



@SJ_Program
#SustainableStateNJ

Sustainable Jersey Summit

Achieving the Gold Standard In Energy

Energy Breakout Session 1:30-2:45



2016 NEW JERSEY SUSTAINABILITY SUMMIT



Achieving the Gold Standard In Energy

Moderator

Gary D. Fournier, Energy Director Sustainable Jersey

- Panel Introductions
- Session Overview



Achieving the Gold Standard In Energy

• Introductions

- Randall Solomon Co-Director Sustainable Jersey
- Sarah Gentile NJDEP Division of Energy Security & Sustainability
- Ashley Miller CEP TRC
- Dennis Henry City of Woodbridge
- Nancy Quirk Sustainable Jersey
- Tony O'Donnell Sustainable Jersey



Achieving the Gold Standard In Energy

• Session Overview

- Gold Overview Randy
- NJDEP EV Initiative Sarah
- Energy Efficiency Strategy-Municipal Buildings Ashley
- Fleet Management Strategy Dennis
- Community Facing Programs
 - SJ Solar Challenge Nancy
 - HPwES & Direct Install Tony
- Discussion



Strategies for Getting to Gold

MUNICIPAL OPERATIONS: GHG REDUCTION STRATEGIES AND GOAL

STRATEGIES AND ACTIONS TO ACHIEVE GOLD	TIME TO IMPLEMENT	IMPACT ON MUNICIPAL GHG
Renewable Energy Generation		4-38%
On-Site Solar System	1-2 years	1-35%
On-Site Wind System	3-5 years	<1%
Geothermal System	2-3 years	3%
Greening the Municipal Fleet		15-18%
Purchase Alternative Fuel or Efficient Vehicles	3-7 years	4%
Convert Vehicles to Alternative Fuel	1 year	2%
Trip Optimization Software	1 Year	3-6%
Proper Vehicle Maintenance	1 Year	6%
Driver Training	1 year	3%
Buildings and Street Lighting Efficiency		12-19%
Implement Energy Efficiency Measures	2-4 years	10-17%
Energy Tracking & Management	1 year	2%
Estimated Impact from Reduction Strategies		31-75%

MUNICIPAL OPERATIONS: GHG REDUCTION STRATEGIES AND GOAL

LOW-END ESTIMATED IMPACTS



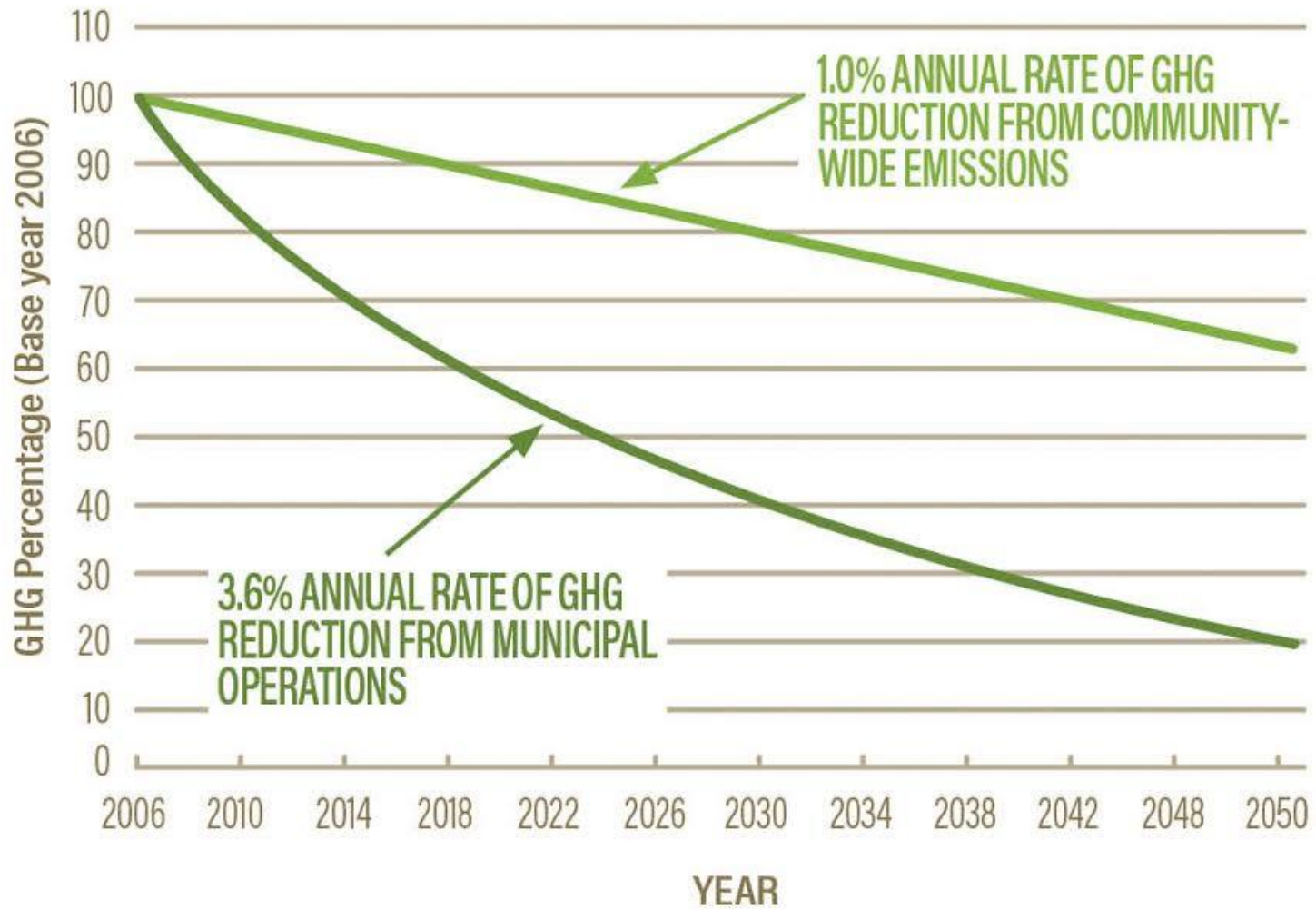
- Renewable Energy Generation
- Greening the Municipal Fleet
- Buildings and Street Lighting Efficiency

HIGH-END ESTIMATED IMPACTS



- The Gap: Future Reductions From Municipal Action
- Goal Achieved: Left Over Emissions After 80% Reduction

REDUCTIONS REQUIRED FOR GOLD STAR IN ENERGY





Community-Wide GHG Standard

1. Implement actions that address four key areas:
 - Take Actions to Promote Alternative Fuel Vehicles
 - Take Actions to Promote Solar and Renewable Energy
 - Promote Building Efficiency to Residents
 - Promote Building Efficiency to Businesses
2. After five years, Sustainable Jersey will perform a review and determine if the community has met a 1% annual reduction by tracking GHG emissions over time (adjusting for weather and the changing carbon intensity of the electric grid). Adjustments may be made for local circumstances on a case-by-case basis.
3. The target rate of 1% annual reduction will be calculated on the basis of the total number of residents and the total number of people employed in a municipality.
4. Municipalities are encouraged to innovate and implement additional GHG-reducing actions they deem suited to their local conditions. Over time, the energy utility data collected and analyzed by Sustainable Jersey will provide evidence of how effective municipal efforts to influence community-wide emissions have been.



Strategies for Getting to Gold

COMMUNITY-WIDE GHG EMISSIONS: REDUCTION STRATEGIES AND GOAL

STRATEGIES AND ACTIONS TO ACHIEVE GOLD	TIME TO IMPLEMENT	IMPACT ON MUNICIPAL GHG
Renewable Energy Generation		6-11%
Community Purchase of Green Energy (Aggregation)	1-2 years	4-7%
Community-led Solar Initiatives	1-2 years	2-4%
Mobile Sources (vehicles)		10-18%
Public Alternative Fuel Vehicle (AFV) Refueling Station	1 year	5-10%
AFV Infrastructure Permitting and Zoning	1-2 years	
Development Patterns/Intensity	5-10 years	5-8%
Promoting Walking and Bicycling	2-10 years	
Building Energy Efficiency		3-4%
Commercial Sector Outreach (Direct Install)	1-2 years	≈1%
Outreach to Residents (Home Performance w/Energy Star)	1-2 years	≈1%
Tree Canopy (Shading Effect)	1-10 years	1-2%
Estimated Impact from Reduction Strategies		19-33%

COMMUNITY-WIDE GHG EMISSIONS: REDUCTION STRATEGIES AND GOAL

LOW-END ESTIMATED IMPACTS



- Renewable Energy Generation
- Mobile Sources (Vehicles)
- Buildings Energy Efficiency

HIGH-END ESTIMATED IMPACTS



- The Gap: Future Reductions Required From Municipal Actions
- Reductions by Non-Municipal Actors (Federal, State, Market)
- Goal Achieved: Left Over Emissions After 80% Reduction

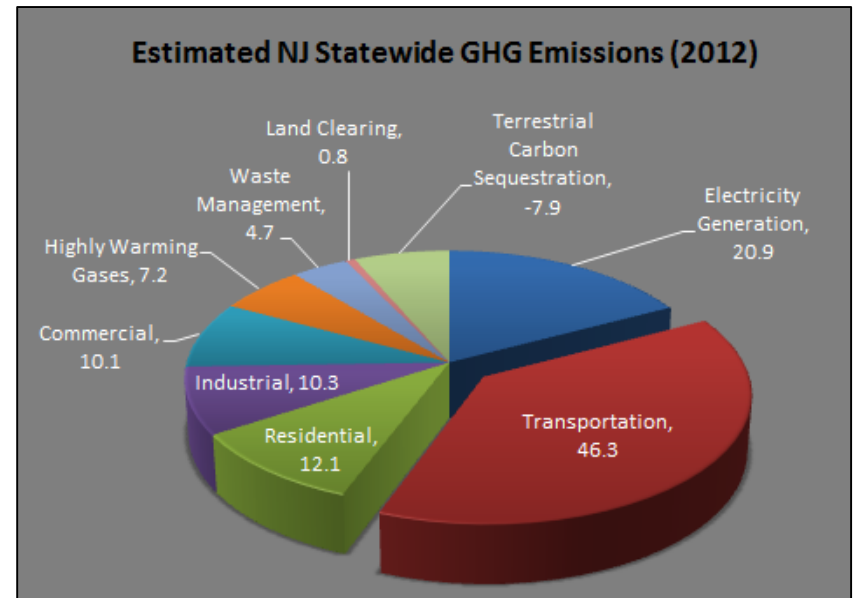
“IT PAYS TO PLUG IN”
**NJ’S ELECTRIC VEHICLE
WORKPLACE CHARGING GRANT
PROGRAM**



Sarah Gentile
Acting Manager of the Bureau of Energy and Sustainability
Air Quality, Energy and Sustainability
New Jersey Department of Environmental Protection

PURPOSE

- Provides grants to employers to offset a portion of the cost of purchasing and installing electric vehicle charging stations
- Goal to support and encourage employees to purchase and drive electric vehicles to work
 - *Reduce tailpipe emissions from transportation sector



WHY WORKPLACE CHARGING?

