Sustainable Jersey for Schools

Multiple Benefits of Energy Efficiency

Brad Bertani, Assistant Principal, Tuscan Elementary School
Kimberly A. Keener, Manager of Facilities, Robbinsville BOE
Mike Thulen, ESIP Coordinator, NJ Board of Public Utilities

Sustainable Jersey for Schools

Three key components:

- Identifies **actions** to become more sustainable
- Provides **tools, resources, and guidance** to make progress
- Provides access to **grants** for schools and school districts

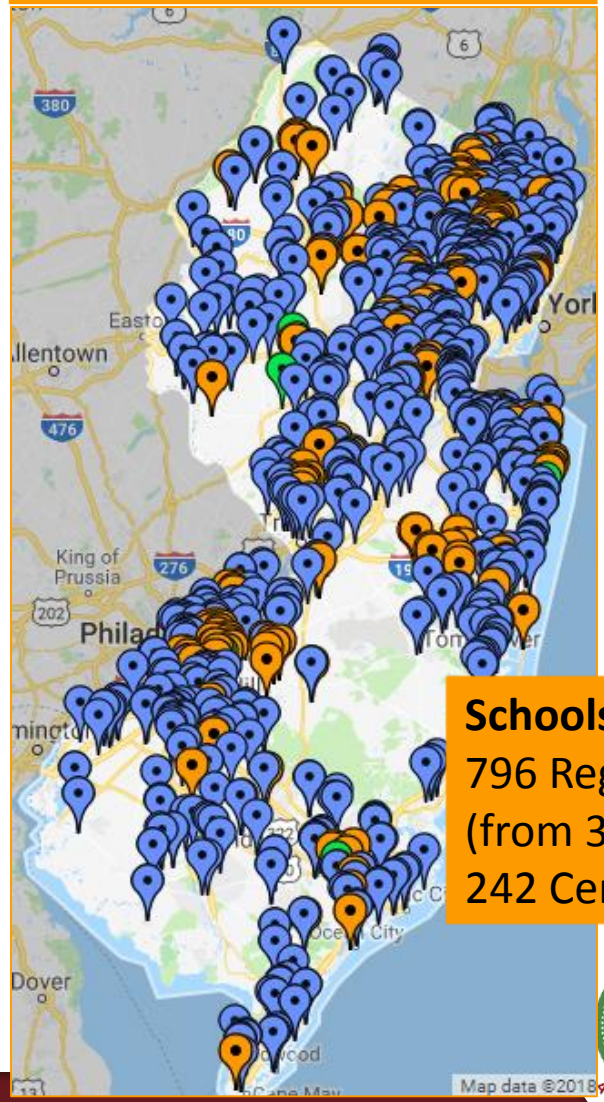
FOR SCHOOLS
SUSTAINABLE JERSEY
CERTIFIED
A Brighter Future, One School at a Time

Program Participants (10/17/2018)

Sustainablejersey.com

Municipalities:
447 Registered
206 Certified

Sustainablejerseyschools.com



Schools:
796 Registered
(from 308 Districts)
242 Certified

FOR SCHOOLS
SUSTAINABLE JERSEY
CERTIFIED
A Brighter Future, One School at a Time

Sustainable Jersey for Schools Energy Actions

Facilities and Operations

Energy Efficiency	Renewable Energy
• Carbon Footprint (priority action) • Energy Tracking and Management • Energy Efficiency for School Facilities	• On-Site Solar Energy • +10 pts storage for resilience • On-Site Geothermal • Buy Renewable Energy

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

FOR SCHOOLS SUSTAINABLE JERSEY CERTIFIED
A Brighter Future, One School at a Time

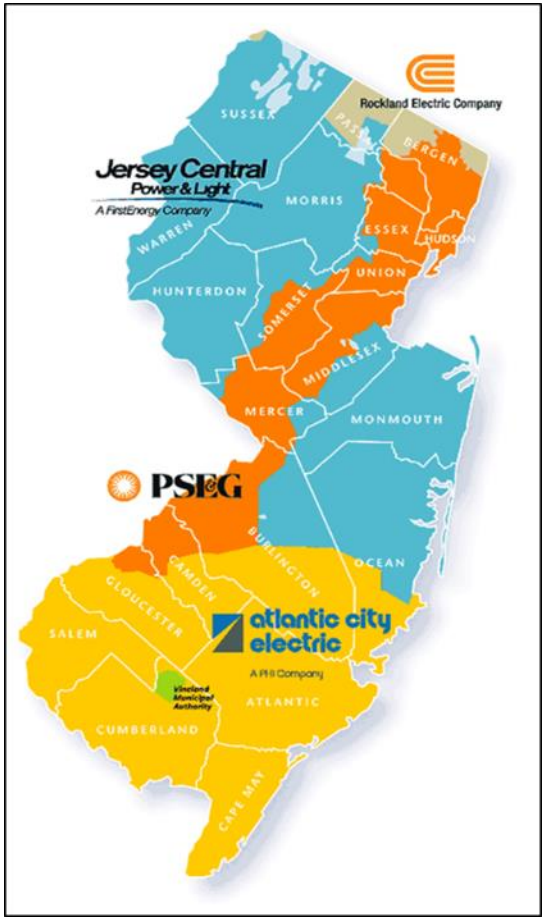
Energy Efficiency for Facilities Action

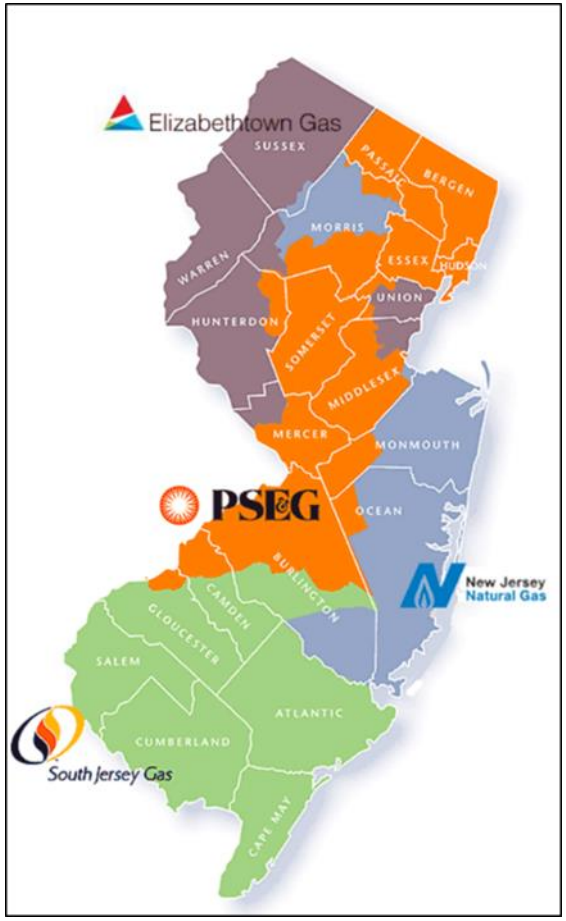
- **5 points** - Audit on at least one building
- **10 points** - Local Government Energy Audit (LGEA)
- **15 points** - Significant upgrade work
- **20 points** - LGEA on all buildings PLUS significant upgrade work
- **30 points** - Efficiency upgrades; 10%-19% decreased energy use
- **40 points** - Efficiency upgrades; 20%-29% decreased energy use
- **50 points** - Efficiency upgrades; at least 30% decreased energy use

FOR SCHOOLS
SUSTAINABLE JERSEY
CERTIFIED
A Brighter Future, One School at a Time

Utility Incentive Programs

- Incentives vary by utility
- Contact your local natural gas and electric utilities
- Utility incentives complement NJCEP
- Programs for facilities, residents, and local businesses





FOR SCHOOLS
SUSTAINABLE JERSEY
CERTIFIED
A Brighter Future, One School at a Time

Sustainable Jersey for Schools Sponsors

Sustainable Jersey for Schools Underwriters

NJSBA

PSEG Foundation

The Geraldine R. Dodge Foundation
IMAGINE A BETTER NEW JERSEY

njea NEW JERSEY EDUCATION ASSOCIATION

New Jersey's cleanenergy program™

Grants Program

GARDINIER ENVIRONMENTAL FUND

PSEG Foundation

njea NEW JERSEY EDUCATION ASSOCIATION

Corporate Sponsors

Platinum Sponsors

SOUTH JERSEY GAS *Founding Sponsor*

New Jersey Natural Gas *Founding Sponsor*

Gold Sponsor

NJM Insurance Group *Founding Sponsor*

Silver Sponsor

investors Bank
Banking in *your* best interest.

