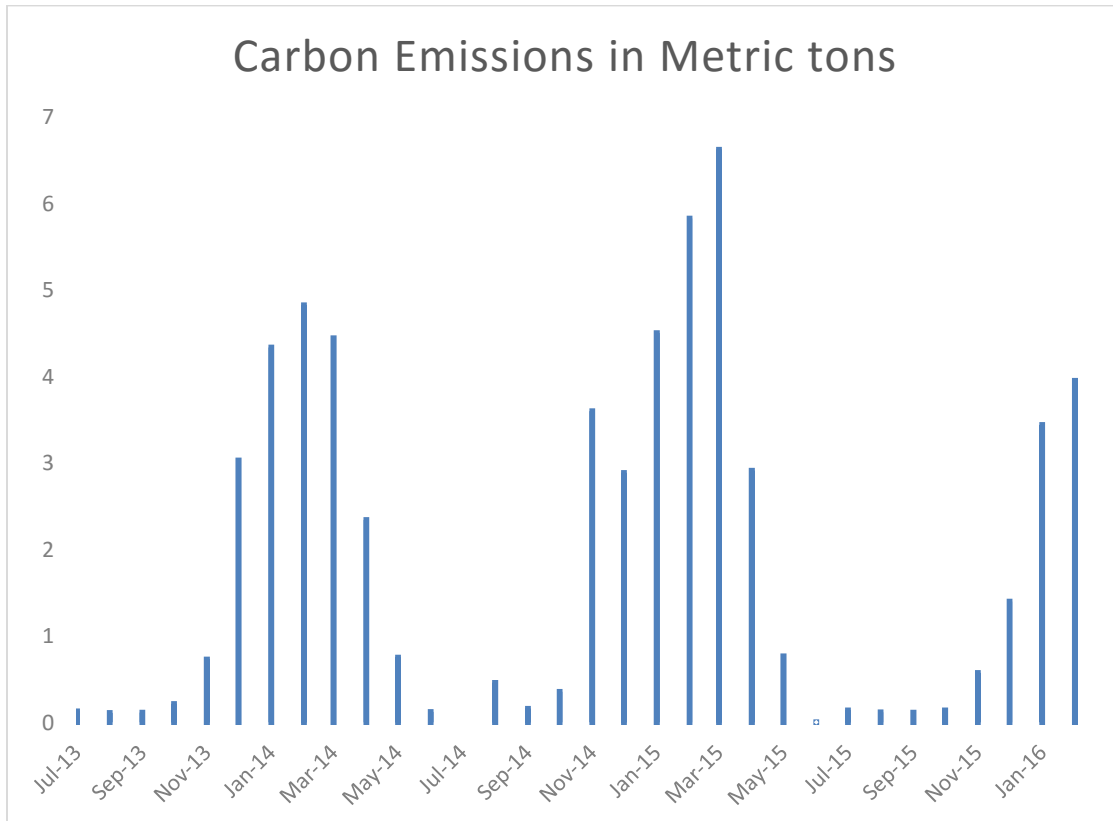
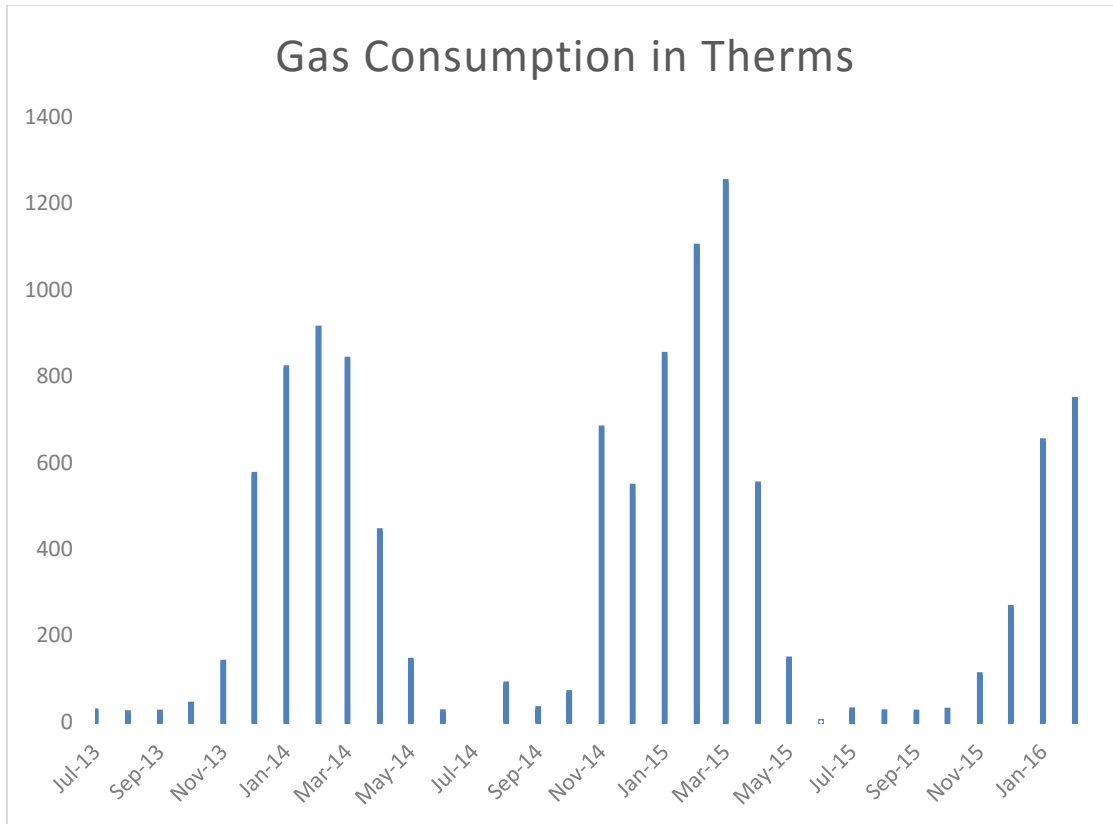
Meter 353707

