2018 NEW JERSEY SUSTAINABILITY SUMMIT

IT'S ELECTRIC!

Our 2018 Sustainability Sessions were made possible in part with the support of the following sponsors:

WiFi network: Guest-at-TCNJ3 | username: guest2344 | password: naranyru

Session Presenters

Nancy Quirk, Energy Program Manager
Sustainable Jersey

John Alexander, Director of Public Affairs
Burlington City

Andrea Friedman, Bureau of Mobile Sources
NJ Department of Environmental Protection

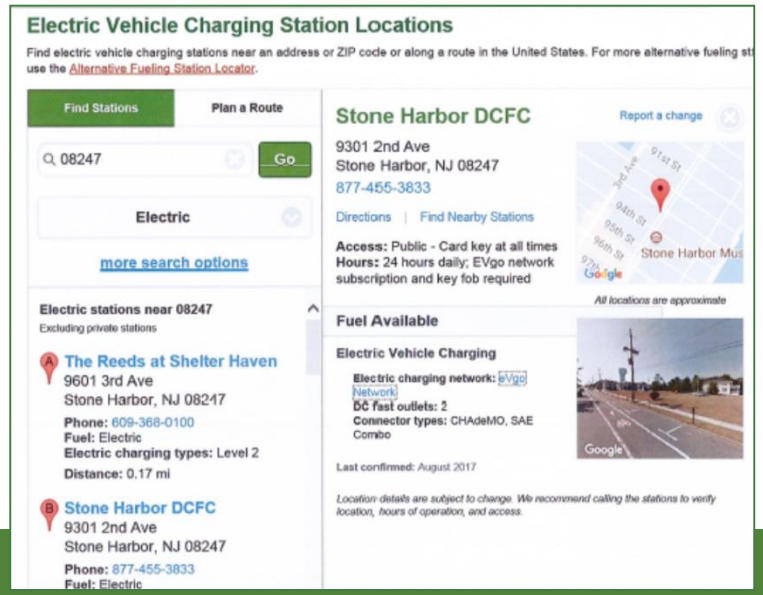
Michael Manzella, Transportation Manager
City of Asbury Park

Brian Platt, Business Administrator
City of Jersey City

Sustainable Jersey EV Actions

Public EV Charging Infrastructure

- Municipality instrumental in the project
- Publicly available
- Listed on “public directory”
- Signage/Promotion of Charging Stations



Make Your Town EV Friendly

- Zoning -- EV charging stations as accessory use
- Design standards for EVSE parking spaces
- Training for local officials
- Outreach activities
  - Incentive for pre-wiring
  - Awareness event
  - Commitment from 3 local partners
    - for workplace chargers
    - for multi-family chargers

DRIVE ELECTRIC
National Drive Electric Week

Municipal Planning and Zoning

PEV Parking Ordinance

- Parking spaces / ratio
  - e.g., 1:1 vs 3:1
- Protection around charging infrastructure, e.g. bollards
- Lighting – type and hours of illumination
- Signage
- ADA accessibility

EV Charging Infrastructure

- Pre-wiring in redevelopment projects
- EV Charging stations in redevelopment projects
- Waive permitting fees
- Award plaque or recognition

Sustainable Jersey Fleet Actions

- Fleet Inventory Action
  - Evaluate current vehicle use
  - Fleet planning exercise
- Purchase Alternative Fuel Vehicles Action
- Assess Municipal Duty Cycle
  - Code enforcement vehicles
  - Police vehicle fleet
  - Light and heavy duty trucks
  - Bus fleet

http://www.hyattsville.org/733/Electric-Police-Vehicles

drive green new jersey

Electric Vehicles and EV Infrastructure: Basics, Tools & Resources

New Jersey Sustainability Summit
June 21, 2018

Andrea Friedman, Bureau of Mobile Sources

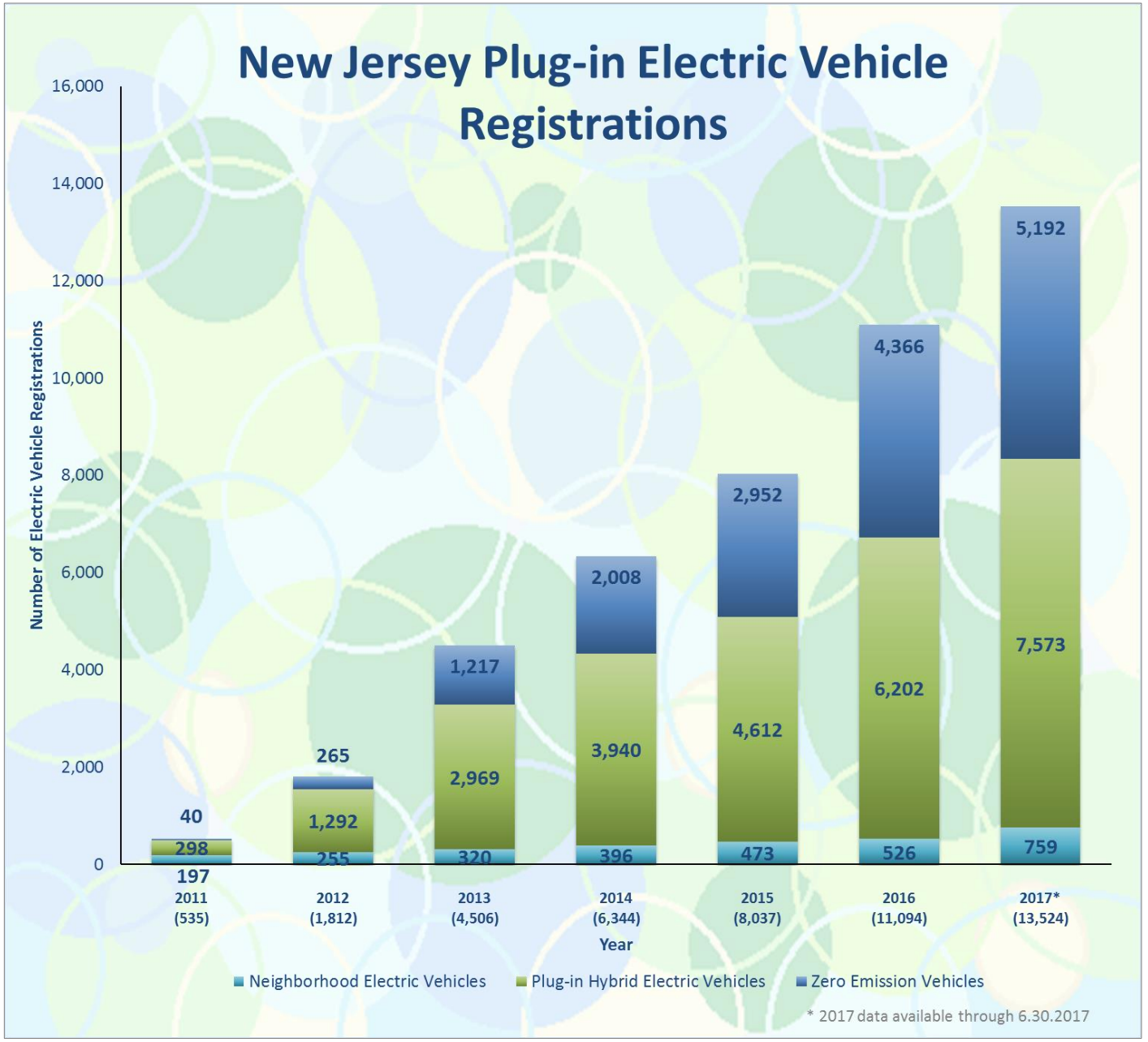
New Jersey Department of Environmental Protection
Air Quality, Energy and Sustainability

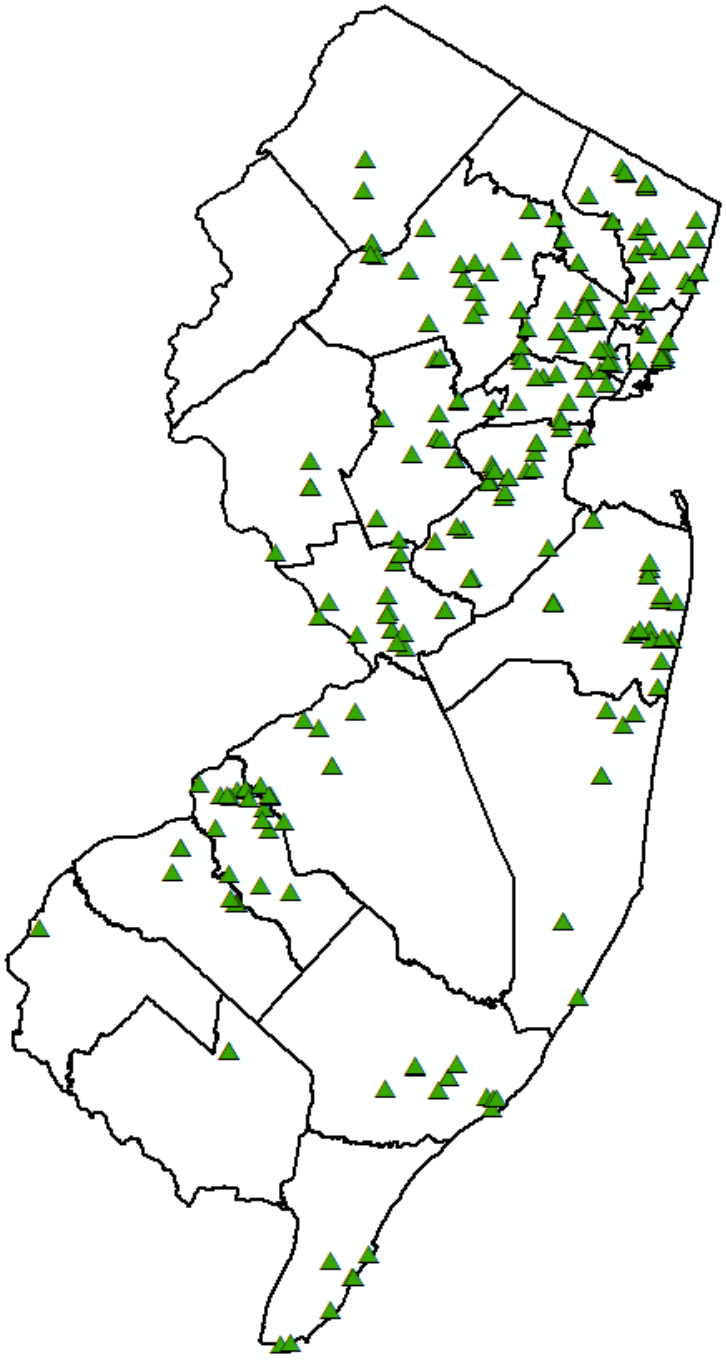
See http://holeintheclouds.net/sites/holeintheclouds.net/files/good_morning/10oct/easterparade.jpg
via Wikimedia Commons

800,000 Americans have made the switch to electric.