Bronze Sponsors

BioShine

Maschio's Food Services, Inc.

gabel associates

Schneider Electric

FOR SCHOOLS SUSTAINABLE JERSEY® CERTIFIED
A Brighter Future, One School at a Time

Program Partners

For More Information

- Visit us at www.sustainablejerseyschools.com
- Sign up for mailing list on website to get bi-weekly E-News
- Email

  schools@sustainablejersey.com
- Call Sustainable Jersey Staff
  - Heather McCall 609-771-2469
  - Veronique Lambert 609-771-3427

FOR SCHOOLS SUSTAINABLE JERSEY CERTIFIED A Brighter Future, One School at a Time

SUSTAINABLE JERSEY INITIATIVE

TEACHER LED

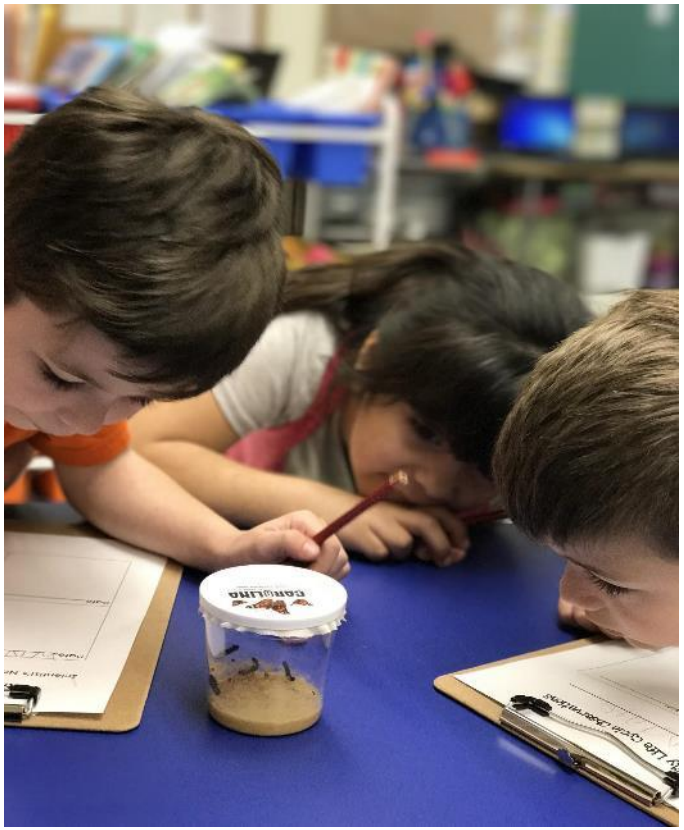
STUDENT DRIVEN

Student Led Opportunities

- **Apples for Ice Cream Day** – 350 Apples were donated by Wightman's Farms in Morristown. The students learned about healthy snack choices.
- **Outdoor Air Quality** – Students look up the daily air quality and raise the appropriate color flag in front of the school.
- **ESIP** – Energy Tracking and Management, Audit, Innovative Projects.
- **Civic Stewardship and Volunteer Initiatives** – Pennies for Patients, Denville Food Pantry Food Drive. Connection with K-Kids and second grade mastery classes.

Educating for Sustainability

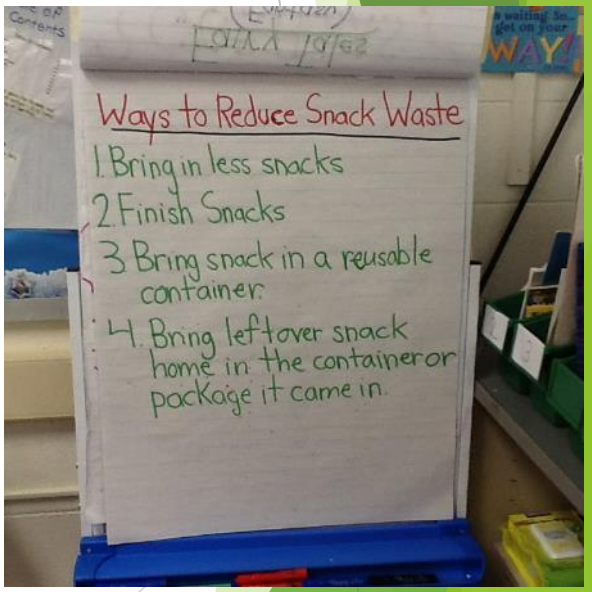
Butterfly Life Cycle



Butterfly Life cycle

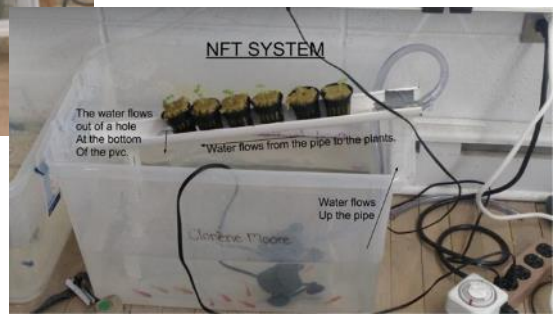
Waste tracking at snack time

After weighing the snack waste on Thursday, June 1st, we brainstormed ways we could reduce the amount. The weight of the waste on June 1st was 24 oz. On Monday, the first day of reducing the snack waste, the results were incredible. The snack waste went from 24 oz to 13.60 oz!! The weight of the waste was reduced by 10.40 oz! The kids were so excited about what they were able to do!! They then started a new bar graph to show the findings.



Education for Sustainability

STEM Hydroponics and Trout in the Classroom



from this to

to this

Education for Sustainability

Science Inquiry: Model Solar Cars

All 7th grade students created a model solar car.
Two met the requirements to attend the annual TransOptions Solar Car Competition.
"The Missile" came in first for engineering in Division 1.

"The Missile"
Division Winner!

Connor Doyle
Nick Tavarone

"Air Racer"

Bailey Daniels
Alia DiGavero
Yarielis Garcia

Accomplishments Continued

- **Reusable Water Bottle Challenge** – Students increased their usage of reusable water bottles by 16%.
- **School Gardens**
- **Access to Healthy Water in Schools** – Collaboration with the district.
- **PowerSave Schools Partnership** – The students are amazing.

