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



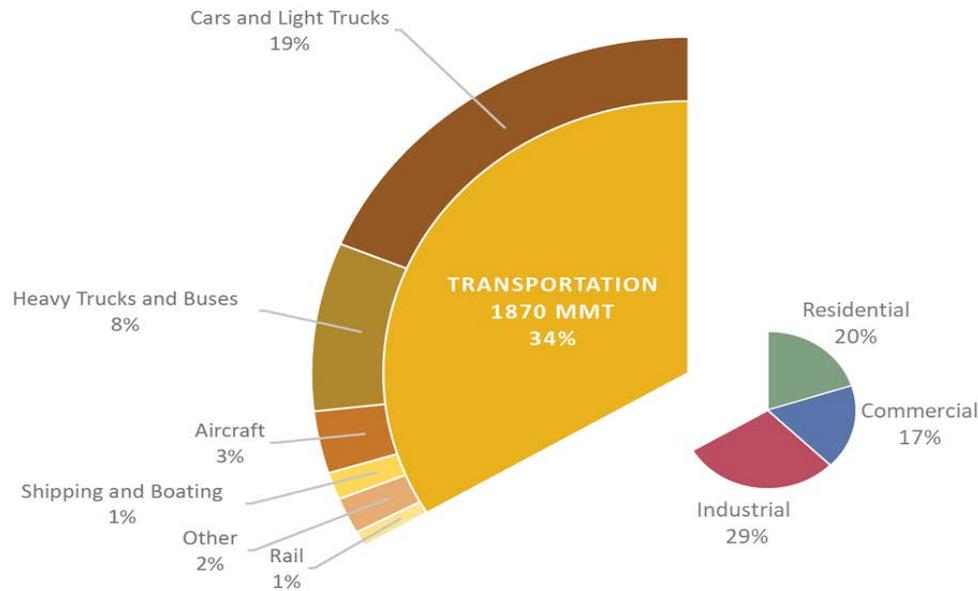
March 27, 2018

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# Clean Air and a Safe Climate Depend on Action in Transportation

