



# Energy Actions To Go

An Overview of Key Energy Actions



# Announcements

More info on each initiative can be found in the rotating images at [sustainablejersey.com](https://sustainablejersey.com)

- **Certification Timeline Changes**
  - **Municipal** – Samantha, [info@sustainablejersey.com](mailto:info@sustainablejersey.com)
  - **Schools** – Veronique, [lambertv@tcnj.edu](mailto:lambertv@tcnj.edu)
- **Free Municipal Tech Coaching** – Lauren, [skowronl@tcnj.edu](mailto:skowronl@tcnj.edu)
- **Census Response** – Samantha, [info@sustainablejersey.com](mailto:info@sustainablejersey.com)



# Upcoming Energy Webinars

## Tracking GHG Emissions from Municipal Operations

Thursday, May 7, 10:00am - 11:30am

## Community Energy Efficiency Outreach Made Easier with Sustainable Jersey Toolkits!

Tuesday, May 12, 2020, 1:00 PM - 2:30 PM

## Case Studies from New Jersey's Community Solar Energy Pilot Program Year 1

Wednesday, May 20, 2020, 1:00 PM - 2:30 PM

## Energy Efficiency Outreach Green Team Trainings

Virtual trainings for launching commercial/residential energy efficiency outreach campaign.



*Sustainable Jersey will be launching new guidebooks, toolkits, and resources to help make completing energy actions easier.*



# Today's Speakers

Moderator: Nancy Quirk, Sustainable Jersey



Zenon Tech-Czarny, Sustainable Jersey  
Research and Project Specialist



Tracey Woods, Sustainable Jersey  
Research and Project Specialist

# Energy Actions To Go

## Sustainable Jersey Energy Actions Overview

- Energy Efficiency and Renewable Energy for Schools and Municipalities
- Alternative Fuel Vehicle Fleet Options for Schools and Municipalities
- Make Your Town EV Friendly
- Make Your Town Solar Friendly
  - NJCEP Community Solar Energy Pilot Program
- Energy Efficiency Outreach Campaigns for Residents and Businesses
- Renewable Government Energy Aggregation



# Municipal Program Energy Actions

	Energy Efficiency	Renewable Energy	Alternative Fuel Vehicles (AFVs)
Municipal Operations	<ul style="list-style-type: none"><li>• Energy Tracking and Management</li><li>• Energy Efficiency for Municipal Facilities</li></ul>	<ul style="list-style-type: none"><li>• On-Site Solar Energy</li><li>• On-Site Geothermal</li><li>• On-Site Wind Energy</li><li>• Purchase Renewable Energy</li></ul>	<ul style="list-style-type: none"><li>• Fleet Inventory</li><li>• Green Fleet Target</li><li>• Purchase AFVs</li></ul>
Community Energy Use	<ul style="list-style-type: none"><li>• Residential Energy Efficiency Outreach</li><li>• Commercial Energy Efficiency Outreach</li></ul>	<ul style="list-style-type: none"><li>• Community Choice Aggregation (R-GEA)</li><li>• Make Your Town Solar Friendly</li><li>• Community-Led Solar Initiatives</li></ul>	<ul style="list-style-type: none"><li>• Make Your Town EV Friendly</li><li>• Public EV Chargers</li></ul>

# Gold Star Standard in Energy

## Municipal Operations

- Municipal buildings
- Streetlights, traffic lights
- Fleet management
- Municipal Utility Authority
- Operations/maintenance
- Energy conservation

## Community Wide

- Make Your Town EV Friendly
- Public Electric Vehicle Chargers
- Make Your Town Solar Friendly
- Community Led Solar Initiatives
- Residential Energy Efficiency
- Commercial Energy Efficiency





# Tracking GHG Emissions from Municipal Operations

Baseline Year									
Municipality:		* Complete applicable cells highlighted in yellow, the brighter are the key cells. Grey cells are not applicable.							
<div> <div>ENERGY STAR®</div> <div>PortfolioManager®</div> </div>									
Recent Year and Percent Change									
Recent Year									
Recent Year (Select from dropdown):		2018							
Electricity Factorset (lb CO2e/MWh)		719.875							
Weather Normalized Stationary Fuel Consumption									
Municipal Operation - Natural Gas									
Total Therms		converted to Million BTU	CO2 Emissions (lbs)	CO2 (Metric Tons CO2e)	CH4 Emissions (Metric Tons)	CH4 (Metric Tons CO2e)	N2O Emissions (Metric Tons)	N2O (Metric Tons CO2e)	Total Emissions (Metric Tons CO2e)
Building & Facilities		0	0	0	0	0	0	0	0
Water & Wastewater Treatment Facilities		0	0	0	0	0	0	0	0
Other		0	0	0	0	0	0	0	0
Natural Gas Total		0	0	0	0	0	0	0	0
Municipal Operation - Heating Oil									
Total Gallons		converted to Million BTU	CO2 Emissions (lbs)	CO2 (Metric Tons CO2e)	CH4 Emissions (Metric Tons)	CH4 (Metric Tons CO2e)	N2O Emissions (Metric Tons)	N2O (Metric Tons CO2e)	Total Emissions (Metric Tons CO2e)
Building & Facilities		0	0	0	0	0	0	0	0
Water & Wastewater Treatment Facilities		0	0	0	0	0	0	0	0
Other		0	0	0	0	0	0	0	0
Heating Oil Total		0	0	0	0	0	0	0	0
Municipal Operation - Other Fuel 1									
Total (specify unit)		convert to Million BTU	CO2 Emissions (lbs)	CO2 (Metric Tons CO2e)	CH4 Emissions (Metric Tons)	CH4 (Metric Tons CO2e)	N2O Emissions (Metric Tons)	N2O (Metric Tons CO2e)	Total Emissions (Metric Tons CO2e)
Building & Facilities									
Water & Wastewater Treatment Facilities									
Weather Normalized Pur									
Building & Facilities									
Water & Wastewater Treatment Facilities									
Municipal Operation - Street Lights & Traffic									
Building & Facilities									
Water & Wastewater Treatment Facilities									
Mobile Fuel Combustion									
Building & Facilities									
Water & Wastewater Treatment Facilities									
Municipal Operation - CO2 emissions by fuel									
Motor Gasoline (per gallon)									
Municipal Operation - Diesel Fuel (per gallon)									
Building & Facilities									
Water & Wastewater Treatment Facilities									
Municipal Operation - Other Fuel 2									
Total (specify unit)		convert to Million BTU	CO2 Emissions (lbs)	CO2 (Metric Tons CO2e)	CH4 Emissions (Metric Tons)	CH4 (Metric Tons CO2e)	N2O Emissions (Metric Tons)	N2O (Metric Tons CO2e)	Total Emissions (Metric Tons CO2e)
Building & Facilities									
Water & Wastewater Treatment Facilities									
RECENT YEAR EMISSIONS & GHG EMISSION REDUCTIONS									
Total Emissions (Metric Tons CO2e)									4734.094753
Total Percent Change									-12.30%
Difference in Number of Years									3
Annual Percent Change									-4.10%





# Municipal Operations

Energy Efficiency and Renewable Energy Actions



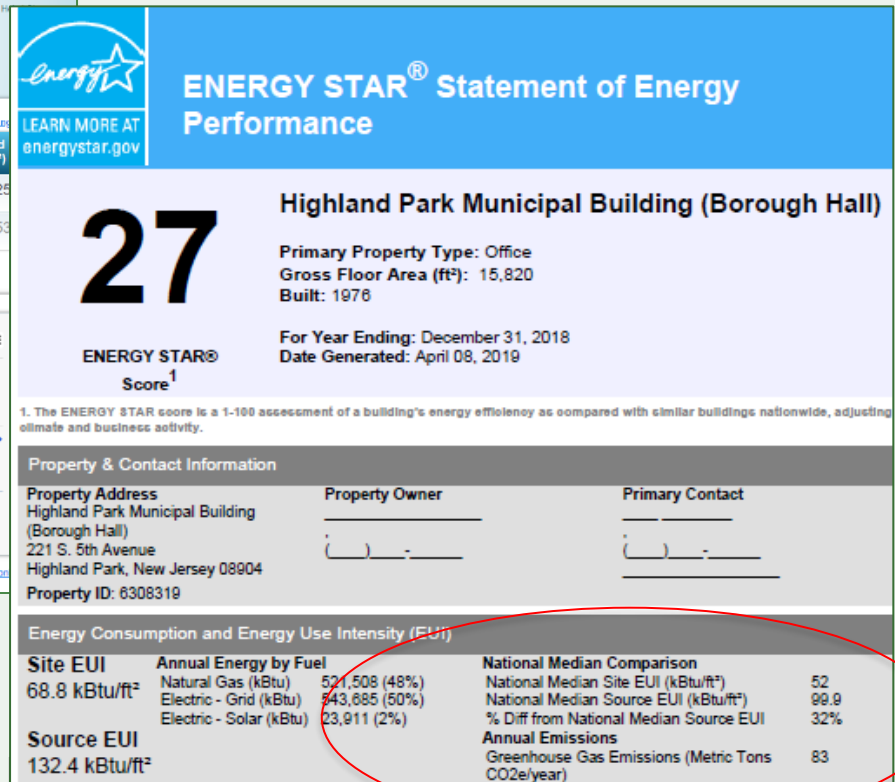
# Energy Tracking and Management

## For base 10 points

- Building portfolio
- Most recent twelve-months of energy use data for all buildings