PowerSave Schools

Students Educating the School Community

Auditing Process

1. Toolkit
2. Energy Efficiency
3. Essential Question: What can we do to save energy?

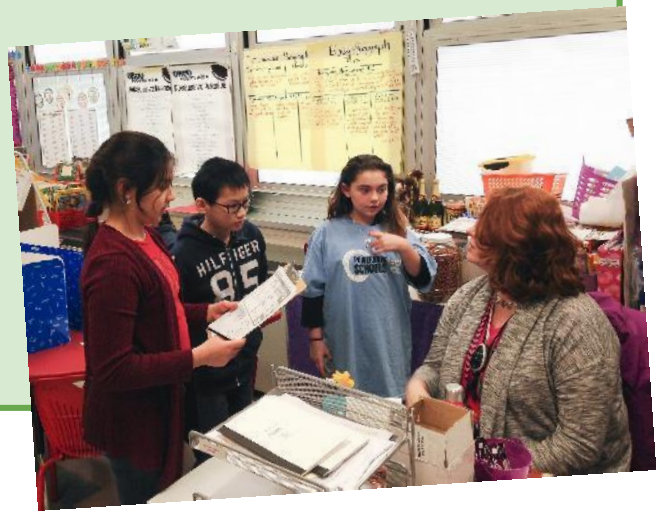
Energy Audit

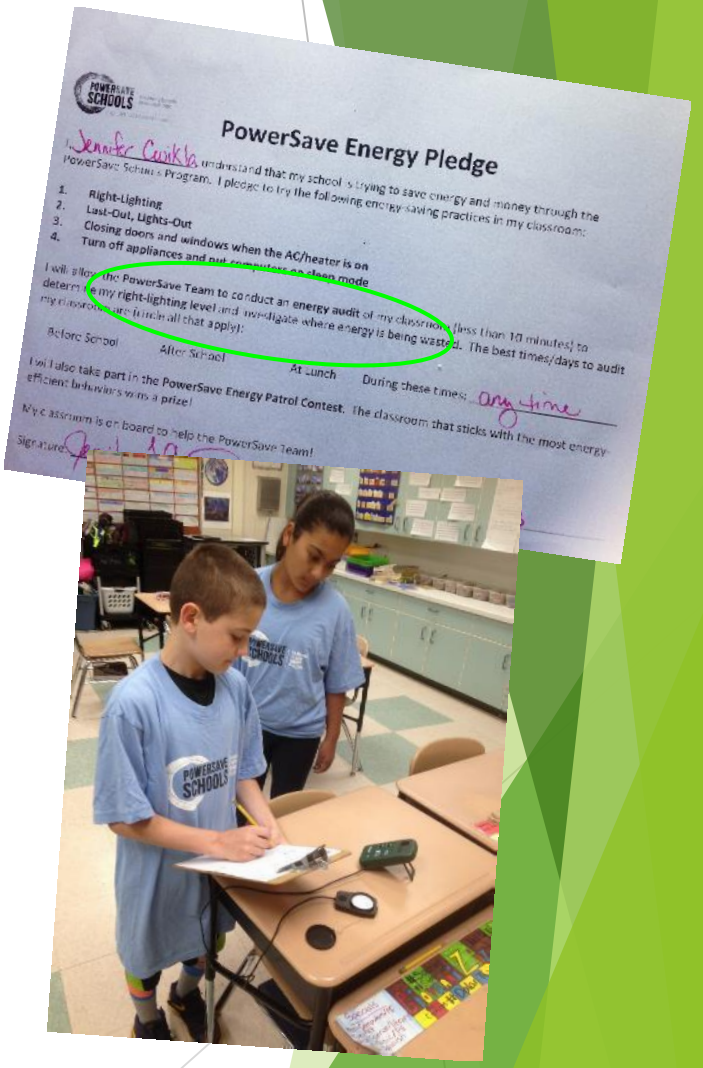
Classes willing to take on our energy-saving challenge first had their rooms audited...

We looked at 3 areas: lighting, appliances and HVAC.

Using a toolkit that included a light meter, infrared thermometer and watt meter, we took readings to measure how much energy was being used and possibly wasted.

We then made suggestions of simple practices that could reduce energy waste in each room.





Patrol contest:

Every Classroom was part of the patrol contest.

Each grade level competed against each other.

The total points were averaged based on the number of homerooms.

The contest ran for four weeks.

What we looked for:

Right Lighting.

Computers being shut off when not in use.

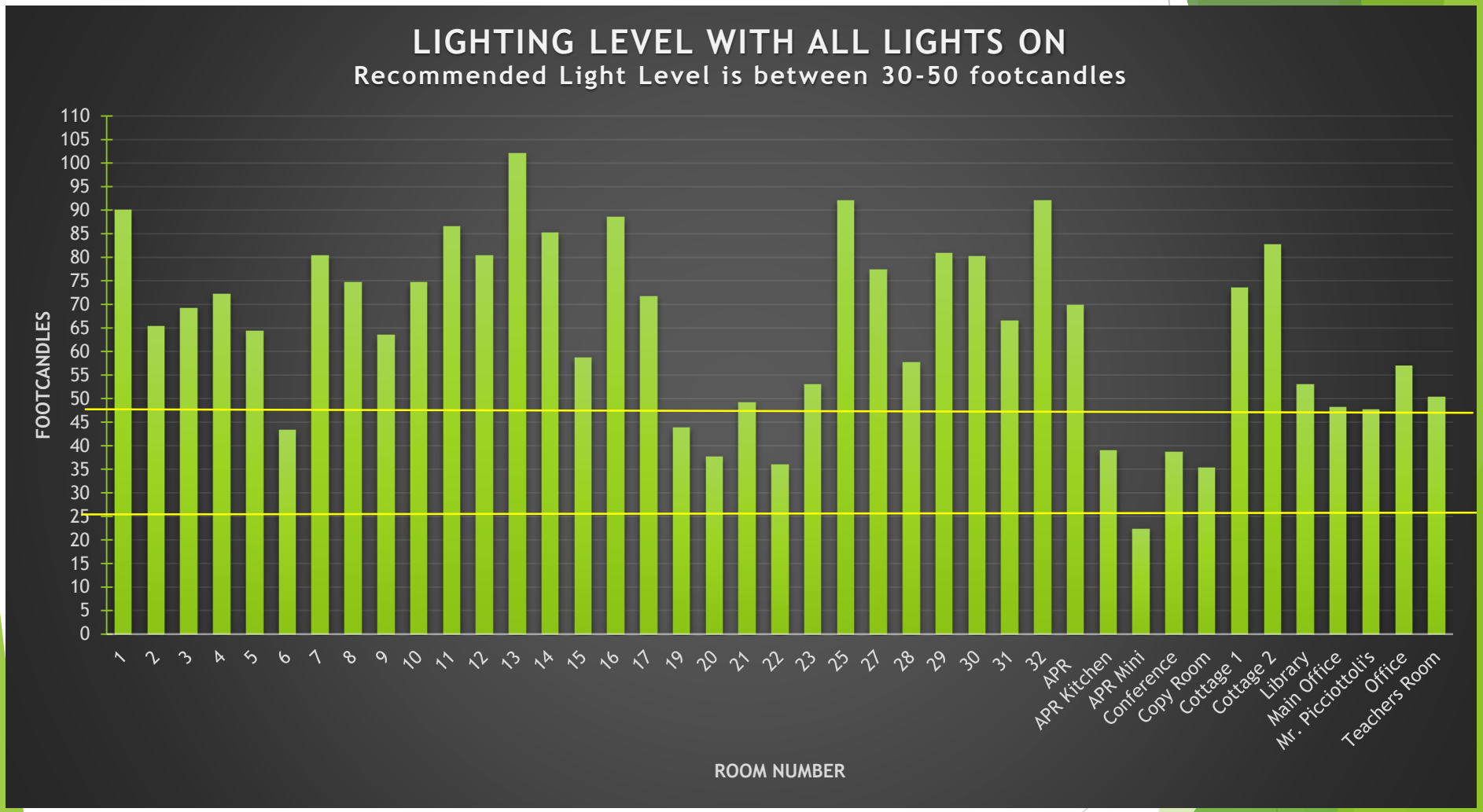
Smart Board being shut off when not in use.

