

# SUSTAINABILITY SUMMIT



## **RIDING THE EV WAVE TOWARDS CLEAN, HEALTHY, AND RESILIENT COMMUNITIES**

May 3, 2024



# Today's Speakers

**Melissa Evanego**

NJ Department of Environmental Protection

**Mayor Patricia Farmer Hendricks**

Lawrence Township

**Krishna Murthy**

EZ Ride

**Nancy Quirk**

Sustainable Jersey



# Municipal Energy Actions

	Energy Efficiency	Renewable Energy	Alternative Fuel Vehicles
<b>Municipal Operations</b>	<ul style="list-style-type: none"> <li>• Energy Efficiency for Municipal Facilities</li> <li>• Energy Tracking and Management</li> </ul>	<ul style="list-style-type: none"> <li>• On-Site Geothermal</li> <li>• On-Site Solar +10 pt storage/resilience + 5 pt solar thermal</li> <li>• On-Site Wind</li> <li>• Buy Renewable Energy</li> </ul>	<ul style="list-style-type: none"> <li>• Fleet Inventory</li> <li>• Purchase Alternative Fuel Vehicles</li> <li>• Meet Green Fleet Targets</li> </ul>
<b>Community Energy Use</b>	<ul style="list-style-type: none"> <li>• Energy Assistance Outreach</li> <li>• Commercial Energy Efficiency Outreach</li> <li>• Residential Energy Efficiency Outreach</li> <li>• Community Energy Plan / Climate Action Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Make Your Town Solar Friendly</li> <li>• Municipally Supported Community Solar</li> <li>• Solar Outreach</li> <li>• Renewable Government Energy Aggregation (R-GEA)</li> </ul>	<ul style="list-style-type: none"> <li>• Make Your Town Electric Vehicle (EV) Friendly</li> <li>• Public EV Chargers</li> <li>• Electric Vehicle Outreach</li> </ul>



# Sustainable Fleets for Schools

- Nation's largest fleet
  - 480,000 school buses in operation
  - Largest form of mass transit
- Alternative fuel vehicles cost more than diesel
- Save 40-50% on fuel costs
- Bi-Directional Charging
  - V2B

- Healthier Air
- Reduced CO2 emissions
- Less particulate matter pollution
- Quieter
- Less expensive O&M





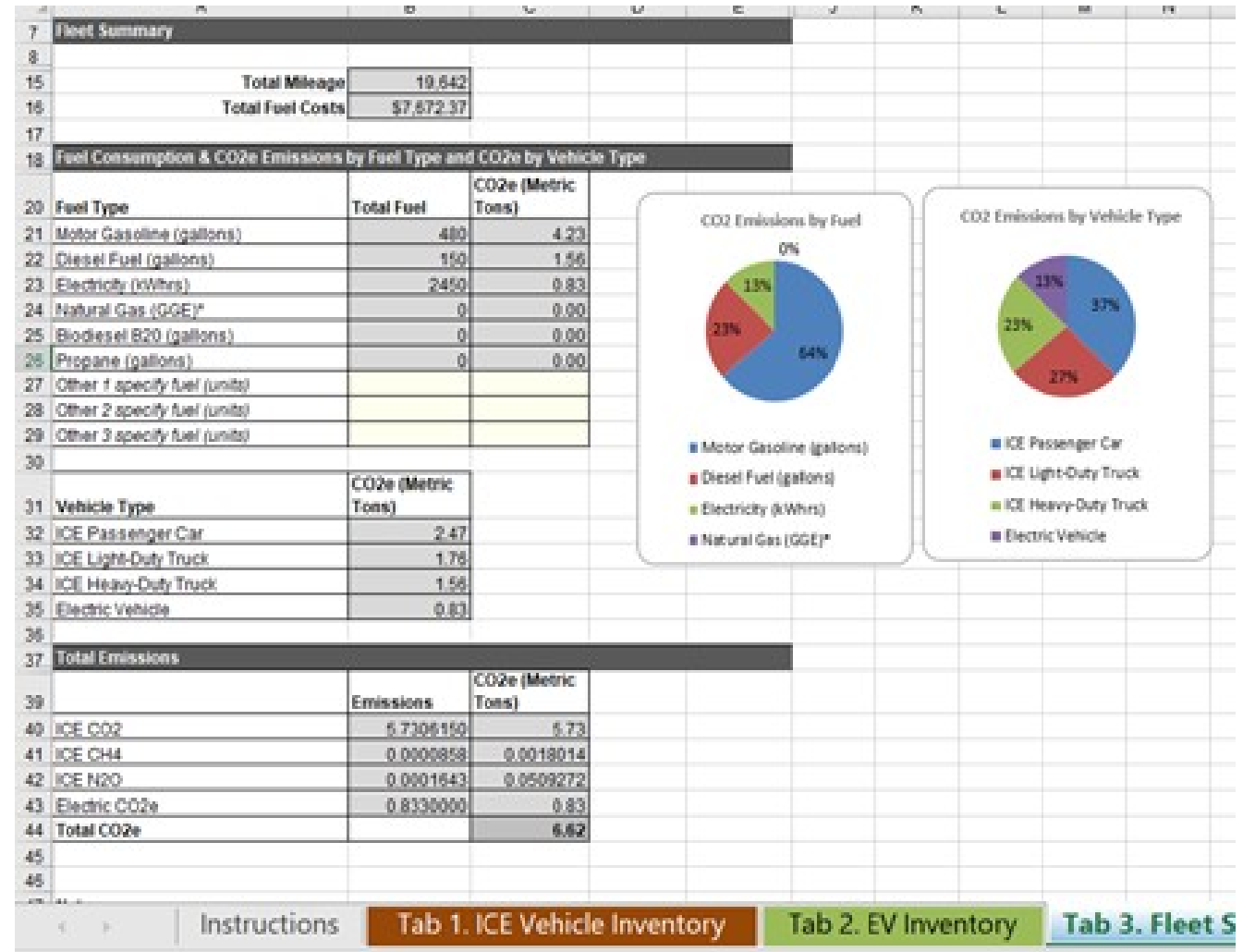
# Fleet Inventory

- Evaluate current vehicle use
- Fleet planning exercise
- Automatically calculate fleet emissions

## Atlas Public Policy Fleet Analysis Tool

Dashboard for Rapid Vehicle Electrification (DRVE)

- Free fleet analysis tool
- Prioritized order of electrification



Sustainable Jersey Fleet Inventory Spreadsheet



# Purchase Alternative Fuel Vehicles

## Considerations:

- Vehicle Miles Travelled/Duty Cycle
- Parking and Charging
- What do fleet users think about EVs?
- Sustainable Jersey PAFV Procurement Guide:

[www.sustainablejersey.com/fileadmin/media/Actions\\_and\\_Certification/Actions/Energy/Sustainable\\_Jersey\\_Alternative\\_Fuel\\_Vehicle\\_Procurement\\_Guide.pdf](http://www.sustainablejersey.com/fileadmin/media/Actions_and_Certification/Actions/Energy/Sustainable_Jersey_Alternative_Fuel_Vehicle_Procurement_Guide.pdf)



# Community EV Actions

## Public EV Charging Infrastructure

## Make Your Town EV Friendly

- Zoning Ordinance
- Parking Ordinance
- First responder training

## EV Outreach

- Local employers: workplace charging
- Multi-family dwellings
- Local fleet operators



**Secaucus EVSE Ribbon Cutting Ceremony**



# Public EV Charging Infrastructure

- Installation of public EV charging
  - Site selection: ‘heat mapping’
- EV infrastructure resources
  - Charger types
  - Site design
- NJDEP. *Charge Up Your Town: Best Management Practices for Ensuring Your Town is EV-Ready.*



