Local Government Energy Audit:
Energy Audit Report

Greater New Point Church

60 Paine Avenue

Irvington, NJ 07111

September 7, 2017

Report by:

TRC Energy Services

Disclaimer

The intent of this energy analysis report is to identify energy savings opportunities associated with recommended upgrades to the facility's systems at this site. Approximate savings are included in this report to make decisions about reducing energy use at the facility. This report, however, is not intended to serve as a detailed engineering design document. It should be noted that detailed design efforts are required in order to implement several of the improvements evaluated as part of this energy analysis.

The energy conservation measures and estimates of energy consumption contained in this report have been reviewed for technical accuracy. However, all estimates contained herein of energy consumption at the site are not guaranteed, because energy consumption ultimately depends on behavioral factors, the weather, and many other uncontrollable variables. The energy assessor and New Jersey Board of Public Utilities (NJBPU) shall in no event be liable should the actual energy consumption vary from the estimated consumption shown herein.

Estimated installation costs are based on a variety of sources, including our own experience at similar facilities, our own pricing research using local contractors and vendors, and cost estimating handbooks such as those provided by RS Means. The cost estimates represent our best judgment for the proposed action. The owner is encouraged to independently confirm these cost estimates and to obtain multiple estimates when considering measure installations. Since actual installed costs can vary widely for a particular installation, and for conditions which cannot be known prior to in-depth investigation and design, the energy assessor does not guarantee installed cost estimates and shall in no event be liable should actual installed costs vary from the estimated costs herein.

New Jersey's Clean Energy Program (NJCEP) incentive values provided in this report are estimates and are based on program information available at the time this report is written. The NJBPU reserves the right to extend, modify, or terminate programs without prior or further notice, including incentive levels and eligibility requirements. The owner should review available program incentives and requirements prior to selecting and/or installing any recommended measures.

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1 EXECUTIVE SUMMARY

The New Jersey Board of Public Utilities (NJBPU) has sponsored this Local Government Energy Audit (LGEA) Report for Greater New Point Church.

The goal of a LGEA is to provide you with information on how your facility uses energy, identify energy conservation measures (ECMs) that can reduce your energy use, and put you in a position to implement the ECMs. The LGEA also sets you on the path to receive financial incentives from New Jersey's Clean Energy Program (NJCEP) for implementing the ECMs.

This study was conducted by TRC Energy Services, as part of a comprehensive effort to assist New Jersey local government and non-profit organization in controlling energy costs and protecting our environment by offering a full spectrum of energy management options.

1.1 Facility Summary

Greater New Point Church is a Missionary Baptist Church located in Irvington, New Jersey. The building is a 4,000 square foot facility comprised of various space types. The building is one floor and includes a sanctuary, sacristy, overflow room, offices on the ground floor. The basement spaces include fellowship rooms, classrooms, nurse rooms, a kitchen, storage rooms, and the boiler room. The building foundation consists of a below-grade basement with a perimeter foundation. Exterior walls are finished with bricks. The building has an aging fixed single pane glass window and stained glass panel windows. The single pane windows are in poor condition and show some signs of outside air infiltration. Exterior doors are constructed of aluminum and wood and are in good condition except that the door seals have worn out which increases the level of outside air infiltration. We recommend the maintenance staff to seal the doors. Lighting at the facility is provided predominantly by linear T12 fluorescent fixtures and lamps. A small area of spaces (kitchen, bathrooms, and the front entrance) are lit with incandescent lamps and compact fluorescent lamps. Greater New Point Church mostly consists of aging and inefficient HVAC equipment in need of replacement. The boiler and the two through the wall system air-conditioning units are operating with minimal efficiency and should be replaced.

The Congregation is interested in exploring a cost effective options that can make the building and its system more efficient.

A thorough description of the facility and our observations are located in Section 2.

1.2 Your Cost Reduction Opportunities

Energy Conservation Measures

TRC Energy Services (TRC) evaluated nine (9) projects which represent an opportunity for Greater New Point Church to reduce annual energy costs by roughly $5,344.32 and annual greenhouse gas emissions by 21,977 lbs CO_2e. The measures would pay for themselves in roughly seven (7) years. The breakdown of existing and potential utility costs is illustrated in Figure 1 and Figure 2, respectively. These projects represent an opportunity to reduce Greater New Point Church's annual energy use by 53.6%.

Figure 1 – Previous 12 Month Utility Costs

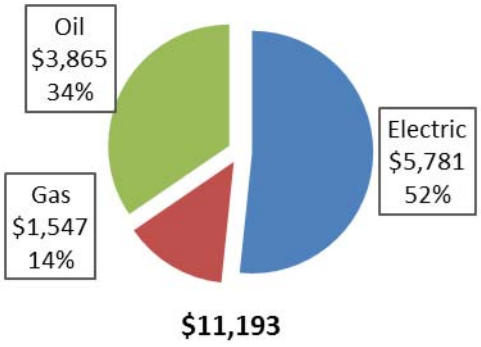
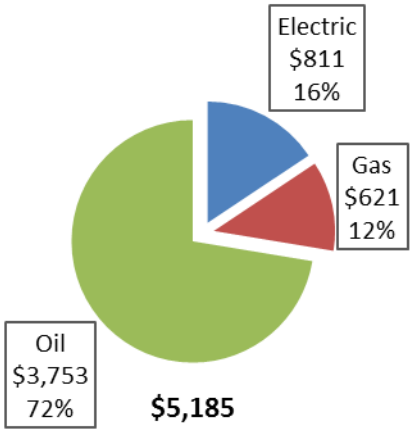


Figure 2 – Potential Post-Implementation Costs



A detailed description of Greater New Point Church's existing energy use can be found in Section 3.

The evaluated measures have been listed and grouped into major categories as shown in Figure 3. Brief descriptions of the categories can be found below and descriptions of the individual opportunities can be found in Section 4, "Energy Conservation Measures."

Figure 3 – Summary of Energy Reduction Opportunities

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMBtu)	Annual No. 2 Fuel Oil Savings (MMBtu)	Annual N/A Savings (MMBtu)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			2,988	6.5	0.0	0.0	0.0	0.0	$1,224.92	$13,562.72	$185.00	$13,377.72	10.92	3,009
ECM 1	Install LED Fixtures	Yes	475	1.5	0.0	0.0	0.0	0.0	$194.71	$2,418.74	$175.00	$2,243.74	11.52	478
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	795	2.1	0.0	0.0	0.0	0.0	$325.97	$5,309.50	$0.00	$5,309.50	16.29	801
ECM 3	Retrofit Fixtures with LED Lamps	Yes	1,094	2.9	0.0	0.0	0.0	0.0	$448.60	$5,081.60	$10.00	$5,071.60	11.31	1,102
ECM 4	Install LED Exit Signs	Yes	624	0.1	0.0	0.0	0.0	0.0	$255.64	$752.89	$0.00	$752.89	2.95	628
Lighting Control Measures			114	0.3	0.0	0.0	0.0	0.0	$46.67	$1,160.00	$200.00	$960.00	6.57	115
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	114	0.3	0.0	0.0	0.0	0.0	$46.67	$1,160.00	$200.00	$960.00	6.57	115
Electric Unitary HVAC Measures			1,714	2.3	0.0	0.0	0.0	0.0	$702.73	$33,452.40	$1,896.00	$31,556.40	14.91	1,726
ECM 6	Install High Efficiency Electric AC	Yes	1,714	2.3	0.0	0.0	0.0	0.0	$702.73	$33,452.40	$1,896.00	$31,556.40	14.91	1,726
Gas Heating (HVAC/Process) Replacement			0	0.0	0.0	10.4	0.0	10.4	$111.91	$17,970.62	$1,401.75	$16,568.87	14.08	1,707
ECM 7	Install High Efficiency Hot Water Boilers	Yes	0	0.0	0.0	10.4	0.0	10.4	$111.91	$17,970.62	$1,401.75	$16,568.87	14.08	1,707
HVAC System Improvements			5,688	1.3	0.0	0.0	0.0	0.0	$2,331.66	$1,800.00	$500.00	$1,300.00	0.56	5,728
ECM 8	Install Dual Enthalpy Outside Economizer Control	Yes	5,688	1.3	0.0	0.0	0.0	0.0	$2,331.66	$1,800.00	$500.00	$1,300.00	0.56	5,728
Domestic Water Heating Upgrade			0	0.0	82.8	0.0	0.0	82.8	$926.43	$540.42	$0.00	$540.42	0.58	9,692
ECM 9	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	82.8	0.0	0.0	82.8	$926.43	$540.42	$0.00	$540.42	0.58	9,692
TOTALS			10,504	10.4	82.8	10.4	0.0	93.2	$5,344.32	$68,486.17	$4,182.75	$64,303.42	6.96	21,977

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

Lighting Upgrades generally involve the replacement of existing lighting components such as lamps and ballasts (or the entire fixture) with higher efficiency lighting components. These measure save energy by reducing the power used by the lighting components due to improved electrical efficiency.

Lighting Controls measures generally involve the installation of automated controls to turn off lights or reduce light output when conditions allow. Automated control reduces reliance on occupant behavior for adjusting lights. These measures save energy by reducing the amount of time lights are on.

Electric Unitary HVAC measures generally involve replacing old inefficient air conditioning systems with modern energy efficient systems. New air conditioning systems can provide cooling equivalent to older air condition systems, but use less energy. These measures save energy by reducing the power used by the air condition system due to improved electrical efficiency.

Gas Heating (HVAC/Process) measures generally involve replacing old inefficient hydronic heating systems with modern energy efficient systems. Gas heating systems can provide heating equivalent to older systems, but use less energy. These measures save energy by reducing the fuel used by the heating due to improved combustion and heat transfer efficiency.

HVAC System Improvements generally involve the installation of automated controls to reduce heating and cooling demand when conditions allow. These measures could encompass changing temperature setpoints, using outside air for free cooling, or limiting excessive outside air during extreme outdoor air temperatures. These measures save energy by reducing the demand on the systems and the amount of time systems operate.

Domestic Water Heating upgrade measures generally involve replacing old inefficient domestic water heating systems with modern energy efficient systems. New domestic water heating systems can provide equivalent or greater capacity as older systems, but use less energy. These measures save energy by reducing the fuel used by the domestic water heating systems due to improved efficiency or the removal of standby losses.

Energy Efficient Practices

TRC also identified 12 no/low cost energy efficient practices. A facility's energy performance can be significantly improved by employing certain behavioral and operational adjustments as well as performing routine maintenance on building systems. Through these practices equipment lifetime can be extended; occupant comfort, health and safety can be improved; and annual energy, operation, and maintenance costs can be reduced. Opportunities identified at the church include:

- Reduce Air Leakage
- Close Doors and Windows
- Use Window Treatments/Coverings
- Perform Proper Lighting Maintenance
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Use Fans to Reduce Cooling Load
- Practice Proper Use of Thermostat Schedules and Temperature Resets
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Install Plug Load Controls
- Water Conservation

For details on these Energy Efficient Practices, please refer to Section 5.

