New Jersey Clean Energy Program

Local Government Energy Audit Report

Congregation Beth El of the Oranges

February 15, 2019

Prepared for:

Congregation Beth El of the Oranges
222 Irvington Avenue
South Orange, NJ 07079

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Disclaimer

The goal of this audit report is to identify potential energy efficiency opportunities, help prioritize specific measures for implementation, and provide information about financial incentives that may be available. Most energy conservation measures have received preliminary analysis of feasibility that identifies expected ranges of savings and costs. This level of analysis is usually considered sufficient to establish a basis for further discussion and to help prioritize energy measures.

TRC Energy Services (TRC) reviewed the energy conservation measures and estimates of energy savings were reviewed for technical accuracy. Actual, achieved energy savings depend on behavioral factors and other uncontrollable variables and, therefore, estimates of final energy savings are not guaranteed. TRC and the New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy savings vary.

TRC bases estimated installation costs on our experience at similar facilities, pricing from local contractors and vendors, and/or cost estimates from RS Means. We encourage the owner of the facility is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Actual installation costs can vary widely based on individual measures and conditions. TRC and NJBPU do not guarantee installed cost estimates and shall in no event be held liable should actual installed costs vary from estimates.

The New Jersey Clean Energy Program (NJCEP) incentive values provided in this report are estimates based on program information available at the time of the report. Incentive levels are not guaranteed. The NJBPU reserves the right to extend, modify, or terminate programs without prior notice. Please review all available program incentives and eligibility requirements prior to selecting and installing any energy conservation measures.

The customer and their respective contractor(s) are responsible to implement energy conservation measures in complete conformance with all applicable local, state and federal requirements.

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1 BUILDING ENERGY SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) report for Congregation Beth El of the Oranges. This report provides you with information about your facility's energy use, identifies energy conservation measures (ECMs) that can reduce your energy use, and provides information and assistance to help make changes in your facility. TRC Energy Services (TRC) conducted this study as part of a comprehensive effort to assist New Jersey school districts and local governments in controlling their energy costs and help protect our environment by reducing statewide energy consumption.

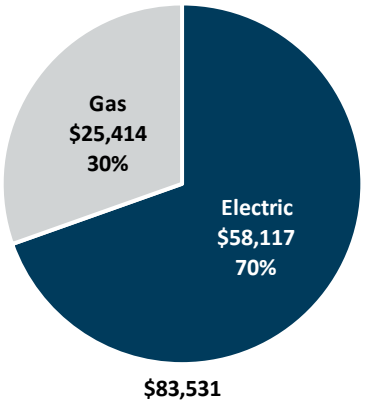
BUILDING PERFORMANCE REPORT

Annual Utilities

Costs: $83,531

Electricity:
382,568 kWh

Natural Gas:
28,552 Therms



FACILITY OVERVIEW

Building Type	Religious Worship
Location	222 Irvington Avenue South Orange, NJ 07079
Building Size	40,000 ft^2
Stories	3
Occupancy (Varies)	Weekday: 8:00 AM - 7:00 PM; Weekend: 9:00 AM - 12:00 PM

ENERGY USE INTENSITY COMPARISON

Energy Use Intensity (EUI) measures your energy consumption on a square foot basis. A lower EUI means better performance and less energy consumed. We compared your building's EUI with the national median EUI for that building type. This can help show whether the building uses more or less energy than similar buildings.

A number of factors could cause energy use to vary from a "typical" building. Local weather conditions, building age and insulation levels, equipment efficiency, daily occupancy hours, changes in occupancy throughout the year, equipment operating hours, and occupant behavior all contribute to a building's energy use.

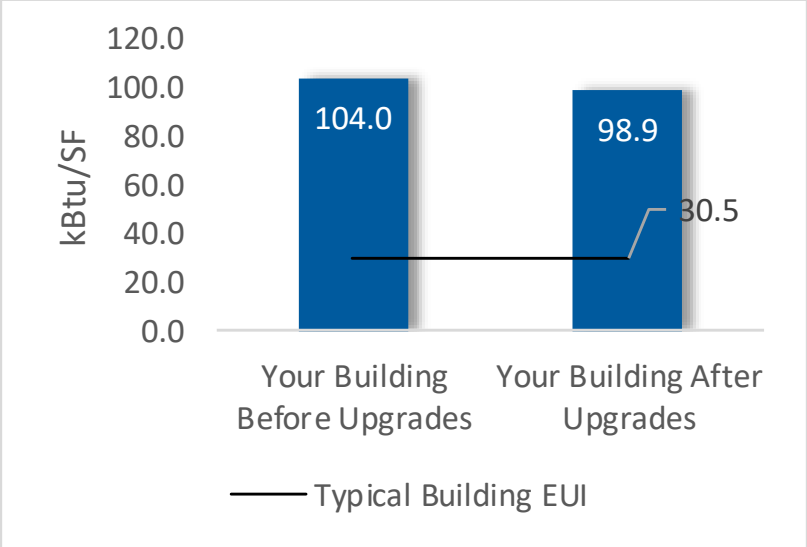


Figure 1 – EUI Comparison

This chart of energy end uses highlights the relative contribution of each equipment category to total energy usage. This can help determine where the greatest benefits might be found from energy efficiency measures.

