

# Creating the Electric Vehicle Revolution

NJLM Conference 2019



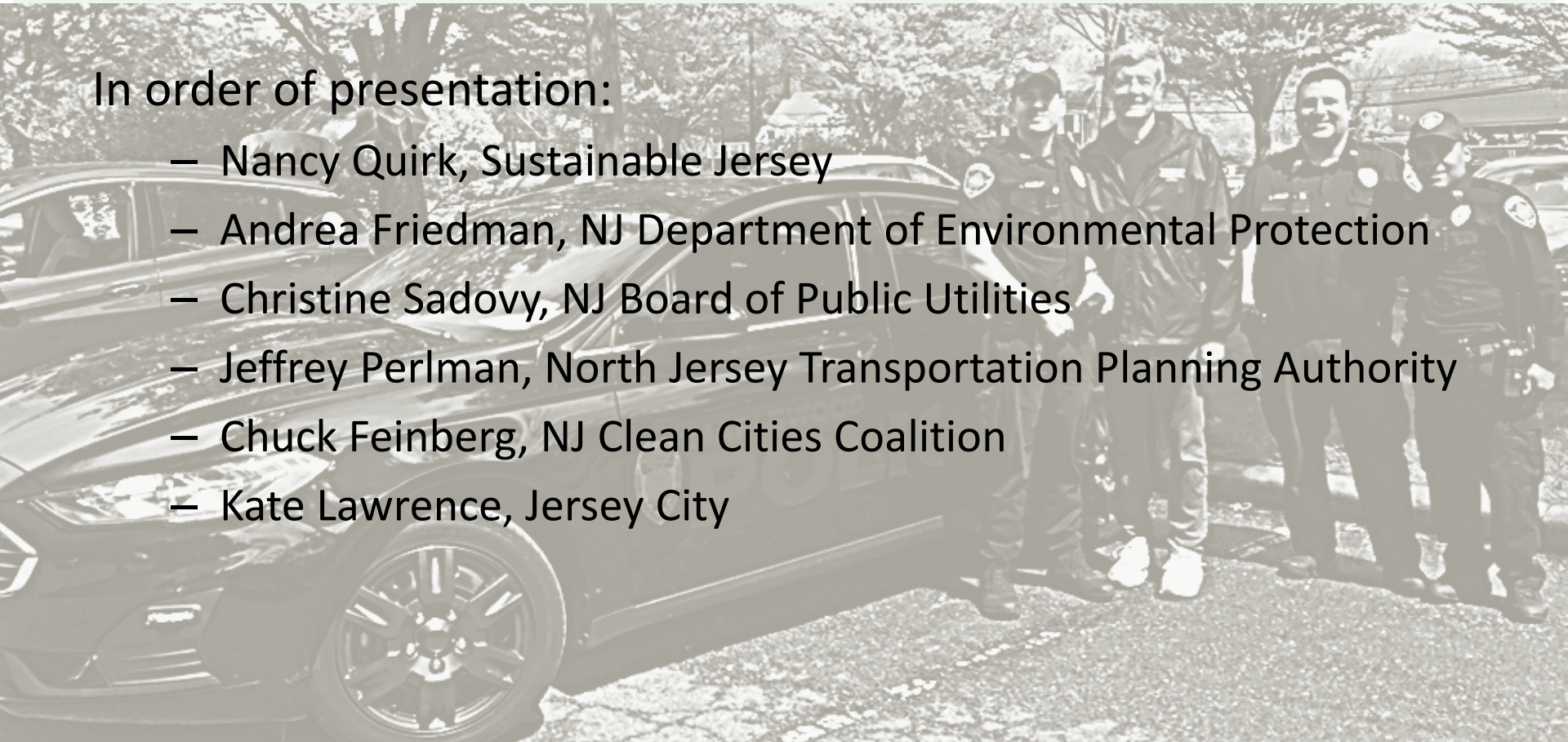
@SJ\_Program • #DecadeofImpact • #njleague

# Speakers

Moderator: Mayor Vic DeLuca, Maplewood Township

In order of presentation:

- Nancy Quirk, Sustainable Jersey
- Andrea Friedman, NJ Department of Environmental Protection
- Christine Sadovy, NJ Board of Public Utilities
- Jeffrey Perlman, North Jersey Transportation Planning Authority
- Chuck Feinberg, NJ Clean Cities Coalition
- Kate Lawrence, Jersey City

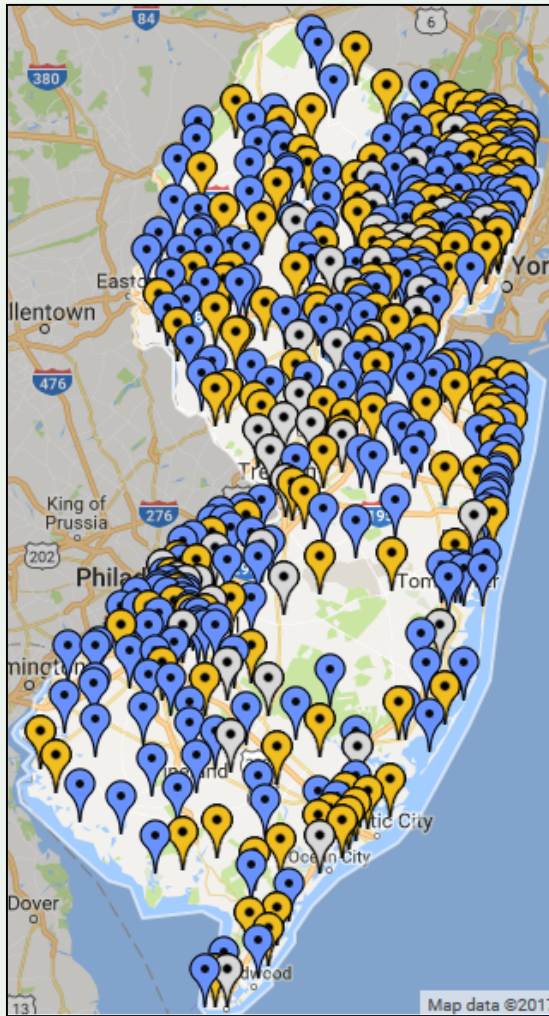


# What is Sustainable Jersey?

- Certification program for municipalities and schools
  - **Tools, resources, and guidance** to help municipalities and schools become more sustainable
  - **Grants and funding** for municipalities and schools
  - **Regional Hubs**



