Energy Efficiency Stakeholder Meeting

September 21, 2023

Agenda

1. Re-cap of Last Meeting
2. New Jersey Energy Efficiency Programs
3. Energy Efficiency Updates
    - NJCEP Updates
        - New Construction Program Update
        - Benchmarking Update
    - Utility Updates
    - Regulatory Updates
4. Guest Presentation: Local Government Energy Audit (LGEA) Program
5. General Q&A
6. Items of Interest
7. Next Meetings

Recap of Last Month

August Meeting Recap

What we covered:

- ✓ NJCEP and Utility Program updates
  - ✓ NJCEP New Construction Program update
  - ✓ Benchmarking Update
  - ✓ FY24 Compliance Filing
  - ✓ Triennium 2 Framework
- ✓ Guest Presenter: Federal EE Funding Overview
- ✓ Q&A

New Jersey Energy Efficiency Programs

New Jersey Energy Efficiency Programs

www.NJCleanEnergy.com/TRANSITION

NJBPU and NJCEP Administered Programs

- New Construction (residential, commercial, industrial, government)
- Large Energy Users
- Energy Savings Improvement Program (financing)
- State Facilities Initiative*
- Local Government Energy Audits
- Combined Heat & Power & Fuel Cells

*State facilities are also eligible for utility programs

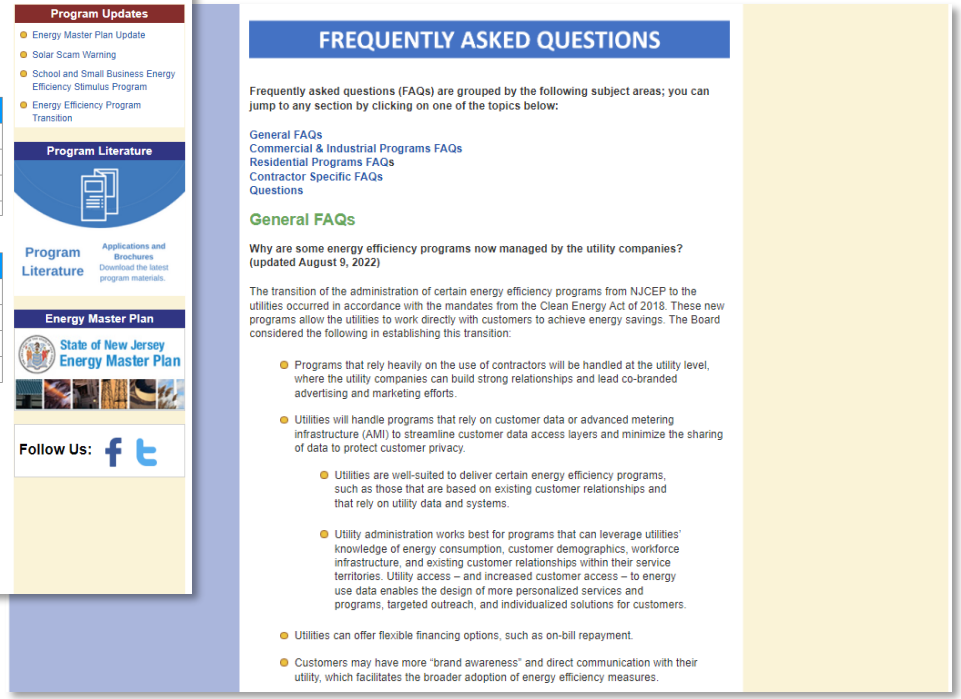
Utility Administered Programs

- Existing buildings (residential, commercial, industrial, government)
- Efficient Products
  - Lighting & Marketplace
  - HVAC
  - Appliance Rebates
  - Appliance Recycling

NJBPU and Utility Co-Administered Programs

Energy Efficiency Program Information

www.NJCleanEnergy.com/TRANSITION



FREQUENTLY ASKED QUESTIONS

Frequently asked questions (FAQs) are grouped by the following subject areas; you can jump to any section by clicking on one of the topics below:

General FAQs
Commercial & Industrial Programs FAQs
Residential Programs FAQs
Contractor Specific FAQs
Questions

General FAQs

Why are some energy efficiency programs now managed by the utility companies? (updated August 9, 2022)

The transition of the administration of certain energy efficiency programs from NJCEP to the utilities occurred in accordance with the mandates from the Clean Energy Act of 2018. These new programs allow the utilities to work directly with customers to achieve energy savings. The Board considered the following in establishing this transition:

- Programs that rely heavily on the use of contractors will be handled at the utility level, where the utility companies can build strong relationships and lead co-branded advertising and marketing efforts.
- Utilities will handle programs that rely on customer data or advanced metering infrastructure (AMI) to streamline customer data access layers and minimize the sharing of data to protect customer privacy.
  - Utilities are well-suited to deliver certain energy efficiency programs, such as those that are based on existing customer relationships and that rely on utility data and systems.
  - Utility administration works best for programs that can leverage utilities' knowledge of energy consumption, customer demographics, workforce infrastructure, and existing customer relationships within their service territories. Utility access – and increased customer access – to energy use data enables the design of more personalized services and programs, targeted outreach, and individualized solutions for customers.
- Utilities can offer flexible financing options, such as on-bill repayment.
- Customers may have more "brand awareness" and direct communication with their utility, which facilitates the broader adoption of energy efficiency measures.

Energy Efficiency Updates:

New Jersey's Clean Energy Program

More NJCEP Information

Clean Energy Program Filings:

www.NJCleanEnergy.com/FILINGS

Clean Energy Program Monthly Progress to Goal Report

www.NJCleanEnergy.com/EE - Meeting Materials Archive

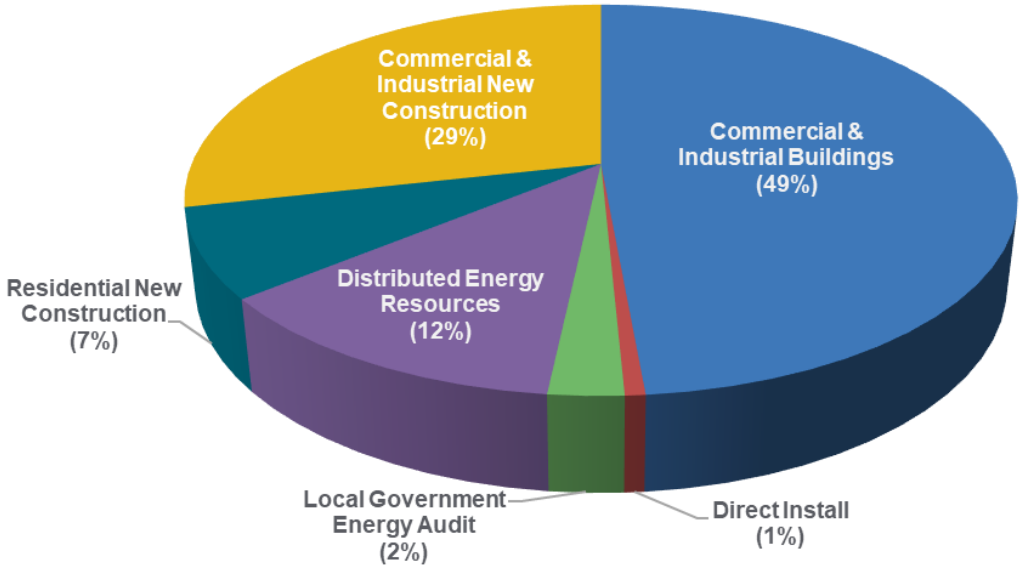
New in FY24:

Progress to Goals Report is posted with post-EE Stakeholder Meeting resources after this meeting

Budget Break-down by Program

FY24 TRC Managed Programs

Incentive Budget: $148,502,129



New Jersey's cleanenergy program

Energy Efficiency Programs FY24

NJCEP/TRC Managed

Closed

- Residential Products & HVAC
- Residential Existing Homes
- Direct Install

Closing Out

- C&I Buildings (existing buildings)
- SmartStart Retrofit
- Pay for Performance Existing Buildings
- School & Small Business Stimulus Program (federally funded)

NJCEP/TRC Managed

Open

- New Construction

  Was: Residential New Construction, SmartStart New Construction, Pay for Performance New Construction, Customer Tailored Energy Efficiency Pilot New Construction

- Large Energy Users
- Local Government Energy Audit
- Distributed Energy Resources

BPU/Utility Managed

Comfort Partners

New Jersey's cleanenergy program

New Construction Program & Garden State Challenge Pilot Update

Next Steps

- Finalize program design with Board Staff
- Release for public comment as Compliance Filing update

Benchmarking Update

- Clean Energy Benchmarking Resources: https://njcleanenergy.com/commercial-industrial/programs/cea-benchmarking

- As of August 1st, utilities regulated by the BPU have implemented aggregated building-level data services
  - These utilities provide building owners their building energy and water data for reporting
  - For a list of utilities who provide data services: https://njcleanenergy.com/commercial-industrial/programs/energy-water-benchmarking/utility-data

- BPU is currently experiencing a high volume of inquiries
  - In process of onboarding a customer relationship management vendor for a dedicated help desk and assistance with inquiries

- The submission deadline is October 1, 2023
  - Building owners will have a 90-day grace period after the October 1st date to report

Energy Efficiency Updates:

New Jersey Utilities

Utility Updates

NJ Energy Efficiency Stakeholder Meeting

September 21, 2023

atlantic city electric™ AN EXELON COMPANY

ELIZABETHTOWN GAS

Jersey Central Power & Light A FirstEnergy Company

New Jersey Natural Gas

PSE&G

Rockland Electric Company

SOUTH JERSEY GAS®

Updates

- **All utilities working to finalize their filings for the Second Triennium**
- **PSE&G hosting a Fall Trade Ally Networking Event**
  - October 19 from 8 am – 10 am at Pines Manor, Edison NJ
  - Open to participating and prospective HVAC, HPwES and Home Weatherization contractors
  - Prospective contractors should email us at PSEGHomeEnergy@icf.com
- **ACE HVAC financing is currently on hold**
  - All projects in the pipeline are being paid out but we are uncertain when financing will resume
- **Appliance Recycling Program has been suspended in PSE&G, JCP&L, ACE and RECO service areas**
  - Customers should contact their local waste management facility for instruction on how to properly recycle appliances responsibly
- **SJG's Energy Efficient Products Program Update**
  - With BPU approval, effective September 7, 2023, SJG has updated the Energy Efficient Products program (HVAC) to offer incentives and on-bill repayment (OBR) for natural gas high efficiency measures
  - No longer accepting incentives or OBR for electric measures
  - Contractors were notified of the change
- **NJNG Outreach events**
  - Energy Assistance Days (23 events throughout Sept. and Oct.) – Community focused events to help customers enroll in energy assistance programs and potentially sign up for Comfort Partners, Moderate Income Weatherization, or Quick Home Energy Checks ups. Will also promote our Workforce Development program.
  - Energy Efficiency Day (Oct. 4) – Energy-efficiency programs will be promoted day-of at two local Home Depot locations, as well as on-site at the NJNG repayment centers and primary office in Wall Twp. to celebrate energy-efficiency with community members, customers and employees.

Updates (cont.)

- **Rockland Electric hosting a Fall Trade Ally and Energy Efficiency Financing Event**
  - October 10th 8:00AM – 10:00AM at the Sheraton Crossroads, Mahwah, NJ
  - Open to participating and prospective HVAC, HPwES, Home Weatherization, and Commercial contractors
  - Prospective contractors should email Kyle Haddock at haddockk@oru.com for this event and be added to our communication list for future residential and commercial trade ally events.

Thank You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ELIZABETHTOWN GAS


Jersey Central Power & Light
A FirstEnergy Company


New Jersey Natural Gas


PSE&G


Rockland Electric Company


SOUTH JERSEY GAS

Energy Efficiency Updates:

Regulatory – State & Federal

Guest Presentation:

Local Government Energy Audit Program (LGEA)

Sarah Walters – LGEA Project Manager, TRC

AGENDA

- Energy Audit Overview
- LGEA Process
- LGEA Scope & Deliverable

Energy Audit Overview

Purpose of an Energy Audit

- An energy audit (or energy survey) is a study of how energy is used in a facility and an analysis of what improvements could be made to reduce energy consumptions & costs
- Energy management is one of the most promising profit improvement / cost reduction strategies available today

Main Audit Points:

1. Document energy use - where, when, how, why
2. Identify opportunities to improve efficiency
3. Recommended list of Energy Conservation Measures (ECMs) and Associated Energy Savings
4. Assessment of financial feasibility