	AC Level 1	AC Level 2	DC Fast Charger
<b>Voltage</b>	120V 1-Phase AC	208V or 240V 1-Phase AC	480V 3-Phase AC
<b>Suitable for Installation</b>	Single-family Multi-family	Single-family Multi-family Commercial Municipal/Private Fleet	Municipal/Private Fleet Public Metro Areas
<b>Amps</b>	12-16 Amps	12-90 Amps (typical 32 Amps)	<125 Amps (typical 60 Amps)
<b>Charging loads</b>	1.4 - 1.9 kW	2.5 - 19.2 kW (typical 7 kW)	<90 kW (typical 50 kW)
<b>Charge time for vehicle</b>	3-5 miles of range per hour	10-20 miles of range per hour	80% charge in 20-30 minutes
<b>Best for</b>	6+ hour or overnight charge	2-6 hour dwell times	High turn over
<b>Station hardware cost</b>	\$500 - \$1,000 per port	\$600 - \$5,000 per port	\$7,000 - \$50,000 per port

*Adapted from NYSERDA*

[dep.nj.gov/wp-content/uploads/drivegreen/pdf/chargeupyourtown.pdf](http://dep.nj.gov/wp-content/uploads/drivegreen/pdf/chargeupyourtown.pdf)

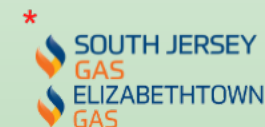
Image from:  
*Charge Up Your Town.*



## PROGRAM UNDERWRITERS



## CORPORATE SPONSORS



\*Digital Schools Sponsor

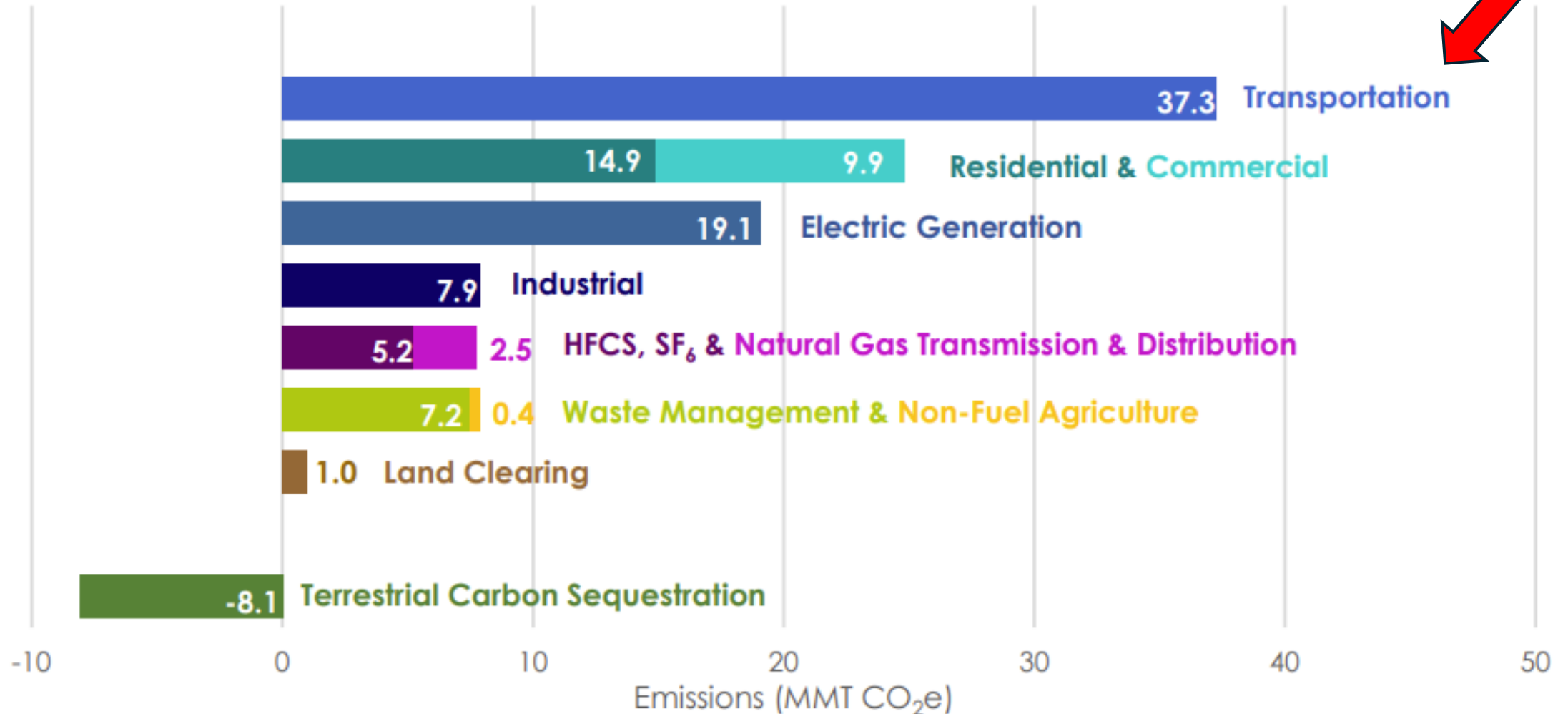


**Melissa Evanego**

NJ Department of Environmental Protection



# 2021 Greenhouse Gas Inventory



# ACT Fleet Reporting

vehicles with a GVWR >8,500 lbs and operated in NJ or entity operated a facility in NJ

- Fleet owner with 50 or more vehicles
- Fleets with over \$50 million in revenue
- Any Federal government agency that had 1 or more vehicles
- Any NJ government agency that had 1 or more vehicles

## **Exclusions**

- School and transit buses
  - Emergency vehicles
- Military tactical vehicles
- Vehicles awaiting sale

**Reporting was due April 1, 2023**

[Details](#) on how to still apply

<https://dep.nj.gov/stopthesoot/advanced-clean-trucks-rule-fleet-reporting/>

## **Advanced Clean Fleet Rule**

- Requires transition to ZEV for medium & heavy-duty vehicles
- Applies to vehicle manufacturers
- Increasing sales requirements based on weight class through 2035

# Medium & Heavy- Duty Vehicle Electrification Grants



DEP provides funding to  
**LOCAL GOVERNMENTS** and private  
entities to replace old diesel  
vehicles & equipment with electric

### Examples

street sweepers, transit buses, garbage  
trucks, delivery trucks, bucket trucks,  
port equipment

Includes associated charging equipment

Over **\$300 MILLION** has been awarded

Overburdened communities are  
prioritized.

*Competitive solicitation*



# ELECTRIC SCHOOL BUS GRANT PROGRAM



## Eligible Applicants

School districts that own their own buses

School bus contractors providing busing services to schools.

## Eligible Buses

All electric

Type C or D

New  
(No repowers or used buses)

Purchase or leased  
(A minimum five-year lease is required)

Vehicle to Building  
Pilot Program

## ELECTRIC SCHOOL BUS GRANT PROGRAM



Scan the QR Code below to begin your application!



