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Roadmap for Transportation Electrification: Options for Lawmakers

Webinar

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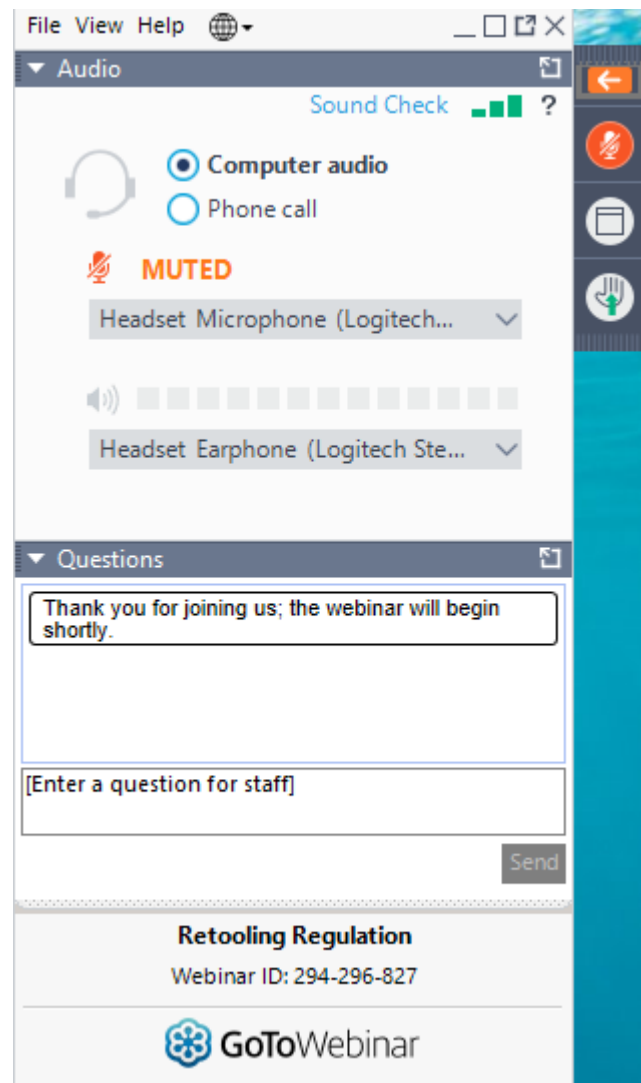


**Moderator:
Clara Summers**



Questions?

Please send questions
through the Questions
pane



EV 101: Terms

- **BEV:** Battery electric vehicle
- **PHEV:** Plug-in hybrid vehicle
- **Levels of Charging:**
 - **Level 1** charger (120 volts) can replace about 4-5 miles of driving each hour of charging.
 - **Level 2** charger (220-240 volts) is faster, delivering about 15-25 miles of range per hour.
 - **DC Fast Charge** (480 volts) allows for the most rapid recharging, adding 50 to 170 miles of range in 30 minutes (depending on the power output of the station and vehicle capacity).
- **EVSE:** Electric vehicle supply equipment, i.e., EV charging equipment
- **ZEV:** Zero-emissions vehicle