- Vehicles are most often parked for extended periods of time at home and at the workplace, making them logical locations to charge an EV
- NJ has made strides to streamline permits for installing residential chargers
 - The next logical location to address is the workplace



Source: Argonne National Laboratory, 2013



AMOUNT OF REIMBURSEMENT

- After installation, eligible applicants will be reimbursed by NJDEP based on charging units installed:
 - **Up to \$250 per Level 1 charging station**
 - **Up to \$5,000 per Level 2 charging station**
 - *DC Fast Chargers are not suitable for workplace applications and therefore are excluded from this program
- Reimbursement contingent upon availability of funding—first-come, first-served basis until depleted
- NJDEP can limit the amount of reimbursement per employer based on number and location of charging stations



GRANT ELIGIBILITY CRITERIA

- All NJ employers eligible for funds (public, private, for-profit, not-for-profit, educational, and government entities)
- Only Level 1 and Level 2 chargers eligible
- Charging station must be owned by applicant
- Grant applicants may not be participating in PSE&G workplace charging program or receiving funding from another utility to install charging stations
- Must comply with requirements outlined in supplemental Certification Checklist

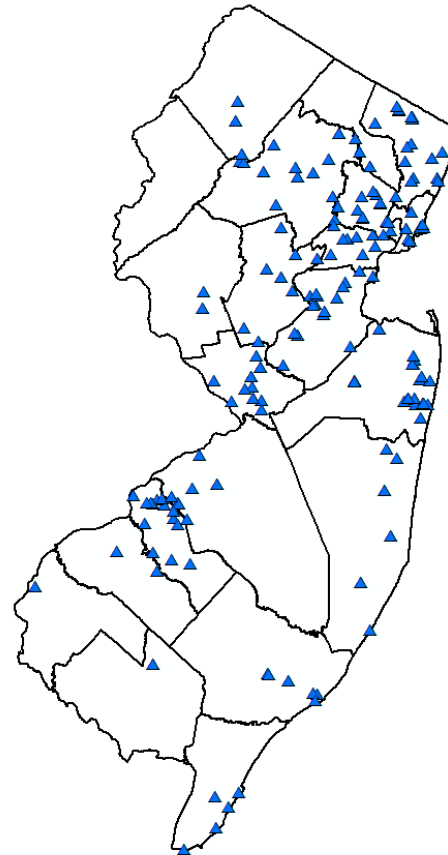


GRANT POTENTIAL

- Based on the funds available, this program has the potential to add 145 Level 2 chargers to the state
 - *Up to 2,900 if all Level 1 chargers

- For reference, the state currently has electric vehicle charging stations at 221 locations

- Source: USDOE's Alternative Fuels Data Center



SUSTAINABLE JERSEY ACTIONS

- Municipalities, as employers, are eligible for funding, and can even get Sustainable Jersey Certification Points for participating
- Possible examples:
 - **“Make your town EV friendly”** by promoting the program to businesses in your town and securing commitments for local partners to install workplace charging stations
 - **“Purchase Alternative Fuel Vehicles”** and the necessary charging infrastructure (which can be funded under these grants)



QUESTIONS?

- Sarah Gentile
Sarah.Gentile@dep.nj.gov
(609) 777-4213
- <http://www.nj.gov/dep/ages/>

Find us on 
(NJDEP Air Quality, Energy and Sustainability)





New Jersey's Clean Energy Program

Opportunities for Local Governments, Schools,
State Agencies & Nonprofits

Ashley Miller

2016 New Jersey Sustainability Summit
June 15, 2016

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
- Incentives available to commercial, industrial, government, school, nonprofit, institutional and multifamily facilities.

PROGRAM PORTFOLIO



ELIGIBLE SECTORS

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

PROGRAMS

Equipment Rebates:

- Retrofit – Existing Buildings
- New Construction
- Direct Install – Small Buildings
- Large Energy Users

Whole Buildings:

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

Energy Generation:

- Combined Heat and Power (CHP) & Fuel Cells

Audits:

- Local Government Energy Audit



LOCAL GOVERNMENT
ENERGY AUDIT (LGEA)

LGEA: OVERVIEW



AVAILABLE TO

- Local Governments
- Schools
- County Colleges
- NJ State Colleges or State Universities
- 501(c)(3) Non-profit Organizations
- State Contracting Agencies & Public Agencies

INCENTIVE

100% of the audit cost, subject to an annual incentive cap of \$100,000 per entity, per fiscal year. Exceptions possible (up to \$300,000)

LGEA: HOW IT WORKS



- Complete an application (includes utility bills)
- Schedule your audit
- Choose among list of recommended, cost-effective energy efficiency upgrades
- Apply for additional incentives from *New Jersey's Clean Energy Program* for implementation of selected upgrades

LGEA: NEW FEATURES



- No RFP process for audit firm selection
- Ability to re-apply and have another energy audit done after 3 years
- Consistency of audit report format/content
- Follow up re: NJCEP incentive programs and implementation of recommended measures



NJ SMARTSTART BUILDINGS

SMARTSTART: OVERVIEW



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

SMARTSTART: INCENTIVES



Prescriptive:

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

Custom:

- Designed for 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 to be eligible.



DIRECT INSTALL

DIRECT INSTALL



- Program is currently on hold...
- Next Steps to re-open:
 - ✓ Approval of general program design by BPU
 - ✓ Release of RFPs for contractors and equipment
 - Approval of all program details (FY17 Filing)
 - Selection and training of contractors and vendors

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 peak electric demand ≤ 200 kW
- Provides incentives of up to 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

DIRECT INSTALL: BENEFITS



- Turnkey process: participating contractors provide support and process all paperwork
- Minimal cost: Low upfront cost with generous incentives
- Fast turnaround time: Average length of time for job completion, 4-6 months
- Ongoing savings: Projects provide energy savings year after year
- State Energy Program (SEP) funding



**DIRECT INSTALL
EXAMPLES**

HAMILTON TOWNSHIP FIRE DISTRICT #2



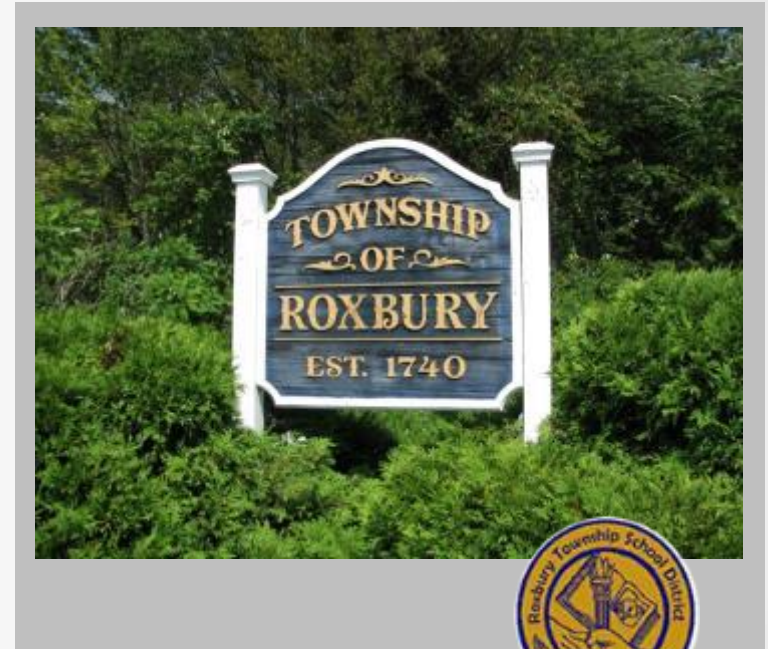
- Municipal Fire Station
- Lighting & HVAC retrofit
- Total Project Cost: \$125,664
- **Incentive: \$87,965**
- **Annual Savings: \$12,961**
- **Payback Period: 2.9 Years**



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**





PAY FOR
PERFORMANCE (P4P)

P4P: OVERVIEW



- Comprehensive, whole-building approach to saving energy in existing or new facilities
- Goal: reduce consumption by 15% or more
- Incentives paid in three installments
- Customer chooses from network of pre-approved participating Partners
- Incentives up to \$2 million per project and \$4 million annual entity cap.
 - Existing Buildings: Large Commercial, Industrial Institutional and certain multifamily with an annual peak demand in excess of 200kW
 - New Construction: Projects with at least 50,000 square feet of planned conditioned space

P4P: HOW IT WORKS



- Projects must create an Energy Reduction Plan
 - *Incentive Milestone #1* of up to \$50,000
- Implementation of Project
 - Must finish construction or renovation to qualify
 - *Incentive Milestone #2* paid to customer

To Qualify for Final Payment:

- Submit a post-construction report after 12 months of consecutive energy billing OR commissioning report for new construction projects
- Final *Incentive Milestone #3* paid to customer

A wide-angle photograph of a modern office space. The office is filled with cubicles, each equipped with a desk, computer monitor, and office chair. A man in a light blue shirt is seated at a desk in the foreground, looking at a computer monitor. The office has a high ceiling with exposed white structural beams and large windows on the right side. A large indoor plant is visible in the background. The floor is covered with a patterned carpet. A blue semi-transparent box is overlaid on the bottom left of the image, containing the text "PAY FOR PERFORMANCE EXAMPLES".