Energy Audit Overview

Goals of an Energy Audit

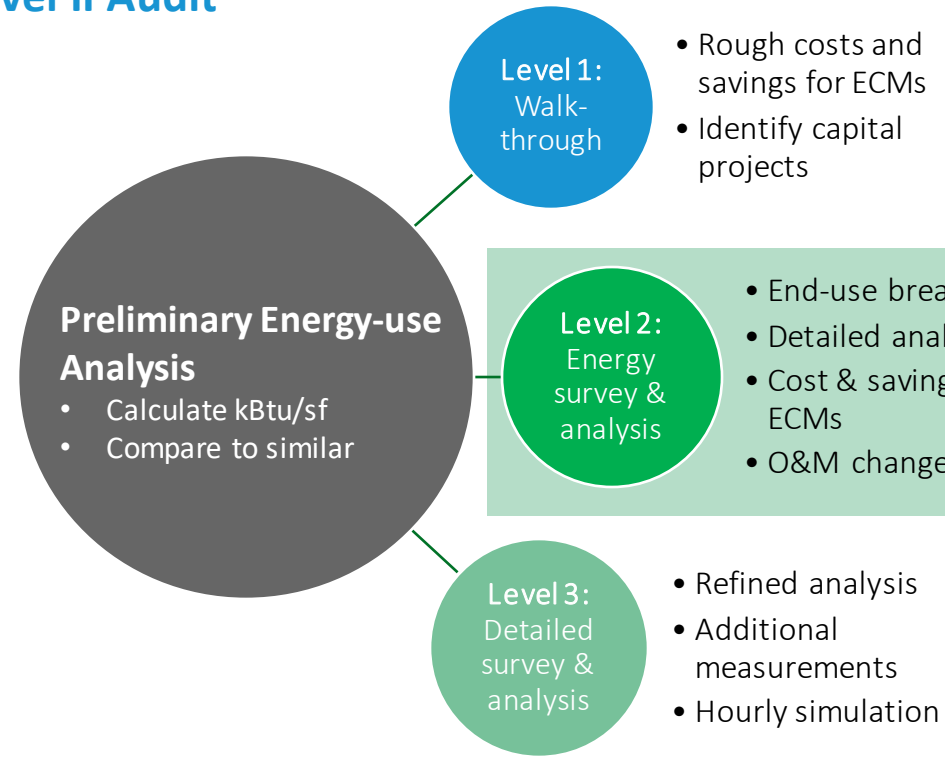
- Clearly identify types and costs of energy use
- Understand how energy is being used and possibly wasted
- Identify and analyze more cost-effective ways of using energy
- Improved operational techniques
- New energy efficient equipment
- New processes or new technology
- Perform an economic analysis on those alternatives and determine which are cost-effective

Main Goal:

Provide adequate information for owner to act upon recommendations for the majority of energy conservation measures

ASHRAE Audit Levels

LGEA = ASHRAE Level II Audit



New Jersey's cleanenergy program

ASHRAE LEVEL II

LGEA = ASHRAE Level II Audit

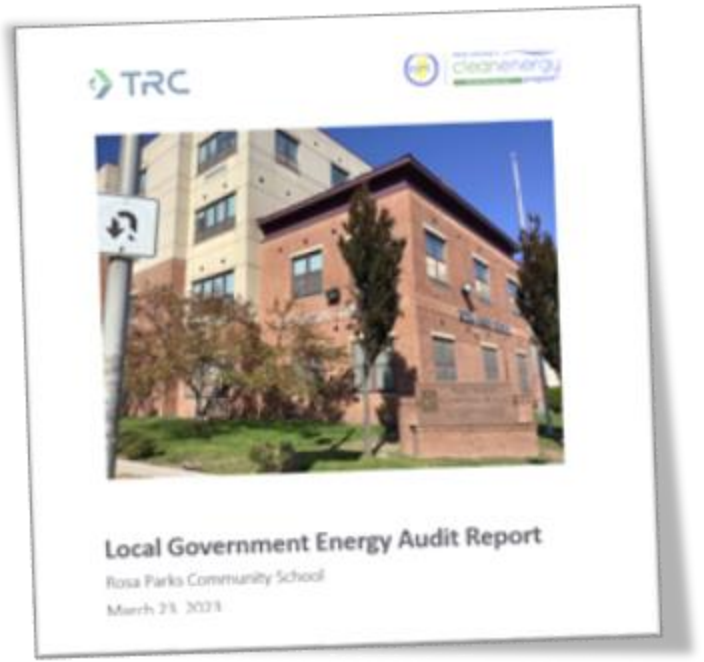
- Preliminary Energy-Use Analysis completed
- Identify and provide savings and cost analyses for all practical energy conservation measures (ECMs)
- Evaluate equipment replacements per the protocol
- Provide a list of potential capital improvements that require more thorough data collection and analysis
- Develop a breakdown of energy end uses
- Provide an estimate of potential incentives available for ECMs
- Provide a high-level screening for the potential for on site energy generation
- Present energy and economic results

LGEA Process

- Application Approval
- Initial Call
- Facility Interviews
- Audit
- Benchmarking & Analysis
- Draft Reports
- LGEA Presentation
- Final Reports

LGEA Scope

- Utility & Benchmarking Analysis
- Energy Audit
- Facility & Existing Conditions
- Energy Conservation Measures (ECMs)
- Potential Capital Improvements
- EV Charging Station Potential
- Energy Efficient Best Practices
- Presentation to Review Findings
- Additional Scope Options



LGEA Scope

Utility Analysis – Required before LGEA Approval

Data Collected:

- **Utility data** collected for at least 12 months (LGEA requires 14 months)
- **Building data** includes size, facility type, operation, and % conditioned

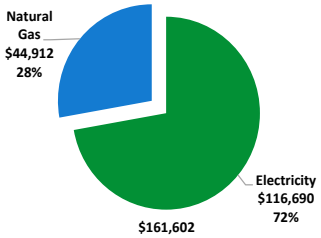
Analysis:

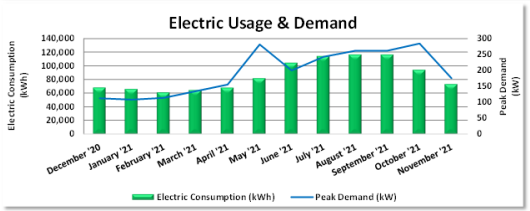
- Preliminary **Energy-Use Analysis** required for all energy audit analyses (Level I, II, or III)
- **Utility Analysis** performed on ALL major fuel types
- **Intensities** are calculated for indication of the level of opportunity for energy savings and ECMs
  - Cost index ($/sq ft)
  - Energy intensities (kWh/sq ft and therm/sq ft)

LGEA Scope & Deliverable

Utility Analysis – Required before LGEA Approval

Utility Summary		
Fuel	**Usage**	**Cost**
Electricity	1,028,033 kWh	$116,690
Natural Gas	45,619 Therms	$44,912
Total		**$161,602**



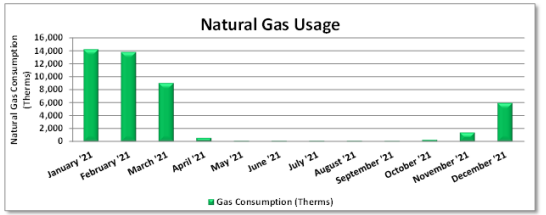


Electric Billing Data

Period Ending	Days in Period	Electric Usage (kWh)	Demand (kW)	Demand Cost	Total Electric Cost
12/30/20	30	68,266	112	$422	$8,336
1/30/21	31	66,068	108	$406	$7,901
2/28/21	29	60,951	113	$427	$7,570
3/30/21	30	64,448	134	$511	$8,378
4/30/21	31	67,945	156	$585	$8,423
5/31/21	31	81,764	281	$1,065	$9,427
6/30/21	30	104,304	200	$2,556	$12,056
7/30/21	30	114,062	243	$3,102	$13,211
8/30/21	31	116,505	262	$3,350	$12,367
9/30/21	31	116,505	262	$3,350	$12,367
10/31/21	31	94,110	285	$1,077	$9,096
11/30/21	30	73,105	176	$664	$7,559
Totals	**365**	**1,028,033**	**285**	**$17,515**	**$116,690**
Annual	**365**	**1,028,033**	**285**	**$17,515**	**$116,690**

Notes:

- Peak demand of 285 kW occurred in October 2021.
- Average demand over the past 12 months was 194 kW.
- The average electric cost over the past 12 months was $0.114/kWh, which is the blended rate that includes energy supply, distribution, demand, and other charges. This report uses this blended rate to estimate energy cost savings.