Self-Generation Measures

TRC evaluated the potential for installing self-generation sources for Greater New Point Church. Based on the configuration of the site and its loads there is a low potential for installing any PV and combined heat and power self-generation measures.

For details on our evaluation and the self-generation potential, please refer to Section 6.

1.3 Implementation Planning

To realize the energy savings from the ECMs listed in this report, the equipment changes outlined for each ECM need to be selected and installed through project implementation. One of the first considerations is if there is capital available for project implementation. Another consideration is whether to pursue individual ECMs, a group of ECMs, or a comprehensive approach wherein all ECMs are pursued, potentially in conjunction with other facility projects or improvements.

Rebates, incentives, and financing are available from the NJBPU, NJCEP, as well as some of the state's investor-owned utilities, to help reduce the costs associated with the implementation of energy efficiency projects. Prior to implementing any project, please review the appropriate incentive program guidelines before proceeding. You will need to submit an application for the incentives before purchasing materials and beginning installation.

The ECMs outlined in this report may qualify under the following program(s):

- SmartStart
- Direct Install

For facilities with capital available for implementation of selected individual measures or phasing implementation of selected measures over multiple years, incentives are available through the SmartStart program. To participate in this program you may utilize internal resources, or an outside firm or contractor, to design the ECM(s), select the equipment and apply for the incentive(s). Program pre-approval is required for some SmartStart incentives, only after receiving approval may the ECM(s) be installed. The incentive values listed above in Figure 3 represent the SmartStart program and is explained further in Section 7.

This facility also qualifies for the Direct Install program which, through an authorized network of participating contractors, can assist with the implementation of a group of measures versus installing individual measures or phasing implementation. This program is designed to be turnkey and will provide an incentive up to 70% of the cost of the project identified by the designated contractor.

Additional descriptions of all relevant incentive programs are located in Section 7 or found at: www.njcleanenergy.com/ci.

To ensure projects are implemented such that maximum savings and incentives are achieved, bids and specifications should be reviewed by your procurement personnel and/or consultant(s) to ensure that selected equipment coincides with LGEA recommendations, as well as applicable incentive program guidelines and requirements.

2 FACILITY INFORMATION AND EXISTING CONDITIONS

2.1 Project Contacts

Figure 4 – Project Contacts

Name	Role	E-Mail	Phone #
Customer			
Reverend H. William Rutherford Jr.	Pastor	hwr512@verizon.net	973-763-5680
Designated Representative			
Reverend H. William Rutherford Jr.	Pastor	hwr512@verizon.net	973-763-5680
TRC Energy Services			
Moussa Traore	Auditor	mtraore@trcsolutions.com	732-855-2879

2.2 General Site Information

On August 18, 2016, TRC performed an energy audit at Greater New Point Church located in Irvington, New Jersey. TRCs' auditor met with Reverend H. William Rutherford Jr. to review the facility operations and focus the investigation on specific energy-using systems.

Greater New Point Church is a Missionary Baptist Church. The building is a 4,000 square foot facility comprised of various space types. The building is one floor and includes a sanctuary, sacristy, overflow room, offices on the ground floor. The basement spaces include fellowship rooms, classrooms, nurse rooms, a kitchen, storage rooms, and the boiler room. The building foundation consists of a below-grade basement with a perimeter foundation. Exterior walls are finished with bricks. The building has an aging fixed single pane glass window and stained glass panel windows. The single pane windows are in poor condition and show some signs of outside air infiltration. Exterior doors are constructed of aluminum and wood and are in good condition except that the door seals have worn out which increases the level of outside air infiltration. We recommend the maintenance staff to seal the doors. Lighting at the facility is provided predominantly by linear T12 fluorescent fixtures and lamps. A small area of spaces (kitchen, bathrooms, and the front entrance) are lit with incandescent lamps and compact fluorescent lamps. Greater New Point Church mostly consists of aging and inefficient HVAC equipment in need of replacement. The boiler and the two (2) through the wall system air-conditioning units are operating with minimal efficiency and should be replaced.

The Congregation is interested in exploring a cost effective options that can make the building and its system more efficient.

2.3 Building Occupancy

The facility is opens to the community every day. The typical schedule is presented in the table below. The seating capacity of the sanctuary is 400 people and the overflow room can accommodate 100 people.

Figure 5 - Building Schedule

Building Name	Weekday/Weekend	Operating Schedule
Greater New Point Church	Weekday	10:00 AM - 12:00 PM
Greater New Point Church	Weekend	8:00 AM - 3 PM

2.4 Building Envelope

Greater New Point Church is constructed of brick wall and structural steel. The foundation consists of a below-grade basement with a perimeter foundation. Exterior and interior walls are in fair condition with signs of uncontrolled moisture, air-leakage and other energy-compromising issues. The building has a flat roof. We were unable to access the roof during the field audit and cannot describe its actual condition.

The building has an aging fixed single pane glass window and stained glass panel windows. The single pane windows are in poor condition and show some signs of outside air infiltration. Exterior doors are constructed of aluminum and wood and are in good condition except that the door seals have worn out which increases the level of outside air infiltration. Otherwise, the building was observed to be fairly air-tight.

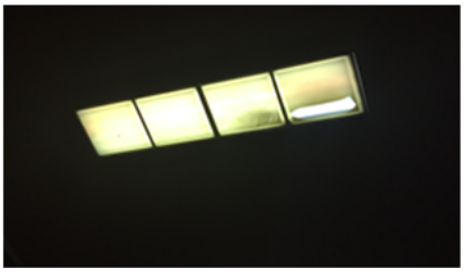
2.5 On-site Generation

There is no on-site electric generation capacity.

2.6 Energy-Using Systems

Please refer to Appendix A: Equipment Inventory & Recommendations for an inventory of building equipment.

Lighting System



Lighting in the sanctuary, offices, classrooms, fellowship rooms, ladies rooms, nurse room, and storage rooms is predominantly by linear T12 fluorescent fixtures and lamps. The kitchen, bathrooms and front entrance are lit with incandescent lamps and compact fluorescent lamps (CFL).

Lighting control is provided by manual light switches. Exit signs are incandescent. There is minimal exterior lighting, which primarily consists of inefficient halogen incandescent lamps that need to be replaced.

Significant energy saving could be achieved by replacing the existing lighting systems with LED linear tubes and LED lamp fixtures. Installing occupancy sensors in select areas will yield additional energy savings.

Heating, Ventilation, and Air-Conditioning System (HVAC)

Two (2) 12-ton Worthington indoor direct-expansion (DX) coils are used to condition the building. The units are located on the attic floor. The units are constant air volume and 35 years old. Air distribution is provided to supply air registers by ducts concealed through the wall and above the ceilings. The units have a very limited accessibility with no light.

The cooling system is controlled by three (3) local programmable thermostats located in the sanctuary. Window AC units are used to cool offices and fellowship rooms. The units appear to be old but were observed running in good condition.

One (1) 35 year old Smith oil boiler provides heat. The boiler is in very poor condition and in need of replacement. The burner shows signs of oil leakage.

Domestic Hot Water

The domestic hot water system for the facility consists of one (1) A O. Smith gas-fired, atmospheric hot water heater with an input rating of 36 kBtu/hr and a nominal efficiency of 68%. The water heater has a 40 gallon storage tank and is in good condition.

Food Service & Laundry Equipment

A non-commercial kitchen is used occasionally for food preparation. Most cooking is done using the ten (10) pan convection ovens.

Refrigeration

The kitchen has two (2) stand-up refrigerators that are in acceptable condition. There are no walk-in refrigerators.

Plug load & Vending Machines

There is one (1) desktop computer, copy machine, and one (1) small printer in the facility. There is no centralized PC power management software installed, and no closet server at the facility. There are two (2) microwaves in the kitchen.

There are no refrigerated beverage vending machines.

2.7 Water-Using Systems

There are three (3) restrooms at the facility. A sampling of restrooms found that faucets are rated for 1.5 gallons per minute (gpm) or higher, the toilets are rated at 1.5 gallons per flush (gpf) and the urinals are rated at 2 gpf. The kitchen faucet is rated for 2.5 gpm.

3 SITE ENERGY USE AND COSTS

Utility data for electricity, natural gas and no. 2 fuel oil was analyzed to identify opportunities for savings. In addition, data for electricity, natural gas and no. 2 fuel oil was evaluated to determine the annual energy performance metrics for the building in energy cost/ft^2 and energy use/ft^2. These energy use indices are indicative of the relative energy effectiveness of this building. There are a number of factors that could cause the energy use of this building to vary from the "typical" energy use for other facilities identified as: Religious. Specific local climate conditions, daily occupancy hours of the facility, seasonal fluctuations in occupancy, daily operating hours of energy use systems, and the behavior of the occupants with regard to operating systems that impact energy use such as turning off appliances and leaving windows open. Please refer to the Benchmarking section within Section 3.5 for additional information.

3.1 Total Cost of Energy

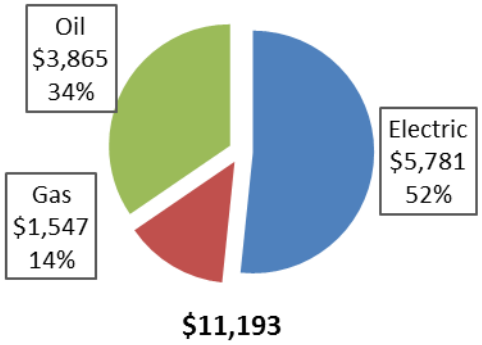
The following energy consumption and cost data is based on the last 12 month period of utility usage data that was provided for each utility. The annual consumption and cost was developed from this information.

Figure 6 - Utility Summary

Utility Summary for Greater New Point Church		
Fuel	Usage	Cost
Electricity	12,315 kWh	$5,781
Natural Gas	1,382 Therms	$1,547
No. 2 Fuel Oil	2,600 Gallons	$3,865
Total		$11,193

The current utility cost for this site is $11,193 as shown in the chart below.

Figure 7 - Energy Cost Breakdown



3.2 Electricity Usage

Electricity is provided by PSE&G. The average electric cost (combined for commodity, transmission and distribution) for the past 12 months is $0.410/kWh, which is the blended rate used throughout the analyses in this report. The monthly electricity consumption and peak demand is represented graphically in the chart below.