Realizing the Benefits of Electrified Transportation for States and Citizens



**IMPROVE PUBLIC
HEALTH**



**SAVE
CONSUMERS
MONEY**



CREATE JOBS



**ENERGY INDEPENDENCE
AND NATIONAL SECURITY
BENEFITS**

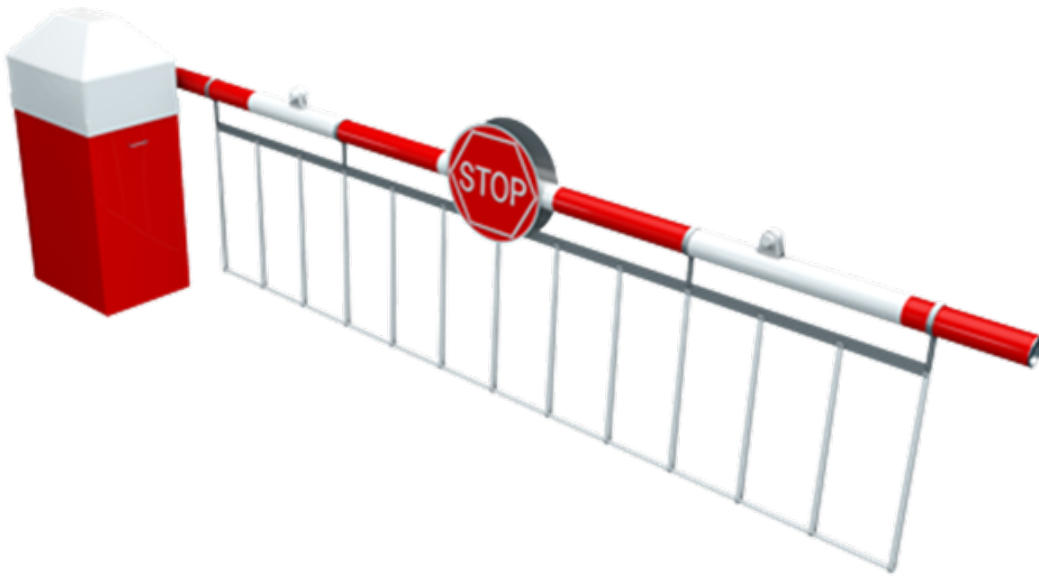


**CLIMATE
CHANGE
MITIGATION**



**ELECTRICITY
SYSTEM
BENEFITS**

Need to Act Now to Remove Barriers



Electrifying transportation offers a variety of advantages to states, but barriers to EV development mean that state legislative action is needed to realize the greatest benefits and avoid pitfalls.

Roadmap for Electric Transportation: Policy Guide

Roadmap for Electric Transportation

- Fact sheet
- Policy guide
- Legislative options from states
- PowerPoint slides
- Online at:
raponline.org/EV-roadmap

