

New Jersey's Clean Energy Program

LGEA Exit Meeting for:
*Watching Hills Regional High School
BOE*

September 3, 2019



INTRODUCTIONS

- *Watchung Hills RHS*
 - Timothy Stys – Business Administrator / Board Secretary
 - Kris Byk – Director of Operations
 - Jennifer Zervopoulos – Administrative Assistant
- *Spiezle Architectural Group*
 - Justin Kozik – Project Architect
 - Steven Siegel - Principal
- *NJ Clean Energy Program*
 - Moussa Traore – TRC Auditor
 - Sarah Walters – TRC Account Manager
 - Mike Mandzik – TRC Outreach Manager
 - Michelle Rossi – ESIP Coordinator



AGENDA

- The audit process overview
- Energy use & existing conditions
- Review of **E**nergy **C**onservation **M**easures (ECMs) identified
- Questions regarding the draft audit report
- Overview of NJCEP equipment incentives
- Next steps for Watchung Hills Regional High School BOE

LGEA PROCESS

- Application Approval
- Scheduling Call
- Audit
- Benchmarking & Analysis
- Draft Report
- Exit Meeting Presentation
- Final Report



WATCHUNG REGIONAL HIGH SCHOOL

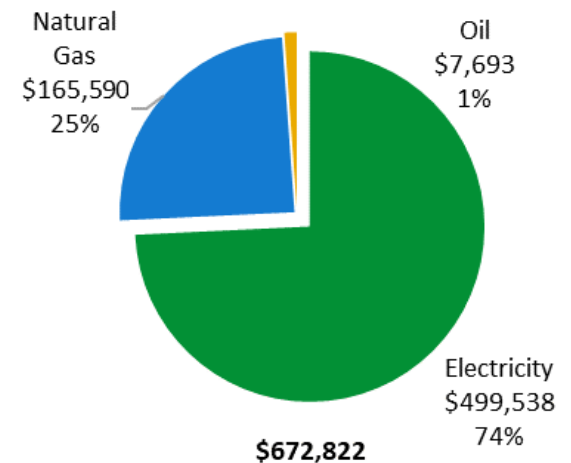
Overview of Systems, Baseline & Existing Conditions:

- Lighting System
- HVAC and Mechanical Systems
- Plug Load Equipment
- Food Service & Refrigeration Equipment

Utility Consumption:

- Electric Consumption and Costs
- Natural Gas Consumption and Costs
- Oil #2

Pre-Implementation Cost:



BENCHMARKING

ENERGY STAR® Statement of Energy Performance

31 **Watchung Hills Regional High School**

Primary Property Type: K-12 School
Gross Floor Area (ft²): 406,648
Built: 1956

For Year Ending: May 31, 2018
Date Generated: July 02, 2019

ENERGY STAR® Score¹

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusted for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
Watchung Hills Regional High School 108 Stirling Road Warren, New Jersey 07059	Watchung Hills Regional High School BOE 108 Stirling Road Warren, NJ 07059	Timothy Stys 108 Stirling Road Warren, NJ 07059 908-647-4800 Extn:4850 tstys@whrhs.org

Property ID: 7164717

Energy Consumption and Energy Use Intensity (EUI)

Site EUI 82.4 kBtu/ft ²	Annual Energy by Fuel	National Median Comparison
	Natural Gas (kBtu) 19,523,108 (59%)	National Median Site EUI (kBtu/ft ²) 68.8
	Electric - Grid (kBtu) 13,989,892 (42%)	National Median Source EUI (kBtu/ft ²) 122.6
		% Diff from National Median Source EUI 20%
Source EUI 146.7 kBtu/ft ²		Annual Emissions
		Greenhouse Gas Emissions (Metric Tons CO ₂ e/year) 2,454

Signature & Stamp of Verifying Professional

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

Signature: _____ Date: _____

Licensed Professional

Timothy Stys
108 Stirling Road
Warren, NJ 07059
908-647-4800 Extn:4850
tstys@whrhs.org

Professional Engineer Stamp
(if applicable)

Energy Consumption
Site EUI
82.4 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft ²)	68.8
National Median Source EUI (kBtu/ft ²)	122.6
% Diff from National Median Source EUI	20%

ENERGY STAR® scores are percentile ranking from 1 (least efficient) to 100 (most efficient). It compares your building's energy performance to similar buildings nationwide.