# Program Participants



**Municipal Program**



**Schools Program**

## **Municipal Program**

445 (79%) participating  
200 Certified

- 152 Bronze
- 48 Silver

## **Schools Program**

290 Districts (49%)  
732 Schools  
194 Schools Certified

- 181 Bronze
- 13 Silver



# Municipal Program Energy Actions

	Climate Planning and Energy Efficiency	Renewable Energy	Alternative Fuel Vehicles
<b>Municipal Operations</b>	<ul style="list-style-type: none"> <li>• Energy Tracking and Management</li> <li>• Energy Efficiency for Municipal Facilities</li> <li>• Municipal Carbon Footprint</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>• Purchase Alternative Fuel Vehicles (AFV)</li> <li>• Green Fleet Action</li> </ul>
<b>Community Energy Use</b>	<ul style="list-style-type: none"> <li>• Residential Energy Efficiency Outreach</li> <li>• Commercial Energy Efficiency Outreach</li> <li>• Community Carbon Footprint</li> <li>• Climate Action Plan</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> <li>• Wind Ordinance</li> </ul>	<ul style="list-style-type: none"> <li>• Make Your Town EV Friendly</li> <li>• Public EV Chargers</li> </ul>



# Make Your Town EV Friendly

Public EV Charging Infrastructure

Zoning: EV charging stations as accessory use

Outreach activities



# Municipal Fleets

- Fleet Inventory
- Purchase Alternative Fuel Vehicles



#DecadeofImpact • #njleague



# Sustainable Jersey Supporters & Sponsors

## Program Underwriters



## Grants Program



## Corporate Sponsors

\* 10<sup>th</sup> Anniversary Sponsors

### PLATINUM



### GOLD



### SILVER



### BRONZE







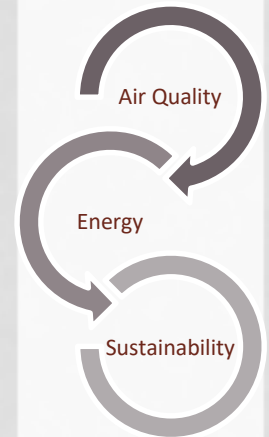
STATE OF NEW JERSEY  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



DIVISION OF AIR QUALITY  
AIR QUALITY, ENERGY, AND SUSTAINABILITY

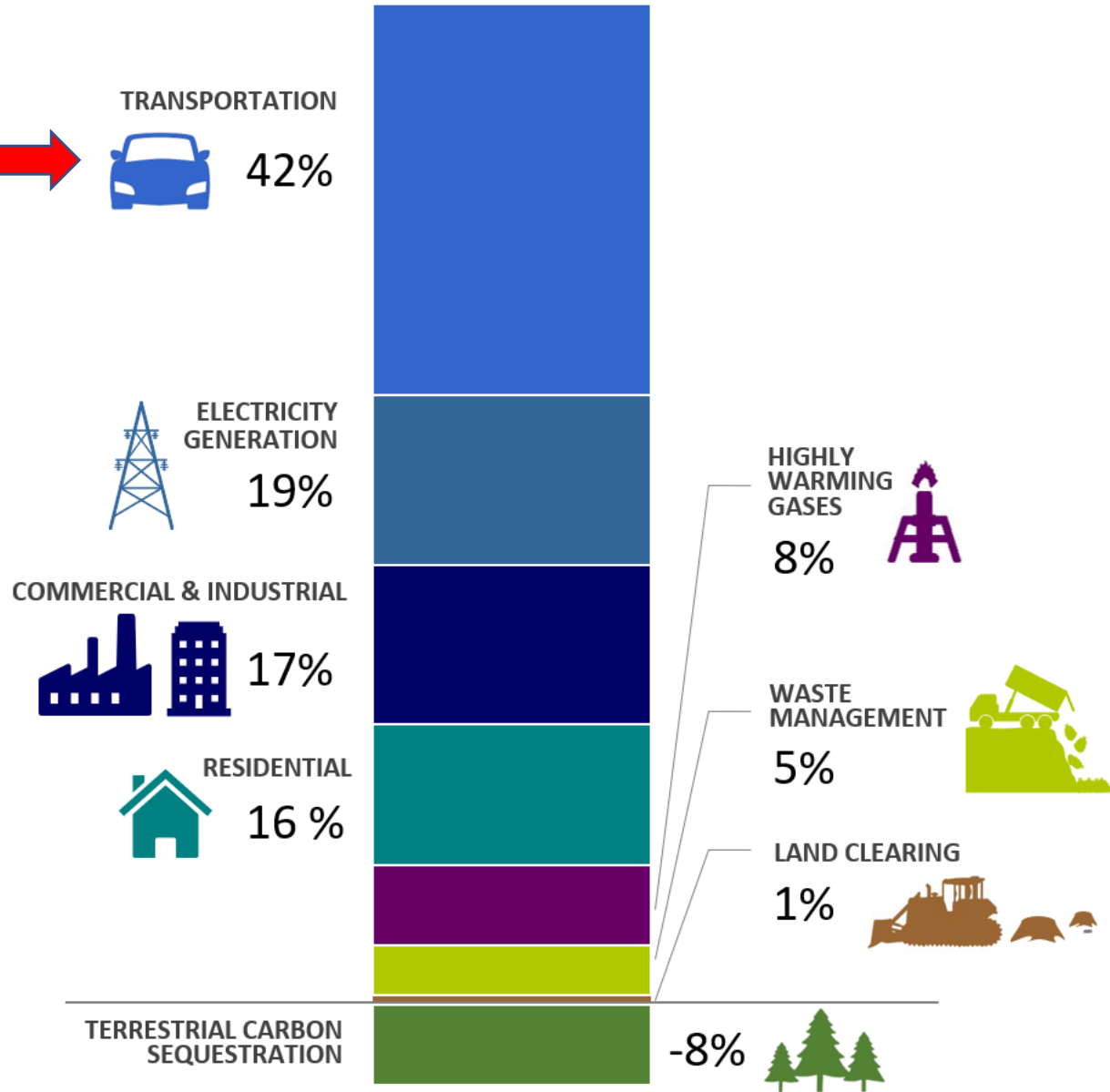
ELECTRIC VEHICLES AND  
EV INFRASTRUCTURE

RESOURCES FOR LOCAL GOVERNMENTS



New Jersey State League of Municipalities Annual Conference 2019  
Andrea Friedman, NJDEP

**Transportation  
is the largest  
single source  
of climate  
pollution in  
New Jersey.**



**New Jersey Greenhouse Gas  
Sources & Sinks 2018**



**Vehicles cause air pollution.**

Photo from Getty Images

**Electric vehicles are 70% – 80%  
cleaner than gasoline vehicles in NJ.  
Including power plant emissions.**

Photo from Citi.io

# There are now 5 electric vehicles on state contract

Vehicle	Class	Type	Battery Range	Price
2020 Chevrolet Bolt EV	Hatchback	All-electric	259 miles	\$32,190
2019 Nissan Leaf S	Hatchback	All-electric	151 miles	\$26,894
2020 Toyota Prius Prime Plus	Hatchback	Plug-in hybrid	25 miles	\$24,690
2020 Ford Fusion Energi	Sedan	Plug-in hybrid	21 miles	\$29,912
2019 Chrysler Pacifica Touring Hybrid	Minivan	Plug-in hybrid	32 miles	\$39,238