Month	Consumption in Therms	Cost	Rate/Therm	Month	CO2 in Tons
Jul-13	0	\$20.45		Jul-13	0
Aug-13	0	\$21.40		Aug-13	0
Sep-13	1	\$20.79		Sep-13	0.005302
Oct-13	7	\$23.12	\$3.30	Oct-13	0.037114
Nov-13	116	\$62.52	\$0.54	Nov-13	0.615032
Dec-13	599	\$198.78	\$0.33	Dec-13	3.175898
Jan-14	835	\$266.22	\$0.32	Jan-14	4.42717
Feb-14	1121	\$326.94	\$0.29	Feb-14	5.943542
Mar-14	951	\$293.25	\$0.31	Mar-14	5.042202
Apr-14	552	\$183.81	\$0.33	Apr-14	2.926704
May-14	207.8	\$78.67	\$0.38	May-14	1.101756
Jun-14	0	\$20.45		Jun-14	0
Jul-14	0	\$21.30		Jul-14	0
Aug-14	0	\$21.30		Aug-14	0
Sep-14	1	\$75.52	\$75.52	Sep-14	0.005302
Oct-14	74	\$46.43	\$0.63	Oct-14	0.392348
Nov-14	875	\$553.90	\$0.63	Nov-14	4.63925
Dec-14	1000	\$630.66	\$0.63	Dec-14	5.302
Jan-15	835	\$298.93	\$0.36	Jan-15	4.42717
Feb-15	1550	\$972.75	\$0.63	Feb-15	8.2181
Mar-15	1950	\$1,230.29	\$0.63	Mar-15	10.3389
Apr-15	690	\$433.00	\$0.63	Apr-15	3.65838
May-15	127.1	\$62.73	\$0.49	May-15	0.673884
Jun-15	1	\$22.25	\$22.25	Jun-15	0.005302
Jul-15	2.1	\$21.01	\$10.00	Jul-15	0.011134
Aug-15	0	\$21.30		Aug-15	0
Sep-15	0	\$21.30		Sep-15	0
Oct-15	3.1	\$21.49	\$6.93	Oct-15	0.016436
Nov-15	116.1	\$61.15	\$0.53	Nov-15	0.615562
Dec-15	340.4	\$125.82	\$0.37	Dec-15	1.804801
Jan-16	850	\$260.00	\$0.31	Jan-16	4.5067
Feb-16	901.6	\$273.52	\$0.30	Feb-16	4.780283