## United States

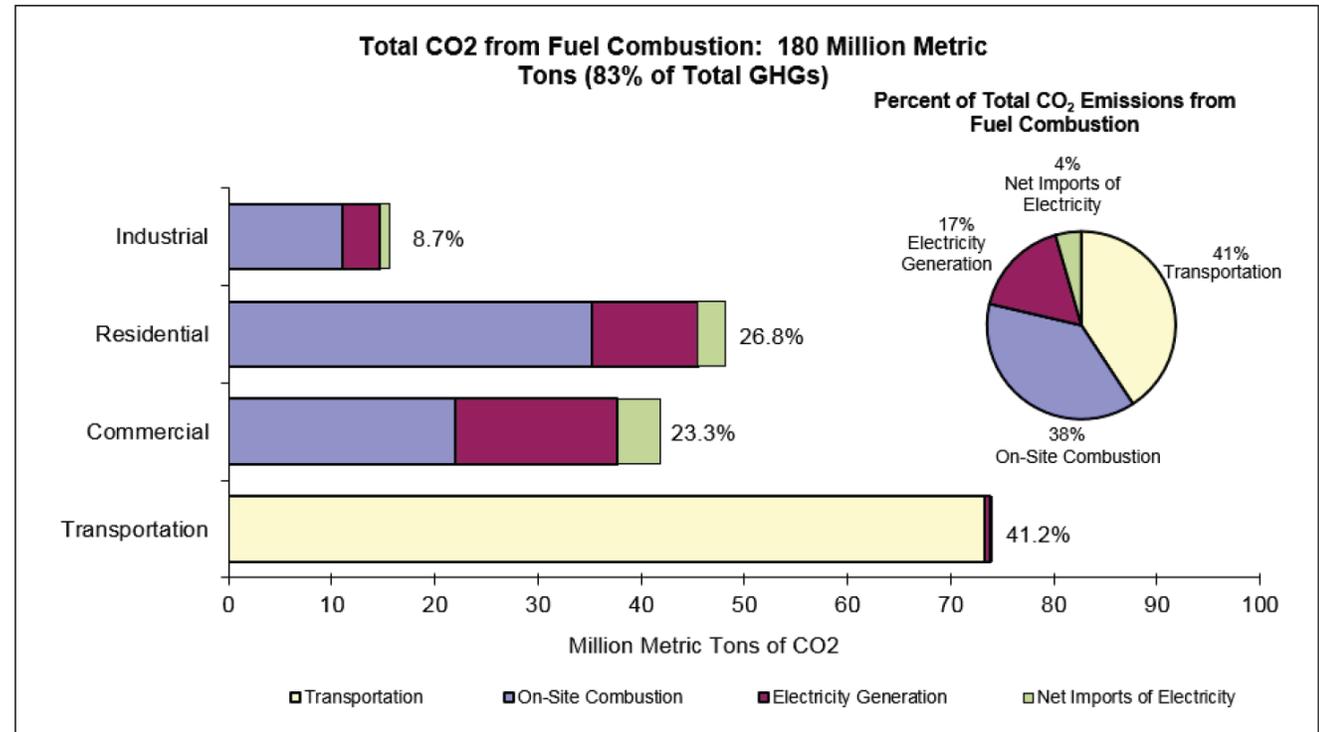


Source: The White House, *United States Mid-Century Strategy for Deep Decarbonization*, November 2016.

## New York State

Figure S-2. 2014 CO<sub>2</sub> Emissions from Fuel Combustion by End Use Sector (Includes Net Imports of Electricity)

CO<sub>2</sub> = carbon dioxide; GHG = greenhouse gas.