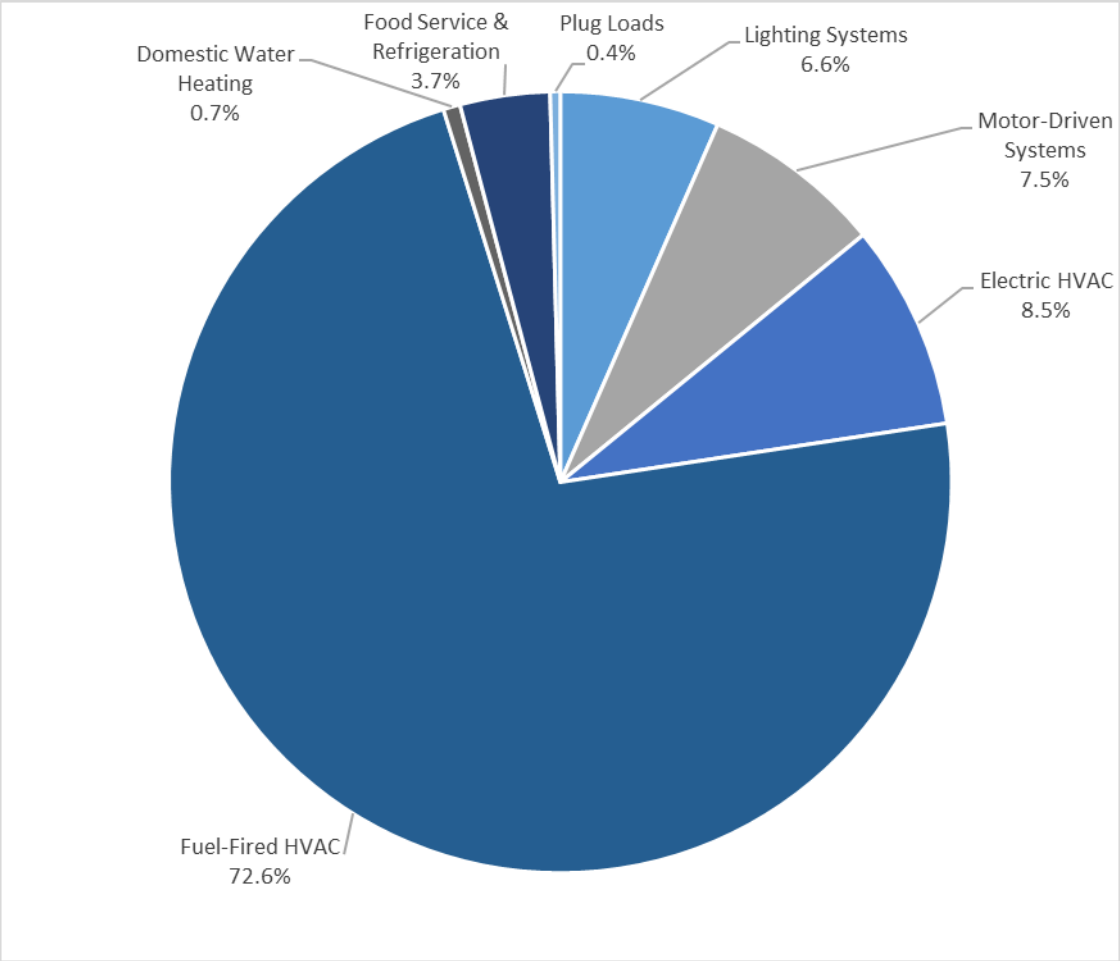
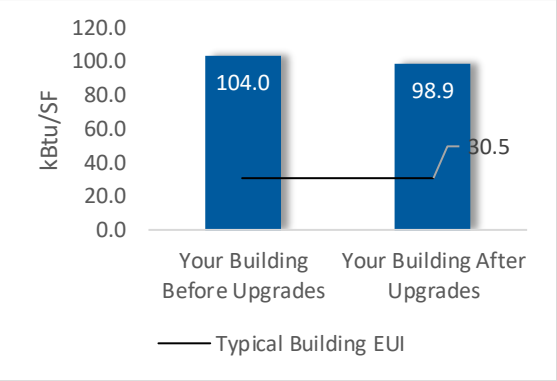


Figure 2 – Energy Intensity by End Use (kBtu/sqft)

POTENTIAL IMPROVEMENTS

This energy audit considered a range of potential energy improvements in your building. Costs and savings will vary between improvements. Presented below is a potential scope of work for your consideration.

Installation Cost	$20,354
Potential Rebates & Incentives[1]	$4,494
Annual Cost Savings	$8,626
Annual Energy Savings	Electricity: 56,092 kWh Natural Gas: 117 Therms
Greenhouse Gas Emission Savings	24.1 Tons
Simple Payback	2.4 years
Site Energy Savings (all utilities)	5%



On-site Generation Potential

Photovoltaic	Medium
Combined Heat and Power	None

[1] Incentives are based on current SmartStart Prescriptive incentives. Other program incentives may apply.

2 Energy Efficiency Investment Guide

Save a little or a lot - it's your call. The more you invest in your building, the more you save in the long term. Here are three approaches to improve your building's performance, increase occupant comfort, and reduce operating costs.

1

Low cost, fast-payback upgrades

Lower investment with modest energy savings

To get you started, try these basic but cost-effective energy-saving improvements. With these upgrades, you can save a modest amount of energy without a major investment of time or resources. Your facility staff may be able to install these measures, or you can work with your own preferred contractor.

#	Energy Improvement	Annual Energy Cost Savings ($)	Installation Cost ($)	Potential Incentive ($)	Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (Tons)
1	LED Fixtures	$375	$1,814	$190	$1,624	4.3	1.0
2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	$1,610	$4,491	$660	$3,831	2.4	4.4
3	Retrofit Fixtures with LED Lamps	$6,537	$18,471	$3,644	$14,827	2.3	18.0
4	Low-Flow Devices	$104	$72	$0	$72	0.7	0.7
TOTALS		**$8,626**	**$24,848**	**$4,494**	**$20,354**	**2.4**	**24.1**

Install LED Fixtures

Replace existing exterior wall pack fixtures containing 100-Watt high pressure sodium (HPS) and 250-Watt metal halide (MH) lamps with new LED light fixtures. This measure saves energy by installing LEDs which use less power than other technologies with a comparable light output.

In some cases, HID fixtures can be retrofit with screw-based LED lamps. Replacing an existing HID fixture with a new LED fixture will generally provide better overall lighting optics; however, replacing the HID lamp with a LED screw-in lamp is typically a less expensive retrofit. We recommend you work with your lighting contractor to determine which retrofit solution is best suited to your needs and will be compatible with the existing fixture(s).

Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Retrofit fluorescent T12 fixtures by removing the fluorescent tubes and ballasts and replacing them with LED tubes and LED drivers (if necessary), which are designed to be used in retrofitted fluorescent fixtures.

This measure uses the existing fixture housing but replaces the electric components with more efficient lighting technology which use less power than other lighting technologies but provides equivalent lighting output. Maintenance savings may also be achieved since LED tubes last longer than fluorescent tubes and therefore do not need to be replaced as often.

Retrofit Fixtures with LED Lamps

Replace fluorescent T8 and T5, compact fluorescent and incandescent lamps found in various spaces with LED lamps. Many LED tubes are direct replacements for existing fluorescent tubes and can be installed while leaving the fluorescent fixture ballast in place. LED lamps can be used in existing fixtures as a direct replacement for most other lighting technologies.

This measure saves energy by installing LEDs which use less power than other lighting technologies yet provide equivalent lighting output for the space. Maintenance savings may also be available, as longer-lasting LEDs lamps will not need to be replaced as often as the existing lamps.

Low-Flow Devices

Install low-flow devices to reduce overall hot water demand. The following low flow devices are recommended to reduce hot water usage:

Device	Flow Rate
Faucet aerators (lavatory)	0.5 gallons per minute (gpm)

Low-flow devices reduce the overall water flow from the fixture, while still providing adequate pressure for washing. Additional savings may result from reduced water usage, especially when combined with toilet and urinal replacements.

Capital replacement upgrades

Higher investment, large incentives, major energy savings

Tackling the big jobs can pay off over time, decreasing your operating costs and adding to the asset value of your building. These larger improvements can also have a big impact on your energy bills.

In additional to the low-cost, fast payback measures, there may be other opportunities to find significant, cost-effective energy savings. While outside the scope of this Level 1 energy audit, the following systems and equipment provide an opportunity for further investigation.

Lighting & Lighting Controls

Occupancy Sensors

Install occupancy sensors to control lighting fixtures in areas that are frequently unoccupied, even for short periods. For most spaces, we recommend lighting controls that use dual technology sensors, which reduce the possibility of lights turning off unexpectedly.

Occupancy sensors detect occupancy using ultrasonic and/or infrared sensors. When an occupant enters the space, the lighting fixtures switch to full lighting levels. Most occupancy sensor lighting controls allow users to manually turn fixtures on/off, as needed. Some controls can also provide dimming options.

Occupancy sensors can be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. In general, wall switch replacement sensors are best suited to single occupant offices and other small rooms. Ceiling-mounted or remote mounted sensors are used in large spaces, locations without local switching, and where wall switches are not in the line-of-sight of the main work area.

High/Low Lighting Controls

Install occupancy sensors to provide dual level lighting control for lighting fixtures in spaces that are infrequently occupied but may require some level of continuous lighting for safety or security reasons.

Lighting fixtures with these controls operate at default low levels when the area is unoccupied to provide minimal lighting to meet security or safety requirements. Sensors detect occupancy using ultrasonic and/or infrared sensors. When an occupant enters the space, the lighting fixtures switch to full lighting levels. Fixtures automatically switch back to low level after a predefined period of vacancy. In parking lots and parking garages with significant ambient lighting, this control can sometimes be combined with photocell controls to turn the lights off when there is sufficient daylight.

Premium Efficiency Motors

Replace standard 7.5 hp efficiency hot water pump motors with IHP 2014 efficiency motors. This evaluation assumes that existing motors will be replaced with motors of equivalent size and type. In some cases, additional savings may be possible by downsizing motors to better meet the motor's current load requirements.

Variable Frequency Drives (VFDs)

Variable Air Volume (VAV) HVAC

Replace existing air volume control devices on variable volume fans, such as inlet vanes and variable pitch fan blades, with VFDs. Inlet guide vanes and variable pitch fan blades are an inefficient means of controlling the air volume compared to VFDs. The existing volume control device will be removed or permanently disabled, and the control signal will be redirected to the VFD to determine proper fan motor speed.

Heating, Ventilation and Air Conditioning

High Efficiency Air Conditioning Units

Replace standard efficiency Carrier split system air conditioning unit serving room 104 with high efficiency split system air conditioning unit. The magnitude of energy savings for this measure depends on the relative efficiency of the older unit versus the new high efficiency unit, the average cooling load, and the estimated annual operating hours.

High Efficiency Steam Boilers

Replace current inefficient steam boilers with high efficiency steam boilers. Energy savings results from improved combustion efficiency and reduced standby losses at low loads. Also, there may be a possibility of replacing the steam boilers with hot water boilers, eliminating the heat exchange system from steam to hot water.

For the purposes of this analysis, we evaluated the replacement of boilers on a one-for-one basis with equipment of the same capacity. We recommend that you work with your mechanical design team to select boilers that are sized appropriately for the heating load at this facility. In many cases installing multiple modular boilers rather than one or two large boilers will result in higher overall plant efficiency while providing additional system redundancy.

Demand Control Ventilation (DCV)

Demand control ventilation (DCV) monitors the indoor air's carbon dioxide (CO_2) content to measure room occupancy. This data is used to regulate the amount of outdoor air provided to the space for ventilation.

Standard ventilation systems often provide outside air based on a space's estimated maximum occupancy but not actual occupancy. During low occupancy periods, the space may then be over ventilated. This wastes energy through excessive fan motor usage as well as heating and cooling the excess outside air flow. DCV reduces unnecessary outdoor air intake by regulating ventilation based on actual occupancy levels. DCV is most suited for facilities where occupancy levels vary significantly from hour to hour and day to day.