Figure 8 - Electric Usage & Demand

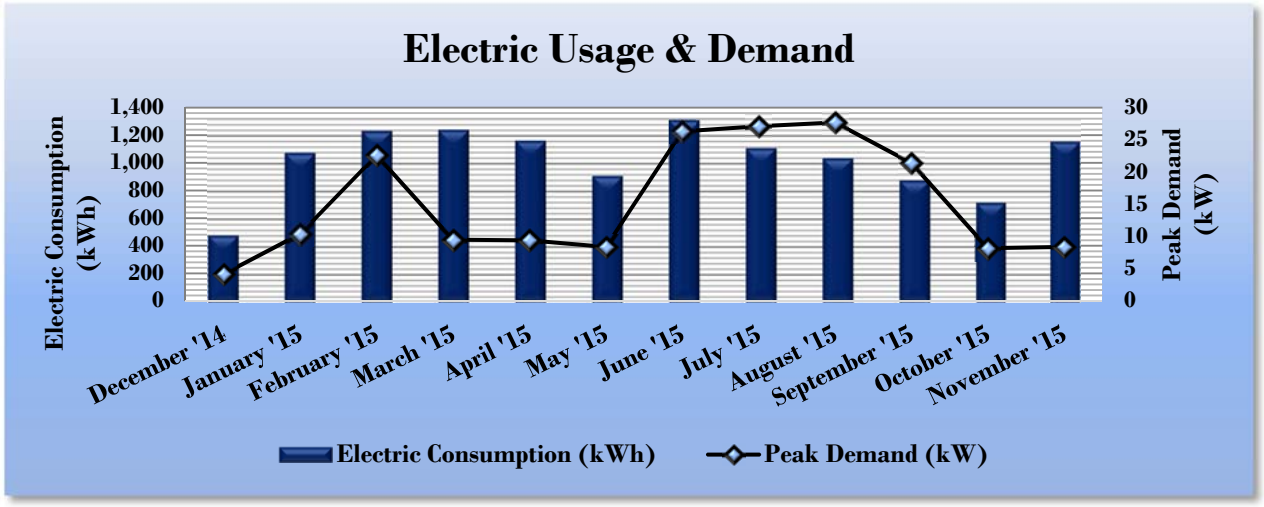


Figure 9 - Electric Usage & Demand

Electric Billing Data for Greater New Point Church					
Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
1/7/15	29	482	4	$3	$129
2/5/15	32	1,076	10	$45	$397
3/9/15	30	1,233	23	$49	$422
4/8/15	29	1,241	10	$41	$438
5/7/15	32	1,163	9	$41	$436
6/8/15	29	910	8	$36	$490
7/8/15	30	1,311	26	$114	$748
8/6/15	32	1,109	27	$118	$737
9/5/15	30	1,037	28	$120	$706
10/6/15	32	878	21	$93	$445
11/4/15	31	718	8	$36	$408
12/7/15	29	1,157	8	$37	$426
Totals	365	12,315	27.7	$733	$5,781
Annual	365	12,315	27.7	$733	$5,781

3.3 Natural Gas Usage

Natural gas is provided by PSE&G. The average gas cost for the past 12 months is $1.119/therm, which is the blended rate used throughout the analyses in this report. The monthly gas consumption is represented graphically in the chart below.

Figure 10 - Natural Gas Usage

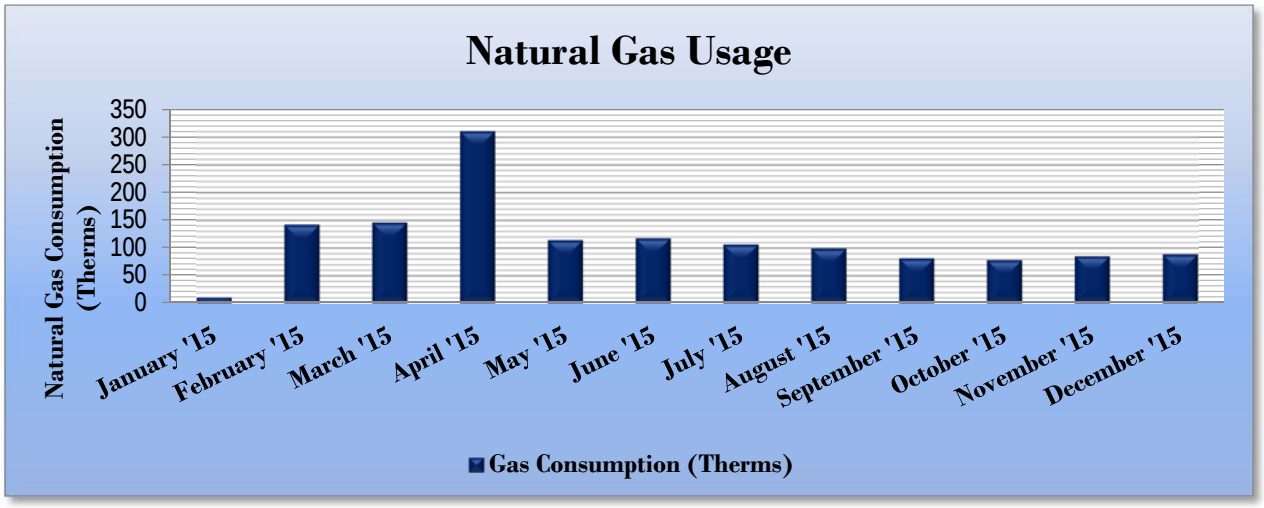


Figure 11 - Natural Gas Usage

Gas Billing Data for Greater New Point Church				
Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost	TRC Estimated Usage?
2/5/15	30	11	$16	Yes
3/9/15	31	143	$164	Yes
4/8/15	30	146	$162	Yes
5/7/15	29	311	$286	Yes
6/8/15	30	114	$125	Yes
7/8/15	29	118	$128	Yes
8/6/15	30	107	$121	Yes
9/5/15	31	99	$115	Yes
10/6/15	30	82	$112	Yes
11/4/15	32	78	$110	Yes
12/7/15	31	85	$103	Yes
1/6/16	32	89	$105	Yes
Totals	365	1,382	$1,547	12
Annual	365	1,382	$1,547	

3.4 No. 2 Fuel Oil Usage

No. 2 fuel oil is provided by National Fuel Oil, Inc. The average oil cost for the past 12 months is $1.487/Gallon, which is the blended rate used throughout the analyses in this report. The oil consumption is shown in the table below.

Figure 12 - No. 2 Fuel Oil Usage

No. 2 Fuel Oil Billing Data for Greater New Point Church				
Period Ending	Days in Period	Oil Usage (Gallons)	Fuel Cost	TRC Estimated Usage?
12/6/15	30	400	$560	Yes
11/5/15	31	300	$510	Yes
10/4/15	31	300	$525	Yes
9/3/15	30	300	$420	Yes
8/2/15	30	0	$0	Yes
7/3/15	31	0	$0	Yes
6/4/16	31	0	$0	Yes
5/3/16	30	0	$0	Yes
4/2/16	30	300	$420	Yes
3/1/16	31	200	$290	Yes
2/1/16	30	400	$580	Yes
1/2/16	30	400	$560	Yes
Totals	365	2,600	$3,865	12
Annual	365	2,600	$3,865	

3.5 Benchmarking

This facility was benchmarked through Portfolio Manager, an online tool created and managed by the United States Environmental Protection Agency (EPA) through the ENERGY STAR® program. Portfolio Manager analyzes your building's consumption data, cost information, and operational use details and compares its performance against a yearly baseline, national medians, or similar buildings in your portfolio. Metrics used in this comparison are the energy use intensity (EUI) and ENERGY STAR® Score.

The EUI is a measure of a facility's energy consumption per square foot, and it is the standard metric for comparing buildings' energy performance. Comparing the EUI of a building with the national median EUI for that building type illustrates whether that building uses more energy than similar buildings on a square foot basis or if that building performs better than the median. EUI is presented in both site energy and source energy. Site energy is the amount of fuel and electricity consumed by a building as reflected in utility bills. Source energy is the raw fuel consumed to generate the energy consumed at the site, factoring in energy production and distribution losses.

Figure 13 - Energy Use Intensity Comparison – Existing Conditions

Energy Use Intensity Comparison - Existing Conditions		
	Greater New Point Church	National Median Building Type: Religious
Source Energy Use Intensity (kBtu/ft^2)	160.3	70.7
Site Energy Use Intensity (kBtu/ft^2)	135.2	36.8

By implementing all recommended measures covered in this reporting, the Project's estimated post-implementation EUI improves as shown in the Table below:

Figure 14 - Energy Use Intensity Comparison – Following Installation of Recommended Measures

Energy Use Intensity Comparison - Following Installation of Recommended Measures		
	Greater New Point Church	National Median Building Type: Religious
Source Energy Use Intensity (kBtu/ft^2)	107.8	70.7
Site Energy Use Intensity (kBtu/ft^2)	102.9	36.8

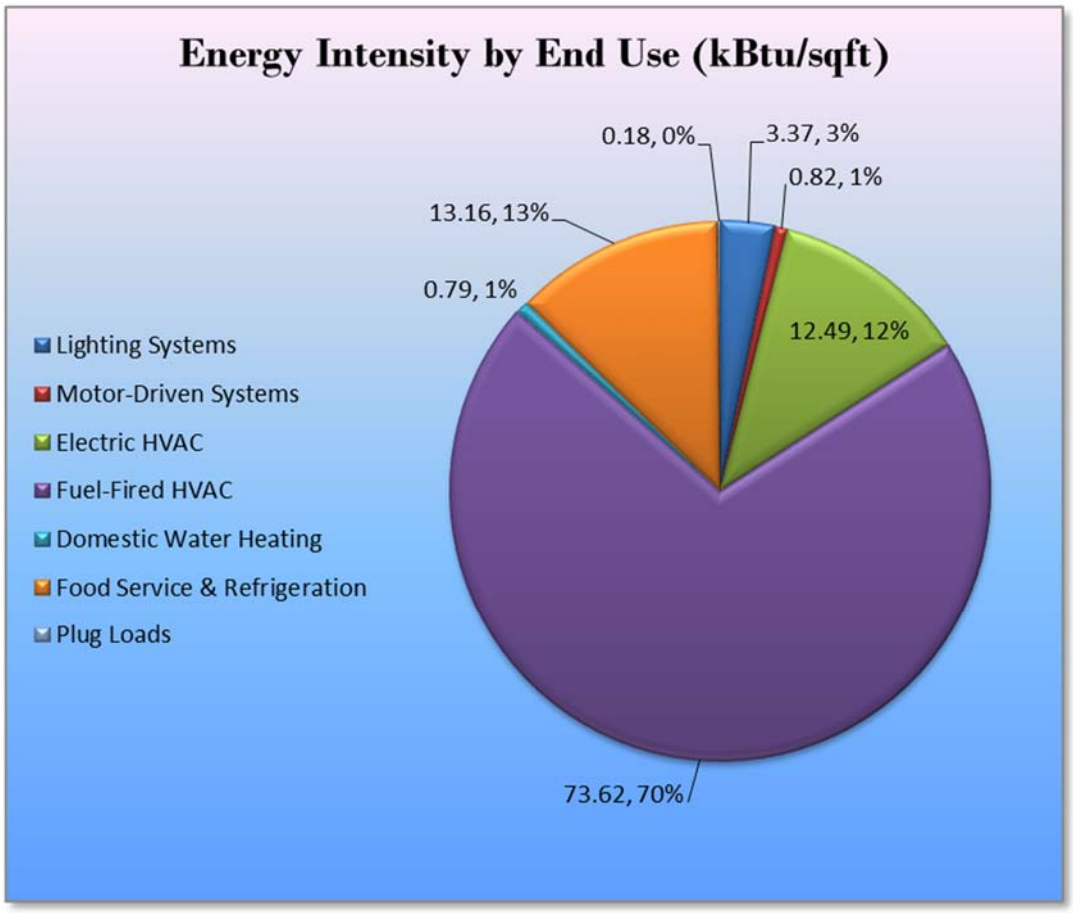
Many buildings can also receive a 1 – 100 ENERGY STAR® score. This score compares your building's energy performance to similar buildings nationwide. A score of 50 represents median energy performance, while a score of 75 means your building performs better than 75 percent of all similar buildings nationwide — and may be eligible for ENERGY STAR® certification. This facility has a current score of 69.

