

The Help You Need --Sustainable Jersey Technical Assistance for Schools

NJ School Board Association Workshop October 24, 2022

IG: Sustainable_Jersey | Twitter: @SJ_Program and @SJ_Schools | FB: @SustainableJersey | LinkedIn: sustainable-jersey

Session speakers

David Joye

Business Administrator Fair Haven Public Schools

Corey Lowell

Business Administrator/Board Secretary West Long Branch School District

Greg Reinert

Outreach Account Manager

TRC on behalf of New Jersey's Clean Energy Program



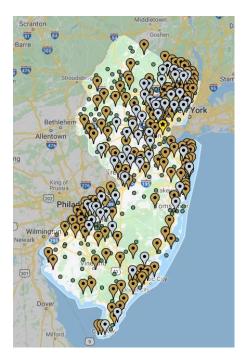
What is Sustainable Jersey?

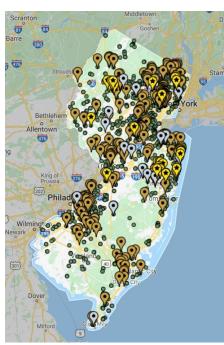
- Certification program for municipalities and schools
- Tools, resources, and guidance to help municipalities and schools become more sustainable
- Grants and funding for municipalities and schools
- Regional Hubs





Program Participants





Municipal Program

Schools Program

Schools Program

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

Municipal Program

- 460 (81%) participating
- 215 Certified
 - 148 Bronze
 - 67 Silver



SJS Energy Actions

Facilities and Operations

Energy Efficiency	Renewable Energy	Alternative Fuel Vehicles
 Carbon Footprint * Energy Tracking and Management Energy Efficiency for School Facilities * 	 On-Site Solar Energy + 10 pt storage/resilience + 5 pts solar thermal On-Site Geothermal Buy Renewable Energy 	Sustainable Fleets

Student Engagement

Student Engagement and Community Outreach Actions

- Behavior-Based Energy Efficiency in Schools
- Civic & Stewardship Volunteer Initiatives
- Community Education and Outreach *
- Education for Sustainability
- Enrichment Programs through Partnership
- Green Challenges
- Professional Development for Sustainability *

* = priority action



Behavior-Based Energy Conservation

- Energy conservation team
 - Science class, extracurricular club
- Energy conservation measures
 - Lighting, computer, HVAC policies
 - Student energy audits
 - Brochures, flyers, email blasts
 - School assembly presentations
 - Holiday shut-down policy
- EmPowered Schools



EmPowered Schools



The EmPowered Schools program provides free support and resources to engage PK-12 students in hands-on learning to take the lead in saving energy and money in their schools and homes.

LEARN MORE AND SIGN UP VIA THE QR CODE OR BY GOING TO:

bit.ly/SJSEmpoweredSchools







Energy Efficiency for Facilities Action





5 points - Audit on at least one building

10 points - Local Government Energy Audit (LGEA)

15 points - Significant upgrade work

20 points - LGEA on all buildings PLUS significant upgrade work

30 points - Efficiency upgrades; 10%-19% decreased energy use

40 points - Efficiency upgrades; 20%-29% decreased energy use

50 points - Efficiency upgrades; at least 30% decreased energy use

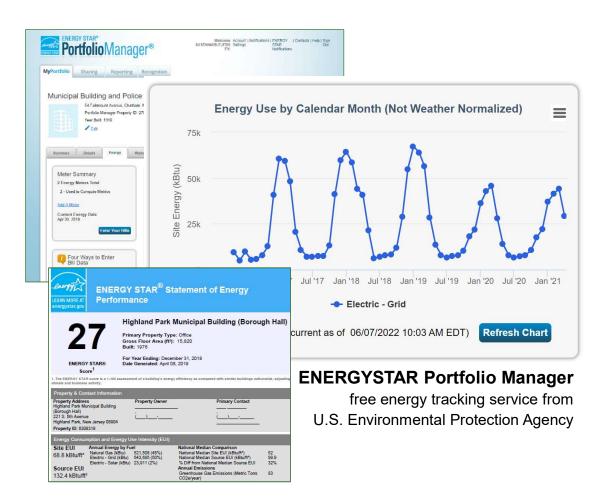
Energy Tracking & Management

For 10 points

- Building portfolio
- Most recent <u>twelve-months</u> of energy use data for all buildings