Gas Billing Data

Period Ending	Days in Period	Natural Gas Usage (Therms)	Natural Gas Cost
1/20/21	34	14,226	$10,772
2/17/21	28	13,796	$11,474
3/19/21	30	9,028	$8,460
4/20/21	32	559	$525
5/19/21	29	92	$210
6/17/21	29	88	$210
7/20/21	33	83	$198
8/18/21	29	78	$213
9/17/21	30	65	$207
10/18/21	31	265	$415
11/16/21	29	1,389	$3,761
12/17/21	31	5,950	$8,468
Totals	**365**	**45,619**	**$44,912**
Annual	**365**	**45,619**	**$44,912**

Notes:

- The average gas cost for the past 12 months is $0.984/therm, which is the blended rate used throughout the analysis.
- Summer gas consumption can be attributed to domestic hot water and cooking equipment usage.

New Jersey's cleanenergy program

LGEA Scope & Deliverable

Benchmarking Analysis

Your building was benchmarked using the United States Environmental Protection Agency's (EPA) *Portfolio Manager®* software. Benchmarking compares your building's energy use to that of similar buildings across the country, while neutralizing variations due to location, occupancy, and operating hours. Some building types can be scored with a 1-100 ranking of a building's energy performance relative to the national building market. A score of 50 represents the national average and a score of 100 is best.

This ENERGY STAR benchmarking score provides a comprehensive snapshot of your building's energy performance. It assesses the building's physical assets, operations, and occupant behavior, which is compiled into a quick and easy-to-understand score.

Benchmarking Score	23

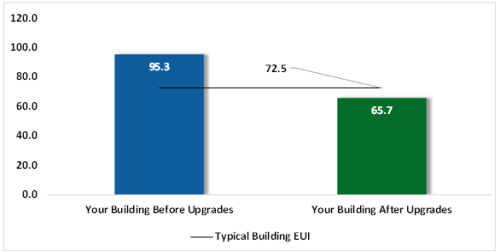


Figure 5 - Energy Use Intensity Comparison[3]

This building performs at, or below the national average. This report contains suggestions about how to improve building performance and reduce energy costs.

Energy use intensity (EUI) measures energy consumption per square foot and is the standard metric for comparing buildings' energy performance. A lower EUI means better performance and less energy consumed. Several factors can cause a building to vary from typical energy usage. 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 and the benchmarking score.

LEARN MORE AT energystar.gov

ENERGY STAR® Statement of Energy Performance

23

ENERGY STAR® Score[1]

Rosa Parks Community School

Primary Property Type: K-12 School
Gross Floor Area (ft²): 84,700
Built: 1880

For Year Ending: November 30, 2021
Date Generated: November 14, 2022

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
Rosa Parks Community School 369 Main Street Orange, New Jersey 07048	Orange Board of Education 451 Lincoln Avenue Orange, NJ 07050 (973) 677-6000	Jason E. Ballard 451 Lincoln Avenue Orange, NJ 07050 (973) 677-6000 ballarja@orange.k12.nj.us

Property ID: 21694612

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
95.7 kBtu/ft²

Source EUI
172.8 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	4,609,598 (57%)
Electric Grid (kBtu)	3,499,884 (43%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	72.5
National Median Source EUI (kBtu/ft²)	131
% Diff from National Median Source EUI	32%
Annual Emissions	
Greenhouse Gas Emissions (Metric Tons CO2e/year)	628

Signature & Stamp of Verifying Professional

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

LP Signature: _____ Date: _____

Licensed Professional

___ _____
,
(___)___-____
_____

Professional Engineer or Registered Architect Stamp (if applicable)

Site EUI
95.7 kBtu/ft²

Source EUI
172.8 kBtu/ft²

National Median Comparison

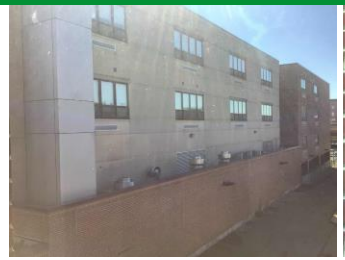
National Median Site EUI (kBtu/ft²)	72.5
National Median Source EUI (kBtu/ft²)	131
% Diff from National Median Source EUI	32%

LGEA Scope & Deliverable

Facility & Existing Conditions

The building will be characterized by usage, occupancy profiles, size, and type. All energy systems and equipment will be described in detail including capacity, condition, efficiency, operation, and remaining useful life. This information is organized by system type and outline the energy baseline.

- Building Envelope
- Lighting Systems
- Air Handling Systems
- Heating Hot Water Systems
- Chilled Water Systems
- Domestic Hot Water Systems
- Food Service Equipment
- Refrigeration
- Building Automation System (BAS)
- Plug Loads
- Water Using Systems
- Etc.








LGEA Scope & Deliverable

Energy Conservation Measures (ECMs)

The energy savings opportunities will be described in detail within the report. Each ECM will include an energy and economic analysis. Results include estimated material and labor costs, energy savings, annual energy cost savings, and simple payback periods.

Lighting
- Install LED Fixtures
- Retrofit Fluorescent Fixtures w/ LED Lamps & Drivers
- Retrofit Fixtures with LED Lamps
- Install LED Exit Signs

Lighting Controls
- Install Occupancy Sensor Lighting Controls
- Install Daylight Dimming/Photocell Controls
- Install High/Low Lighting Controls

Motors
- Premium Efficiency Motors

Variable Frequency Drives
- Install VFD on Variable Air Volume (VAV) Fans
- Install VFDs on Constant Volume (CV) Fans
- Install VFDs on Chilled/Heating Water Pumps
- Install VFDs on Cooling Tower Fans
- Install Boiler Draft Fan VFDs
- Install VFDs on Boiler Feedwater Pumps
- Install VFDs on Air Compressors
- Install VFDs on Kitchen Hood Fan Motors
- Install VFDs on Condensate Pumps
- Install on WSHP Circulation Pump
- Install VFDs on Water Supply Pump
- Install VFD on Process/Pool Filtration Pumps
- Install VFDs on Process Blowers

Unitary HVAC
- Install High Efficiency Air Conditioning Units
- Install High Efficiency Heat Pumps
- Install High Efficiency PTAC/PTHP