Pick up a flyer in the back for more information

# Climate Mayors EV Purchasing Collaborative

(you can buy/lease vehicles and charging stations)



CONTACT US:  
800-267-7830



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COMPARE 



Climate Mayors Electric Vehicle  
Purchasing Collaborative

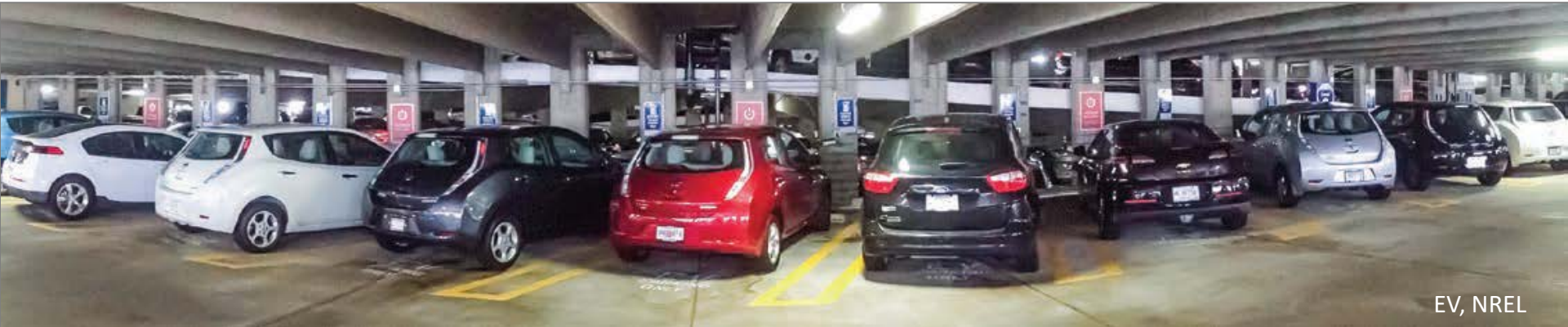
Unprecedented cooperation of  
cities nationwide to electrify  
municipal fleet vehicles.

BUY NOW

[www.driveEVfleets.org](http://www.driveEVfleets.org)

# ***It Pay\$ to Plug In***

## New Jersey's Grant Program for EV Charging Stations



EV, NREL

*Grants of up to \$6,000 per charging station for the purchase and installation of EV chargers at **public places, multi-family homes, and workplaces (including fleets).***

Accepting applications for the waiting list.

Apply online at: [www.drivegreen.nj.gov/plugin.html](http://www.drivegreen.nj.gov/plugin.html)

# Volkswagen Settlement: Round 1 Awards



\$3.2 million Electric vehicle charging stations

\$8 million 8 electric NJ TRANSIT buses in Camden

\$16 million 82 electric heavy-duty vehicles in Environmental Justice Communities:

School buses, garbage trucks, delivery trucks, port trucks and equipment, airport ground support equipment



# Volkswagen Settlement: Next Steps



- DEP will issue solicitations for Rounds 2 & 3.
- See [www.state.nj.us/dep/vw](http://www.state.nj.us/dep/vw) for more information.
- Join the listserv for updates  
[www.state.nj.us/dep/vw/subscribe.html](http://www.state.nj.us/dep/vw/subscribe.html)

# Preview of coming attractions!

- Incentives for EVs (and infrastructure) from the New Jersey Board of Public Utilities
- Regional Greenhouse Gas Initiative (RGGI) funding (Look for the Strategic Funding Plan in April.)



# Grab flyers on your way out!

## It Pay\$ to Plug In: NJ's Electric Vehicle C

It Pay\$ to Plug In provides grants of up to \$6,000 per electric vehicle charging stations. The program is designed to build electric vehicle infrastructure, allowing residents, businesses, and organizations to drive electric vehicles. EVs dramatically reduce vehicle emissions.

### ELIGIBILITY CRITERIA

- Level 1 and Level 2 charging stations are eligible
- The program is open to businesses, government, and educational institutions. Private residential dwellings other than multi-unit dwellings must be installed in New Jersey
- Charging stations must be owned by the applicant
- Approvals are first-come, first-served.

### ELIGIBLE PROJECTS

- Workplaces: Charging stations for employees who drive electric vehicles
- Public Places: Charging stations that are available in public areas, public parking lots and garages, public buildings, public destinations and attractions, colleges and universities
- Multi-Unit Dwellings: Charging stations for multi-unit dwellings, condominiums and townhouses.

Application forms, grant amounts and instructions are available at [www.drivegreen.nj.gov/plugin.html](http://www.drivegreen.nj.gov/plugin.html).  
Learn more about electric vehicle charging stations at [www.drivegreen.nj.gov/charging.html](http://www.drivegreen.nj.gov/charging.html).

For questions or additional information, please contact the Bureau of Mobile Sources at [DriveGreen@NJDEP.state.nj.us](mailto:DriveGreen@NJDEP.state.nj.us).

New Jersey Department of Environmental Protection • Bureau of Mobile Sources

## Electric Vehicles on New Jersey State

Vehicle	Type	Battery Range (miles)
2020 Chevrolet Bolt EV (hatchback)	All-electric	259
2019 Nissan Leaf S (hatchback)	All-electric	151
2020 Toyota Prius Prime Plus (hatchback)	Plug-in hybrid	25
2020 Ford Fusion Energi (sedan)	Plug-in hybrid	21
2019 Chrysler Pacifica Hybrid (minivan)	Plug-in hybrid	32

### To Access the State Pu

- Go to [www.njstart.gov/bso/external/advsearch/](http://www.njstart.gov/bso/external/advsearch/)
- Select Contracts/Blankets
- In the Contract/Blanket Description field, enter T2006 for minivans or T2009 for sedans and hatchbacks
- At the bottom of the page, select Find It

New Jersey Dept of Environmental Protection, Division of Air Quality, Bureau of Mobile Sources  
<http://www.drivegreen.nj.gov>