## For additional 10 points

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

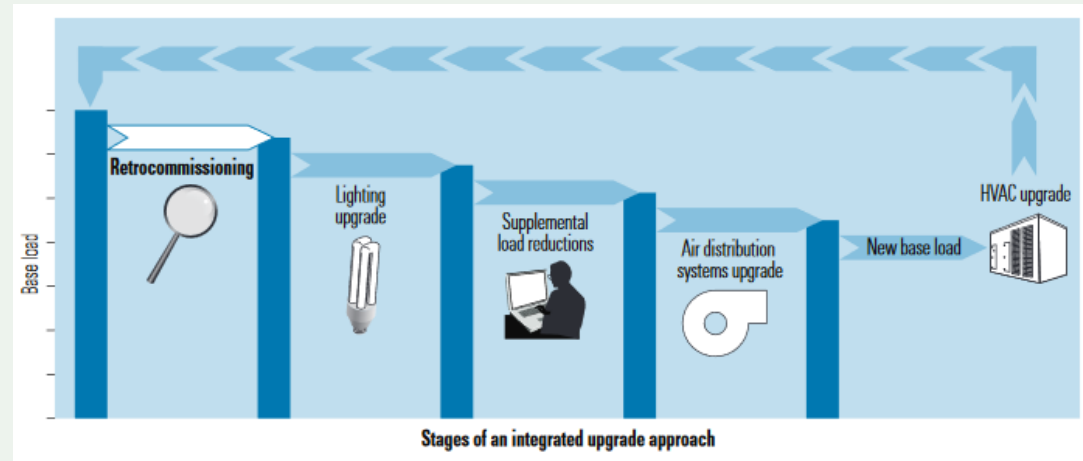


# Energy Management

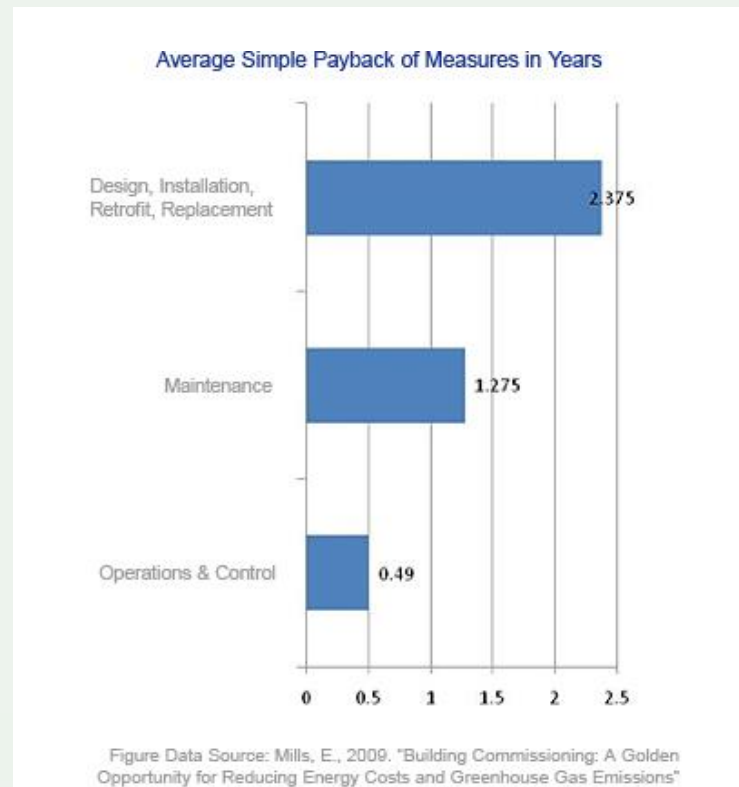
- Tracking energy data and benchmarking
- Creating a culture of conservation
  - Retro-commissioning / Continuous Commissioning
  - Behavior-Based Conservation
  - Preventive maintenance
- Demand-side management
  - Demand Response
- Acquiring funding/incentives for energy conservation measures
  - Equipment upgrades and retrofits
  - Building electrification
- Evaluating facility for renewable energy projects
- Energy storage, batteries and microgrids
- Adoption of alternative fuel vehicles/fleet optimization

# Retro-Commissioning

- Retro-commissioning is a “tune-up” for existing building systems
  - Thermostat calibration
  - Belts, valves
  - Variable frequency drives
- Improves indoor air quality, comfort, cost savings
- Changes in occupancy, use, etc. can change equipment usage/demands
- Training for O&M
- 5% to 30% energy savings



[https://www.energystar.gov/sites/default/files/buildings/tools/EPA\\_BUM\\_CH5\\_RetroComm.pdf](https://www.energystar.gov/sites/default/files/buildings/tools/EPA_BUM_CH5_RetroComm.pdf)



# Behavior-Based Energy Conservation Programs



## 10 Point (Schools)

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



### You’ve Been Hogged

By the GLC PowerSave Team

- ☐ Computers Left On
- ☐ Lights Left On
- ☐ Door/ Windows Open
- ☐ Chrome Book/ iPad
- Cart plugged in (Fridays)



George L. Catrambone Elementary School and PowerSave



# Energy Efficiency for Facilities

- **5 points** - Audit on at least one building
- **10 points** - Local Government Energy Audit (LGEA) that covers all buildings
- **15 points** - Significant upgrade work (at least 10% cost savings demonstrated)
- **20 points** - LGEA that covers all buildings PLUS significant upgrade work
- **30 points** - Efficiency upgrades with 10%-19% decrease in energy consumption
- **40 points** - Efficiency upgrades with 20%-29% decrease in energy consumption
- **50 points** - Efficiency upgrades with at least 30% decrease in energy consumption



Municipal buildings



Schools

# New Jersey's Clean Energy Program



[www.njcleanenergy.com/muni](http://www.njcleanenergy.com/muni)

[Newsletters](#) | [Contact Us](#) | [Site Map](#)

Search

HOME

RESIDENTIAL

COMMERCIAL, INDUSTRIAL,  
LOCAL GOV & MULTIFAMILY

RENEWABLE ENERGY

## COMMERCIAL, INDUSTRIAL, LOCAL GOV. & MULTIFAMILY

### ▼ PROGRAMS

▶ NJ SMARTSTART BUILDINGS

▶ PAY FOR PERFORMANCE

▶ MULTIFAMILY PROGRAM

COMBINED HEAT AND POWER -  
FUEL CELL

LOCAL GOVERNMENT ENERGY  
AUDIT

LARGE ENERGY USERS PROGRAM

ENERGY SAVINGS IMPROVEMENT  
PROGRAM (ESIP)

▶ DIRECT INSTALL

COMMUNITY ENERGY PLANS

BENCHMARKING

OIL, PROPANE, MUNICIPAL & COOP  
ELECTRIC CUSTOMERS

DER MICROGRID FEASIBILITY  
STUDIES

[Home](#) » [Commercial & Industrial](#)

## Local Governments, Schools and Non-Profits



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 Jersey's Clean Energy Program* provides financial incentives for energy efficiency through a number of initiatives directed at local government facilities. Take a leadership role in energy efficiency for your municipality or school today!

## Do you want to see how your building's energy use compares to others like it?

### BENCHMARKING



**Benchmarking** is a free service that provides a performance assessment and valuable information on how to get your project started. Benchmarking is available to hospitals and other healthcare facilities, municipalities

### Program Updates

- 2020 Clean Energy Conference
  - Enhanced Rebates Announced
  - Summary of FY20 Program Changes
  - New Jersey Clean Energy Learning Center
- Other updates posted.

### Program Literature



**Applications  
and Brochures**  
Download the Latest  
Program Materials

### Find a Trade Ally

Select a  
contractor for an  
energy efficient  
upgrade today!



### Success Stories

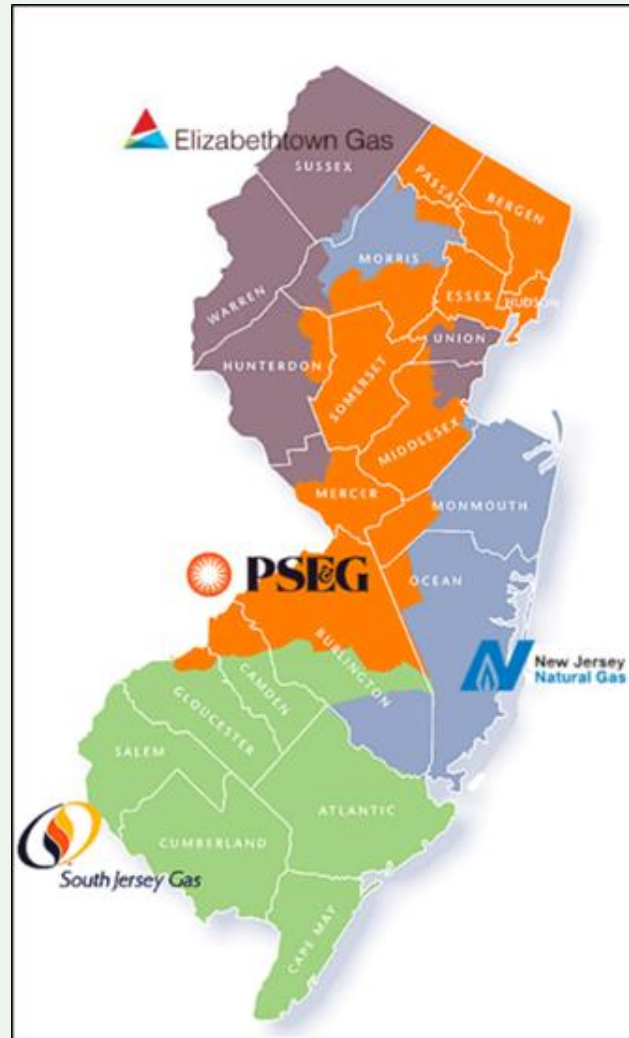


**Roxbury Township  
Public Schools**  
Kennedy Elementary  
Shows its Smarts on  
Energy Efficiency




# Utility Incentive Programs

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



# Local Government Energy Audit (LGEA)



Press Room | Library | FAQs | Calendar | Newsletters | Contact Us | Site Map

HOME

RESIDENTIAL

COMMERCIAL, INDUSTRIAL,  
LOCAL GOV & MULTIFAMILY

COMMERCIAL, INDUSTRIAL,  
LOCAL GOV. & MULTIFAMILY

▼ PROGRAMS

▶ NJ SMARTSTART BUILDINGS

▶ PAY FOR PERFORMANCE

▼ MULTIFAMILY PROGRAM

GET STARTED

LEARN MORE

RESOURCES AND NEWS

COMBINED HEAT AND POWER -  
FUEL CELL

LOCAL GOVERNMENT ENERGY  
AUDIT

LARGE ENERGY USERS PROGRAM

ENERGY SAVINGS IMPROVEMENT  
PROGRAM (ESIP)

