Environmental Commission Roundtable

Electric Vehicles
Electric vehicles, road trips & incentives

- Background: EV Road Trips
- Why Are EVs Great?!?
- EV Myth busting
- Montclair Initiatives & Financing
- Questions
Background: EV Road Trips

10 years of cross country EV road trips
- 6 years on a Zero electric motorcycle
- 4 years in a Mid Range Tesla Model 3

Co-Chair of the Montclair Environmental Commission

Sustainability Coordinator at MKA
- Teach AP Environmental Science

Certified LEED Green Associate

Plugstar Trainer for Plugin America

Featured in Kick Gas documentary
Why Electric Vehicles

1) Human carbon emissions are driving extreme climate change.

2) The only way to combat climate change is to stop burning fossil fuels.

3) Everyone must eliminate fossil fuel use by 2050 according to the IPCC.
   a) Cut fossil fuel use in half by 2030.

Extreme heat in 2021 breaks the famous Dust Bowl record from 1936 for hottest summer on record in the USA.

In 1936, we observed a hot blob on a relatively cool planet. Today, we have a hot blob on a warm planet.
Why Are Electric Vehicles Awesome?

Electric Vehicles:
- Fast
- Smooth (no explosions)
- Have 1-pedal driving
- Safer than gas or hybrids
- Less expensive to operate
- Quieter than gas cars
- Require less maintenance
- Better for the environment

Tesla's SUV Is So Fast It Beat an Italian Super Car...While Towing Another Car

Tesla Car destroys a Dodge Challenger Hellcat in a drag race! World Record
Myth Busting: EVs are worse for the environment

Charged using coal!
- There are no coal fired power plants in NJ
- Coal is less than 30% of US electricity and falling
- The grid is getting cleaner and renewable electricity is possible, can’t eliminate CO2 from gasoline.
Myth Busting: EVs are worse for the environment

It takes more resources to make an EV than a gas car!

- All lifecycle analyses show EVs better
Myth Busting: EVs are worse for the environment

Mining is bad!
- This is a copper mine

85% of Lithium is from brine pools in the deserts of South America.
Myth Busting: EVs catch fire

<table>
<thead>
<tr>
<th>Type of vehicle</th>
<th># fires per 100,000 sold*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hybrid</td>
<td>3,475</td>
</tr>
<tr>
<td>Internal Combustion Engine (ICE)</td>
<td>1,530</td>
</tr>
<tr>
<td>Electric Vehicle</td>
<td>25</td>
</tr>
</tbody>
</table>

The chance of injury in a crash were lower in an electric car than gas or diesel**.

*Source: AutoinsuranceEZ, January 21, 2022
** Source: National Highway Traffic Safety Administration
Myth Busting: Range is an issue

The average distance traveled per day is less than 50 miles (35mi/day).

Most EVs have a range greater than 200mi
Tesla Supercharger Map
Red-online, Gray-I visited, Green-not yet visited by competitor, Yellow-under construction, Blue-Permit

Electrify America charging map for non-Tesla EVs.

Tesla’s superchargers will be open to other vehicles eventually.
Charging an EV

- 95% of charging occurs at home
- How long does it take to charge? 7 seconds!

<table>
<thead>
<tr>
<th>AC Level 1</th>
<th>AC Level 2</th>
<th>DC Fast Charging</th>
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</thead>
<tbody>
<tr>
<td>(110 Volt)</td>
<td>(220 Volt)</td>
<td>(480 - 800 Volt)</td>
</tr>
<tr>
<td>J1772 Charge Port</td>
<td>J1772 Charge Port</td>
<td>J1772 Charge Port</td>
</tr>
</tbody>
</table>

- Home and Away
  - 4 - 5 Miles per Hour
  - ~ 40 miles overnight

- Home and Away
  - 12 - 35 Miles per Hour
  - ~ 250 miles overnight

- Away Only
  - Up to 20 Miles per Minute
Montclair EVs: Where we are now

Map: PlugShare.com

Green: Public Level 2 chargers

Orange: Public DC Fast Chargers

Blue: Residential Level 2 chargers offered to public

Good public charging available, room to improve
Montclair EVs: Current Projects

Climate Action Plan
- Whole town
- Residential is biggest carbon emitter
- Fleet Electrification

Municipal Fleet Electrification
- Grassroots
- Ordinance

https://www.electriphi.ai/insights/how-to-charge-an-electric-vehicle-fleet
Municipal Fleet Electrification - Grassroots

1) Get list of township vehicles
2) Create EV Buying Guide
3) Talk with each department
   a) Begin with a question
   b) EV Guide
   c) Incentive Guide

