



Find Your Path to Energy Efficiency

August 2022

EDF Fellows 2022

Agenda

1. Sustainable Jersey (SJ)
2. SJ EDF Fellows 2022
3. Benefits of energy efficiency
4. NJ Clean Energy Program (NJCEP) and utility incentive overview
5. Local Government Energy Audit (LGEA)
6. Case studies for energy efficiency projects

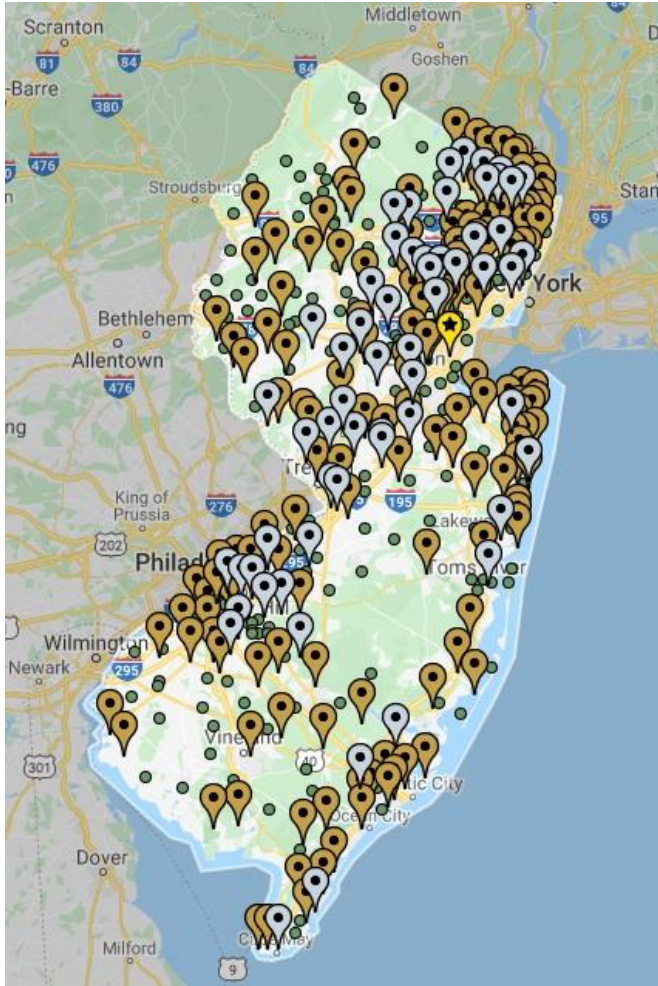


What is Sustainable Jersey?

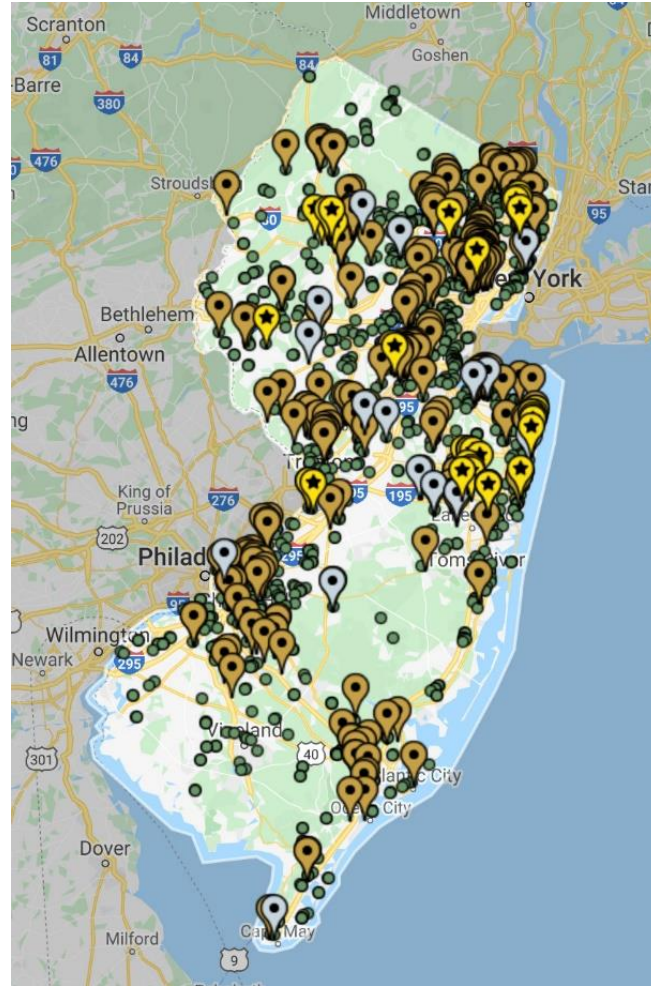
- **Certification program** for municipalities and schools
- **Tools, resources, and guidance** to help municipalities and schools become more sustainable
- **Grants and funding** for municipalities and schools
- **Regional Hubs**