ALL OPPORTUNITIES

#	Energy Conservation Measure	Annual Electric Savings (kWh)	Peak Demand Savings (kW)	Annual Fuel Savings (MMBtu)	Annual Energy Cost Savings (\$)	Estimated Install Cost (\$)	Estimated Incentive (\$)*	Estimated Net Cost (\$)	Simple Payback Period (yrs)**	CO ₂ e Emissions Reduction (lbs)
Lighting Upgrades		1,083,103	202.1	-131	\$130,877	\$388,455	\$60,451	\$328,004	2.5	1,075,362
ECM 1	Install LED Fixtures	446,927	63.4	0	\$54,462	\$168,636	\$5,785	\$162,851	3.0	450,052
ECM 2	Retrofit Fixtures with LED Lamps	636,175	138.7	-131	\$76,415	\$219,819	\$54,666	\$165,153	2.2	625,310
Lighting Control Measures		87,451	17.4	-18	\$10,502	\$77,722	\$7,735	\$69,987	6.7	85,922
ECM 3	Install Occupancy Sensor Lighting Controls	63,575	12.6	-13	\$7,634	\$60,442	\$7,735	\$52,707	6.9	62,463
ECM 4	Install High/Low Lighting Controls	23,877	4.7	-5	\$2,867	\$17,280	\$0	\$17,280	6.0	23,459
Motor Upgrades		12,863	3.9	0	\$1,567	\$23,054	\$0	\$23,054	14.7	12,953
ECM 5	Premium Efficiency Motors	12,863	3.9	0	\$1,567	\$23,054	\$0	\$23,054	14.7	12,953
Variable Frequency Drive (VFD) Measures		280,567	93.3	78	\$34,853	\$296,578	\$25,120	\$271,458	7.8	291,685
ECM 6	Install VFDs on Constant Volume (CV) Fans	237,441	83.6	0	\$28,934	\$262,409	\$21,820	\$240,589	8.3	239,101
ECM 7	Install VFDs on Chilled Water Pumps	37,161	9.3	0	\$4,528	\$21,690	\$3,000	\$18,690	4.1	37,421
ECM 8	Install VFDs on Heating Water Pumps	2,798	0.4	0	\$341	\$6,781	\$0	\$6,781	19.9	2,818
ECM 9	Install VFDs on Kitchen Hood Fan Motors	3,166	0.1	78	\$1,049	\$5,697	\$300	\$5,397	5.1	12,345
Electric Unitary HVAC Measures		58,915	63.0	0	\$7,179	\$730,264	\$22,068	\$708,196	98.6	59,327
ECM 10	Install High Efficiency Air Conditioning Units	58,508	62.8	0	\$7,130	\$725,191	\$21,792	\$703,399	98.7	58,917
ECM 11	Install High Efficiency Heat Pumps	407	0.2	0	\$50	\$5,073	\$276	\$4,797	96.8	409
Electric Chiller Replacement		62,968	90.5	0	\$7,673	\$279,032	\$26,496	\$252,536	32.9	63,409
ECM 12	Install High Efficiency Chillers	62,968	90.5	0	\$7,673	\$279,032	\$26,496	\$252,536	32.9	63,409
Gas Heating (HVAC/Process) Replacement		0	0.0	1,458	\$12,361	\$558,641	\$21,458	\$537,183	43.5	172,521
ECM 13	Install High Efficiency Hot Water Boilers	0	0.0	491	\$4,165	\$174,707	\$13,058	\$161,649	38.8	57,502
ECM 14	Install High Efficiency Steam Boilers	0	0.0	322	\$2,731	\$215,083	\$0	\$215,083	78.8	37,702
ECM 15	Install High Efficiency Furnaces	0	0.0	644	\$5,465	\$168,852	\$8,400	\$160,452	29.4	77,316
HVAC System Improvements		5,869	0.0	227	\$2,641	\$41,046	\$0	\$41,046	15.5	32,499
ECM 16	Implement Demand Control Ventilation (DCV)	5,869	0.0	209	\$2,488	\$40,783	\$0	\$40,783	16.4	30,387
ECM 17	Install Pipe Insulation	0	0.0	18	\$153	\$264	\$0	\$264	1.7	2,112
Domestic Water Heating Upgrade		0	0.0	88	\$748	\$222	\$0	\$222	0.3	10,333
ECM 18	Install Low-Flow DHW Devices	0	0.0	88	\$748	\$222	\$0	\$222	0.3	10,333
Food Service & Refrigeration Measures		3,224	0.4	0	\$393	\$460	\$100	\$360	0.9	3,246
ECM 19	Vending Machine Control	3,224	0.4	0	\$393	\$460	\$100	\$360	0.9	3,246
TOTALS		1,594,959	470.6	1,702	\$208,796	\$2,395,476	\$163,428	\$2,232,047	10.7	1,807,256

* All incentives presented in this table are based on NJ SmartStart 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).