Action Plan for Electrification of Transportation



**Plan Your
Destination**



**Remove
Roadblocks**

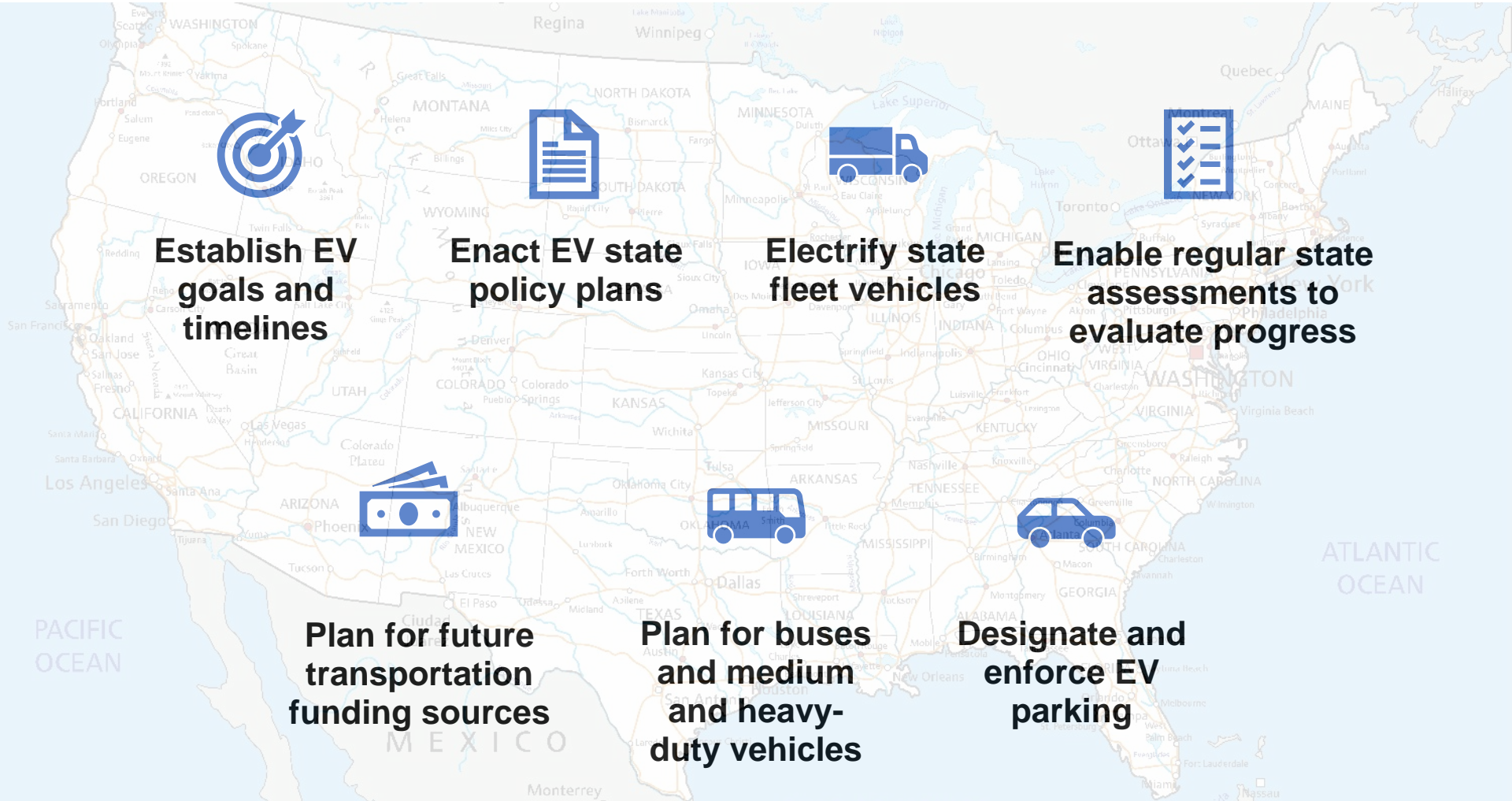


**Provide
Incentives
for EVs**



**Rev Up
Regulators:
Empower and
Guide Them**

Plan Your Destination



State Planning Options

Comprehensive plans

- Simple
- Phased

Narrower planning provisions

- Regional transportation plan (Washington)
- Sustainable freight plan (California)
- Statewide charging infrastructure plan (New Jersey)
- Essential public charging network (New Jersey, Florida)

Essential Public Charging Network: New Jersey

- Provide sufficient geographic coverage to ensure that most EV drivers will have access
- Not all the charging that will eventually be required
- Meant to:
 - address critical unmet needs of the early market
 - stimulate accelerated EV adoption
 - seed the market for long term growth



Access to Electric Transportation

Legislative opportunities to ensure access for all, including low-income, rural and disadvantaged communities, requires:

- Robust stakeholder engagement – ex. New Jersey
- Explicit goals – ex. New Jersey, California
- Assessments of progress – ex Oregon, California
- Equitable program participation – ex. New Jersey
- Targeted financial incentives – ex. Maine
- Study the barriers – ex. California
- Guidelines for access – ex. New Jersey, Colorado

Provide Incentives for EVs



**Increase attractiveness
of EVs**



**Make incentives
durable**



**Make incentives
simple and transparent**

Efficiency Maine EV Incentive Program

- Base rebate of \$2000 for BEV, \$1000 for PHEV
- Low-income enhanced rebates of an additional \$1000 for BEV, and an additional \$500 for PHEV
 - Must have qualified for Low-Income Home Energy Assistance Program in past 12 months
- Vehicle purchase price must be under \$50,000
- Qualified dealers directly offer rebate – “cash on the hood” – and get reimbursed



Charging Station Incentives in New York

- Charge Ready NY – NYSERDA
 - Rebate of up to \$4,000 per charging port
 - Level 2 EV charging stations at public parking facilities, workplaces, and multifamily apartment buildings
- State tax credit
 - The lesser of \$5,000 or 50% of the cost of property
 - Nonrefundable
- NYSDEC ZEV Infrastructure Grant Program for municipalities
 - Additional support for public charging



High Occupancy Vehicle Lane Access



- Arizona: Requires alternative fuel vehicle license plate
 - Access to HOV lanes regardless of passenger number
- Georgia: Requires alternative fuel vehicle license plate
 - Access to HOV lanes regardless of passenger number
 - Toll-free access to I-85 express lane
- Maryland: Requires special permit for plug-in electric vehicles
 - Access to HOV lanes regardless of passenger number

