



Learning from Energy Exemplars

New Jersey School Boards Association Workshop October 23, 2019

Session Speakers

- Kelly Stone and Michelle Morey
 - Long Branch Elementary
- John Blair
 - Jackson School District
- Tony O'Donnell
 - TRC/New Jersey Clean Energy Program

Moderator:

- Nancy Quirk
 - Sustainable Jersey

What is Sustainable Jersey?

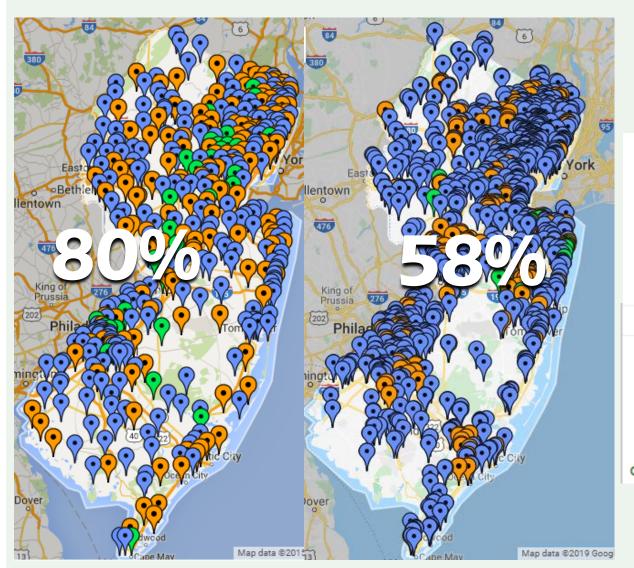
- Certification program for municipalities and schools
 - Tools, resources, and guidance to help municipalities and schools become more sustainable
 - Grants and funding for municipalities and schools
 - Regional Hubs





Municipal

Schools



Sustainable Jersey
Program
Participants



BRONZE

BECOME CERTIFIED \rightarrow

Sign in or sign up.









• CERTIFIED

one school

ABOUT

ACTIONS & CERTIFICATION

EVENTS & TRAININGS

GRANTS & RESOURCES

MEDIA & COMMUNICATIONS

SUPPORT US

REGISTER



HEADLINES



Sustainable Jersey for Schools Announces 2015 Champion and Leadership Awards

OCT 20, 2015



Sustainable Jersey for Schools Announces the First 59 Schools to Achieve Sustainability Certification

SEP 28, 2015

ABOUT SUSTAINABLE JERSEY FOR SCHOOLS

Sustainable Jersey for Schools is a certification program for New Jersey public schools that want to go green, conserve resources and take steps to create a brighter future, one school at a time. Learn More—

PARTICIPATING DISTRICTS & SCHOOLS



306

DISTRICTS

SCHOOLS

REGISTER NOW →

UPCOMING EVENTS



New Jersey School Boards Association Workshop 2015

Atlantic City Convention Center

OCT 27, 2015 - 08:00 AM TO OCT 29, 2015 - 05:00 PM

Sustainable Jersey for Schools 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 storage for resilience On-Site Geothermal Buy Renewable Energy 	Purchase Alternative Fuel Vehicles

* = priority action

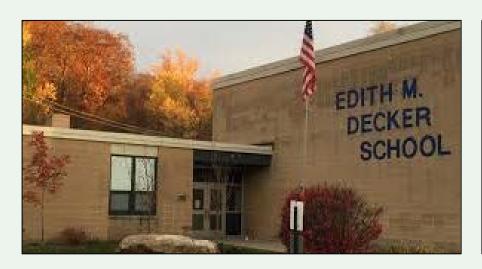
Student Engagement

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 *

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 Savings Improvement Plan

- ESIP How-To Guide
 - Case Studies
 - Flow chart
 - Contracting options
 - Glossary

How to Implement an Energy Savings Improvement Plan Sustainable Jersey How-To Guide, V.2



Sustainable Jersey

Sustainability Institute at The College of New Jersey
Forcina Hall, 3rd Floor
2000 Pennington Rd.
Ewing, NJ 08628-0718

http://www.sustainablejersey.com/grants-resources/publications/

Behavior-Based Energy Conservation

- Activities to change energy behaviors
 - "Energy Patrol" contests
 - Walk-through audit checklists
 - Holiday-shutdown activities
- "Energy Campaign"
 - o Brochures, flyers, email blasts
 - School Assembly presentations