Program Participants



Municipal Program



Schools Program

Municipal Program

- 460 (81%) participating
- 219 Certified
 - 155 Bronze
 - 64 Silver

Schools Program

- 374 (54%) of school districts
- 1025 schools participating
- 335 schools certified
 - 292 Bronze
 - 43 Silver

Sustainable Jersey Environmental Defense Fund Climate Corps Program

- Sponsored by
 - Elizabethtown Gas
 - Jersey Central Power & Light
 - New Jersey Natural Gas
 - South Jersey Gas



EDF Fellows 2022



David Becker-Turk
MS Civil, Environmental, &
Sustainable Engineering,
Arizona State University



Connor Donnelly
MBA/MS Environmental Justice,
University of Michigan



Sarah Murphy
Master of Public Affairs,
University of Texas



Rebeca Rodriguez
Master of Sustainability Solutions,
Arizona State University



Nakul Prabhakar Sangolli
MA Law & Diplomacy,
Tufts University



Daniel Wilkins
Master of Public Policy,
International Relations & Affairs,
University of Denver

The EDF Climate Corps is an environmental and sustainability fellowship program for graduate students across the US, China, & India.



Why Prioritize Energy Efficiency?

“Do more, or the same, with less.”

- **Cost Savings**
 - Reduced service and maintenance costs
 - Increase savings even further when in tandem with renewables
- **Lowered Environmental Impact**
- **Increased Comfort and Productivity of People**
- **Minimal Financial Burden for Streamlined Options**
 - Lower upfront costs
 - Plethora of incentives
 - New Jersey's Clean Energy Program (NJCEP)
 - Utilities



Incentive Program Overview



NJCEP Incentives

- Local Government Energy Audits
- Energy Savings Improvement Program
- New Construction / Gut Rehab
- Combined Heat & Power & Fuel Cells (not covered in this presentation)

The screenshot shows the NJCEP website interface. At the top left is the BPU logo and the text "New Jersey's cleanenergy program". A yellow banner at the top right contains the URL "https://njcleanenergy.com/muni" and a search box. The navigation bar includes "HOME", "RESIDENTIAL", "COMMERCIAL, INDUSTRIAL AND LOCAL GOVERNMENT" (highlighted in yellow), and "RENEWABLE ENERGY".

The left sidebar menu is titled "COMMERCIAL, INDUSTRIAL & LOCAL GOVERNMENT" and lists several categories, with three highlighted in red boxes: "LOCAL GOVERNMENT ENERGY AUDIT", "NEW CONSTRUCTION ENERGY EFFICIENCY", and "COMBINED HEAT AND POWER - FUEL CELL". Other categories include "EXISTING BUILDINGS ENERGY EFFICIENCY", "UTILITY PROGRAMS", "SINGLE MEASURE: SMARTSTART NEW CONSTRUCTION", "MULTI MEASURE: CUSTOMER TAILORED", "COMPREHENSIVE: PAY FOR PERFORMANCE", "DISTRIBUTED ENERGY RESOURCES", "DER MICROGRID FEASIBILITY STUDIES", and "OTHER/SPECIALIZED" with "ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)".