Remove Roadblocks



**Benefit all of society,
including rural and
low-income**



Interoperability



**Ensure charging
infrastructure and
parking is available**



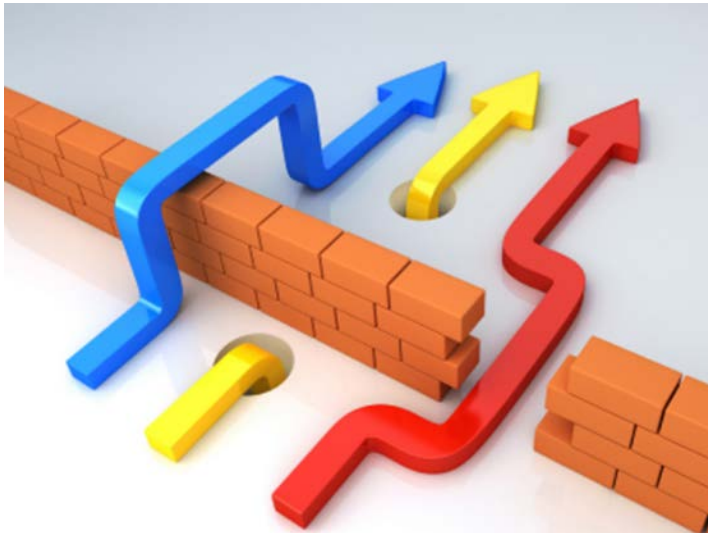
**Revise building
codes to provide for
an electrified future**

Removing Roadblocks: Building Codes



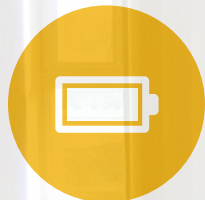
- Home charging, most common practice in US.
- 30% of housing stock is comprised of structures with 3+ dwelling units.
- Legislation could enable:
 - An update to multi-unit, and commercial bldg. codes to accommodate EV charging.
 - Allowing the addition of charging points to existing garages for renters.
 - The “right to charge” which make it harder for a property management to prevent residents from installing charging stations when certain conditions are met.

Removing Roadblocks: Interoperability



- Standardizing practices between charging companies makes their networks more accessible to EV owners and helps promote EV adoption.
- EV charging equipment interoperability standards generally fall into three categories:
 - Physical connection between the EVSE and vehicle;
 - Billing and payment systems; and
 - Data and communications protocols (*i.e.*, network interoperability).