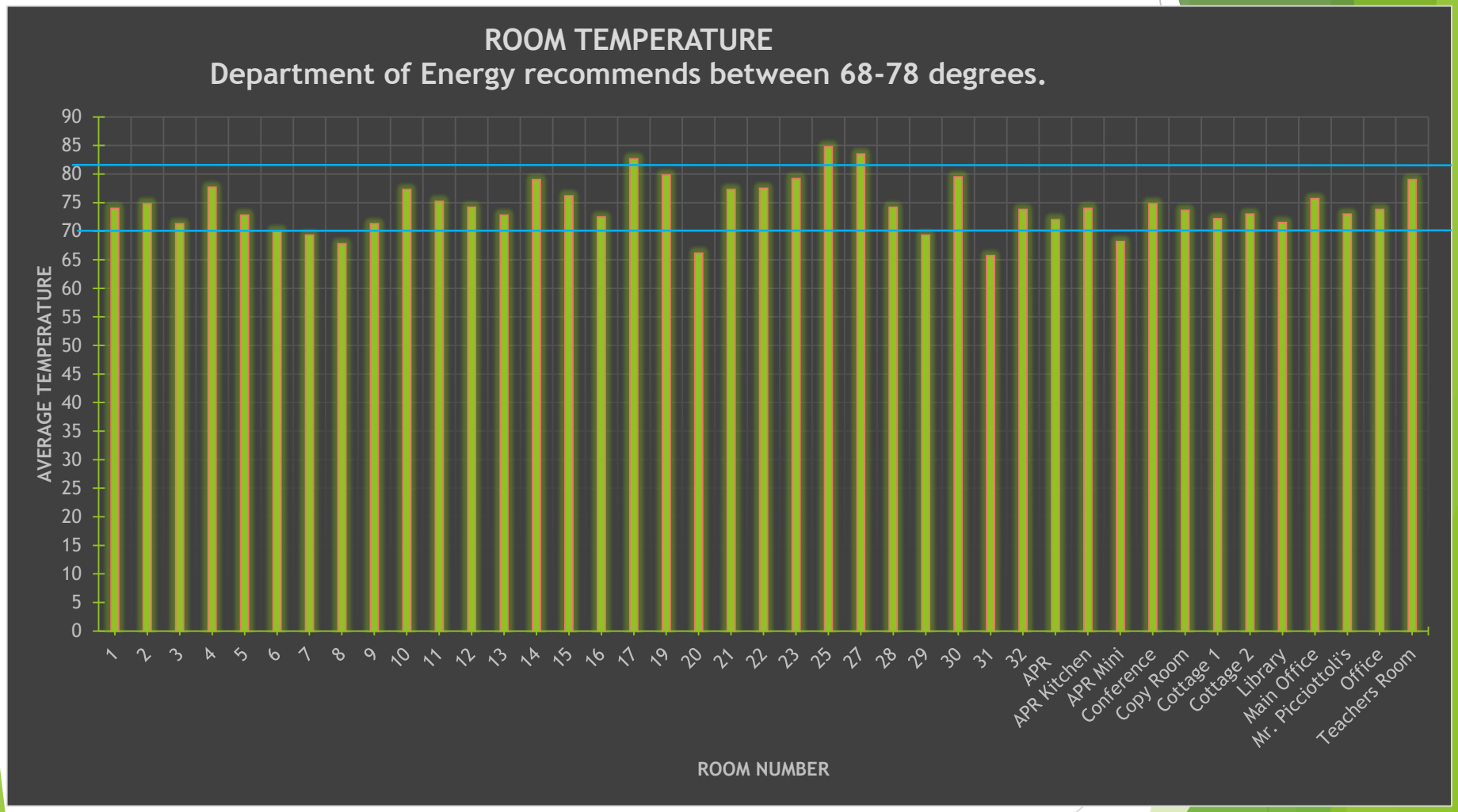
Doors and windows closed when the heat or air conditioner was on.

Community outreach:

- During 2016-2017, the Middle School PowerSave team concentrated on reaching out to the school community. We have accomplished this by:
  - Interacting with visitors at the Middle School Green Fair
  - Creating and displaying posters within the school
  - Tweeting reminders to save energy
  - Promoting PowerSave through the teacher websites for parents and the public to view.

- We are looking forward to building an even stronger, more successful team next year when the participating students from the elementary schools move up to the middle school.


LIGHTING LEVEL WITH ALL LIGHTS ON
Recommended Light Level is between 30-50 footcandles
FOOTCANDLES
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
19
20
21
22
23
25
27
28
29
30
31
32
APR
APR Kitchen
APR Mini
Conference
Copy Room
Cottage 1
Cottage 2
Library
Main Office
Mr. Picciottoli's
Office
Teachers Room
ROOM NUMBER


ROOM TEMPERATURE
Department of Energy recommends between 68-78 degrees.
AVERAGE TEMPERATURE
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
19
20
21
22
23
25
27
28
29
30
31
32
APR
APR Kitchen
APR Mini
Conference
Copy Room
Cottage 1
Cottage 2
Library
Main Office
Mr. Picciottoli's
Office
Teachers Room
ROOM NUMBER

Recommendations for the School Board

Change the way the lights are wired in the classrooms. This would allow every other light in the entire classroom to be on, as opposed to a section of the classroom, helping achieve the best lighting for learning.

Investigate use of solar panels, wind turbines and other technologies to offset the cost of using non-green energy.

Research the purchase of additional PowerSave equipment for use within Science classes and clubs through grants and other opportunities.

Recommendations Continued

Begin Energy Audits sooner in the school year to allow more data to be collected and compared.

Continue to bring the learning to the whole school! Educate teachers, custodians and other staff about saving energy both in school and at home.

Hold more energy saving contests, spread throughout the year, with prizes and incentives. This will help our team raise awareness within the schools.

TOGETHER WE CAN BUILD A FUTURE FILLED WITH GREEN!

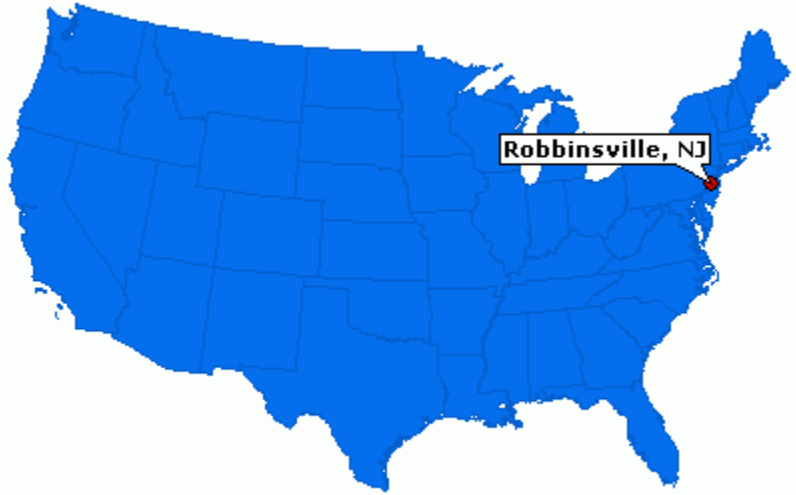
THANK YOU

Funding Energy Savings Projects

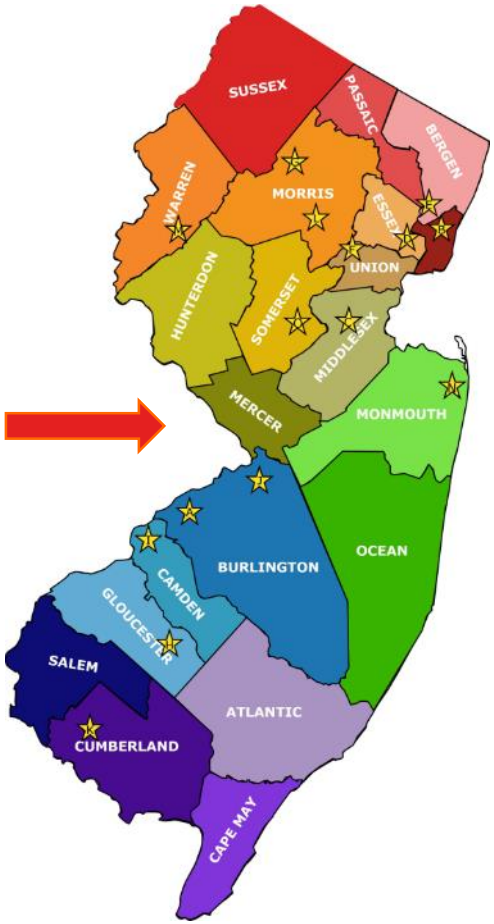
Kimberly Keener, CEFM
Robbinsville BOE

Robbinsville, NJ (Mercer County)