Pipe Insulation

Install insulation on domestic hot water system piping. Distribution system losses are dependent on water system temperature, the size of the distribution system, and the level of insulation of the piping. Significant energy savings can be achieved when insulation has not been well maintained. When the insulation is exposed to water, when the insulation has been removed from some areas of the pipe, or when valves have not been properly insulated system efficiency can be significantly reduced. This measure saves energy by reducing heat transfer in the distribution system.

Food Service Equipment

Food Service and Refrigeration Equipment Replacement

Buildings that use a lot of food service equipment are often among the most energy intensive commercial buildings. Replace existing food service equipment with new high efficiency equipment. Consider replacing the following equipment with high efficiency or ENERGY STAR® labeled versions:

Locations	System Quantity	Equipment Type
Kitchen	2	Gas Combination Oven/Steam Cooker (<15 Pans)
Kitchen	1	Gas Convection Oven (Half Size)

Visit https://www.energystar.gov/products/commercial_food_service_equipment for the latest information on high efficiency food service equipment.

3 Clean Energy Options

On-site generation

You don't have to look far in New Jersey to see one of the thousands of solar electric systems providing clean power to homes, businesses, schools and government buildings. Is solar is the right choice for you?

Solar Photovoltaic Potential: Medium

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the **medium** potential. A photovoltaic array located on the roof may be feasible. If you are interested in pursuing the installation of PV, we recommend conducting a full feasibility study.

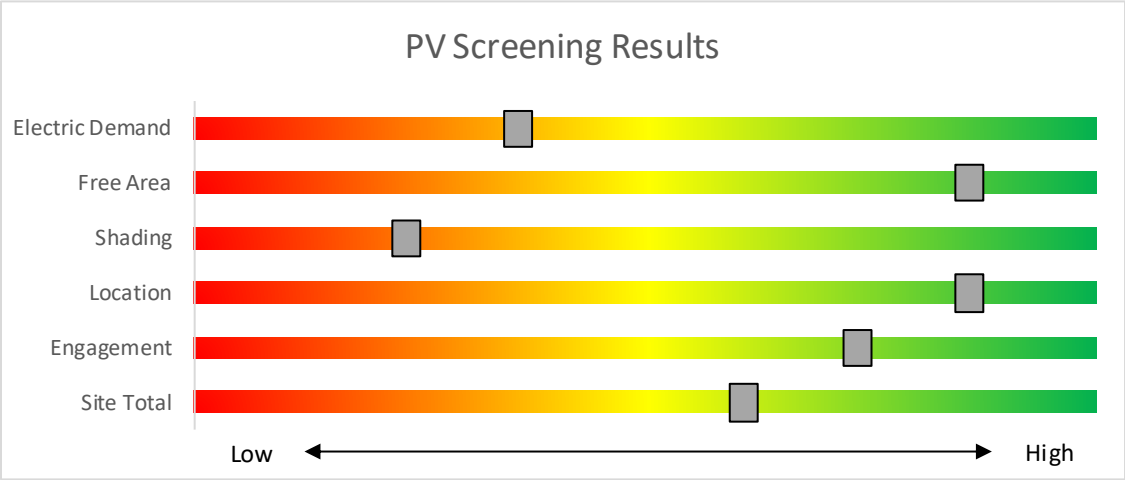


Figure 3 - Photovoltaic Screening

Solar Renewable Energy Certificate (SREC) Registration Program (SRP)

Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SREC Registration Program before starting construction. Once your photovoltaic system is up and running, you periodically earn credits, which can then be sold on the open market for up to 15 years.

> If you are considering installing solar photovoltaics on your building, visit www.njcleanenergy.com/srec for more information about the SREC Registration Program.

Get more information about solar power in New Jersey or find a qualified solar installer who can help you decide if solar is right for your building:

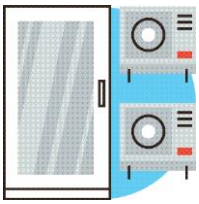
- **Basic Info on Solar PV in NJ**: www.njcleanenergy.com/whysolar
- **NJ Solar Market FAQs**: www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs
- **Approved Solar Installers in the NJ Market**: www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/?id=60&start=1

3 Energy Efficient Best Practices

A whole building maintenance plan will extend equipment life; improve occupant comfort, health, and safety; and reduce energy and maintenance costs. You may already be doing some of these things— see our list below for potential additions to your maintenance plan. Be sure to consult with qualified equipment specialists for details on proper maintenance and system operation.

Energy Tracking with ENERGY STAR® Portfolio Manager®

You've heard it before - you can't manage what you don't measure. ENERGY STAR® Portfolio Manager® is an online tool that you can use to measure and track energy and water consumption, as well as greenhouse gas emissions.[2] Your account has already been established. Now you can continue to keep tabs on your energy performance every month.



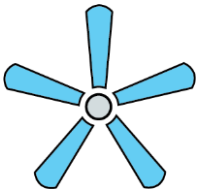
Reduce Air Leakage

Caulk or weather strip leaky doors and windows to reduce drafts and loss of heated or cooled air. Sealing cracks and openings can reduce heating and cooling costs, improve building durability, and create a healthier indoor environment.

Use Window Treatments/Coverings

Use high-reflectivity films or cover windows with shades or shutters to reduce solar heat gain and reduce the load on cooling and heating systems. Older, single pane windows and east or west-facing windows are especially prone to solar heat gain. In addition, use shades or shutters at night during cold weather to reduce heat loss.

Perform Regular Lighting Maintenance



Thoroughly clean lamps, reflectors and lenses of dirt, dust, oil, and smoke buildup every 6 – 12 months.

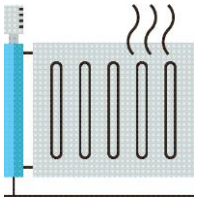
Use Ceiling Fans to Reduce Cooling Load

Install ceiling fans to supplement your cooling system. Thermostat settings can typically be increased by 4°F with no change in overall occupant comfort due to the wind chill effect of moving air.