Rev Up Regulators: Guide and Empower Them



Clarify status of EV charging station owners and operators



Ensure integrated planning processes include EVs



Ensure smart rate design for EVs



Decide on utility involvement in providing EV infrastructure

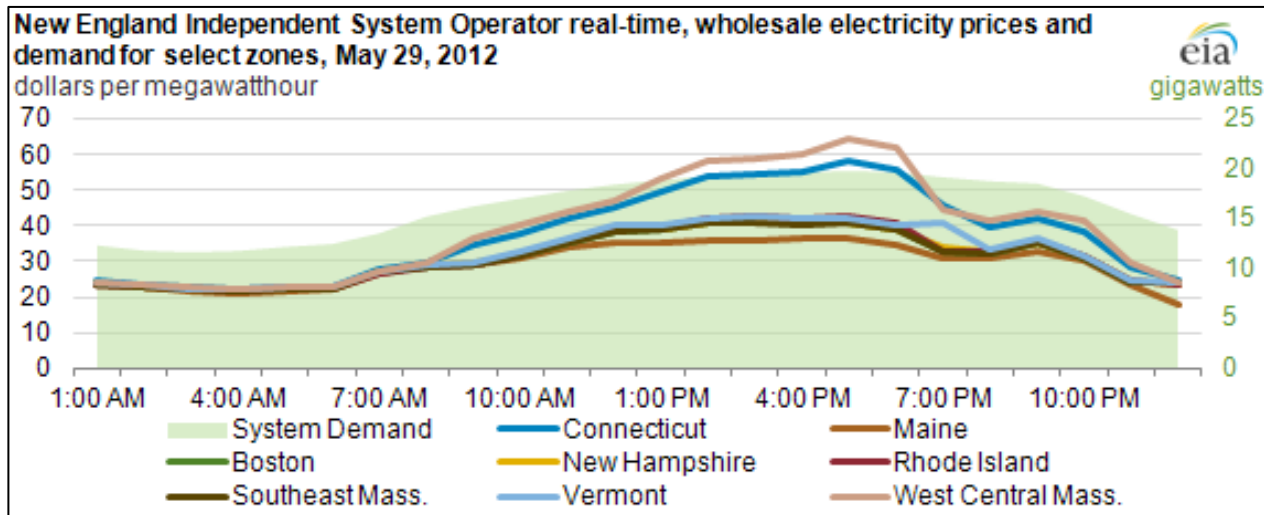


Consider performance-based regulatory mechanisms for utility EV programs



Address EVSE cost-recovery

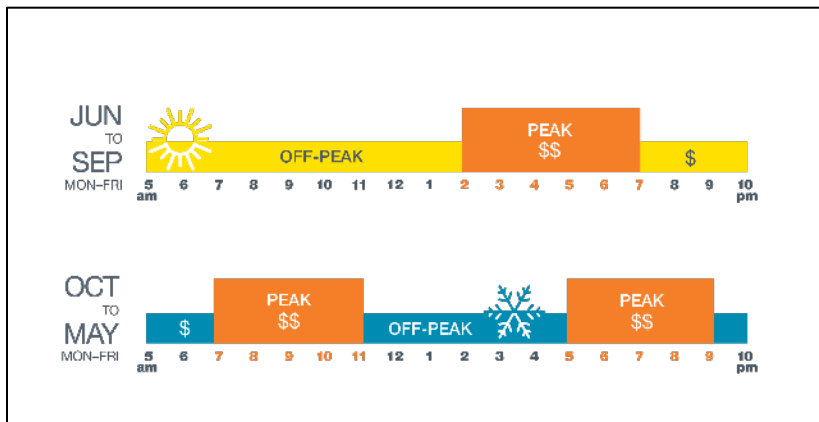
EV Rate Design Options: Revealing Value, and Saving Money, at Different Times



- EV charging can take advantage of the time-varying costs of electricity through time-varying prices:
 - Homes and businesses
 - Time-of-use rates for all electric service
 - EV-only TOU or other rate structures (e.g., managed charging)
 - Transit bus fleets
 - EV charging stations

Time-Varying Prices

- Some benefits:
 - They give consumers incentives to minimize their costs and optimize the use of the grid, to be flexible in their usage
 - EV charging offers an opportunity to address legacy problems in rate design
 - Flat, non-time-varying energy charges, which don't reflect the underlying time- and, in some contexts, location-varying nature of system costs
 - Demand charges, which also fail to reflect the time-varying nature of costs, especially those that relate to system peaks