- Robbinsville, New Jersey 08691
- Total population-14,000 (2018)
- Public School Population- 3,200 (2018)



Robbinsville
TOWNSHIP
BE AT THE CENTER OF IT ALL



District Overview-2011

1. **Robbinsville High School**
   - **809 Students (Grades PreK, 9-12)**
   - **Built in 2005**
   - **220,000 Sq. Ft**

2. **Pond Road Middle School**
   - **1117 Students (Grades 4-8)**
   - **Built in 1996 w/ addition in 2003**
   - **150,000 Sq. Ft**

spiezle

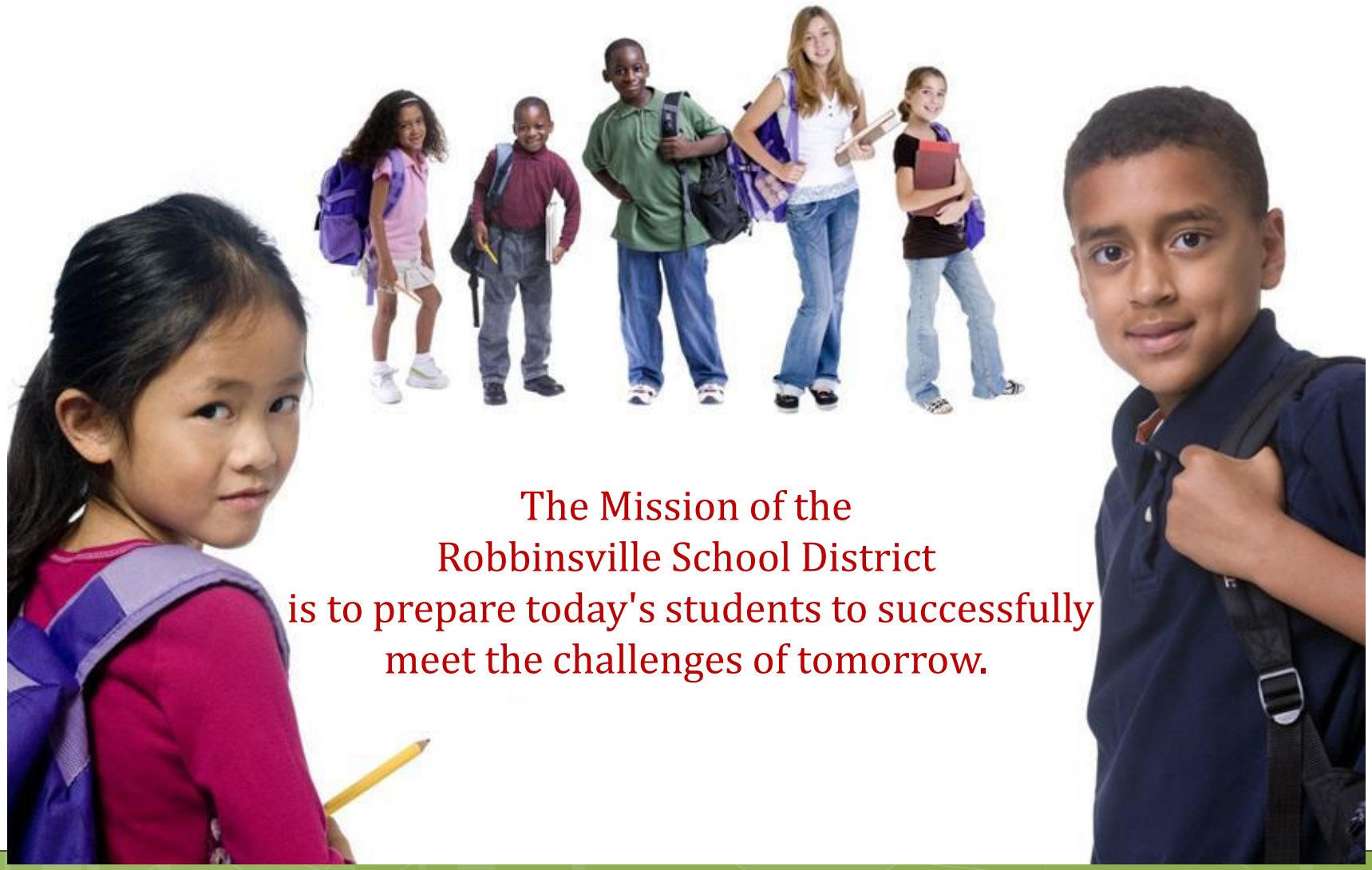
District Overview-2011

3. **Sharon Elementary School**
   - **820 Students (Grades PreK-3)**
   - **Built in 1958 with additions in 1961, 1972, 1987, 1991, 2001**
   - **96,000 Sq. Ft.**

4. **Windsor Elementary School**
   - **66 Students (K)**
   - **Built in 1909**
   - **6,000 Sq. Ft**

spiezle

District Mission Statement

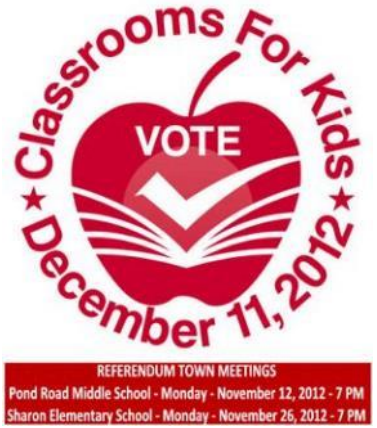


The Mission of the
Robbinsville School District
is to prepare today's students to successfully
meet the challenges of tomorrow.

Obstacles to Our Mission

- **Large Overcrowded Schools**
  - 332 Students Over Capacity with 335 More Students Expected from Approved Development
- **Operational Issues**
  - Stressed Schedules for Core Facilities (Cafeterias and Gymnasiums)
  - Re-purposed Spaces to Accommodate Increased Enrollment
  - Lack of Control over Mechanical Systems
  - Occupant Comfort Issues
  - Reductions in Maintenance and Custodial Staff
- **Capital Improvements Needed**
  - Roof Replacement
  - Boiler Replacements
  - Window Replacement
  - Air Conditioning
  - Lighting Upgrades
  - Water Fountain Replacement

District Capital Strategy



- **$39.6M Failed 2010 Referendum**
  - Renovations to Sharon Elementary School
  - Standalone New School
- **Stalled Solar PPA**
  - Pond Road & Sharon School Solar Install and Roof Replacement
  - Financing Unattainable Due to Unstable SREC Value
- **Board Reviewed Alternatives**
  - Leverage Energy Savings Improvement Program (ESIP)
    - Address Energy Related Improvements
  - Scaled Down $19M Referendum
    - Expand Sharon Elementary School / Renovate Cafeteria
    - Air-Conditioning in Old Section of Sharon Elementary School
    - Expand Pond Road Middle School / Renovate Media Center

spiezle

Referendum ESIP Message

CENTRAL JERSEY SUNNEWS

AUG 20, 2012 12:22 PM

Robbinsville Board of Education approves energy saving plan

BY NEWS STAFF Tweet

At its regular Board meeting on July 31, 2012 the Robbinsville Board of Education unanimously approved an Energy Savings Improvement Plan (ESIP) that will permit the district to replace or repair nearly $4 million of its HVAC, mechanical controls, windows, and even portions of leaking roofs at no cost to the taxpayer. Further, signing the ESIP reduced the proposed December 2012 facility referendum by nearly $1 million dollars.