Meter 355710

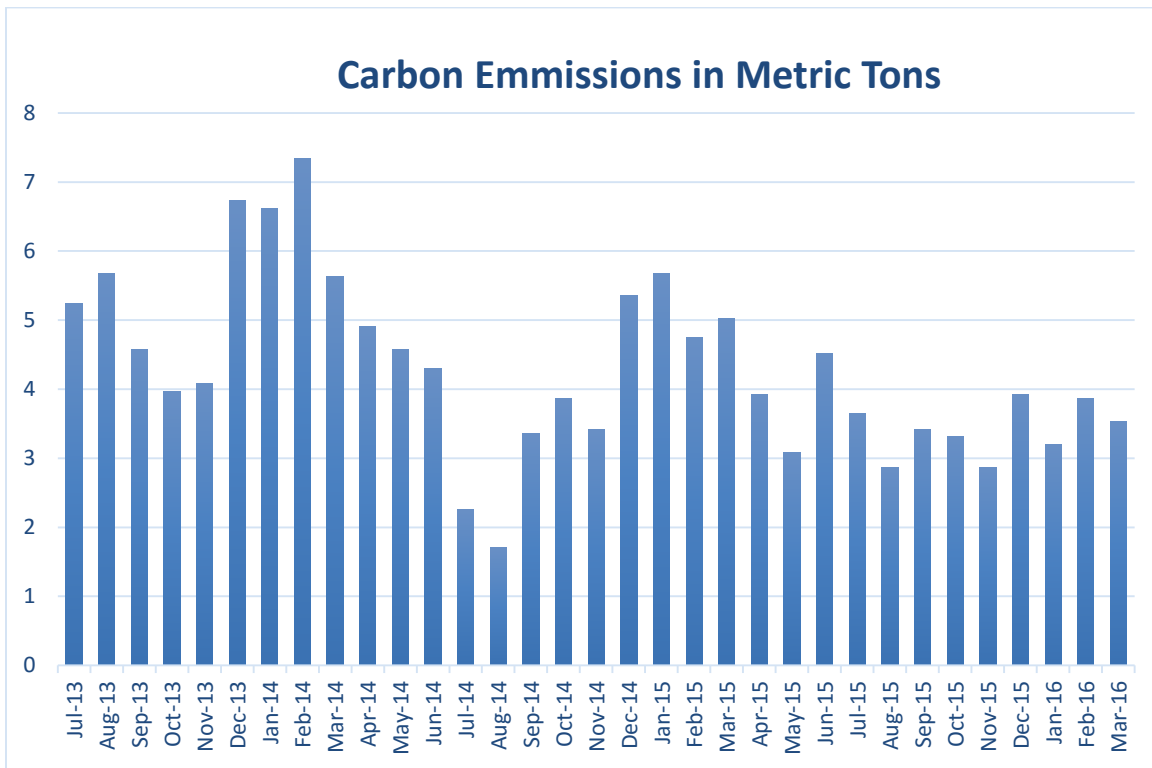
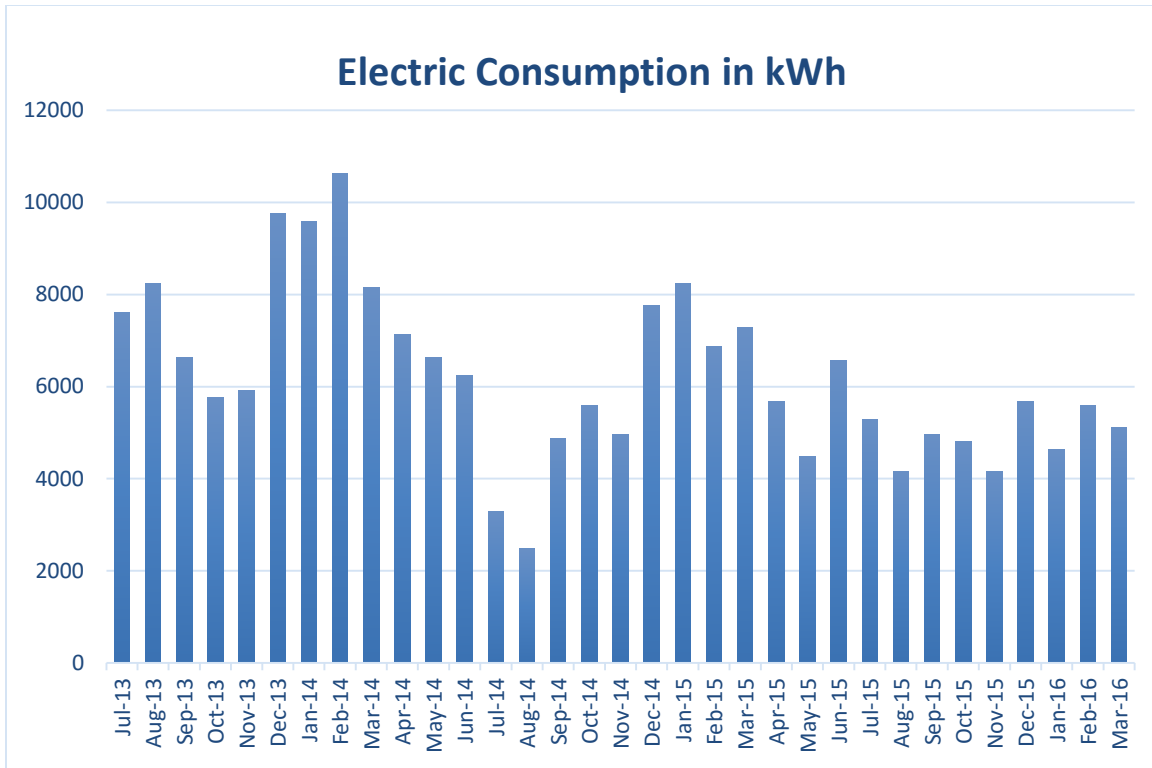
Month	Consumption in Therms	Cost	Rate/Therm	Month	CO2 in Tons
Jul-13	25	\$31.22	\$1.25	Jul-13	0.13255
Aug-13	21	\$30.46	\$1.45	Aug-13	0.111342
Sep-13	22	\$29.66	\$1.35	Sep-13	0.116644
Oct-13	41	\$38.86	\$0.95	Oct-13	0.217382
Nov-13	138	\$76.86	\$0.56	Nov-13	0.731676
Dec-13	572	\$219.76	\$0.38	Dec-13	3.032744
Jan-14	819	\$301.93	\$0.37	Jan-14	4.342338
Feb-14	911	\$325.32	\$0.36	Feb-14	4.830122
Mar-14	839	\$304.19	\$0.36	Mar-14	4.448378
Apr-14	442	\$175.52	\$0.40	Apr-14	2.343484
May-14	142.3	\$74.35	\$0.52	May-14	0.754475
Jun-14	23	\$30.38	\$1.32	Jun-14	0.121946
Jul-14	0	\$21.30		Jul-14	0
Aug-14	87	\$55.57	\$0.64	Aug-14	0.461274
Sep-14	30	\$67.17	\$2.24	Sep-14	0.15906
Oct-14	67	\$48.05	\$0.72	Oct-14	0.355234
Nov-14	680	\$490.86	\$0.72	Nov-14	3.60536
Dec-14	545	\$251.52	\$0.46	Dec-14	2.88959
Jan-15	850	\$622.05	\$0.73	Jan-15	4.5067
Feb-15	1100	\$785.65	\$0.71	Feb-15	5.8322
Mar-15	1250	\$907.93	\$0.73	Mar-15	6.6275
Apr-15	550	\$399.60	\$0.73	Apr-15	2.9161
May-15	144.8	\$75.12	\$0.52	May-15	0.76773
Jun-15	1	\$22.25	\$22.25	Jun-15	0.005302
Jul-15	27	\$29.79	\$1.10	Jul-15	0.143154
Aug-15	22.9	\$29.99	\$1.31	Aug-15	0.121416
Sep-15	21.8	\$29.57	\$1.36	Sep-15	0.115584
Oct-15	26.9	\$31.13	\$1.16	Oct-15	0.142624
Nov-15	108.8	\$64.41	\$0.59	Nov-15	0.576858
Dec-15	264.4	\$116.44	\$0.44	Dec-15	1.401849
Jan-16	650	\$230.00	\$0.35	Jan-16	3.4463
Feb-16	745.9	\$267.53	\$0.36	Feb-16	3.954762