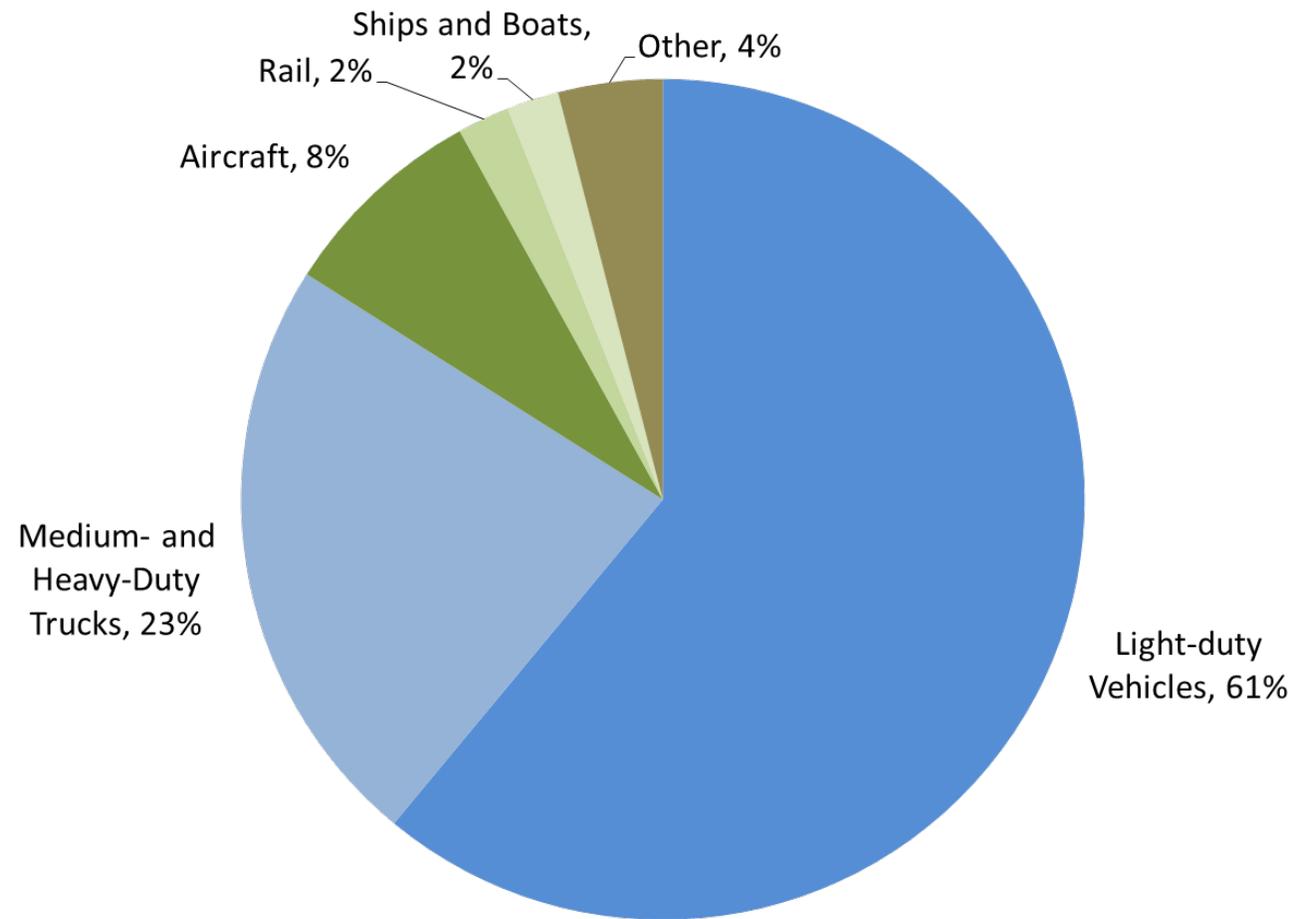


Source: *New York State Greenhouse Gas Inventory: 1990 – 2014: Final Report*, February 2017.

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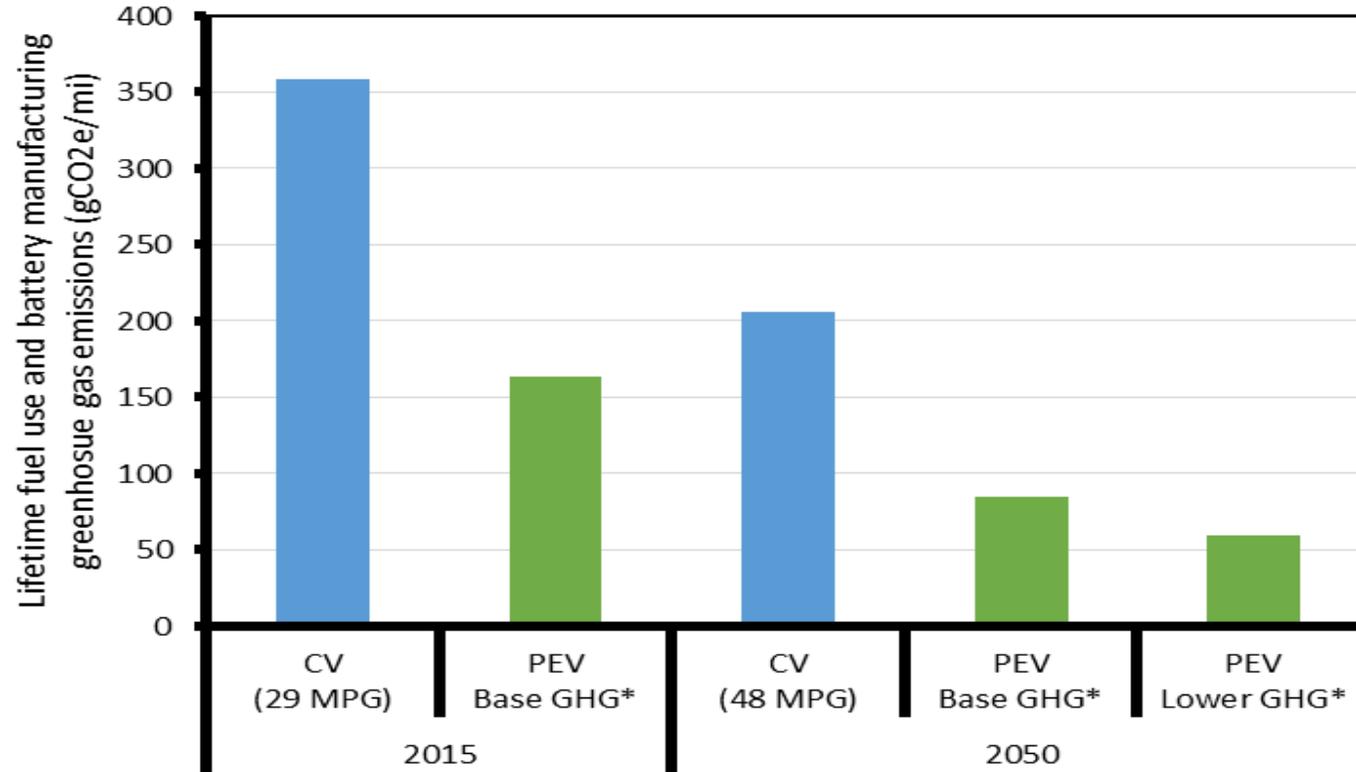
# On-road Vehicles Contribute >80% of Transportation GHG Emissions