The Portfolio Manager, Statement of Energy Performance can be found in Appendix B: ENERGY STAR® Statement of Energy Performance.

3.6 Energy End-Use Breakdown

In order to provide a complete overview of energy consumption across building systems, an energy balance was performed at this facility. An energy balance utilizes standard practice engineering methods to evaluate all components of the various electric and fuel-fired systems found in a building and determine their proportional contribution to overall building energy usage. This visual representation of energy end uses highlights systems that may benefit most from energy efficiency projects.

Figure 15 - Energy Balance (% and kBtu/SF)



4 Energy Conservation Measures

Level of Analysis

The goal of this audit report is to identify potential energy projects, help prioritize specific measures for implementation, and set Greater New Point Church on the path to receive financial incentives. For this audit report, most measures have received only a preliminary analysis of feasibility which identifies expected ranges of savings and costs. This level of analysis is considered sufficient to make "Go/No-Go" decisions and to prioritize energy projects. Savings are based on the New Jersey Board of Public Utilities New Jersey Clean Energy Program Protocols to Measure Resource Savings dated March 17, 2014. Further analysis or investigation may be required to calculate more accurate savings to support any custom SmartStart. Financial incentives for the ECMs identified in this report have been calculated based the NJ prescriptive SmartStart program. Depending on your implementation strategy, the project may be eligible for more lucrative incentives through other programs as identified in Section 7.

The following sections describe the evaluated measures. Please refer to Appendix A: Equipment Inventory & Recommendations for a detailed list of the locations and equipment affected by the recommended measures.

4.1 Recommended ECMs

The measures below have been evaluated by the auditor and are recommended for implementation at the facility.

Figure 16 – Summary of Recommended ECMs

	Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMBtu)	Annual No. 2 Fuel Oil Savings (MMBtu)	Annual N/A Savings (MMBtu)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**2,988**	**6.5**	**0.0**	**0.0**	**0.0**	**0.0**	**$1,224.92**	**$13,562.72**	**$185.00**	**$13,377.72**	**10.92**	**3,009**
ECM 1	Install LED Fixtures	Yes	475	1.5	0.0	0.0	0.0	0.0	$194.71	$2,418.74	$175.00	$2,243.74	11.52	478
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	795	2.1	0.0	0.0	0.0	0.0	$325.97	$5,309.50	$0.00	$5,309.50	16.29	801
ECM 3	Retrofit Fixtures with LED Lamps	Yes	1,094	2.9	0.0	0.0	0.0	0.0	$448.60	$5,081.60	$10.00	$5,071.60	11.31	1,102
ECM 4	Install LED Exit Signs	Yes	624	0.1	0.0	0.0	0.0	0.0	$255.64	$752.89	$0.00	$752.89	2.95	628
Lighting Control Measures			**114**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**$46.67**	**$1,160.00**	**$200.00**	**$960.00**	**6.57**	**115**
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	114	0.3	0.0	0.0	0.0	0.0	$46.67	$1,160.00	$200.00	$960.00	6.57	115
Electric Unitary HVAC Measures			**1,714**	**2.3**	**0.0**	**0.0**	**0.0**	**0.0**	**$702.73**	**$33,452.40**	**$1,896.00**	**$31,556.40**	**14.91**	**1,726**
ECM 6	Install High Efficiency Electric AC	Yes	1,714	2.3	0.0	0.0	0.0	0.0	$702.73	$33,452.40	$1,896.00	$31,556.40	14.91	1,726
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**0.0**	**10.4**	**0.0**	**10.4**	**$111.91**	**$17,970.62**	**$1,401.75**	**$16,568.87**	**14.08**	**1,707**
ECM 7	Install High Efficiency Hot Water Boilers	Yes	0	0.0	0.0	10.4	0.0	10.4	$111.91	$17,970.62	$1,401.75	$16,568.87	14.08	1,707
HVAC System Improvements			**5,688**	**1.3**	**0.0**	**0.0**	**0.0**	**0.0**	**$2,331.66**	**$1,800.00**	**$500.00**	**$1,300.00**	**0.56**	**5,728**
ECM 8	Install Dual Enthalpy Outside Economizer Control	Yes	5,688	1.3	0.0	0.0	0.0	0.0	$2,331.66	$1,800.00	$500.00	$1,300.00	0.56	5,728
Domestic Water Heating Upgrade			**0**	**0.0**	**82.8**	**0.0**	**0.0**	**82.8**	**$926.43**	**$540.42**	**$0.00**	**$540.42**	**0.58**	**9,692**
ECM 9	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	82.8	0.0	0.0	82.8	$926.43	$540.42	$0.00	$540.42	0.58	9,692
TOTALS			**10,504**	**10.4**	**82.8**	**10.4**	**0.0**	**93.2**	**$5,344.32**	**$68,486.17**	**$4,182.75**	**$64,303.42**	**6.96**	**21,977**

* - All incentives presented in this table are based on NJ Smart Start Building equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

** - Simple Payback Period is based on net measure costs (i.e. after incentives).

4.1.1 Lighting Upgrades

Lighting Upgrades include several "submeasures" as outlined in Figure 17 below.

Figure 17 – Summary of Lighting Upgrade ECMs

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMBtu)	Annual No. 2 Fuel Oil Savings (MMBtu)	Annual N/A Savings (MMBtu)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			2,988	6.5	0.0	0.0	0.0	0.0	$1,224.92	$13,562.72	$185.00	$13,377.72	10.92	3,009
ECM 1	Install LED Fixtures	Yes	475	1.5	0.0	0.0	0.0	0.0	$194.71	$2,418.74	$175.00	$2,243.74	11.52	478
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	795	2.1	0.0	0.0	0.0	0.0	$325.97	$5,309.50	$0.00	$5,309.50	16.29	801
ECM 3	Retrofit Fixtures with LED Lamps	Yes	1,094	2.9	0.0	0.0	0.0	0.0	$448.60	$5,081.60	$10.00	$5,071.60	11.31	1,102
ECM 4	Install LED Exit Signs	Yes	624	0.1	0.0	0.0	0.0	0.0	$255.64	$752.89	$0.00	$752.89	2.95	628

ECM 1: Install LED Fixtures

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	417	1.1	0.0	$171.09	$1,782.23	$125.00	$1,657.23	9.69	420
Exterior	58	0.4	0.0	$23.62	$636.51	$50.00	$586.51	10.50	58

Measure Description

This measure evaluates replacing existing fixtures containing fluorescent (excluding T12), HID, and incandescent lamps with new high performance LED light fixtures. This measure saves energy by installing LED sources which use less power than other technologies with a comparable light output.

Maintenance savings are anticipated since LED sources have burn hours which are generally more than twice that of a fluorescent source and more than 10 times incandescent sources. Maintenance savings may be partially offset by the higher material costs associated with LED sources.

During planning and design for the installation of new fixtures, we recommend a holistic approach that considers both the technology of the lighting sources and how they are controlled.

ECM 2: Retrofit Fluorescent Fixtures with LED Lamps and Drivers

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	795	2.1	0.0	$325.97	$5,309.50	$0.00	$5,309.50	16.29	801
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.00	0

Measure Description

This measure evaluates replacing linear fluorescent lamps, ballasts, and reflectors with LED tube lamps, reflectors, and drivers specifically designed for existing linear fluorescent fixtures. The retrofit uses the existing fixture housing but replaces the rest of the components with an efficient source and reflectors designed for LEDs. This measure saves energy by installing LED sources which use less power than other technologies with a comparable light output and efficiently projects the light into the space.

Maintenance savings are anticipated since LED sources have burn hours which are more than twice that of a fluorescent source. Maintenance savings may be partially offset by the higher material costs associated with LED sources.

During retrofit planning and design, we recommend a holistic approach that considers both the technology of the lighting sources and how they are controlled.

ECM 3: Retrofit Fixtures with LED Lamps

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	1,094	2.9	0.0	$448.60	$5,081.60	$10.00	$5,071.60	11.31	1,102
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.00	0

Measure Description

This measure evaluates replacing linear fluorescent lamps with LED tube lamps and replacing incandescent and halogen screw-in/plug-in based lamps with LED lamps. Many LED tube lamps are direct replacements for existing fluorescent lamps and can be installed although there is a fluorescent fixture ballast in place. Other tube lamps require that fluorescent fixture ballasts be removed or replaced with LED drivers. Screw-in/plug-in LED lamps can be used as a direct replacement for most other screw-in/plug-in lamps. This measure saves energy by installing LED sources which use less power than other technologies with a comparable light output.

Maintenance savings are anticipated since LED sources have burn hours which are more than twice that of a fluorescent source and more than 10 times incandescent sources. LED lamps that use the existing fluorescent fixture ballast will be constrained by the remaining hours of the ballast. Maintenance savings may be partially offset by the higher material costs associated with LED sources.

During retrofit planning and design, we recommend a holistic approach that considers both the technology of the lighting sources and how they are controlled.

ECM 4: Install LED Exit Signs

Summary of Measure Economics

Interior/ Exterior	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
Interior	624	0.1	0.0	$255.64	$752.89	$0.00	$752.89	2.95	628
Exterior	0	0.0	0.0	$0.00	$0.00	$0.00	$0.00	0.00	0

Measure Description

This measure evaluates replacing incandescent and compact fluorescent lighting in exit signs with LEDs. LED sources require virtually no maintenance and LED exit signs have a life expectancy of at least 20 years. Many manufacturers can provide retrofit kits that meet fire and safety code requirements. Retrofit kits are less expensive and simpler to install than replacement signs, however, new fixtures would have a longer useful life and are therefore recommended.

A reduction in maintenance costs will be realized with the proposed retrofit because lamps will not have to be replaced as frequently.

4.1.2 Lighting Control Measures

Lighting control measures include several "submeasures" as outlined in Figure 18 below.