PAY FOR
PERFORMANCE
EXAMPLES

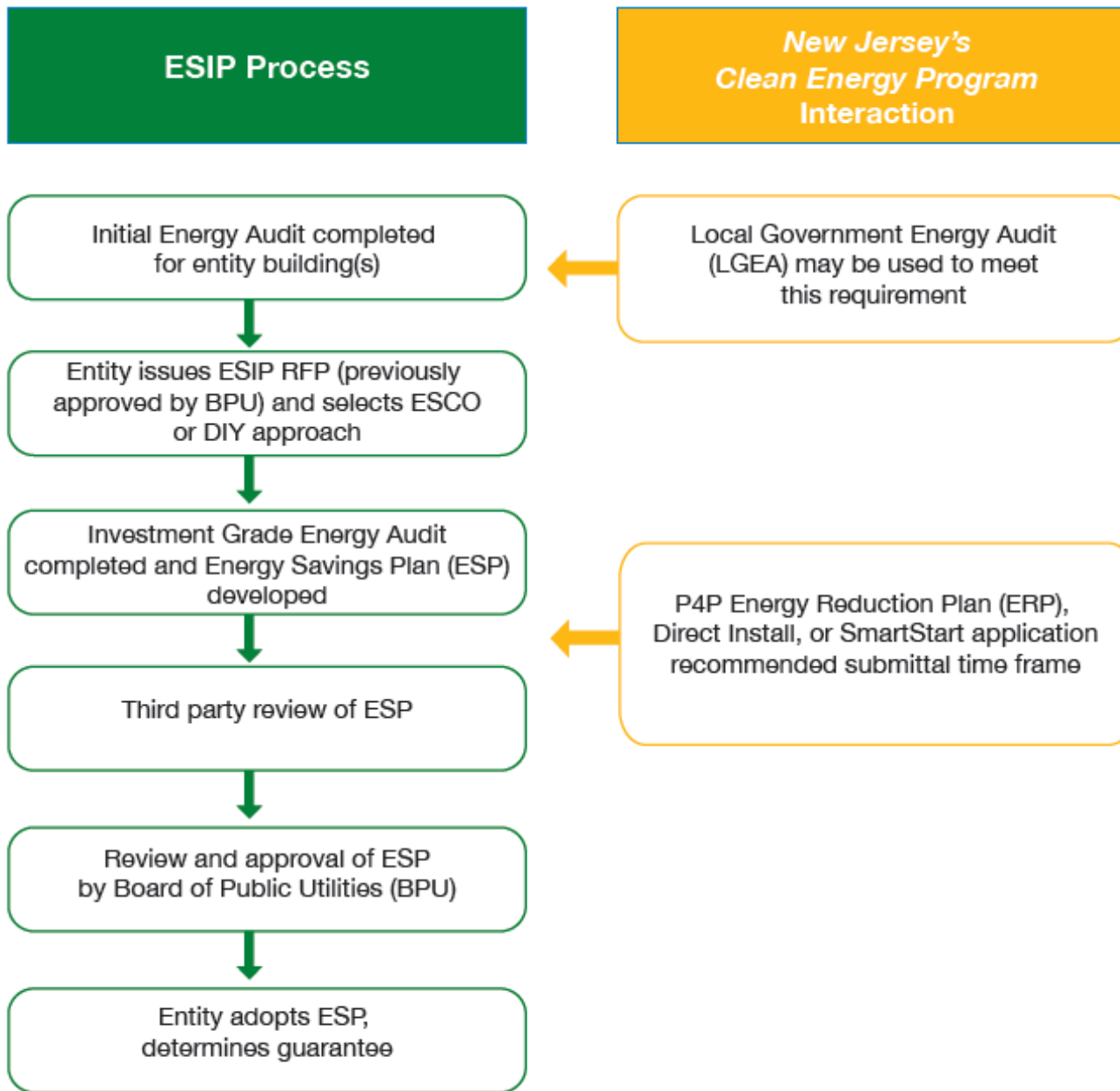
NEWARK PUBLIC SCHOOLS



- 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)





CHP/FC:



- Program currently being re-designed. BPU has solicited comments on a new program design and details will be available after the BPU board meeting June 29th.
- Program Manager now ICF International

SUSTAINABLE JERSEY

GOLD STANDARD - ENERGY



- Achieving Gold Standard in Energy by reducing Greenhouse Gas Emissions
 - Municipal Operations
 - Influencing the Community
- Recognizing the need for energy efficiency measures and implementing them is key to achieving Gold
- *Have you maximized recommendations from your last energy audit?*

TOWNSHIP OF WOODBRIDGE



- **2010** – Completed LGEA
- **2011** – Installed recommended measures
 - Direct Install
- **2015** – Installed recommended measures
 - Direct Install
 - SmartStart
- **2016** – Enrolled in LGEA for second energy audit
 - Interest in funding projects post-audit, possibly an Energy Savings Improvement Program (ESIP)



FOR MORE INFORMATION

Visit NJCleanEnergy.com

Call (866) NJSMART

Stay Informed NJCleanEnergy.com

Ashley Miller

LG&E Program Manager

amiller@trcsolutions.com

732-855-2864

Woodbridge Township Public Works Department

Automated Collection and Single Stream Recycling

Presented by: Dennis Henry
Director of Public Works, Woodbridge Township
225 Smith Street, Woodbridge Township

The 3 Year Plan

- Fully automate the Township's solid waste and recycling collection programs
- Increase efficiency of solid waste and recycling service while decreasing GHG and costs to taxpayer



Phase Breakdown

- Phase 1 – beginning January 1, 2009
- Convert a total of 9 solid waste routes and 6 recycling routes to automation
- Flexibility to maintain current system for other routes

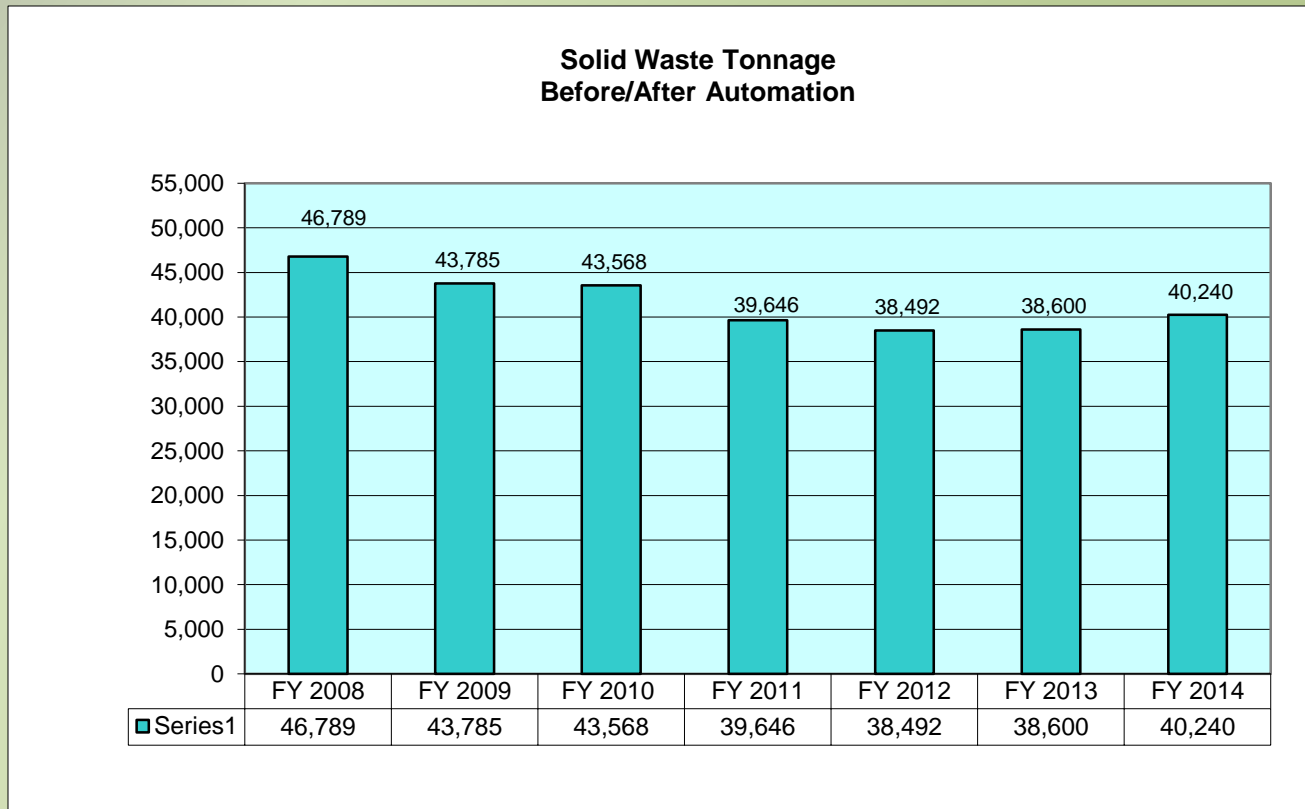
Phase 1

- Efficiency of Operation
 - Frequency of solid waste collection reduced to once a week
 - Recycling Collection for all single stream to once per week
- Changed from ward based schedule to postal zip codes
 - Cuts down on noise pollution, fuel consumption and Greenhouse Gas

Solid Waste Routes

- Three solid waste routes in three days vs.
Two routes in four days
(Twice a week collection)
- Trucks decreased from 20 rear load route trucks to 14 automated trucks