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Data source: U.S. EPA, "Fast Facts: U.S. Transportation Sector Greenhouse Gas Emissions 1990-2014", June 2016.

# Electric Vehicles: Cleaner Today, Cleaner Tomorrow



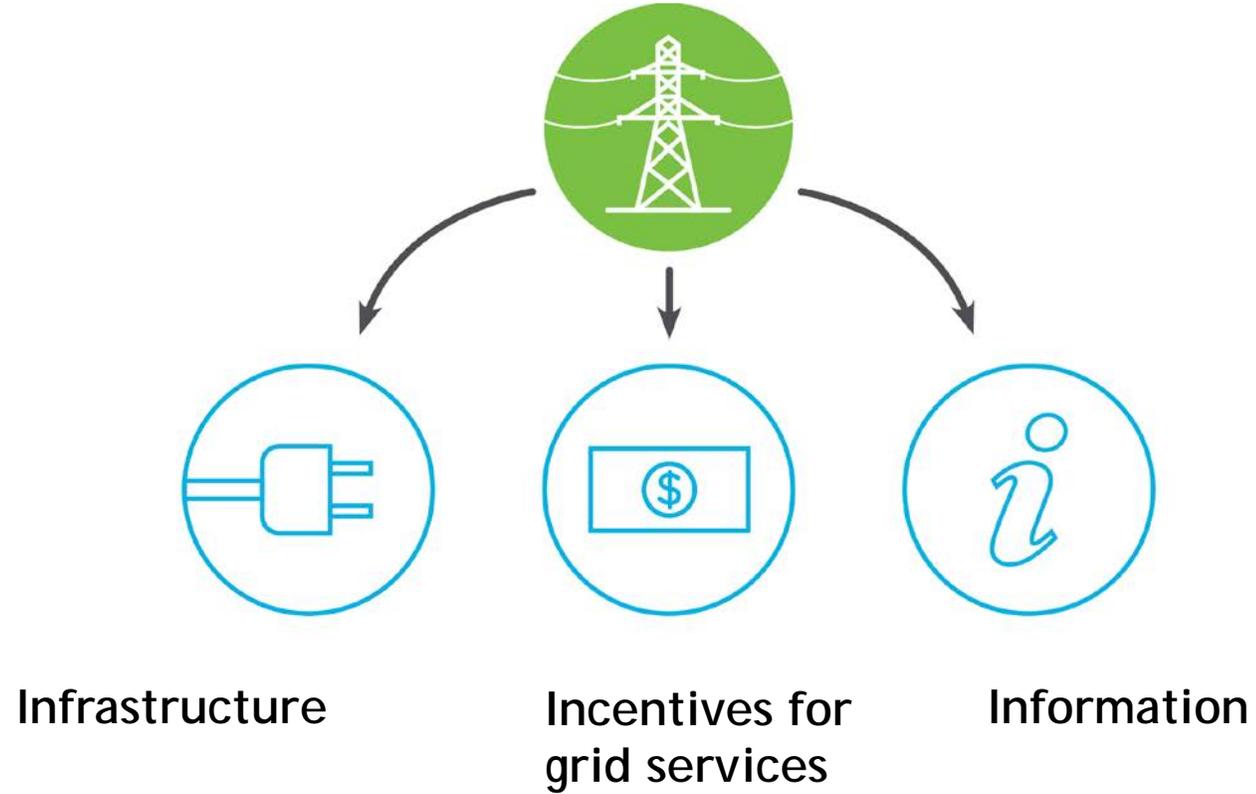
Source: EPRI-NRDC *Environmental Assessment of a Full Electric Transportation Portfolio*, 2015. Relative vehicle emissions of plug-in electric vehicle (PEV) and conventional vehicle (CV) in the passenger car class for 2015 and 2050.