Figure 18 – Summary of Lighting Control ECMs

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Natural Gas Savings (MMBtu)	Annual No. 2 Fuel Oil Savings (MMBtu)	Annual N/A Savings (MMBtu)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Control Measures			114	0.3	0.0	0.0	0.0	0.0	$46.67	$1,160.00	$200.00	$960.00	6.57	115
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	114	0.3	0.0	0.0	0.0	0.0	$46.67	$1,160.00	$200.00	$960.00	6.57	115

ECM 5: Install Occupancy Sensor Lighting Controls

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
114	0.3	0.0	$46.67	$1,160.00	$200.00	$960.00	6.57	115

Measure Description

This measure evaluates installing occupancy sensors to control light fixtures that are currently manually controlled in restrooms, storage rooms, and private offices. Sensors detect occupancy using ultrasonic and/or infrared wave technologies. Lighting systems are enabled when an occupant is detected. Fixtures are automatically turned off after an area has been vacant for a preset period. Occupants will also be able to manually turn off fixtures. Energy savings result from only operating lighting systems when they are required.

Occupancy sensors may be mounted on the wall at existing switch locations, mounted on the ceiling, or in remote locations. Ceiling-mounted or remote-mounted sensors require the use of low voltage switching relays or a wireless signal to the switch. In general, use wall switch replacement sensors for single occupant offices and other small rooms. Install ceiling-mounted or remote mounted sensors in locations without local switching, in situations where the existing wall switches are not in the line-of-sight of the main work area, and in large spaces. We recommend a holistic design approach that considers both the technology of the lighting sources and how they are controlled.

Maintenance savings are anticipated due to reduced lamp operation, however, additional maintenance costs may be incurred because the occupancy sensors may require periodic adjustment; it is anticipated that the net effect on maintenance costs will be negligible.

4.1.3 Electric Unitary HVAC Measures

ECM 6: Install High Efficiency Electric AC

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
1,714	2.3	0.0	$702.73	$33,452.40	$1,896.00	$31,556.40	14.91	1,726

Measure Description

This measure evaluates replacing package air conditioners with high efficiency package air conditioners. There have been significant improvements in both compressor and fan motor efficiencies in the past several years. Therefore, electricity savings can be achieved by replacing old units with new high efficiency units. A higher EER or SEER rating indicates a more efficient cooling system. The magnitude of energy savings for this measure depends on the relative efficiency of the old and new unit, the cooling load, and the annual operating hours.

4.1.4 Gas Heating (HVAC/Process) Replacement

Gas heating replacement measures include several "submeasures" as outlined in Figure 19 below.

Figure 19 - Summary of Gas Heating Replacement ECMs

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	*Annual Natural Gas Savings (MMBtu)*	*Annual No. 2 Fuel Oil Savings (MMBtu)*	*Annual N/A Savings (MMBtu)*	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Gas Heating (HVAC/Process) Replacement			0	0.0	0.0	10.4	0.0	10.4	$111.91	$17,970.62	$1,401.75	$16,568.87	14.08	1,707
ECM 7	Install High Efficiency Hot Water Boilers	Yes	0	0.0	0.0	10.4	0.0	10.4	$111.91	$17,970.62	$1,401.75	$16,568.87	14.08	1,707

ECM 7 Install High Efficiency Hot Water Boilers

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	10.4	$111.91	$17,970.62	$1,401.75	$16,568.87	14.08	1,707

Measure Description

This measure evaluates replacing old inefficient hot water boilers with high efficiency hot water boilers. Significant improvements have been made in combustion technology resulting in increases in overall boiler efficiency. Savings result from improved combustion efficiency and reduced standby losses at low loads.

The most notable efficiency improvement is condensing hydronic boilers that can achieve over 90% efficiency under the proper conditions. Condensing hydronic boilers typically operate at efficiencies between 85% and 87% (comparable to other high efficiency boilers) when the return water temperature is above 130°F. The boiler efficiency increases as the return water temperature drops below 130°F. Therefore, condensing hydronic boilers were only evaluated when the return water temperature is less than 130°F during most of the operating hours. As a result condensing hydronic boiler is recommended for this site. It should be noted that condensing boilers produce acidic condensate that needs to be drained.

4.1.5 HVAC System Improvements

HVAC system improvement measures include several "submeasures" as outlined in Figure 20 below.

Figure 20 - Summary of HVAC System Improvement ECMs

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	*Annual Natural Gas Savings (MMBtu)*	*Annual No. 2 Fuel Oil Savings (MMBtu)*	*Annual N/A Savings (MMBtu)*	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
HVAC System Improvements			5,688	1.3	0.0	0.0	0.0	0.0	$2,331.66	$1,800.00	$500.00	$1,300.00	0.56	5,728
ECM 8	Install Dual Enthalpy Outside Economizer Control	Yes	5,688	1.3	0.0	0.0	0.0	0.0	$2,331.66	$1,800.00	$500.00	$1,300.00	0.56	5,728

ECM 7: Install Dual Enthalpy Outside Economizer Control

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
5,688	1.3	0.0	$2,331.66	$1,800.00	$500.00	$1,300.00	0.56	5,728

Measure Description

Dual enthalpy economizers are used to control a ventilation system's outside air intake in order to reduce a facility's total cooling load. A dual enthalpy economizer monitors the air temperature and humidity of both the outside and return air. The control supplies the lowest energy (temperature and humidity) air to the air handling system. When outside air conditions allow, outside air can be used for cooling in place of the air handling system's compressor. This reduces the demand on the cooling system, lowering its usage hours, saving energy. Savings result from using outside air instead of mechanical cooling whenever possible.

4.1.6 Domestic Water Heating Upgrade

Domestic water heating measures include several "submeasures" as outlined in Figure 21 below.

Figure 21 - Summary of Domestic Water Heating ECMs

Energy Conservation Measure		Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	*Annual Natural Gas Savings (MMBtu)*	*Annual No. 2 Fuel Oil Savings (MMBtu)*	*Annual N/A Savings (MMBtu)*	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)*	Estimated Net Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Domestic Water Heating Upgrade			0	0.0	82.8	0.0	0.0	82.8	$926.43	$540.42	$0.00	$540.42	0.58	9,692
ECM 9	Install Low-Flow Domestic Hot Water Devices	Yes	0	0.0	82.8	0.0	0.0	82.8	$926.43	$540.42	$0.00	$540.42	0.58	9,692

ECM 8: Install Low-Flow DHW Devices

Summary of Measure Economics

Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated Install Cost ($)	Estimated Incentive ($)	Estimated Net Cost ($)	Simple Payback Period (yrs)	CO_2e Emissions Reduction (lbs)
0	0.0	82.8	$926.43	$540.42	$0.00	$540.42	0.58	9,692

Measure Description

This measure evaluates the savings from installing low flow domestic water devices to reduce overall water flow in general and hot water flow in particular. Low flow showerheads and faucet aerators reduce the water flow, relative to standard showerheads and aerators, from the fixture. Pre-rinse spray valves often used in commercial and institutional kitchens and are designed to remove food waste from dishes prior to dishwashing. Replacing standard pre-rinse spray valves with low flow valves will reduce water use.

All of the low flow devices reduce the overall water flow from the fixture which generally reduces the amount of hot water used resulting in energy and water savings.

5 ENERGY EFFICIENT PRACTICES

In addition to the quantifiable savings estimated in Section 4, a facility's energy performance can also be improved through application of low or no-cost efficiency strategies. By employing certain behavioral and operational adjustments as well as performing routine maintenance on building systems, equipment lifetime can be extended; occupant comfort, health and safety can be improved; and annual energy, operation, and maintenance costs can be reduced. The recommendations below are provided as a framework for developing a whole building maintenance plan that is customized to your facility. Consult with qualified equipment specialists for details on proper maintenance and system operation.

Reduce Air Leakage

Air leakage, or infiltration, occurs when outside air enters a building uncontrollably through cracks and openings. Properly sealing such cracks and openings can significantly reduce heating and cooling costs, improve building durability, and create a healthier indoor environment. This includes caulking or installing weather stripping around leaky doors and windows allowing for better control of indoor air quality through controlled ventilation.

Close Doors and Windows

Ensure doors and windows are closed in conditioned spaces. Leaving doors and windows open leads to a significant increase in heat transfer between conditioned spaces and the outside air. Reducing a facility's air changes per hour (ACH) can lead to increased occupant comfort as well as significant heating and cooling savings, especially when combined with proper HVAC controls and adequate ventilation.

Use Window Treatments/Coverings

A substantial amount of heat gain can occur through uncovered or untreated windows, especially older single pane windows and east or west-facing windows. Treatments such as high-reflectivity films or covering windows with shades or shutters can reduce solar heat gain and, consequently, cooling load and can reduce internal heat loss and the associated heating load.

Perform Proper Lighting Maintenance

In order to sustain optimal lighting levels, lighting fixtures should undergo routine maintenance. Light levels decrease over time due to lamp aging, lamp and ballast failure, and buildup of dirt and dust on lamps, fixtures and reflective surfaces. Together, these factors can reduce total illumination by 20 - 60% or more, while operating fixtures continue drawing full power. To limit this reduction, lamps, reflectors and diffusers should be thoroughly cleaned of dirt, dust, oil, and smoke film buildup approximately every 6 – 12 months.

Develop a Lighting Maintenance Schedule

In addition to routine fixture cleaning, development of a maintenance schedule can both ensure maintenance is performed regularly and can reduce the overall cost of fixture re-lamping and re-ballasting. By re-lamping and re-ballasting fixtures in groups, lighting levels are better maintained and the number of site visits by a lighting technician or contractor can be minimized, decreasing the overall cost of maintenance.

Ensure Lighting Controls Are Operating Properly

Lighting controls are very cost effective energy efficient devices, when installed and operating correctly. As part of a lighting maintenance schedule, lighting controls should be tested annually to ensure proper functioning. For occupancy sensors, this requires triggering the sensor and verifying that the sensor's timer settings are correct. For daylight sensors, maintenance involves cleaning of sensor lenses and confirming setpoints and sensitivity are appropriately configured.

Use Fans to Reduce Cooling Load

Utilizing ceiling fans to supplement cooling is a low cost strategy to reduce cooling load considerably. Thermostat settings can be increased by 4°F with no change in overall occupant comfort when the wind chill effect of moving air is employed for cooling.

Practice Proper Use of Thermostat Schedules and Temperature Resets

Ensure thermostats are correctly set back. By employing proper set back temperatures and schedules, facility heating and cooling costs can be reduced dramatically during periods of low or no occupancy. As such, thermostats should be programmed for a setback of 5-10°F during low occupancy hours (reduce heating setpoints and increase cooling setpoints). Cooling load can be reduced further by increasing the facility's occupied setpoint temperature. In general, during the cooling season, thermostats should be set as high as possible without sacrificing occupant comfort.

Perform Proper Boiler Maintenance

Many boiler problems develop slowly over time, regular inspection and maintenance is essential to retain proper functionality and efficiency of the heating system. Fuel burning equipment should undergo yearly tune-ups to ensure they are operating as safely and efficiently as possible from a combustion standpoint. A tune-up should include a combustion analysis to analyze the exhaust from the boilers and to ensure the boiler is operating safely. Buildup of dirt, dust, or deposits on the internal surfaces of a boiler can greatly affect its heat transfer efficiency. These deposits can accumulate on the water side or fire side of the boiler. Boilers should be cleaned regularly according to the manufacturer's instructions to remove this build up in order to sustain efficiency and equipment life.