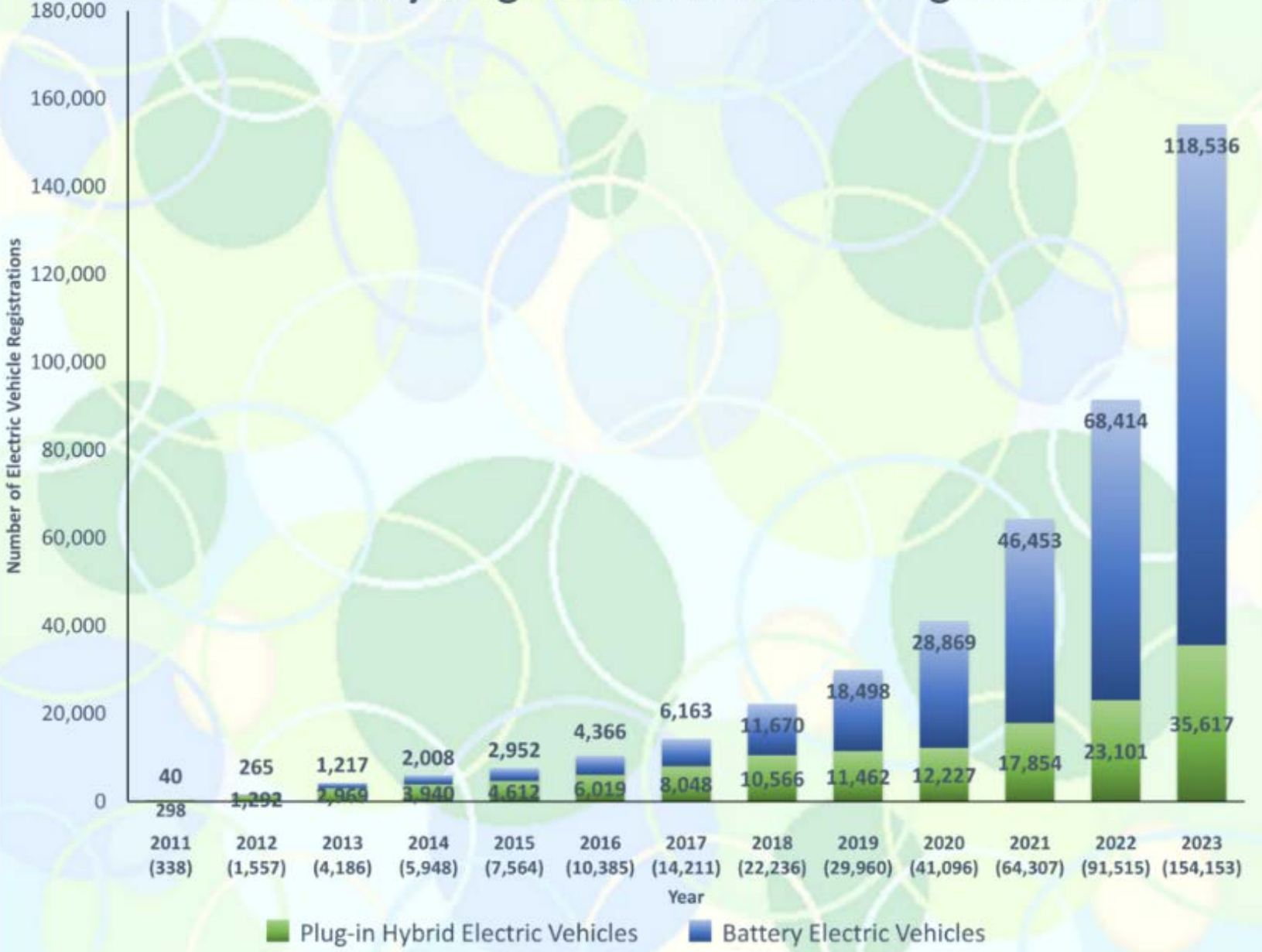
Applications DUE

**Friday May 17, 2024 at 5:00 PM ET**

Please contact NJ DEP  
***stopthesoot@dep.nj.gov***

with any questions, including "School Bus Grant Program" in the subject line.

# New Jersey Plug-in Electric Vehicle Registrations



\* 2023 data available through 12.31.2023

# NJ Electric Vehicle Service Equipment Contract details

- **TREASURY ID: 22DPP00769, T3138 Electric Vehicle Service Equipment – Statewide**
- **Effective Dates: March 18, 2024 through March 17, 2027** with the possibility of up to three (3) one-year extensions, with no single extension exceeding one year.
- **Items:**
  1. Electric Vehicle Service Equipment (EVSE)
  2. Software
  3. Software-Related Services
  4. EV Fleet Charging and Transaction Management Services
  5. Maintenance and Repair Services for EVSE
  6. Installation Services for EVSE

<b>Awardees</b>	<b>Contract Number</b>
Timothy P. Bryan Electric Co., Inc.	23-FLEET-68464
JF Acquisition, LLC d/b/a JF Petroleum Group	23-FLEET-68465
Livingston Energy Group	23-FLEET-68466



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

\$750 per port for Level 1 charging stations

Up to \$4,000 per single port/\$8,000 per dual-port, networked L2 charger

Maximum of 20 ports per location (either 10 dual-port, or 20 single-port)

Applicants may not be approved for more than \$500,000.00 in projects in a calendar year

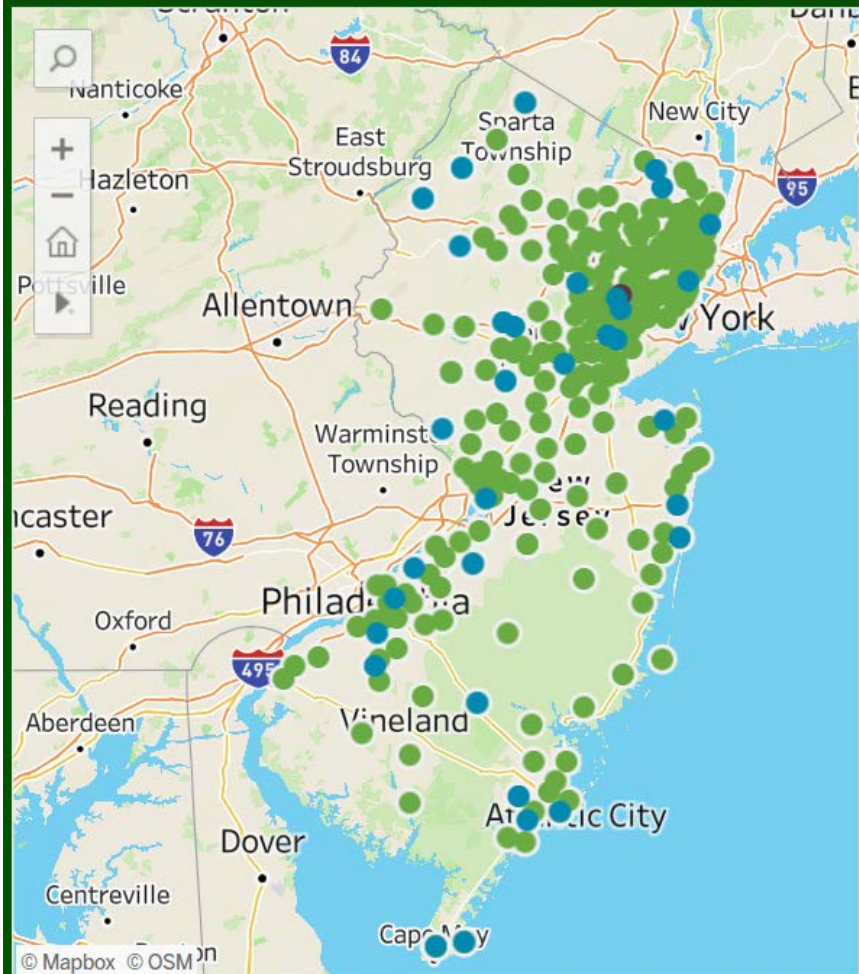
Eligible costs: Purchase of charging station(s) **and** associated delivery and activation fees, warranty, network subscription, maintenance contract, and leasing agreement (if applicable)