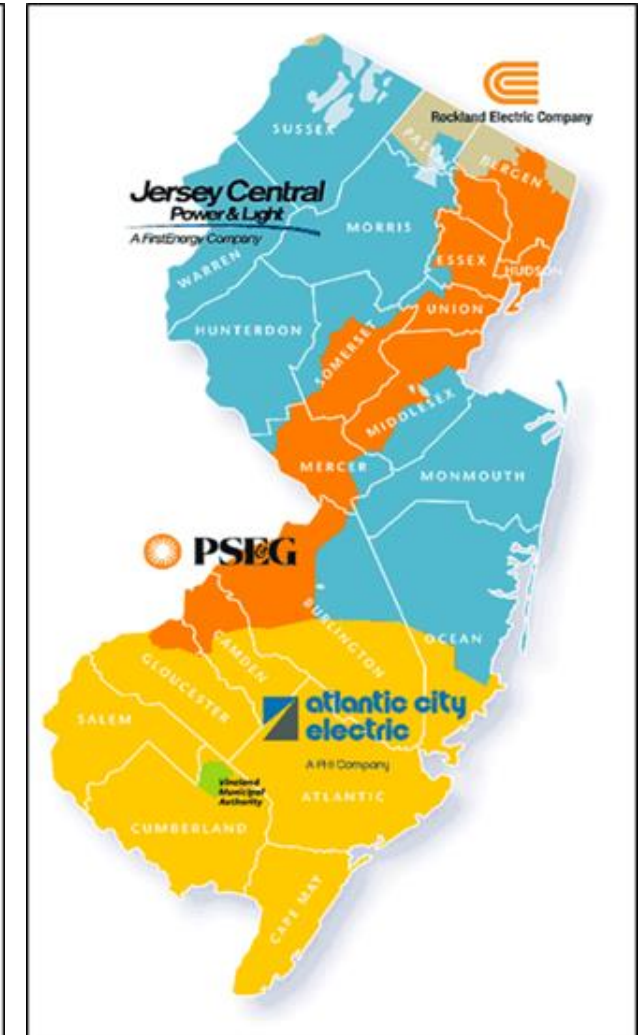
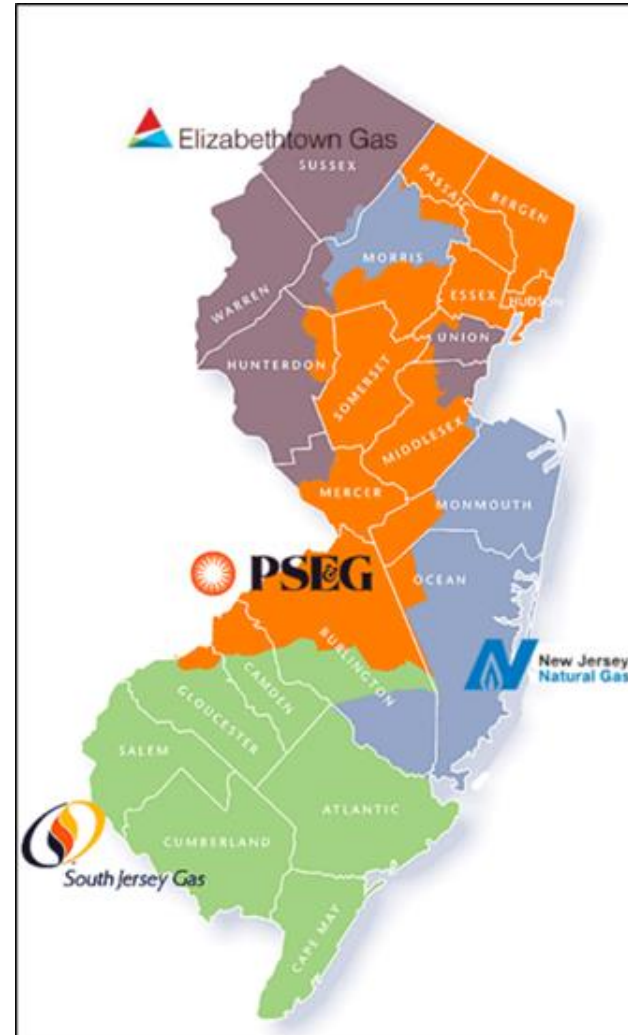
The main content area is titled "Local Governments, Schools and Non-Profits" and features a note: "Note: Select energy efficiency programs for existing buildings are transitioning to the utility companies". Below this, it states that NJCEP Pay for Performance (P4P) and Direct Install programs will no longer accept applications starting July 1, 2021. It also mentions that PSE&G customers who purchased equipment prior to June 1, 2021, may be eligible for SmartStart Buildings (SSB) and/or Customer Tailored Energy Efficiency Program (CTEEP) rebates. For projects saving electricity and natural gas (dual-fuel), NJCEP's SSB, CTEEP, and P4P programs will remain available for new construction projects starting July 1, 2021.