GLC PowerSave Team 2017



Sustainable Transportation Action



- Healthier Air
- Reduced CO2 emissions
- Quieter
- Less expensive O&M

- Nation's largest fleet
 - 480,000 school buses in operation
- Largest form of mass transit
- Alternative fuel vehicles cost more than diesel
- Save 40-50% on fuel costs



Sustainable Jersey for Schools Supporters

Sustainable Jersey for Schools Underwriters









Grants Program







Corporate Sponsors

Platinum Sponsors











Silver Sponsor



Bronze Sponsors











SJS Program Partners



















Upcoming Events

Webinar: Getting Started on Energy Actions
Planning Solar Projects to Serve the Whole Community
October 28, 2019 @ 1 PM-2 PM

Webinar: Funding Energy Projects Part 1
New Jersey's Clean Energy Program Incentives
November 6, 2019 @ 1 PM-2 PM

Webinar: Funding Energy Projects Part 2
How Energy Savings Improvement Plans Fund Energy Upgrades (ESIP)
November 13, 2019 @ 1 PM-2 PM

Working Group: Energy Tracking and Management November 1, 2019 @ 9:30 AM-Noon TCNJ or call in option

> Focus Group: Community Solar November 7, 2019 @ 9:30 AM-11 AM TCNJ or call-in option







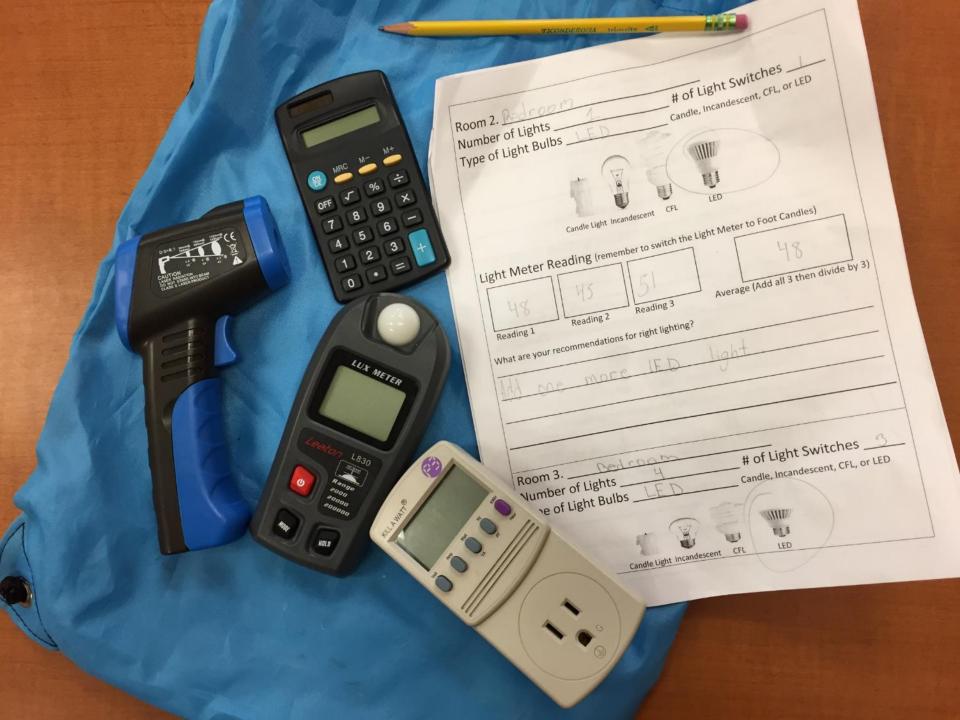
























Behavior-Based Conservation Programs
Professional Development for Sustainability
Community Education and Outreach
Civic & Stewardship Volunteer
Education for Sustainability

- Education for Sustainability Grades 4-12 Career and Technical Education
- Education for Sustainability Grades 4-12 Math
- Education for Sustainability Grades 4-12 Science
- Education for Sustainability Grades 4-12 Social Studies
- Education for Sustainability Grades 4-12 Technology

Enrichment Programs through Partnerships
Energy Tracking and Management
Green Challenges
School Carbon Footprint



Demand Response

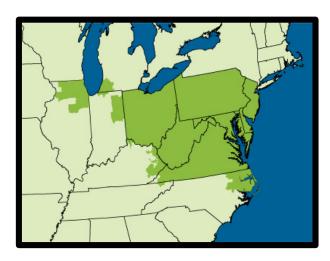
Participation in this program has brought in over **\$200,000** since 2017.