NJ EV Registrations

2011: 535
2017: 13,524





The Charging Network is Growing

Publicly accessible EV charging stations:

517 plugs at
220 locations

Including 102 DC Fast Charging plugs at 42 locations.

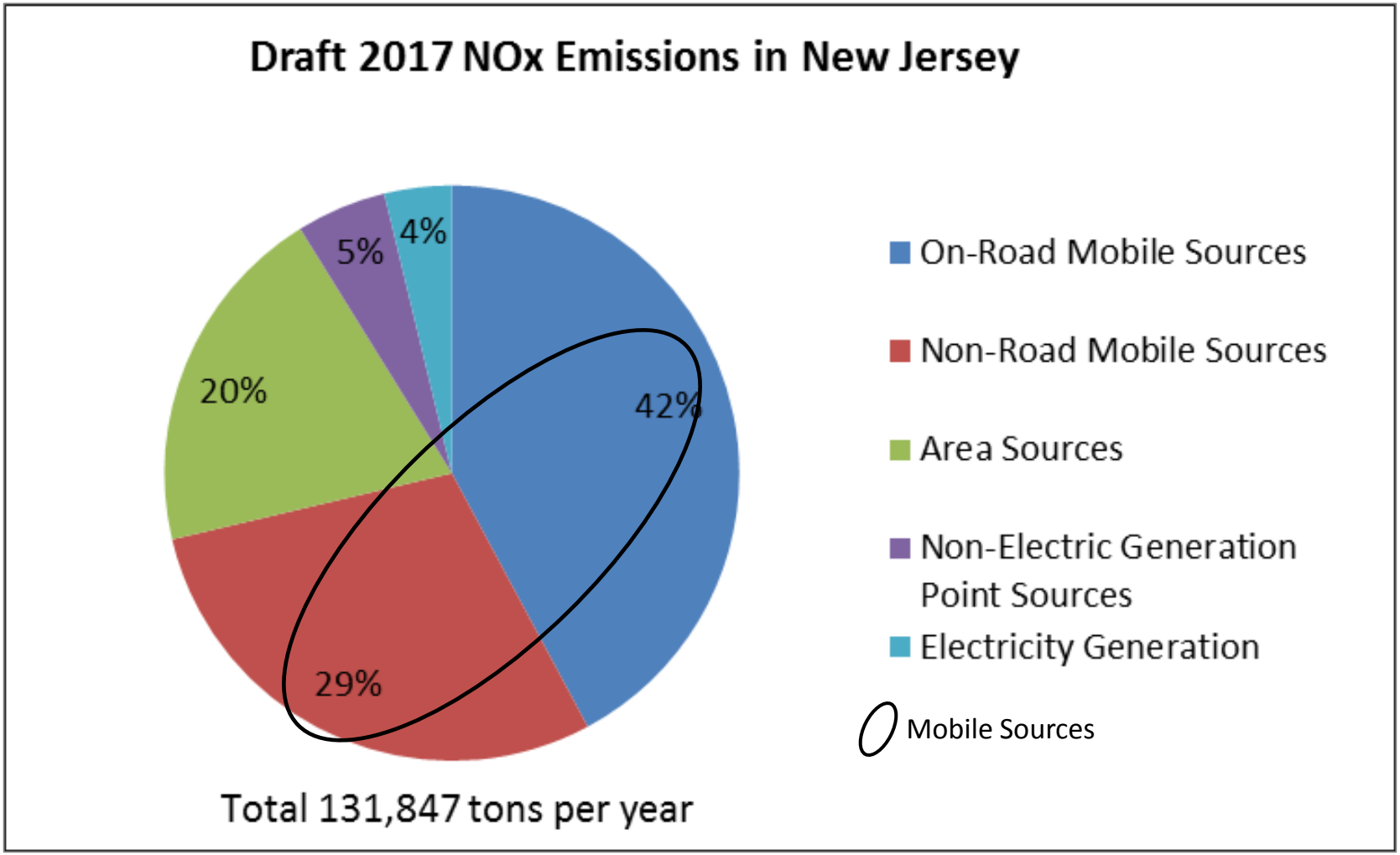
Source: www.afdc.energy.gov (11/2017)

Why do we care?

Vehicles cause air pollution.