<table>
<thead>
<tr>
<th>DEPARTMENT</th>
<th>DEPT./DIV.</th>
<th>YEAR</th>
<th>MAKE</th>
<th>MODEL</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>Building</td>
<td>Building</td>
<td>2008</td>
<td>FORD</td>
<td>Escape</td>
<td>XLT 4WD</td>
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<tr>
<td>Building</td>
<td>Building</td>
<td>2019</td>
<td>FORD</td>
<td>Escape</td>
<td>SE 4WD</td>
</tr>
<tr>
<td>Building</td>
<td>Building</td>
<td>2019</td>
<td>FORD</td>
<td>Escape</td>
<td>SE 4WD</td>
</tr>
<tr>
<td>Building</td>
<td>Building</td>
<td>2007</td>
<td>FORD</td>
<td>Escape</td>
<td>4/wh dr SUV</td>
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<tr>
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<td>Building</td>
<td>2017</td>
<td>FORD</td>
<td>Escape</td>
<td>4 X 4</td>
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<tr>
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<td>Building</td>
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<td>FORD</td>
<td>Escape</td>
<td>5 X 4</td>
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<td>Code Enforcement</td>
<td>Code/Hag. Inspec.</td>
<td>2007</td>
<td>DODGE</td>
<td>Durango</td>
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<tr>
<td>Code Enforcement</td>
<td>Code/Hag. Inspec.</td>
<td>2018</td>
<td>FORD</td>
<td>Escape</td>
<td>4-DR</td>
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<td>Code/Hag. Inspec.</td>
<td>2003</td>
<td>FORD</td>
<td>Explorer</td>
<td>Red Baron</td>
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<td>Code/Hag. Inspec.</td>
<td>2008</td>
<td>FORD</td>
<td>Escape</td>
<td>HYBRID 4-DR</td>
</tr>
</tbody>
</table>
Municipal Fleet Electrification - Ordinance

1) Environmental Commission Writes Ordinance
   a) Use Model Ordinance from 2021
2) Submit to town council
3) Pass ordinance

AN ORDINANCE

AUTHORIZING AND ENCOURAGING

ELECTRIC VEHICLE

SUPPLY/SERVICE EQUIPMENT (EVSE) & MAKE-READY PARKING SPACES

[Note: Pursuant to P.L. 2021, c.171, all sections of this model ordinance become effective in each municipality upon its publication on the Department of Community Affairs’ internet website. Municipalities may make changes to the reasonable standards in the model ordinance as noted below through the normal ordinance amendment process. However, municipalities may not make changes to the legislatively mandated requirements in Sections C., D., and E.

This Ordinance sets forth procedures for the installation of Electric Vehicle Supply/Service Equipment (EVSE) and Make-Ready parking spaces and establishes associated regulations and other standards within the {name of municipality} ____________ of {name of county} ____________.}
Municipal Fleet Electrification - Funding

NJ DEP Drive Green Website
- Summary of State & Federal Incentives
- Bring incentives when you talk with department heads

New Jersey Electric Vehicle & Charging Infrastructure Incentives

<table>
<thead>
<tr>
<th>Program</th>
<th>Agency</th>
<th>Geographic Eligibility</th>
<th>Summary Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero Emission Vehicle Tax Exemption</td>
<td></td>
<td>Statewide</td>
<td>Sales Tax Exemption - New or used Zero Emission Vehicles (ZEVs) sold, from state sales and use tax in weight classes 1-8</td>
</tr>
<tr>
<td>Clean Fleet EV Incentive Program</td>
<td>BPU</td>
<td>Statewide</td>
<td>Purchase Incentive - State and local governments, entities, and schools Electric Vehicle (cap depends on population serve Pop. less than 20k: 2 vehicle maximum Pop. 20-50k: 5 vehicle maximum Pop. 50-100k: 7 vehicle maximum Pop. more than 100k: 10 vehicle maximum</td>
</tr>
<tr>
<td>Charge Up New Jersey</td>
<td>BPU</td>
<td>Statewide</td>
<td>Purchase or Lease Incentive for New Jersey Residents - New light-duty plug-in electric vehicles with a Manufacturer's Suggested Retail Price (MSRP) below $55k are eligible</td>
</tr>
</tbody>
</table>
**EV Buying - Financial Incentives - up to $11,500**

**Federal** - 2022 Inflation Reduction Act (IRA)
- $7,500 federal tax credit for vehicles whose final assembly is in USA
  - See [https://www.fueleconomy.gov/feg/taxevb.shtml](https://www.fueleconomy.gov/feg/taxevb.shtml) for qualifying vehicles
  - Sedans less than $55,000 MSRP
  - Pickups, vans, SUVs less than $80,000 MSRP.
  - Single Income cap: $150,000, HH: $225,000, Couple: $300,000

**New Jersey**
- No sales tax for any EV
- $4,000 for vehicles with a MSRP under $45,000,
- $2,000 for vehicles with a MSRP between $45,000 and $55,000.
- [https://chargeup.njcleanenergy.com/](https://chargeup.njcleanenergy.com/)

There were 3 types of DC Fast Chargers (DCFC), now moving to 2 types of DCFC.
How do you find a charger?

- [www.Plugshare.com](https://www.Plugshare.com) - most widely used, crowdsourced
- Vehicle navigation systems
  - Tesla, Kia, etc
- [www.chargepoint.com](https://www.chargepoint.com)
- [www.electrifyamerica.com](https://www.electrifyamerica.com)

https://electrek.co/2020/02/14/tesla-add-third-party-charging-stations-car-navigation/
Fun Stuff: EV Road Trips

2016 trip was 21,111 miles on a Zero SR
Collected all the lower 48 states, 8640 miles

2019 trip was 21,111 miles in a Tesla Model 3
Avg charge time: 12 min 18 seconds
THANKS!

ANY QUESTIONS?

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