Perform Proper Water Heater Maintenance

At least once a year, drain a few gallons out of the water heater using the drain valve. If there is a lot of sediment or debris, then a full flush is recommended. Turn the temperature down and then completely drain the tank. Once a year check for any leaks or heavy corrosion on the pipes and valves. For gas water heaters, check the draft hood and make sure it is placed properly, with a few inches of air space between the tank and where it connects to the vent. Look for any corrosion or wear on the gas line and on the piping. If you noticed any black residue, soot or charred metal, this is a sign you may be having combustion issues and you should have the unit serviced by a professional. For electric water heaters, look for any signs of leaking such as rust streaks or residue around the upper and lower panels covering the electrical components on the tank. For water heaters over three to four years old have a technician inspect the sacrificial anode annually.

Plug Load Controls

There are a variety of ways to limit the energy use of plug loads including increasing occupant awareness, removing under-utilized equipment, installing hardware controls, and using software controls. Some control steps to take are to enable the most aggressive power settings on existing devices or install load sensing or occupancy sensing (advanced) power strips. For additional information refer to "Plug Load Best Practices Guide" http://www.advancedbuildings.net/plug-load-best-practices-guide-offices.

Water Conservation

Installing low flow faucets or faucet aerators, low flow showerheads, and kitchen sink pre-rinse spray valves saves both energy and water. These devices save energy by reducing the overall amount of hot water used reducing the energy used to heat the water. The flow ratings for EPA WaterSense™ (http://www3.epa.gov/watersense/products) labeled devices are 1.5 gallons per minute (gpm) for bathroom faucets, 2.0 gpm for showerheads, and 1.28 gpm for pre-rinse spray valves.

Installing dual flush or low flow toilets and low flow or waterless urinals are additional ways to reduce water use, however, these devices do not provide energy savings at the site level. Any reduction in water use does however ultimately reduce grid level electricity use since a significant amount of electricity is used to deliver water from reservoirs to end users. The EPA WaterSense™ ratings for urinals is 0.5 gallons per flush (gpf) and toilets that use as little as 1.28 gpf (this is lower than the current 1.6 gpf federal standard).

6 SELF-GENERATION MEASURES

Self-generation measures include both renewable (e.g. solar, wind) and non-renewable (e.g. microturbines) on-site technologies that generate power to meet all or a portion of the electric energy needs of a facility, often repurposing any waste heat where applicable. Also referred to as distributed generation, these systems contribute to Greenhouse Gas (GHG) emission reductions, demand reductions and reduced customer electricity purchases, resulting in the electric system reliability through improved transmission and distribution system utilization.

The State of New Jersey's Energy Master Plan (EMP) encourages new distributed generation of all forms and specifically focuses on expanding use of combined heat and power (CHP) by reducing financial, regulatory and technical barriers and identifying opportunities for new entries. The EMP also outlines a goal of 70% of the State's electrical needs to be met by renewable sources by 2050.

Preliminary screenings were performed to determine the potential that a generation project could provide a cost-effective solution for your facility. Before making a decision to implement, a feasibility study should be conducted that would take a detailed look at existing energy profiles, siting, interconnection, and the costs associated with the generation project including interconnection costs, departing load charges, and any additional special facilities charges.

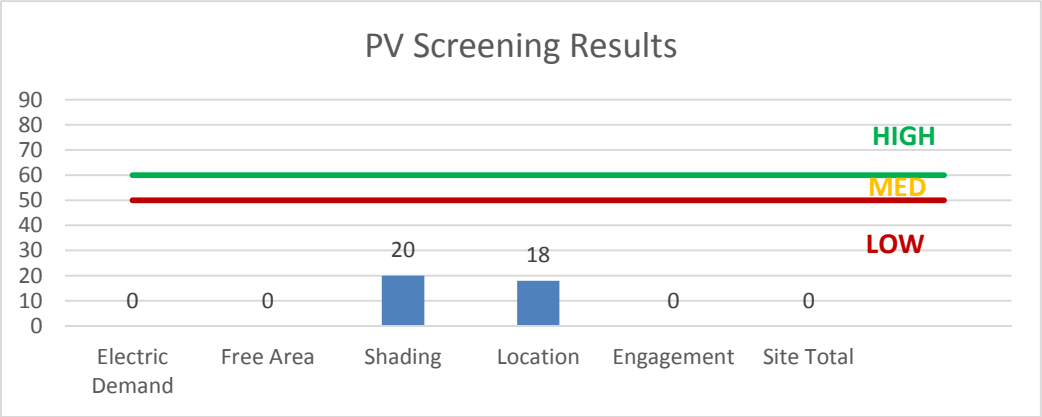
6.1 Photovoltaic

Sunlight can be converted into electricity using photovoltaics (PV) modules. Modules are racked together into an array that produces direct current (DC) electricity. The DC is converted to alternating current (AC) through an inverter. The inverter is interconnected to the facility's electrical distribution system. The amount of unobstructed area available determines how large of a solar array can be installed. The size of the array combined with the orientation, tilt, and shading elements determines the energy produced.

A preliminary screening based on the facility's electric demand, size and location of free area, and shading elements shows that the facility has a Low potential for installing a PV array.

In order to be cost-effective, a solar PV array generally needs a minimum of 4,000 square feet of flat or south-facing rooftop, or other unshaded space, on which to place the PV panels. In our opinion, the facility does not appear to meet these minimum criteria for cost-effective PV installation.

Figure 22 - Photovoltaic Screening



Rebates are not available for solar projects, but owners of solar projects MUST register their projects in the SREC Registration Program prior to the start of construction in order to establish the project's eligibility to earn SRECs. Registration of the intent to participate in New Jersey's solar marketplace provides market participants with information about the pipeline of anticipated new solar capacity and insight into future SREC pricing

For more information on solar PV technology and commercial solar markets in New Jersey, or to find a qualified solar installer, who can provide a more detailed assessment of the specific costs and benefits of solar develop of the site, please visit the following links below:

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

6.2 Combined Heat and Power

In non-industrial settings, combined heat and power (CHP) is the on-site generation of electricity and recovery of heat which is put to beneficial use. .Common prime movers in CHP applications include reciprocating engines, microturbines, fuel cells, and gas turbines (at large facilities). Electricity is typically interconnected to the sites local distribution system. Heat is recovered from the exhaust stream and the ancillary cooling system and interconnected to the existing hot water (or steam) distribution system.

CHP systems are typically used to produce a portion of the electricity needed by a facility, with the balance of electric needs satisfied by purchase from the grid. The heat is used to supplement (or supplant) existing boilers for the purpose of space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for the purpose of space cooling. The key criteria used for screening, however, is the amount of time the system operates at full load and the facility's ability to use the recovered heat. Facilities with continuous use for large quantities of waste heat are the best candidates for CHP.

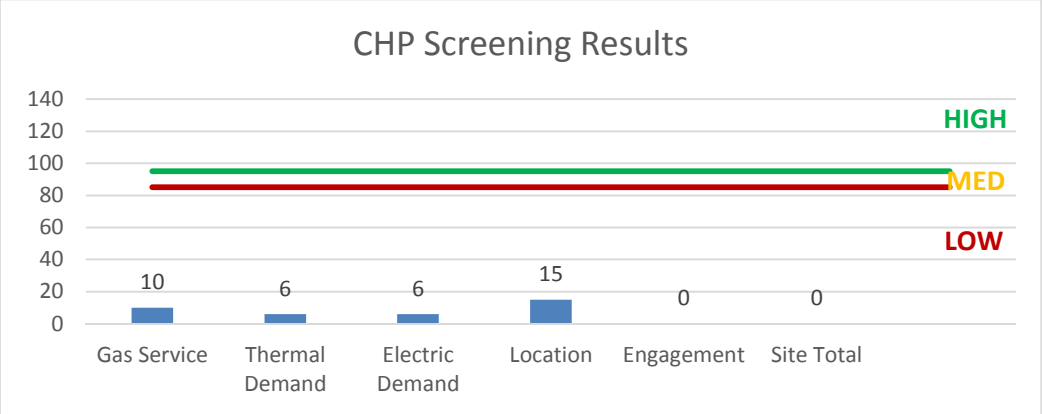
A preliminary screening based on heating and electrical demand, siting, and interconnection shows that the facility has a Low potential for installing a cost-effective CHP system.

If Greater New Point Church is interested in pursuing the installation of CHP, we recommended a detailed feasibility study be completed.

Low or infrequent thermal load, and lack of space near the existing thermal generation are the most significant factors contributing to the low potential for CHP at the site. In our opinion, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation.

For a list of qualified firms in NJ specializing in commercial CHP cost assessment and installation, go to: http://www.njcleanenergy.com/commercial-industrial/programs/nj-smartstart-buildings/tools-and-resources/tradeally/approved_vendorsearch/

Figure 23 - Combined Heat and Power Screening



7 PROJECT FUNDING / INCENTIVES

The NJCEP is able to provide the incentive programs described below, and others, because of the Societal Benefits Charge (SBC) Fund. The SBC was created by the State of New Jersey's 1999 Electricity Restructuring Law which requires all customers of investor-owned electric and gas utilities to pay this charge on their monthly energy bills. As a contributor to the fund you were able to participate in the LGEA program and are also eligible to utilize the equipment incentive programs. Also available through the NJBPU are some alternative financing programs described later in this section. Please refer to Figure 24 for a list of the eligible programs identified for each recommended ECM.

Figure 24 - ECM Incentive Program Eligibility

Energy Conservation Measure		SmartStart Prescriptive	SmartStart Custom	Direct Install
ECM 1	Install LED Fixtures	x		x
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	x		x
ECM 3	Retrofit Fixtures with LED Lamps	x		x
ECM 4	Install LED Exit Signs			x
ECM 5	Install Occupancy Sensor Lighting Controls			x
ECM 6	Install High Efficiency Electric AC			x
ECM 7	Install High Efficiency Hot Water Boilers			x
ECM 8	Install Dual Enthalpy Outside Economizer Control			x
ECM 9	Install Low-Flow Domestic Hot Water Devices			x

SmartStart is generally well suited for implementation of individual or small sets of measures, with the flexibility to install projects at your own pace using in-house staff or a preferred contractor. Direct Install caters to small to mid-size facilities to bundle measures and simplify participation, but requires the use of pre-approved contractors.

Generally, the incentive values provided throughout the report assume the SmartStart program is utilized because it provides a consistent comparison of available incentives.

Brief descriptions of all relevant alternative financing and incentive programs are located in the sections below or: www.njcleanenergy.com/ci.

7.1 SmartStart

Overview

The SmartStart program is comprised of new construction and retrofit components that offer incentives for installing prescriptive and custom energy efficiency measures at your facility. Routinely the program adds, removes or modifies incentives for various energy efficiency equipment based on national/market trends, new technologies or changes in efficiency baselines.