The right sidebar contains several sections: "Program Updates" with a link to "Energy Efficiency Program Transition Update"; "Program Literature" with a link to "Applications and Brochures"; "Find a Trade Ally" with a call to action to "Select a contractor for an energy efficient upgrade today!"; "Success Stories" featuring "Library IV Restaurant" with "New Lighting and HVAC equipment for greater savings"; "Clean Energy Learning Center" with the "New Jersey Clean Energy Learning Center" logo; and "Local Govt and Schools" with a call to action to "Find out what financial incentives are available today!".

At the bottom of the page, a photo shows a teacher and students in a classroom. Below the photo, text reads: "Throughout New Jersey, residents and business owners are looking for ways to save energy and the environment - local governments and schools are no exception. New

Utility Incentive Programs

- Incentives include:
 - Direct Install
 - Prescriptive/Custom Rebates
 - Instant Discounts
 - Engineered Solutions
 - Energy Management (not covered in this presentation)
- Check your local electric or natural gas utility



<https://njcleanenergy.com/transition>



Local Government Energy Audit (LGEA)

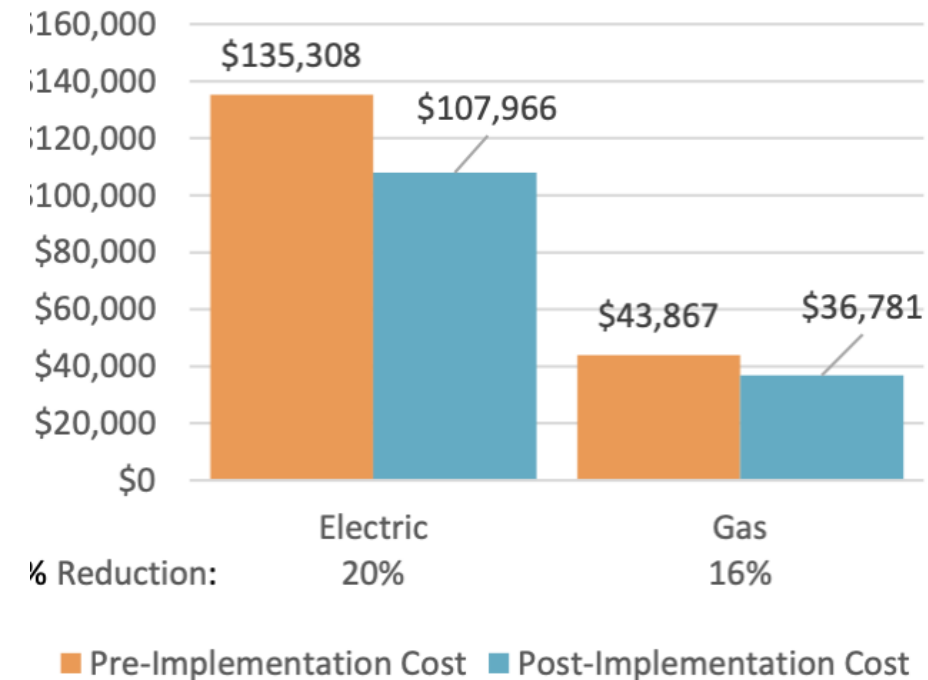


LGEA

Local Government Energy Audit

NJCEP

- ASHRAE Level II Audit
- 100% free
- Includes comprehensive analysis
 - equipment
 - entire building
 - solar opportunities





LGEA Process

1. Determine eligibility (Peak Demand over 200 kW; waivers available)
2. Gather + complete documents (14+ months of bills, LGEA Workbook)
3. Application submission
4. Application approval and pre-audit interviews with staff
5. Onsite audit
6. Post audit analysis and presentation

Is the LGEA right for us?