Electric Chillers
- Install High Efficiency Chillers

Gas-Fired Heating
- Install High Efficiency Hot Water Boilers
- Install High Efficiency Steam Boilers
- Install High Efficiency Unit Heaters
- Install Infrared Heater

HVAC Improvements
- Install Programmable Thermostats
- Install Occupancy-Controlled Thermostats
- Implemented Demand Control Ventilation (DCV)
- Install Pipe Insulation
- Install Duct Insulation

Domestic Water Heating
- Install High Efficiency Gas-Fired Water Heater
- Install Tankless Water Heater
- Install Gas-Fired Booster Water Heater
- Install Low-Flow Devices

Food Service & Refrigeration Measures
- Food Service Equipment Replacement
- Dishwater Replacement
- Refrigerator/Freezer Case Electrically Commutated Motors
- Walk-In Cooler or Freezer Controls
- Replace Refrigeration Equipment
- Vending Machine Control

Custom Measures
- Optimize HVAC Schedule
- Installation of a Building Automation System
- Replace Gas-Fired Water Heater with Heat Pump Water Heater

LGEA Scope & Deliverable – ECM Summary Table

#	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings ($)	Estimated M&L Cost ($)	Estimated Incentive ($)*	Estimated Net M&L Cost ($)	Simple Payback Period (yrs)**	CO_2e Emissions Reduction (lbs)
Lighting Upgrades			**259,358**	**44.4**	**-48**	**$28,970**	**$89,917**	**$19,792**	**$70,125**	**2.4**	**255,588**
ECM 1	Install LED Fixtures	Yes	69,542	7.8	-9	$7,808	$27,311	$3,050	$24,261	3.1	69,009
ECM 2	Retrofit Fixtures with LED Lamps	Yes	189,816	36.6	-39	$21,162	$62,606	$16,742	$45,864	2.2	186,579
Lighting Control Measures			**75,316**	**12.5**	**-16**	**$8,394**	**$39,587**	**$11,960**	**$27,627**	**3.3**	**73,999**
ECM 3	Install Occupancy Sensor Lighting Controls	Yes	66,140	10.9	-14	$7,371	$29,012	$3,700	$25,312	3.4	64,984
ECM 4	Install High/Low Lighting Controls	Yes	9,176	1.6	-2	$1,023	$10,575	$8,260	$2,315	2.3	9,015
Variable Frequency Drive (VFD) Measures			**72,635**	**19.1**	**78**	**$9,015**	**$67,836**	**$8,875**	**$58,961**	**6.5**	**82,299**
ECM 5	Install VFDs on Constant Volume (CV) Fans	Yes	45,873	15.9	0	$5,207	$39,323	$6,300	$33,023	6.3	46,194
ECM 6	Install VFDs on Heating Water Pumps	Yes	20,979	3.1	0	$2,381	$18,354	$2,400	$15,954	6.7	21,126
ECM 7	Install VFDs on Kitchen Hood Fan Motors	Yes	5,783	0.0	78	$1,426	$10,159	$175	$9,984	7.0	14,980
Unitary HVAC Measures			**2,955**	**2.5**	**0**	**$335**	**$23,177**	**$1,103**	**$22,074**	**65.8**	**2,976**
ECM 8	Install High Efficiency Air Conditioning Units	No	2,955	2.5	0	$335	$23,177	$1,103	$22,074	65.8	2,976
Gas Heating (HVAC/Process) Replacement			**0**	**0.0**	**570**	**$5,615**	**$211,409**	**$14,362**	**$197,048**	**35.1**	**66,778**
ECM 9	Install High Efficiency Hot Water Boilers	No	0	0.0	570	$5,615	$211,409	$14,362	$197,048	35.1	66,778
Domestic Water Heating Upgrade			**0**	**0.0**	**42**	**$409**	**$8,974**	**$937**	**$8,037**	**19.6**	**4,868**
ECM 10	Install High Efficiency Gas-Fired Water Heater	No	0	0.0	10	$96	$8,493	$697	$7,797	80.9	1,146
ECM 11	Install Low-Flow DHW Devices	Yes	0	0.0	32	$313	$480	$240	$240	0.8	3,722
Food Service & Refrigeration Measures			**4,433**	**0.3**	**0**	**$503**	**$5,007**	**$370**	**$4,637**	**9.2**	**4,464**
ECM 12	Refrigerator/Freezer Case Electrically Commutated Motors	Yes	785	0.1	0	$89	$910	$120	$790	8.9	791
ECM 13	Refrigeration Controls	No	2,035	0.0	0	$231	$3,867	$200	$3,667	15.9	2,050
ECM 14	Vending Machine Control	Yes	1,612	0.2	0	$183	$230	$50	$180	1.0	1,623
Custom Measures			**39,082**	**0.0**	**326**	**$7,650**	**$127,050**	**$0**	**$127,050**	**16.6**	**77,573**
ECM 15	Upgrade/Replace Energy Management System	No	39,082	0.0	326	$7,650	$127,050	$0	$127,050	16.6	77,573
TOTALS (COST EFFECTIVE MEASURES)			**409,707**	**76.3**	**47**	**$46,963**	**$198,959**	**$41,037**	**$157,922**	**3.4**	**418,022**
TOTALS (ALL MEASURES)			**453,779**	**78.8**	**953**	**$60,891**	**$572,955**	**$57,398**	**$515,558**	**8.5**	**568,543**

* - All incentives presented in this table are included as placeholders for planning purposes and are based on previously run state rebate programs. Contact your utility provider for details on current programs.

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

LGEA Scope & Deliverable

Potential Capital Improvements

- Retro-Commissioning Study
- Install/Upgrade/Replace Building Automation System
- Electric Sub Metering
- Ozone Laundry Systems
- Pool Heating System Upgrades
- Eliminate Oversized Domestic Hot Water Heating Systems
- Heating System Conversion from Steam to Hot Water
- Replace Fuel Oil Fired Equipment with Natural Gas Equipment
- Upgrade to a Heat Pump System
- Revolving Doors
- Window Replacements
- Disaggregate Boiler System
- VRF Systems
- Replace Smooth V-Belts with Notched or Synchronous Belts
- Variable Frequency Drives to Control Fixed Head Pump Motors
- High Speed Insulated Overhead Doors
- Install High Efficiency Energy Recovery Units (ERUs)
- Implement Data Center Energy Efficiency Measures
- Building Insulation
- Replacing/Repairing Built-up Air Handler

LGEA Scope & Deliverable

Distributed Energy Potential

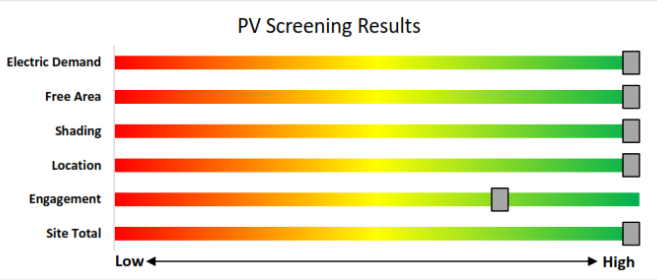
6.1 Solar Photovoltaic

Photovoltaic (PV) panels convert sunlight into electricity. Individual panels are combined into an array that produces direct current (DC) electricity. The DC current is converted to alternating current (AC) through an inverter. The inverter is then connected to the building's electrical distribution system.