▶ DIRECT INSTALL

COMMUNITY ENERGY PLANS

BENCHMARKING

Home » Commercial & Industrial » Programs

## Local Government Energy Audit

LEAD BY EXAMPLE

All across New Jersey, residents and business owners are looking for ways to save energy and the environment. In order to understand how they can save, the Local Government Energy Audit (LGEA) Program allows local government agencies, state contracting agencies, public agencies, state colleges and state universities, and select non-profit agencies, to examine their facilities and see how they can improve their energy use. The program can help you identify cost-justified energy-efficiency measures, as well as subsidize the full cost of the audit. The entire audit process including customer assistance, application processing and auditing will be performed by TRC, the Program Manager for *New Jersey's Clean Energy Program* (NJCEP). More details are available about the LGEA program in this [brochure](#), [Video Overview](#), [Program Guide](#) and [FAQs](#).

### Eligibility


The LGEA Program targets buildings owned by many local government-related entities, New Jersey Colleges and Universities, and 501(c)(3) non-profit agencies. Such facilities may include, but are not limited to: offices, courtrooms, town halls, police and fire stations, sanitation buildings, transportation structures, [schools](#) and community centers.


### Your Expense is Covered

NJCEP will subsidize 100% of the cost of the audit, up to an incentive cap, so there are no out of pocket expenses associated with services provided under this program.


### Audit Scope

The audit includes an inventory of all energy-consuming equipment, comprehensive utility bill analysis, facility benchmarking, and feasibility for solar and combined heat & power. When your audit is complete, you'll have a list of recommended, cost-justified measures and facility upgrades that will help reduce operating expenses and, in many cases, improve the health and productivity of the buildings' occupants. Many of the recommended measures will be eligible for additional incentives






## Local Government Energy Audit: Energy Audit Report



### Administration Building

Asbury Park Board of Education  
910 Fourth Ave.  
Asbury Park, New Jersey 07712



Results you can rely on

Copyright ©2018 TRC Energy Services. All rights reserved.

Reproduction or distribution of the whole, or any part of the contents of this document without written permission of TRC is prohibited. Neither TRC nor any of its employees makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any data, information, method, product or process disclosed in this document, or represents that its use will not infringe upon any privately-owned rights, including but not limited to, patents, trademarks or copyrights.

October 11, 2018

Final Report by:  
**TRC Energy Services**

@SJ\_Program | #NJSustainabilitySummit

# Heat Pumps/ Building Electrification

- Air-source
- Ductless Mini-Split
- Ground source
  - Municipal Geothermal Energy System Action, **10 Points**
- Water heater



<https://commons.wikimedia.org/w/index.php?curid=838369>

Flickr user: Gary Cziko



**Diagonal**



**Vertical**



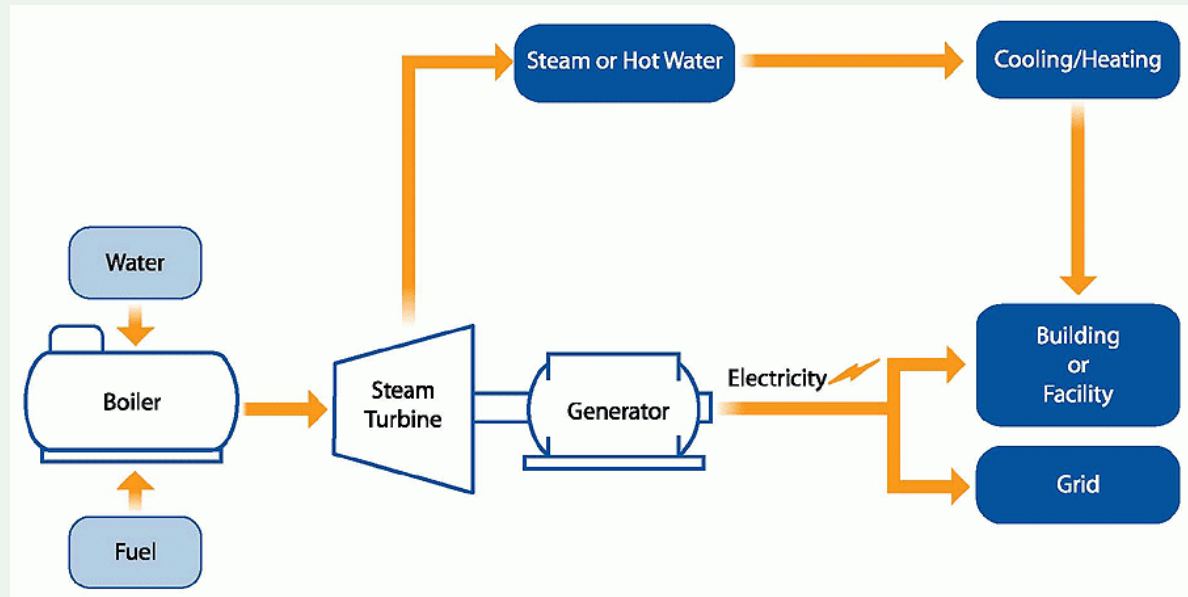
**Horizontal**

<https://commons.wikimedia.org/w/index.php?curid=53250131>

# Combined Heat and Power (CHP)

Common CHP system configurations:

- Steam boiler with steam turbine
- Combustion turbine, or reciprocating engine, with heat recovery unit