Solid Waste Tonnage

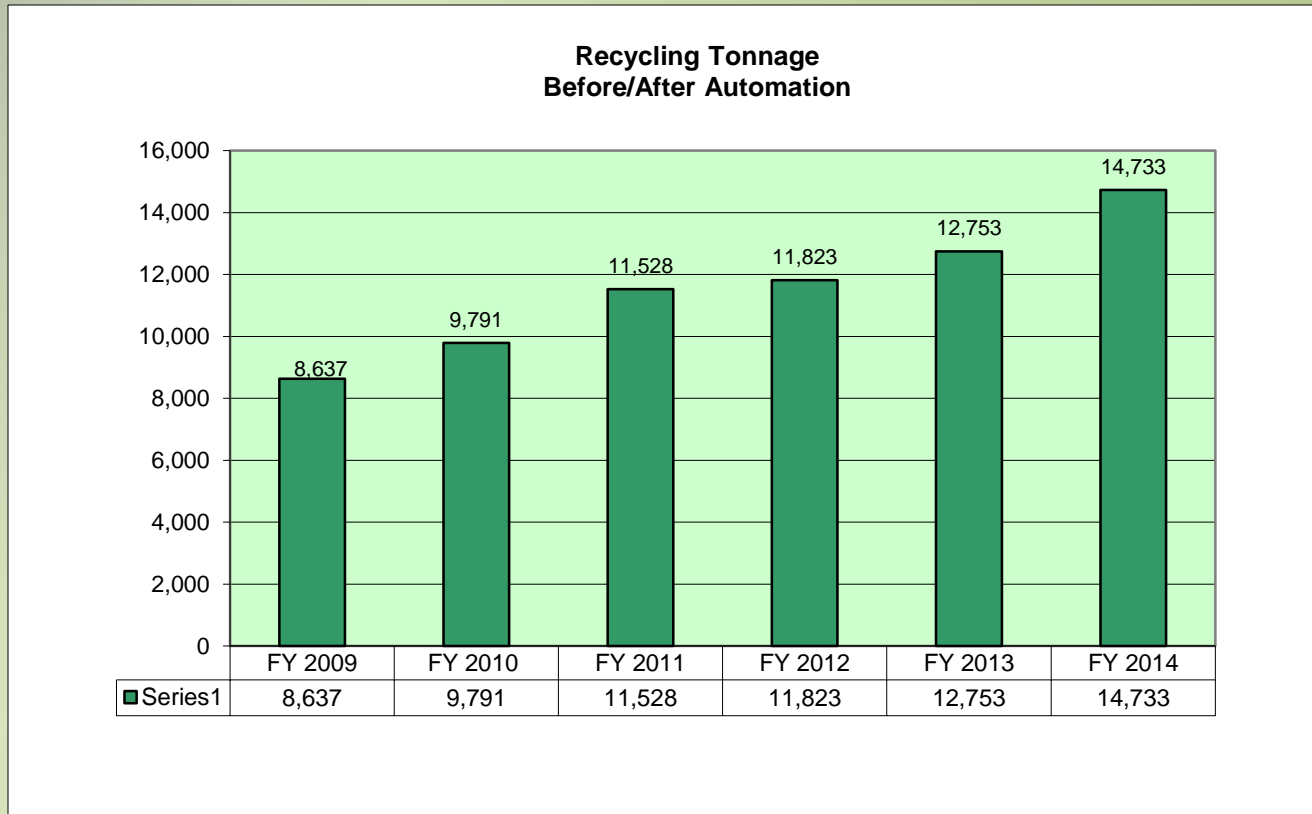


The total landfill tonnage for solid waste fell dramatically when the Township introduced single stream recycling.

Recycling

- Two recycling routes per week to collect all single stream items instead of co-mingled one week and paper goods the following week
- Improved Service
- Recycling trucks decreased from 26 to 14

Recycling Tonnage



Single Stream recycling has increased our curbside tonnage dramatically each year.

Single Stream Recycling

- All automated routes provide single stream recycling
- Mix commingles and metals with paper products
- Overall increase in recycling tonnage and resident participation
- Everything out in one container, once a week



Resident Outreach

- Key to automated system is resident buy-in
- New system results in the three E's
 - Easy
 - Efficient
 - Effective

► **Single-Stream Recycling is simple: ALL Your Recyclables in 1 Can!**

Paper:

- Office Paper
- Newspapers
- Magazines
- Catalogs
- Junk Mail
- Paper Bags
- Cardboard
- Paperback Books
- Telephone Books
- Paper Plates and Cups
- Anything Else Made of Paper

Aluminum/Metal:

- Soda Cans
- Food Cans (soup, coffee, etc.)

Styrofoam:

- Egg Cartons
- Packing Materials

Glass:

- Food and Beverage Bottles

Do Not Include In Cart:

* Oversized plastic items such as lawn furniture or computers, electronics and small appliances.

* Bring these items to the Convenience Center at 225 Smith St., Keasbey.



"If we all pitch in, we can help make Woodbridge Township one of the cleanest, greenest and best-looking places to live in America."

— John E. McCormac, Mayor



Plastic Bottles – All Codes 1-7:

- Plastics (non-toxic containers)
- Bottles (detergents, oil, salad dressing, etc.)
- Milk & Water Containers
- Jars (Peanut Butter, Mayonnaise, etc.)
- Containers for Yogurt, Sour Cream, Dairy
- Take-out Containers
- Cake & Cookie Containers
- Plastic Bags

- Magazine Wrappers
- Plastic Toys (no metal parts)
- Bubble Wrap
- Shrink Wrap
- Juice Boxes (with foil inside)
- Milk Containers
- Tetra Pak Materials
- Rigid Plastic: Small Toys, Buckets, etc.

→ For More Recycling Information, see: www.twp.woodbridge.nj.us

Taking Out the Trash?

Township ordinances prohibit trash or bulk waste from being placed at the curb prior to 4:00 p.m. the day before scheduled collection (6:00 p.m. for commercial businesses participating in the paid Township collection program).



- Empty trash containers must be removed from the curb by 9:00 p.m. on collection day and properly stored at the rear or side of the property.
- Household trash must be placed in the green 95-gallon container provided by the Township for those households on the Automated Trash Collection Program. For residents still receiving manual collection, trash must be placed in sturdy metal or plastic containers with detachable lids; not to exceed 45 gallons — or in plastic bags; securely tied or bundled.
- Bundles are not to exceed 4 feet in length and 75 pounds in weight. Yard waste can be placed in the green 95-gallon automated trash container... Leaves must be bagged in special biodegradable bags (free from Public Works) and placed curbside for pick-up during the annual Fall leaf collection program. Leaf bags are not to be used for disposal of yard waste.
- Or You May Drop-Off Bulk Waste for FREE at the Township "Recycling & Convenience Center"

The Recycling & Convenience Center is located at 225 Smith Street (under the Parkway Bridge) in Keasbey. It is open Mon. – Fri. from 8:00 a.m. to 5:00 p.m. and Sat. from 8:00 a.m. to 4:00 p.m. CLOSED ON SUNDAY.

Take the Smith St. Exit from Route 9 South and follow the sign for Keasbey (bear to the left). Remain in the left lane approximately 1,000 ft. to sign for U-turn. Make U-turn and immediately get to the right. Turn right at the yellow sign for the Public Works Recycling & Convenience Center. At the bottom of hill turn right and follow into the DPW.

ITEMS ACCEPTED: Appliances, mixed metal, bulk waste, concrete, asphalt, brick, brush, leaves, old propane tanks and electronics (computers, monitors, scanners, PCs, modems, printers, cables, keyboards and televisions).

RECYCLING DROP-OFF: Glass bottles and jars, aluminum and tin cans, plastic bottles, newspaper, mixed paper and corrugated cardboard, paint, tires, batteries, motor oil, anti-freeze and textiles (old clothing).

If you would like the Township Sanitation Department to collect bulk waste at the curb, you must call Public Works at (732) 738-1311 x3035 or x3600 for information on scheduling an appointment. There is no fee if you limit collection to no more than two bulk waste items. There is a \$30.00 fee for curbside pick-up of bulk waste for more than two items and for appliances, concrete and asphalt.

Attention Senior and Disabled Residents: The Department of Public Works has a limited supply of blue and green 65-gallon trash containers for use with the new Automated Trash & Recycling Collection Program. Please call Public Works at (732) 738-1311 x3600 to request information on how to obtain a 65-gallon container (no additional cost).



Reminder to Homeowners, Gardeners & Landscapers:
Township Ordinance prohibits blowing grass, leaves and debris into the street.

Township inspectors will issue a Notice of Violation to anyone observed blowing grass, leaves or yard debris into the street. Anyone convicted of a violation of the Ordinance can be assessed the cost of removal and proper disposal of any items or materials "thrown, discharged, or dumped" into the street and can be fined "not less than five hundred (\$500.00) dollars or more than two thousand (\$2,000.00) dollars (1974 Code § 12-109; Ord. #11-19-74 § III; Ord. #07-33 § 1).

A Greener Community...

Woodbridge Introduces Automated Trash Collection

Woodbridge Township



"Ten Towns – One Community"

Dear Resident:

As part of our continuing effort to improve resident services, while holding the line on expenses, we are pleased to announce that Woodbridge Township is instituting a more efficient program for the collection of household trash and recyclable materials.

When fully implemented, the Automated Trash Collection Program will save taxpayer dollars and will provide every household with a cleaner and more attractive system for the disposal of household waste.

What is the Automated Trash Collection Program?

It is as simple as the 3 E's – Easy, Effective, Efficient.

Easy.

Each household will be issued two standardized 95-gallon collection containers at no cost. The GREEN container is for household trash and garbage. The BLUE container is for recycling.