Electrical Consumption Data

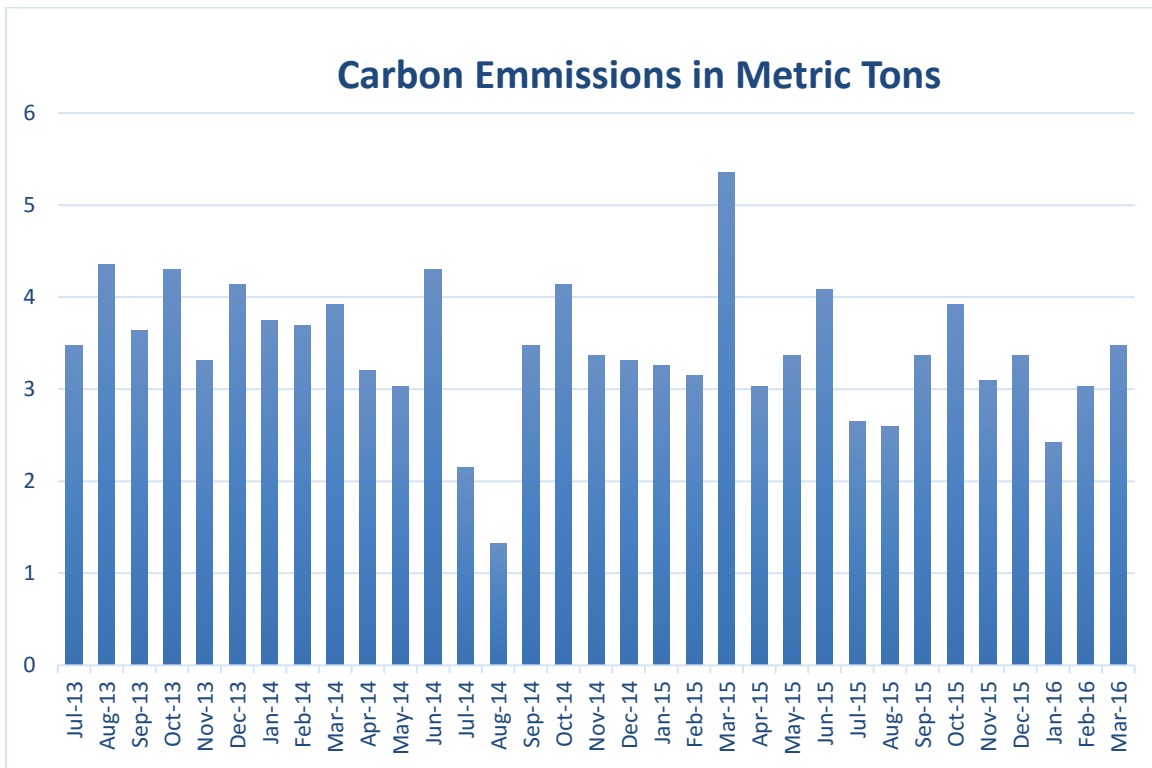
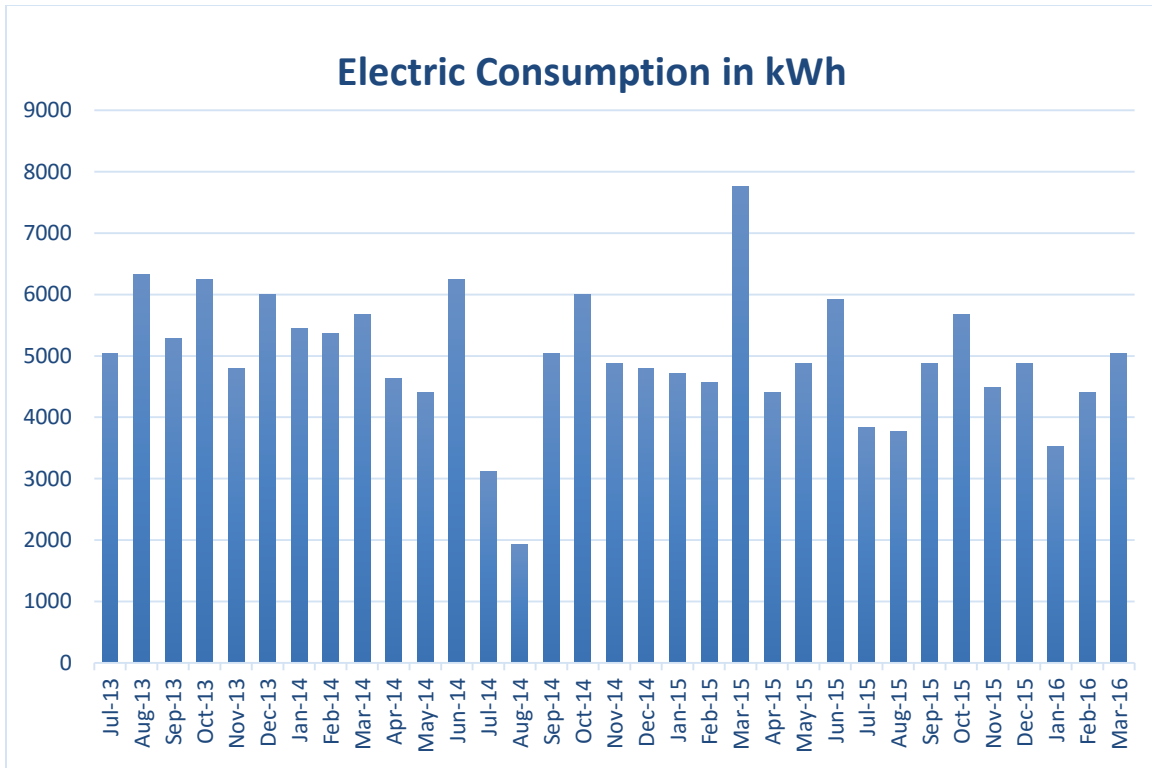
Meter 3945350001