**Now many include a fuel cell!**

<https://www.epa.gov/chp/what-chp>

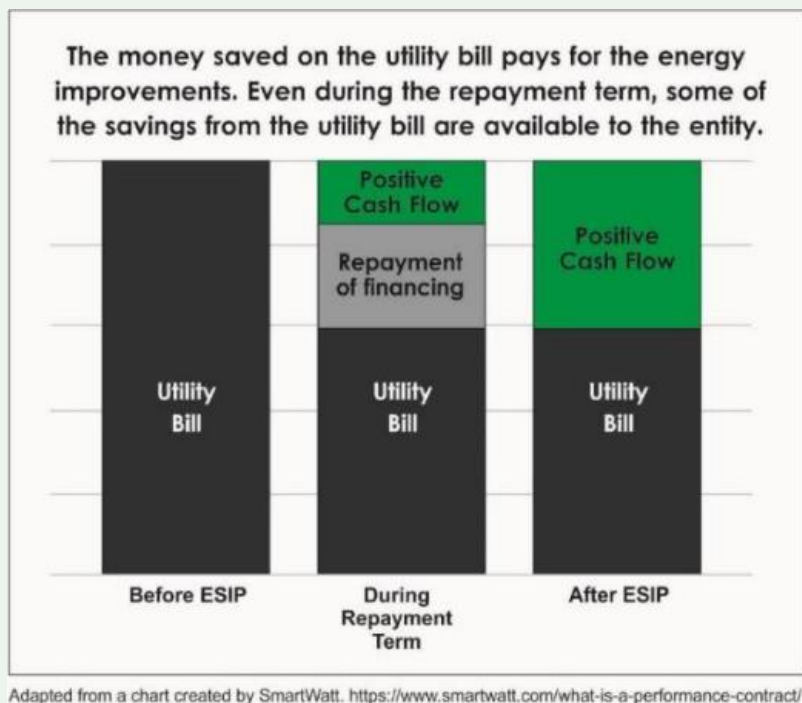
NJCEP incentives for CHP

<http://www.njcleanenergy.com/chp>

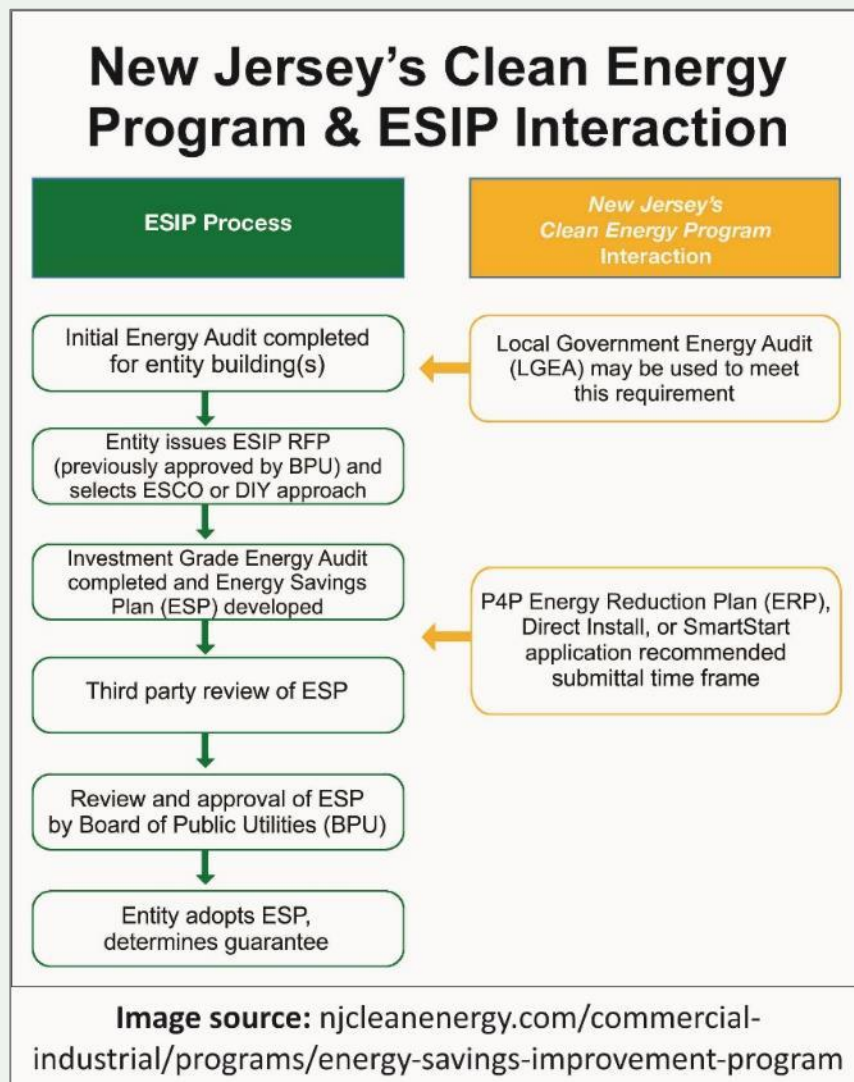




# Energy Savings Improvement Program



Sustainable Jersey ESIP Guidebook  
[www.sustainablejersey.com/fileadmin/media/Grants\\_and\\_Resources/ESIP\\_HowToGuide\\_V2\\_2019.pdf](http://www.sustainablejersey.com/fileadmin/media/Grants_and_Resources/ESIP_HowToGuide_V2_2019.pdf)



# Green Roofs

Figure 4: Temperature Differences between a Green and Conventional Roof



On a typical day, the Chicago City Hall green roof measures almost 80°F (40°C) cooler than the neighboring conventional roof.

Images: [www.epa.gov/sites/production/files/2017-05/documents/reducing\\_urban\\_heat\\_islands\\_ch\\_3.pdf](http://www.epa.gov/sites/production/files/2017-05/documents/reducing_urban_heat_islands_ch_3.pdf)

- Reduce energy costs
- Increase building comfort
- Reduce urban heat island effect
- Enhance stormwater management
- Points for Green Infrastructure Implementation action



Moorestown Municipal Complex

# On-Site Solar System

- **10 points** - System displaces less than 20% of electric purchases
- **20 points** - System displaces between 20% and 30% of electric purchases
- **30 points** - System displaces greater than 30% of electric purchases
- **Additional 10 points** - If system includes energy storage
- Need to show displaced energy data

2016 Utility Displacement - DPW Facility			
	Solar	Facility Consumption	
Jan	4,835.40	15,367.30	
Feb	5,276.70	13,998.30	
Mar	10,324.00	15,277.50	
Apr	12,253.20	12,447.40	
May	9,521.20	11,997.70	
Jun	12,477.30	13,827.60	
Jul	10,304.90	14,703.30	
Aug	10,301.30	16,295.50	
Sep	8,231.00	13,648.50	
Oct	7,875.00	12,480.80	
Nov	5,474.70	12,665.40	
Dec	3,897.20	14,526.90	
<b>Totals</b>	<b>100,771.90</b>	<b>167,236.20</b>	<b>60.26%</b>

Displaced electricity from Cherry Hill's DPW building



# Solar Thermal

- Uses solar energy to heat water
- Can reduce water heating costs by 80%
- Can be used in:
  - City Hall
  - Fire Stations
  - Rec Centers
  - Senior Center
  - Schools
  - Multifamily
- Manchester Township's Police Department
- Provides hot water for
  - 5 showers
  - 16 sinks



[www.ci.minneapolis.mn.us/sustainability/buildings-energy/sustainable-energy/sustainability\\_firestation1](http://www.ci.minneapolis.mn.us/sustainability/buildings-energy/sustainable-energy/sustainability_firestation1)

Solar thermal installation on Fire Station in Minneapolis



Manchester, NJ solar thermal installation

# On-Site Solar PV

- Rooftop solar on municipal or school buildings
- Ground mount
- Parking lot solar canopy



Bradley Beach Recreation Center Solar PV



Morristown water treatment

# Battery Storage

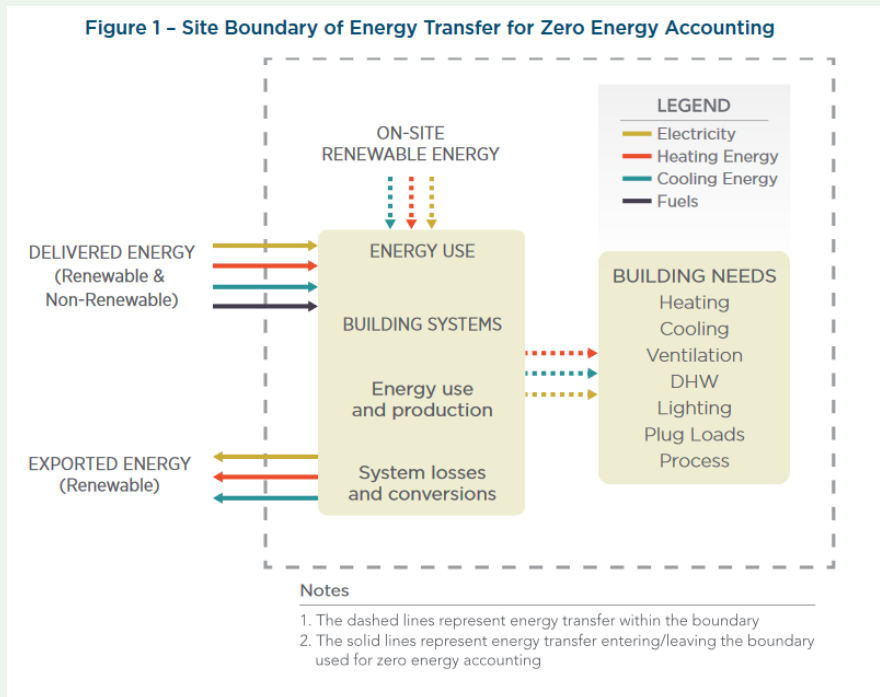
- Can be used in combination with renewable energy – solar (**Extra 10 points!**)
- Can provide resilience when grid is down
- Can charge battery on off peak hours
- Can help defer grid upgrades
- Reduces greenhouse gas emissions



One-megawatt (MW) renewable energy storage battery is located at ACUA's Wastewater Treatment Facility.  
[www.acua.com/green-initiatives/renewable-energy/battery/](http://www.acua.com/green-initiatives/renewable-energy/battery/)



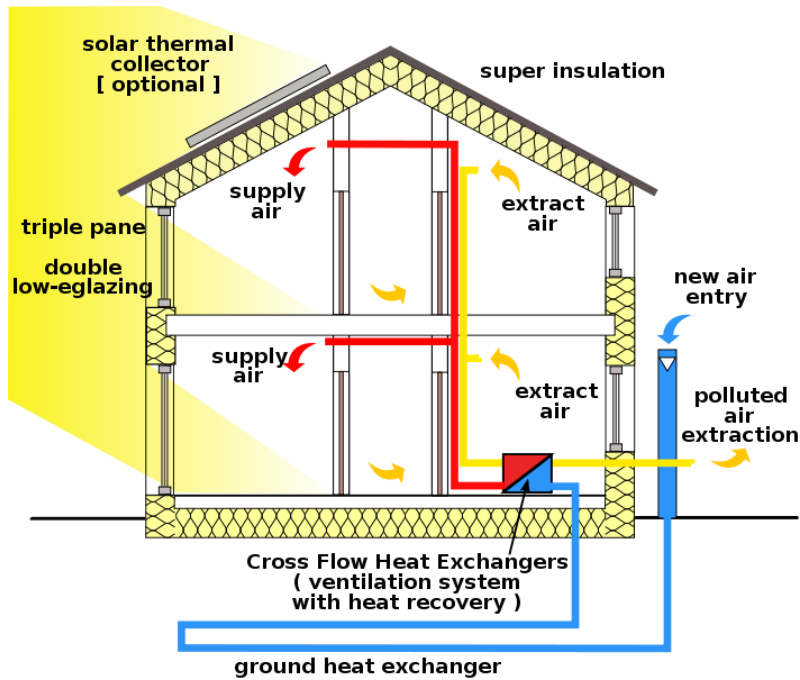
# Zero Energy/Net Zero Building



[https://www.energy.gov/sites/prod/files/2015/09/f26/bto\\_common\\_definition\\_zero\\_energy\\_buildings\\_093015.pdf](https://www.energy.gov/sites/prod/files/2015/09/f26/bto_common_definition_zero_energy_buildings_093015.pdf)