## Electric Vehicle Resources for Local Governments

1. It Pays to Plug In – NJ's Grant Program for EV Charging Stations  
General info: [drivegreen.nj.gov/plugin.html](http://drivegreen.nj.gov/plugin.html)  
Email list: [stopthesoot.org/sts-listserv.htm](mailto:stopthesoot.org/sts-listserv.htm)
2. NJ Volkswagen Settlement  
General info: [state.nj.us/dep/vw](http://state.nj.us/dep/vw)  
Email list: [state.nj.us/dep/vw/subscribe.html](mailto:state.nj.us/dep/vw/subscribe.html)
3. Climate Mayors Electric Vehicle Purchasing Collaborative  
Procurement Tools for Public Fleets (buy/lease vehicles & chargers)  
[DriveEVfleets.org](http://DriveEVfleets.org)
4. Regional Greenhouse Gas Initiative – Strategic Funding Plan  
General info and email list: [nj.gov/rggi](http://nj.gov/rggi)
5. Electric Vehicles on State of New Jersey Purchasing Contracts  
[njstart.gov/bso/external/advsearch/advancedSearch.sdo](http://njstart.gov/bso/external/advsearch/advancedSearch.sdo)
  - Select Contracts/Blankets
  - In the Contract/Blanket Description field, enter T0099 for sedans and hatchbacks or T2006 for minivans
  - At the bottom of the page, select Find It
6. Useful Electric Vehicle Web Sites  
Drive Green New Jersey (NJDEP's EV website) [drivegreen.nj.gov](http://drivegreen.nj.gov)  
Drive Change. Drive Electric. [driveelectricus.com](http://driveelectricus.com)  
PlugStar [plugstar.com](http://plugstar.com)

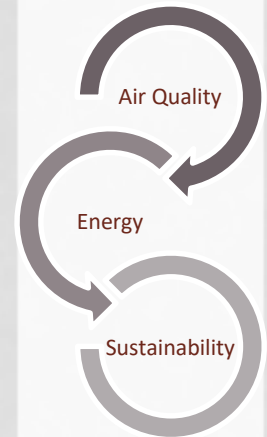
New Jersey Dept of Environmental Protection, Division of Air Quality, Bureau of Mobile Sources  
<http://www.drivegreen.nj.gov> Revised November 2019



# Feel free to contact me

Andrea Friedman  
Supervisor, Electric Vehicle Programs  
Division of Air Quality  
New Jersey Department of Environmental  
Protection

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(609) 984-2055



[www.drivegreen.nj.gov](http://www.drivegreen.nj.gov)

# Creating the Electric Vehicle Revolution

New Jersey State League of  
Municipalities

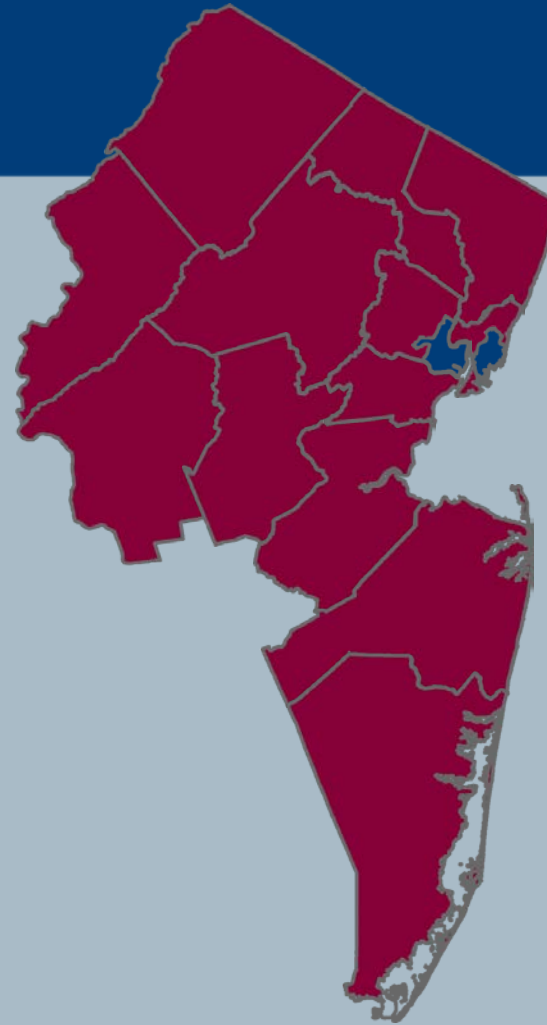
November 21, 2019



Jeffrey Perlman, AICP, PP, Senior Director of Planning  
**North Jersey Transportation Planning Authority**

# NJTPA Region

Bergen	Morris
Essex	Newark
Hudson	Ocean
Hunterdon	Passaic
Jersey City	Somerset
Middlesex	Sussex
Monmouth	Union
	Warren



# North Jersey Transportation Planning Authority

The Metropolitan Planning Organization for Northern New Jersey



## STANDING COMMITTEES

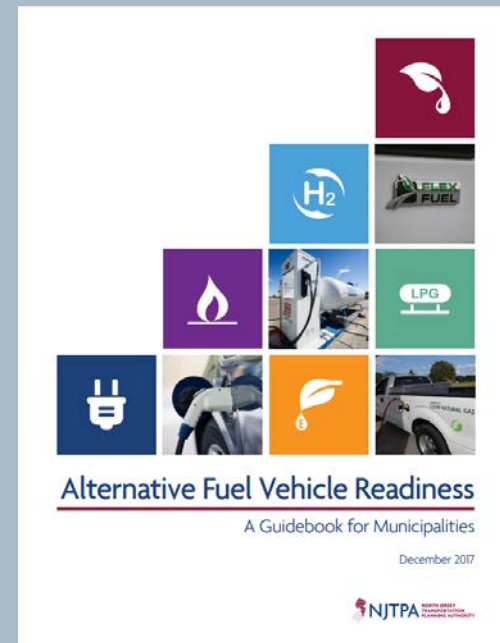
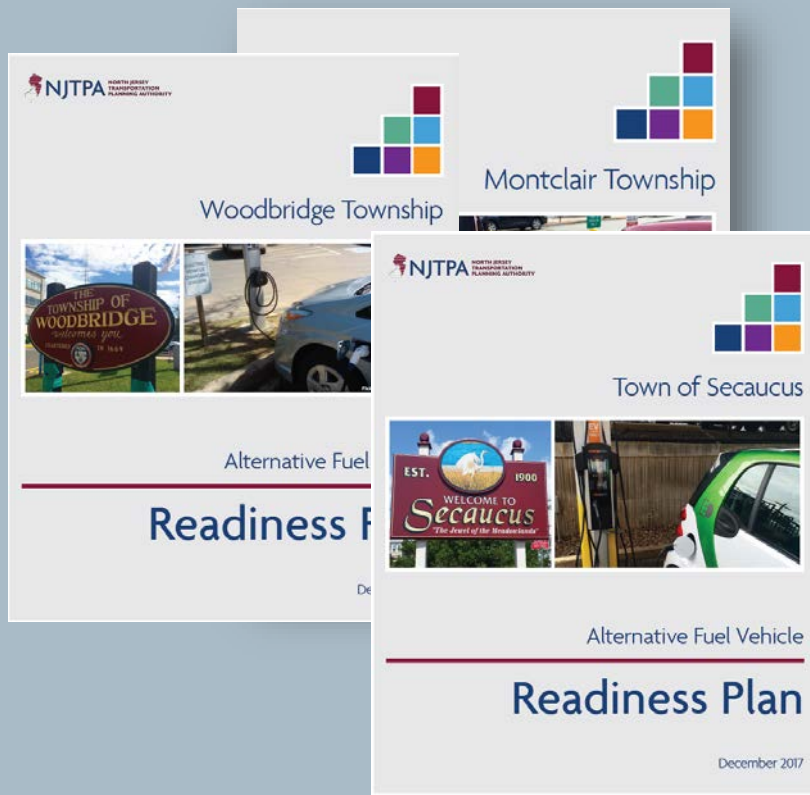
Planning & Economic Development  
Committee