The containers are Township property and will be assigned to each household by address. Each container will have a separate serial number that corresponds to the assigned address. The containers are designed to be emptied through the use of an automated collection system. As we will be using special garbage trucks, these are the **only** containers that can be used to place trash and recyclables at the curb for weekly collection. Additional trash and/or recycling containers can be rented for an additional \$60.00.

Effective.

Automated Trash Collection began in January 2009 when certain sections of the Township went to the new, one-day-per-week trash collection program. Residents slated to participate in the new program will receive trash containers well in advance of the first scheduled pick-up.

Efficient.

There is a major improvement in the method in which recyclables are collected. The Township will implement what is known as a "Single Stream" system. All recyclable items – including paper, mixed paper, bottles and cans – will be placed together into the 95-gallon BLUE recycling container.

Please note that the Automated Trash Collection Program will be implemented over a period of time as we will slowly phase out the current, costly and time-consuming trash and recycling collection system.

In the interim, we are committed to making sure that every resident receives the best possible trash collection service. Detailed information on the Automated Trash Collection Program is contained in this pamphlet.

If you have any questions regarding the Automated Trash Collection Program, please contact the Public Works Department - Sanitation Office at 732-738-1311 x3600 or the Office of Recycling at 732-738-1311 x3035.

Sincerely,

John E. McCormac, Mayor



Starting March 15, 2010 ... Automated Trash Collection Begins on Your Street ...

Woodbridge Township will expand its system for automated collection of trash and recyclables to parts of Iselin, Colonia, Avenel, Hopelawn, Fords and Keasbey. This program has proven to be cost-effective and provides residents with a clean, convenient and attractive system for disposal of household waste and recyclable materials.

The new system is being phased in gradually throughout the Township. You are receiving this mailer because your residence or business will start with the new system on March 15, 2010.

Please join Mayor McCormac and Municipal Council members at either of these sites to learn more about the new Automated Trash & Recycling System:

▶ **Wednesday, Feb. 10 from 7-9 p.m.**
for Colonia/Iselin/Avenel
JFK High School Cafeteria
200 Washington Avenue, Iselin

▶ **Thursday, Feb. 18 from 7-9 p.m.**
for Fords/Hopelawn/Keasbey
Fords Middle School Cafeteria
100 Fanning Street, Fords

~ To Learn How You Can Participate in Woodbridge Township's award-winning Sustainability Programs, see the Greenable Woodbridge link at <http://www.twp.woodbridge.nj.us>



Greenable Woodbridge
A Sustainable Community



Savings & Benefits

- Reduction of cost in Township garbage disposal
 - Reduced Sanitation fleet by over 25%
 - Savings of over \$500,000 in landfill related costs
 - Savings of at least \$500,000 in compensation claims annually
 - Reduction of Landfill Gas

Manpower

- The number of Sanitation employees decreased from 107 in 2007 to 46 in 2013
 - Automated service reduced labor from each collection vehicle from a three man operation to a one man operation
 - Reduction in labor achieved through attrition and transfers

Resident Feedback



- Less noise complaints during morning pick ups
- Single stream recycling system makes it easier for residents to dispose of materials
- Aesthetics of the neighborhood on garbage and recycling days

Expanding the Program

- Eliminated all 40 gallon capacity containers in all downtowns and parks
- New decorative cans in all downtown and park areas throughout Woodbridge Township
- Dual 60 gallon decorative receptacles allow for true recycling in all downtowns
- Eliminated Sunday service in all downtown areas reducing labor cost, fuel and GHG

-Duel stream vehicle

No need for two different trucks to service the new cans in downtown areas, parks and special event cans after large events



Business District Collection System

Mayor's Message

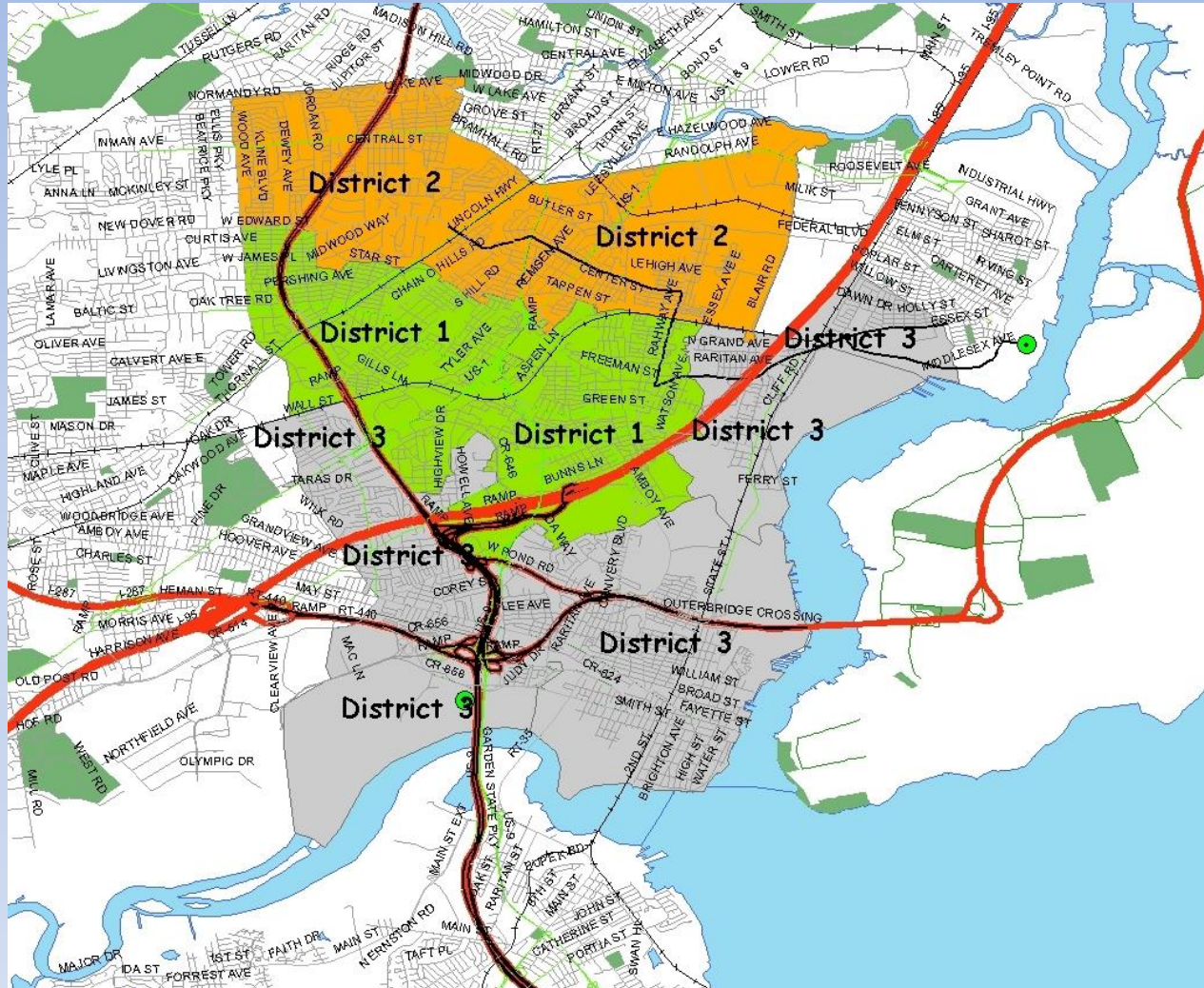
- “If we all pitch in, we can help make Woodbridge Township one of the cleanest, greenest, and best looking places to live in America.” – John E. McCormac



Mayor John E. McCormac Woodbridge Township Department of Public Works “State-of-the-Art” Vehicle Routing & Tracking Program