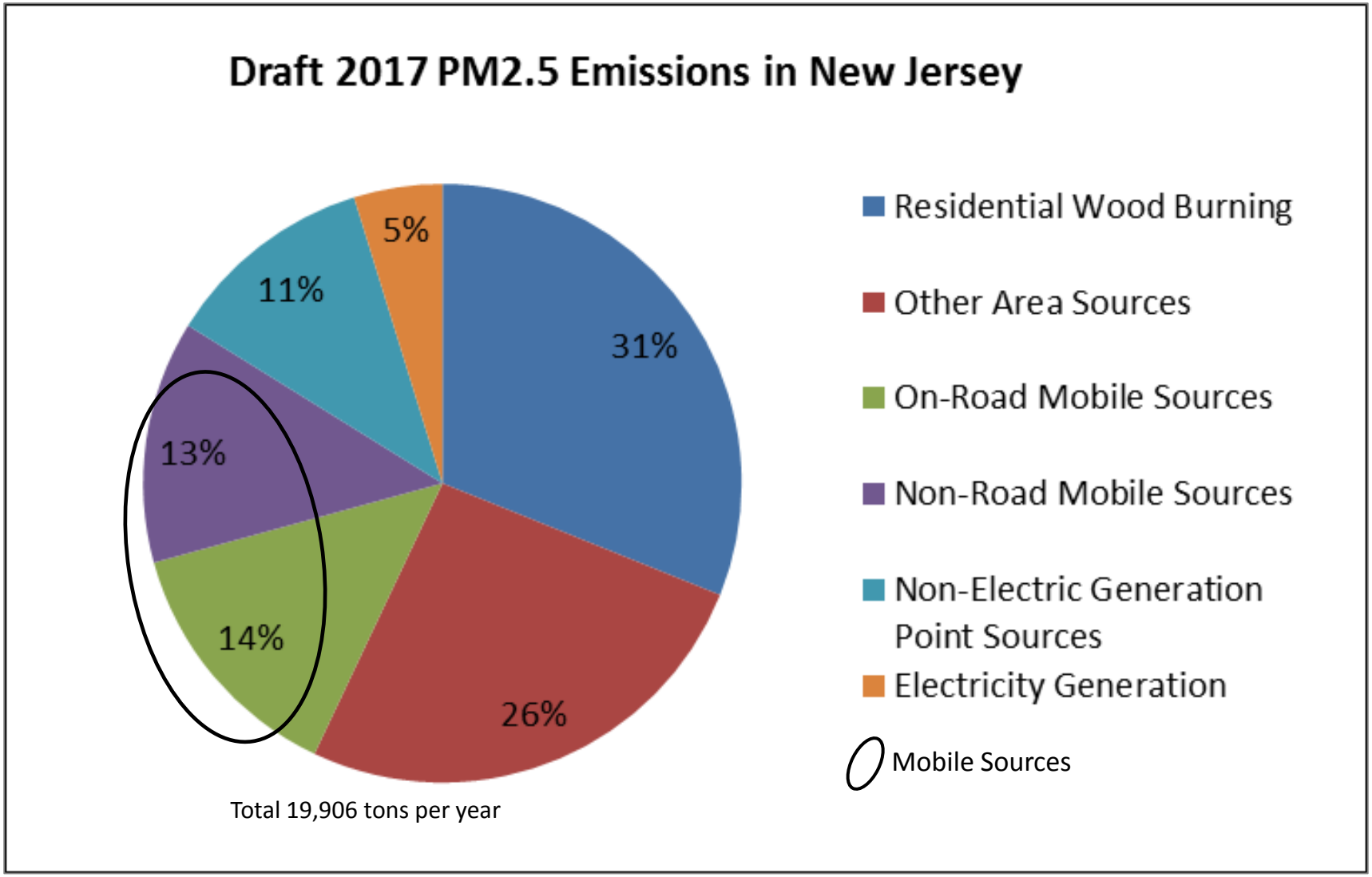
Photo from Getty Images

Vehicles Contribute to Ozone Pollution



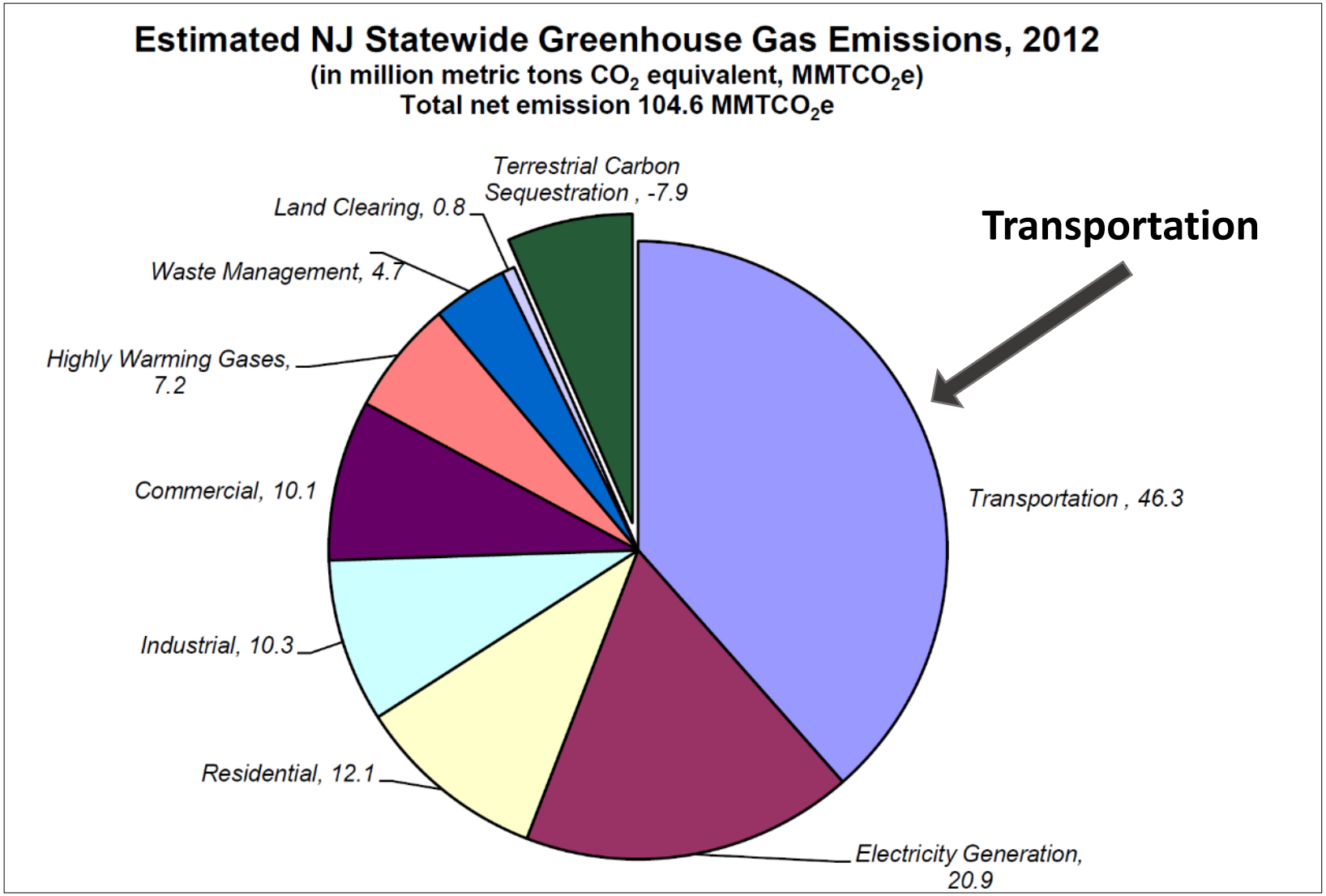
Source: Draft MARAMA 2017 BETA2 Regional Modeling Inventory

Vehicles Cause Particulate Pollution



Source: Draft MARAMA 2017 BETA2 Regional Modeling Inventory

Vehicles Cause Greenhouse Gas Pollution



Source: New Jersey Statewide Greenhouse Gas Emissions Inventory Report 2012

Electric Vehicles Improve Air Quality and Address Climate Change

- Less ozone-causing chemicals
- Less harmful particulates
- Less greenhouse gases

Electric vehicles get cleaner over time.

Photo from Citi.io

About Electric Vehicles

Battery Electric Vehicle (BEV)

- **100% powered by an electric motor**

- "Fuel up" by plugging in
- Battery stores the electricity
- No tailpipe emissions
- 85 - 300+ miles per charge
- Recharge in 20 - 30 minutes (fast charger) or 4 - 6 hours (Level 2 charger)

- Examples: Nissan Leaf, Tesla Model 3, Chevy Bolt, Ford Focus Electric

Plug-In Hybrid Electric Vehicle (BEV)

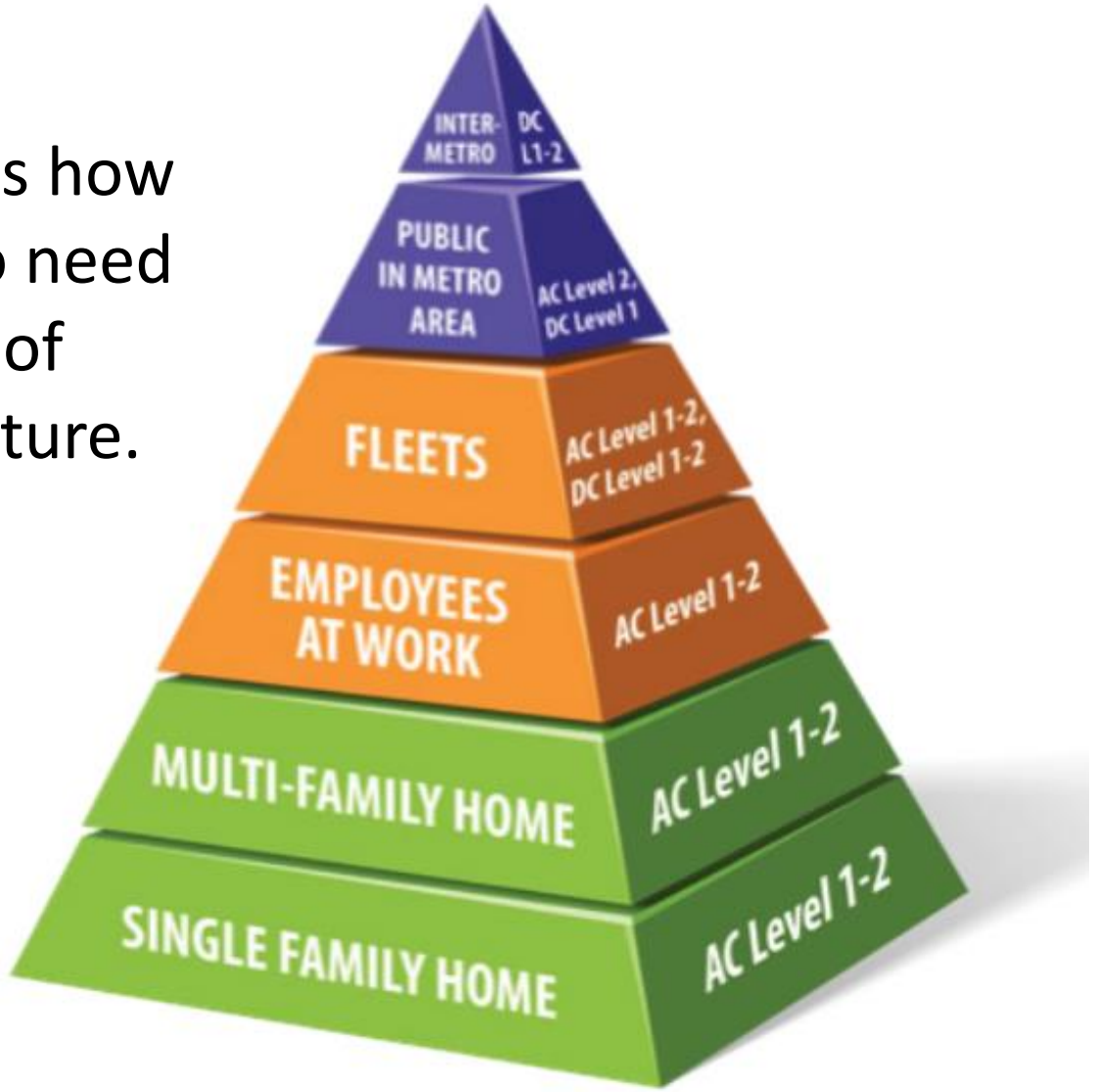
- **Powered by an electric motor <u>and</u> a gasoline engine**

- "Fuel up" by plugging in or gas station
- Battery stores the electricity
- Reduced tailpipe emissions
- 15 - 50 miles per charge
- Recharge with Level 1 or Level 2 charger. Time depends on battery size

- Examples: Toyota Prius Prime, Chevy Volt, Ford Fusion Energi, Honda Clarity

The Charging Pyramid

This pyramid shows how likely drivers are to need and use each type of charging infrastructure.



Source: Argonne National Laboratory, 2013

About Charging

Level 1 - 120V

Add 2 -5 miles range per hour

$1,000 average (including installation)

Source: greentransportation.info

Level 2 – 240V

Add 10 - 20 miles range per hour

$10,000 average (including installation)

Source: www.fastcompany.com

DC Fast Charger – 480V+

100 – 300 miles range per hour

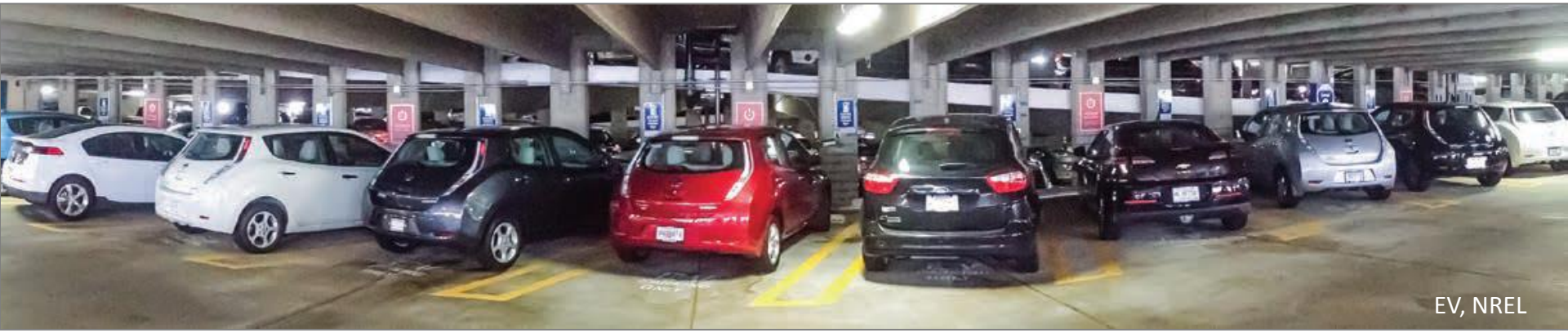
$100,000 average (including installation)

Eaton DC Fast Charger

Incentives, Tools and Resources

1. *It Pay$ to Plug In*

New Jersey's Grant Program for Workplace Charging



For purchase and installation of EV charging stations.