If you answer yes to any of the below, apply:

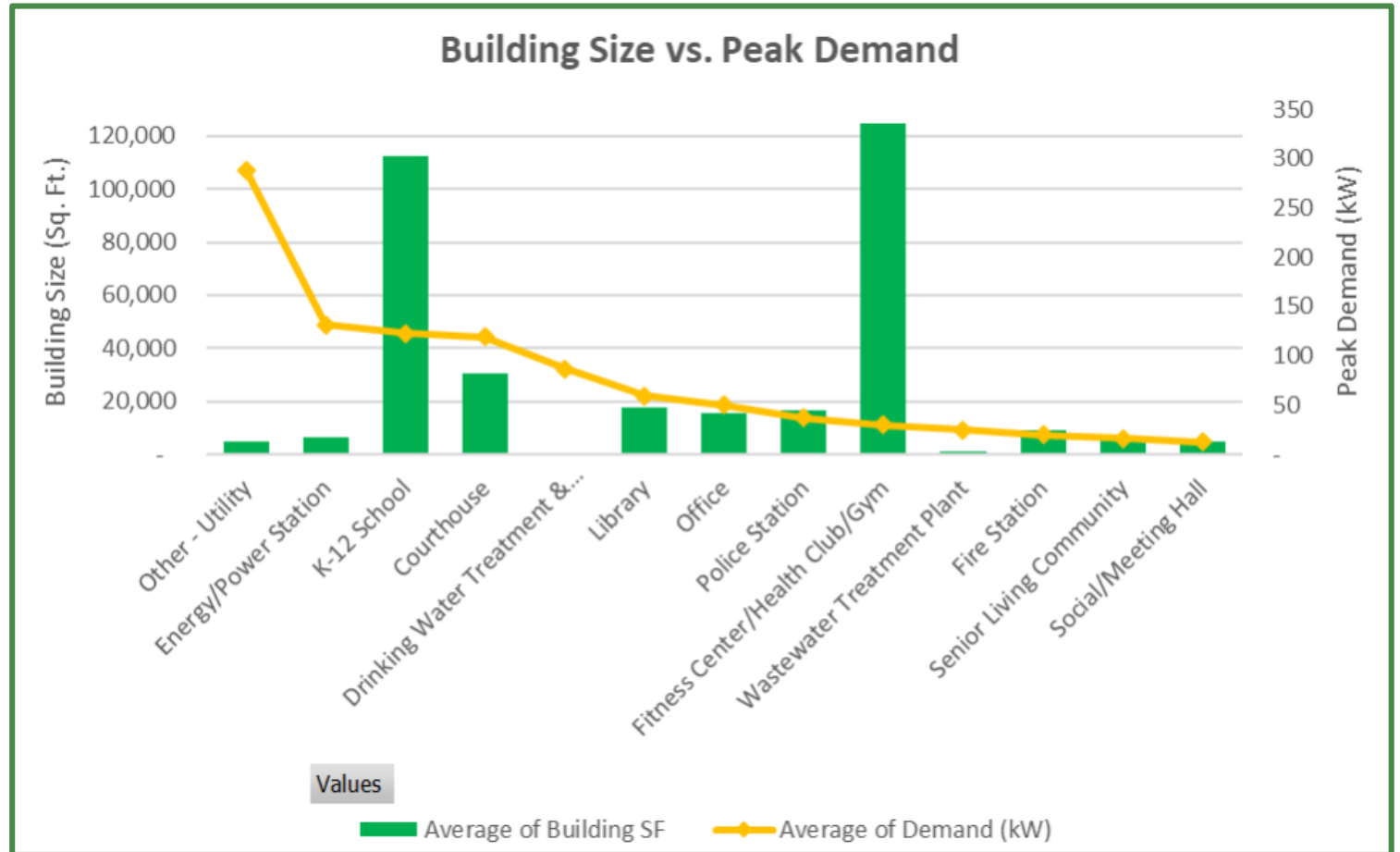
- Haven't conducted energy audit in 3+ years
- Foresee substantial upgrades for multiple facilities
- Want to see comprehensive energy efficiency data across multiple buildings
- Not sure where to start with energy efficiency upgrades





Peak Demand

- Peak demand (aka Billed Load) is the maximum electricity usage for a building in a day averaged over a month.
- Peak demand does not always correlate with building size.