Automated Trash Routes

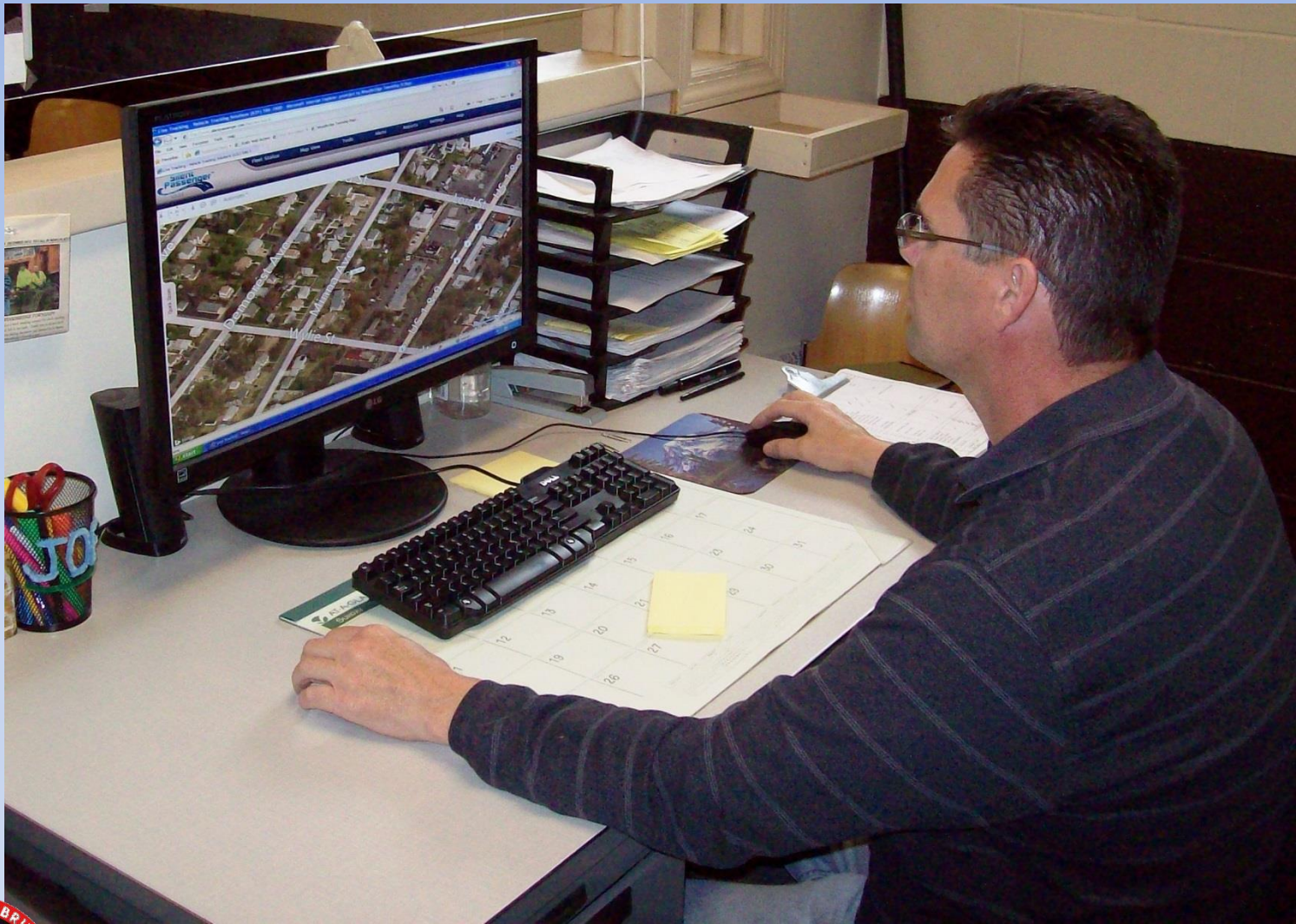


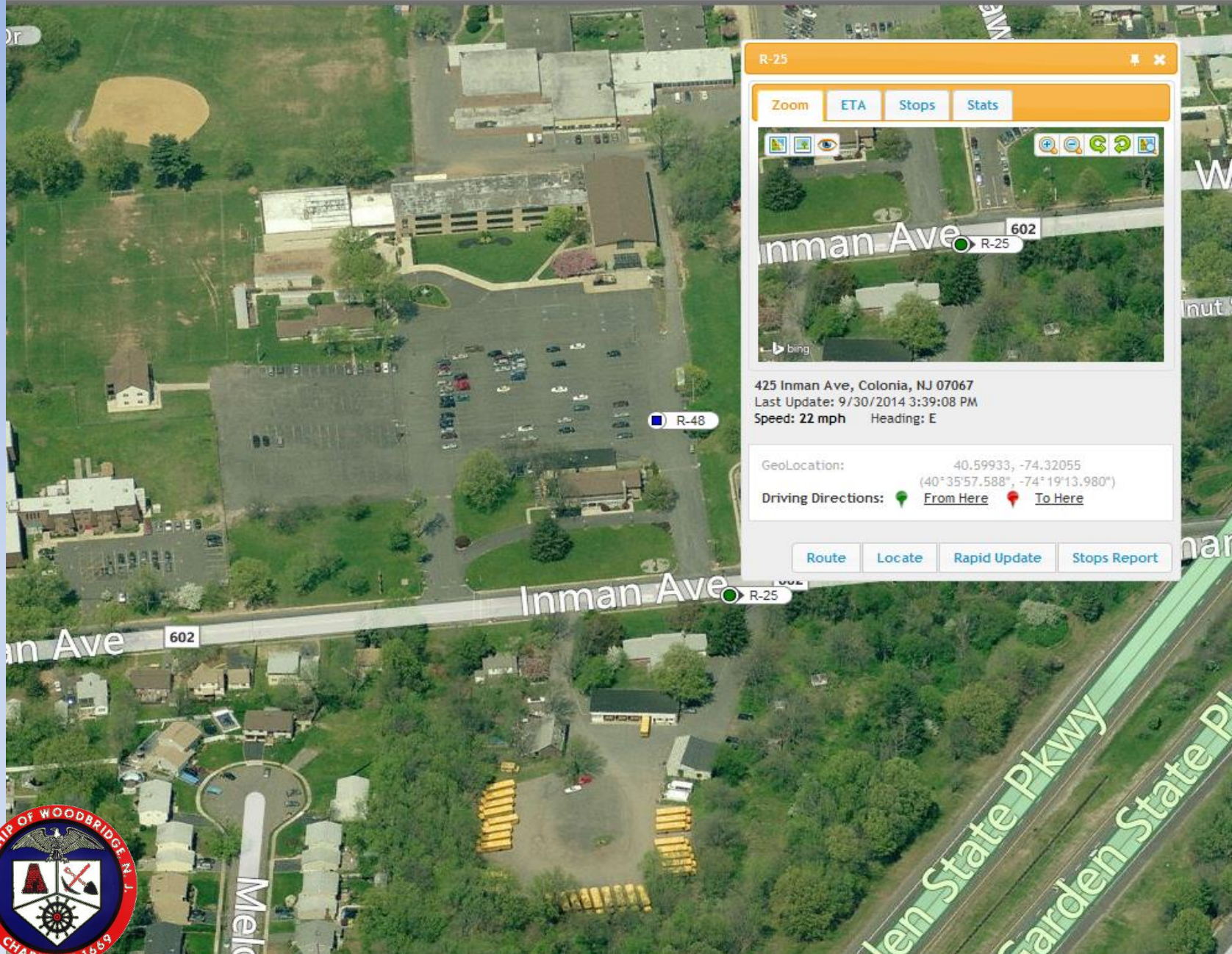
Street Routes



Automated Trash - Recycle Route










Vehicle Information

R-45

Zoom ETA Stops Stats



42 Colonia Blvd, Rahway, NJ 07065
Last Update: 9/30/2014 3:42:22 PM
Speed: 9 mph Heading: E

GeoLocation: 40.5944, -74.29138
(40° 35' 39.840", -74° 17' 28.968")
Driving Directions:  [From Here](#)  [To Here](#)

Route Locate Rapid Update Stops Report



R-45

Zoom ETA Stops Stats

Enter an address or a place
38 Delaware Ave, Colonia, NJ 07067 [Get ETA](#)

6 Minutes
[Alert on arrival](#)

42 Colonia Blvd, Rahway, NJ 07065
Last Update: 9/30/2014 3:42:22 PM
Speed: 9 mph Heading: E

GeoLocation: 40.5944, -74.29138
(40° 35' 39.840", -74° 17' 28.968")
Driving Directions:  [From Here](#)  [To Here](#)

Route Locate Rapid Update Stops Report



Zooming in more will switch you to "Satellite View".

Note that Satellite view is for viewing purposes only and is not displaying current road or weather conditions.

The screenshot displays the Silent Passenger software interface. At the top, a navigation bar includes the Silent Passenger logo, a menu with options like 'Fleet Status', 'Map View', 'Tools', 'Alerts', 'Reports', 'Settings', and 'Help', and a browser address bar showing 'http://www.silentpassenger.com/RoutePlayback.aspx'. Below the navigation bar is a legend with three categories: 'Vehicle is stopped' (red), 'Vehicle is in motion' (green), and 'Vehicle is stopped with ignition on' (yellow). A legend table lists five vehicles: P-57, R-36, R-38, R-40, and R-45, each with a corresponding color-coded bar. A timeline below the legend shows time intervals from 05:00:54 AM to 10:26 PM. The main map area shows a satellite view of a residential neighborhood with a grid of streets. A blue arrow indicates the current vehicle position on Main St. Green arrows along the streets represent the movement of the vehicles over time. Major roads like New Jersey Tpke (I-95) and US-514 are also visible. In the bottom left corner, there is a circular logo for 'TOWNSHIP OF WOODBRIDGE, N.J. CHARTERED 1869'. The bottom right corner contains copyright information for Microsoft Corporation and Pitney Bowes.

Vehicle	Color
P-57	Red
R-36	Green
R-38	Green
R-40	Yellow
R-45	Green

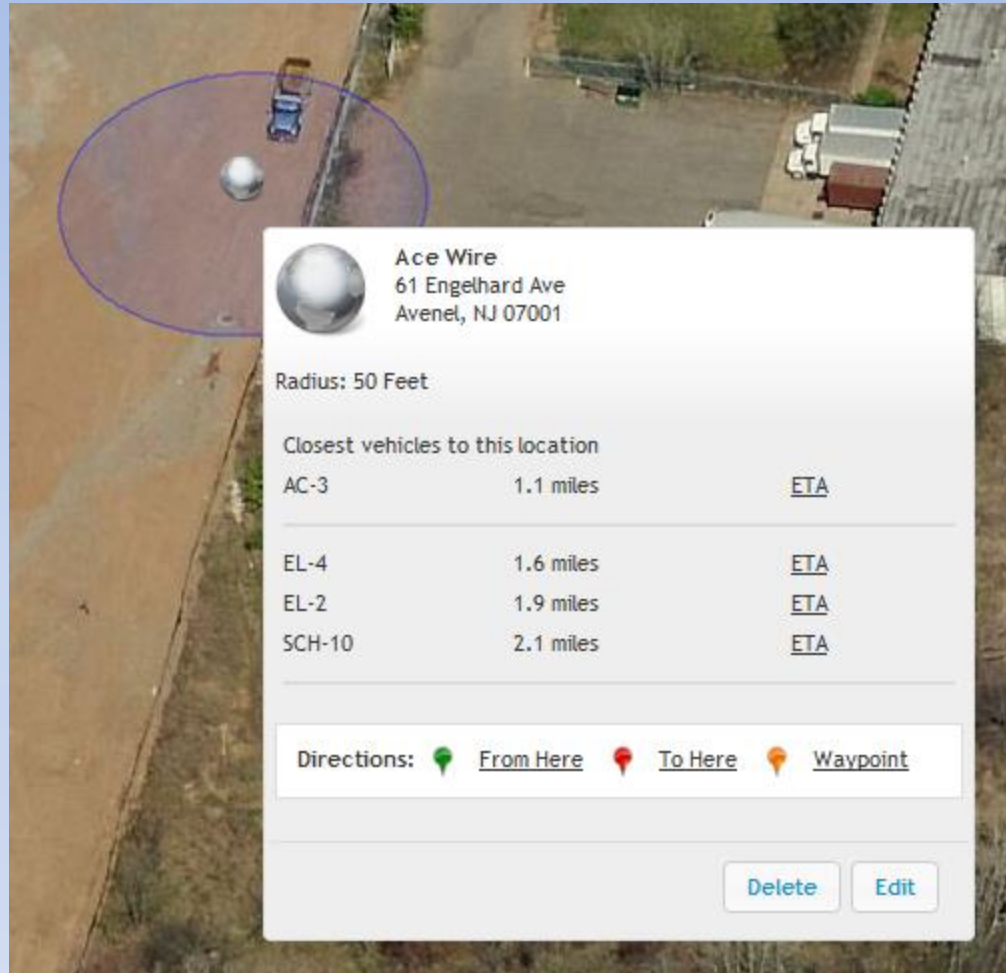
Zooming back in to check coverage on assigned routes. R40 has mechanical issue at 7:24 AM and returns to shop at 9:30 AM. Truck was down for duration of storm.