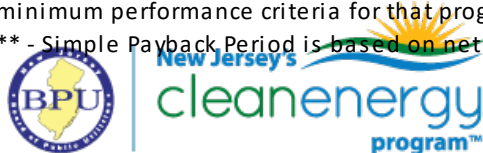
New
clean energy

COST EFFECTIVE OPPORTUNITIES

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ECM 19	Vending Machine Control	3,224	0.4	0	\$393	\$460	\$100	\$360	0.9	3,246
TOTALS		1,451,546	312.8	35	\$177,185	\$756,920	\$93,406	\$663,514	3.7	1,465,842

* - All incentives presented in this table are based on NJ SmartStart equipment incentives and assume proposed equipment meets minimum performance criteria for that program.

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SOLAR ENERGY GENERATION POTENTIAL

	Watchung Hills RHS
<i>Potential:</i>	HIGH
<i>System Potential: (kW)</i>	1,053
<i>Electric Generation: (kWh per year)</i>	1,254,513
<i>Displaced Cost: (per year)</i>	\$152,870

SREC Registration Program (SRP):

<http://www.NJCleanEnergy.com/SREC>

Community Solar Energy Pilot
Program:

<http://www.NJCleanEnergy.com/CommunitySolar>

COMBINED HEAT & POWER POTENTIAL

	Watchung Hills RHS
<i>Potential:</i>	HIGH
<i>System Type:</i>	Microturbine
<i>System Potential: (kW)</i>	190
<i>Electric Generation: (kWh per year)</i>	1,373,908
<i>Thermal Generation: (MBtu per year)</i>	7,111,036
<i>Displaced Cost: (per year)</i>	\$60,220

ENERGY EFFICIENT BEST PRACTICES

- Reduce Air Leakage
- Close Doors and Windows
- Develop a Lighting Maintenance Schedule
- Ensure Lighting Controls Are Operating Properly
- Use Fans to Reduce Cooling Load
- Use Window Treatments/Coverings
- Clean and/or Replace HVAC filters
- Check and Seal Duct Leakage
- Perform Proper Boiler Maintenance
- Perform Proper Water Heater Maintenance
- Plug Load Controls
- Water Conservation

See individual reports for specific EE practices by building

CLEAN ENERGY PROGRAM PORTFOLIO

ELIGIBLE SECTORS

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

INCENTIVE PROGRAMS

Equipment Rebates:

- **SmartStart**
- **Customer Tailored Energy Efficiency Pilot (CTEEP)**
- Direct Install
- Large Energy Users

Whole Buildings:

- **Pay for Performance**

Energy Generation:

- **Combined Heat and Power – Fuel Cells**

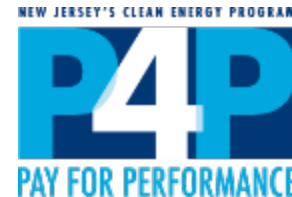
OTHER PROGRAMS

Renewable Energy Generation:

- **SREC Registration Program (SRP)**
- **Community Solar**

PAY FOR PERFORMANCE

NJCleanEnergy.com/P4P



What is P4P: Comprehensive, whole-building approach to saving energy in existing or new facilities.

Qualifications: Annual peak demand 200 kW+ in the previous year for existing buildings