Month	Consumption in kWh	Cost	Rate/kWh	Month	CO2 in Tons
Jul-13	7600	825.22	\$0.11	Jul-13	5.240588
Aug-13	8240	904.15	\$0.11	Aug-13	5.6819
Sep-13	6640	734.72	\$0.11	Sep-13	4.578619
Oct-13	5760	626.43	\$0.11	Oct-13	3.971814
Nov-13	5920	642.72	\$0.11	Nov-13	4.082142
Dec-13	9760	1021.11	\$0.10	Dec-13	6.730018
Jan-14	9600	\$982.41	\$0.10	Jan-14	6.61969
Feb-14	10640	\$1,083.94	\$0.10	Feb-14	7.336823
Mar-14	8160	\$840.19	\$0.10	Mar-14	5.626736
Apr-14	7120	\$735.49	\$0.10	Apr-14	4.909603
May-14	6640	\$685.37	\$0.10	May-14	4.578619
Jun-14	6240	\$665.89	\$0.11	Jun-14	4.302798
Jul-14	3280	\$367.10	\$0.11	Jul-14	2.261727
Aug-14	2480	\$286.66	\$0.12	Aug-14	1.710086
Sep-14	4880	\$553.38	\$0.11	Sep-14	3.365009
Oct-14	5600	\$627.15	\$0.11	Oct-14	3.861486
Nov-14	4960	\$559.97	\$0.11	Nov-14	3.420173
Dec-14	7760	\$853.86	\$0.11	Dec-14	5.350916
Jan-15	8240	\$909.84	\$0.11	Jan-15	5.6819
Feb-15	6880	\$767.90	\$0.11	Feb-15	4.744111
Mar-15	7280	\$810.24	\$0.11	Mar-15	5.019931
Apr-15	5680	\$628.40	\$0.11	Apr-15	3.91665
May-15	4480	\$492.39	\$0.11	May-15	3.089188
Jun-15	6560	\$724.11	\$0.11	Jun-15	4.523455
Jul-15	5280	\$587.01	\$0.11	Jul-15	3.640829
Aug-15	4160	\$467.08	\$0.11	Aug-15	2.868532
Sep-15	4960	\$552.15	\$0.11	Sep-15	3.420173
Oct-15	4800	\$523.36	\$0.11	Oct-15	3.309845
Nov-15	4160	\$458.81	\$0.11	Nov-15	2.868532
Dec-15	5680	\$612.09	\$0.11	Dec-15	3.91665
Jan-16	4640	\$506.83	\$0.11	Jan-16	3.199517
Feb-16	5600	\$598.00	\$0.11	Feb-16	3.861486
Mar-16	5120	\$549.67	\$0.11	Mar-16	3.530501