Energy Conservation Measures

ECM Description	Robbinsville High School	Pond Middle School	Sharon Elementary School
Lighting Retrofit and Motion Sensors	✓	✓	✓
De-Stratification Fans	✓	✓	✓
Vending Misers	✓	✓	✓
Boiler Replacements		✓	✓
Kitchen Hood Controls	✓	✓	
Premium Efficient Motors and VFDs	✓	✓	✓
Walk-In Refrigerator/Freezer Controls	✓	✓	
RTU Cooling			✓
Building Management System Upgrades	✓	✓	✓
Demand Control Ventilation	✓	✓	✓
Building Envelope Improvements	✓	✓	✓
Roof Replacements		✓	
Power Factor Optimization	✓	✓	✓
Transformer Replacement	✓	✓	✓
Premium Efficiency Motors and VFDs			✓
Water Conservation	✓	✓	✓
Demand Response	✓	✓	✓

Robbinsville Voters Approve $18.9M School Facilities Bond

Updated Dec 11, 2012; Posted Dec 11, 2012

- ✓ Funding will go toward renovations and expansion at Sharon Elementary School currently serving the pre-kindergarten through third grades.
  A two-story 24-classroom addition will allow the elementary school to take the fourth grade class back from Pond Road Middle School and the PreK from Robbinsville High School.
- ✓ Funding would also be used to install air conditioning throughout the school, renovate windows and ceilings and build a full-court gymnasium.
- ✓ At Pond Road Middle School funding would provide three to five new classrooms in the Media Center and create expanded Cafetorium space.

ESIP Project

- Interior / Exterior Lighting Retrofit
  - High Efficiency Lighting Throughout District
  - Old Section of Sharon Elementary School
  - High School Theatre Room Lighting
  - Parking Lot LED Lighting

- Boiler Replacement-Aerco Units
  - Sharon Elementary School Boiler Replacement
  - Pond Road Middle School Boiler Replacement

- Building Management System Installation
  - Sharon ES Building Management System
  - Pond Road Middle Building Management System

New Lighting

Boiler Replacement

Honeywell

THE POWER OF CONNECTED

spiezle

ESIP Project

- Roof Replacement
  - Portion of Pond Road Middle School
- Window Replacement
  - Old Section of Sharon Elementary School
- Building Envelope
  - Roof-Wall Junction Insulation Throughout District
  - Weather Stripping Throughout District
  - Seal Through-The-Wall Air Conditioning Units
  - Seal Sharon Elementary School Abandoned Outside Air Vents
  - Seal Windsor Elementary Abandoned Coal Chute ***(Removed Post-Referendum)***

Roof Replacement

Honeywell

THE POWER OF **CONNECTED**

spiezle

ESIP Project

- Transformer Upgrades
  - High Efficiency Transformers Installed Throughout the District

New Transformers

- Power Factor Correction
  - Green Revolution Power Application Correction System (PACS) Installed In Main Switchgear Throughout the District

New PACS

Honeywell

THE POWER OF CONNECTED

spiezle

ESIP Project

- Destratification Fans
  - Destratification Fans Installed in Auditoriums and Gymnasiums Throughout the District
- Water Conservation
- Vending Misers

New Destratification Fan

Aerators

Honeywell

THE POWER OF CONNECTED

spiezle

Sharon Elementary School-Est. 1958

- Additions 1961, 1972, 1987, 1991, 2001, 2014
- 142,000 sq. ft.
- Grades PreK-4
- 1052 Students/136 Staff

Pond Road Middle School-Est. 1996

- Additions in 2003 and 2014
- 158,000 sq. ft.
- Grades 5-8
- 1032 Students/130 Staff

spiezle

Robbinsville High School-Est. 2005

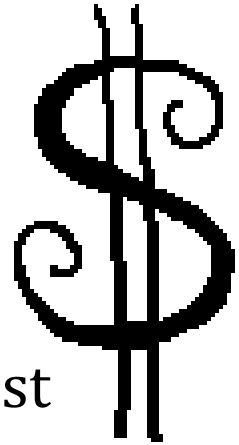
- Media Center Remodel 2018
- 220,000 sq. ft.
- Grades 9-12 and District Offices
- 1058 Students/134 Staff

Windsor Elementary School

- April 2016-Robbinsville Board of Education voted to sell the 1909 Windsor School to Robbinsville Township
- July 2017-Robbinsville Township purchased the property for $217,000 (Maintenance Reserve)

ESIP Financial Summary

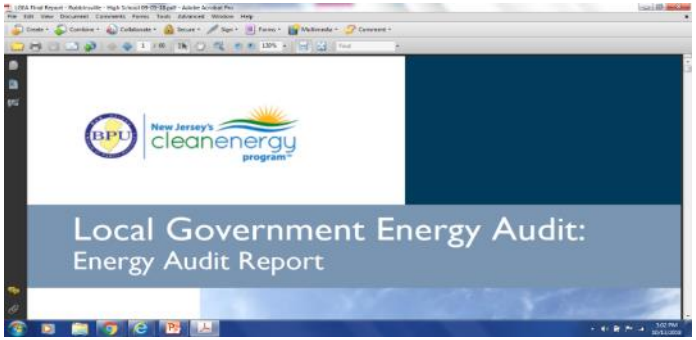
- ESIP Project Value - $4.7M
- Projected Rebates - $470K
- Guaranteed Annual Energy Savings - $241K
- Financing – 15 Year Lease Purchase @ 2.16% Interest



THE ENERGY SAVINGS CONTINUES
~LGEA 2017~…

2nd Energy Audit-LGEA

- **November 2017**-Robbinsville initiated the process to begin a 2nd ESIP by registering for a **FREE** LGEA (Local Government Energy Audit) w/ BPU
- **February 2018**-Audit was conducted by TRC in February 2018 (Honeywell ESIP was reviewed during the process)
- **May 2018**-TRC creates draft reports and an exit meeting was scheduled to prepare final documents
- **August 2018**-The district accepts the final energy audit reports and agrees to take next steps in the ESIP process



ESIP Changes from 2011 to 2018

- The incentive programs have changed to allow for percentage payment for performance
- An ESIP project can contain 15% of the dollar value in other types of projects
- Robbinsville will look to include security upgrades as part of the 15%
- Solar PPA can be part of the project
- A successful ESCO from the initial phase can be retained for a Phase II of an ESIP without issuing an RFP

NEW ESIP Change-2018

A successful ESCO from the initial phase can be retained for a Phase II of an ESIP without issuing an RFP if:

- Phase I was completed through a competitive contracting RFP initially
- No additional buildings can be added to the scope that were not included in the first phase
- Only new energy savings can be used to fund the Phase II project (i.e.. cannot double dip on savings from the initial phase ECMs)

If these conditions are met the ESCO will perform an updated investment grade energy audit. The ESCO then must have the BPU approve the updated Energy Savings Plan. Upon approval the District can go out for financing and begin construction on the project. The District can also still contract with their preferred professional services provider for architectural and engineering on the project.

Lessons Learned 2011 to 2018

- Research and explore all options for highest efficiencies, equipment upgrades, project funding, programs, and rebates
- Monitor all data systems and utility bills closely
- Maintain a service contract
- Create a culture of energy awareness and conservation
- Trust the process and take a holistic approach

Robbinsville Public Schools has cost avoided
$2.7 Million in utility charges since July 2010
Cenergistic Client-July 2010 to Present

Awards & Recognition

- 2012 Energy Education Energy Award for Good Stewardship
- 2013 Broad USA Energy Conservation Award
- 2014 Cenergistic Environmental Conservation Award-
  $1,000,000 in Energy Cost Avoidance
- 2015 Bronze Certification Sustainable Jersey (Municipality)
- 2016 Registered Sustainable Jersey for Schools
- 2017 Cenergistic Environmental Conservation Award-
  $2,000,000 in Energy Cost Avoidance
- 2018 NJ Dept of Agriculture Farm to School Grant Recipient

Questions?