For additional 10 points

- Benchmarking report for each building in the inventory
- Demonstrate <u>ongoing</u> Energy Tracking and Management system



NJCEP Incentives

- Local Government Energy Audits
- **Energy Savings Improvement** Program ESIP
- New Construction / Gut Rehab
- Combined Heat & Power & Fuel Cells





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

Search

Applications and Brochures

Download the Latest

Library IV Restaurant

New Lighting and HVAC equipment for greater

New Jersey Clean Energy Learning Center

Find out what

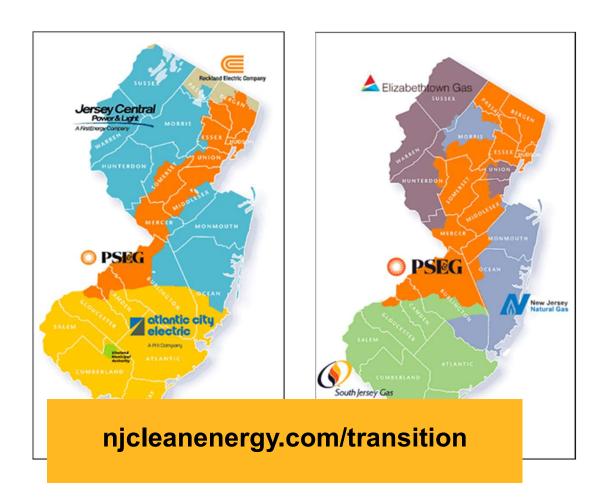
incentives are

available today!

financial

Utility Incentive Programs

- Incentives vary by utility
- Contact your local natural gas and electric utilities





Thank you!

Nancy Quirk
Senior Energy Program Manager
quirkn@tcnj.edu
609.771.2902

Technical Assistance for Energy Initiatives

- Review current energy use
 - Utility billing data
 - Energy tracking
- Apply for utility and NJCEP incentives
- Submit for SJ certification points





New Funding Cycle Announced!

- \$100,000 is available to New Jersey public schools participating in the Sustainable Jersey for Schools programs
 - -\$2k and \$10k grants to fund sustainability projects and support your green team

Informational Webinar

3-4pm on Thursday, **December 15, 2022**

Application Deadline

March 10, 2023

Award Notifications

By early May 2023 with an event in early June 2023 Performance Period

10k Grants: 18 months

2k Grants: 12 months



Sustainable Jersey for Schools Underwriters and Sponsors















Grant Program Underwriters







Corporate Sponsors























*Digital Schools Underwriters and Sponsors

IG: Sustainable_Jersey | Twitter: @SJ_Program and @SJ_Schools | FB: @SustaiableJersey | LinkedIn: sustainable-jersey

Sustainable Jersey's technical assistance (TA) program

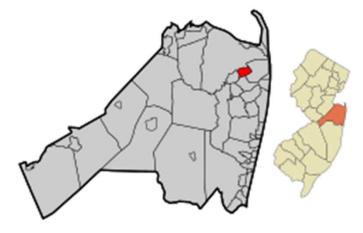
Fair Haven Public Schools

October 2022



Fair Haven

- Monmouth County along the Navesink River
- Bordered by Rumson, Red Bank and Little Silver
- PreK to 8
- •1,000 students
- •2 school buildings (Prek to 3 and 4 to 8)
- Built in the 1920s and 1930s
- About a \$17 million operating budget



Energy Efficiency/Sustainability 2018-2019 School Year

- We were a school district interested in energy efficiency/sustainability (Board, staff, student body)
- On the verge of a referendum (approved Sept 2019)
- Local Government Energy Audit (LGEA final October 2019)
 - 12 Energy Conservation Measures (ECM's) recommended at Knollwood.
 - 9 ECM's at Sickles.
 - Really boiled down to 3 areas for us
 - Lighting/Controls
 - HVAC
 - Energy Management System