Use Thermostat Schedules and Temperature Resets

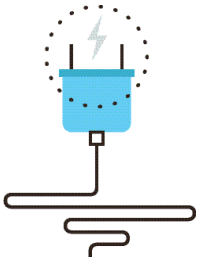
Use setback thermostats to reduce heating and cooling load by 5°F – 10°F during unoccupied periods.

[2] https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager



Regular HVAC System Maintenance

Regular inspection and maintenance is essential to keeping your heating and cooling system running efficiently and preventing expensive repairs. Clean or replace air filters monthly, per manufacturer instructions. Be sure to get yearly tune-ups by a qualified service professional.



Plug Load Controls

Reducing plug loads is a common way to decrease your electrical use. Limiting the energy use of plug loads can include increasing occupant awareness, removing under-used equipment, installing hardware controls, and using software controls. Consider enabling the most aggressive power settings on existing devices or install load sensing or occupancy sensing (advanced) power strips[3]. Your local utility may offer incentives or rebates for this equipment.

Replace Computer Monitors

Replacing old computer monitors with ENERGY STAR® labeled monitors, which are up to 25% more efficient than standard monitors. ENERGY STAR® rated monitors have specific requirements for on mode power consumption as well as idle and sleep mode power.

Water Conservation

Install low-flow faucet aerators, showerheads, toilets and kitchen sink pre-rinse spray valves to save both energy and water. Look for the WaterSense™ for the most efficient equipment.

http://www3.epa.gov/watersense/products

Retail Electric and Natural Gas Supply Options

Consider shopping for a reduced rate from third-party electric and natural gas suppliers. If you already buy electricity or natural gas from a third-party supplier, review and compare prices at the end of each contract year. A list of licensed third-party suppliers is available at the NJBPU website.

www.state.nj.us/bpu/commercial/shopping.html

Control Demand Charges with Staggered Starts

If your electric bill uses a demand rate, be aware of starting up electrical equipment all at once. Staggering the start-up and use of electrical equipment can help avoid high peaks in demand which can increase your electric bill.

[3] For additional information refer to "Plug Load Best Practices Guide" http://www.advancedbuildings.net/plug-load-best-practices-guide-offices

4 Move Ahead with NJ Clean Energy Programs

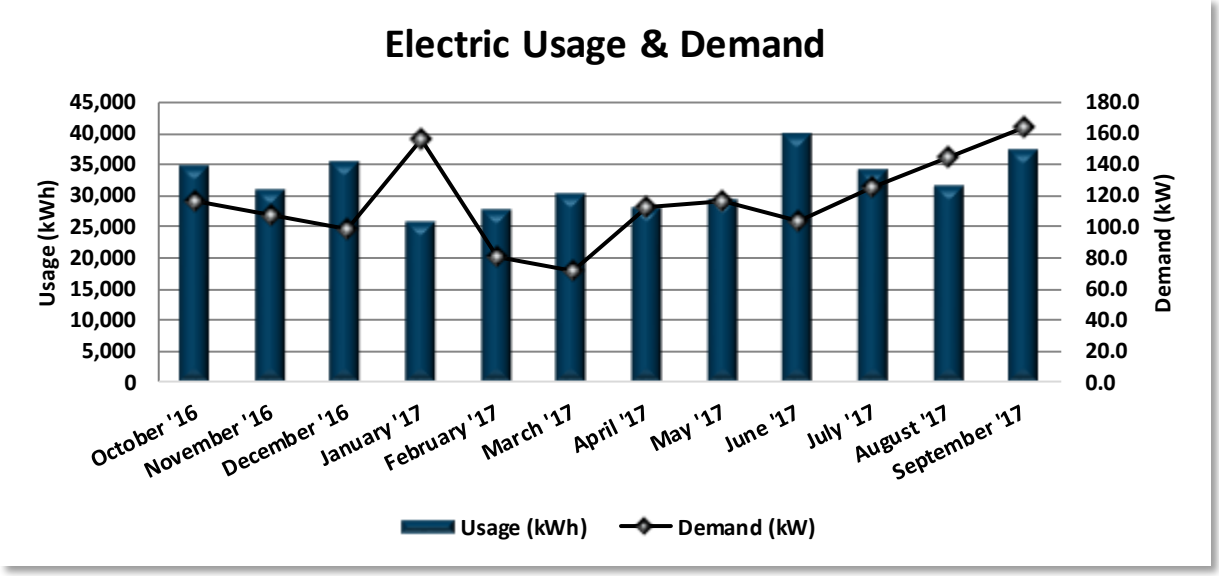
Ready to improve your building's performance?

NJ Clean Energy Programs can help. Pick the program that works best for you…

	SmartStart *Flexibility to install at your own pace*	**Direct Install** *Turnkey installation*	**Pay for Performance** *Whole building upgrades*
Who should use it?	Buildings installing individual measures or small group of measures.	Small to mid-size facilities that can bundle multiple measures together. Average peak demand should be below 200 kW. Not suitable for significant building shell issues.	Mid to large size facilities looking to implement as many measures as possible at one time. Peak demand should be over 200 kW.
How does it work?	Use in-house staff or your preferred contractor.	Pre-approved contractors pass savings along to you via reduced material and labor costs.	Whole-building approach to energy upgrades designed to reduce energy use by at least 15%. The more you save, the higher the incentives.
What are the Incentives?	Fixed incentives for specific energy efficiency measures.	Incentives pay up to 70% of eligible costs, up to $125,000 per project. You pay the remaining 30% directly to the contractor.	Up to 25% of installation cost, calculated based on level of energy savings per square foot.
How do I participate?	Submit an application for the specific equipment to be installed.	Contact a participating contractor in your region.	Contact a pre-qualified Partner to develop your Energy Reduction Plan (ERP) and set your energy savings targets.
Take the next step by visiting **www.njcleanenergy.com** for program details, applications, and to contact a qualified contractor.			