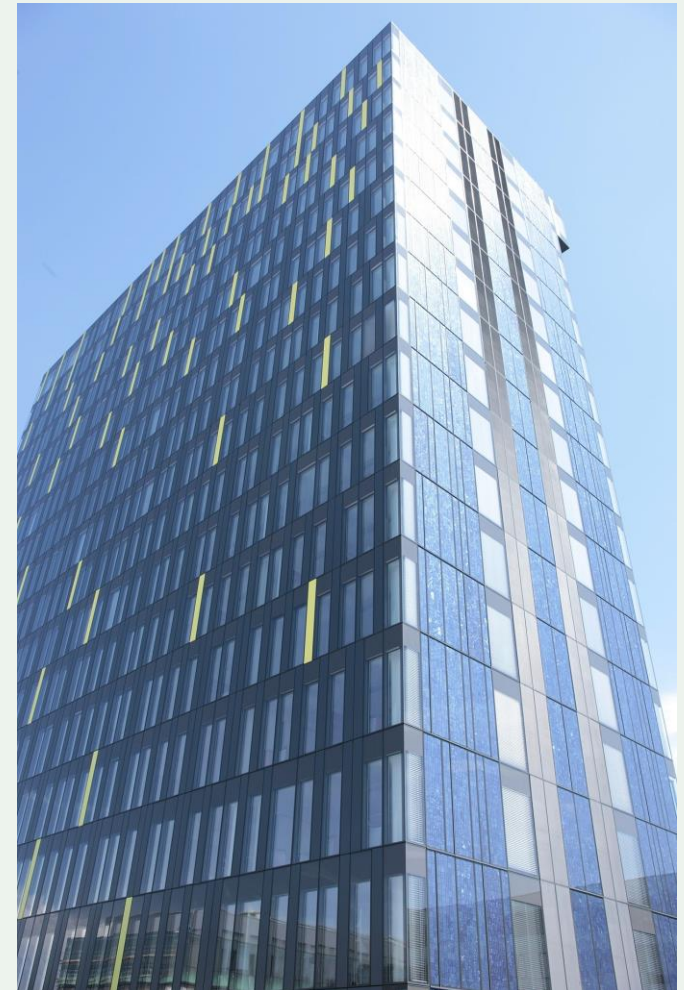
American Geophysical Union Building AGU / Hickok Cole Architects  
<https://ggwash.org/view/41860/net-zero-energy-building-gets-the-thumbs-up-graham-davidson-says-more-nutty-things-about-climate-change>

# Passive House



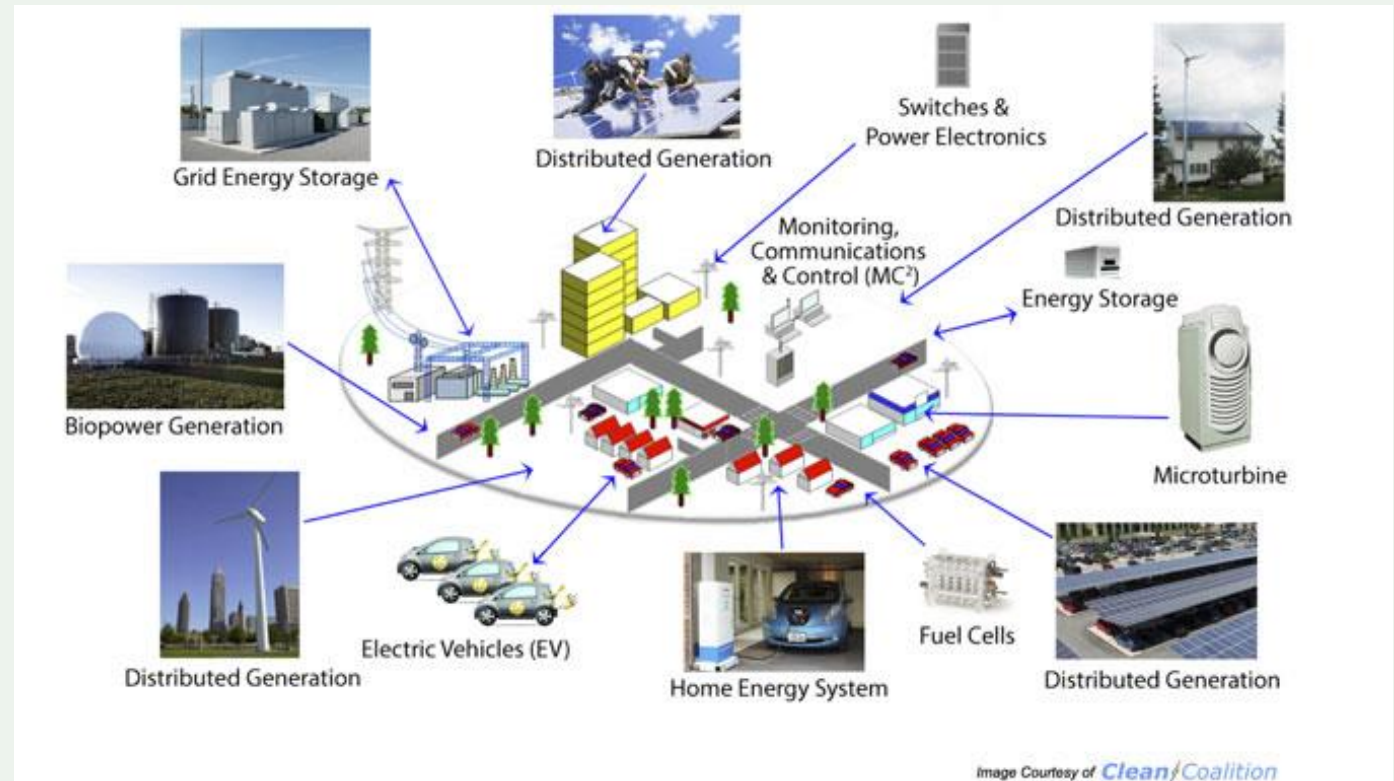
Passive House Diagram

[https://commons.wikimedia.org/wiki/File:Passive\\_house\\_scheme\\_1.svg](https://commons.wikimedia.org/wiki/File:Passive_house_scheme_1.svg)



[https://commons.wikimedia.org/wiki/File:Power\\_Tower\\_Linz\\_Fassade\\_unten.jpg](https://commons.wikimedia.org/wiki/File:Power_Tower_Linz_Fassade_unten.jpg)

# Microgrids



<https://www.nyseda.ny.gov/All-Programs/Programs/NY-Prize/Resources-for-applicants/Microgrids-101>

NJCEP 2017 Microgrid Feasibility Studies

[njcleanenergy.com/commercial-industrial/programs/der-microgrid-feasibility-studies](http://njcleanenergy.com/commercial-industrial/programs/der-microgrid-feasibility-studies)

NJ Community Microgrids Planning Academy: [www.microgrids.io](http://www.microgrids.io)

# Sustainable Jersey Transportation Actions

## Municipal Initiatives

Fleet Inventory

Meet Green Targets for Fleet

Purchase Alternative Fuel Vehicle

## Community Initiatives

Public EV Charging Infrastructure

Make Your Town EV Friendly



**Upcoming Webinar - June 2020**

*Adding EVs to Your Municipal Fleet and Community*



# Fleet Inventory

10 points

Maintaining a Fleet inventory helps municipalities and schools:

- Track fleet emissions
- Identify vehicles that should be replaced with alternative fuel options or decommissioned

Template fleet inventory spreadsheet, automatically calculates fleet emissions

Vehicle Type (bus, truck, sedan, segway, scooter, etc)	Year	Make	Model	Fuel Type (Gasoline, Diesel, Propane, etc)	Odometer Reading at end of Baseline Year	Miles Traveled in Baseline Year	Annual Fuel Usage in Baseline Year	Fuel Units (Gallons, GGE, kWh)	Annual Fuel Cost in Baseline Year	Average Fuel Efficiency in Baseline Year (miles per fuel unit)	Is the vehicle owned or leased?	If leased, in which year will lease contract end?	If owned, in which year is this vehicle expected to be replaced?	Used by which municipal department?	Primary duty of vehicle	
SUV	2009	TOYOTA	HIGHLANDER	GASOLINE	20,976	3,500	206	Gallons	\$ 459.12	17	Owned	N/A	2019	POLICE	POLICE ADMIN	
SUV	2008	DODGE	DURANGO	GASOLINE	21,145	3,500	Municipality: City of Ocean City complete cells highlighted in yellow, grey cells contain formulas									
SUV	2006	DODGE	DURANGO	GASOLINE	101,297	3,500	Baseline Year Selected: 2015-2016									
Enter baseline year mileage for each type of municipal vehicle.																
Methane and Nitrous Oxide Emissions Factors for Highway Vehicles																
Vehicle Type/ Control Technology		Model Year	Total Mileage for Each Vehicle Type	N <sub>2</sub> O (g/mi)	CH <sub>4</sub> (g/mi)	N <sub>2</sub> O grams	CH <sub>4</sub> grams	N <sub>2</sub> O Metric Tons	CH <sub>4</sub> Metric Tons							
Gasoline Passenger Cars																
EPA Tier 2		2004 and Later	6000	0.0036	0.0173	21.6	103.8	0.0000216	0.0001038							
Low Emission Vehicles		2000-2003	500	0.015	0.0105	7.5	5.25	0.0000075	0.00000525							
EPA Tier 1		1995-1999	500	0.0429	0.0271	21.45	13.55	0.00002145	0.00001355							
EPA Tier 0		1981-1994	0	0.0647	0.0704	0	0	0	0							
Oxidation Catalyst		1975-1980	0	0.0504	0.1365	0	0	0	0							
Non-Catalyst		1973-1974	0	0.0197	0.1696	0	0	0	0							
Uncatalyzed		1972 and Earlier	0	0.0197	0.178	0	0	0	0							
Gasoline Light-Duty Trucks																
EPA Tier 2		2005 and Later	3000	0.0066	0.0163	19.8	46.9	0.0000198	0.0000469							
Low Emission Vehicles		2001-2004	0	0.0157	0.0148	0	0	0	0							
EPA Tier 1		1995-2000	500	0.0871	0.0452	43.55	22.6	0.00004355	0.0000226							
EPA Tier 0		1986-1994	0	0.1056	0.0776	0	0	0	0							
Oxidation Catalyst		1975-1985	0	0.0639	0.1516	0	0	0	0							
Non-Catalyst		1973-1974	0	0.0218	0.1908	0	0	0	0							
SUV	2010	FORD	EXPLORER	GASOLINE	20,053	4,000										
PICKUP	2010	FORD	F150	GASOLINE	15,543	2,200										