- Up to $250 for Level 1 charger
- Up to $5,000 for Level 2 charger
- Awarded >$850,000 to 62 grantees for 186 chargers
- Temporarily out of funds. Accepting applications for the waiting list. www.drivegreen.nj.gov/programs.html

It Pay$ to Plug In: Eligibility and Process

- All NJ employers: government, private, for-profit, not-for-profit, educational.
- First-come, first-served.
- **Apply online before installing charging stations.**
- **Receive approval letter from DEP before installing charging stations.**
- Install within one calendar year.
- Receive reimbursement.

Congratulations Municipal and County Grantees!

Municipality or County	Chargers
Borough of Rutherford	8
Borough of Glen Rock	6
Hopewell Township	5
Borough of Bound Brook	4
Borough of Seaside Heights	4
Town of Secaucus	4
Borough of Beach Haven	3
Borough of Demarest	3
Borough of Park Ridge	3

Municipality or County	Chargers
Borough of Bogota	2
County of Hudson	2
Township of Edison	2
County of Hudson	2
Morris Co. Vocational Technical School	2
Township of Ocean	2
Borough of Avalon	1
City of Ocean City	1
Princeton	1

18 county and municipal grantees will install 55 Level 2 EV charging stations.

Expansion of *It Pay$ to Plug In* (late 2018)

We anticipate $10M (VW Settlement) plus $3.6M (federal grants – preliminary approval)

<u>Eligible Projects</u>

1. Government-owned, publicly accessible
2. Non-government-owned, publicly accessible
3. Workplace
4. Multi-unit dwellings (apartments, condos, etc.)

Includes Level 1, Level 2 and DC Fast Chargers

2. Volkswagen Settlement

- Volkswagen secretly installed software in certain diesel vehicles to cheat emission tests. Settlement: VW to provide funds to states and tribes for NOx reduction projects.

  Appx. $72.2 million for New Jersey
  Including up to 15% for EV charging = appx. $10.8 million

- Draft Beneficiary Mitigation Plan is actively under development. There will be opportunities for public input on the draft Plan.
- See www.state.nj.us/dep/vw for details and to join the email list for updates.

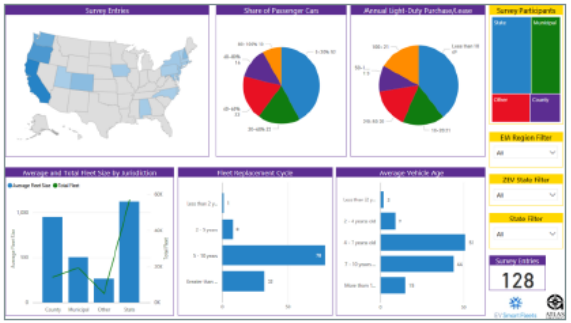
3. Procurement Tools for Public Fleets
EV Smart Fleets

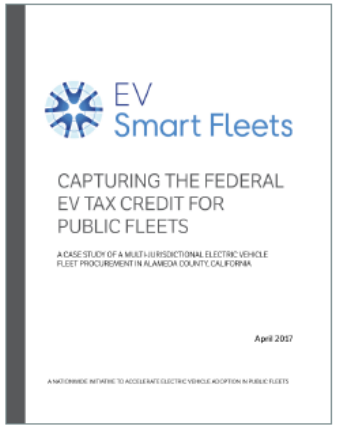
ATLAS PUBLIC POLICY

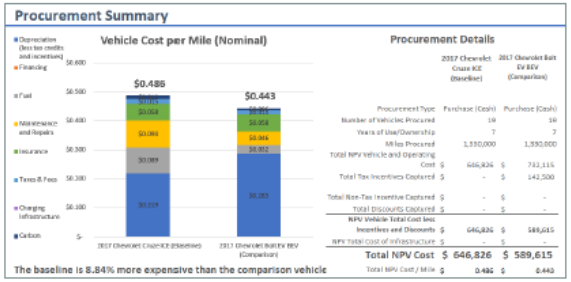
Materials on EV Smart Fleets Website

www.evsmartfleets.com

- Explore results from our nationwide survey of public fleets on EV procurement
- Read our case studies and learn about how public fleets have acquired EVs at a low cost
- **Use the Fleet Procurement Analysis Tool to assess how EVs compare to conventional vehicles**



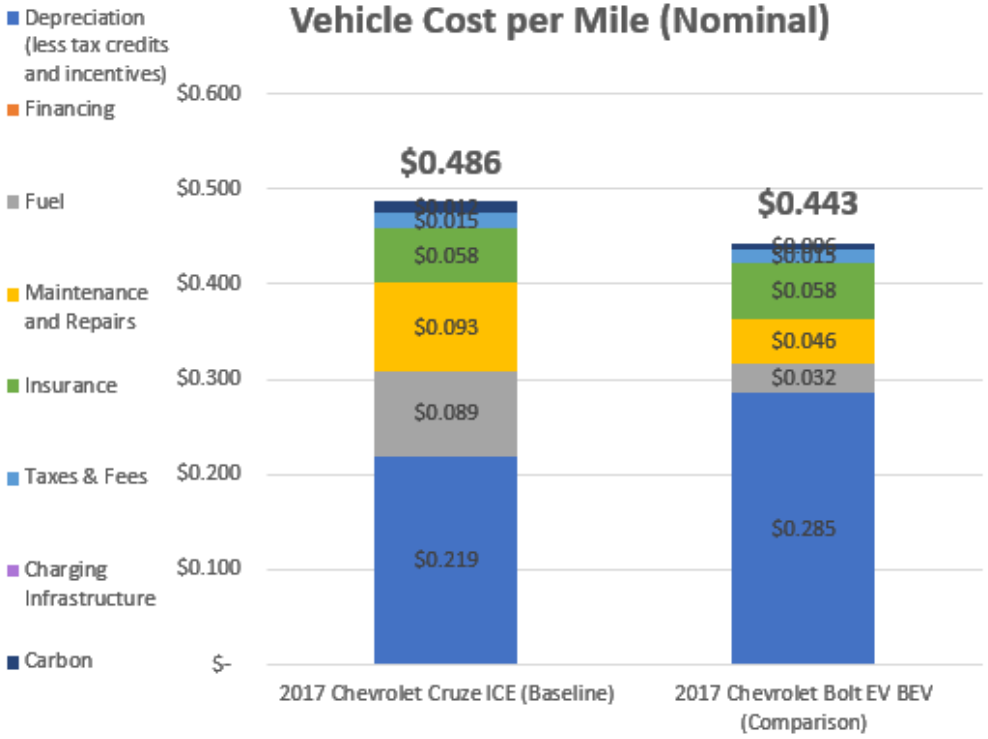




www.evsmartfleets.com

EV Fleet Procurement Analysis Tool

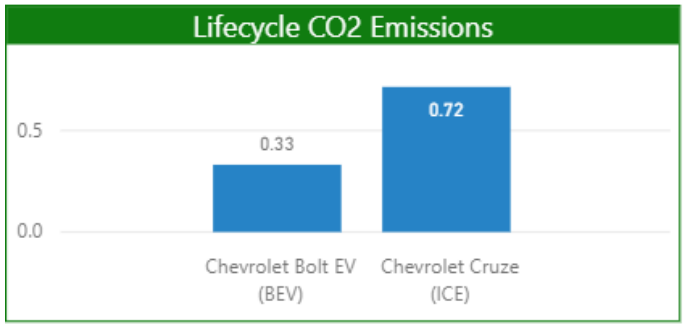
Procurement Summary

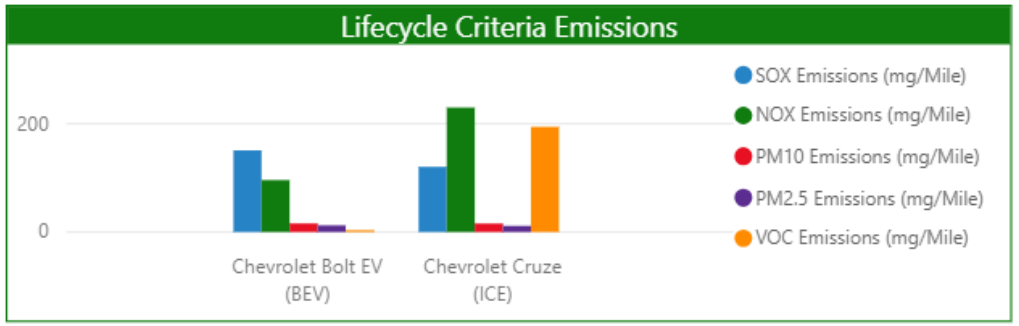


Procurement Details

	2017 Chevrolet Cruze ICE (Baseline)	2017 Chevrolet Bolt EV BEV (Comparison)
Procurement Type	Purchase (Cash)	Purchase (Cash)
Number of Vehicles Procured	19	19
Years of Use/Ownership	7	7
Miles Procured	1,330,000	1,330,000
Total NPV Vehicle and Operating Cost	$ 646,826	$ 732,115
Total Tax Incentives Captured	$ -	$ 142,500
Total Non-Tax Incentive Captured	$ -	$ -
Total Discounts Captured	$ -	$ -
NPV Vehicle Total Cost less Incentives and Discounts	$ 646,826	$ 589,615
NPV Total Cost of Infrastructure	$ -	$ -
Total NPV Cost	**$ 646,826**	**$ 589,615**
Total NPV Cost / Mile	$ 0.486	$ 0.443