Look For:

- Split
- Equipment Cost
- Time of year when test takes
 - place
- Portal







Utility Bill Analysis

Tracking

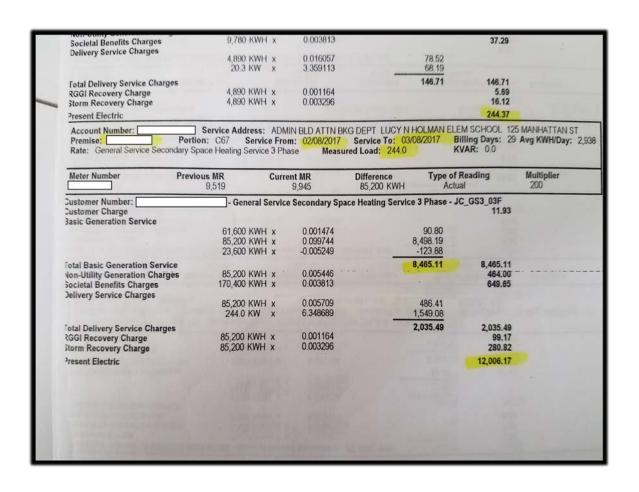
Demand Charges –Reducing Load Saves \$\$

Estimated Bills – Especially in Summer

Duplicates

Savings

Societal Benefits Charge



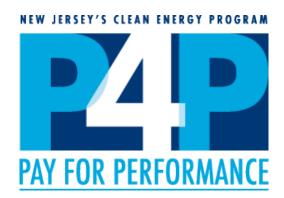
Local Government Energy Audit



The <u>Local Government Energy Audit Program</u> provides FREE energy audits to local governments such as schools and municipal buildings.

Provides a list of useful Energy Conservation Measures (ECM's)







	Energy Conservation Measure	Recommend?	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)		Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
	Lighting Upgrades		262,579	52.4	0.0	\$31,454.89	\$161,087.62	\$25,860.00	\$135,227.62	4.3	264,415
ECM 1 Install L	ED Fixtures	Yes	91,996	12.6	0.0	\$11,020.41	\$52,088.18	\$3,970.00	\$48,118.18	4.4	92,639
ECM 2 Retrofit	Fix tures with LED Lamps	Yes	170,583	39.8	0.0	\$20,434.48	\$108,999.45	\$21,890.00	\$87,109.45	4.3	171,775
	Lighting Control Measures		48,063	10.9	0.0	\$5,757.58	\$34,928.67	\$4,565.00	\$30,363.67	5.3	48,399
ECM 3 Install C	Occupancy Sensor Lighting Controls	Yes	45,083	10.3	0.0	\$5,400.63	\$31,146.00	\$3,765.00	\$27,381.00	5.1	45,399
ECM 4 Install F	High/Low Lighitng Controls	Yes	2,980	0.7	0.0	\$356.95	\$3,782.67	\$800.00	\$2,982.67	8.4	3,001
	Motor Upgrades		3,011	0.7	0.0	\$360.66	\$4,813.23	\$0.00	\$4,813.23	13.3	3,032
ECM 5 Premiu	m Efficiency Motors	Yes	3,011	0.7	0.0	\$360.66	\$4,813.23	\$0.00	\$4,813.23	13.3	3,032
Vari	able Frequency Drive (VFD) Measures		34,361	6.1	0.0	\$4,116.17	\$26,507.72	\$2,320.00	\$24,187.72	5.9	34,601
ECM 6 Install V	/FDs on Constant Volume (CV) HVAC	Yes	13,271	3.9	0.0	\$1,589.80	\$14,029.20	\$2,320.00	\$11,709.20	7.4	13,364
ECM 7 Install V	/FDs on Hot Water Pumps	Yes	21,090	2.2	0.0	\$2,526.37	\$12,478.52	\$0.00	\$12,478.52	4.9	21,237
	Electric Unitary HVAC Measures		82,772	47.0	0.0	\$9,915.48	\$590,109.18	\$32,176.50	\$557,932.68	56.3	83,351
Install H	High Efficiency Electric AC	No	82,018	46.6	0.0	\$9,825.16	\$586,279.56	\$32,046.50	\$554,233.06	56.4	82,592
Install H	High Efficiency Packaged Terminal AC/HP	No	754	0.4	0.0	\$90.32	\$3,829.62	\$130.00	\$3,699.62	41.0	759
Gas	Heating (HVAC/Process) Replacement		0	0.0	141.1	\$1,920.32	\$77,547.03	\$6,516.00	\$71,031.03	37.0	16,522
Install H	High Efficiency Hot Water Boilers	No	0	0.0	141.1	\$1,920.32	\$77,547.03	\$6,516.00	\$71,031.03	37.0	16,522
	Domestic Water Heating Upgrade		0	0.0	77.9	\$1,060.53	\$236.61	\$0.00	\$236.61	0.2	9,125
ECM 8 Install L	ow-Flow Domestic Hot Water Devices	Yes	0	0.0	77.9	\$1,060.53	\$236.61	\$0.00	\$236.61	0.2	9,125
Plug Lo	ad Equipment Control - Vending Machine		9,671	0.0	0.0	\$1,158.51	\$1,380.00	\$0.00	\$1,380.00	1.2	9,739
ECM 9 Vending	g Machine Control	Yes	9,671	0.0	0.0	\$1,158.51	\$1,380.00	\$0.00	\$1,380.00	1.2	9,739
	TOTAL OF EVALUATED MEASURES		440,457	117.1	219.0	\$55,744.14	\$896,610.06	\$71,437.50	\$825,172.56	14.8	469,184
	TOTAL OF ALL RECOMMENDED MEASURES		357,685	70	78	\$ 43,908.34	\$ 228,953.84	\$ 32,745.00	\$ 196,208.84	4.5	369,310
Т	OTAL OF ALL NON_RECOMMENDED MEASURES	3	82,772	47	141	11,836	667,656	38,693	628,964	53.1	99,873