Local Government Energy Audit





	Energy Conservation Measure	Cost Effective?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)		Annual Energy Cost Savings (\$)	Lifetime Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting	Upgrades		224,728	40.8	-44	\$26,497	\$397,460	\$94,372	\$19,767	\$74,605	2.8	221,104
ECM 1	Install LED Fixtures	Yes	43,025	6.9	-6	\$5,092	\$76,384	\$37,149	\$6,155	\$30,994	6.1	42,573
ECM 2	Retrofit Fluorescent Fixtures with LED Lamps and Drivers	Yes	6,815	1.8	-1	\$803	\$12,041	\$2,486	\$420	\$2,066	2.6	6,695
ECM 3	Retrofit Fixtures with LED Lamps	Yes	172,957	31.9	-36	\$20,375	\$305,621	\$53,507	\$13,192	\$40,315	2.0	169,937
ECM 4	Install LED Exit Signs	Yes	1,932	0.1	0	\$228	\$3,415	\$1,231	\$0	\$1,231	5.4	1,899
Lighting Control Measures			46,664	8.6	-10	\$5,497	\$43,976	\$26,081	\$2,590	\$23,491	4.3	45,848
ECM 5	Install Occupancy Sensor Lighting Controls	Yes	41,764	7.7	-9	\$4,920	\$39,358	\$20,906	\$2,590	\$18,316	3.7	41,034
ECM 6	Install High/Low Lighting Controls	Yes	4,900	0.9	-1	\$577	\$4,618	\$5,175	\$0	\$5,175	9.0	4,814
Variable Frequency Drive (VFD) Measures			27,366	4.4	0	\$3,277	\$49,155	\$37,403	\$520	\$36,883	11.3	27,557
ECM 7	Install VFDs on Constant Volume (CV) Fans	Yes	8,042	1.9	0	\$963	\$14,445	\$7,577	\$520	\$7,057	7.3	8,098
ECM 8	Install VFDs on Heating Water Pumps	No	19,324	2.5	0	\$2,314	\$34,710	\$29,826	\$0	\$29,826	12.9	19,459
Electric Unitary HVAC Measures			29,339	25.1	0	\$3,513	\$52,699	\$224,988	\$6,311	\$218,677	62.2	29,544
ECM 9	Install High Efficiency Air Conditioning Units	No	29,339	25.1	0	\$3,513	\$52,699	\$224,988	\$6,311	\$218,677	62.2	29,544
Gas Heating (HVAC/Process) Replacement			0	0.0	45	\$418	\$8,366	\$70,023	\$4,159	\$65,863	157.5	5,261
ECM 10	Install High Efficiency Steam Boilers	No	0	0.0	45	\$418	\$8,366	\$70,023	\$4,159	\$65,863	157.5	5,261
HVAC System Improvements			1,718	0.0	17	\$362	\$5,432	\$9,516	\$0	\$9,516	26.3	3,697
ECM 11	Implement Demand Control Ventilation (DCV)	No	1,718	0.0	17	\$362	\$5,432	\$9,516	\$0	\$9,516	26.3	3,697
Custom	Measures		21,379	0.0	524	\$2,985	\$44,770	\$177,000	\$0	\$177,000	59.3	82,827
ECM 12	Installation of an Energy Management System	No	21,379	0.0	524	\$2,985	\$44,770.04	\$177,000	\$0	\$177,000	59.3	82,827
TOTALS (COST EFFECTIVE MEASURES)			279,434	51.3	-54	\$32,957	\$455,882	\$128,030	\$22,877	\$105,153	3.2	275,050
TOTALS (ALL MEASURES)			351,194	78.9	531	\$42,550	\$601,858	\$639,383	\$33,347	\$606,036	14.2	415,839

^{* -} All incentives presented in this table are based on NJ SmartStart equipment incentives





LGEA/Direct Install

- Highly recommend these programs
 - The LGEA team was organized and professional.
 - Pre-meeting, meet during, post meeting.
 - Gave us a great baseline of information to act on.
 - Inventory of lighting, HVAC, useful life, yearly cost, replacement costs, payback in terms of energy savings. For instance, changing from fluorescents to LED had a great payback period of 2 to 5 years depending on whether you were retrofitting or replacing.
 - Told us what programs we could qualify for (Direct Install, SmartStart, etc.)
 - We used Direct Install at one of our schools to do the lighting and the boiler replacement. One contractor handled everything start to finish. The other school we did as part of the referendum.