Prescriptive Equipment Incentives Available:

Electric Chillers
Electric Unitary HVAC
Gas Cooling
Gas Heating
Gas Water Heating
Ground Source Heat Pumps
Lighting
Lighting Controls
Refrigeration Doors
Refrigeration Controls
Refrigerator/Freezer Motors
Food Service Equipment
Variable Frequency Drives

All customer sizes and types may be served by this program. This program provides an effective mechanism for securing incentives for individual projects that may be completed at once or over several years.

Incentives

The prescriptive path provides fixed incentives for specific energy efficiency measures whereas the custom measure path provides incentives for unique or specialized technologies that are not addressed through prescriptive offerings.

Since your facility is an existing building, only the retrofit incentives have been applied in this report. Custom measure incentives are calculated at $0.16/kWh and $1.60/therm based on estimated annual savings, capped at the lesser of 50% of the total installed incremental project cost, or a buy down to a one year payback. Program incentives are capped at $500,000 per electric account and $500,000 per natural gas account, per fiscal year.

How to Participate

To participate in the SmartStart program submit an application for the specific equipment to be installed. Many applications are designed as rebates, although others require application approval prior to installation. Applicants may work with a contractor of their choosing and can also utilize internal personnel, which provides added flexibility to the program. Using internal personnel also helps improve the economics of the ECM by reducing the labor cost that is included in the tables in this report.

Detailed program descriptions, instructions for applying and applications can be found at: www.njcleanenergy.com/SSB.

7.2 Direct Install

Overview

Direct Install is a turnkey program available to existing small to mid-sized facilities with a peak electric demand that did not exceed 200 kW in the preceding 12 months. You will work directly with a pre-approved contractor who will perform a free energy assessment at your facility, identify specific eligible measures, and install those measures. Energy efficiency measures may include lighting and lighting controls, refrigeration, HVAC, motors, variable speed drives and controls.

Incentives

The program pays up to 70% of the total installed cost of eligible measures, up to $125,000 per project. Direct Install participants will also be held to a fiscal year cap of $250,000 per entity.

How to Participate

To participate in the Direct Install program you will need to contact the participating contractor assigned to the county where your facility is located; a complete list is provided on the Direct Install website identified below. The contractor will be paid the program incentive directly which will pass on to you in the form of reduced material and implementation costs. This means up to 70% of eligible costs are covered by the program, subject to program caps mentioned above, and the remaining 30% of the cost is your responsibility to the contractor.

Since Direct Install offers a free assessment, LGEA applicants that do not meet the audit program eligibility requirements, but do meet the Direct Install requirements, may be moved directly into this program.

Detailed program descriptions and applications can be found at: www.njcleanenergy.com/DI.

8 ENERGY PURCHASING AND PROCUREMENT STRATEGIES

8.1 Retail Electric Supply Options

In 1999, New Jersey State Legislature passed the Electric Discount & Energy Competition Act (EDECA) to restructure the electric power industry in New Jersey. This law deregulated the retail electric markets, allowing all consumers to shop for service from competitive electric suppliers. The intent was to create a more competitive market for electric power supply in New Jersey. As a result, utilities were allowed to charge Cost of Service and customers were given the ability to choose a third party (i.e. non-utility) energy supplier.

Energy deregulation in New Jersey has increased energy buyers' options by separating the function of electricity distribution from that of electricity supply. So, though you may choose a different company from which to buy your electric power, responsibility for your facility's interconnection to the grid and repair to local power distribution will still reside with the traditional utility company serving your region.

If your facility is not purchasing electricity from a third party supplier, consider shopping for a reduced rate from third party electric suppliers. If your facility is purchasing electricity from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party electric suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

8.2 Retail Natural Gas Supply Options

The natural gas market in New Jersey has also been deregulated. Most customers that remain with the utility for natural gas service pay rates that are market-based and that fluctuate on a monthly basis. The utility provides basic gas supply service (BGSS) to customers who choose not to buy from a Third Party Supplier for natural gas commodity.

A customer's decision about whether to buy natural gas from a retail supplier is typically dependent upon whether a customer seeks budget certainty and/or longer-term rate stability. Customers can secure longer-term fixed prices by signing up for service through a third party retail natural gas supplier. Many larger natural gas customers may seek the assistance of a professional consultant to assist in their procurement process.

If your facility is not purchasing natural gas from a third party supplier, consider shopping for a reduced rate from third party natural gas suppliers. If your facility is purchasing natural gas from a third party supplier, review and compare prices at the end of the current contract or every couple years.

A list of third party natural gas suppliers, who are licensed by the state to provide service in New Jersey, can be found online at: www.state.nj.us/bpu/commercial/shopping.html.

Appendix A: Equipment Inventory & Recommendations

Lighting Inventory & Recommendations

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Front Entrance	10	Halogen Incandescent: PAR 38 Recessed Light	Daylight Dimming	60	100	Fixture Replacement	No	10	LED - Fixtures: Downlight Solid State Retrofit	Daylight Dimming	9	100	0.41	58	0.0	$23.62	$636.51	$50.00	24.83
Vestview	11	Halogen Incandescent: PAR 30 Recessed Light	Wall Switch	60	300	Fixture Replacement	No	11	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	9	300	0.46	190	0.0	$77.96	$700.16	$55.00	8.28
Vestview	3	Incandescent: Globe 60wW Hanging Pendent A Lamp	Wall Switch	60	400	Fixture Replacement	No	3	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	9	400	0.12	69	0.0	$28.35	$190.95	$15.00	6.21
Hallway	1	Incandescent: Ceiling Mounted 75W A Lamp	Wall Switch	75	400	Fixture Replacement	No	1	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	13	400	0.05	28	0.0	$11.49	$63.65	$5.00	5.11
Hallway	1	Linear Fluorescent - T8: 2' T8 (17W) - 2L	Wall Switch	33	400	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	400	0.01	7	0.0	$2.96	$48.20	$10.00	12.89
Office	3	Linear Fluorescent - T12: 4' T12 (40W) - 4L	Wall Switch	176	400	Relamp & Reballast	Yes	3	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	280	0.33	184	0.0	$75.26	$601.50	$20.00	7.73
Sanctuary	3	Exit Signs: Incandescent	None	15	8,760	Fixture Replacement	No	3	LED Exit Signs: 2 W Lamp	None	6	8,760	0.02	267	0.0	$109.56	$322.67	$0.00	2.95
Sanctuary	88	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	50	300	Relamp	No	88	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	300	2.36	984	0.0	$403.55	$4,241.60	$0.00	10.51
Sanctuary	2	Halogen Incandescent: PAR 30 Recessed Light	Wall Switch	60	300	Fixture Replacement	No	2	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	9	300	0.08	35	0.0	$14.17	$127.30	$10.00	8.28
Sanctuary (Overflow Room)	12	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	300	Relamp & Reballast	Yes	12	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	210	0.66	275	0.0	$112.90	$1,520.00	$20.00	13.29
Passageway	2	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	50	400	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	280	0.06	34	0.0	$14.12	$330.00	$20.00	21.96
Basement	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	250	Relamp & Reballast	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	250	0.10	33	0.0	$13.66	$234.00	$0.00	17.12
Basement	1	Incandescent: Ceiling Mounted 60W A Lamp	Wall Switch	60	250	Fixture Replacement	No	1	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	9	250	0.04	14	0.0	$5.91	$63.65	$5.00	9.93
Felloship Hall	8	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	250	Relamp & Reballast	Yes	8	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	175	0.44	153	0.0	$62.72	$1,052.00	$20.00	16.45
Felloship Hall	1	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	50	250	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	250	0.03	9	0.0	$3.82	$48.20	$0.00	12.61
Felloship Hall	2	Exit Signs: Incandescent	None	15	8,760	Fixture Replacement	No	2	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	178	0.0	$73.04	$215.11	$0.00	2.95
Kitchen	4	Linear Fluorescent - T12: 8' T12 (75W) - 2L	Wall Switch	158	150	Relamp & Reballast	Yes	4	LED - Linear Tubes: (2) 8' Lamps	Occupancy Sensor	72	105	0.35	73	0.0	$29.91	$924.00	$20.00	30.23
Kitchen	1	Exit Signs: Incandescent	None	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	None	6	8,760	0.01	89	0.0	$36.52	$107.56	$0.00	2.95
Storage	2	Compact Fluorescent: Spiral CFL 23W	Wall Switch	23	100	Fixture Replacement	No	2	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	5	100	0.03	4	0.0	$1.67	$127.30	$0.00	76.34
Storage	1	Compact Fluorescent: CFL 23W	Wall Switch	23	100	Fixture Replacement	No	1	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	5	100	0.01	2	0.0	$0.83	$63.65	$0.00	76.34
Storage	2	Incandescent: 60W A Lamp	Wall Switch	60	100	Fixture Replacement	No	2	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	9	100	0.08	12	0.0	$4.72	$127.30	$10.00	24.83
Men's Bathroom	1	Linear Fluorescent - T12: 8' T12 (75W) - 1L	Wall Switch	92	300	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	300	0.05	19	0.0	$7.78	$166.00	$0.00	21.33
Women's Bathroom	1	Linear Fluorescent - T12: 8' T12 (75W) - 1L	Wall Switch	92	300	Relamp & Reballast	No	1	LED - Linear Tubes: (1) 8' Lamp	Wall Switch	36	300	0.05	19	0.0	$7.78	$166.00	$0.00	21.33
Nurse Room	3	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	50	150	Relamp	Yes	3	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	105	0.09	19	0.0	$7.94	$260.60	$20.00	30.30
Ladies Room	2	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	50	150	Relamp	Yes	2	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	105	0.06	13	0.0	$5.29	$212.40	$20.00	36.34