APPENDIX A: MONTHLY ENERGY DATA

Electricity

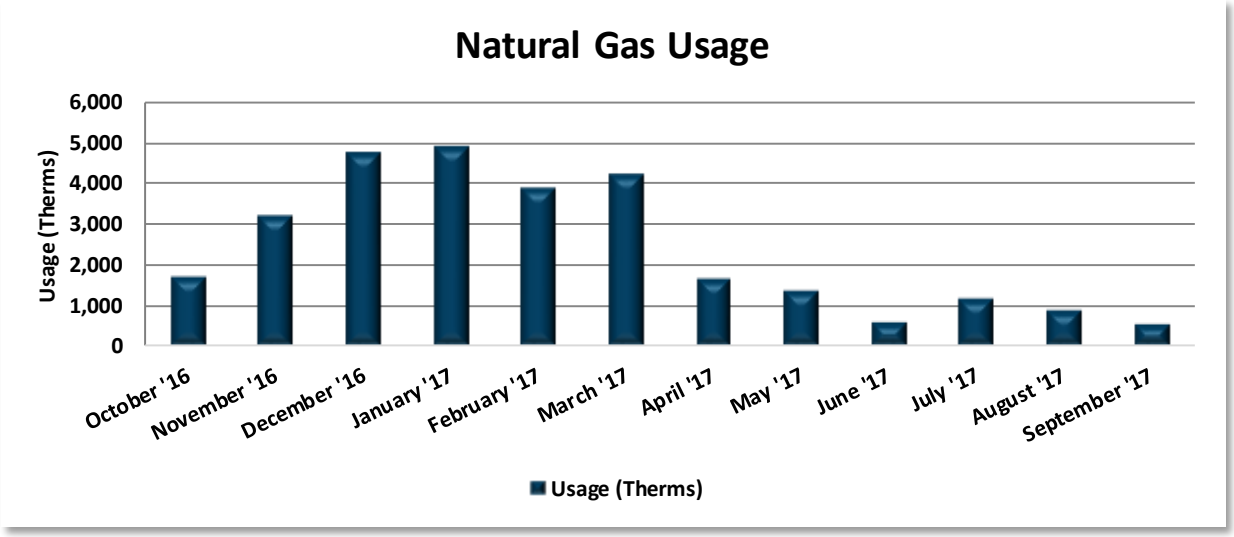


Electric Utility Data for Congregation Beth El of the Oranges						
Period Ending	Days in Period	Usage (kWh)	Total Cost	Demand (kW)	Demand Cost	TRC Estimated Usage?
10/31/2016	31	34,493	$4,330	116.4	$520	No
12/1/2016	31	30,724	$4,026	107.4	$458	No
1/3/2017	30	35,277	$5,000	98.4	$440	No
2/1/2017	28	25,594	$3,880	156.0	$697	No
3/3/2017	31	27,450	$3,948	80.4	$359	No
4/3/2017	30	30,200	$4,402	72.0	$325	No
5/3/2017	31	27,824	$4,210	112.8	$509	No
6/2/2017	30	28,993	$4,332	116.4	$525	No
7/3/2017	31	39,596	$6,059	103.2	$466	No
8/2/2017	31	33,957	$5,960	126.0	$569	No
8/30/2017	30	31,379	$5,410	145.2	$655	No
10/2/2017	31	37,081	$6,560	164.4	$752	No
Totals	**365**	**382,568**	**$58,117**	**164.4**	**$6,274**	
Annual	**365**	**382,568**	**$58,117**	**164.4**	**$6,274**	

Notes:

- Total annual electric usage was 382,568 kWh at a cost of $58,117.
- Peak usage of 39,596 kWh occurred in June 2017.
- Peak demand occurred of 164.4 kW occurred in September 2017.
- The profile indicates year round.

Natural Gas



Natural Gas Utility Data for Congregation Beth El of the Oranges				
Period Ending	**Days in Period**	**Usage (Therms)**	**Total Cost**	**TRC Estimated Usage?**
10/31/2016	31	1,662	$1,142	No
12/1/2016	31	3,191	$3,017	No
1/3/2017	30	4,719	$4,463	No
2/1/2017	28	4,861	$4,886	No
3/3/2017	31	3,863	$3,678	No
4/3/2017	30	4,183	$3,640	No
5/3/2017	31	1,632	$1,164	No
6/2/2017	30	1,325	$952	No
7/3/2017	31	581	$486	No
8/2/2017	31	1,164	$848	No
8/30/2017	30	845	$702	No
10/2/2017	31	525	$436	No
Totals	**365**	**28,552**	**$25,414**	
Annual	**365**	**28,552**	**$25,414**	

Notes:

- Total annual usage was 28,552 Therms at a cost of $25,414.
- Peak usage of 4,861 Therms occurred in January 2017.
- Usage is indicative of a gas heating profile.

APPENDIX B: BUILDING AND EQUIPMENT INFO

This section is intended to document the results of the on-site survey. This is not a complete list of all facility equipment and systems.