Direct Install

Sarah Murphy





Direct Install

Program Overview

- Buildings under 200kW peak demand qualify
- One-for-one equipment replacement (e.g., HVAC units, LED ballasts, boilers)
- Incentives may cover up to 80% materials & labor costs
- Customer repayment terms will vary by Utility

Process

1. Determine electricity peak demand (aka "billed load") for each building
2. Assemble 12-month usage summaries for electric & natural gas
3. Contact Utility representatives or DI contractor to schedule walk-through
4. Review statements of work with incentives and plan project work



Prescriptive & Custom

David Becker-Turk





Prescriptive and Custom Programs

- **Rebates to upgrade individual pieces of equipment to more energy efficient models**
- **More well suited to smaller projects where there is urgent need for upgrades**
- **Relatively quick turnaround time compared to other programs**

Prescriptive

- **Equipment options are selected from a utility approved list with predetermined incentives**

Custom

- **For non-standard or more complex equipment not found on the Prescriptive list**
- **Incentive amount is typically based on energy savings**



Engineered Solutions

Nakul Prabhakar Sangolli





Engineered Solutions

Utility led program with ASHRAE Audits for entities with at least one high peak demand building (>200kW)

What does it entail?



ASHRAE Audit



Installation and Upgrades



Loan Repayment



Costing Energy Conservation Measures



RFP for Project Scope



Financing varies by Utility



Engineered Solutions

Utility led program with ASHRAE Audits for entities with at least one high peak demand building (>200kW)

Prerequisites and Preparation

1. 12-month utility (Electric, Gas, Oil etc.) data for buildings under consideration (at least one building with average monthly peak demand > 200kW)
2. DPW/Facilities/Utility Staff preparing information on HVAC Inventory, Controls, Building Management System (BMS)

Age/Capacity of HVAC?

Can BMS detect faults?

Are Control Systems customizable?

1. Last Audit conducted? Prior Energy Conservation Measures (ECMs) undertaken?
2. Preparing and inviting RFPs for installation



Energy Savings Improvement Program (ESIP)