\* 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%.

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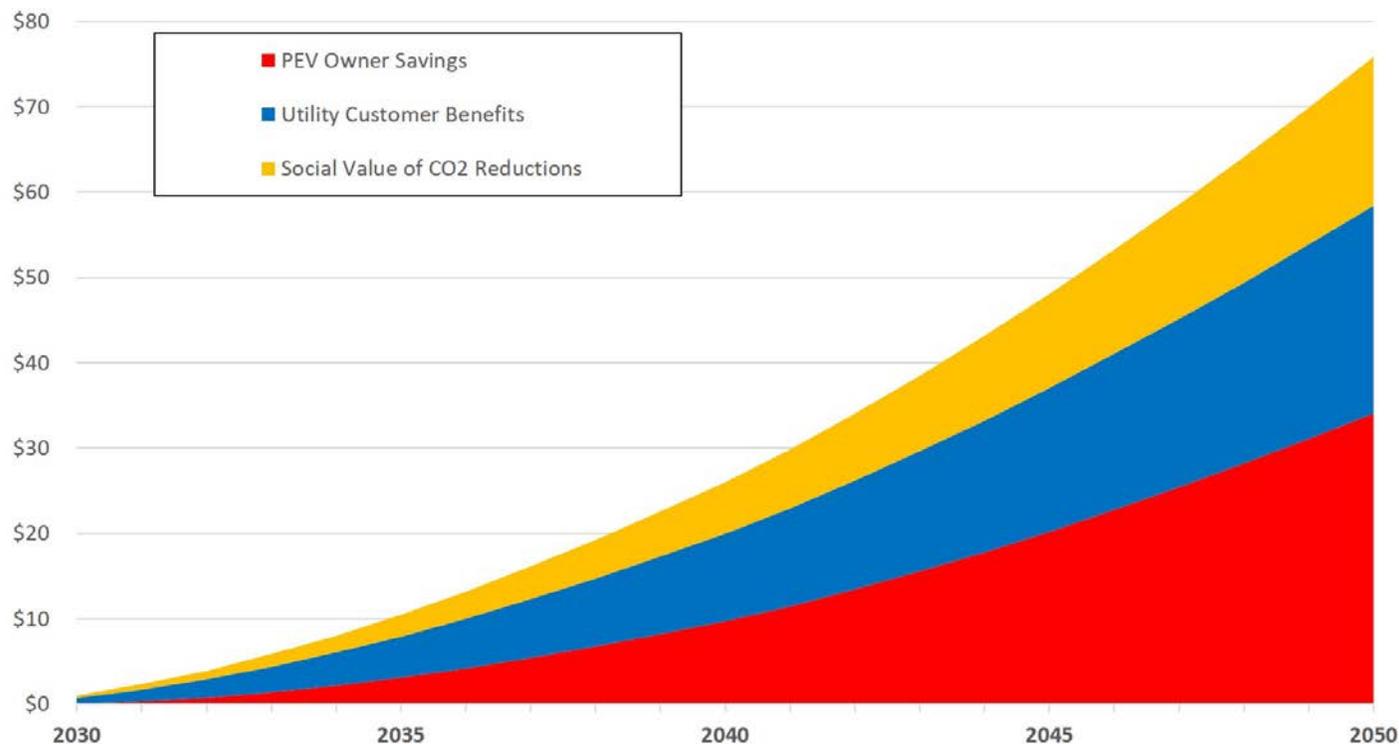
# Electric Utilities Can Help Accelerate Electric Vehicle Adoption

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# 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