^{* -} 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).

Energy Savings Improvement Program - ESIP









3 Types

Do It Yourself

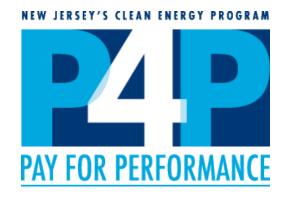
ESCO

Hybrid

Energy Savings Improvement Program - ESIP







General Steps in Process

RFP – Submit to BPU for approval then advertise

Mandatory Pre-Proposal Meeting/Site Visit

Review Process – Selection of ESCO

Investment Grade Energy Audit

Energy Savings Project Presented

Board Approval

Installation

Third Party Review

New Jersey's Clean Energy ProgramTM

Overview of Programs for K-12 Schools in New Jersey

October 23, 2019





NJCEP Background

ADMINISTERED BY

New Jersey Board of Public Utilities' Office of Clean Energy

FUNDING

Societal Benefits Charge (SBC) on utility bill

PROGRAM GOALS

- Education
- Change behavior
- Provide opportunity for ALL NJ residents to reduce energy and lower operating cost
- Protect the environment and lower emissions
- Meet Governor's goal of 100% clean energy by 2050





NJCEP Portfolio of Programs

RENEWABLE ENERGY

- Offshore Wind
- SREC Registration
- Community Solar

SPECIALIZED ENERGY EFFICIENCY

- Community Energy Grants
- State Facility Initiatives
- R&D Energy Tech Hub*
- Workforce Development*



COMMERCIAL & INDUSTRIAL

- Energy Audits
- Energy Efficiency Incentives
- Multifamily*
- High Performance Building Competition*
- Trade Allies



DISTRIBUTED ENERGY RESOURCES

- Combined Heat
 Power Fuel
 Cells
- Microgrid
 Development
- Energy Storage*



RESIDENTIAL

- New
 Construction
- Existing Homes
- Energy Efficient Products
- Trade Allies



* coming soon!



C&I PROGRAMS

C&I Portfolio of Programs

Eligible Sectors: Commercial, Industrial, Government, Schools, Non-Profit, Institutional and Multifamily

MEASUREMENT & AUDITS

- Energy Benchmarking
- Local Government Energy Audits (for non-profits too)

COMPREHENSIVE PROGRAMS

- Multifamily*
 - Single Measure
 - Multi-measure
- Large Energy Users
- Pay for Performance
 - Existing Buildings
 - New Construction
- Direct Install
- Customer Tailored Energy Efficiency Pilot

SINGLE MEASURE REBATES

- SmartStart
 - Existing Buildings
 - New Construction

DISTRIBUTED ENERGY RESOURCES

- Combined Heat & Power - Fuel Cells
- Energy Storage
- Microgrids

FY20

Some programs offer enhanced incentives to buildings:

- in a **UEZ** or **OZ**
- owned or operated by a municipality
- owned or operated by a K-12 public school

* coming soon!