Number of Project Locations: 677

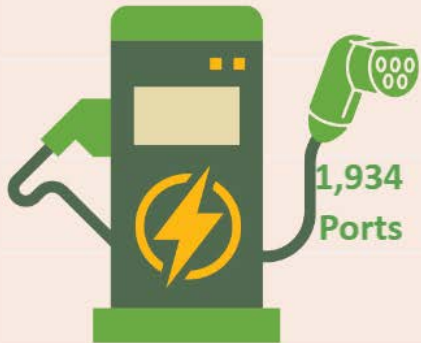
## Project Locations

By Zip Code



### Charger Overview

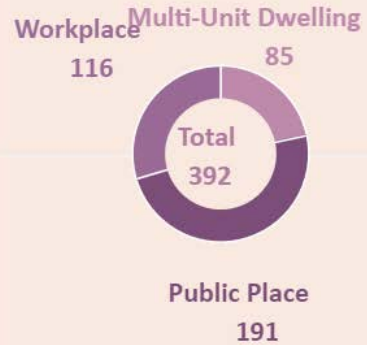
Quantity



1,290  
Chargers

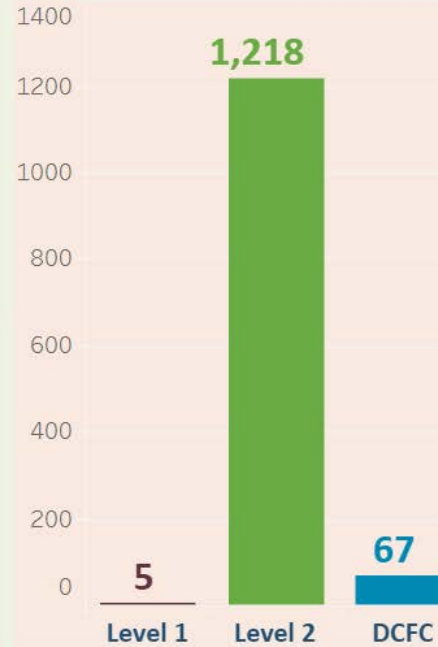
### Location Category

Number of Project Sites



### Charging Level

Number of Stations



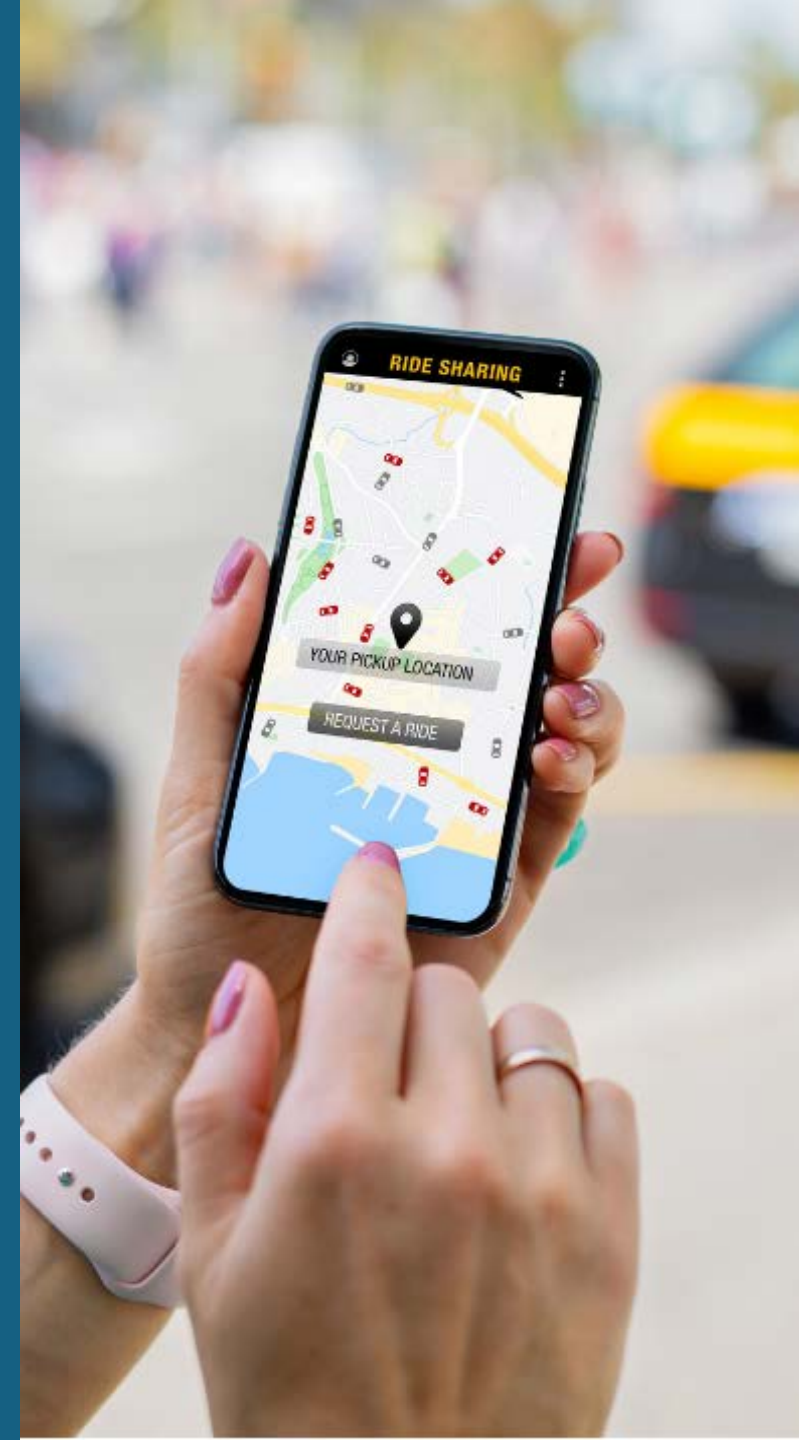


# What is eMobility?

A multifaceted approach must be taken to reduce emissions from the transportation sector. **eMobility** is one approach that provides clean transportation to citizens who may not own their own vehicles.

## Shared Transportation using EVs:

- ✓ Rideshare
- ✓ Carshare
- ✓ Ride hailing
- ✓ Shuttle Services
- ✓ And more





## COMMUNITY-LED eMOBILITY PILOT

### Main Project Components

- On-demand shuttles (all-electric)
- EV charging stations (DCFC and L2)
- Workforce van (all-electric)

### On-Demand Shuttle Top Destinations

- Transit Center
- Soup Kitchen
- Grocery Stores
- Health Centers
- Community Center



# ELECTRIC SCHOOL BUS RESOURCES

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- [Types of Electric School Buses](#)
- [All About Charging Infrastructure](#)
- [Step by Step Guide for ESB electrification](#)
- [Cold Weather Impacts on Electric School Buses](#)
- [Technical Assistance](#)
- [NJ Utility Contact Sheet](#)
- [Commercial Clean Vehicle Credit](#)





# Important Links

1. [MUD Toolkit](#)
2. [Model EV Ordinance](#)
3. [Electric Vehicle and Charging Incentives](#)
4. [EV Utility Incentive Comparison](#)
5. [NJ BPU Clean Energy Program](#)
6. [Alternative Fuel Vehicle Refueling Property Credit](#)
7. [Commercial Clean Vehicle Credit](#)
8. [Electric Vehicle Law P.L.2007, c.340 and P.L.1999, c.23](#)
9. [Right to Charge Law P.L. 2020, c. 108](#)
10. [Electric Vehicle Installation Requirement Law P.L. 2020](#)



[Flyer: Electric Vehicle Resources for Local Government](#)

[Best Management Practices to Ensure Your Town is EV Ready](#)

[It Pay\\$ to Plug In: NJ's Electric Vehicle Charging Grants](#)

[New Jersey Clean Fleet Electric Vehicle Incentive Program](#)

[Dashboard for Rapid Vehicle Electrification: DRVE Tool](#)

[Climate Mayors Electric Vehicle Purchasing Collaborative](#)

[Electrifying Transportation in Municipalities: A Policy Toolkit](#)

[Alternative Fuel Vehicle Readiness: A Guidebook for Municipalities](#)

[Electric Vehicle Resource Kit for Municipalities](#)

**Local Government**

**Resources**

# Follow NJDEP Bureau of Mobile Sources on social media!



- Instagram
  - @DriveCleanNJ
- Facebook
  - NJDEPAQES
- Twitter
  - @NewJerseyDEP
- Visit [www.nj.gov/dep/drivegreen](http://www.nj.gov/dep/drivegreen)



Like & follow us!