	Existing Conditions					Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Fixture Recommendation	Add Controls?	Fixture Quantity	Fixture Description	Control System	Watts per Fixture	Annual Operating Hours	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Ladies Room	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	150	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	150	0.12	24	0.0	$9.87	$96.40	$0.00	9.77
Boiler Room	2	Halogen Incandescent: PAR30 60W	Wall Switch	60	150	Fixture Replacement	No	2	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	9	150	0.08	17	0.0	$7.09	$127.30	$10.00	16.55
Classroom1	4	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	50	150	Relamp & Reballast	Yes	4	LED - Linear Tubes: (2) 2' Lamps	Occupancy Sensor	17	105	0.12	26	0.0	$10.59	$544.00	$20.00	49.48
Classroom1	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	200	Relamp & Reballast	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	200	0.10	27	0.0	$10.93	$234.00	$0.00	21.41
Storage	2	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	50	150	Relamp	No	2	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	150	0.05	11	0.0	$4.59	$96.40	$0.00	21.02
Classroom2	1	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	50	150	Relamp	No	1	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	150	0.03	6	0.0	$2.29	$48.20	$0.00	21.02
Fellowship Storage	3	Linear Fluorescent - T12: 2' T12 (20W) - 2L	Wall Switch	50	100	Relamp	No	3	LED - Linear Tubes: (2) 2' Lamps	Wall Switch	17	100	0.08	11	0.0	$4.59	$144.60	$0.00	31.53
Fellowship Storage	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	100	Relamp	No	2	LED - Linear Tubes: (2) 4' Lamps	Wall Switch	29	100	0.10	13	0.0	$5.47	$117.00	$0.00	21.41
Basement Stairway	1	Halogen Incandescent: PAR30 60W	Wall Switch	60	100	Fixture Replacement	Yes	1	LED - Fixtures: Downlight Solid State Retrofit	Occupancy Sensor	9	70	0.04	6	0.0	$2.49	$179.65	$25.00	62.17
Basement Stairway	1	Exit Signs: Incandescent	Wall Switch	15	8,760	Fixture Replacement	No	1	LED Exit Signs: 2 W Lamp	Wall Switch	6	8,760	0.01	89	0.0	$36.52	$107.56	$0.00	2.95
Upstair Office	2	Linear Fluorescent - T12: 4' T12 (40W) - 2L	Wall Switch	88	400	Relamp & Reballast	Yes	2	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	280	0.11	61	0.0	$25.09	$350.00	$20.00	13.15
Upstair Office	1	Incandescent: 60W A Lamp	Wall Switch	60	400	Fixture Replacement	No	1	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	9	400	0.04	23	0.0	$9.45	$63.65	$5.00	6.21
Bathroom	1	Incandescent: Ceiling Mounted 60W A Lamp	Wall Switch	60	300	Fixture Replacement	No	1	LED - Fixtures: Downlight Solid State Retrofit	Wall Switch	9	300	0.04	17	0.0	$7.09	$63.65	$5.00	8.28

Motor Inventory & Recommendations

		Existing Conditions						Proposed Conditions				Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	Motor Quantity	Motor Application	HP Per Motor	Full Load Efficiency	VFD Control?	Annual Operating Hours	Install High Efficiency Motors?	Full Load Efficiency	Install VFDs?	Number of VFDs	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Roof Top	Bathroom	1	Exhaust Fan	0.3	52.0%	No	2,745	Yes	69.5%	No		0.07	186	0.0	$76.21	$442.55	$0.00	5.81
Mechanical Room	Boiler	1	Heating Hot Water Pump	0.1	56.0%	No	2,745	No	56.0%	No		0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Electric HVAC Inventory & Recommendations

		Existing Conditions				Proposed Conditions							Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Install High Efficiency System?	System Quantity	System Type	Cooling Capacity per Unit (Tons)	Heating Capacity per Unit (kBtu/hr)	Cooling Mode Efficiency (SEER/EER)	Heating Mode Efficiency (COP)	Install Dual Enthalpy Economizer?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Upstair Office	Office	1	Window AC	0.66		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Upstair Office	Office	1	Window AC	0.66		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Basement	Fellowship Room	1	Window AC	0.66		No							No	0.00	0	0.0	$0.00	$0.00	$0.00	0.00
Attic Floor	Sanctuary	2	Packaged AC	12.00		Yes	2	Packaged AC	12.00		14.00		Yes	3.58	7,402	0.0	$3,034.39	$35,252.40	$2,396.00	10.83

Fuel Heating Inventory & Recommendations

		Existing Conditions			Proposed Conditions					Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Output Capacity per Unit (MBh)	Install High Efficiency System?	System Quantity	System Type	Output Capacity per Unit (MBh)	Heating Efficiency	Heating Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Boiler Room	Building	1	Non-Condensing Hot Water Boiler	801.00	Yes	1	Non-Condensing Hot Water Boiler	801.00	85.00%	Et	0.00	0	10.4	$111.91	$17,970.62	$1,401.75	148.05

DHW Inventory & Recommendations

		Existing Conditions		Proposed Conditions						Energy Impact & Financial Analysis						
Location	Area(s)/System(s) Served	System Quantity	System Type	Replace?	System Quantity	System Type	Fuel Type	System Efficiency	Efficiency Units	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	Building	1	Storage Tank Water Heater (≤ 50 Gal)	No						0.00	0	0.0	$0.00	$0.00	$0.00	0.00

Low-Flow Device Recommendations

	Recommedation Inputs				Energy Impact & Financial Analysis						
Location	Device Quantity	Device Type	Existing Flow Rate (gpm)	Proposed Flow Rate (gpm)	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Faucet Aerator (Kitchen)	2.50	2.20	0.00	0	1.7	$19.09	$7.17	$0.00	0.38
Men's Bathroom	2	Faucet Aerator (Lavatory)	1.50	1.00	0.00	0	5.7	$63.63	$14.34	$0.00	0.23
Men's Bathroom	1	Pre-Rinse Spray Valve	1.50	1.15	0.00	0	16.7	$187.07	$124.35	$0.00	0.66
Women's Bathroom	2	Faucet Aerator (Lavatory)	1.50	1.00	0.00	0	5.7	$63.63	$14.34	$0.00	0.23
Men's Bathroom	2	Pre-Rinse Spray Valve	1.50	1.15	0.00	0	33.4	$374.13	$248.70	$0.00	0.66
Upstair Office Bath.	1	Faucet Aerator (Lavatory)	1.50	1.00	0.00	0	2.8	$31.81	$7.17	$0.00	0.23
Upstair Office Bath.	1	Pre-Rinse Spray Valve	1.50	1.15	0.00	0	16.7	$187.07	$124.35	$0.00	0.66

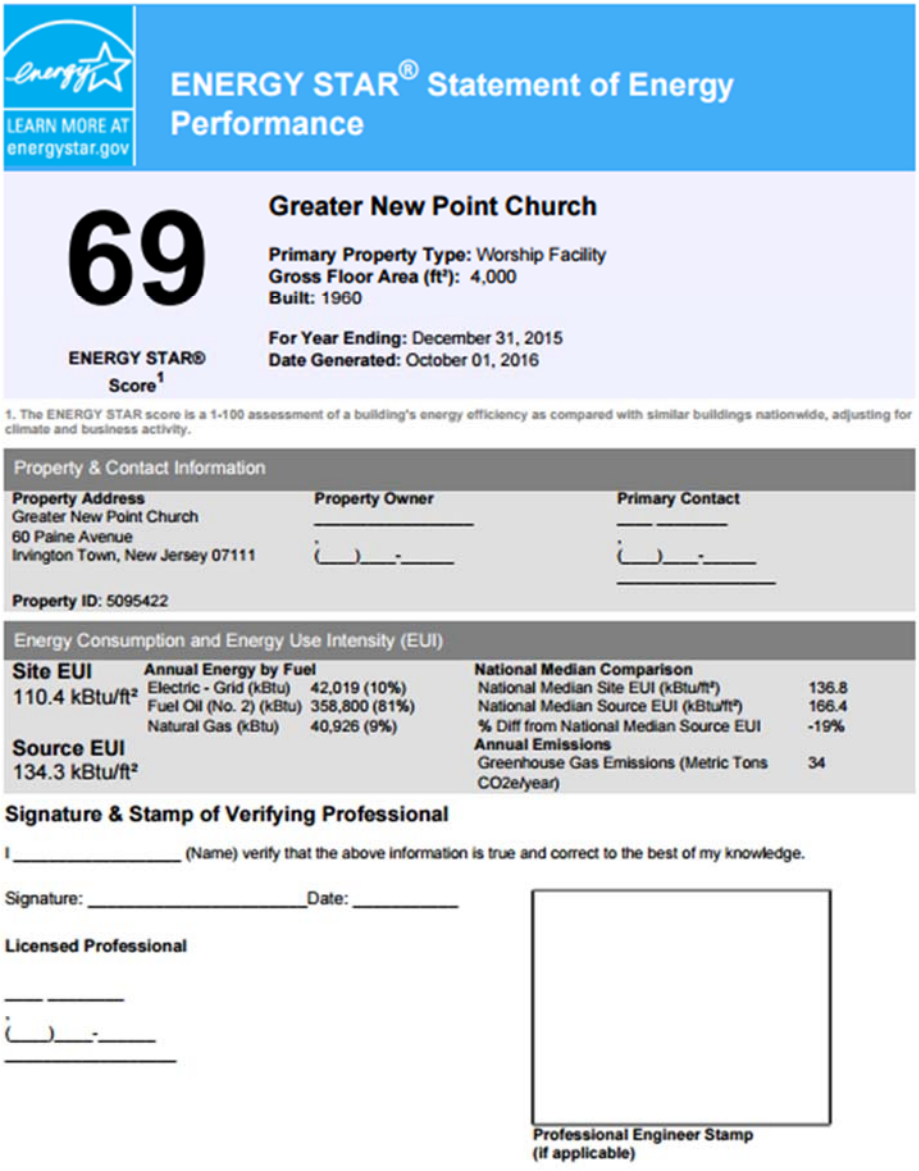
Cooking Equipment Inventory & Recommendations

	Existing Conditions			Proposed Conditions	Energy Impact & Financial Analysis						
Location	Quantity	Equipment Type	High Efficiency Equipement?	Install High Efficiency Equipment?	Total Peak kW Savings	Total Annual kWh Savings	Total Annual MMBtu Savings	Total Annual Energy Cost Savings	Total Installation Cost	Total Incentives	Simple Payback w/ Incentives in Years
Kitchen	1	Gas Combination Oven/Steam Cooker (<15 Pans)	Yes	No	0.00	0	0.0	$0.00	$16,598.81	$750.00	0.00

Plug Load Inventory

	Existing Conditions			
Location	Quantity	Equipment Description	Energy Rate (W)	ENERGY STAR Qualified?
Kitchen	1	Microwave	800.0	No
Kitchen	1	Microwave	800.0	No
Office	1	Multifuction Printer	760.0	Yes
Office	1	Printer	46.0	No
Office	1	Table Fan	15.0	No

Appendix B: ENERGY STAR® Statement of Energy Performance



ENERGY STAR® Statement of Energy Performance

LEARN MORE AT energystar.gov

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ENERGY STAR® Score[1]

Greater New Point Church

Primary Property Type: Worship Facility
Gross Floor Area (ft²): 4,000
Built: 1960

For Year Ending: December 31, 2015
Date Generated: October 01, 2016

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Greater New Point Church 60 Paine Avenue Irvington Town, New Jersey 07111	_____ . (___)___-_____	___ _____ . (___)___-_____ _____

Property ID: 5095422

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
110.4 kBtu/ft²

Source EUI
134.3 kBtu/ft²

Annual Energy by Fuel	
Electric - Grid (kBtu)	42,019 (10%)
Fuel Oil (No. 2) (kBtu)	358,800 (81%)
Natural Gas (kBtu)	40,926 (9%)

National Median Comparison	
National Median Site EUI (kBtu/ft²)	136.8
National Median Source EUI (kBtu/ft²)	166.4
% Diff from National Median Source EUI	-19%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	34

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Licensed Professional

___ _____
.
(___)___-_____
_____

Professional Engineer Stamp (if applicable)