The screenshot displays a fleet management software interface for SilentPassenger. At the top, a browser address bar shows the URL <http://www.silentpassenger.com/RoutePlayback.aspx>. The main navigation bar includes options for Fleet Status, Map View, Tools, Alerts, Reports, Settings, and Help. Below this is a legend indicating vehicle status: red for 'Vehicle is stopped', green for 'Vehicle is in motion', and yellow for 'Vehicle is stopped with ignition on'. A timeline at the top shows the playback period from 05:00:54 AM to 10:26 PM, with a vertical marker at 07:24 AM. The map view below shows a residential area with streets like Garden State Pkwy, Lincoln Hwy, and US-1 & 9. A red truck icon (R40) is positioned at the 07:24 AM mark on the map. A circular logo for the Township of Woodbridge, N.J., is visible in the bottom left corner.

Zoom in closer to check a route covered by one particular vehicle.

The screenshot displays the 'Route Playback - Vehicle Tr...' interface. At the top, a navigation bar includes 'Fleet Status', 'Map View', 'Tools', 'Alerts', 'Reports', 'Settings', and 'Help'. Below this is a legend for vehicle status: red for 'Vehicle is stopped', green for 'Vehicle is in motion', and yellow for 'Vehicle is stopped with ignition on'. A timeline at the top shows a sequence of times from 02:31 AM to 10:26 PM. The main map view shows a residential area with streets like Main St, Woodbridge Ave, and New Jersey Tpke. A red arrow on Main St indicates the location of vehicle P-57 at 05:00:54 AM. A circular logo for 'TOWNSHIP OF WOODBRIDGE, N. J. CHARTERED 1669' is visible in the bottom left corner. The bottom right corner contains a scale bar (0 to 100 meters) and copyright information for Microsoft and Nokia.

Landmarks – Closest Vehicles






 **Ace Wire**
61 Engelhard Ave
Avenet, NJ 07001

Radius: 50 Feet

Closest vehicles to this location

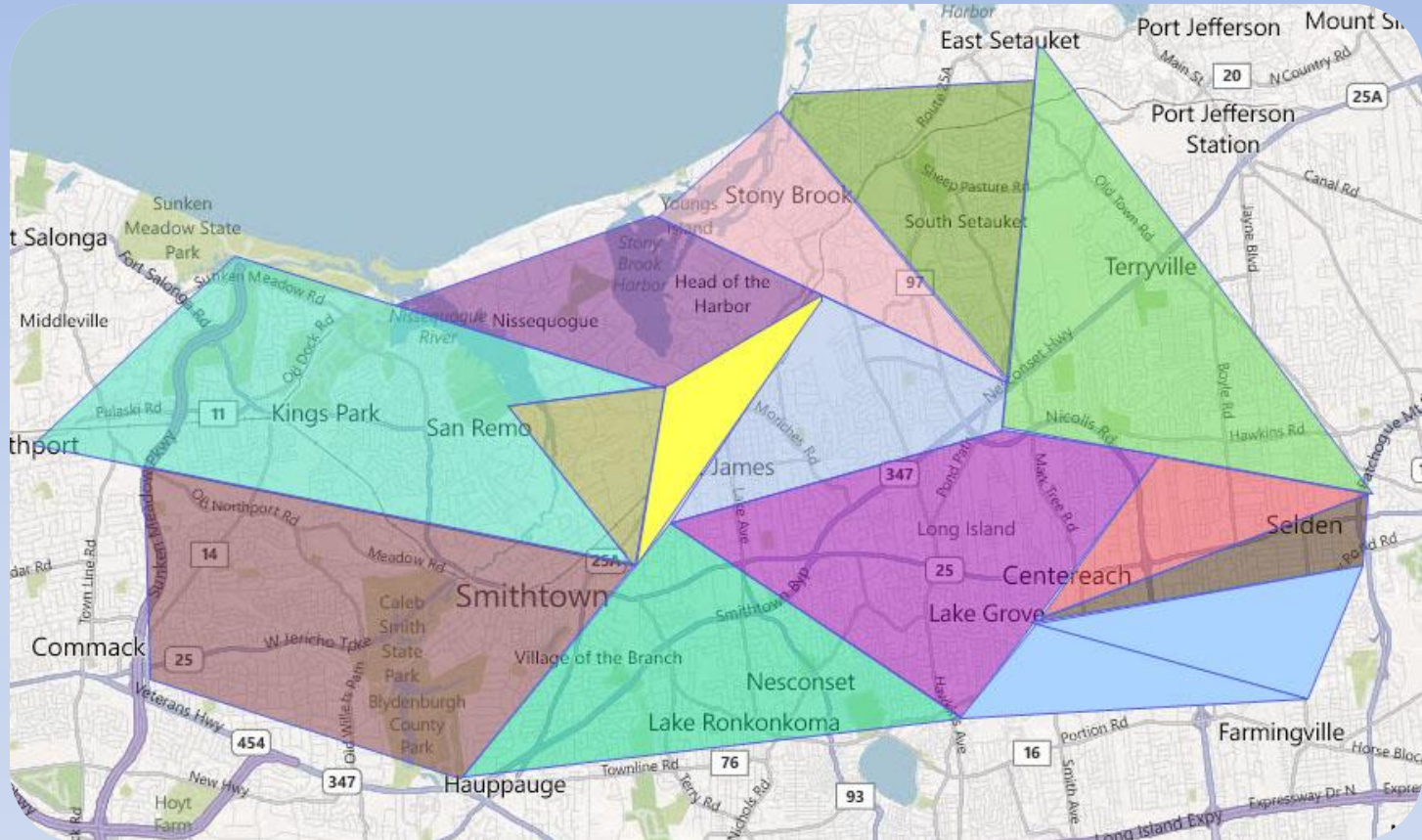
AC-3	1.1 miles	ETA
EL-4	1.6 miles	ETA
EL-2	1.9 miles	ETA
SCH-10	2.1 miles	ETA

Directions:  [From Here](#)  [To Here](#)  [Waypoint](#)

[Delete](#) [Edit](#)



Geofences



Reports

- ▶ Enhanced Idle
- ▶ Enhanced Idle w/ PTO
- ▶ Enhanced Odometer
- ▶ Events
- ▶ Geofence Violations
- ▶ Hours of Use
- ▶ IO Events
- ▶ Landmark Category Stops Details
- ▶ Landmark Category Stops Summary
- ▶ No Movement
- ▶ Non-Landmark Stops
- ▶ Non-Responsive
- ▶ Speed
- ▶ SpeedGauge
- ▶ Start End of Day
- ▶ State Mileage
- ▶ Vehicle Location Search
- ▶ Vehicle Service History
- ▶ Vehicle Summary

All reports can be generated on demand or as a scheduled e-mail.





@SJ_Program
#SustainableStateNJ

Sustainable Jersey Solar Challenge

In partnership with
EnergySage

Nancy Quirk
Program Coordinator Advanced Infrastructure
Sustainable Jersey



2016 NEW JERSEY SUSTAINABILITY SUMMIT



Sustainable Jersey Solar Challenge

- Solar Outreach and Marketing Campaign
 - Community-based marketing effort
- EnergySage Online Solar Marketplace [energysage.com]
 - User-friendly interface
 - Direct quotes from installers
 - Financing options and information
 - Basic Solar 101 information for homeowners and businesses
- Friendly Competition
 - Award to municipality driving highest adoption of solar
 - Sustainable Jersey Certification points
 - Participating communities listed on Sustainable Jersey Solar Challenge website



Sustainable Jersey Solar Challenge

- Benefits of participating in the Solar Challenge:
 - Make Your Town Solar Friendly Action points
 - Simple, cost-effective method to promote solar
 - Lowers cost and complexity for consumers
- Participating communities can:
 - Reduce their community carbon footprint
 - Become recognized leaders in local solar installations
 - Help residents save on utility bills
 - Make progress toward achieving GOLD!



Image: <http://inhabitat.com/nyc/breaking-att-and-goal-zero-roll-out-street-charge-solar-powered-phone-charging-stations-in-nyc/> eStateNJ



EnergySage Online Solar Marketplace

GET AN INSTANT SOLAR ESTIMATE

Find out in 1 minute how much solar can save you!

Estimates are based on the data you provide. For more precise information, [create a property profile on the EnergySage Marketplace](#) and get detailed quotes from multiple, pre-screened installers.



- ✔ Educational videos and materials for customers
- ✔ Simple online quoting
- ✔ Financing options
- ✔ Pre-screened installers
- ✔ Multiple bids

YOUR INSTANT ESTIMATE

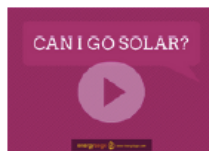
Solar estimate for 4640 Bryant Street, Denver, CO 80211, USA [EDIT YOUR ADDRESS](#)



Your Roof is Good for Solar

According to our roof surface and shading data, your roof should be able to fit a system that can meet **85%** of your electricity need – possibly more with high efficiency panels.