@newjerseydep

Join our DEP mailing list for updates and  
funding announcements

[www.state.nj.us/dep/stophesoot/sts-listserv.htm](http://www.state.nj.us/dep/stophesoot/sts-listserv.htm)





**Meadowlands Transportation  
Brokerage Corporation**

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

**May 3, 2024**

Krishna Murthy  
President & CEO

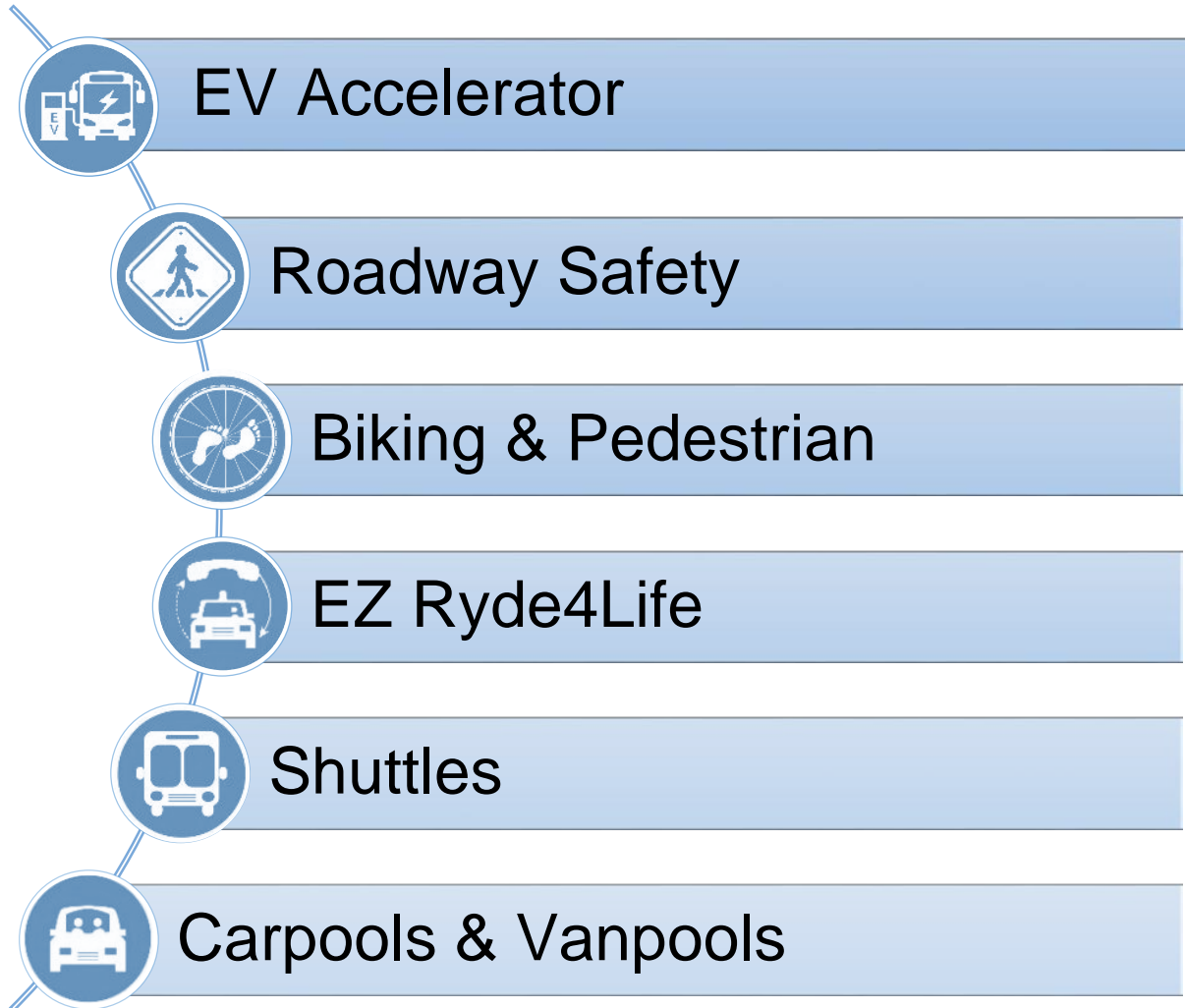


# **EV Planning is a Process, Making a Fleet Transition Plan is Key**

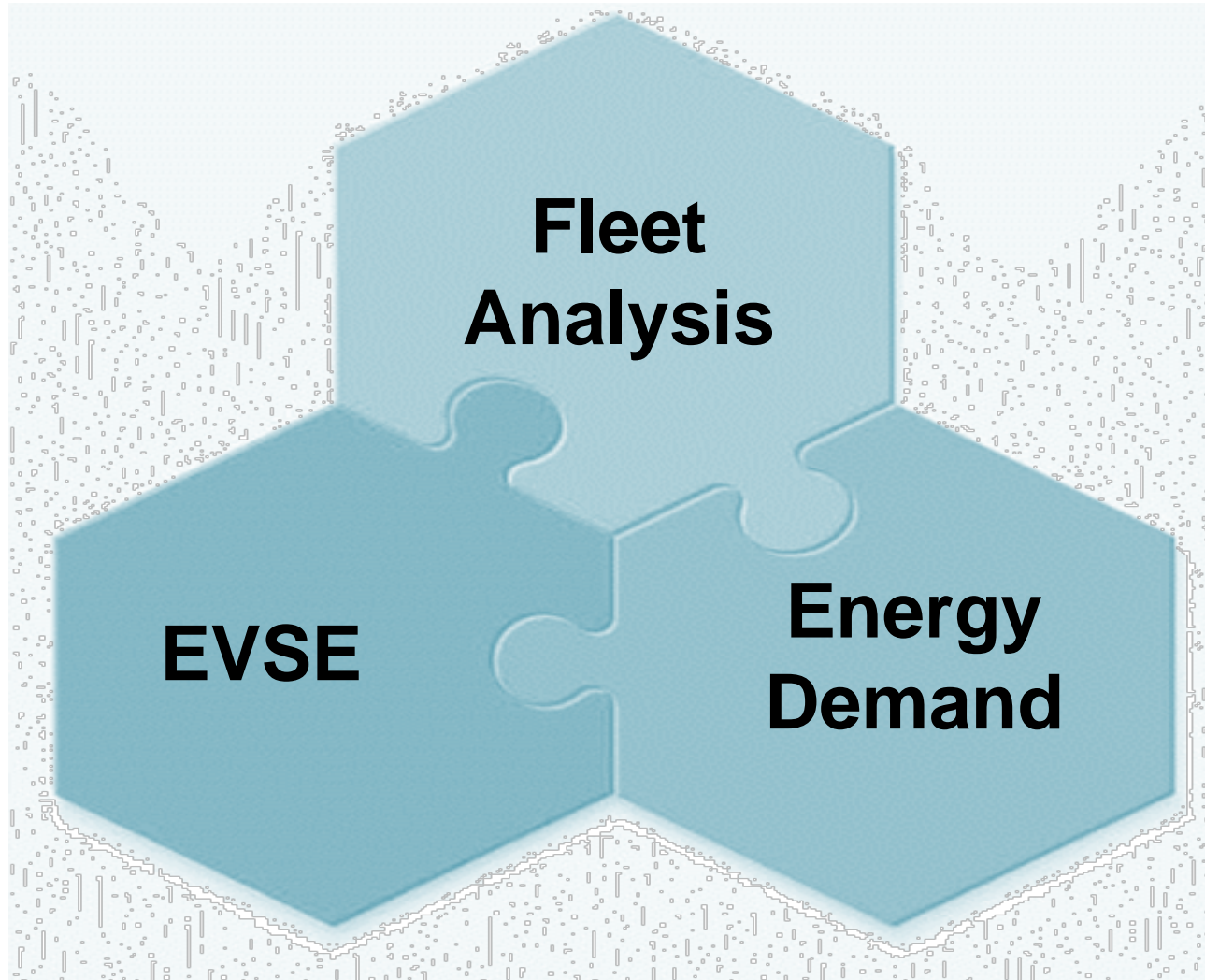
# About EZ Ride



**Meeting Your Community's  
Mobility Needs**



# Key Elements of the Fleet Transition Plan



# Fleet Analysis – How we currently operate?



---

Bus Count: 25

---

Ford E-450 (18-25 seats)

---

Schedules: AM, PM & Night Shifts

---

Route Length: 48-120 miles

---

Time Between Runs: 4-19 hours

---

Origin/Destination: Transit Hub

**Finding: Data collection is time consuming and not always available**

# Fleet Analysis – Key EV Attributes



---

Battery: 100 - 138 KWh

---

Range: 100+ miles

---

Capacity: 14 – 25 passengers

---

Price: \$150k - \$300k

---

Auxiliary Vehicle Heating  
System

**Trade off between Seating Capacity, Battery Size (Range), and Cost**

# Fleet Analysis – Other Requirements



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Made in America

---

Altoona Testing

---

ADA Compliance - Wheelchairs

---

Warranty & Service Support

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**Finding: Focus on Vehicle Specs for Operational Flexibility**

# Calculating Our Charging Needs



## Vehicle Energy Requirements

Estimated that the selected Vehicle will deliver 0.8-1.2 miles/KWh (MPK)

Calculate energy needed based on the daily miles



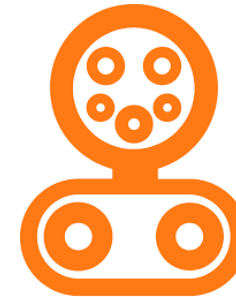
## Two Charging Options

19.2 kW charging vis L2 Charging using J1772 protocol

60-100 kW via DCFC using CCS1 protocol.