Meter 5956088180

Month	Consumption in kWh	Cost	Rate/kWh	Month	CO2 in Tons
Jul-13	5040	637.98	\$0.13	Jul-13	3.475337
Aug-13	6320	805.87	\$0.13	Aug-13	4.357962
Sep-13	5280	619.86	\$0.12	Sep-13	3.640829
Oct-13	6240	756.52	\$0.12	Oct-13	4.302798
Nov-13	4800	586	\$0.12	Nov-13	3.309845
Dec-13	6000	685.5	\$0.11	Dec-13	4.137306
Jan-14	5440	\$604.33	\$0.11	Jan-14	3.751157
Feb-14	5360	\$576.51	\$0.11	Feb-14	3.695993
Mar-14	5680	\$597.60	\$0.11	Mar-14	3.91665
Apr-14	4640	\$552.14	\$0.12	Apr-14	3.199517
May-14	4400	\$521.76	\$0.12	May-14	3.034024
Jun-14	6240	\$776.93	\$0.12	Jun-14	4.302798
Jul-14	3120	\$407.91	\$0.13	Jul-14	2.151399
Aug-14	1920	\$262.79	\$0.14	Aug-14	1.323938
Sep-14	5040	\$662.92	\$0.13	Sep-14	3.475337
Oct-14	6000	\$770.03	\$0.13	Oct-14	4.137306
Nov-14	4880	\$630.13	\$0.13	Nov-14	3.365009
Dec-14	4800	\$620.19	\$0.13	Dec-14	3.309845
Jan-15	4720	\$615.64	\$0.13	Jan-15	3.254681
Feb-15	4560	\$521.54	\$0.11	Feb-15	3.144353
Mar-15	7760	\$878.05	\$0.11	Mar-15	5.350916
Apr-15	4400	\$565.67	\$0.13	Apr-15	3.034024
May-15	4880	\$607.67	\$0.12	May-15	3.365009
Jun-15	5920	\$778.69	\$0.13	Jun-15	4.082142
Jul-15	3840	\$512.03	\$0.13	Jul-15	2.647876
Aug-15	3760	\$500.46	\$0.13	Aug-15	2.592712
Sep-15	4880	\$645.76	\$0.13	Sep-15	3.365009
Oct-15	5680	\$710.52	\$0.13	Oct-15	3.91665
Nov-15	4480	\$564.15	\$0.13	Nov-15	3.089188
Dec-15	4880	\$615.99	\$0.13	Dec-15	3.365009
Jan-16	3520	\$448.60	\$0.13	Jan-16	2.42722
Feb-16	4400	\$520.70	\$0.12	Feb-16	3.034024
Mar-16	5040	\$627.79	\$0.12	Mar-16	3.475337



Energy Star Score



ENERGY STAR[®] Statement of Energy Design Intent (SEDI)¹
UUCF

LEARN MORE AT energystar.gov

53

Primary Property Type: Worship Facility
Gross Floor Area (ft²): 25,056
Estimated Date of Certification of Occupancy: _____

Date Generated: May 08, 2016

ENERGY STAR[®]
Design Score²

1. This form may be used to apply for the ENERGY STAR Designed to Earn. This form was generated from Portfolio Manager's target finder. <http://www.portfoliomanager.energystar.gov/targetfinder>.
2. The ENERGY STAR Score is based on total source energy. The scale is 1-100. A score of 75 is the minimum to be eligible for the ENERGY STAR.

Property & Contact Information for Design Project		
Property Address UUCF 2709 Hunter Mill Road Oakton, Virginia 22124	Project Architect _____ () - _____	Owner Contact _____ () - _____
Property ID: 4967398	Architect Of Record _____ () - _____	Property Owner _____ () - _____

Estimated Design Energy		
Fuel Type	Usage	Energy Rate (\$/Unit)
Electric - Grid	131,400 kWh (thousand Watt-hours)	\$ 0.11/kWh (thousand Watt-hours)
Natural Gas	12,105 therms	\$ 0.63/therms

Estimated Design Use Details	
★ This Use Detail is used to calculate the 1-100 ENERGY STAR Score.	
Worship Facility	
★ Weekly Operating Hours	50
★ Seating Capacity	1,002.24 ← default value
★ Number of Weekdays Open	5
★ Number of Computers	10
★ Gross Floor Area	25,056 Sq. Ft.
★ Cooking Facilities	Yes
★ Number of Commercial Refrigeration/Freezer Units	2

Design Energy and Emission Results			
Metric	Design Project	Median Property	Estimated Savings
ENERGY STAR Score (1-100)	53	50	N/A
Energy Reduction (from Median)(%)	-3.5	0	N/A
Source Energy Use Intensity (kBtu/ft ² /yr)	106	110	4
Site Energy Use Intensity (kBtu/ft ² /yr)	66	68	2
Source Energy Use (kBtu/yr)	2,678,802	2,775,738	96,936
Site Energy Use (kBtu/yr)	1,658,836	1,718,863	60,027
Energy Costs (\$)	22,080	22,879	799
Total GHG Emissions (Metric Tons CO2e)	128	133	5

Gap Analysis to meet Paris Climate conference Target

The Paris Pledge

As a pledge taker your goal is to reduce carbon emissions by 50% by 2030 and carbon neutral by 2050. Our current Carbon emissions are 150 metric tons per year. In order to achieve 50% target we have to reduce emissions by 75 metric tons.

If you refer to table 1 and 2 above, and combine all operational and Capital ECOs under 5 year payback (including lighting upgrades under lighting retrofit summary), you can potentially reduce carbon emissions by approximately 80 metric tons. This will get to the 50% reduction target. This will also secure Energy Star certification, as a facility that is performing in the top 25 percentile as compared to peer facilities.