The baseline is 8.84% more expensive than the comparison vehicle





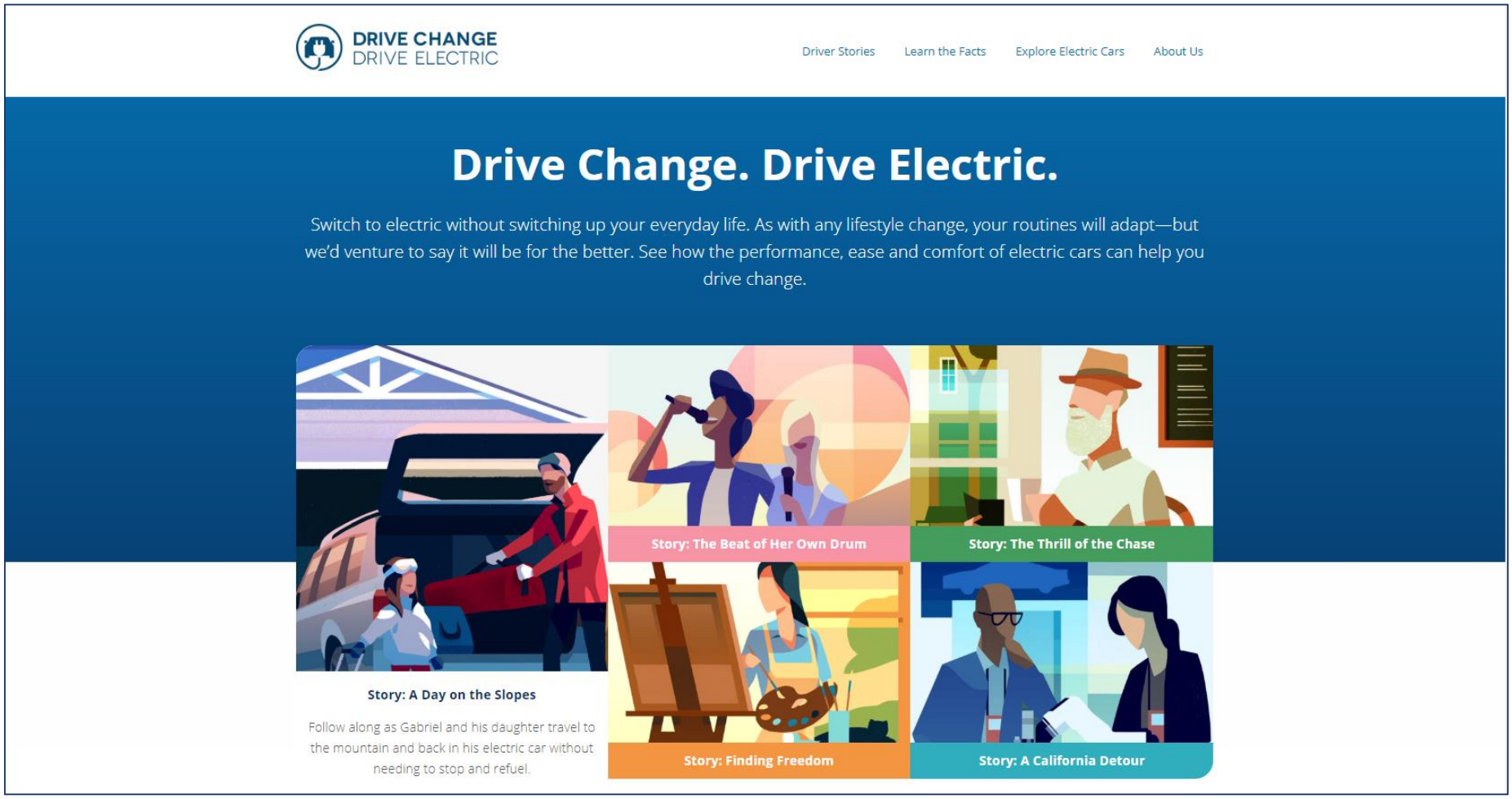
4a. Useful EV Website #1:
Drive Green New Jersey

drive green new jersey

- Electric vehicle basics
- All about charging
- **Grants and incentives**
- Which EV is right for me?
- Can I afford it?
- Charging station locator
- Maps and data
- Sign up for our email list

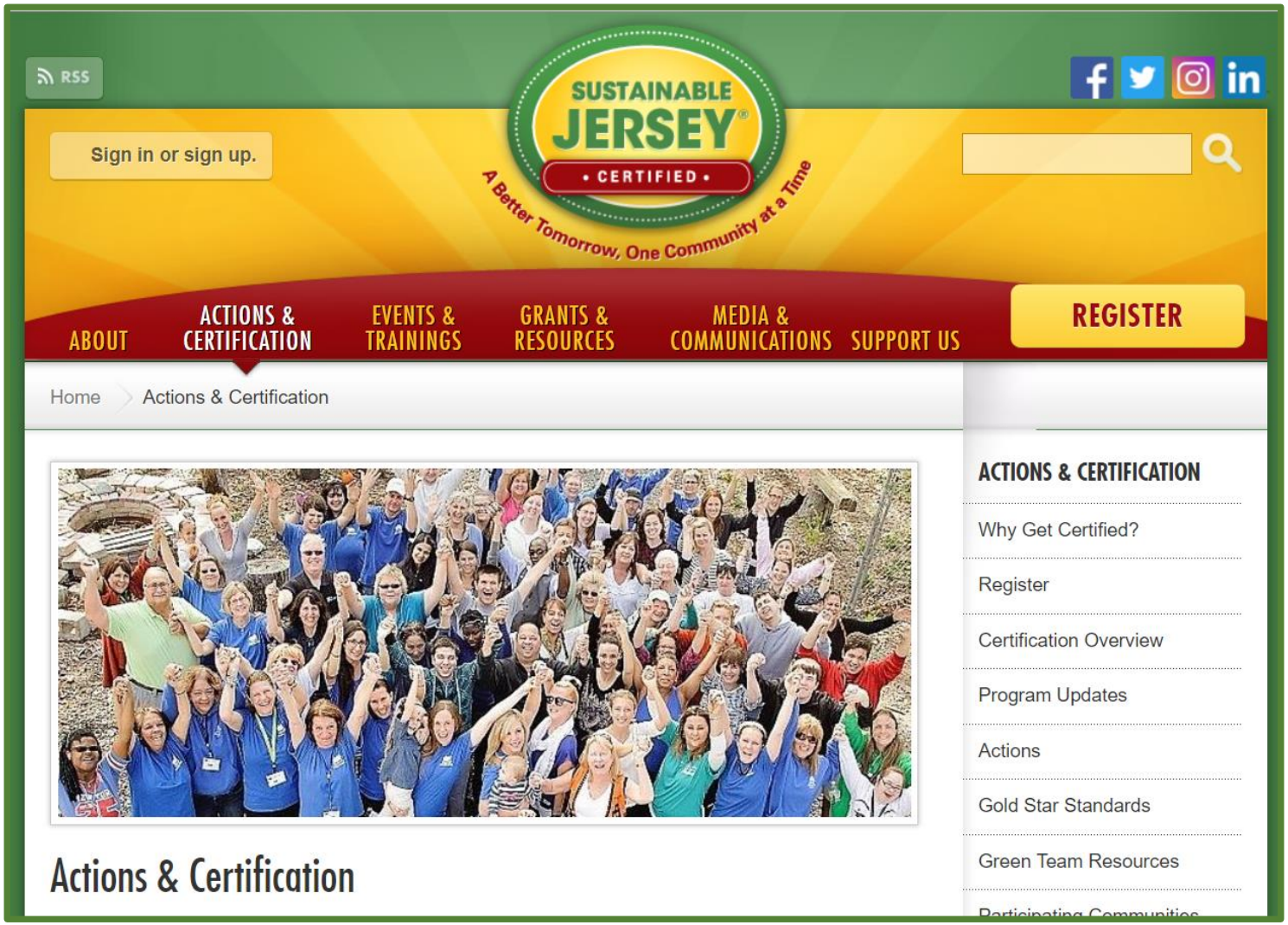
www.drivegreen.nj.gov

4b. Useful EV Website #2:
Drive Change. Drive Electric



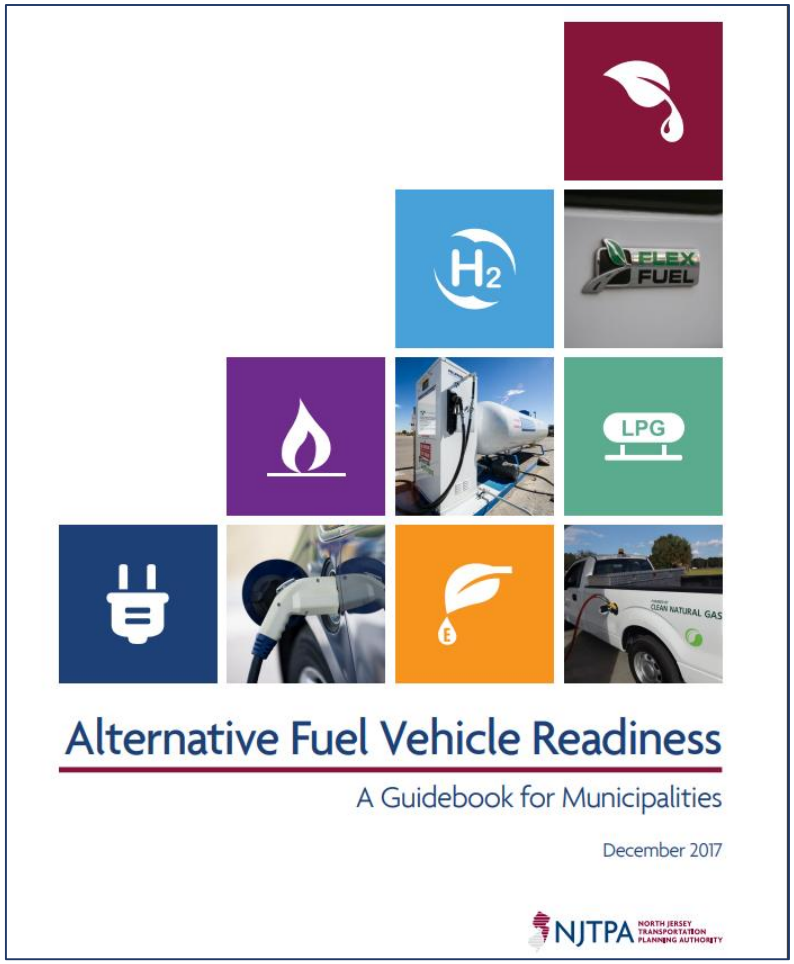
www.driveelectricus.com

5. Sustainable Jersey Tools



www.sustainablejersey.com

6. Alternative Fuel Vehicle Readiness:
A Guidebook for Municipalities



www.njtpa.org/planning/regional-studies/environment/air-quality/alternative-fuels-vehicles