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

The amount of free area, ease of installation (location), and the lack of shading elements contribute to the high potential. A PV 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.

The graphic below displays the results of the PV potential screening conducted as a part of this audit. The position of each slider indicates the potential (potential increases to the right) that each factor contributes to the overall site potential.



Potential	High	
System Potential	107	kW DC STC
Electric Generation	127,477	kWh/yr
Displaced Cost	$14,470	/yr
Installed Cost	$278,200	

Figure 8 - Photovoltaic Screening

6.2 Combined Heat and Power

Combined heat and power (CHP) generates electricity at the facility and puts waste heat energy to good use. Common types of CHP systems are reciprocating engines, microturbines, fuel cells, backpressure steam turbines, and (at large facilities) gas turbines.

CHP systems typically produce a portion of the electric power used on-site, with the balance of electric power needs supplied by the local utility company. The heat is used to supplement (or replace) existing boilers and provide space heating and/or domestic hot water heating. Waste heat can also be routed through absorption chillers for space cooling.

The key criteria used for screening is the amount of time that the CHP system would operate at full load and the facility's ability to use the recovered heat. Facilities with a continuous need 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 no potential for installing a cost-effective CHP system.

Based on a preliminary analysis, the facility does not appear to meet the minimum requirements for a cost-effective CHP installation. The lack of gas service, low or infrequent thermal load, and lack of space for siting the equipment are the most significant factors contributing to the lack of CHP potential.

The graphic below displays the results of the CHP potential screening conducted as a part of this audit. The position of each slider indicates the potential (potential increases to the right) that each factor contributes to the overall site potential.

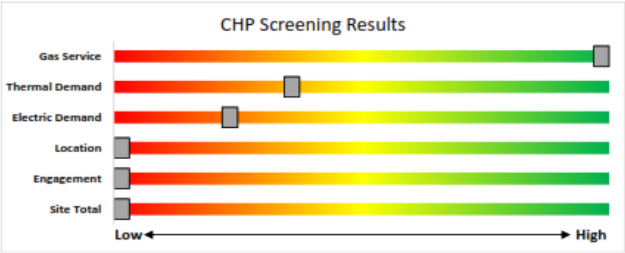
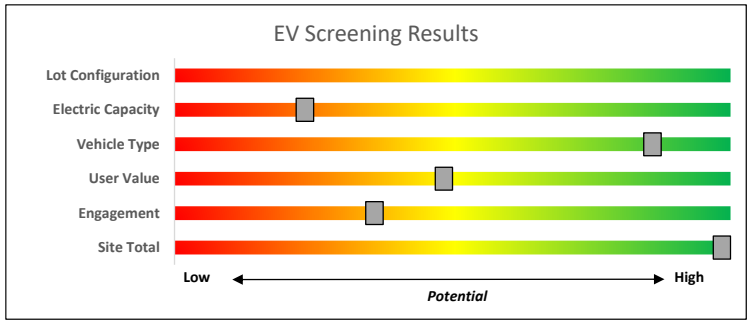
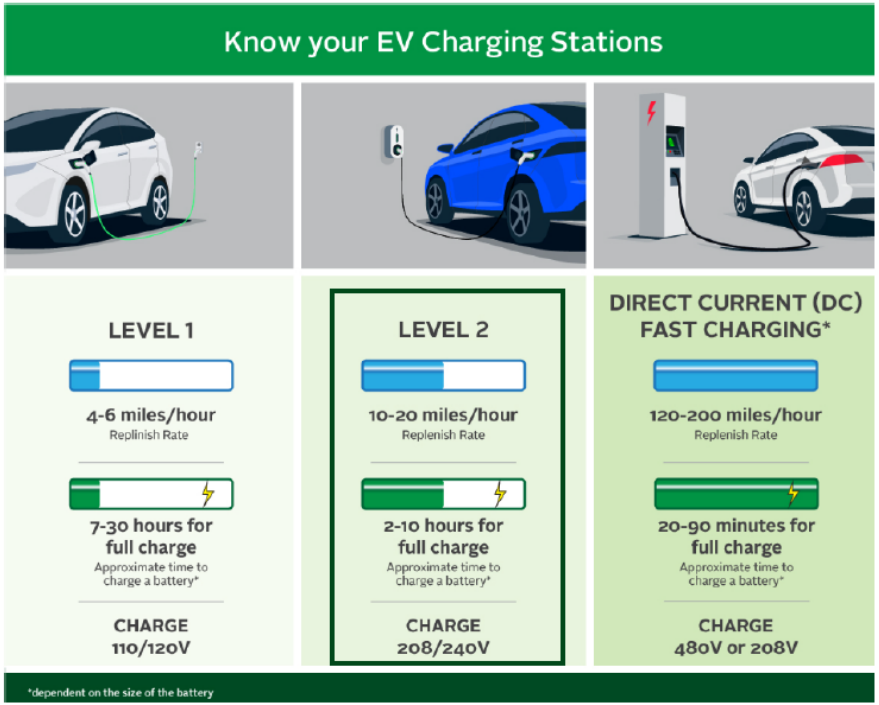