Available applicable Rebate Information

Dominion Measures for Non-Residential Heating & Cooling Efficiency Program		
Size Range	Minimum Qualifying Efficiency	Incentive Per Ton*
Packaged Terminal Air Conditioner Units and Heat Pumps		
< 7k Btu/h	11.3 EER	\$37
≥ 7k and < 15k Btu/h	10.0 EER	\$37
≥ 15k Btu/h	9.2 EER	\$37
Unitary Air Cooled Air Conditioners		
All Split Units < 60k Btu/h (5 tons)	12.5 EER or 15.0 SEER	\$45
All Single Package Units < 60k Btu/h (5 tons)	12.0 EER or 15.0 SEER	\$45
≥ 60k and < 132k Btu/h (5 – 11 tons)	12.0 EER	\$45
≥ 132k and < 240k Btu/h (11 – 20 tons)	12.0 EER	\$45
≥ 240k and < 756k Btu/h (20 – 63 tons)	10.6 EER	\$45
All Units ≥ 756k Btu/h (63 tons)	10.2 EER	\$45
Unitary Air Cooled Heat Pumps		
All Split Units < 60k Btu/h (5 tons)	12.5 EER or 15.0 SEER	\$45
All Single Package Units < 60k Btu/h (5 tons)	12.0 EER or 15.0 SEER	\$45
≥ 60k and < 132k Btu/h (5 – 11 tons)	11.1 EER	\$45
≥ 132k and < 240k Btu/h (11 – 20 tons)	10.7 EER	\$45
≥ 240k and < 756k Btu/h (20 – 63 tons)	10.1 EER	\$45
Water Cooled Chillers		
Rotary / Screw / Scroll Type < 75 tons	0.50 kW/Ton	\$51
Rotary / Screw / Scroll Type ≥ 75 and < 150 tons	0.49 kW/Ton	\$53
Rotary / Screw / Scroll Type ≥ 150 and < 300 tons	0.44 kW/Ton	\$49
Rotary / Screw / Scroll Type ≥ 300 tons	0.41 kW/Ton	\$41
Centrifugal < 150 tons	0.44 kW/Ton	\$47
Centrifugal ≥ 150 and < 300 tons	0.40 kW/Ton	\$41
Centrifugal ≥ 300 tons	0.39 kW/Ton	\$33
Magnetic Bearing < 150 tons	0.37 kW/Ton	\$62
Magnetic Bearing ≥ 150 and < 300 tons	0.357 kW/Ton	\$52
Magnetic Bearing ≥ 300 tons	0.33 kW/Ton	\$46
Air Cooled Chillers		
All Sizes	12.5 EER	\$52
Geothermal Heat Pumps		
All Sizes	18.1 EER	\$42
Variable Frequency Drives		
For HVAC Equipment Only		\$56/hp
HVAC Economizers		
Dual Enthalpy Economizers < 10 tons		\$98/unit
Dual Enthalpy Economizers ≥ 10 tons		\$156/unit

Size Range	Minimum Qualifying Efficiency	Incentive Per Ton*
Mini Split Air Conditioners and Heat Pumps		
Level 1 ≤ 60k Btu/h	11.8-13.7 EER	\$60
Level 2 ≤ 60k Btu/h	13.8-14.9 EER	\$110
Level 3 ≤ 60k Btu/h	15.0 EER	\$150
Variable Refrigerant Flows		
≥ 60k and < 132k Btu/h	14.0 EER; 14.2 IEER	\$80
≥ 132k and < 240k Btu/h	13.0 EER; 13.7 IEER	\$70
≥ 240k Btu/h	12.4 EER; 13.0 IEER	\$60
Water Source Heat Pumps and Air Conditioners		
≤ 132k Btu/h	14.0 EER	\$80