Summary: Incentives, Tools and Resources

1. **NJ Volkswagen Settlement**

   General info: www.state.nj.us/dep/vw

   Email list: www.state.nj.us/dep/vw/subscribe.html

2. **It Pays to Plug In – NJ's Grant Program for EV Charging Stations**

   General info: www.drivegreen.nj.gov/programs.html

   Email list: www.stopthesoot.org/sts-listserv.htm

3. **EV Smart Fleets – EV Procurement Tools for Public Fleets** www.evsmartfleets.com

4. **Two Useful EV Web Sites**

   Drive Green New Jersey www.drivegreen.nj.gov

   Drive Change. Drive Electric. www.driveelectricus.com

5. **Sustainable Jersey Tools** www.sustainablejersey.com

6. **NJTPA Alternative Fuel Vehicle Readiness – A Guidebook for Municipalities** www.njtpa.org/planning/regional-studies/environment/air-quality/alternative-fuels-vehicles

drive green new jersey

Questions?

Andrea Friedman
NJDEP Division of Air Quality
Bureau of Mobile Sources
Andrea.Friedman@dep.nj.gov
(609) 984-2055

www.drivegreen.nj.gov

Case Study: Electric Vehicle Charging Stations in Jersey City

Brian Platt
Business Administrator
Jersey City, NJ
BPlatt@jcnj.org

@BrianDavidPlatt @briandavidplatt

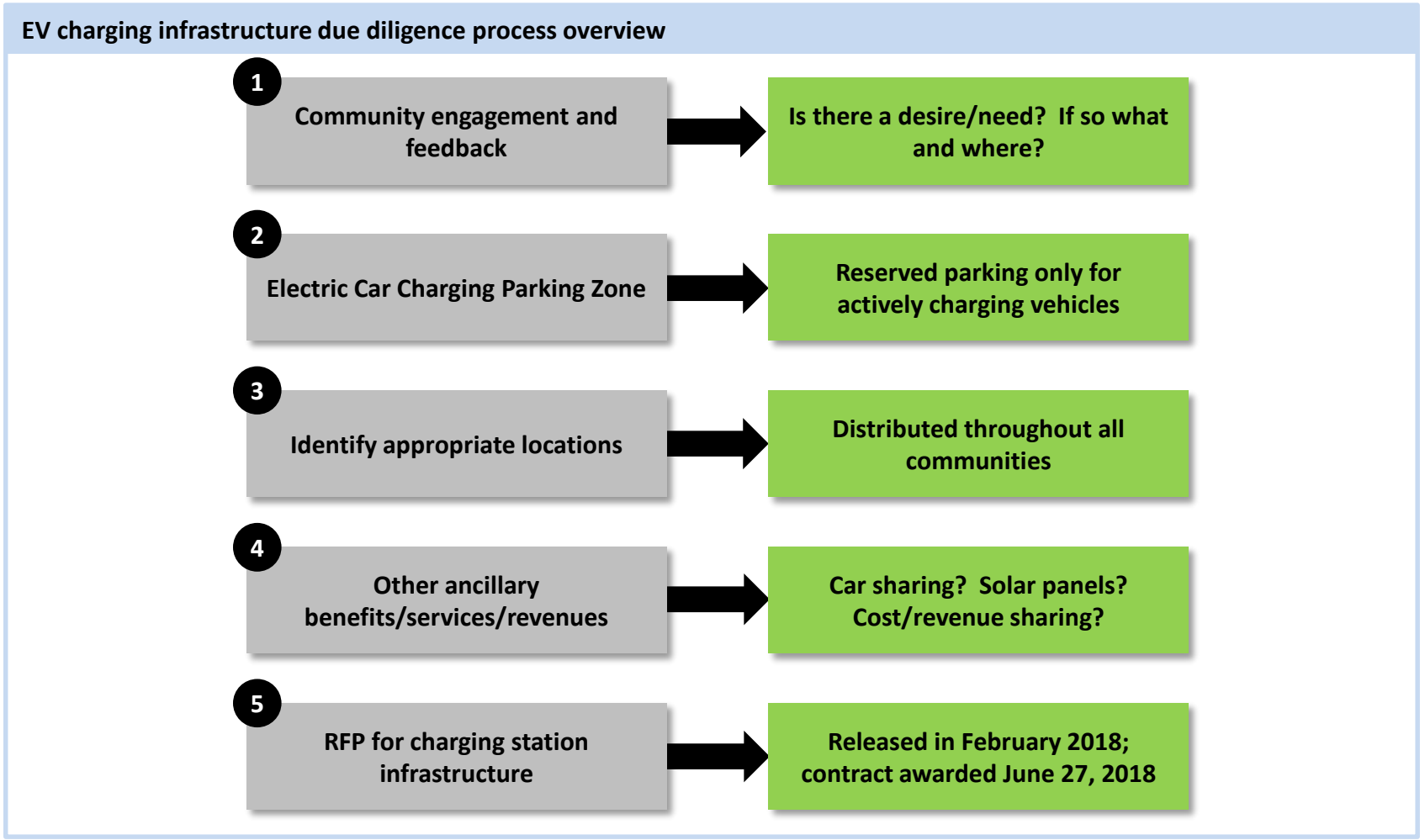
Installing Electric Vehicle (EV) charging stations across Jersey City will facilitate use by private residents and in our city fleet

Rationale for the installation of EV charging stations

1 Growing demand	2 Expanded accessibility	3 Infrastructure is missing link
Citywide focus on energy efficiency *(government and citizens)*	Electric cars are becoming more accessible and available	Limited in-home charging options for those using on-street parking
Residents already purchasing electric vehicles	More new funding sources *(e.g. VW Settlement Funds)*	No existing infrastructure for municipal vehicles
Higher awareness and acceptance of technology	Local developers and property owners installing infrastructure on private property	

NOTE: Upstream energy delivery still depends on fossil fuels

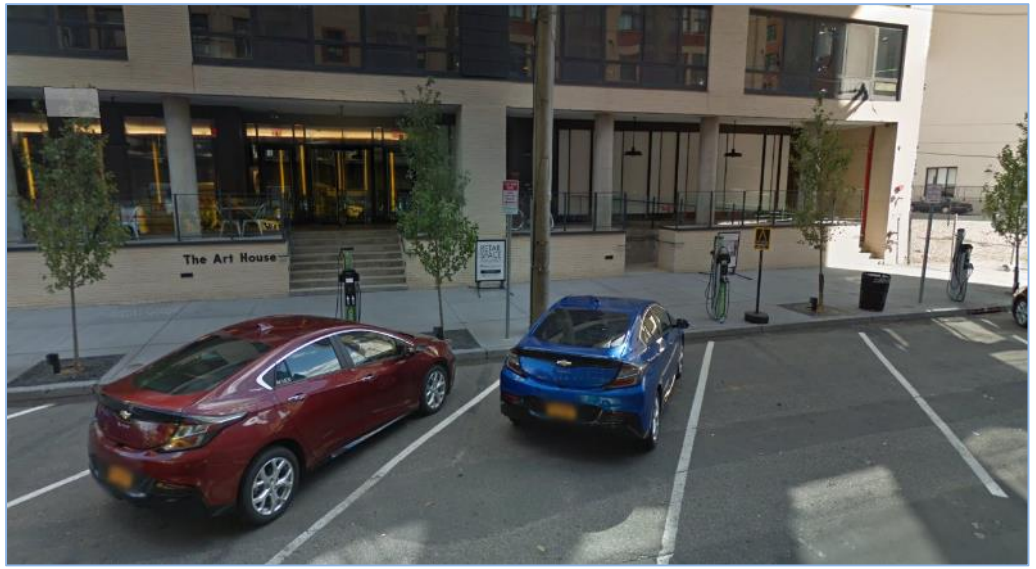
5 key steps for installing public EV charging infrastructure in Jersey City