Project Prioritization Committee

Freight Initiatives Committee

Regional Transportation Advisory Committee

# Interagency Collaboration on Alternative Fuel Vehicles





# Readiness Planning Strategies



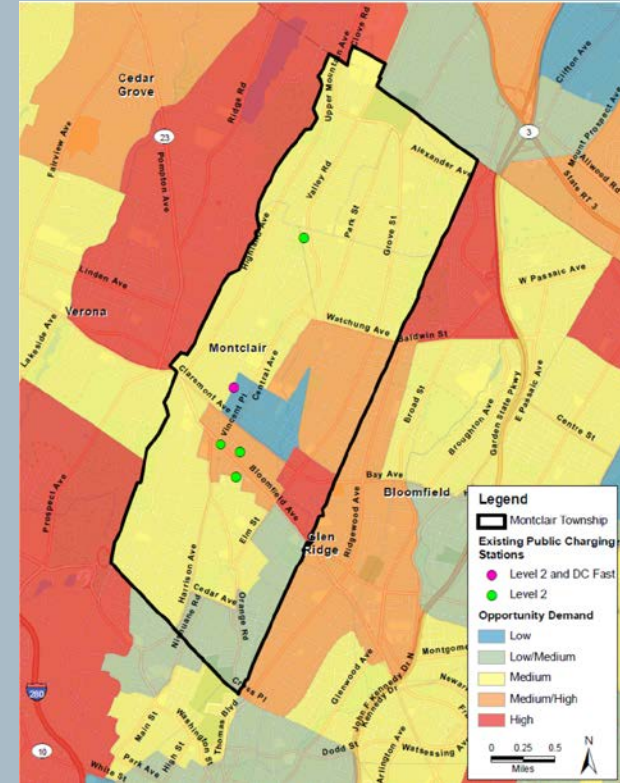
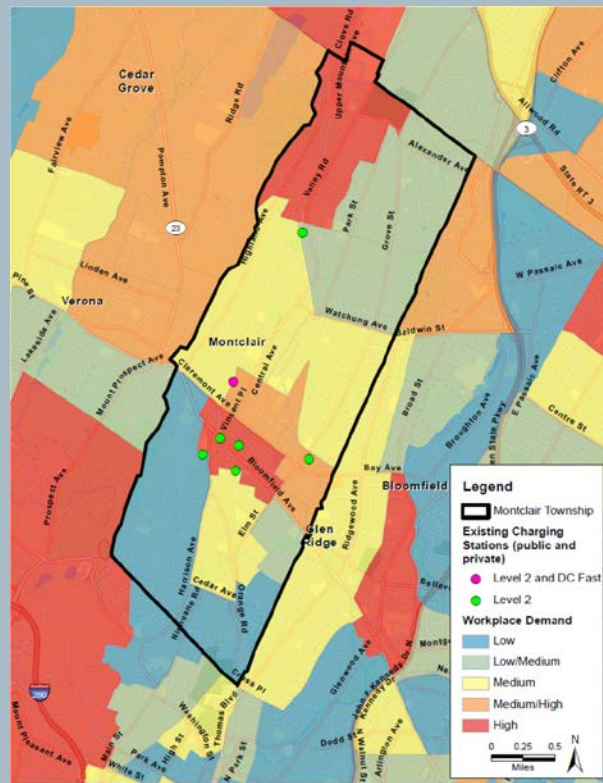
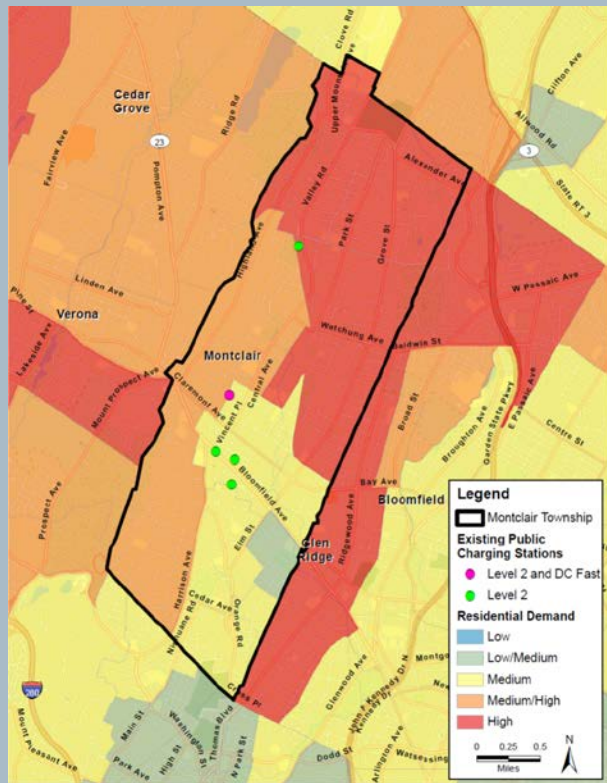
★ Focus of Readiness Planning Study

# Siting Stations

- Conduct siting analysis
- Consider future demand
- Determine appropriateness of Level 1, 2 or DC Fast chargers
- Other considerations
  - Ensure stations are easy to find, use and meet needs of user
  - Proximity to fuel source