Lighting Inventory & Recommendations

Lighting Inventory						Lighting Upgrades						Lighting Analysis				
Locations	Fixture / Lamp Count	Technology Type	Fixture/Lamp Description	Watts per Fixture/ Lamp	Annual Operating Hours	Recommendation	Technology Type	Fixture/Lamp Description	Watts per Fixture/ Lamp	Cost per Fixture/ Lamp	Incentive per Fixture/ Lamp	Annual Electric Consumption (kWh)	Annual Electric Savings (kWh)	Annual Cost Savings	Estimated Net Cost	Simple Payback (Years)
Congregation	39	Linear Fluorescent - T8	4' T8 (32W) - 4L	114	2,648	Retrofit with LED Lamps	LED Linear Tubes	(4) 4' Lamps	58	$73.03	$20.00	11,773	5,783	$879	$2,068	2.4
Congregation	30	Exit Signs	LED - 2 W Lamp	6	8,760	None						1,577				
Congregation	74	LED Fixtures	Ceiling Mount	19	2,648	None						3,723				
Congregation	49	Compact Fluorescent Screw-In-Lamps	G25	26	2,648	Retrofit with LED Lamps	LED Screw-In Lamps	G25	17	$25.22	$3.00	3,374	1,168	$177	$1,089	6.1
Congregation	64	Incandescent Screw-In Lamps	A21	75	2,648	Retrofit with LED Lamps	LED Screw-In Lamps	A21	13	$35.18	$3.00	12,710	10,507	$1,596	$2,060	1.3
Congregation	15	Linear Fluorescent - T5HO	4' T5HO (54W) - 2L	117	2,648	Retrofit with LED Lamps	LED Linear Tubes	(2) 4' Lamps	29	$36.52	$10.00	4,647	3,495	$531	$398	0.7
Congregation	12	Linear Fluorescent - T12HO	2' T12HO (35W) - 2L	85	2,648	Retrofit with LED Lamps and Drivers	LED Linear Tubes	(2) 2' Lamps	17	$64.77	$10.00	2,701	2,161	$328	$657	2.0
Congregation	42	Linear Fluorescent - T8	4' T8 (32W) - 2L	62	2,648	Retrofit with LED Lamps	LED Linear Tubes	(2) 4' Lamps	29	$36.52	$10.00	6,895	3,670	$558	$1,114	2.0
Congregation	77	U-Bend Fluorescent - T8	U T8 (32W) - 2L	62	2,648	Retrofit with LED Lamps	LED Linear Tubes	(2) U-Lamp	33	$72.46	$10.00	12,642	5,913	$898	$4,809	5.4
Congregation	76	Linear Fluorescent - T8	4' T8 (32W) - 3L	93	2,648	Retrofit with LED Lamps	LED Linear Tubes	(3) 4' Lamps	44	$54.77	$15.00	18,716	9,962	$1,513	$3,023	2.0
Congregation	54	Linear Fluorescent - T12	4' T12 (40W) - 2L	88	2,648	Retrofit with LED Lamps and Drivers	LED Linear Tubes	(2) 4' Lamps	29	$68.77	$10.00	12,583	8,437	$1,282	$3,174	2.5
Congregation	12	Incandescent Screw-In Lamps	A19	65	2,648	Retrofit with LED Lamps	LED Screw-In Lamps	A19	11	$17.23	$3.00	2,065	1,716	$261	$171	0.7
Exterior Recessed	12	LED Fixtures	Downlight Recessed	21	4,380	None						1,104				
Exterior Recessed	3	Incandescent Screw-In Lamps	A21	75	4,380	Retrofit with LED Lamps	LED Screw-In Lamps	A21	13	$35.18	$3.00	986	815	$124	$97	0.8
Exterior Recessed	4	High-Pressure Sodium	(1) 100W Lamp	138	4,380	Replace with LED Fixtures	LED Fixtures	Ceiling Mount	45	$297.08	$10.00	2,418	1,629	$248	$1,148	4.6
exterior Wll Pack	1	Metal Halide	(1) 250W Lamp	295	4,380	Replace with LED Fixtures	LED Fixtures	Low-Bay	104	$625.47	$150.00	1,292	837	$127	$475	3.7
											TOTALS:	**99,206**	**56,092**	**$8,521**	**$20,282**	**2.4**

Motor Inventory

Motor Inventory								Motor Analysis
Locations	Motor Quantity	Motor Application	HP per Motor	Motor RPM	Open/ Enclosed	Motor Load Factor	Annual Operating Hours	Annual Electric Consumption (kWh)
Roof	5	Exhaust Fan	0.8	1,800	Enclosed	0.75	2,745	7,102
Mechanical Room	2	Heating Hot Water Pump	7.5	1,800	Open	0.75	3,391	31,274
Roof	2	Supply Fan	15.0	1,800	Enclosed	0.75	3,391	61,599
Roof	2	Exhaust Fan	3.0	1,800	Enclosed	0.75	2,745	10,296
Roof	1	Supply Fan	1.5	1,800	Enclosed	0.75	2,745	2,663
							TOTALS:	112,934

Electric HVAC Inventory

Electric HVAC Inventory									Electric HVAC Analysis
Locations	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Cooling Mode Efficiency (EER/ SEER/ IEER)	Annual Cooling EFLH	Heating Capacity per Unit (MBh)	Heating Mode Efficiency (COP)	Annual Heating EFLH	Annual Electric Consumption (kWh)
Roof	2	Packaged AC	31.0	11.4	750				48,947
Roof	1	Packaged AC	10.0	12.7	279				7,087
Roof	1	Packaged AC	7.5	12.7	279				5,315
Roof	2	Packaged AC	3.0	14.0	279				3,857
Roof	2	Packaged AC	20.0	12.2	279				29,508
Roof	1	Split-System AC	10.0	12.7	279				7,087
Roof	1	Split-System AC	15.0	12.2	279				11,066
Roof	1	Split-System AC	8.0	12.7	279				5,669
Roof	1	Split-System AC	1.0	13.0	279				692
Roof	1	Split-System AC	2.0	13.0	279				1,385
Roof	1	Split-System AC	0.8	13.0	279				519
Roof	7	Window AC	1.5	14.0	279				6,750
								TOTALS:	127,882

Heating Equipment Inventory

Fuel Heating Inventory							Fuel Heating Analysis	
Locations	System Quantity	System Type	Output Heating Capacity per Unit (MBh)	Heating Fuel Type	Heating System Efficiency	Annual Heating EFLH	Annual Gas Consumption (Therms)	BLANK
Roof	2	Furnace	432.0	Natural Gas	78.0%	722	7,998	
Roof	1	Furnace	200.0	Natural Gas	78.0%	722	1,851	
Roof	1	Furnace	160.0	Natural Gas	78.0%	722	1,481	
Roof	1	Furnace	121.5	Natural Gas	78.0%	722	1,125	
Roof	2	Furnace	80.0	Natural Gas	78.0%	722	1,481	
Roof	2	Furnace	324.0	Natural Gas	78.0%	722	5,998	
Mechanical Room	2	Forced Draft Steam Boiler	949.0	Natural Gas	79.0%	722	17,346	
						TOTALS:	**37,280**	