Municipality: City of Ocean City complete cells highlighted in yellow, grey cells contain formulas					
Fuel Consumption (and Scope 1 Emissions from Mobile Fuel Combustion)					
Municipal Operation - Vehicle Emissions	CO <sub>2</sub> emissions by fuel usage	Total Fuel Units consumed by all municipal vehicles in baseline year	CO <sub>2</sub> Emissions (lbs/fuel unit)	CO <sub>2</sub> Emissions (lbs)	CO <sub>2</sub> (Metric Tons CO <sub>2</sub> e)
Motor Gasoline (gallons)	11500	19.54	224710	101.1195	
Diesel Fuel (gallons)	0	22.37	49214	22.1463	
Biodiesel B20 (gallons)	2200	22.37	0	0	
Natural Gas (gge)	0	15.25	0	0	
Propane (gallons)	0	12.67	0	0	
Other 1 specify fuel (units)			0	0	
Other 2 specify fuel (units)			0	0	
Other 3 specify fuel (units)			0	0	
Carbon dioxide emissions coefficients: <a href="http://www.eia.doe.gov/oiat/1605/excel/Fuel%20Emission%20Factors.xls">http://www.eia.doe.gov/oiat/1605/excel/Fuel%20Emission%20Factors.xls</a>					
Municipal Operation - Vehicle Emissions	CH <sub>4</sub> and N <sub>2</sub> O emissions by mileage	Total Mileage	CH <sub>4</sub> Emissions (Metric Tons)		
Totals from Worksheet 2, "Vehicle Emissions"		13700	0.00024963		
Total Emissions (Metric Tons CO <sub>2</sub> e)					
FLEET CARBON FOOTPRINT		123.3249295			

Total Emissions (Metric Tons CO<sub>2</sub>e)

FLEET CARBON FOOTPRINT123.3249295

Notes

Be sure to use the units specified in the chart or adjust formulas accordingly

Abbreviations: CO<sub>2</sub>e=carbon dioxide equivalents CO<sub>2</sub>=carbon dioxide, CH<sub>4</sub>=methane, N<sub>2</sub>O=nitrous oxide

# Purchase Alternative Fuel Vehicles

**5-15 points**

## **Vehicles eligible for points**

- Plug-in hybrid electric vehicle
- Plug-in electric vehicle
- Pursuit class hybrid vehicles
- CNG or EV heavy-duty service vehicles



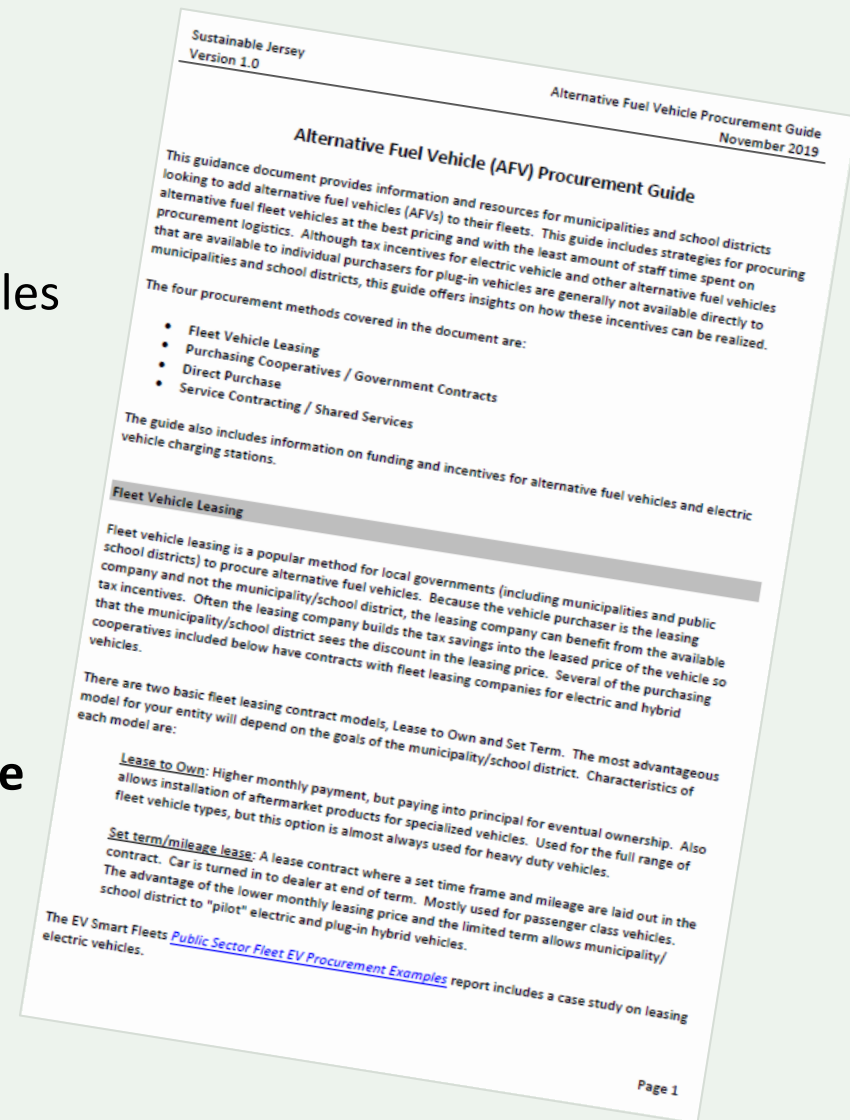
# Purchase Alternative Fuel Vehicles

## Plug-in Electric Vehicles

- 22-33% total emissions of gasoline vehicles
- 20-25% less maintenance costs
- 40-50% less fuel cost
- Rebates/Incentives Available

## Alternative Fuel Vehicle Procurement Guide

Includes guidance for capturing tax credits and procurement options



# Purchase Alternative Fuel Vehicles

## EVs Available on New Jersey State Purchasing Contract for FY20

### NJDEP It Pay\$ to Plug In

- Public, Workplace, Multi-Unit Housing charging stations
  - \$750 per Level 1 charging station
  - \$5,000 per single-port Level 2 charger
  - \$6,000 per dual-port Level 2 charger

[drivegreen.nj.gov/programs.html](https://drivegreen.nj.gov/programs.html)

### NJBPU Clean Fleet Electric Vehicle Incentive Program

- \$4,000 grant toward the purchase of a municipal EV
- \$1,500 toward the purchase of a dual-port Level 2 EV charging station

[www.state.nj.us/bpu/newsroom/2019/approved/20191126.html](https://www.state.nj.us/bpu/newsroom/2019/approved/20191126.html)

#### 2020 Chevrolet Bolt EV (Hatchback)

\$32,190

7% Discount



#### 2019 Nissan Leaf (Hatchback)

\$26,894

11% Discount



#### 2020 Ford Fusion Energi Titanium (Sedan)

\$29,912

6% Discount



#### 2020 Toyota Prius Prime (Hatchback)

\$24,690

11% Discount





# SJS Sustainable Fleet

## 5-15 points

### Vehicles eligible for points:

- Plug-in hybrid electric vehicle
- Plug-in electric vehicle
- Propane or EV school buses
- CNG or EV heavy-duty service vehicles



Image source EPA.gov

### Electric School Buses

- Zero tailpipe emissions/  
significant overall emissions reduction
- Quiet
- **Cost Effective**



Images: [afdc.energy.gov/uploads/publication/case-study-propane-school-bus-fleets.pdf](https://afdc.energy.gov/uploads/publication/case-study-propane-school-bus-fleets.pdf)

# Meet Targets for Green Fleets

## 30 points

Average fuel efficiency of 35/mpg  
for all light duty vehicles

**OR**

20% reduction in fuel usage



Idling Reduction Technologies in Woodbridge Firetruck

Image Source: Woodbridge

## Fleet Fuel Reduction Strategies

- Fleet Management
  - Replace vehicles
  - Fleet right sizing
  - Share vehicles
  - Driver training: save 5% on fuel
  - Maintenance
- Fleet Route Optimization
- Telematics
- Hybridize vehicles with Idle Reduction Technology
- Convert vehicles to alternative fuels

# Make Your Town EV Friendly

## 15 points

Zoning Ordinance —  
EV charging stations as accessory use

Plug-in Electric Vehicle (PEV) Ordinance —  
design standards for EV charging parking spaces

- Required spaces (e.g. ratio, percentage)
- Signage
- Protection around EV chargers, e.g. bollards
- Lighting
- ADA accessibility

First responder training

Additional activities from list



@SJ\_Program | #NJSustainabilitySummit





# Make Your Town EV Friendly

## Additional activities

- EV Awareness Event
- Incentive for EV Charging Pre-Wiring
- EV Charging at the Workplace
- Multi-Family Housing EV Charging



**Ribbon Cutting Ceremony:** Burlington City unveils new EV charging station



Participating in National Drive Electric Week is a great way to support EV Adoption

<https://driveelectricweek.org/index.php>

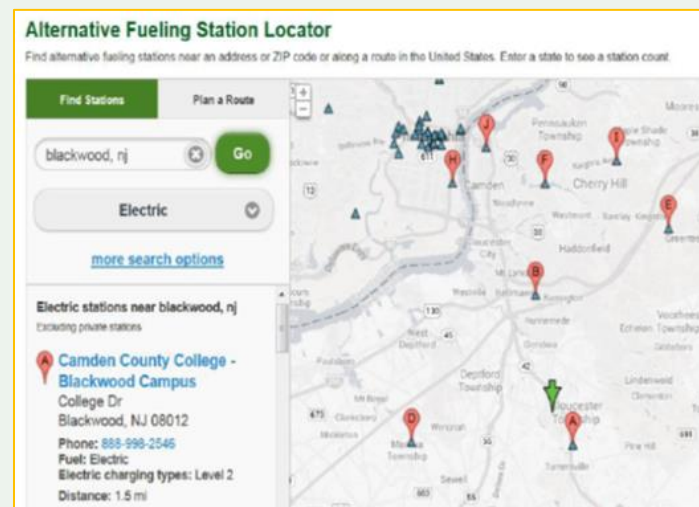


# Public EV Charging Infrastructure

15 points

Guidance on **installation** and **outreach** for municipally supported public charging infrastructure

Funding and procurement guidance in **Alternative Fuel Vehicle Procurement Guide**



# Effective Parking Management

## 10 points

Adopt or revise parking policies and or code provisions in a way that:

- uses existing parking more efficiently
- reduces future parking demand
- enhances walkability

Action includes guidance for understanding parking needs and parking management strategies.