Existing pilot project on 1st Street in Jersey City

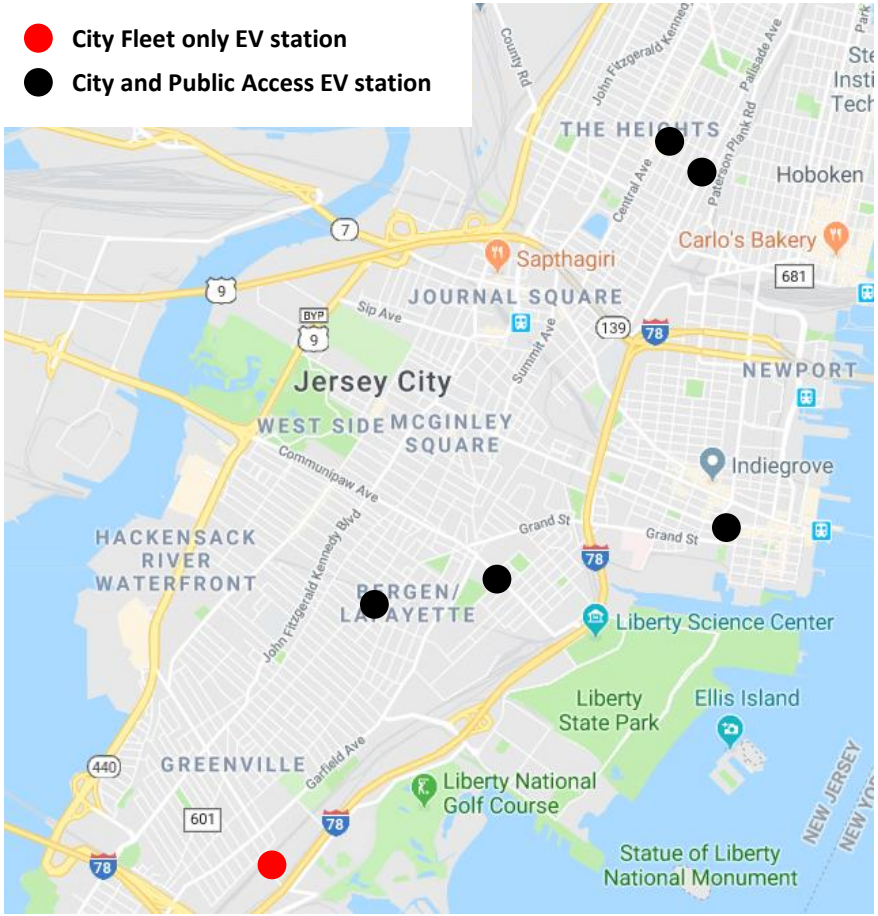
Greenspot Project, 148-160 First Street Jersey City, NJ

- **Project managed locally by Greenspot**
- **10 charging stations** *(9 level 2, 1 DC fast)*
- **Networked charging stations provided by Chargepoint**
- **Currently utilizing 4 Maven (Chevy Volt) electric cars for car sharing**
- **Privately installed and maintained by developer**



Jersey City will be installing LilyPad EV charging stations across the city and will include EV car sharing for the city fleet

EV charging infrastructure next steps



LilyPad EV selected as vendor for level 2 and DC fast charge stations

Stations will be located across the City *(still finalizing)*

Funded by 2018 capital budget and other grants

City fleet EV's will be incorporated in internal car sharing program

Electric Vehicle Car Share

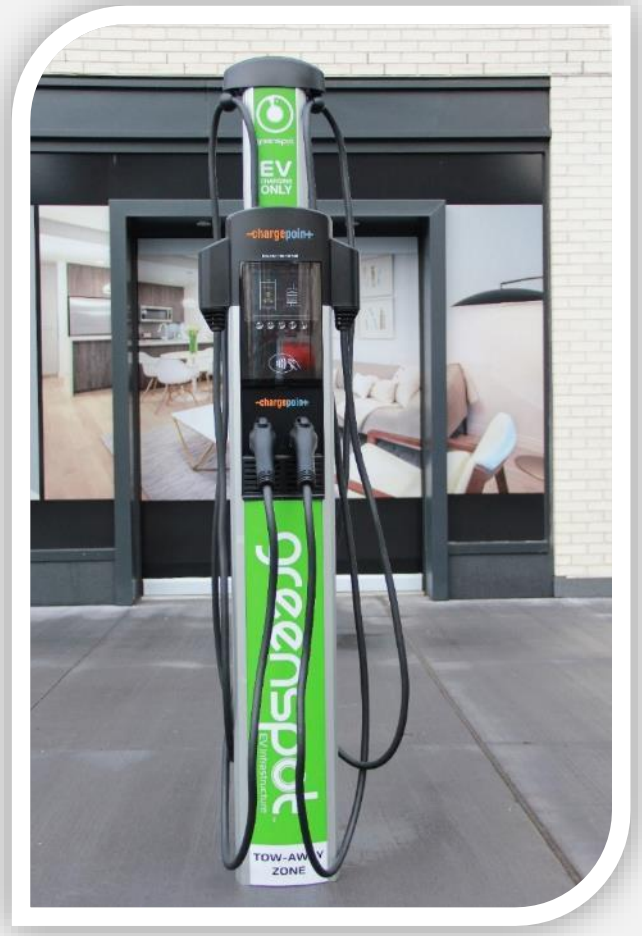
June 21, 2018


PARAMOUNT


DINER
Asbury Lanes
ASBURY LANES


greenspot™
EV Infrastructure
FOR YOUR CITY
Asbury Park, NJ
Revolutionizing Urban Mobility
with EV Infrastructure for Cities

Why EV Car Share?



Environment

- Cleaner air and a more sustainable City
- Sustainable Jersey Silver

Economy

- Provide alternatives to car ownership, reduce parking demand and need to create more parking → efficient transportation
- More attractive community for millennials and innovators → growing demand for EVs

Equity

- Over 1/3 of all AP households are zero-car households → improve accessibility

From music to cars, we now live in a shared economy.

It has changed the way people view travel, ownership and consumption.

What began as a way for people to make extra money on the side, while providing services for time-strapped people, has brought in BILLION$ in revenue.

Courtesy of: Greenspot

76% of U.S. adults familiar with the sharing economy believe it's better for the environment.

A whopping 91% of Americans believe that "The way we live produces too much waste."

Cars in particular, sit idle 95% of the day.

Cars of the future are driverless, shared, electric…

Courtesy of: Greenspot

Asbury Park RFP

Phased program

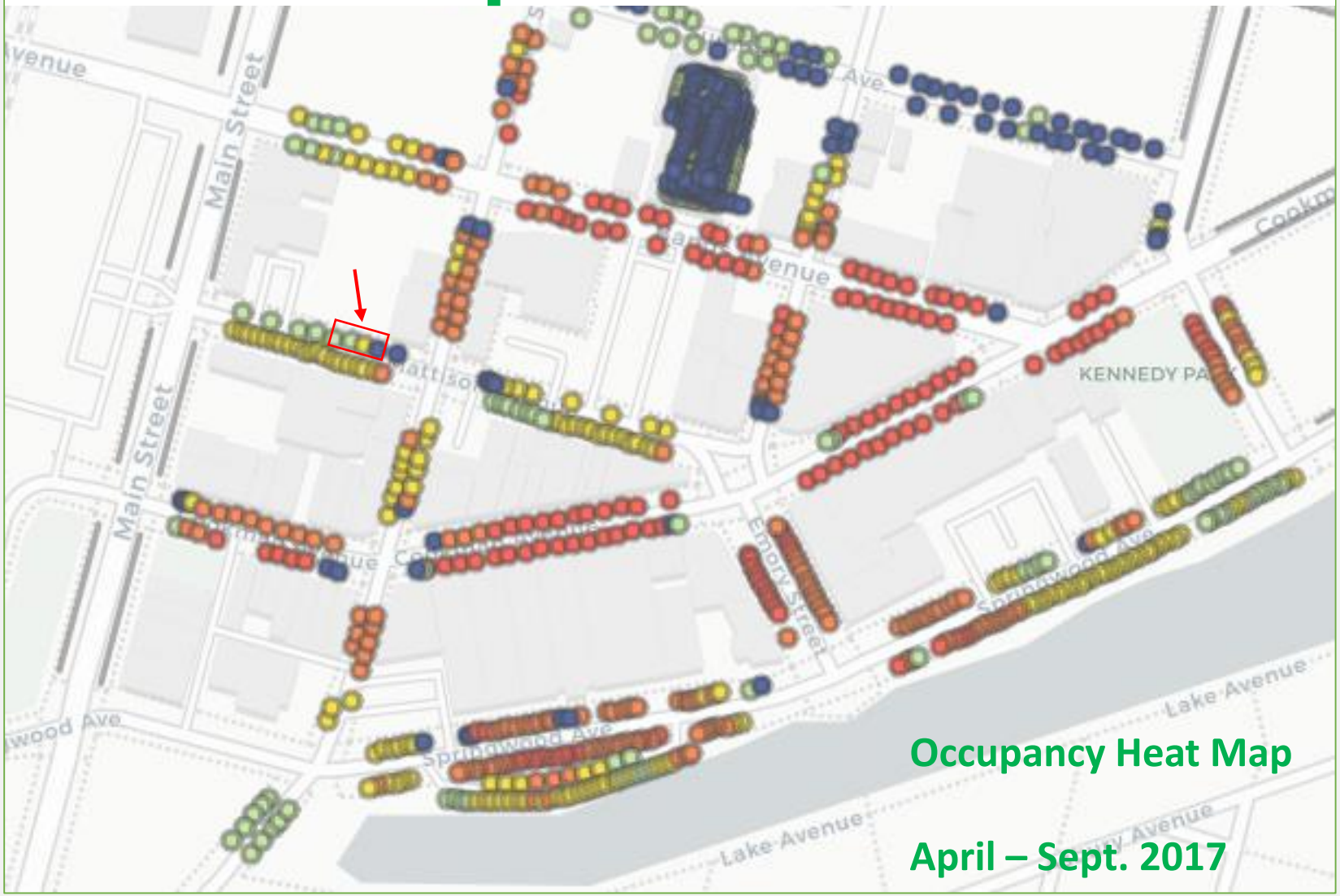
- Initial installation – 6 spaces (3 locations)
- Expansion to 8 spaces (or more)
- City and Vendor will evaluate program success

Vendor will:

- Perform feasibility analysis for installation locations
- Install Level II charging stations
- Operate car share program
- Depending on number of stations, allow public charging
- Pay for the electricity
- Share profits w/ City (once startup costs have been recovered)