DHW Equipment Inventory

DHW nventory					DHW Analysis		
Locations	System Quantity	System Type	Input Capacity per Unit (MBh)	DHW Fuel Type	Annual Electric Consumption (kWh)	Annual Gas Consumption (Therms)	BLANK
Mechanical Room	1	Storage Type Water Heater (> 50 Gal)	200.0	Natural Gas	0	360	
				TOTALS:	**0**	**360**	**0**

Low-Flow Device Recommendations

Low-Flow Device Recommendations			Low-Flow Device Analysis					
Device Quantity	Device Type	Affected Fuel Type	Annual Electric Savings (kWh)	Annual Gas Savings (Therms)	BLANK	Annual Cost Savings	Estimated Net Cost	Simple Payback (Years)
10	Faucet Aerator (Private Lavatory)	Natural Gas	0	117		$104	$72	0.7
		TOTALS:	**0**	**117**		**$104**	**$72**	**0.7**

Refrigeration Equipment Inventory

Commercial Refrigerator/Freezer Inventory						Refrigerator/Freezer Analysis
Locations	Quantity	System Type	Volume per Unit (cu. ft.)	ENERGY STAR Labeled?		Annual Electric Consumption (kWh)
Kitchen	3	Stand-Up Refrigerator, Solid Door (31 - 50 cu. ft.)	46.0	No		7,271
				TOTALS:		7,271

Commercial Ice Maker Inventory						Ice Maker Analysis
Locations	Quantity	System Type	Harvest Rate per Unit (lbs/day)	ENERGY STAR Labeled?		Annual Electric Consumption (kWh)
Kitchen	1	Ice Making Head (<450 lbs/day), Batch	250	Yes		4,981
				TOTALS:		4,981

Food Service Equipment Inventory

Food Service Equipment Inventory						Food Service Equipment Analysis		
Locations	System Quantity	Equipment Type	Operating Hours per Day	Operating Days per Year	Fuel Type	Annual Electric Consumption (kWh)	Annual Gas Consumption (Therms)	BLANK
Kitchen	2	Gas Combination Oven/Steam Cooker (<15 Pans)	3.0	365	Natural Gas	0	1,118	
Kitchen	1	Gas Convection Oven (Half Size)	3.0	365	Natural Gas	0	375	
					TOTALS:	**0**	**1,493**	

Plug Load Inventory

Plug Load Equipment Inventory						Plug Load Equipment Analysis
Locations	Quantity	Equipment Description	Energy Rate (W)	Annual Operating Hours		Annual Electric Consumption (kWh)
Congregation	4	Microwave	1,000.0	100		400
Congregation	4	Copy Machine	600.0	200		480
Congregation	2	Toaster	500.0	50		50
Congregation	17	Computer	120.0	1,500		3,060
Congregation	4	Water Cooler	127.0	2,920		1,483
Congregation	3	Small Refrigerator	85.0	2,920		745
Congregation	10	Printer	55.0	75		41
				TOTALS:		**6,259**

APPENDIX C: PHOTOS GALLERIES

Image 1: Building Envelope

Image 2: Steam to Hot Water Heating System

Image 3: RTUs

Image 4: Interior Lighting System

Image 5: Exterior Lighting System

Image 6: Domestic Hot Water & Pipes

Image 7: Food & Refrigeration Systems

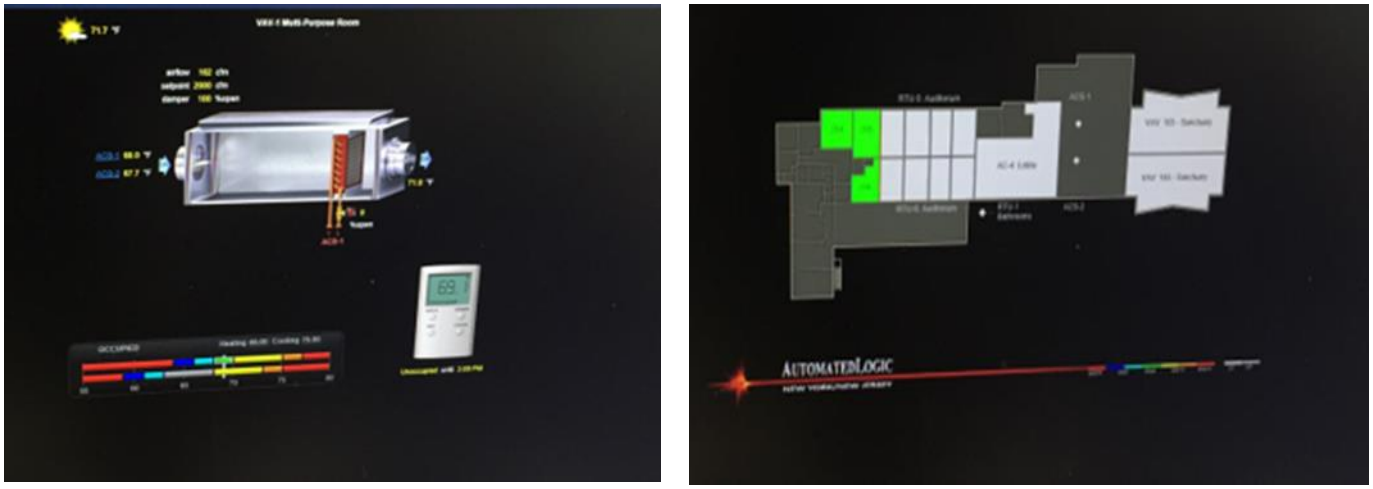


Image 8: Building Energy Management System (EMS)