# Solar Actions

## Make Your Town Solar Friendly Community-Led Solar Initiatives



Images: [www.nrel.gov/docs/fy11osti/49930.pdf](http://www.nrel.gov/docs/fy11osti/49930.pdf)  
[www.energy.gov/eere/solar/community-and-shared-solar](http://www.energy.gov/eere/solar/community-and-shared-solar)



# Make Your Town Solar Friendly

**15-30 points**

## **Supportive Solar Zoning Ordinance**

- Adopt Solar Zoning Ordinance
- Amend Permitting Fee Ordinance



- Note: [Solsmart](#) *Silver* designation qualifies for 30 points for this action

## **Streamlined Permitting**

- Post requirements online

### **Additional activities:**

- Train first responders
- Cross-train codes and permitting staff
- Expedited permitting
- Offer narrow inspection timeframe
- Expedite or eliminate zoning review

# Community-Led Solar Initiatives

**5-15 points**

**Municipally-Supported Community Solar Project**

**Community-Led Solar Purchasing Program**

- Solarize campaign
- Solarize campaign for businesses
- Marketplace model

**For Additional Points**

- Activities to Promote Solar
- Municipal Incentives for Solar



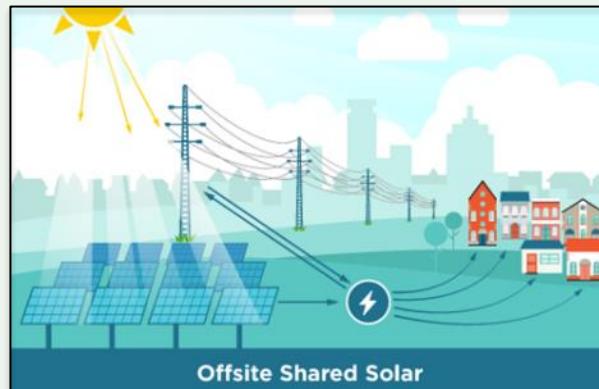
# NJCEP Community Solar Energy Program

- Expands access to solar
- Energy savings for subscribers
- Local generation of clean energy
- Local job creation/workforce development
- Reduction of municipal emissions
- Community pride

## Who can subscribe?

Any metered customer in an electric service territory

Renters  
Businesses  
Municipalities  
Homeowners  
Institutions  
Non-profits  
Schools



Images from [energy.gov/eere/solar/community-and-shared-solar](https://energy.gov/eere/solar/community-and-shared-solar)



# New Jersey Community Solar Energy Pilot

***New Sustainable Jersey Community Solar Guidebook coming soon!***



Images: [www.nrel.gov/docs/fy11osti/49930.pdf](http://www.nrel.gov/docs/fy11osti/49930.pdf)

## **Roles for Municipalities in Community Solar**

- Anchor Subscriber
- Site Host Outreach Partner and Project Ambassador
- Multi-Municipality Project Coordinator
- Zoning and Permitting
- Developer and Project Owner

**Upcoming Webinar May 20<sup>th</sup>, 1pm**

***Case Studies from New Jersey***

***Community Solar Energy Pilot Year 1***

***<https://attendee.gotowebinar.com/register/8617497556011805963>***



# Community Solar Pilot Year 1

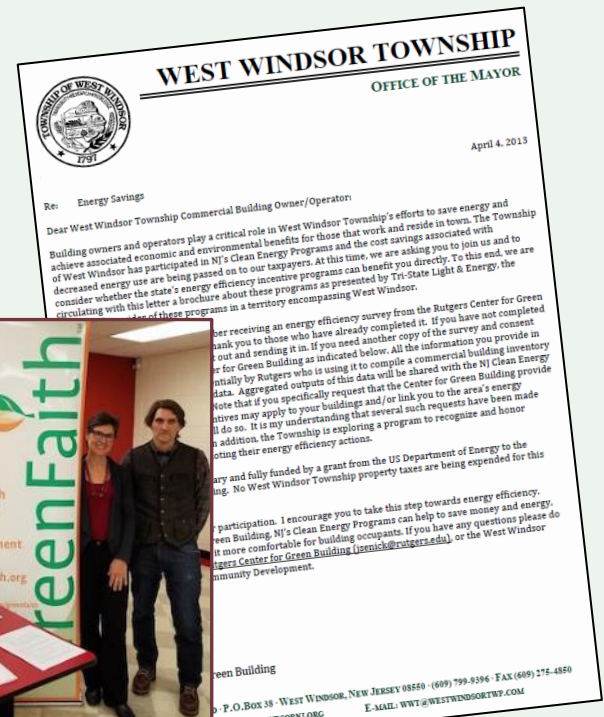
Municipality	County
Egg Harbor Township	Atlantic
Carlstadt/Wood-Ridge Twp	Bergen
Teterboro Borough	Bergen
Cinnaminson Township	Burlington
Delanco Township	Burlington
Glendora (Gloucester Twp)	Camden
Pennsauken Township	Camden
Woodbine Borough	Cape May
East Orange City	Essex
Newark City	Essex
Deptford Township	Gloucester

Municipality	County
Jersey City	Hudson
North Bergen Township	Hudson
Secaucus Township	Hudson
Edison Township	Middlesex
Perth Amboy City	Middlesex
South Brunswick Township	Middlesex
Wall Township	Monmouth
Lakewood Township	Ocean
Manchester Township	Ocean
Bridgewater Township	Somerset
Linden City	Union
Franklin Township	Warren



# Energy Efficiency Outreach Actions

Residential  
Commercial



# Energy Efficiency Outreach Toolkits

**Upcoming Webinar:**  
*Community Energy Efficiency  
Outreach Made Easier with  
Sustainable Jersey Toolkits!*

Tuesday, May 12, 2020  
1:00 PM - 2:30 PM

**Poll for EE Toolkit Trainings**



# Residential Energy Efficiency Outreach

10-20 points

Energy-saving home upgrades can:

- Save homeowners up to 30% on energy costs
- Increase home comfort and safety

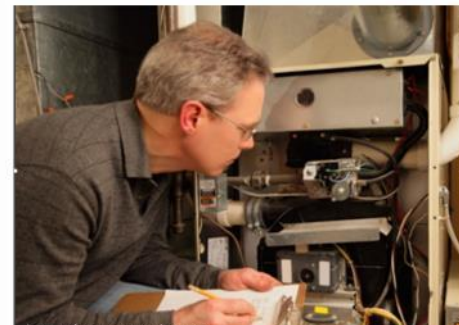
New Jersey's Clean Energy Program™  
**Home Performance with ENERGY STAR®**

- Up to \$4,000 in rebates
- Zero- or low-interest loans



@SJ\_Program | #NJSustainabilitySummit

## Social Media Templates



## Best Practices for a Successful Commercial Energy Efficiency Outreach Campaign

The best practices included in this document are listed for each step of the outreach campaign:

- Letter to Businesses
- Outreach Partners
- Outreach Campaign

### Letter to Businesses

A letter to all township business owners from the [Municipality]—a trusted messenger among local businesses...

### Compile list of local businesses

- To get a list of businesses:
  - NJCEP-designated
  - Municipal Building
  - Local businesses
  - Health Office
- Include both retail and service businesses

### Work with NJCEP-designated

- Direct install contractors

## Lower your energy bills while reducing your home energy usage.

New Jersey's Clean Energy Program™  
**Home Performance with ENERGY STAR®**  
(HPwES) offers residents up to \$4,000 in rebates and zero- or low-interest loans for energy efficiency measures.

The first step to participate in the program is to have a home energy assessment with a HPwES Building Performance Institute (BPI) certified auditor.

To make getting a home energy assessment easier, [Municipality] has partnered with [name of partner] to offer a discounted home energy assessment for \$XX (up to a \$400 value).



Air sealing and insulation are some of the measures available to improve the comfort, health, and safety of your home and reduce your energy bills.

### INFORMATION SESSION

Learn more about incentives available to residents, including a special offer for a home energy assessment available to residents of [Municipality].

Date, Time

Location



# Residential Energy Efficiency Outreach

First step in Home Performance with ENERGY STAR (HPwES) process is a Home Energy Assessment.

Two approaches for identifying an assessment offer to be the centerpiece of outreach campaign.