Rebeca Rodriguez

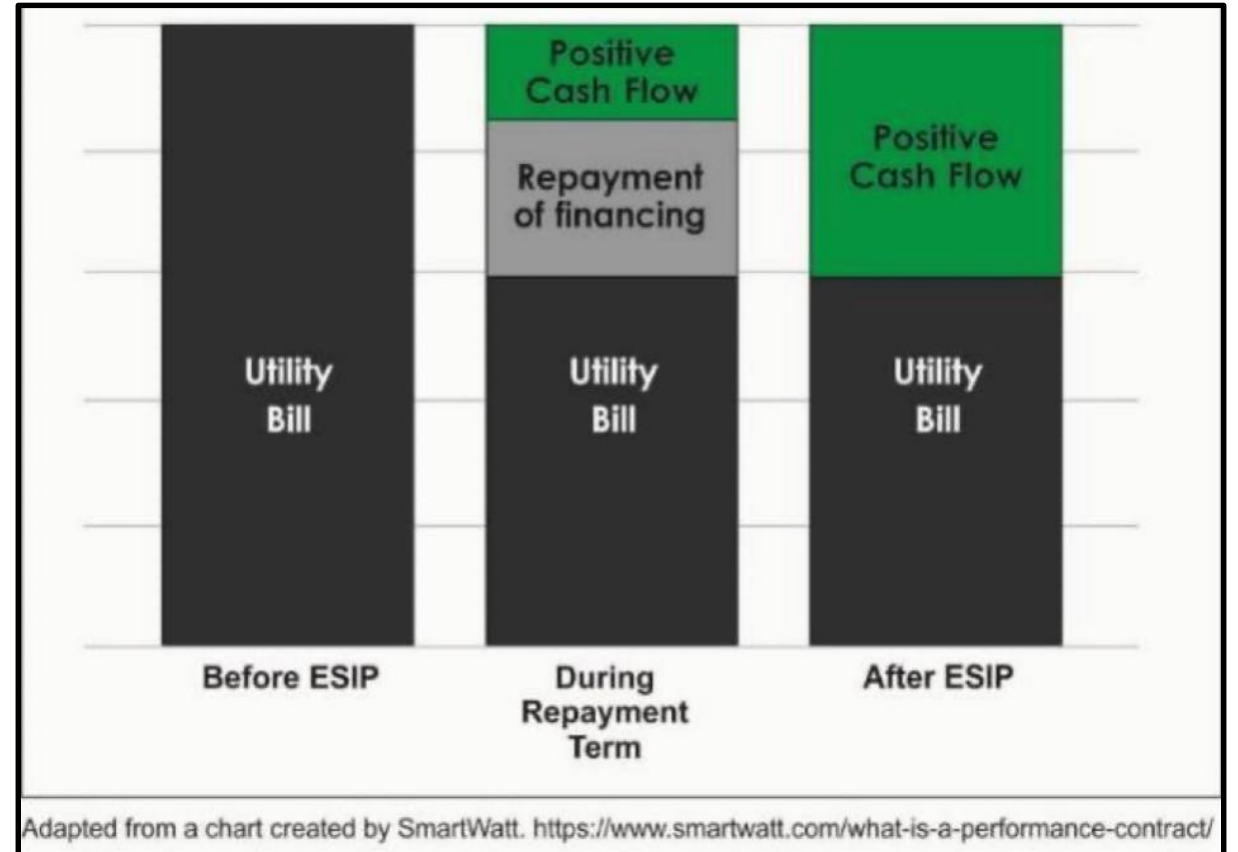




ESIP

Energy Savings Improvement Program

- Financing mechanism
- No additional cost to taxpayer
 - Refunding bonds or lease purchase agreements
- Can include projects without energy reduction focus
- Future energy savings pay for upfront costs





ESIP

Energy Savings Improvement Program

- Prerequisite
 - LGEA
- Considerations
 - typically > \$1.5M of projects
 - 24 to 36 month process





Gut Rehab & New Construction

Dan Wilkins









New Construction/Gut Rehab

- NJCEP Program offering incentives for:
 - New Construction
 - Substantial Renovations (Gut Rehab)
 1. Change of use to an existing building
 2. If the building is out out-of-service for 30+ days
 3. Work in/on a vacant structure



New Construction/Gut Rehab

Savings Potential	Program	Description
	 Whole Building/ Comprehensive: Pay for Performance Program	Designed for buildings with 50,000 square feet for more of planned conditioned space. Comprehensive improvements addressing heating, cooling, lighting, and envelope.
	 Multi-Measure: Customer Tailored Energy Efficiency Program	Bundle multiple prescriptive and custom measures into a single application. Includes eligibility for technical assistance incentives to help offset soft costs associated with custom measure development.
	 Single Measure: SmartStart Buildings Program	Prescriptive and Custom incentives.



Case Studies



NOTICE

36" CLEARANCE REQUIRED
IN FRONT OF THIS METERING
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JERSEY CENTRAL P. & L. CO.

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DISCONNECTED AT THE POLE
OR TRANSFORMER PAD.

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Direct Install

Sarah Murphy





Entity: Municipal Borough
Population: 15,000
Building Portfolio: 4 owned + 1 leased

Building Description	Peak Demand	Utilities
Borough Hall/Police Station	32.9 kW	JCP&L Electric; NJ Natural Gas
Firehouse No. 1	19.7 kW	JCP&L Electric; NJ Natural Gas
Firehouse No. 2	9.5 kW	JCP&L Electric; Fuel Oil
Senior Center (leased)	14.6 kW	JCP&L Electric; NJ Natural Gas
Dept. of Public Works Garage	14.8 kW	JCP&L Electric; NJ Natural Gas



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Other Considerations

Past Energy Efficiency Investments:

LED lighting replacement in 3/5 buildings

Boiler replaced in Borough Hall/Police Station in 2016

Availability & Expertise of DPW Staff:

In-house expertise with boiler & HVAC equipment replacement

Shortage of staff availability & limited electrical expertise

Timeline: Want to start energy efficiency actions within 3-6 months





Prescriptive Custom or Direct Install

David Becker-Turk





Convention Center

13,000 sqft

110kW peak demand

Urgent Need:

1 failing HVAC roof-unit

Other possible upgrades:

Other HVAC

Doorway air curtain

Lighting

Prescriptive/ Custom Program

- **Fastest installation timeline for urgent HVAC need**
- **Known incentive of \$1600** (for a 20 ton HVAC unit)

The single HVAC unit is the only upgrade expected without a professional audit of the Convention Center.