Kimberly A. Keener, CEFM, LEED Green Associate
Director of Operations
Robbinsville Board of Education
155 Robbinsville-Edinburg Road
Robbinsville, New Jersey 08691
(609)632-0910 ext 3022 (office)
(609)468-9134 (cell)
(609)371-7964 (fax)
kkeener@robbinsville.k12.nj.us (email)

New Jersey's Clean Energy Program

Opportunities for Commercial, Industrial and Institutional Buildings

Mike Thulen
State Energy Services BPU

NJCEP BACKGROUND

- Administered by the New Jersey Board of Public Utilities
- Funded from “Societal Benefits Charge” on utility bill
- Program Goals:
  - Save energy and lower operating cost
  - Protect environment and lower emissions
  - Change the business mindset

PROGRAM PORTFOLIO

ELIGIBLE SECTORS

Commercial, Industrial, Government, Non-Profit, Institutional and Multifamily

PROGRAMS

Equipment Rebates:

- Retrofit – Existing Buildings
- New Construction
- Direct Install – Small Business
- Large Energy Users
- Sandy Relief Plan

Whole Buildings:

- Pay for Performance Existing Buildings
- Pay for Performance New Construction

Energy Generation:

- Combined Heat and Power (CHP) and Fuel Cells

Audits:

- Local Government Energy Audits

BENCHMARKING OVERVIEW

- Open to Commercial, Industrial, Agricultural, Government, Non-Profit and Institutional Customers
- Free Benchmarking Report includes:
  - An ENERGY STAR® Portfolio Manager score
  - Suggestions for improving operations and maintenance
  - Identification of relevant incentives and program options for energy efficiency projects

LGEA: OVERVIEW

AVAILABLE TO

- Local governments under Local Public Contracts Law
- Local governments under Local Public School Contracts Law
- County colleges under County College Contracts Law
- NJ State Colleges or State Universities 501(c)(3) Non-profit Agencies

INCENTIVE

The program subsidizes 100% of the audit cost, subject to an annual incentive cap of $100,000 per entity, per fiscal year.

SMARTSTART: OVERVIEW

- Two types of incentives for high efficiency equipment installation:
  - Prescriptive Incentives
  - Custom Incentives
- Available to all Commercial, Industrial, Agricultural, Government, Non-Profit and Institutional customers
- Includes New Construction, Rehab and Retrofit projects
- Project pre-approval required
- Incentives up to $500,000 per electric account and $500,000 per natural gas account.

SMARTSTART: INCENTIVES

Prescriptive Incentives

- Project Categories:
  - New Construction
  - Renovation
  - Remodeling
  - Equipment Replacement
- Specific incentives and individual applications for Lighting, HVAC, VFDs, Refrigeration, Controls and more.

HOLIDAY INN HASBROUK HEIGHTS

- Hotel
- LED lighting retrofit
- Total Project Cost: $73,787*
- **Incentive: $60,510**
- **Annual Savings: $19,057**
- **Project Payback: 0.8 years**

*Lower costs due to installation by maintenance staff

COLGATE-PALMOLIVE

- Research Facility
- Chilled water plant retrofit
- Total Project Cost:

  $2,293,350
- **Incentive: $171,120**
- **Annual Savings: $96,040**

DIRECT INSTALL: OVERVIEW

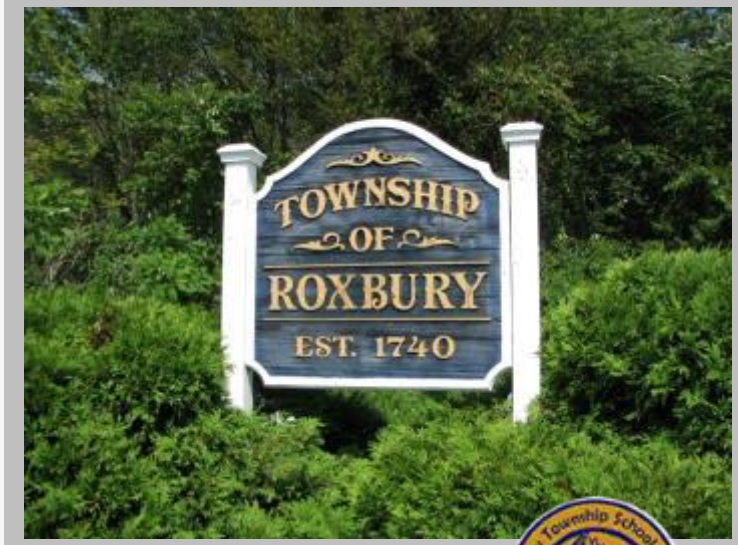
- A turn-key retrofit program to replace outdated and inefficient equipment
- Lighting, HVAC, Refrigeration
- Open to Small to Mid-Sized Commercial and Industrial facilities with a peak electric demand ≤ **200 kW**
- **Provides incentives of 70% of the installed cost**
- Incentives are paid directly to the contractor
  - Customer only pays remaining 30% of installed cost
  - **$125,000 project cap**
  - $250,000 per entity cap

HAMILTON TOWNSHIP FIRE DISTRICT #2

- Municipal Fire Station
- Lighting & HVAC retrofit
- Total Project Cost: $125,664
- **Incentive: $87,965**
- **Annual Savings: $12,961**
- **Payback Period: 2.9 Years**

ROXBURY TOWNSHIP PUBLIC SCHOOLS

- Public Elementary School
- Lighting & HVAC retrofit
- Total Project Cost: $119,740
- **Incentive: $83,818**
- **Annual Savings: $16,229**
- **Payback Period: 2.2 Years**



FLYING FISH BREWING CO.

- Brewery
- Lighting & HVAC retrofit
- Total Project Cost: $40,591
- **Incentive: $28,414**
- **Annual Savings: $4,015**
- **Payback Period: 2.6 Years**

LIBRARY IV

- Restaurant
- Lighting & HVAC retrofit
- Total Project Cost: $61,283
- **Incentive: $42,898**
- **Annual Savings: $9,052**
- **Payback Period: 2.0 Years**

MIDDLESEX COUNTY EXTENSION SERVICES

- County Park Building
- Lighting & HVAC retrofit
- Total Project Cost: $79,505
- **Incentive: $55,654**
- **Annual Savings: $11,604**
- **Payback Period: 2.1 Years**

SHOP n BAG

- Grocery store in Farmingdale
- Lighting, refrigeration controls and grocery aisle covers and doors
- Total Project Cost: $155,121
- **Incentive: $108,585**
- **Annual Savings: $34,719**
- **Payback Period: 1.3 Years**

CHURCH OF THE NATIVITY

- Catholic parish and non-profit school in Midland Park
- Lighting & HVAC retrofit
- Total Project Cost: $24,872
- **Incentive: $17,410**
- **Annual Savings: $2,937**
- **Payback Period: 2.5 Years**

Church of the Nativity
A Stewardship Parish

P4P: OVERVIEW

- Comprehensive, whole-building approach to saving energy in existing or new facilities
- Goal: reduce consumption by 15% or more
- Incentives up to $2 million per project, assuming both gas and electric improvements are made; $4 million annual entity cap
- Incentives paid in three installments at milestones
- Customer chooses from network of pre-approved participating Partners

P4P: OVERVIEW

- Existing Buildings: Large Commercial, Industrial Institutional and certain multifamily with an annual peak demand in excess of 100kW
- New Construction: Projects with over 50,000 square feet of planned conditioned space
- Eligibility requirements flexible for hospitals, 501(c)(3) non-profits, local government buildings, affordable multi-family housing and public universities and colleges

TROY HILLS VILLAGE

- Multifamily Apartment
- Lighting & HVAC retrofit
- Total Project Cost: $1,480,000
- **Incentive: $683,186**
- **Annual Savings: $208,927**
- **Payback Period: 5.5 Years**

NEWARK PUBLIC SCHOOLS

- 6 high schools
- New boilers and water heaters, motors, controls, lighting
- Total Project Cost: $19 million
- **Incentive: $1,515,255**
- **Annual Savings: $990,000**
- **Payback Period: 17 Years**

(Energy Savings Improvement Program, ESIP)