Referendum Projects (Knollwood)







Knollwood School • 224 Hance Road, Fair Haven NJ 07704 • Phone: 732-747-0320 • Fax: 732-747-7441

Referendum Projects (Knollwood)







Referendum Projects (Sickles)





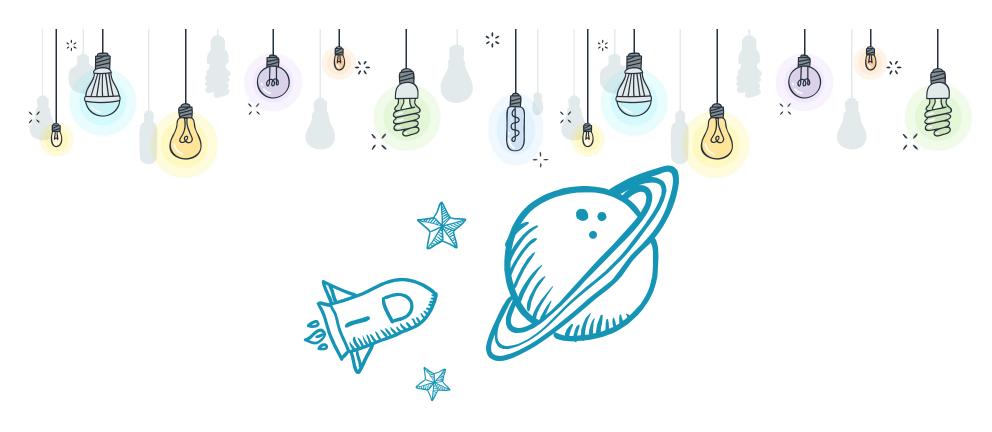
EDF Climate Corps fellowship program

- Energy Tracking and Management
 - Karen started by updating the district's Energy Star Portfolio Manager account that we created when we applied for the LGEA.
 - The update she did included 14 months of electric and natural gas utility usage and cost data.
 - She trained one of our staff how to continue the work she started.
- Building Energy Efficiency
 - Karen talked to us about potential energy efficiency upgrades.
- Document actions than can lead to Sustainable Jersey for Schools certification
 - She helped document our energy efficiency projects (LGEA, upgrades to both schools, energy savings of 27%, updated Energy Star Portfolio Manager).

EDF Climate Corps fellowship program

- Highly recommend the Fellowship program
 - The fellow was extremely organized and professional.
 - Very knowledgeable.
 - Gave us actionable information that we could bring back to the Board to show the fruits of our labor (usage down 27% two years later in one school, down 50% in the other).
 - Karen helped us start our Green Team club in our Knollwood school (In our 2nd year now)
 - Especially helpful for us was that our Borough was participating as well. Karen was helping both of us and pointed out some great overlap where we could both get credit.





FREE TECHNICAL ASSISTANCE

2017 EDF Fellow at Shore Regional HS 2019 EDF Fellow at West Long Branch Schools

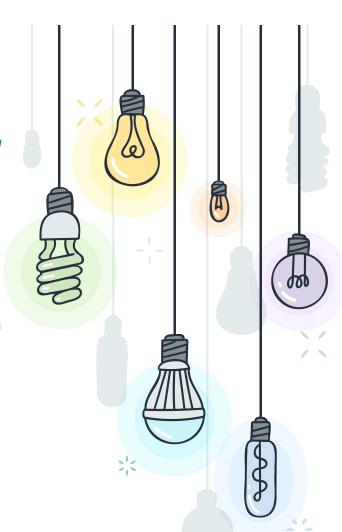
* Care & feeding of your EDF fellow

What an EDF Fellow is:

- A highly trained analyst of energy use and energy-related building initiatives
- Knowledgeable about LGEA, DI, and Smart Start programs
- Knowledgeable about Sustainable Jersey for Schools actions and certification

What an EDF Fellow is not:

- → Baby-sitting
- + An intern for the business office
- + Intrusive
- + Responsible for SJFS certification



* Funding energy improvements

LGEA

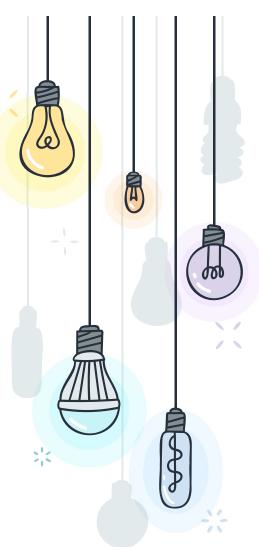
- Evaluate ROI of ECM
- Pick "low hanging fruit"
- Lease purchase may be an option