Direct Install

- **All possible upgrades could be included in one Direct Install project**
- **Incentive of up to 80%**

The timeline is longer than prescriptive but more upgrades and cost savings can be achieved via DI.



Engineered Solutions & Direct Install

Nakul Prabhakar Sangolli





Case for Direct Install + Engineered Solutions

Building Description	Peak Demand	Utilities
Municipal Building	>200KW	JCP&L Electric; NJ Natural Gas
Library	<100KW	JCP&L Electric; NJ Natural Gas
Senior Center	<100KW	JCP&L Electric; NJ Natural Gas
Justice Building	<200KW	JCP&L Electric; NJ Natural Gas
Dept. of Public Works Garage	<200KW	JCP&L Electric; NJ Natural Gas



Case for Direct Install + Engineered Solutions

Building Description	Peak Demand	Utilities	Status
Municipal Building	>200KW	JCP&L Electric; NJ Natural Gas	Application Submitted
Library	<100KW	JCP&L Electric; NJ Natural Gas	Scoping done in 2021
Senior Center	<100KW	JCP&L Electric; NJ Natural Gas	Scoping done in 2021
Courthouse Building	<200KW	JCP&L Electric; NJ Natural Gas	Scoping done in 2021
Dept. of Public Works Garage	<200KW	JCP&L Electric; NJ Natural Gas	Scoping done in 2021

Other Considerations

- 1. Past Energy Efficiency Investments:**
LED lighting replacement and HVAC upgradation in four buildings
No Audit done for Municipal Building
- 1. Availability & Expertise of DPW Staff:**
In-house expertise with HVAC Control Systems
Lacking in expertise on boiler replacement, insulation
- 1. Requirement:**
Seek significant savings in Municipal Building with favourable repayment scheme
Seek to work with similar stakeholders as in the past.

Direct Install for all except
Municipal Building

ES for Municipal
Building



Energy Savings Improvement Program (ESIP)

Rebeca Rodriguez





ESIP Case Study

Energy Savings Improvement Program

Background:

- Board of Education
 - 8 schools
- HVAC
- Roof replacement

Considerations:

- Two buildings over 200kW
- LGEA process and timeline
- Building envelope improvements

Benefits:

- Thorough energy audit
- 15% of budget can go towards other projects
- Financing
- Cash flow positive



Gut Rehab & New Construction

Dan Wilkins





Gut Rehab Case Study

Background:

- Rural Municipality
– 1 building
- HVAC
- Gas Water Boiler
- Lighting Upgrades
- Food Service Equipment

Considerations:

- Replacement of HVAC with major modifications to building shell
- Assessment done by 3rd party to determine upgrades

Benefits:

- Popular and commonly used technologies ensure a predictable cost and savings potential
- Incentives up to \$500K per individual building
- Custom incentives can cover non-standard equipment



Summary

Utility Programs

- Prescriptive/Custom Rebates
- Instant Discounts
- Direct Install
- Engineered Solutions

NJCEP Programs

- Local Government Energy Audit (LGEA)
- Energy Savings Improvement Plan (ESIP)
- Gut Rehab/New Construction

Benefits

- Energy cost savings
- Lowered environmental impact
- Multiple program options
- Financial incentives to cover cost
- Increased comfort and productivity for employees and students
- SJ Points for Energy Efficiency Action

Contact Sustainable Jersey for technical assistance in navigating these programs and to inquire about EDF Fellow support!



Municipalities: info@sustainablejersey.com

Public Schools: schools@sustainablejersey.com



Sustainable Jersey Energy Technical Assistance

**Sustainable Jersey Staff can
help your municipality or
school district with:**

- Energy Tracking and Management
- Applying for Local Government Energy Audits (LGEAs)
- Applying for State and utility energy efficiency incentives
- Applying for NJCEP's Energy Savings Improvement Program

Email info@sustainablejersey.com
to learn about current technical
assistance options open to your
school or municipality.



Questions?