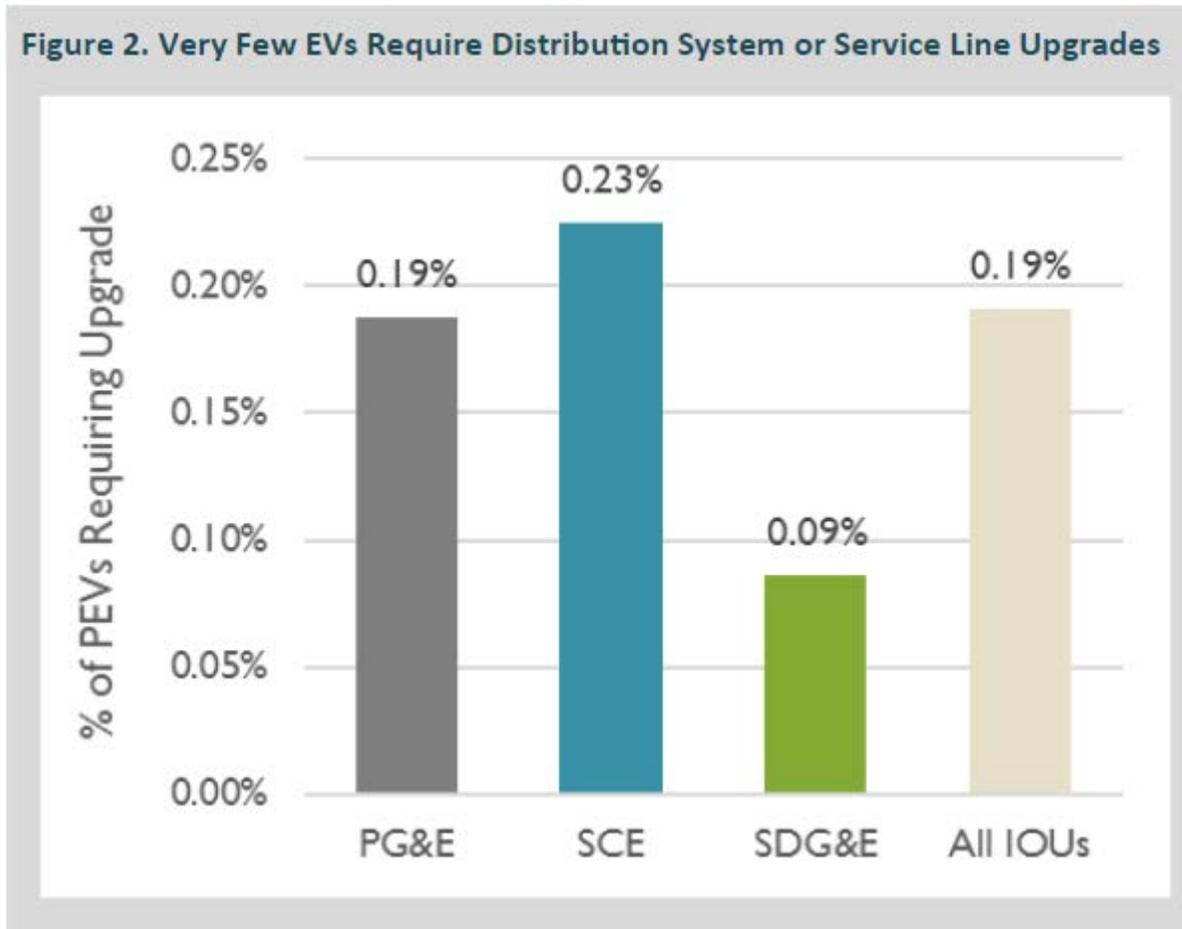


## 2050 Cumulative Benefits (2015\$ billions)

| EV Owner | Utility Customer | GHG  | Total |
|----------|------------------|------|-------|
| 34.1     | 24.3             | 17.5 | 75.9  |

Source: MJ Bradley & Associates. New York and other state reports available [here](#).

## 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.

Source: Synapse Energy Economics, “Electric Vehicles Are Not Crashing the Grid: Lessons from California”, November 20 17.