DI

- Now run directly through utility companies
 - Program may cover up to 70-80% of costs

ESIP

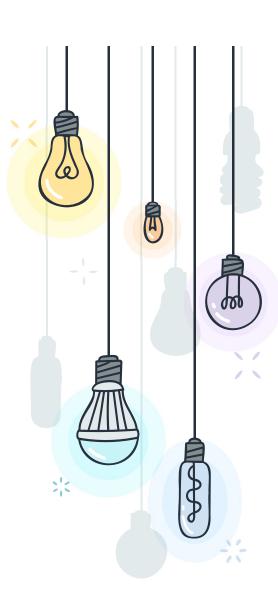
 Pay for energyrelated improvements using the value of savings





THE POWER OF ENERGY

Buy-in from the
Superintendent and BOE
are especially critical to
advancing these programs





New Jersey's Clean Energy ProgramTM



Agenda

- Introduction to New Jersey's Clean Energy Program
- Energy Efficiency Defined
- Transition of Energy Efficiency Programs
- NJCEP Portfolio of Program Categories:
 - Commercial and Industrial (C&I) Energy Efficiency



New Jersey's Clean Energy Program



CURRENTLY ADMINISTERED BY

New Jersey Board of Public Utilities' Division of Clean Energy

CURRENTLY FUNDED BY

Societal Benefits Charge (SBC) on utility bill

PROGRAM GOALS

- Education
- Change behavior
- Provide opportunities for ALL NJ residents and business owners to save energy and lower operating costs
- Protect the environment and reduce emissions
- Meet Governor Murphy's goal of 100% clean energy by 2050





Addressing Climate Change in NJ



CUSTOMER EDUCATION



ENERGY CONSERVATION



ENERGY EFFICIENCY



DISTRIBUTED ENERGY RESOURCES



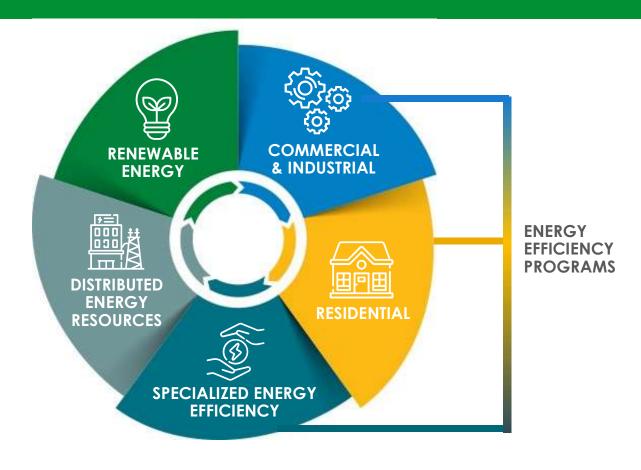
RENEWABLE ENERGY

"Energy efficiency is using technology that requires less energy to perform the same function"

U.S. Energy Information Administration



NJCEP Portfolio of Programs





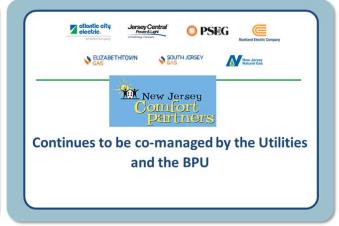


Energy Efficiency Transition: July 1, 2021

NJCleanEnergy.com/TRANSITION











Energy Efficiency

NJCleanEnergy.con



SPECIALIZED ENERGY EFFICIENCY

- Community Energy Grants
- Combined Heat and Power & Fuel Cells
- State Facility Initiatives
- Micro Grid Development
- R&D Fneray Tech Hub
- Workforce Development



COMMERCIAL & INDUSTRIAL

- Existing Buildings
 - Local Gov. Energy Audits
 - Large Energy Users
 - School and Small Business Stimulus Program
- New Construction:
 - Prescriptive & custom rebates: SmartStart Buildings
 - Bundled rebates: CTEEP
 - Comprehensive med-large: Pay for Performance
- Municipal Electric Fleets