Dominion Measures for Non-Residential Lighting Systems & Controls Program			
Item	New Fixture or Retrofit	Replaces	Incentive Per Item*
T8 with Electronic Ballast			
1	T8 – 2 – 2ft 17W Lamps with Reflector & NB	2 Bi-ax Lamps in 2x2, 2U-bends	\$21
2	T8 – 3 – 2ft 17W Lamps with Reflector & NB	2 Bi-ax Lamps in 2x2, 2U-bends	\$16
3	T8 Enclosed Fixture – 2 Lamp NB No Reflector 24/7	75W – 100W HID	\$33
4	T8 Enclosed Fixture – 3 Lamp NB No Reflector 24/7	150W – 175W HID	\$67
6	T8 High-Bay – 4ft 3 Lamp	150W – 175W HID	\$41
7	T8 High-Bay – 4ft 4 Lamp	250W HID	\$53
8	T8 High-Bay – 4ft 6 Lamp	400W HID	\$80
9	T8 High-Bay – 4ft 8 Lamp	400W HID	\$73
10	T8 High-Bay – Double Fixture 4ft 6 Lamp	1,000W HID	\$186
11	T8 High-Bay – Double Fixture 4ft 8 Lamp	1,000W HID	\$137
High Performance T8			
12	LW HPT8 – 4ft 1 Lamp	T8	\$2
13	LW HPT8 – 4ft 2 Lamp	T8	\$3
14	LW HPT8 – 4ft 3 Lamp	T8	\$8
15	LW HPT8 – 4ft 4 Lamp	T8	\$10
58	LW HPT8 – 4ft 2 Lamp – Delamping with Reflector	T8 – 4 Lamp	\$20
59	LW HPT8 – 4ft 3 Lamp – Delamping with Reflector	T8 – 4 Lamp	\$17
60	LW HPT8 – 4ft 2 Lamp – Delamping with Reflector	T8 – 3 Lamp	\$14
61	LW HPT8 – 4ft 1 Lamp – Delamping with Reflector	T8 – 2 Lamp	\$12
16	HPT8 T8 – 4ft 2 Lamp	T12HO – 8ft 1 Lamp	\$14
17	HPT8 T8 – 4ft 4 Lamp	T12HO – 8ft 2 Lamp	\$25
T5 with Electronic Ballast			
18	T5 HO Enclosed – 1 Lamp 24/7	75W – 100W HID	\$38
19	T5 HO Enclosed – 2 Lamp 24/7	150W – 175W HID	\$56
20	T5 HO Enclosed – 3 Lamp 24/7	250W HID	\$68
21	2 Lamp T5 28W 24/7	75W – 150W HID	\$43
22	T5 HO Enclosed – 2 Lamp Miro Reflector 24/7	250W HID	\$60
23	T5 – 2 – 2ft Lamps 24W	75W – 100W HID	\$29
24	T5 – 3 – 2ft Lamps 24W	150W HID	\$44
25	T5 – 4 – 2ft Lamps 24W	175W HID	\$46
26	T5 – 3 – 4ft HO Lamps	250W HID	\$61
27	T5 HO – High-Bay 2L	150W – 175W HID	\$46
28	T5 HO – High-Bay 3L	250W HID	\$61
29	T5 HO – High-Bay 4L	400W HID	\$81
30	T5 HO – High-Bay 6L	400W HID	\$71
31	T5 HO – Double Fixture High-Bay 3L	1,000W HID	\$163
32	T5 HO – Double Fixture High-Bay 6L	1,000W HID	\$147
Compact Fluorescent Lamps (CFL)			
33	CFL – Screw in (Lamp only) < 30W	Incandescent (EISA Standard)	\$1.30
34	CFL – Screw in (Lamp only) ≥ 30W	Incandescent (EISA Standard)	\$2

Item	New Fixture or Retrofit	Replaces	Incentive Per Item*
LED			
38	LED Exit Signs	Standard Exit Sign	\$13
40	LED Downlight 13W – 30W (Excludes Screw in Lamps)	Incandescent Downlight 76W – 150W (EISA Standard)	\$19
41	LED 2x4 Fixture 39W – 80W	2x4 T8 Fluorescent	\$50
42	LED 2x2 or 1x4 Fixture	2 2x2 Bi-ax Lamps, 2U-bends, 2L 4ft T8	\$35
43	LED Lamps ≤ 7W	≤ 30W Equiv. (EISA Standard)	\$6
44	LED Lamps > 7W and ≤ 12W (Excludes Screw in Lamps)	31W – 75W Lamps (EISA Standard)	\$10
45	LED or Induction	100W – 150W HID	\$38
46	LED or Induction	175W HID	\$77
47	LED or Induction	250W HID	\$110
48	LED or Induction	400W HID	\$167
62	LED Exterior New Fixture	1,000W HID Exterior	\$243
63	LED Interior New Fixture	1,000W HID Interior	\$263
64	LED Interior New Fixture	750W HID Interior	\$201
65	LED Exterior New Fixture	750W HID Exterior	\$202
66	LED Exterior New Fixture	150W HID Exterior	\$53
67	LED Exterior New Fixture	100W HID Exterior	\$45
49	LED or Induction Exterior	175W HID	\$58
50	LED or Induction Exterior	250W HID	\$107
51	LED or Induction Exterior	400W HID	\$147
52	LED or Induction 24/7	150W HID	\$105
53	LED or Induction 24/7	175W HID	\$123
54	LED or Induction 24/7	250W HID	\$158
68	LED 24/7	T8 Enclosed Fixture – 2 Lamp	\$30
69	LED 24/7	T8 Enclosed Fixture – 3 Lamp	\$27
70	LED Panels	T8 – 8ft 1 Lamp	\$9
71	LED Panels	T8 – 8ft 2 Lamp	\$15
72	LED Panels on Belly Pan	T8 – 4ft 3 Lamp	\$18
73	LED Panels on Belly Pan	T8 – 4ft 2 Lamp	\$12
74	LED Panels on Belly Pan	T8 – 4ft 1 Lamp	\$6
75	LED	T8 – 2ft 4 Lamp	\$14
76	LED	T8 – 2ft 3 Lamp	\$7
77	LED	T8 – 2ft 2 Lamp	\$5
78	LED High-Bay	T8 High-Bay 4ft 4 Lamp	\$32
79	LED High-Bay	T8 High-Bay 4ft 6 Lamp	\$39
80	LED High-Bay	T8 High-Bay 4ft 8 Lamp	\$51
81	LED High-Bay	T8 High-Bay 4ft 6 Lamp Tandem	\$45
82	LED High-Bay	T8 High-Bay 4ft 8 Lamp Tandem	\$69
83	LED 24/7	T3 HO Enclosed – 1 Lamp	\$26
84	LED 24/7	T3 HO Enclosed – 2 Lamp	\$42
85	LED 24/7	T3 HO Enclosed – 3 Lamp	\$60
86	LED High-Bay	T3 HO – High-Bay 3L	\$37