# Determining Demand for Electric Vehicles at the Local Level



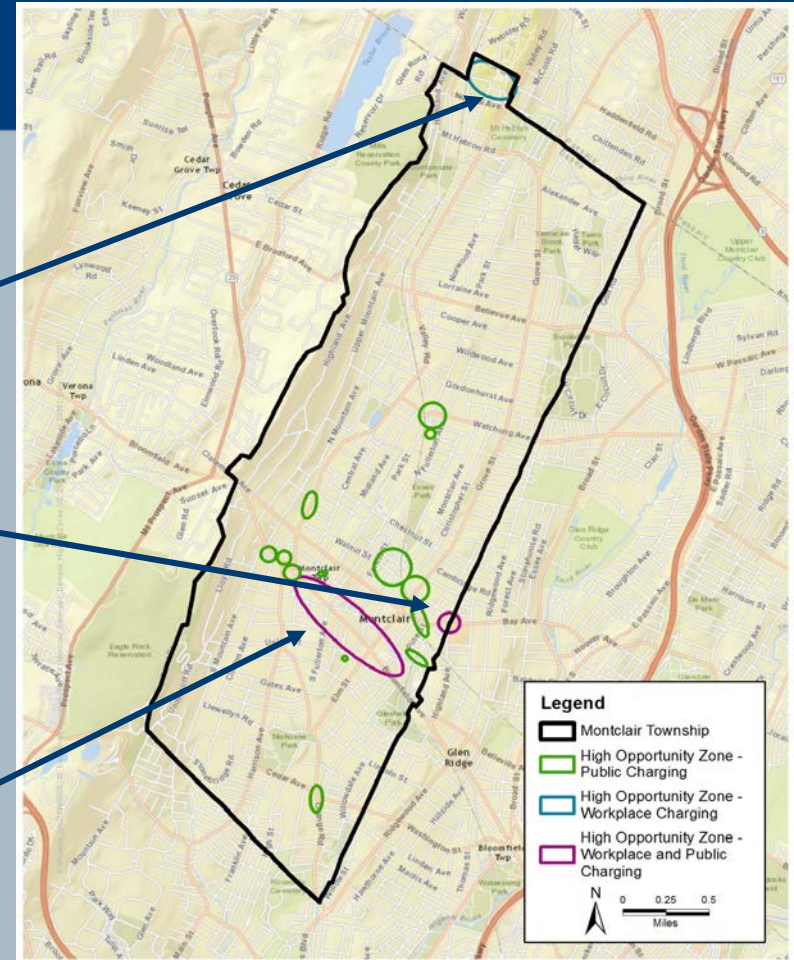
# Selecting Priority Locations for Non-Residential Charging

- Overlaid heat maps with land use and zoning data
- Identified locations with the highest demand for charging infrastructure

Montclair State University

Mountainside Hospital

Montclair Center



# Adopt EV-Friendly Ordinances

- Update zoning and redevelopment plans
- Determine EV parking capacity & minimum parking requirements
- Set Signage, safety and other standards
- Establish clear definitions of EVs and EVSE



# Readiness EV Planning — Other Considerations

- On-street parking
- Car sharing
- Fleets
- Renters
- HOAs



# Thank You

**Jeffrey Perlman, AICP, PP**  
**Senior Director of Planning**

*Defining the Vision. Shaping the Future.*



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**[www.njtpa.org/AFV](http://www.njtpa.org/AFV)**



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# Creating the Electric Vehicle Revolution



**Chuck Feinberg**  
Principal, Greener by Design, LLC  
Chairman and Coordinator, NJ Clean Cities Coalition



The New Jersey Clean Cities Coalition is an IRS 501(c)3 non-profit corporation and is formally designated by the US Dept. of Energy as a Clean Cities Coalition.

We are the only state-wide entity dedicated to the establishment of Public/Private Partnerships for the reduction of petroleum in transportation, and the advancement of alternative transportation fuels and advanced vehicle technologies.



- Connect fleets and fuel providers with industry & public partners – locally and across corridors
- Offer training and information
- Access to national expertise
- Identify funding; develop public/private partnerships & projects
- Collect data and track progress



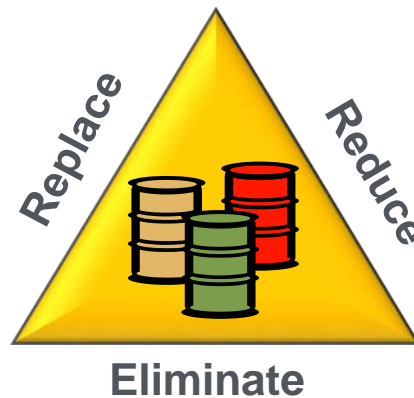
**Clean Cities coalitions are locally based with the ability to tap national resources.**

## Alternative Fuels

Electric Vehicles  
Biodiesel  
Ethanol  
Hydrogen  
Propane  
Natural Gas (RNG)

## Idle Reduction

Heavy-Duty Trucks  
School & Transit Buses  
Light-Duty Vehicles



## Fuel Economy

More fuel-efficient vehicles,  
smarter driving and vehicle  
purchasing habits, vehicle  
miles travel reductions



## Hybrids

Light- and heavy-duty  
Electric hybrids  
Plug-In hybrids  
Hydraulic hybrids

**Post Sandy Theme:  
FUEL DIVERSIFICATION!**

## Idle Reduction Is the Low-Hanging Fruit of Fuel Economy



- Fuel cost (for which the vehicle owner gets *0 mpg*)
  - Wastes 0.3 gallons/hour in a car and 1 gallon/hour in a truck
  - Wastes about 6 billion gallons of fuel per year; about half of that is from trucks
- Engine Wear
  - Increased maintenance costs



## Plug-In Hybrid Electric Vehicle (PHEV)

- Powered by an electric motor and engine
- Plugs-in to an electricity source to charge the battery



## Battery Electric Vehicle (BEV)

- Powered by an electric motor
- Plugs-in to an electricity source to charge the battery

More than 40 models of PEVs currently available in the US

PEVs account for 2% Market Share of LDV Sales

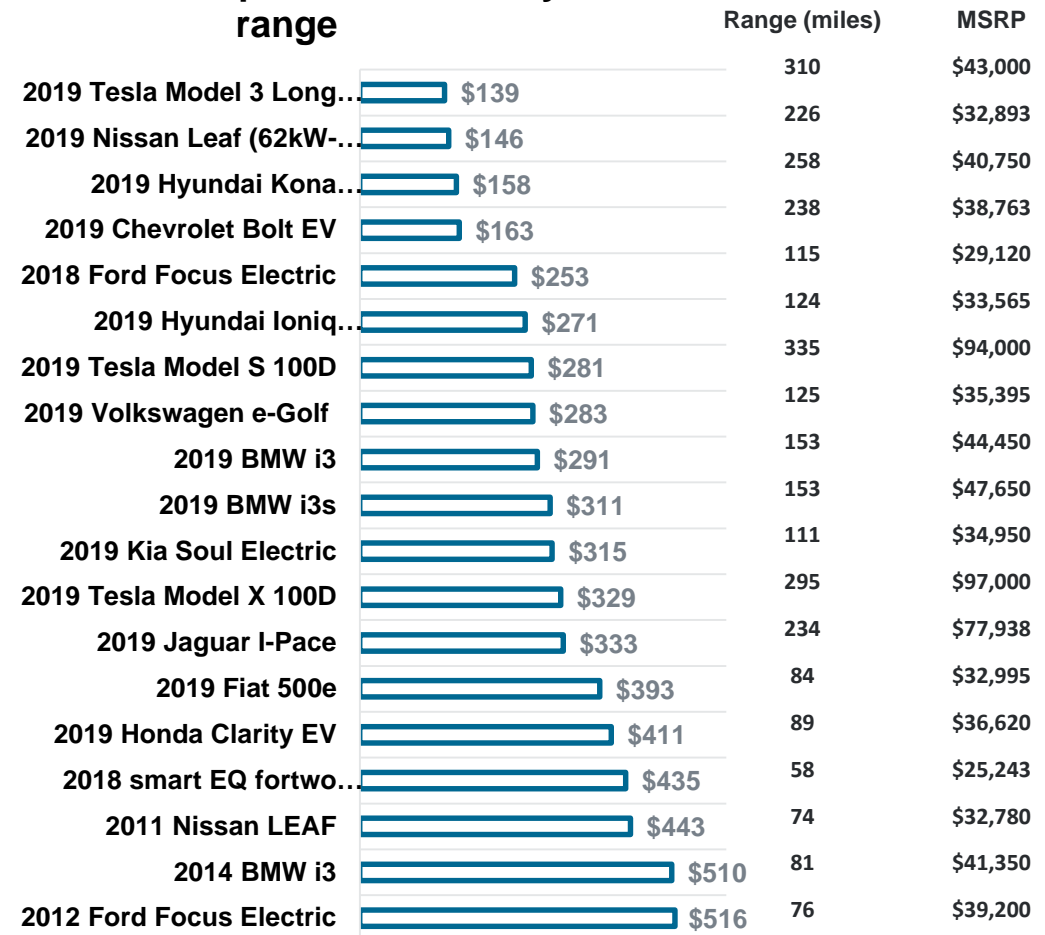
# Battery Advances are Making BEVs Affordable