RESIDENTIAL

- Residential New Construction
- Comfort Partners
- Electric Vehicles





Commercial & Industrial Customers

















Local Government Energy Audit

EXISTING BUILDINGS

NJCleanEnergy.com/LGEA

WHO Local Government, New Jersey Colleges and

Universities, and 501(c)(3) Non-Profit buildings

with an average yearly demand >200kW*

INCLUDES BENCHMARKING

COST Free

WHY

- Inventory of all energy-consuming equipment and line by line program eligibility, savings and costs
- Comprehensive utility bill analysis
- Facility benchmarking
- Feasibility for solar and combined heat & power

INCENTIVE CAP

- **INCENTIVE** •\$150,000 per entity (covers most small to large entities)
 - •\$300,000 per 501(c)(3) hospital**
 - •\$300,000 maximum cap per entity with ESIP participation**

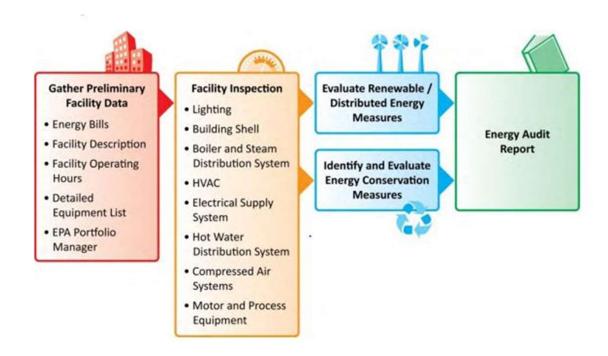
**Subject to BPU Approval



EXISTING BUILDINGS

Local Government Energy Audit

NJCleanEnergy.com/LGE/





FLORHAM PARK PUBLIC SCHOOL DISTRICT

- Program Local Government Energy Audit.
- Audit report 3 School & Maintenance Bldg
 - · identify potential energy efficiency opportunities
 - help prioritize specific measures for implementation
 - provide information about financial incentives that may be available.

Suggested Measures

•	Lighting	Upgrades

- Lighting Control Measures
- VFD Measures
- HVAC System Improvements
- Domestic Hot Water
- Food Service Refrigeration
- Custom Measures

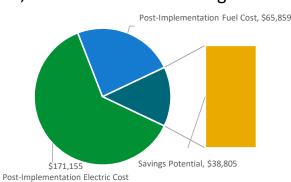
Total Audit Cost: \$0.00



All Measures Implemented - Full Package Admin Building

Installation Cost	\$227,861
Potential Rebates & Incentives	\$71,597
Annual Cost Savings	\$38,805
Annual Energy Savings	
Electricity:	306,183 kWh
Natural Gas:	104 Therms
Greenhouse Gas Emission Savir	ngs 160 Tons
Simple Payback	5.0 Years
Site Energy Savings (all utilities)	16%

\$38,805 Cost-effective Savings Potential



New Construction

NJCleanEnergy.com

Any size C&I **new construction** or **gut rehab** project may be eligible for energy efficiency incentives.

New construction/gut-rehab projects must exceed ASHRAE 90.1-2016.*

Savings Potential	Program	Description
	Whole Buil <mark>ding/ Compr</mark> ehensive: Pay for Pe <mark>rformance</mark> Program	Designed for buildings with 50,000 square feet for more of planned conditioned space.
	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.



New Construction

NEW CONSTRUCTION

NJCleanEnergy.com

Any size C&I **new construction** or **gut rehab** project may be eligible for energy efficiency incentives.

New construction/gut-rehab projects must exceed **ASHRAE 90.1-2016**.*





Substantial Renovation (Gut Rehab)

NJCleanEnergy.com

NJCEP programs for new construction* include substantial renovation and gut rehabilitation:

- Change of use and reconstruction of an existing building
- Construction work of a nature requiring that the building or portion of the building within be out of service for at least 30 days
- Reconstruction of a vacant structure or a portion of the building within





^{*} A licensed professional architect or engineer must have prepared or certified the building plans

SmartStart Buildings (SSB)

SINGLE MEASURE: NEW CONSTRUCTION

NJCleanEnergy.com

WHO

New Construction C&I Projects: commercial, industrial, agricultural, government, non-profit institutional, and multifamily customers



SIZE TO QUALIFY

N/A

ABOUT

- Individual high efficiency equipment rebates for new construction, and gut rehab projects.
- Prescriptive and custom designed measures