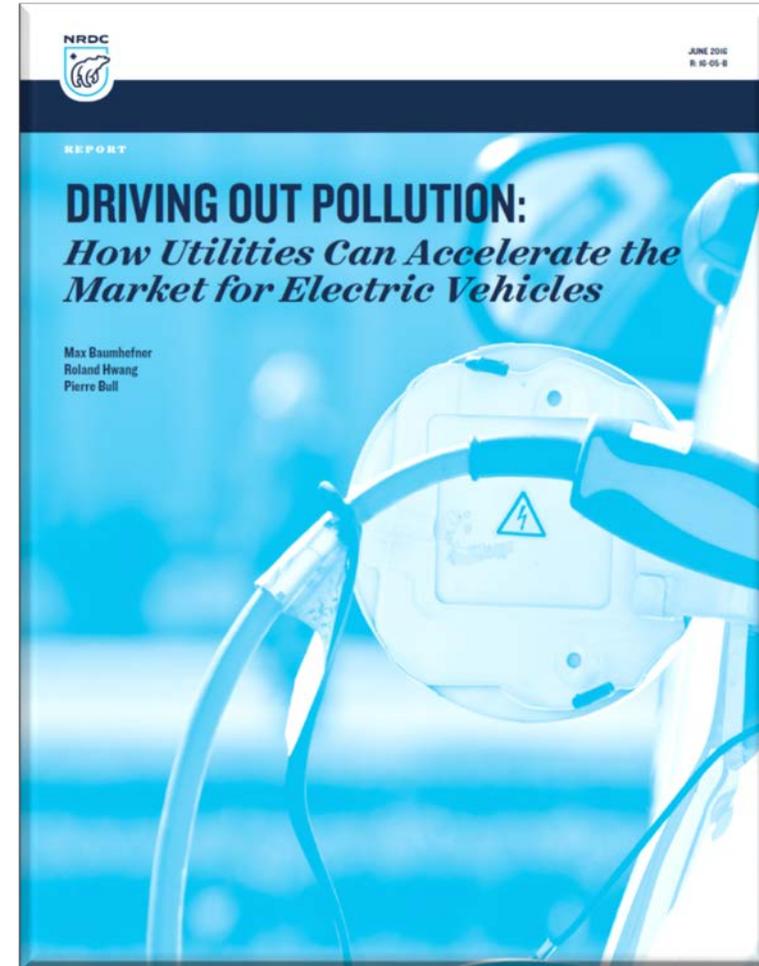
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# Utility Policy Roadmap for Transportation Electrification

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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.