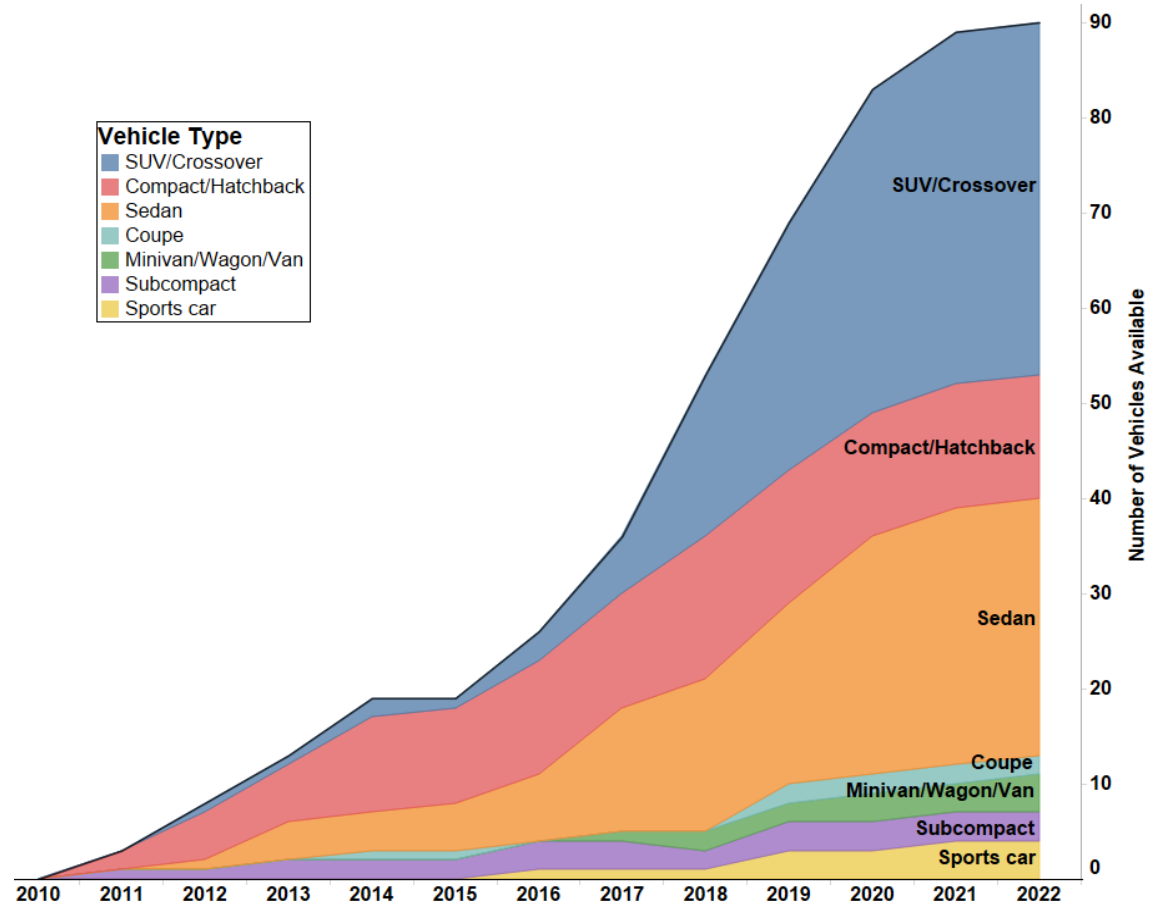
Significant technology improvements, steady price:

- 2011 LEAF: 74-mile range, MSRP of \$32,780
- 2019 LEAF: 226-mile range, MSRP of \$32,893

## Vehicle cost per mile of battery range



Based on Manufacturer announcements, at least 90 models of PEVs are expected to be available by 2022.



Source: <https://www.epri.com/#/pages/product/000000003002005948/?lang=en>

# Type C & D Electric School Buses



Charge Time: 6-8 Hours  
Range: Up to 120 miles

- Lower cost of maintenance and longer vehicle life – fewer parts, no need for engine oil changes, and no transmission or engine to maintain
- 80% of school bus routes are 80 miles or less per day
- Charging typically with Level 2 charger, Fast charging options
- Vehicle to Grid (V2G) in development



A new USDOE grant project to be started in Spring 2020. The main components of the electric school bus experience are:

- Provide a user level introduction
- Allow school districts to gain experience with buses from multiple manufacturers
- Support district deployment plans including identification of appropriate routes and charging infrastructure
- Engage stakeholders to build awareness and educate them about activities needed to support deployment



# Medium-duty & pickups entering production



**VS**



Workhorse, Lightning, Rivian, Adomani, Tesla, and many others

# Electric Garbage Trucks – initial deployments



Not quite ready for mass deployment, but BYD, Mack and others are making progress.

# Ballpark PEV Charging Station Costs



Charging Type	Charging Unit Cost Range	Average Installation Cost (per unit)	Installation Cost Range (per unit)
Level 2	<b>\$400-\$6,500</b>	<b>~\$3,000</b>	<b>\$600-\$12,700</b>
DCFC	<b>\$8,000-\$35,000</b>	<b>~\$21,000</b>	<b>\$4,000-\$51,000</b>

Installation costs are extremely site-specific and difficult to project.