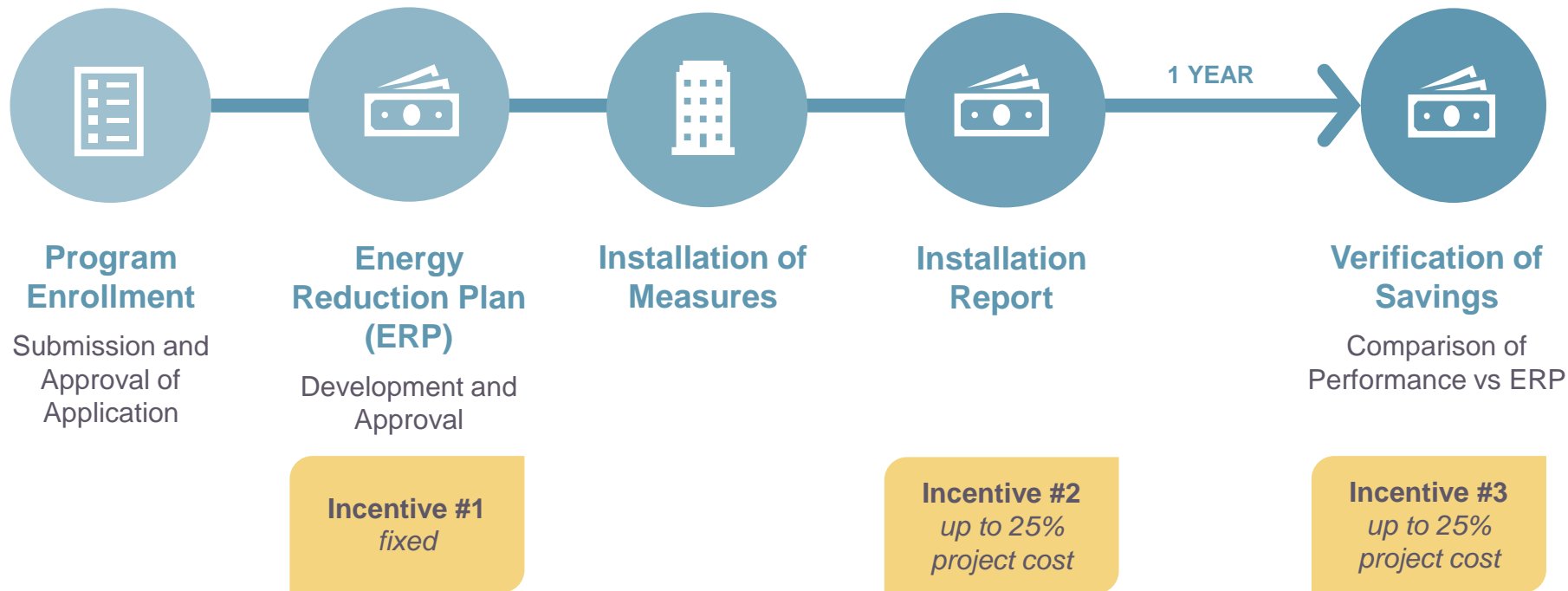
About: Customer choose from a network of pre-approved *Participating Partners*

- Incentives:**
- Incentives paid in *three* installments
 - Up to \$2MM per project((\$4MM entity cap/year)
 - \$1 million for electric measures
 - \$1 million for gas measures
 - Up to 50% of project cost (or **80%** for UEZ/OZ/ MUNI/**K-12 Public Schools**) up to \$2MM per project / \$4MM per entity annually
 - Incentive #2 & #3 are doubles for UEZ/OZ/ MUNI/**K-12 Public Schools**



PAY FOR PERFORMANCE

NJCleanEnergy.com/P4P



SMARTSTART

NJCleanEnergy.com/SSB

What is SSB: Individual high efficiency equipment rebates for new construction, renovation, remodeling, equipment replacement

Qualifications:

- All C&I customer types contributing into the Societal Benefits Charge (SBC)

About:

- Prescriptive and custom designed measures
- Pre-approval required only for lighting projects with incentives >\$100,000 and all custom projects
- For measures not requiring pre-approval, applications must be submitted to the program within one year of purchase.

Incentives:

- Prescriptive: \$500,000 cap 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
 - 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
- VFD's
- Food Service
- Refrigeration

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



CUSTOMER TAILORED ENERGY EFFICIENCY PILOT

NJCleanEnergy.com/CTEEP

What is CTEEP: A streamlined/single application process for participants submitting multiple different technology types.

Qualifications:

- All C&I customer types contributing into the Societal Benefits Charge (SBC)

About:

- On site assistance available
- Additional technical incentive available to offset soft costs associated with developing and planning custom projects

Incentives:

- \$250,000 fiscal year entity cap
- Technical assistance incentives for custom project evaluation (up to \$10K)

**SAME INCENTIVE
VALUES AS
SMARTSTART**

COMBINED HEAT & POWER - FUEL CELLS

NJCleanEnergy.com/CHP

What is CHP: Combined Heat & Power (CHP) units generates electricity and recycle waste heat to provide heating and/or cooling

About:

- Fuel Cells (FC) with or without heat recovery (HR)
- Resiliency with Return on Investment
- Technology-neutral incentives

Incentives:

- 30/50/20 Incentive payment
 - 30% when equipment purchased
 - 50% when system installed
 - 20% upon confirmation that the project is achieving the required performance