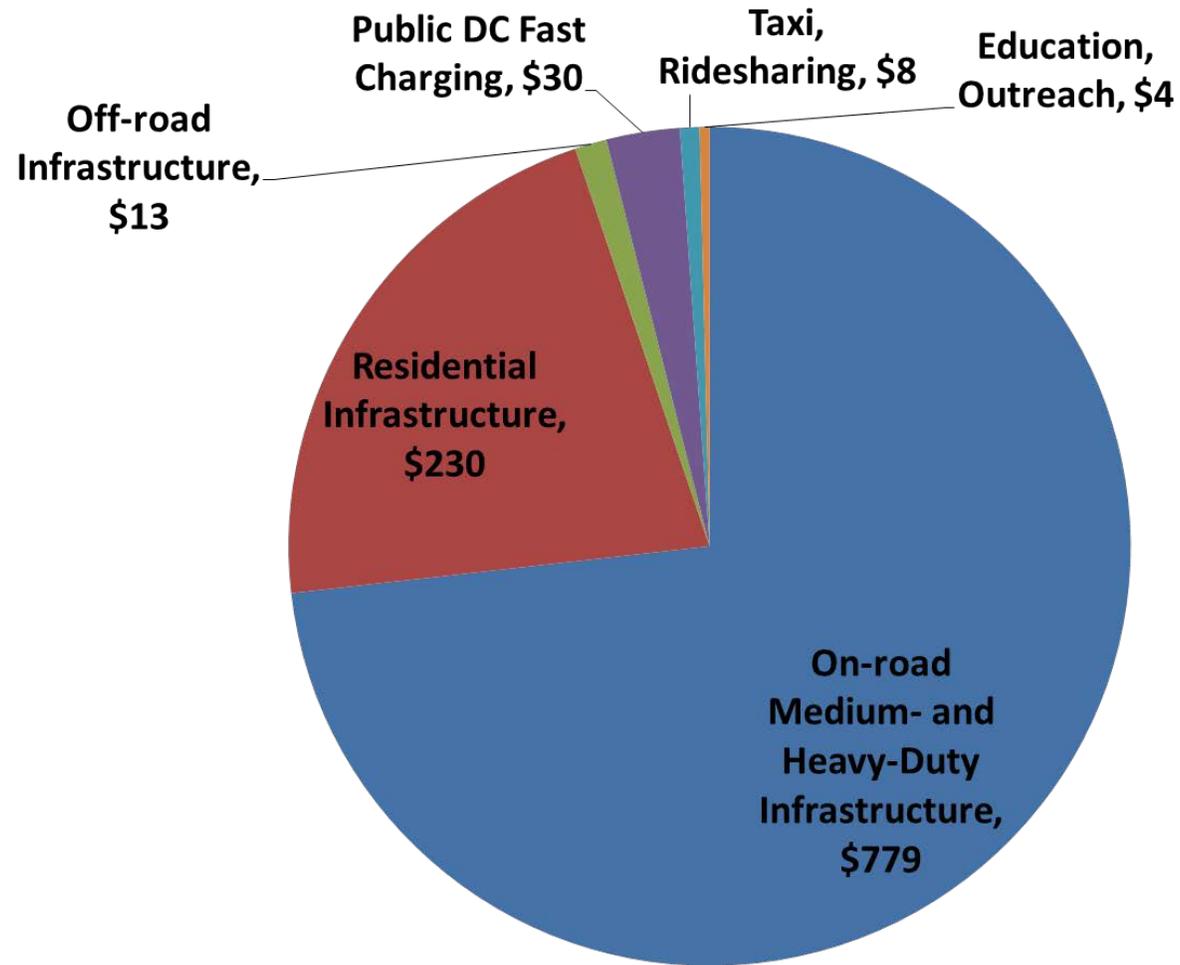


## Utility Programs to Close the Charging Infrastructure Gap and Promote Equity

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

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.

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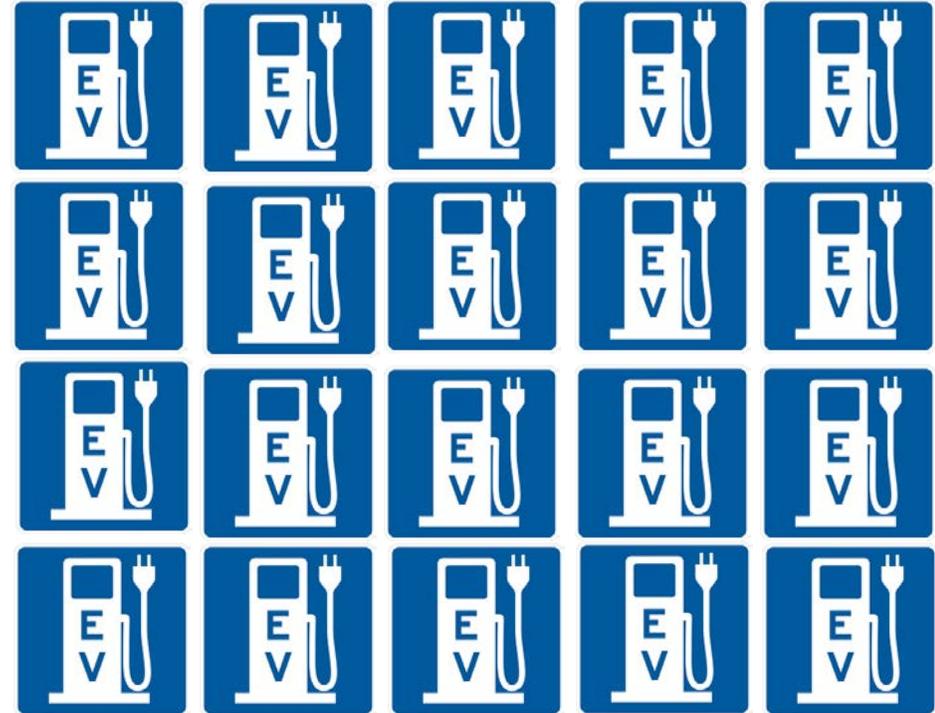
# Tremendous Growth in New York Infrastructure Needed

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**= 2000 Public  
and Workplac  
e Charging P  
orts**

**Today**



**2025**

THANK YOU



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***NRDC***