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

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## Alternative Fuels Data Center

FUELS & VEHICLES | CONSERVE FUEL | LOCATE STATIONS | LAWS & INCENTIVES

Maps & Data | Case Studies | Publications | Tools | About | Home

EERE » AFDC

Printable Version | Share

### Fuels & Vehicles

Biodiesel | Electricity | Ethanol | Hydrogen | Natural Gas | Propane

### Information by State

select a state

### Information by Fleet Application

Delivery Services | Refuse Collection  
Public Transit | School Transportation

### Maps & Data

- U.S. Alternative Fueling Stations by Fuel Type
- Alternative Fuel Vehicles in Use
- U.S. Hybrid Electric Vehicle Sales by Model

### Fuel Prices

### Tools

- Laws & Incentives
- Electricity Sources & Emissions
- Vehicle Cost Calculator
- Vehicle Search
- Petroleum Reduction Planning Tool

### Need a Jump?

Ten ways to get rolling on petroleum savings, emissions reductions, and lower fuel costs.

### The Information Source for Alternative Fuels and Advanced Vehicles

The Alternative Fuels Data Center (AFDC) provides information, data, and tools to help fleets and other transportation decision makers find ways to reduce petroleum consumption through the use of alternative and renewable fuels, advanced vehicles, and other fuel-saving measures.

The AFDC is a resource of the U.S. Department of Energy's Clean Cities program.

- ✓ Specific information on fuels, vehicles, technologies, & strategies
- ✓ Tools
- ✓ Publications
- ✓ State-specific information
- ✓ Fleet-specific information
- ✓ AFV station locator

afdc.energy.gov

## Chuck Feinberg

**Chairman of the Board of Trustees,  
USDOE-Designated Coordinator  
New Jersey Clean Cities Coalition, A NJ Nonprofit  
Corp**

[www.njcleancities.org](http://www.njcleancities.org)

Twitter: @njcleancities

LinkedIn Group: New Jersey Clean Cities Coalition

**Principal, Greener By Design, LLC**

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[cfeinberg@gbdtoday.com](mailto:cfeinberg@gbdtoday.com)

**732-253-7717**



# Jersey City's Transition to Electric Vehicles

Kate Lawrence  
Sustainability Director  
City of Jersey City



Creating the Electric Vehicle  
Revolution  
New Jersey League of Municipalities  
November 21, 2019

# 2016 Fleet Inventory

## PSEG ISS Green Team Recommendations:

### Add Fleet Management Software

- Track mileage and maintenance costs

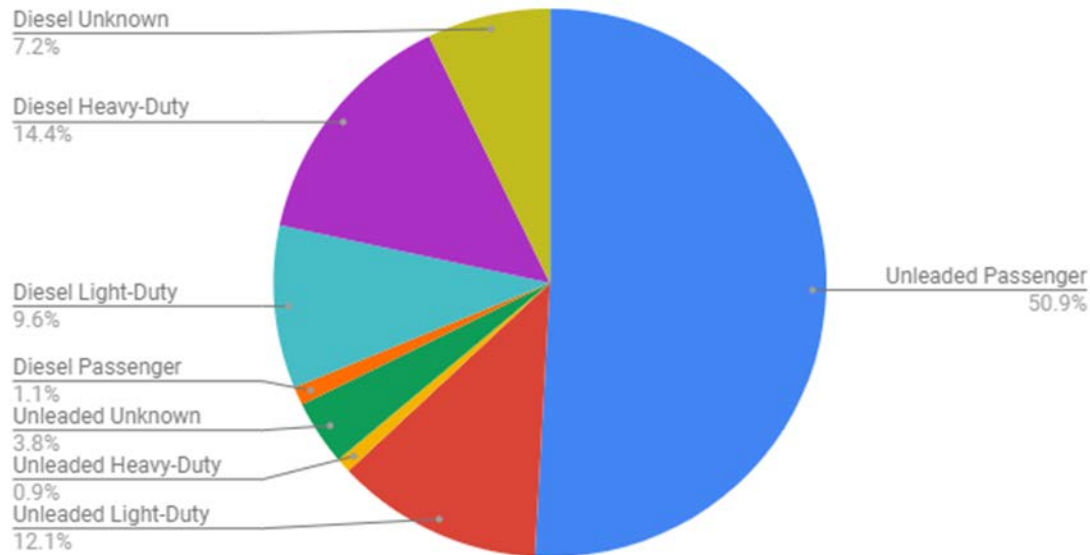
### Replace old vehicles with hybrid or electric vehicles

- 50% hybrid or electric by 2025
- 75% hybrid or electric by 2030



# 2016 Fleet Inventory

Percentage of Number of Vehicles by Type

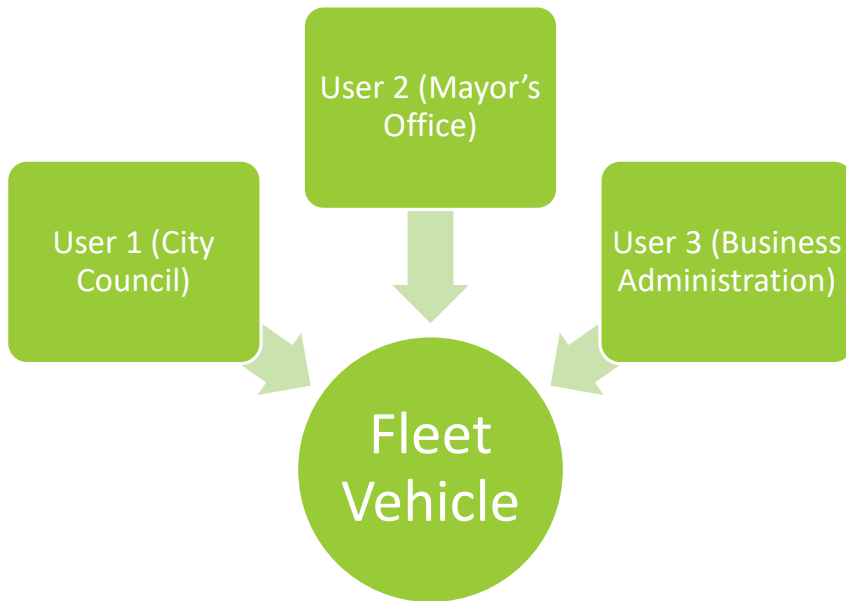


## 916 Total Vehicles

Approx. forty 10+ year-old light-duty unleaded not in public safety

# Car Sharing Technology

- 5 vehicles
- 40+ users



# Electric Vehicles



2019 Nissan Leaf

- Four 2019 Nissan Leafs
- Higher initial cost (compared to traditional vehicle), but lower operating cost
- More efficient use = more savings
- Up to 5 electric garbage trucks later this year
- EV infrastructure

# Speakers

Moderator: Mayor Vic DeLuca, Maplewood Township

In order of presentation:

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