Definitions: UEZs and OZs

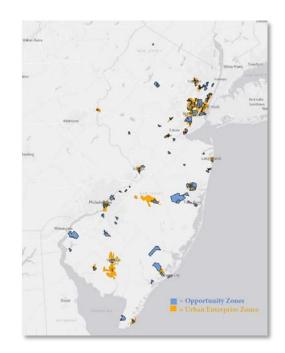
FY20

Some programs offer enhanced incentives to buildings:

- in a **UEZ** or **OZ**
- owned or operated by a municipality
- owned or operated by a K-12 public school



Eligibility Basis	Criteria			
Located in an	The building where equipment is or will be installed must be located within the bounds of an Urban			
Urban	Enterprise Zone (UEZ). Please follow the steps below to confirm your facility is within the qualifying			
Enterprise	zone.			
Zone (UEZ)	The building location must be checked against the NJ Community Asset Map.			
	Enter the address of your building in the field at the top of the map. Under the Layers menu on the left side of the screen, scroll down to Urban Enterprise Zones and <i>check</i> to enable the layer. Print or save a screenshot of the page to include with your submission.			
	For the avoidance of doubt, companies do not need to become a Certified UEZ Business to be eligible for enhanced incentives from NJCEP.			
Located in an OpportunityZone (OZ)	The building where equipment is or will be installed must be located within the bounds of an Opportunity Zone (OZ). Please follow the steps below to confirm your facility is within the qualifying zone.			
	The building location must be checked against the NJ Community Asset Map.			





Click here for a link to NJ Community Asset Maps

Local Government Energy Audit

MEASUREMENT & AUDITS

NJCleanEnergy.com/LGEA

WHO

Local Government, New Jersey Colleges and Universities, and 501(c)(3) Non-Profit buildings with an average yearly demand >200kW*



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

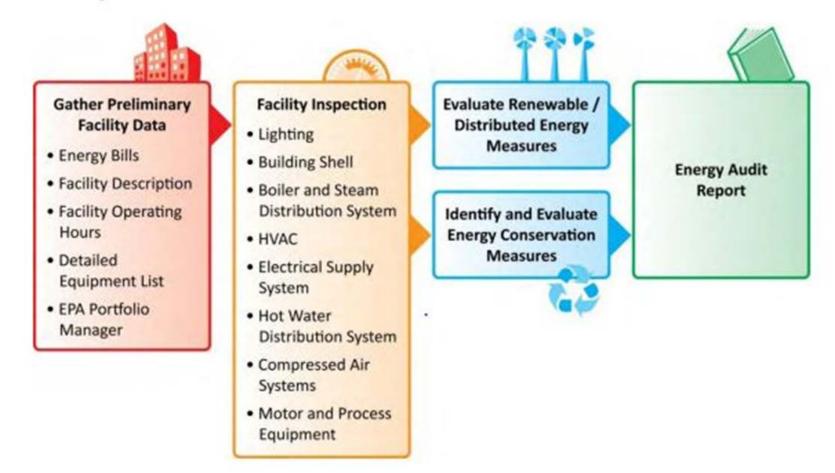
CAP

- **INCENTIVE** •\$100,000 per entity (covers most small to large entities)
 - •\$300,000 per 501(c)(3) hospital
 - •\$500,000 per entity interested in ESIP



* Inquire about the waivers available to buildings ≤200kW average

NJCleanEnergy.com/LGEA





C&I Portfolio of Programs

Eligible Sectors: Commercial, Industrial, Government, Schools, Non-Profit, Institutional and Multifamily

MEASUREMENT & AUDITS

- Energy Benchmarking
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- Large Energy Users
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 - New Construction
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SINGLE MEASURE REBATES

- SmartStart
 - Existing Buildings
 - New Construction

DISTRIBUTED ENERGY RESOURCES

- Combined Heat & Power - Fuel Cells
- Energy Storage
- Microgrids





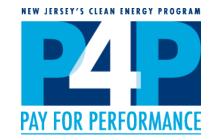
Pay for Performance

COMPREHENSIVE PROGRAMS

NJCleanEnergy.com/P4P



Large C&I existing buildings or new construction seeking two or more energy efficiency measures with a minimum 15% savings