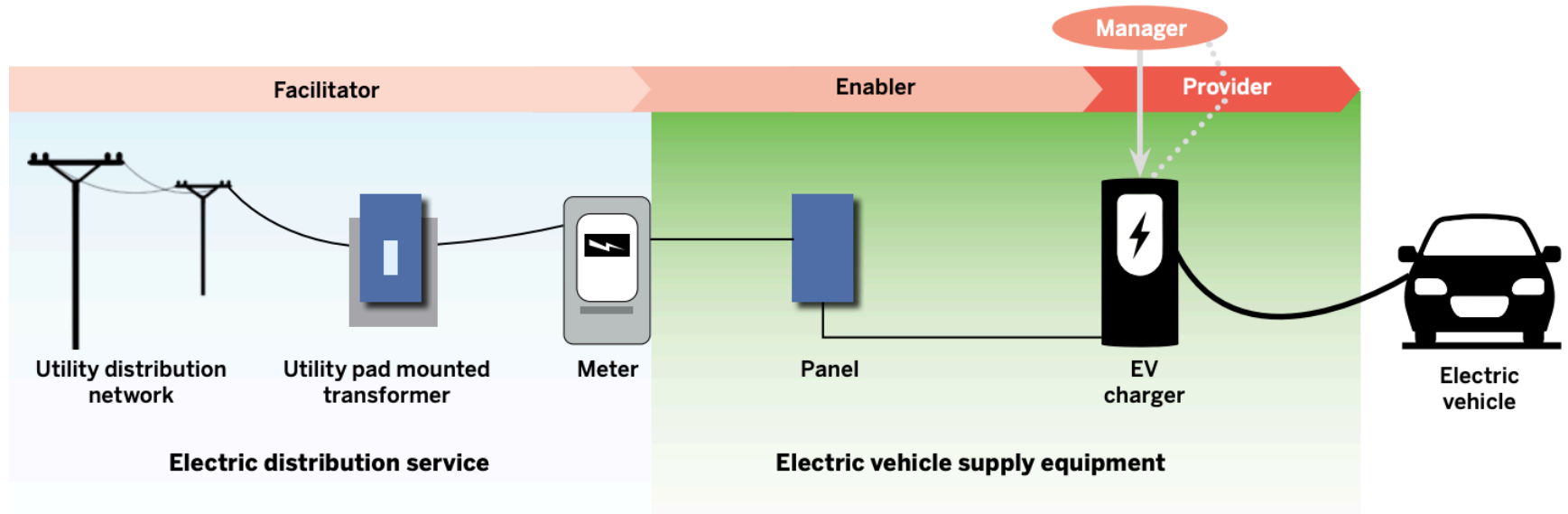


Baltimore Gas & Electric, Seasonal TOU Residential EV Rate

Green Mountain Power, EV Rate Options

	<i>Customer Charge</i>	<i>Energy Charge, all hours</i>	<i>Energy Charge, off peak</i>	<i>Energy Charge, on peak</i>
Rate 1 Residential	\$0.492/day	\$0.16859/kWh		
Rate 22: Residential Seasonal TOU	\$0.651/day		\$0.11411/kWh	\$0.26711/kWh
Rate 72: EV Off-Peak, Controlled			\$0.13343/kWh	\$0.68604/kWh
Rate 74: EV TOU			\$0.12831/kWh	\$0.16859/kWh

Utility Involvement in EV Charging



Sources: Base illustration based on California Public Utilities Commission, Application 15-02-009, Proposed Decision of ALJ Farrar, Mailed November 14, 2016. Roles drawn from Nelder, C., Newcomb, J., and Fitzgerald, G. (2016). *Electric Vehicles as Distributed Energy Resources*; and Advanced Energy Economy. (2018). *EVs 101: A Regulatory Plan for America's Electric Transportation Future*

Acting Now on Electrified Transportation Will Realize Benefits for States and Citizens



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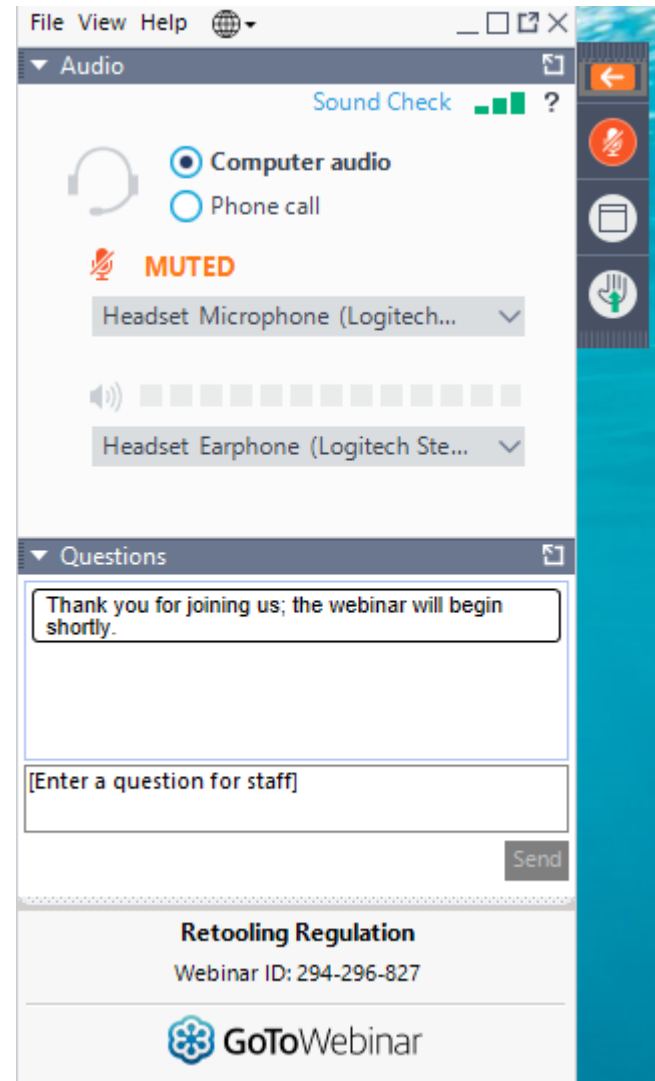
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About RAP

The Regulatory Assistance Project (RAP)[®] is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org

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