COMBINED HEAT & POWER - FUEL CELLS

NJCleanEnergy.com/CHP

Eligible Technology	Size (Installed Rated Capacity)	Incentive (\$/Watt) ⁽⁵⁾	% of Total Cost Cap per project	\$ Cap per project	
CHP powered by non-renewable or renewable fuel source, or a combination ⁽⁴⁾ : <ul style="list-style-type: none"> • Gas Internal Combustion Engine • Gas Combustion Turbine • Microturbine 	≤500 kW ⁽¹⁾	\$2.00	30-40% ⁽²⁾	\$2 million	
	>500 kW – 1 MW ⁽¹⁾	\$1.00			
	Fuel Cell with Heat Recovery (FCHR)	>1 MW – 3 MW ⁽¹⁾	\$0.55	30%	\$3 million
		>3 MW ⁽¹⁾	\$0.35		
Fuel Cell without Heat Recovery (FCwoHR)	Same as above ⁽¹⁾	Applicable amount above	30%	\$1 million	
Waste Heat to Power (WHP) ⁽³⁾ Powered by non-renewable fuel source. Heat recovery or other mechanical recovery from existing equipment utilizing new electric generation equipment (e.g. steam turbine)	≤1 MW ⁽¹⁾	\$1.00	30%	\$2 million	
	>1 MW ⁽¹⁾	\$0.50	30%	\$3 million	

Critical Facility/Blackstart bonus of 25%

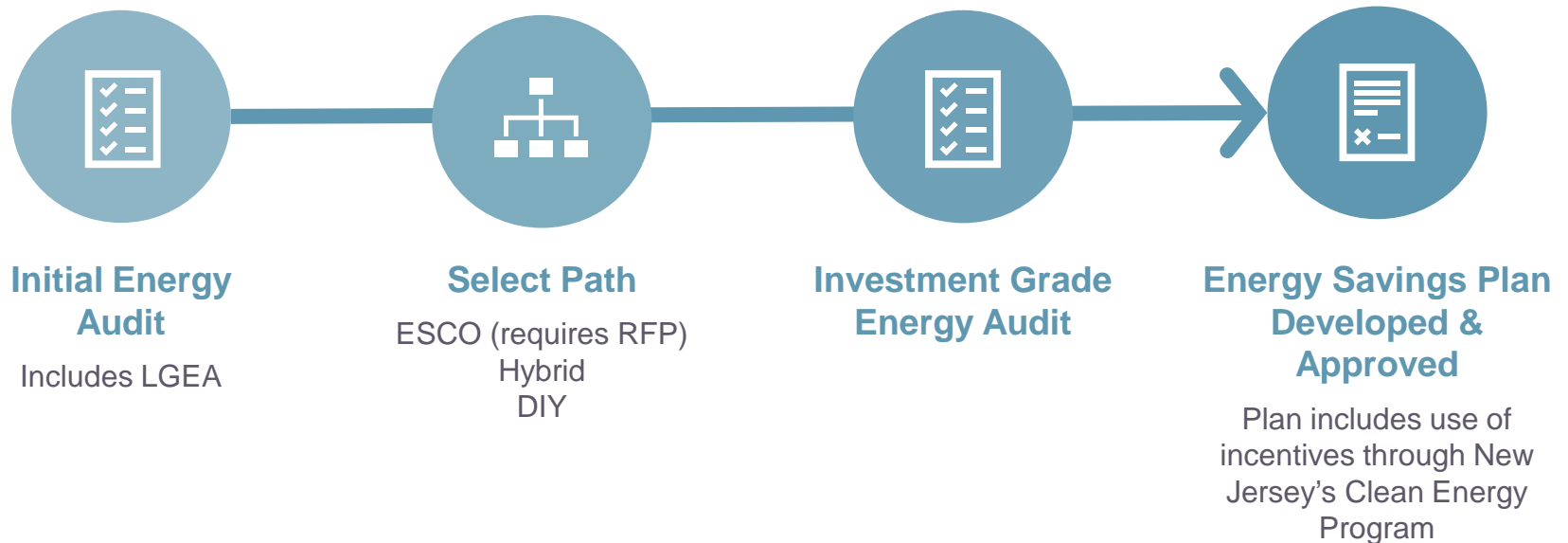
FINANCING MECHANISM: ESIP

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



ENERGY SAVINGS IMPROVEMENT PROGRAM (ESIP)

FOR MORE INFORMATION

Michelle Rossi

ESIP Coordinator

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ESIP@bpu.nj.gov



FOR MORE INFORMATION

Visit NJCleanEnergy.com

Call (732) 855-0033

Mike Mandzik

Regional Outreach Manager

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QUESTIONS