SIZE TO **QUALIFY** Annual peak demand 200 kW+ in the previous year for existing buildings or over 50,000 square feet of planned new construction

ABOUT

A pre-approved Participating Partner will streamline the program and guide users through the program phases

CAP

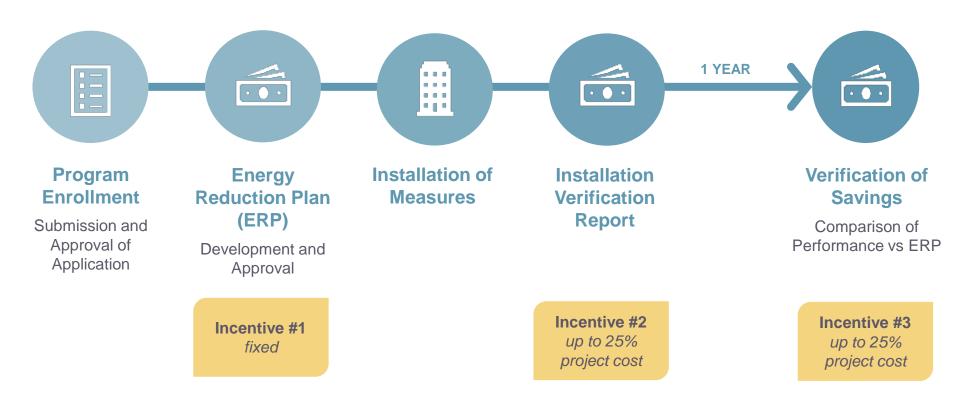
- **INCENTIVE** •50% of project cost (or 80% for UEZ/OZ/ MUNI/K-12 Public Schools) up to \$2M per project / \$4M per entity annually
 - Incentive payments #2 and #3 are doubled for UEZ/OZ/ MUNI/K-12 Public Schools



Pay for Performance

COMPREHENSIVE PROGRAMS

NJCleanEnergy.com/P4P





Direct Install

COMPREHENSIVE PROGRAMS

NJCleanEnergy.com/DI

WHO

Small to medium sized C&I existing facilities seeking to replace inefficient equipment



SIZE TO **QUALIFY**

Average annual peak demand <200 kW in the previous 12 months

ABOUT

- A pre-approved regional Participating Contractor will do a walkthrough evaluation and guide users through the program phases
- Fast project turnaround time

CAP

- **INCENTIVE** •\$125,000 incentive funding per project/building (\$250K UEZ/OZ/ MUNI/K-12 Public Schools), or
 - •\$250,000 per entity (\$500K ESIP; \$4M UEZ/OZ/ MUNI/K-12 Public Schools)



Direct Install

NJCleanEnergy.com/DI



Facilities in Urban Enterprise Zones (UEZ), Opportunity Zones (OZ), municipalities, and K-12 public schools:

INCENTIVE FUNDING

CUSTOMER

Up to **80%** of installed cost is paid directly to the contractor

20% of installed cost

All other eligible facilities:

INCENTIVE FUNDING

CUSTOMER

Up to **70%** of installed cost is paid directly to the contractor

30% of installed cost



Customer Tailored Energy Efficiency Pilot

COMPREHENSIVE PROGRAMS

NJCleanEnergy.com/CTEEP

WHO

C&I customers seeking a streamlined/single application for participants submitting for multiple different technology types

SIZE TO **QUALIFY**

N/A

ABOUT

- On site assistance available
- One application form for multiple prescriptive or custom measures
- Utilizes SmartStart Incentives
- Additional technical incentive available to offset soft costs associated with developing and planning custom projects

CAP

INCENTIVE Maximum incentive per entity is the lesser of:

- \$250,000 entity cap,
- 50% of eligible project costs, or
- Buy-down to 1-year payback

Up to \$10,000 for technical assistance of custom project evaluation.

VALUES AS SMARTSTART



Customer Tailored Energy Efficiency Pilot

NJCleanEnergy.com/CTEEP

Payment schedule based on program variation:

	Energy Efficiency Plan Approval	Installation Complete	Performance Verification
Technical Assistance (Optional)	50%	50%	
CTEEP Prescriptive Measures		100%	
CTEEP Custom Measures		90%	10%



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DISTRIBUTED ENERGY RESOURCES

- Combined Heat & Power - Fuel Cells
- Energy Storage
- Microgrids

* coming soon!