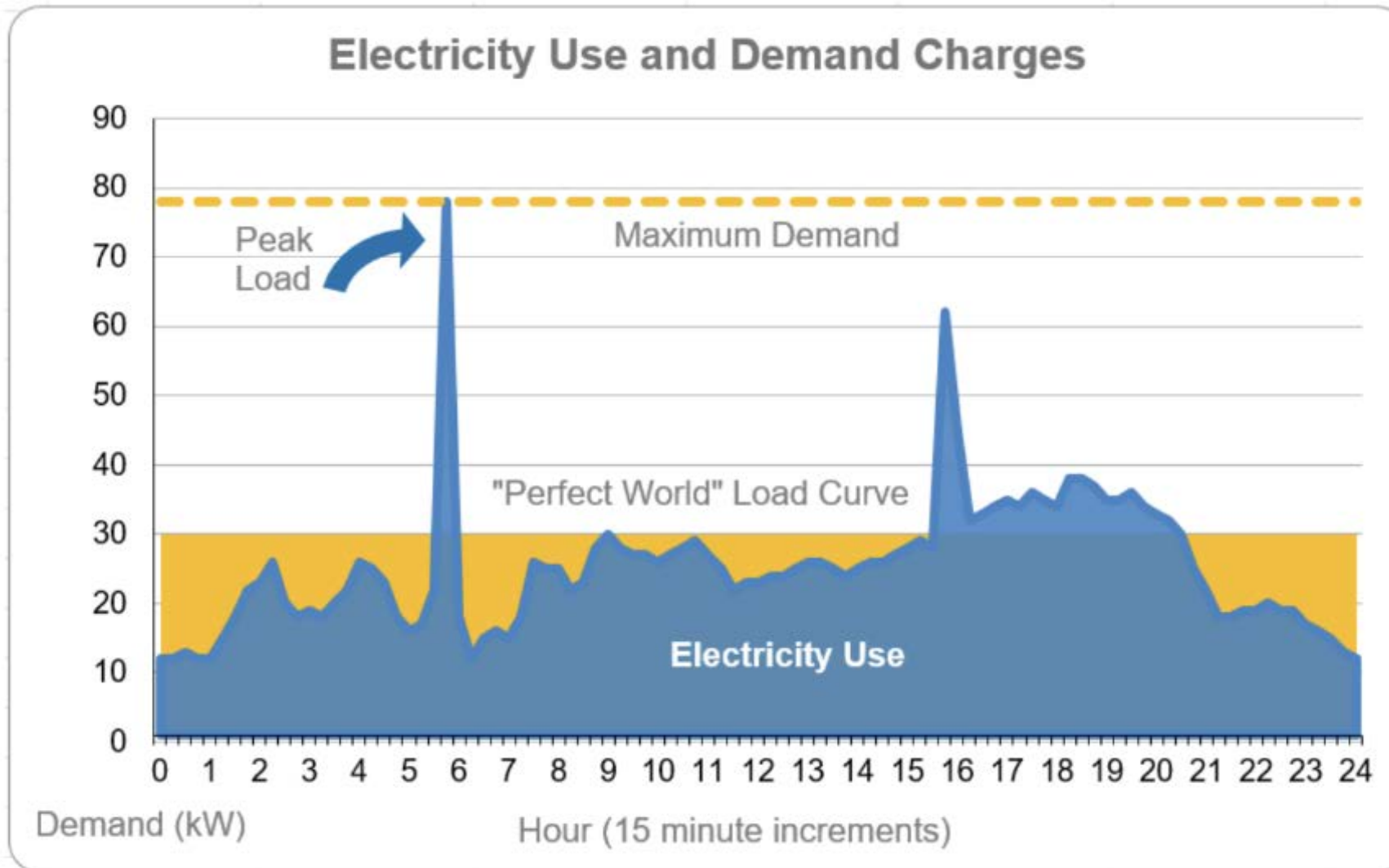


TYPE 1 J1772



CCS COMBO TYPE 1

# Energy Consumption – Flatten the Peak





# EVSE & Network Provider Selection



## Key Criteria

- Approved by NJDEP
- Offers load management capabilities
- Integrates with vehicle's on-board diagnostics
- Software is hardware-agnostic