See what makes a roof great for solar
[CHECK OUT OUR VIDEO](#)



Your Cost Without Solar

Based on your current electricity usage, you'll pay your utility:

\$100	Monthly Cost	EDIT
\$1,200	Cost This Year	
\$35,000	Cost Over the Next 20 Years	



Environmental Benefits of Solar

Your solar panel system will have significant environmental benefits:

12,000	Pounds of Carbon Emissions Avoided Each Year
620	Gallons of Gasoline Not Burned Each Year
140	Trees Planted Every Year



EnergySage Online Solar Marketplace

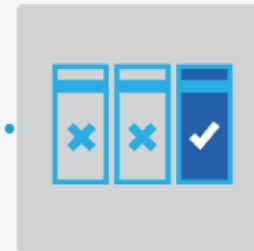
How the EnergySage Marketplace Works



**Step 1:
Register online**
Register and complete your
property profile



**Step 2:
Pre-screened installers
submit quotes online**
Installers compete for your business




**Step 3:
Compare quotes online**
Pick the best quote for you
and save with solar!



Customizable Promotional Materials

Municipalities have access to customized solar program resources


GO SOLAR IN 2015!
Visit the City of Santa Cruz solar marketplace!



- Learn about solar and how it can save you money!
- See examples of solar installations
- Compare free online quotes from local installers

www.EnergySage.com/SantaCruz

A new feature of the Climate Action Program's campaign



Go Solar Santa Cruz!

Thinking about going solar?

Get a quick estimate of what solar may cost and save you

Get Solar Estimate



Powered by **energysage**



It's the Cambridge Year of Solar!

Solar is: easy, affordable and accessible for all property types.

sunnycambridge.org



Look up!

Your roof has solar written all over it.

Solar is: accessible
Solar works for all housing types.
sunnycambridge.org



Sunny Cambridge is the City's initiative to help residents get the best deal on solar.



Customizable Web Landing Page

energysage [About Solar](#) [Solar Calculator](#) [Solar Loans](#) [Compare Solar Quotes](#)

Solarize Old Lyme!

Solar. Simple. Together.

Compare solar quotes online and save!

Step 1: Register to get custom quotes from pre-screened solar installers!

[REGISTER TO GET QUOTES](#)

Solarize Old Lyme helps you go solar and save money



Here's How:

- **Step 1:** Register and complete your property profile
- **Step 2:** Get actual online quotes from our pre-screened solar installers
- **Step 3:** Compare your quotes online and get the best deal!

By registering on EnergySage, you can find the best solar solution and financing option for your situation. It's free to use and you don't have to share your phone number with installers!

But you must act now!
The Solarize Old Lyme

[About Solarize Old Lyme](#)

Launching this month:
Go Solar Santa Cruz!
EnergySage.com/SantaCruz

Find out how much you can save with solar!

Go Solar Santa Cruz!

energysage [About Solar](#) [Solar Calculator](#) [Solar Loans](#) [Solar Marketplace](#)

National Capital Region Solar Marketplace

Powered by EnergySage

National Capital Region has partnered with EnergySage to increase solar adoption

Your local government, in partnership with EnergySage, has developed a Solar Marketplace that makes it easy to go solar! The partnership encourages the use of solar panels in the National Capital Region to promote energy security and improve environmental quality. The Marketplace gets you quotes online from multiple, pre-screened solar providers so you can compare and get the best deal!

Estimate your savings with our Solar Calculator!

[CALCULATE SOLAR SAVINGS](#)

WHY GO SOLAR?

[Compare solar quotes online and save!](#)

It's never been easier to shop for solar systems with confidence. Get multiple quotes from qualified installers. Homeowners can buy or lease with no-money-down. The EnergySage Marketplace makes comparison shopping for solar simple and transparent, so you can understand the true costs and benefits of each quote across all of your financing options. Don't shop without it.

energysage [About Solar](#) [Solar Calculator](#) [Solar Loans](#) [Solar Marketplace](#) 888.838.4638 [Sign In](#)

The EnergySage Marketplace

Compare solar quotes online and save!

Estimate your savings with our Solar Calculator! [CALCULATE SOLAR SAVINGS](#)

Eli Pond, Melrose. ©Abby Rosmann

Melrose & EnergySage are partnering to help you save money!



The Melrose Energy Commission and EnergySage have partnered to offer a simple way to go solar. The EnergySage Solar Marketplace allows you to:

- Receive online quotes for your solar project
- Compare quotes apples-to-apples from multiple, pre-screened installers to get the best deal
- Find the best financing option for your situation
- It's free to use and you don't have to share your phone number!

[About Melrose Energy Commission \(MEC\)](#)



Solar Challenge Application Details

- Applications available: Friday, July 8, 2016
 - Check Sustainable Jersey website for updates
- Informational webinar: Wednesday, July 20, 2016
 - 1 pm to 2 pm
 - Register:
 - <http://www.sustainablejersey.com/nc/events-trainings/>
- Applications due: Monday, August 15, 2016
 - Identify local organizing team
 - Brief community description
 - Marketing and outreach experience of local team
 - Permitting procedures for solar installations
 - Municipal resolution of support



@SJ_Program
#SustainableStateNJ

Sustainable Jersey Solar Challenge

Thank you!
Nancy Quirk
quirkn@tcnj.edu



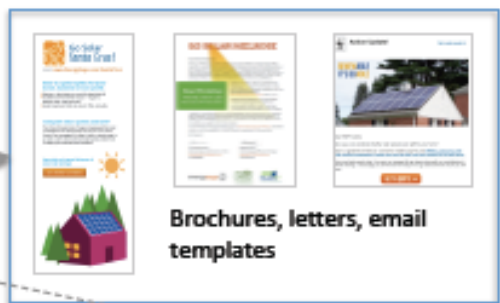
2016 NEW JERSEY SUSTAINABILITY SUMMIT



Sustainable Jersey Solar Challenge

SJ Main Program Website

- Program goals
- Program participation graphics – muni's + overall
- Marketing strategy + templates for participating municipal download
- Ability to find municipal websites through dropdown





Direct Install

What is the Direct Install program?

- Part of NJ Clean Energy Program
- Targets existing small to mid-sized commercial & industrial facilities whose peak electric demand <200kW in any of the preceding 12 months
- Covers lighting, refrigeration, HVAC, motors, natural gas, and variable frequency drives



Direct Install

What are the benefits of Direct Install?

- Turnkey process
- Minimal costs
- Fast turnaround time
- Ongoing savings

What challenges have we identified with Direct Install?

Getting the attention of local businesses to educate them about and engage them in this program



Sustainable Jersey Action to promote Direct Install

1. Choose an Outreach Coordinator
2. Identify local Direct Install contractor
3. Compile a list of local businesses to target
4. Working with municipal officials & DI contractor, craft letter to local businesses
5. Outreach coordinator works with DI contractor to follow up with local businesses
6. Perform two additional outreach activities to the business community



Sustainable Jersey Action to promote Direct Install

Completing these requirements will get a community 10 points toward SJ certification.

An additional 10 points can be achieved if the community can demonstrate that they have achieved a predetermined increase in program completions

- this is based on the number of commercial businesses in a particular community



Direct Install action - Results

To date, 17 municipalities have completed this action with four qualifying for additional points for exceeding the 5% target rate.

Participation rates for businesses have on average tripled in the municipalities that have completed this action.

The businesses who have participated as a result have saved an average of 27% on their energy usage as a result of upgrades from the Direct Install program.

Applicant	County
Hammonton	Atlantic
Harrington Park	Bergen
Moorestown**	Burlington
Camden**	Camden
Haddonfield	Camden
Cape May	Cape May
Montclair	Essex
Woodbury	Gloucester
Princeton	Mercer
West Windsor	Mercer
Highland Park	Middlesex
New Brunswick**	Middlesex
Woodbridge**	Middlesex
Howell	Monmouth
Madison	Morris
Berkeley Heights	Union
Springfield Township	Union



Home Performance with ENERGY STAR

What is the Home Performance with ENERGY STAR (HPwES) program?

- Part of NJ Clean Energy Program
- Offers “whole house” solutions to reduce energy costs and carbon footprint
- Initial comprehensive audit of your home to identify potential for energy efficiency & safety upgrades
- Homeowner and contractor agree on scope of work to be done on the home to achieve target % savings



Home Performance with ENERGY STAR (HPwES)

What are the benefits of the Home Performance with ENERGY STAR program?

- Low-interest financing and/or cash back options to help pay for improvements
- Significantly reduce energy bills and increase home value
- Additional assistance available for low income homeowners

What challenges have we identified with HPwES?

Multi-faceted process that can be confusing and intimidating for homeowners



Sustainable Jersey Action to promote HPwES

1. Choose an Outreach Coordinator
2. Go through an RFP process to identify municipally-approved contractor (for 20 points). In lieu of this, establishing a basic package for an audit and providing an information clearing house will earn 10 points under this action
3. In addition, the community must do at least two other events to promote the HPwES program



HPwES action - Results

The average participation rate improvement for the six HPwES efforts that have been certified to date in Sustainable Jersey is a “6.8-fold” increase (range low of 1.7 to a high of 15.6)

Municipality	Households	Participation Rates					Total Completions
		2011	2012	2013	2014	2015	
Glen Rock	3,672	0.16%	0.05%	0.27%	0.63%	1.23%	69
Highland Park	2,475	0.12%	0.93%	1.82%	0.53%	0.48%	114
Millburn	5,777	0.12%	0.02%	0.07%	0.02%	0.12%	24
Princeton	5,739	0.63%	0.51%	0.51%	1.10%	0.71%	301
Watchung	1,735	0.23%	0.06%	0.23%	0.06%	0.35%	19
Woodbridge	24,406	0.00%	0.00%	0.02%	0.19%	1.72%	509
Statewide	2,102,465	0.13%	0.18%	0.23%	0.26%	0.30%	30,060