## **Contractor RFP Approach –**

Actions has template RFP

## **Utility Partner Approach –**

Partner with utility that has HPwES Home Assessment Offer

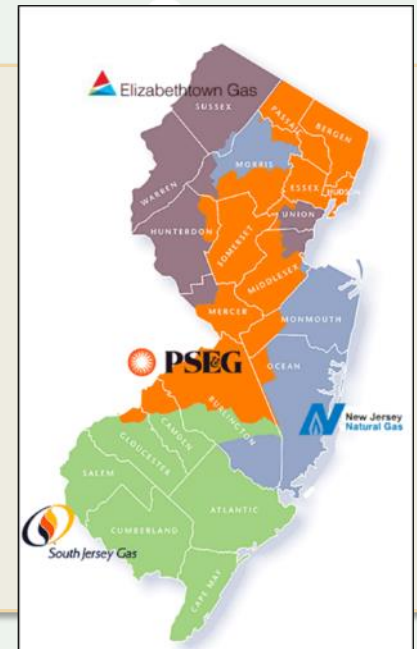
### **Utility HPwES Assessments**

#### **New Jersey Natural Gas SAVEGREEN Project**

\$49 assessment conducted by SAVEGREEN technicians

#### **South Jersey Gas Smart Energy Partners**

\$49 assessment from pre-selected HPwES contractor



# Commercial Energy Efficiency Outreach

10-20 points

## New Jersey's Clean Energy Program™ Direct Install program:

- Up to 80% of the cost of energy-saving upgrades for small to mid-sized businesses
- Eligible equipment includes:
  - Lighting
  - Heating, cooling & ventilation (HVAC)
  - Refrigeration
  - Motors
  - Natural gas systems
  - Variable frequency drives



@SJ\_Program | #NJSustainabilitySummit

Insert Municipal/Green Team Logo Here

IMMEDIATE RELEASE	Contact:		
Date of Release	Main Contact	Phone	Email
Website address	Secondary Contact	Phone	Email

**New Jersey's Clean Energy Program™ — Direct Install**  
**Direct Install helps businesses lower energy bills and save energy!**

*[Municipality] teams up with [name of contractor] to make getting started easy!*

As part of [Municipality]'s ongoing sustainability efforts, the [Municipality] is encouraging local businesses to have a Direct Install assessment.

Created specifically for existing small to medium-sized facilities, the Direct Install Program is a turnkey solution that makes it easy and affordable to upgrade to high efficiency equipment. The program pays up to 80% of costs for energy-saving upgrades. Upgrades covered by the Direct Install program include lighting; heating, cooling & ventilation (HVAC); refrigeration; motors; natural gas systems; and variable frequency drives.

Energy-saving upgrades include:  
• a net revenue generator

Insert information about [Municipality] utility.

Consider adding a local team to the Direct Install Program to get \$100,000 in projected annual energy savings. [Efficiency Outreach Campaign](#)

The process starts with a free, no-obligation energy assessment by a Direct Install contractor. [contractor name], to set up a free assessment with the NJCEP-designated Direct Install contractor contact:

**INCLUDE IF APPLICABLE:**  
Information session [Date]


NJCEP offers an array of incentives for businesses that have retroactively applied for retroactively. Businesses that have retroactively applied for retroactively, visit [NJ Clean Energy](#)

### Save Up to 80% on Energy-Saving Upgrades for Your Business

New Jersey's Clean Energy Program™ (NJCEP) Direct Install program pays up to 80% of the cost of energy-saving upgrades for small to mid-sized businesses.

The process starts with a free, no-obligation energy assessment of your building.

To learn more about the Direct Install Program and all the NJCEP incentives available to businesses, visit [NJCleanEnergy.com/CI](#). Or substitute [Municipality] municipal webpage, if applicable.



Direct Install can be used for energy-saving upgrades to lighting; heating, cooling & ventilation (HVAC); refrigeration; motors; natural gas systems; and variable frequency drives.

#### INFORMATION SESSION



Representatives from NJCEP and the NJCEP-designated Direct Install contractor will provide information about the incentives available to [Municipality]'s businesses.

Date, Time  
Location

To set up a free assessment with the NJCEP-designated Direct Install contractor contact:

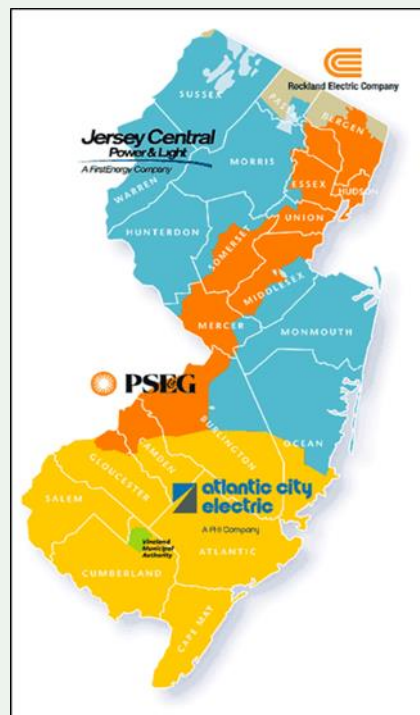
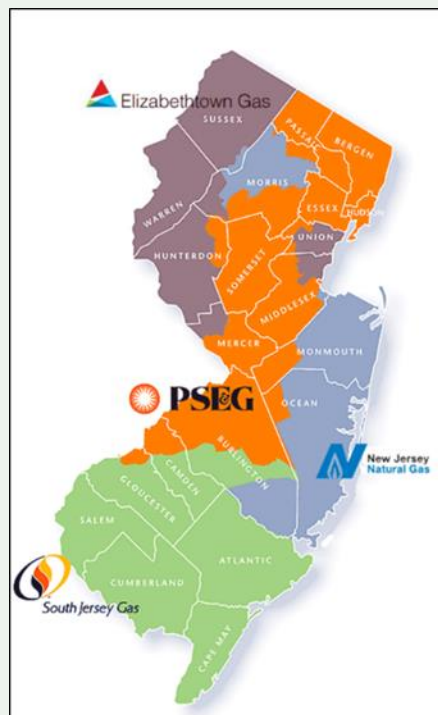
Name of Contractor  
Phone number, Email

INSERT TOWN OR GREEN TEAM LOGO HERE

## Utility Incentive Programs

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



## New Jersey's Clean Energy Program (NJCEP)

- Enhanced Incentives
  - Opportunity Zones
  - Urban Enterprise Zones



# Renewable Government Energy Aggregation (R-GEA)

**5-50 points**

## **In R-GEA the municipality:**

- Replaces utility as default supplier of electricity
- Solicits bids from third party electrical suppliers for increased renewable content
- Hires a consultant to manage bid solicitation and program enrollment

## **From the resident's point of view:**

- Opt-out program, meaning all eligible residents are enrolled but have the option to opt out for free at any time
- Residents receive opt-out notice before program starts
- Billing, line maintenance, and delivery are still done by the utility



# Renewable Government Energy Aggregation

## Sustainable Jersey R-GEA Guidebook

- Overview of R-GEA process
- FAQ for lead up to consultant
- Template RFP for Consultant

R-GEA Action is  
worth up to 50  
points and can be  
applied to the Gold  
Star Standard in  
Energy

Sustainable Jersey  
Version 2.0

R-GEA Guidebook  
August 2019

### Responding to common questions from the public before an energy consultant is hired

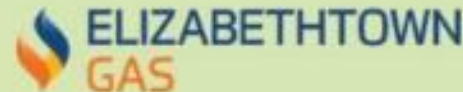
Once your municipality establishes a contract with an energy consultant, the energy consultant will largely handle responding to questions from the public. In the lead up to the selection of the energy consultant, the project team will likely need to address some questions from residents. Here are answers to the questions that are most commonly asked:

- **How much will it cost to hire the energy consultant? Will we still have to pay the energy consultant if we do not go through with the renewable aggregation?** Usually, the energy consultants are paid out of the contract with the third party supplier, which means they don't get paid until a third party supplier contract is finalized. If no contract materializes, no money is paid to the energy consultant.
- **What do I have to do to be in the aggregation program?** Because the program is set up so that all residents are initially included in the aggregation, unless they have already chosen a third party supplier, you simply do nothing and will automatically be put on the winning contract after the 30 day opt-out period ends. You will also receive a letter from the utility, alerting you to the switch of suppliers.
- **What if I already have a third party supplier?** If a household wants to take advantage of the R-GEA program but is already with a third party supplier, they will need to either 1) terminate the contract before the aggregation begins or 2) enroll in the renewable aggregation after their third party contract expires, assuming there are provisions in the suppliers contract to allow "opt-ins" at any point during the contract term. Households with an existing third-party supply contract are urged to review the contract terms before requesting to be switched over to the municipality's R-GEA program to be sure that no 'early-termination' fees will be triggered.
- **Who will my bill come from?** Meter reading and billing are part of the distribution company's function, which means they will still come from the utility. You will see on the utility bill that a new energy supplier is listed, but, other than that, the bill will look the same.
- **What happens at the end of the aggregation contract?** At the end of the contract, either the aggregation will roll over into a new aggregation contract, with a new 30 day opt-out window; or, if no new contract is established, the supply portion of the contract will revert to the utility.
- **I'm on the balanced billing plan, how will the aggregation impact my billing?** Aggregation should not change your ability to receive an equal payment (a.k.a. budget billing) plan. The utility will still provide an equal payment plan for the delivery charges on your bill. Your municipality can include a requirement in its program bid specifications that the R-GEA supplier also provide an equal payment plan for the power supply charges. In that case, the monthly budget amount for power supply will be set by the supplier by multiplying your recent 12-month electricity usage by the contract price, and then dividing by 12. This level monthly amount will appear on your utility bill, along with the balanced bill amount for the utility delivery charges. As the utility does, the supplier may periodically implement a 'true-up' adjustment to the monthly billing amount based upon your actual usage.

# PROGRAM UNDERWRITERS



# SUMMIT SPONSORS



# More Virtual Sustainability Summit events to come!

List of Virtual Summit events & to register  
**[bit.ly/NJVirtualSustSummit](https://bit.ly/NJVirtualSustSummit)**

Recordings of Virtual Summit events  
**[www.sustainablejersey.com](http://www.sustainablejersey.com) >  
Resources > Presentations >  
Sustainability Summit**



@SJ\_Program | #NJSustainabilitySummit

**Register**

**Protecting Drinking**  
**Friday, April 24, 11:00**

**Register**

**Asbury Park Dinner**  
**Monday, April 27, 4:00**

**Register**

# Speakers



Zenon Tech-Czarny, Sustainable Jersey  
Research and Project Specialist  
[czarnyz@tcnj.edu](mailto:czarnyz@tcnj.edu)



Tracey Woods, Sustainable Jersey  
Research and Project Specialist  
[woodst@tcnj.edu](mailto:woodst@tcnj.edu)