SmartStart

NJCleanEnergy.com/SSB

WHO

All C&I: Commercial, Industrial, Agricultural, Government, Non-Profit and Institutional customers



SIZE TO QUALIFY

N/A

ABOUT

- Individual high efficiency equipment rebates for new construction, renovation, remodeling, equipment replacement
- Prescriptive and custom designed measures
- Pre-approval required for lighting ≥ \$100,000 and <u>all</u> custom measures

INCENTIVE CAP

- Prescriptive: \$500,000 for each electric or gas account
- 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

NJCleanEnergy.com/SSB



PRESCRIPTIVE INCENTIVES

- Lighting & Lighting Controls
- Packaged HVAC
- Boilers & Water Heaters
- Chillers
- VFDs
- Food Service
- Refrigeration

Existing buildings prescriptive only:

DOUBLE INCENTIVES
FOR OZ/UEZ/ MUNI/
K-12 PUBLIC
SCHOOLS



CUSTOM INCENTIVES

- New or innovative technologies proven to be cost-effective and not listed as prescriptive
- Projects must have a minimum first year energy savings of 75,000 kWh or 1,500 therms
- Project pre and post inspection required



Coming Soon!

Local Government Energy Audit

Direct Install

Combined Heat and Power – Fuel Cells

C&I Buildings

Program terms that will no longer be used:

- SmartStart (EB & NC)
 - CTEEP
- Pay for Performance (EB & NC)
 - Large Energy Users



The Future: C&I Buildings

Coming Soon!

During the coming year, several programs will be transitioned to one primary program designed to better facilitate energy efficiency for New Jersey customers

BASE

NJBASE: BUILDING & SYSTEMS EVALUATION

- Optional first step before upgrade paths
- Building-specific technical assistance to guide decision making
- 50/50 cost-share model
- Done by pre-approved contractors



PATH A

SINGLE MEASURE PRESCRIPTIVE

- Rebate structure
- Simplified application, equipment categories, and requirements



PATH B

MULTI-MEASURE & CUSTOM

- Progress payments for completion of ECM types
- Bonus incentives for bundles
- No minimum savings for Custom
- Simplified requirements



PATH C

WHOLE BUILDING

- No minimum size or savings required, but comprehensive scope of work required
- Performance Incentive for Optional M&V
- Pre-approved contractors





FINANCING

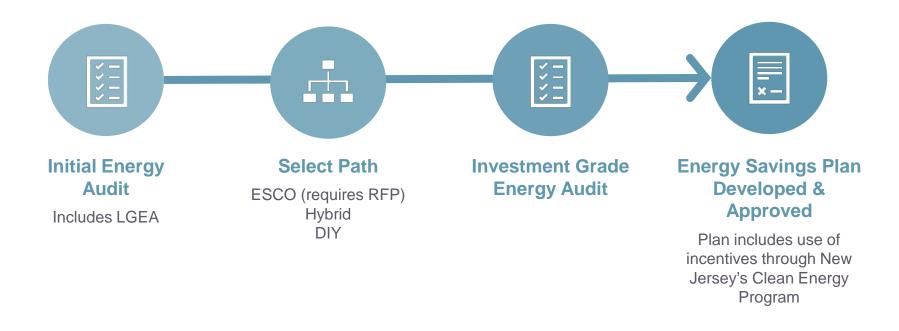
Financing Mechanism: ESIP

ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

- Provides alternative financing for energy savings projects at public institutions
- Administered directly by the BPU
- Value of energy savings leveraged to pay for cost of EE projects over a 15 year contract
- Requires NO new bonding and is outside of capital budget
- Does not count as debt or require voter approval



Financing Mechanism: ESIP





More Information

TONY O'DONNELL

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VISIT

NJCleanEnergy.com

NEWSLETTER

NJCleanEnergy.com/NEWSLETTER

LISTSERVS

NJCleanEnergy.com/LISTSERVS



@NJCleanEnergy





Thank you!

- Michelle Morey and Kelly Stone
 - Long Branch Elementary
 - mmorey@longbranch.k12.nj.us and kstone@longbranch.k12.nj.us
- John Blair
 - Jackson School District
 - jblair@jacksonsd.org
- Tony O'Donnell
 - TRC/New Jersey Clean Energy Program
 - AODonnell@trccompanies.com

Moderator:

- Nancy Quirk
 - Sustainable Jersey
 - quirkn@tcnj.edu