Driving Out Pollution: Electrification and The Path to Low Carbon Transportation

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Luke Tonachel
Director, Clean Vehicles & Fuels Project
Clean Air and a Safe Climate Depend on Action in Transportation

United States


New York State

Figure S-2. 2014 CO₂ Emissions from Fuel Combustion by End Use Sector (Includes Net Imports of Electricity)

CO₂ = carbon dioxide; GHG = greenhouse gas.

On-road Vehicles Contribute >80% of Transportation GHG Emissions

Electric Vehicles: Cleaner Today, Cleaner Tomorrow

Source: EPRI-NRDC *Environmental Assessment of a Full Electric Transportation Portfolio*, 2015. Relative vehicle emissions of plug-in electric vehicle (PEV) and conventional vehicle (CV) in the passenger car class for 2015 and 2050.

* PEV emissions include battery-manufacturing emissions and full-fuel-cycle emissions for electricity and gasoline, averaged over a 150,000-mile vehicle lifetime. The utility factor for the PEV is 87%.
Electric Utilities Can Help Accelerate Electric Vehicle Adoption

- Infrastructure
- Incentives for grid services
- Information
Electric Vehicles Can Benefit All Utility Customers

NPV Cumulative Net Benefits from Plug-in Vehicles in New York
(80x50 Scenario: Off-peak Charging - Low Carbon Electricity)

$ billions

2050 Cumulative Benefits
(2015$ billions)

<table>
<thead>
<tr>
<th>EV Owner</th>
<th>Utility Customer</th>
<th>GHG</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>34.1</td>
<td>24.3</td>
<td>17.5</td>
<td>75.9</td>
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</tbody>
</table>

Grid Impacts of EVs

- Only about 0.2% of EVs are triggered infrastructure upgrades.

- EV-related grid maintenance spending was 0.01% of annual distribution system maintenance costs.

Utility Policy Roadmap for Transportation Electrification

Three phases:

1. Removing barriers to adoption, ensuring grid reliability and maximizing fuel cost savings.
2. Closing the charging infrastructure gap and promoting equity.
3. Capturing the value of grid services and integrating renewable energy.
Utility Programs to Close the Charging Infrastructure Gap and Promote Equity

<table>
<thead>
<tr>
<th></th>
<th>California</th>
<th>Massachusetts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utility</strong></td>
<td>SCE</td>
<td>Eversource</td>
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<tr>
<td></td>
<td>PG&amp;E</td>
<td>National Grid</td>
</tr>
<tr>
<td><strong>Status</strong></td>
<td>Approved</td>
<td>Approved</td>
</tr>
<tr>
<td></td>
<td>Approved</td>
<td>Proposed</td>
</tr>
<tr>
<td><strong>Investment</strong></td>
<td>$45M, 3 yrs</td>
<td>$55M, 5 yrs</td>
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<tr>
<td></td>
<td>$130M, 3 yrs</td>
<td>$24M, 3 yrs</td>
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<tr>
<td></td>
<td>$22M, 12-18 months</td>
<td></td>
</tr>
<tr>
<td><strong>Charging Ports</strong></td>
<td>3,500</td>
<td>3,500-4,500 (includes ~65 DC Fast)</td>
</tr>
<tr>
<td></td>
<td>7,500</td>
<td>1,200+ (includes 40-80 DC Fast)</td>
</tr>
<tr>
<td></td>
<td>1,500</td>
<td></td>
</tr>
<tr>
<td><strong>Disadvantaged Communities Deployment</strong></td>
<td>10% commitment</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>15% commitment, 20% goal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10% commitment</td>
<td></td>
</tr>
</tbody>
</table>

Efforts also underway in Maryland, New Jersey, Pennsylvania, and Rhode Island to establish utility infrastructure programs.
California Utilities Propose $1 Billion in New Transportation Electrification Markets

Category investments shown in $ millions.

- Residential Infrastructure, $230
- On-road Medium- and Heavy-Duty Infrastructure, $779
- Public DC Fast Charging, $30
- Off-road Infrastructure, $13
- Taxi, Ridesharing, $8
- Education, Outreach, $4
Tremendous Growth in New York Infrastructure Needed

= 2000 Public and Workplace Charging Ports

Today 2025
THANK YOU

Luke Tonachel
Ltonachel@nrdc.org
NRDC