70-90 COLUMBUS TOWER

- 50-story high rise with 550 luxury apartments; 12,000 sq ft of retail space in Jersey City
- Heat pumps, HVAC units, insulation, efficient windows, ENERGY STAR® appliances, LEDs
- Total Project Cost: $1,050,000
- **Incentive: $775,446**
- **Annual Cost Savings: $192,216**
- **Payback period: 1.5 years**

CHP/FC: OVERVIEW

- On-site power generation with recovery and productive use of waste heat
- Two paths for incentives:
  - CHP and Fuel Cell systems fueled by non-renewable sources
  - Biopower systems for technologies fueled by biomass, which is handled through the renewable energy program

CHP/FC: OVERVIEW

- Incentives range from $0.35-$4.00/watt
- Cap of $2-$3 million depending on technology and size
- Incentives paid in three phases:
  - 30% at equipment purchase
  - 60% at installation completion
  - 10% at performance verification

RIDER UNIVERSITY

- 280 acre college campus
- Combined Heat and Power (CHP)
- Total Project Cost: $4,594,188 (estimated)
- **Incentive: $1,000,000**
- **Annual Cost Savings: $527,973**
- **Payback Period: 6.8 Years**
- Manufacturing and construction anticipated to generate 25 temporary full-time jobs

STEVE & COOKIE'S

- Restaurant by the Jersey Shore
- Micro CHP
- Total Project Cost: $189,600
- **Incentive: $40,000**
- **Annual Cost Savings: $20,588**
- **Payback Period: 6.3 Years**

JERSEY SHORE UNIVERSITY MEDICAL CENTER

- Hospital and Critical Care Facility
- CHP Equipment
- Total Project Cost: $3,888,805
- **Incentive: $1,000,000**
- **Annual Savings: $2,892,703**
- **Payback Period: 1 Year**

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

PRINCETON UNIVERSITY

- College/University
- CHP Equipment
- Total Project Cost: $914,557
- **Incentive: $243,000**
- **Annual Savings: $250,000**
- **Payback Period: 2.68 Years**

Board of Public Utilities

Energy Saving Improvement Programs

Mike Thulen – Coordinator for the ESIP Program

aka: ESIP; ESCO; P.L. 2012, c. 55

WHAT ESIP IS ALL ABOUT

- Retrofitting public facilities with Energy Conservation Measures (ECM) without new capital investment
  - Savings from reduced energy use pays for the improvements = No New Money!
- Applies to all government contracting units, including school districts

ECM CATEGORIES

- Distributed generation (solar, wind, geo, bio…)
- Major HVAC (capital) and minor HVAC (non-capital)
- Energy efficiency, demand response equipment
- Non-energy savings related (building envelope)
- Future capital replacements
- Standalone lighting improvements
- New energy related capital improvements, i.e., new air conditioning installation Must be funded separately from non-operating (i.e., capital improvement) funds
- **Water savings, i.e., low flow fixtures**

DEVELOP THE ESIP

- **Step 1** – Perform independent audit
  - Third party – not the ESCO
- **Step 2** – Hire ESCO or Mechanical Engineer to prepare Energy Savings Plan
  - If competitive process, use the audit as basis for proposals
  - ESCO must agree to provide an optional energy savings guarantee
- **Step 3** – Develop Energy Savings Plan
  - Identify the Energy Conservation Measures and projected energy savings
  - Savings based on BPU adopted standards

HOW ESIP IS FUNDED

- An ESIP is either a Self Refunding Bond or Lend-Lease Operation
- Capital Project Energy refunding comes from the energy savings that were budgeted as energy line item in the general budget
- Incentives from the Clean Energy Program
- Demand Response Savings through lower energy use
- Energy Resiliency Bank
- Federal Tax Incentives from (Lend-Lease programs)

- **ROID Grants cannot be combined with ESIP**

CONTRACTING OPTIONS AVAILABLE
ESCO OPTION

- **Plan A – ESCO Option**
  - ESCO is a single contractor that develops & manages the process, including offering guaranteed savings.
  - Use public bidding or competitive contracting process to award a contract to a firm (ESCO) to develop & manage construction of improvements
  - ESCO must give a guarantee of savings opportunity to government entity
  - Contract award is for "most advantageous, price and other factors considered process" or "lowest responsible bidder."

CONTRACTING OPTIONS AVAILABLE
DIY MODEL

- **Plan B – DIY Model**

- Hire an energy consultant to develop your Energy Savings Plan
- Develop your own specs and bid the job…
  - Or hire professionals to provide that service

- Rely on built-in verification process to assure savings

CONTRACTING OPTIONS AVAILABLE
HYBRID MODEL

- **Plan C – Hybrid Model – Combination of ESCO & DIY**

- Hire an Architect or Mechanical Engineer to manage an ESCO project
- Develop a plan that the professional will put out to bid as a RFP
- Allow the professional to take the entity (gov't or school) through the interview process
- Allow the professional to be the liaison through the project to the ESCO

ESIP IS A FUNDING PROGRAM

- **Requirements for an Energy Savings Plan**

- No Negative Cash Flow
- No Capital Cost Avoidance (except on a very limited basis)
- No use of SREC's in Cost Savings Calculations
- Independent Third Party Review of Plan
- Maximum 15 Year Pay Back Standard Plan
- Maximum 20 Year Back with Combined Heat & Power Plan

BPU JURISDICTION OF ESIP

- **Guidelines – The Final Word**

- RFP must be approved by the BPU
- Mandatory pre-proposal conference for interested, DPMC certified ESCO's
- BPU will receive, at a minimum, a CD or Flash Drive copy of each phase of the proposal and contract process
- Investment Grade Audit (IGA) for the Energy Savings Plan
- After Independent Third Party Review of Plan, BPU must approve plan
- BPU has complete authority to deny any phase and Clean Energy Incentives when deemed necessary

THE STATUS ESIP SINCE 2012

- LGEA over 2400 building in the State of New Jersey can be audited.
- LGEA over 400 government entities, Municipalities, school districts and state agencies have been audited.
- Over 40 school districts have either started or are in the process of completing an ESIP project.
- Several large cities have started the ESIP process with bidding using the RFP provided by the BPU.
- Clean Energy Program is fully funded to help the ESIP program.
- Several school districts have used CHP to extend financing for 20 years without Clean Energy incentives.

MEASUREMENT & VERIFICATION 2014

Entity	Projected Guaranteed Annual Savings	Actual Annual Savings	Percentage Difference
Barnegat School District	$317,151.00	$359,411.00	113.32%
Mercer VoTech	$1,015,724.00	$1,126,793.00	110.93%
Millville School District	$616,411.00	$803,820.00	130.40%
Salem County VoTech	$529,649.00	$623,562.00	117.73%
Wyckoff School District	$368,277.00	$403,642.00	109.60%
Kearny Township	$100,604.00	$122,534.00	121.79%
Bridgewater/Raritan RSD	$592,025.00	$593,612.00	100.26%
Hanover Twp School Dist.	$212,168.00	$218,104.00	102.79%
Phillipsburg	$442,341.00	$521,762.00	117.95%
Franklin Twp	$99,134.00	$103,543.00	104.44%
Somerset Hills	$345,944.00	$352,647.00	101.93%
Manalapan	$67,021.00	$78,623.00	117.31%
Newark Housing Authority	$4,212,128.00	$9,411,792.00	123.45%
	$8,918,577.00	$14,719,845.00	113.22%

GETTING STARTED

Start with an Energy Audit:
NJCleanEnergy.com/LGEA

Issue a RFP for a Energy Cost Savings Plan: Boiler Plate Available
NJCleanEnergy.com/ESIP

Contract Issued
Work Begins
Energy Costs Drop
Savings Begin

FOR MORE INFORMATION

Visit NJCleanEnergy.com

Call (866) NJSMART

Stay Informed NJCleanEnergy.com/Newsletter

FOR MORE INFORMATION

Call (866) NJSMART

Stay Informed NJCleanEnergy.com/Newsletter