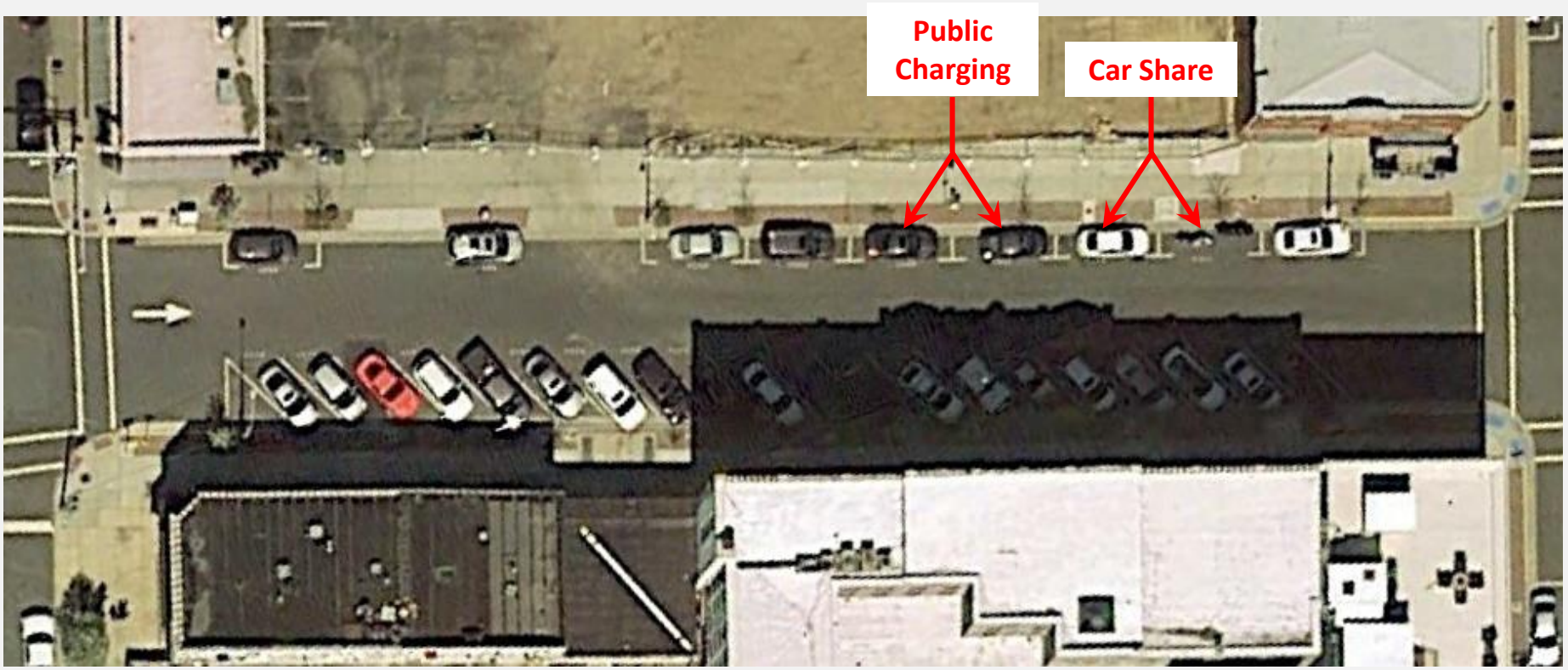
Potential Locations - CBD

CBD – Proposed Location



700 Block – Mattison Avenue

CBD – Proposed Location

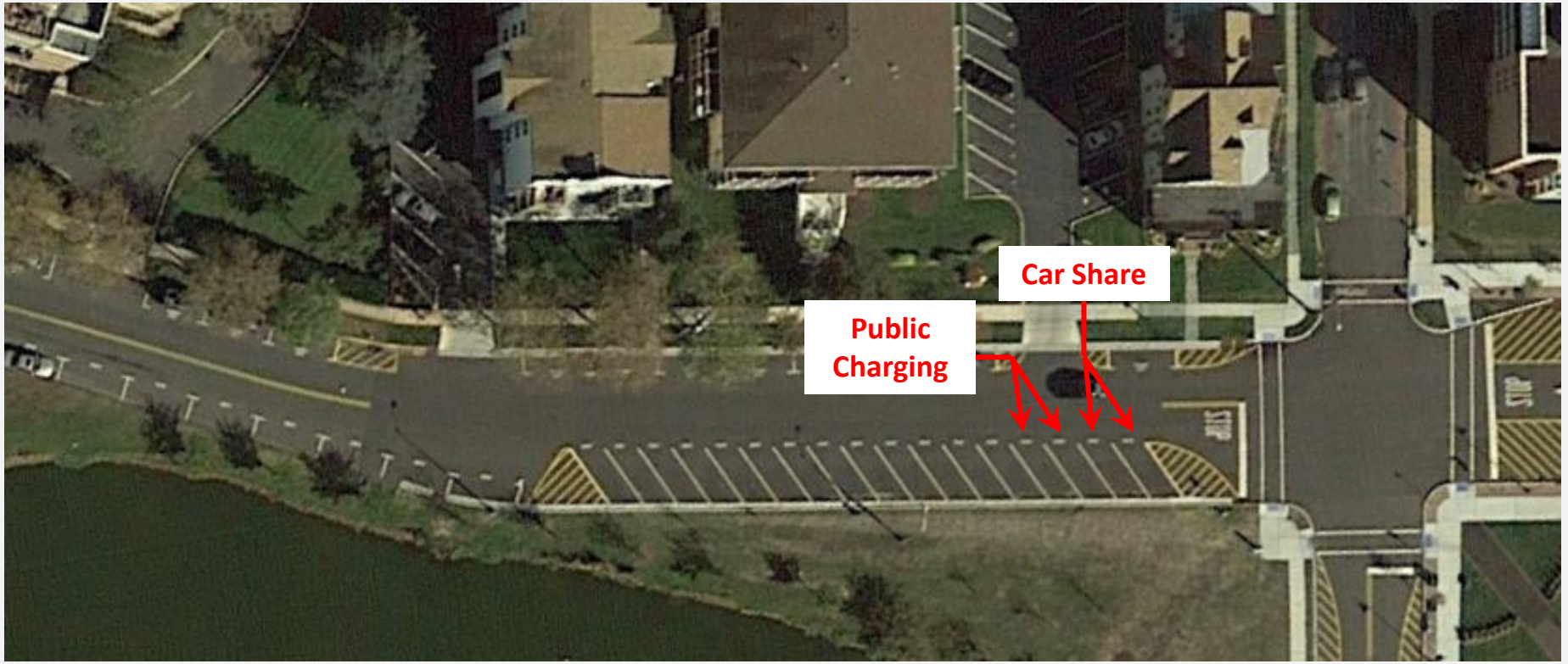


Potential Locations - WRA

Waterfront – Proposed Location

300 Block – Sunset Avenue

Waterfront – Proposed Location



Potential Locations – Springwood Ave

1300 Block – Springwood Avenue

Springwood Avenue – Proposed Location

2017 Master Plan Reexam

Adopted December 11, 2017

5.4 MOBILITY PLAN

5.4.2.17 Encourage alternative fuel vehicles
The City should encourage use of alternatively fueled vehicles, such as hybrid, natural gas and electric. Such vehicles are appropriate for many municipal vehicles, waste collection vehicles, public transit vehicles and personal vehicles. Encouragement can come in the form of considering alternative fuels during City vehicle purchases and by providing charging infrastructure to support electric vehicles. The City should include charging stations in municipal parking lot upgrades, consider how they might be incorporated in streetscape as their demand increases and encourage via the zoning ordinance their inclusion in new parking garages and surface parking lots.

Burlington City

John Alexander, Director of Public Affairs
Burlington City

Lyceum Hall Built 1839

Historic Preservation Commission

Recommendations:

Although the charging station is clearly a modern piece of equipment, the proposed location is relatively unobtrusive and I don't think it will detract from the building or the streetscape. In addition, I think it's important that historic buildings are shown to be able to accommodate new technology.

Regarding the actual installation, the City should clarify whether the proposed concrete base is flush with the pavement or if it is raised (flush would be less

Hoskins House Built 1797

Burlington New Development

Current Annual Sustainable Jersey Municipal Sponsors

Program Underwriters

The Geraldine R. Dodge Foundation — Imagine a Better New Jersey

BPU New Jersey's cleanenergy program — njcleanenergy.com

Surdna Andrus

Grants Program Underwriters

PSEG

Gardinier Environmental Fund

Corporate Sponsors

PLATINUM

South Jersey Gas

New Jersey Natural Gas

PSEG

SILVER

NJM Insurance Group

Bayshore Family of Companies

BRONZE

Elizabethtown Gas

Greener by Design

New Jersey American Water

AT&T

Covanta — Powering Today. Protecting Tomorrow.

GoodEnergy — A Smarter Way to Buy Energy

Jersey Central Power & Light — A FirstEnergy Company

powur

Current Annual Sustainable Jersey for Schools Sponsors

Sustainable Jersey for Schools Underwriters

NJSBA

The Geraldine R. DODGE FOUNDATION
IMAGINE A BETTER NEW JERSEY

BPU New Jersey's cleanenergy njcleanenergy.com program™

njea

Small Grants Underwriters

njea

GARDINIER ENVIRONMENTAL FUND

PSEG

Corporate Sponsors

PLATINUM

SOUTH JERSEY GAS
Founding Sponsor

New Jersey Natural Gas
Founding Sponsor

PSEG

GOLD

NJM Insurance Group
Founding Sponsor

SILVER

investors Bank
Banking in *your* best interest.

BRONZE

Schneider Electric

BioShine

Q&A

This event was made possible in part through our Event Sponsor:

Horizon Blue Cross Blue Shield of New Jersey

Our 2018 Sustainability Sessions were made possible in part with of the support of the following sponsors:

Church & Dwight Co., Inc.

American Water Resources

Duke Farms

Atlantic Health System

New Jersey Food Council

ciel power

BUSCH LAW GROUP LLC

PosiGen Solar Energy and Energy Efficiency