INCENTIVE CAP

- C&I New Construction \$500,000 per electric account and \$500,000 per natural gas account, per fiscal year.
- Custom, lesser of the following:
 - \$0.16/kWh and/or \$1.60/therm saved annually;
 - 50% of incremental installed cost; and
 - Buy-down to 1 year payback based on incremental cost and savings



SmartStart Buildings (SSB)

NJCleanEnergy.com





PRESCRIPTIVE INCENTIVES

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



CUSTOM INCENTIVES

- New or innovative technologies proven to be cost-effective and not listed as prescriptive
- Project pre and post inspection required



Pay for Performance (P4P)

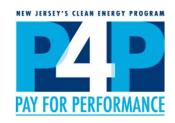
MID-LARGE: NEW CONSTRUCTION

NJCleanEnergy.com

WHO New construction projects seeking two or more energy efficiency measures with a minimum 5%

savings compared to ASHRAE 90.1-2016 (15%

savings for Multifamily).



SIZE TO QUALIFY

Over 50,000 square feet of planned new construction or gut

rehab*

ABOUT

A pre-approved Participating Partner will streamline the program

and guide users through the program phases

INCENTIVE CAP

• 50% of project cost up to \$2M per project / \$4M per entity

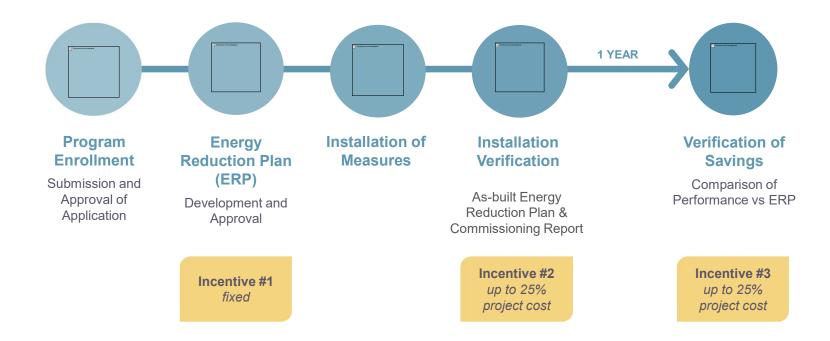
annually



Pay for Performance (P4P)

NJCleanEnergy.com

MID-LARGE:
NEW CONSTRUCTION







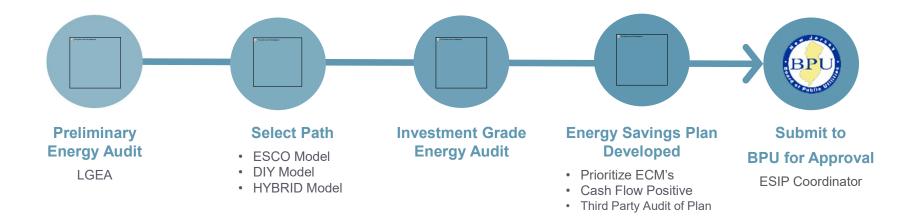
Financing Mechanism: ESIP

ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- Energy Performance Contracting NJ ESIP
- Financing Mechanism that allows state entities to make energy efficiency improvements without impacting their budgets
- Administered by the NJBPU
- NJBPU Approved EE Incentive Programs: NJCEP or Utility
- Project is paid for with the value of its own energy savings
- 15 or 20 year self-funding loan
- Can be combined with Federal/State Pandemic Relief Funds
- No upfront capital expenses
- No referendum is required
- No impact to taxpayers



ESIP Process





Energy Savings Improvement Program

FOR MORE INFORMATION

Michelle Rossi

ESIP Coordinator

ESIP@bpu.nj.gov

o: 609.913.6295

c: 609.915.0903





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More Information

GREG REINERT

Outreach Manager Greinert@trccompanies.com 732-340-6385

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NJCleanEnergy.com/NEWSLETTER

LISTSERVS

NJCleanEnergy.com/LISTSERVS









Thank you!

David Joye, Business Administrator, Fair Haven Public Schools joyed@fairhaven.edu

Corey Lowell, Business Administrator/Board Secretary

West Long Branch School District, Shore Regional School District

clowell@shoreregional.org

Greg Reinert

Outreach Account Manager, TRC / NJCEP

greinert@trccompanies.com

Nancy Quirk, Senior Energy Program Manager, Sustainable Jersey quirkn@tcnj.edu