# Utility Upgrades - PSEG

---

Current load Available: 45kW

---

Projected Fleet Load: 154 kW

---

Site Load (Office): 26kW

---

Total Load: 180kW

---

Site Capacity: 225kW

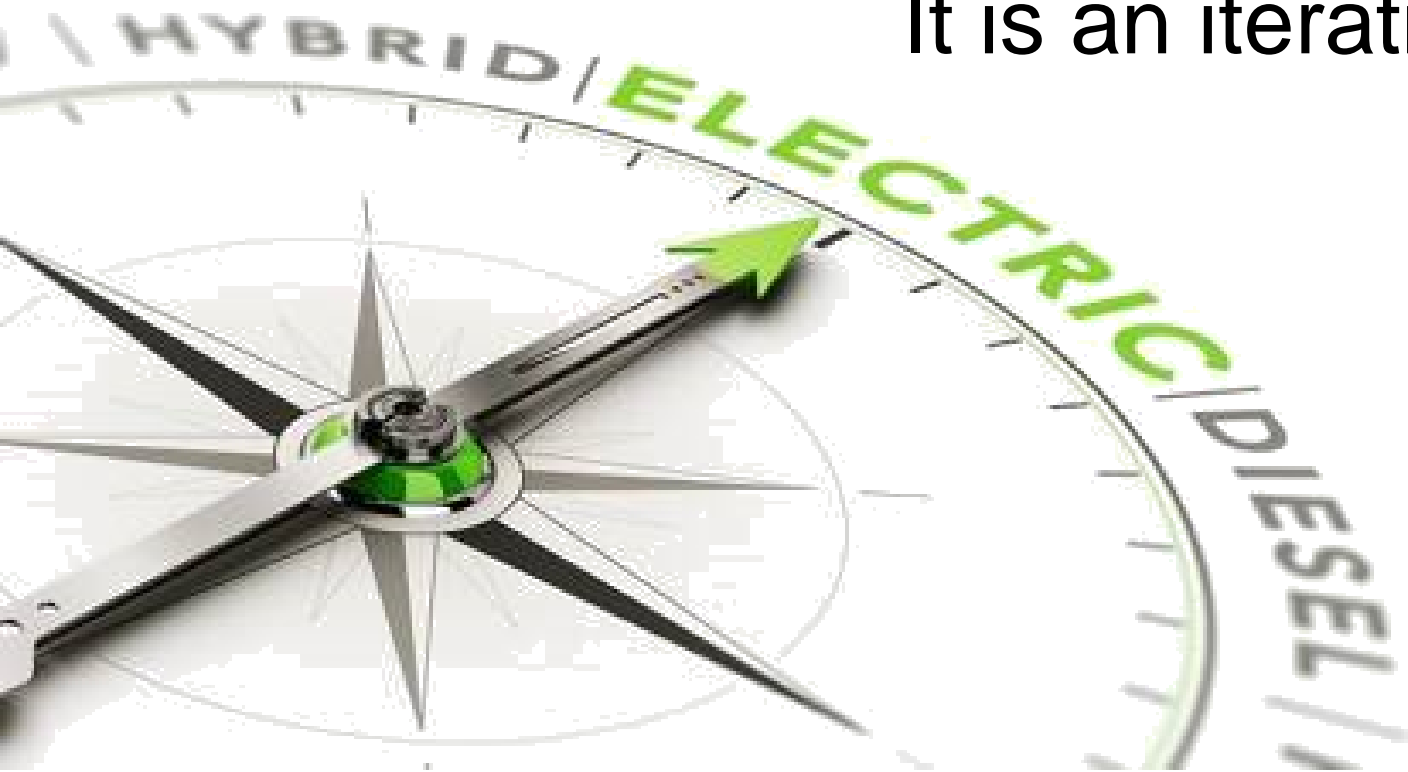
# Estimated Annual Fuel Savings

	<b>Gas Vehicle</b>	<b>Electric Vehicle</b>
<b>Efficiency</b>	8 MPG	0.9 MPK
<b>Gasoline price \$/gal, low/high</b>	\$3/\$4	-
<b>Electricity cost in \$/kWh regular/discounted</b>	-	\$0.17/\$0.09
<b>Cost per mile</b>	\$0.375/\$0.50	\$0.189/\$0.100
<b>Daily cost - EZ Ride Operations (2,780 Miles/ Day)</b>	\$1,043/\$1391	\$525/\$278
<b>Weekly cost - EZ Ride Operations (15,500 Miles/ Week)</b>	\$5,812/\$7,749	\$2,929/\$1,550
<b>Annual Fleet Savings</b>	\$0	\$150k - \$322k

# Fleet Transition Plan

## Start Small, Start Now

It is an iterative process





**9% of all  
new car  
sales are  
EVs**

# Workplaces – The 2<sup>nd</sup> Most Likely Location for EV Owners to Charge



30% of all EV drivers do not have access to home charging

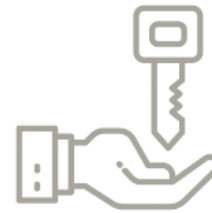
Future EV adopters will increasingly live in multi-unit dwellings

# Why Workplace Charging?

## 1. Competitive Advantage



Recruit & Retain Talent



Attract clients/ Tenants



Increase Property Value

# Why Workplace Charging?

## 2. Cost Effective



Cost \$13-14 per day  
per L2 Charger



Grants to cover capital costs



# Why Workplace Charging?

## 3. Resources & Recognition



NJDEP: Workplace Charging Toolkit



FORTH: Best Practices for Workplace Charging Programs

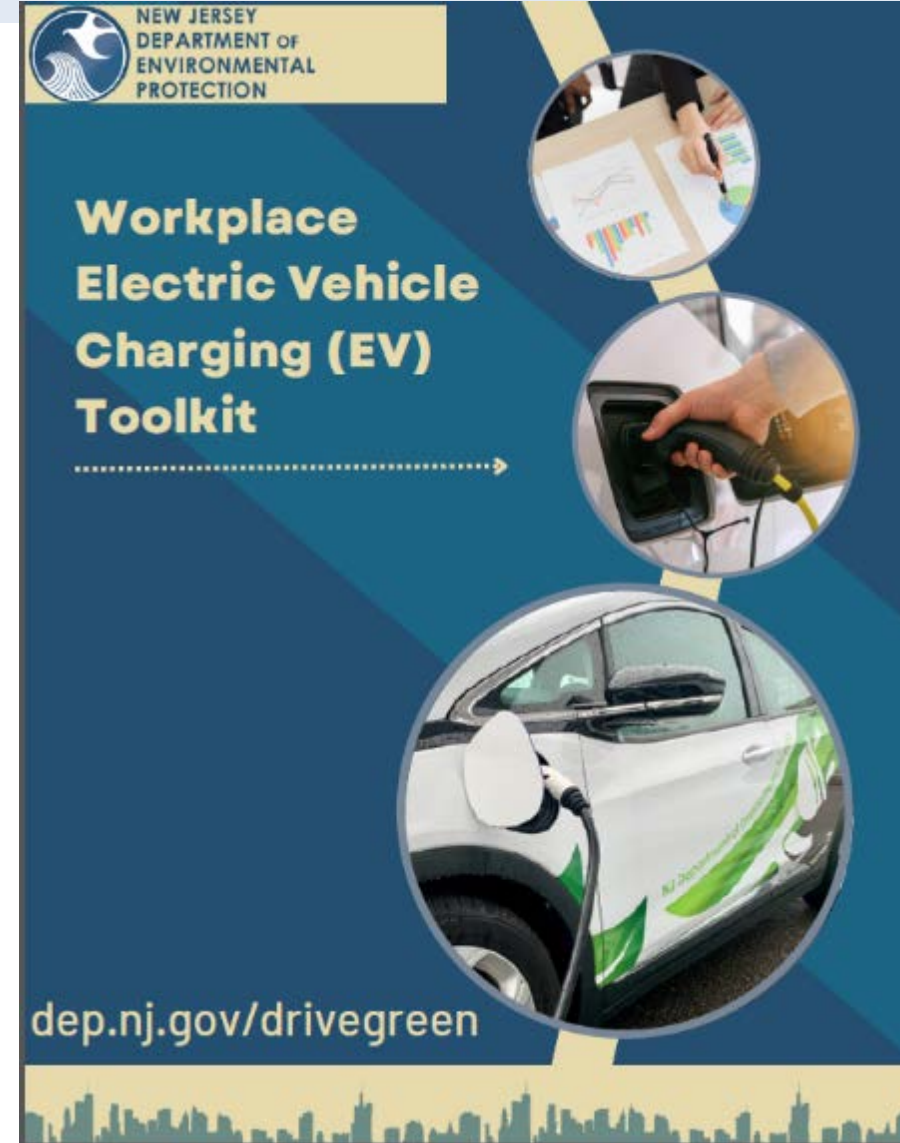


EVAL & Charge@Work websites

# NJDEP: Workplace Charging Toolkit

Complete toolkit from the Department of Environmental Protection:

<https://dep.nj.gov/drivegreen/workplace-charging-toolkit/>





# EVAL Certification

Administered by Forth

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

[chargeatwork.org/](http://chargeatwork.org/)



# Charge@Work

Administered by CALSTART

# Thank you to our Partners





# Township of Lawrence Mercer County

## Electric Vehicle Projects & Infrastructure

Presented by: Mayor Patricia Hendricks Farmer

# PUBLIC CHARGING STATION

## Lawrence Township Municipal Complex

The screenshot shows the 'Alternative Fuels Data Center' website. The header includes the U.S. Department of Energy logo and navigation links for 'Energy Efficiency & Renewable Energy', 'EERE Home | Programs & Offices | Consumer Information', and a search bar for 'AFDC'. The main navigation menu includes 'FUELS & VEHICLES', 'CONSERVE FUEL', 'LOCATE STATIONS', and 'LAWS & INCENTIVES'. The 'LOCATE STATIONS' section is active, displaying the 'Alternative Fueling Station Locator' tool. The tool includes filters for 'Public Stations', 'Advanced Filters', and 'Fuel Corridors', with a dropdown menu set to 'U.S. and Canada'. A search input field contains '08648' and a dropdown menu is set to 'All Fuels'. A map shows the location of the Lawrence Township Municipal Complex with three markers labeled A, B, and C. A legend on the right side of the map identifies fuel types: Biodiesel (red dot), CNG (blue dot), Electric (green dot), and Ethanol (yellow dot).

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy | EERE Home | Programs & Offices | Consumer Information

### Alternative Fuels Data Center

Search the AFDC [SEARCH]

FUELS & VEHICLES | CONSERVE FUEL | **LOCATE STATIONS** | LAWS & INCENTIVES | Maps & Data | Case Studies | Publications | Tools | About | Home

EERE » AFDC » Locate Stations [Printable Version]

#### Alternative Fueling Station Locator

Find alternative fueling stations in the United States and Canada. By default, this tool displays only available, publicly accessible stations. You can use the advanced filters to expand your search. For U.S. stations, see [data by state](#). For Canadian stations in French, see [Natural Resources Canada](#).