Figure 9 - Combined Heat and Power Screening

LGEA Scope & Deliverable

EV Charging Station Screening





LGEA Scope & Deliverable – Line by Line

	Existing Conditions						Proposed Conditions							Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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	Estimated Mtl. Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Cafeteria	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Cafeteria	10	Linear Fluorescent - T8: 4' T8 (32W) - 2.	Wall Switch	S	62	3,500	2, 3	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,415	0.3	1,617	0	$180	$635	$135	2.8
Cafeteria	40	Linear Fluorescent - T8: 4' T8 (32W) - 3.	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	40	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	1.8	9,700	-2	$1,081	$3,001	$705	2.1
Classroom 102	11	Linear Fluorescent - T8: 4' T8 (32W) - 3.	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	11	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.5	2,667	-1	$297	$872	$200	2.3
Classroom 103	11	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	11	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,133	-1	$349	$1,073	$255	2.3
Classroom 104	11	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	11	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,133	-1	$349	$1,073	$255	2.3
Classroom 106	6	Linear Fluorescent - T8: 4' T8 (32W) - 3.	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.3	1,455	0	$162	$599	$135	2.9
Classroom 401	9	Linear Fluorescent - T8: 4' T8 (32W) - 3.	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.4	2,182	0	$243	$763	$180	2.4
Classroom 402	12	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
Classroom 404	12	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
Classroom 406	12	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
Classroom 407	12	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
Classroom 408	12	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
Classroom 410	12	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
Classroom 411	16	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	16	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.9	4,557	-1	$508	$1,708	$390	2.6
Classroom 412	12	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
Classroom 413	12	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
Classroom 414	19	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	19	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	1.0	5,412	-1	$603	$1,928	$450	2.4
Classroom 415	12	Linear Fluorescent - T8: 4' T8 (32W) - 4.	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
Classroom 416	20	Linear Fluorescent - T8: 4' T8 (32W) - 2.	Wall Switch	S	62	3,500	2, 3	Relamp	Yes	20	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,415	0.6	3,233	-1	$360	$1,270	$290	2.8
Classroom 417	14	Linear Fluorescent - T8: 4' T8 (32W) - 3.	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.6	3,395	-1	$378	$1,037	$245	2.1
Classroom 418	9	Linear Fluorescent - T8: 4' T8 (32W) - 3.	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.4	2,182	0	$243	$763	$180	2.4
Classroom 419	9	Linear Fluorescent - T8: 4' T8 (32W) - 3.	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.4	2,182	0	$243	$763	$180	2.4
Conference 1st Floor	5	Linear Fluorescent - T8: 4' T8 (32W) - 3.	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.2	1,212	0	$135	$564	$130	3.2
Corridor - Elevator to Central	1	Linear Fluorescent - T8: 4' T8 (32W) - 3.	Wall Switch	S	93	3,500	2	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,500	0.0	191	0	$21	$35	$15	1.9

	Existing Conditions						Proposed Conditions								Energy Impact & Financial Analysis						
Location	Fixture Quantity	Fixture Description	Control System	Light Level	Watts per Fixture	Annual Operating Hours	ECM #	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	Estimated M&L Cost ($)	Total Incentives	Simple Payback w/ Incentives in Years
Cafeteria	4	Exit Signs: LED - 2 W Lamp	None		6	8,760		None	No	4	Exit Signs: LED - 2 W Lamp	None	6	8,760	0.0	0	0	$0	$0	$0	0.0
Cafeteria	10	Linear Fluorescent - T8: 4' T8 (32W) - 2L	Wall Switch	S	62	3,500	2, 3	Relamp	Yes	10	LED - Linear Tubes: (2) 4' Lamps	Occupancy Sensor	29	2,415	0.3	1,617	0	$180	$635	$135	2.8
Cafeteria	40	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	40	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	1.8	9,700	-2	$1,081	$3,001	$705	2.1
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Classroom 104	11	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	11	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,133	-1	$349	$1,073	$255	2.3
Classroom 106	6	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	6	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.3	1,455	0	$162	$599	$125	2.9
Classroom 401	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.4	2,182	0	$243	$763	$170	2.4
Classroom 402	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
Classroom 404	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
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Classroom 412	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
Classroom 413	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
Classroom 414	19	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	19	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	1.0	5,412	-1	$603	$1,928	$460	2.4
Classroom 415	12	Linear Fluorescent - T8: 4' T8 (32W) - 4L	Wall Switch	S	114	3,500	2, 3	Relamp	Yes	12	LED - Linear Tubes: (4) 4' Lamps	Occupancy Sensor	58	2,415	0.6	3,418	-1	$381	$1,146	$275	2.3
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Classroom 417	14	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	14	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.6	3,395	-1	$378	$1,037	$245	2.1
Classroom 418	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.4	2,182	0	$243	$763	$170	2.4
Classroom 419	9	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	9	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.4	2,182	0	$243	$763	$170	2.4
Conference 1st Floor	5	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,500	2, 3	Relamp	Yes	5	LED - Linear Tubes: (3) 4' Lamps	Occupancy Sensor	44	2,415	0.2	1,212	0	$135	$544	$110	3.2
Corridor - Elevator to Central	1	Linear Fluorescent - T8: 4' T8 (32W) - 3L	Wall Switch	S	93	3,500	2	Relamp	No	1	LED - Linear Tubes: (3) 4' Lamps	Wall Switch	44	3,500	0.0	191	0	$21	$55	$15	1.9

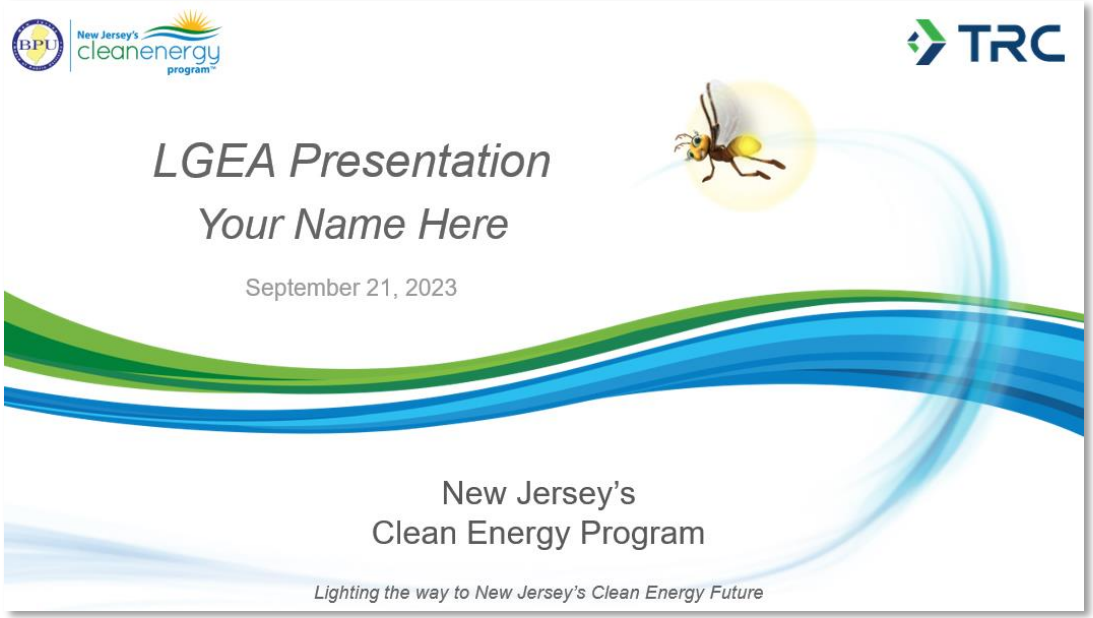
LGEA Scope & Deliverable

Energy Efficient Best Practices

- Energy Tracking with ENERGY STAR® Portfolio Manager®
- Weatherization
- Close Doors & Windows
- Window Treatments/Coverings
- Lighting Maintenance
- Lighting Controls
- Motor Controls
- Motor Short Cycling Reduction
- Motor Maintenance
- Fans to Reduce Cooling Load
- Destratification Fans
- Thermostat Schedules & Temperature Resets
- Economizer Maintenance
- Chiller Maintenance
- AC System Evaporator/Condenser Coil Cleaning
- HVAC Filter Cleaning & Replacement
- Ductwork Maintenance
- Steam Trap Repair & Placement
- Thermostatic Radiator Valve Installations
- Boiler Maintenance
- Furnace Maintenance
- Label HVAC Equipment
- Optimize HVAC Equipment Schedule
- Water Heater Maintenance
- Compressed Air System Maintenance
- Refrigeration Equipment Maintenance
- Plug Load Controls
- Computer Monitor Replacement
- Computer Power Management Software
- Water Conservation