Public Stations | Advanced Filters | Fuel Corridors | U.S. and Canada

08648 | All Fuels | Map a Route

**LAWRENCE TWP TOWN HALL PS 1**  
2207 Lawrenceville Rd  
Lawrence Township, NJ 08648 Level 2

**LAWRENCE TWP FLEET ST 2**  
2207 US-206  
Lawrence Township, NJ 08648 Level 2

**LAWRENCE TWP FLEET ST 1**  
2207 US-206  
Lawrence Township, NJ 08648 Level 2

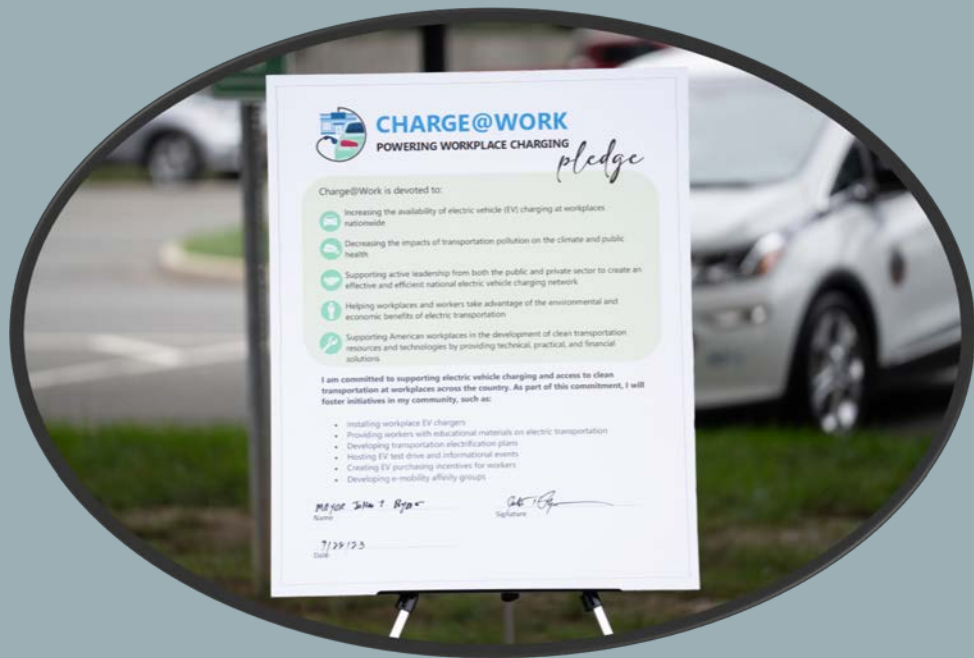
Legend  
● Biodiesel  
● CNG  
● Electric  
● Ethanol



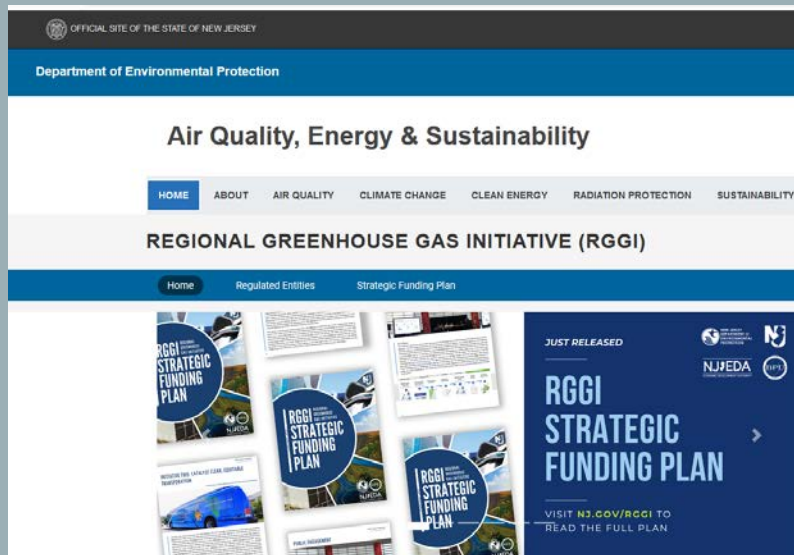
# FLEET STATION



# CHARGE@WORK PLEDGE EVENT





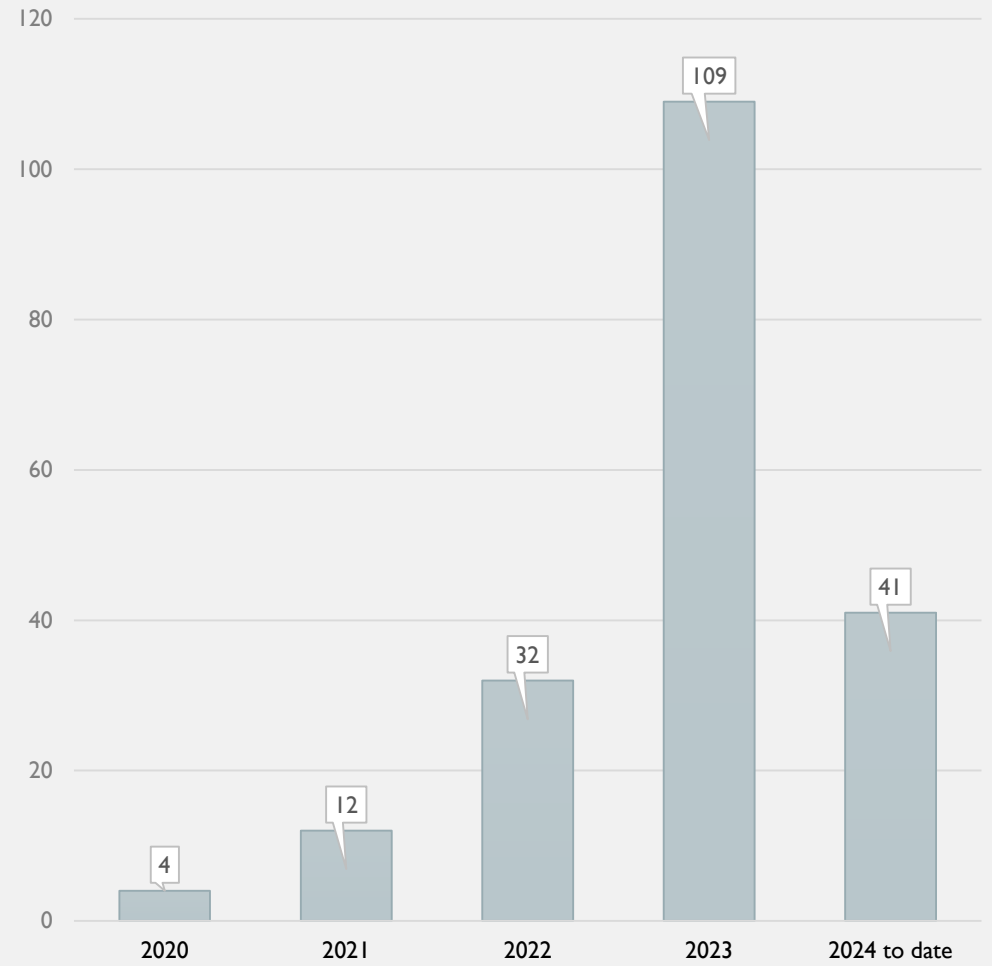


ELECTRIC VS. GASOLINE





### EV Chargers Permits Issued in Lawrence Township





IT'S ELECTRIC!!

Thank you

Mayor Patricia Hendricks Farmer

# SUSTAINABILITY SUMMIT



## Melissa Evanego

Bureau of Mobile Sources NJDEP  
*Melissa.Evanego@dep.nj.gov*

## Patricia Farmer Hendricks

Mayor, Lawrence Township  
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## Krishna Murthy

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## Nancy Quirk

Sustainable Jersey  
*quirkn@tcnj.edu*

## CEU SIGN OUT



### QR CODE INSTRUCTIONS:

1. Open the Camera app on your phone.
2. Hold your phone so that the QR code appears in view.
3. Tap the notification to open the link.
4. You **MUST** Sign out to receive CEU credits.

### WIFI INFORMATION: 2 Open Networks

1. **sustainablenj**: Ballroom, GS3, Nonprofit Exhibit area
2. **Bell\_Works\_Conf\_Center**: Bell Theatre & Conference