LGEA Scope & Deliverable

LGEA Presentation



LGEA Scope & Process

Additional Scope Options –
A more in-depth study of PV Systems

- The regular LGEA provides a high-level PV screening considering daylight hours, electric demand, sq ft available, shading, and the interest of the entity
- Additional PV Screening will be a high-level assessment include the above and utilize additional tools to include:
  - ❑ Number of solar panels
  - ❑ Number of inverters
  - ❑ Solar PV system cost
  - ❑ Solar system rating
  - ❑ Projected energy consumption mix

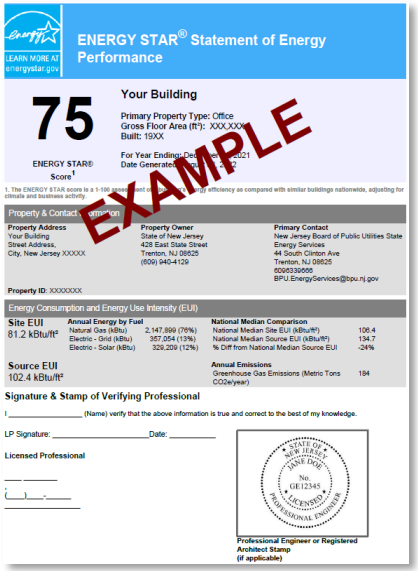
LGEA Scope & Process

Additional Scope Options –
ENERGY STAR® Building Certification

HOW MUCH DO ENERGY STAR BUILDINGS SAVE?

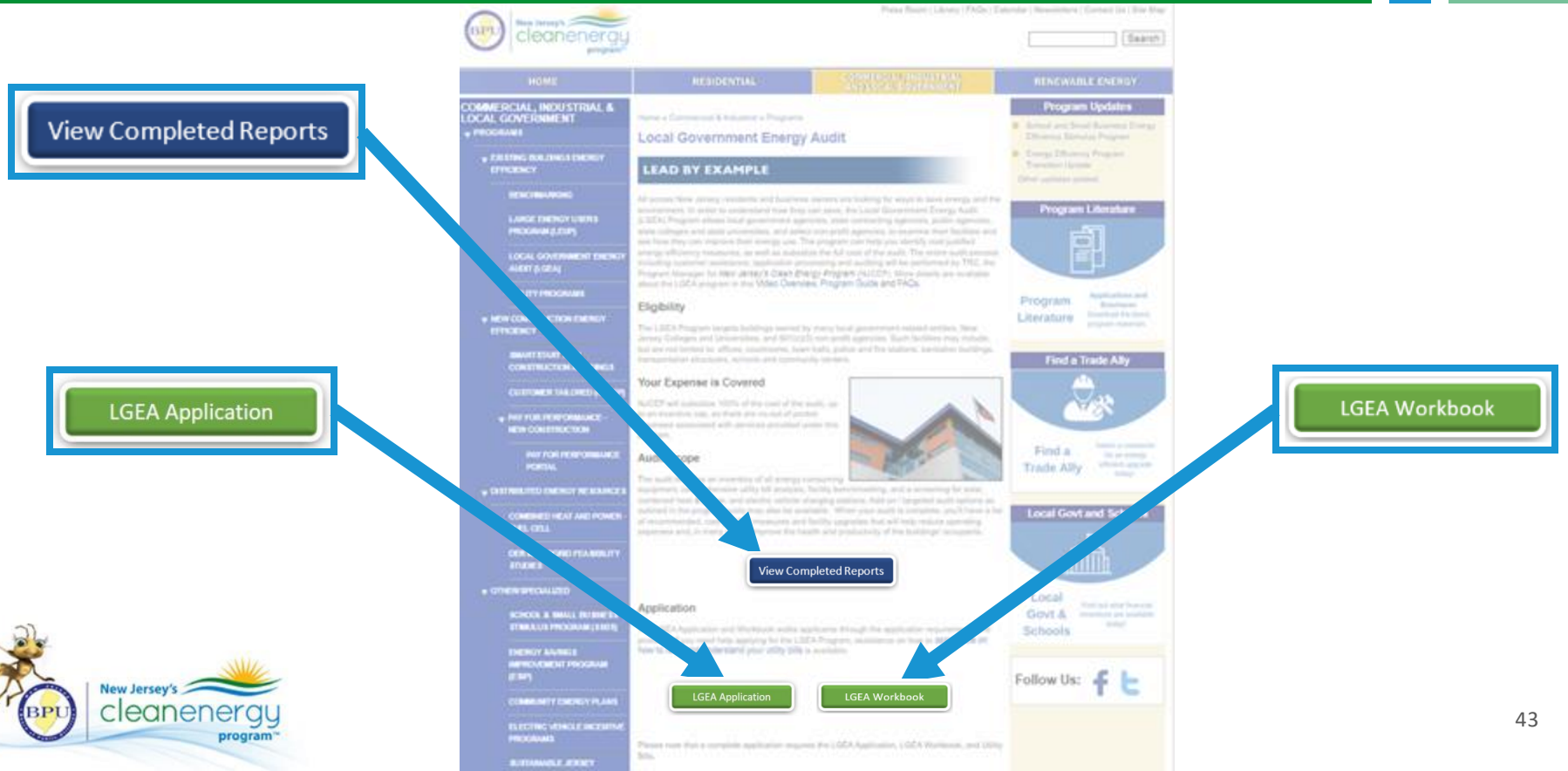
Compared with its peers, an ENERGY STAR certified office building:

- Uses 35% less energy
- Generates 35% fewer greenhouse gas emissions
- Costs $0.54 less per square foot to operate
- Has higher rental and occupancy rates



LGEA Application – LGEA Website

NJCleanEnergy.com/LGEA



Thank you

NJCleanEnergy.com/LGEA

LGEA@NJCleanEnergy.com

General Q&A

To submit questions in advance for next month:
EnergyEfficiency@bpu.nj.gov

Items of Interest

Next Meetings

Energy Efficiency Stakeholder Meetings

NJCleanEnergy.com/StakeholderGroups/Energy-Efficiency

3rd Thursday of the Month, 1-2:30pm

October 19, 2023

(no November meeting)

December 21, 2023

October's Guest Presentation:

Comfort Partners Program

More Information

VISIT

NJCleanEnergy.com

NJCleanEnergy.com/EE

CONTACT

EnergyEfficiency@bpu.nj.gov

866.NJ.SMART (657.6278)

EE LISTSERV

NJCleanEnergy.com/LISTSERVS

@NJCleanEnergy

THANK YOU