House Committee on Transportation Policy

Electric Vehicles 101

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FORTH

Where we come from:

Drive Oregon
Innovation in Electric Mobility

Nonprofit (501c6 & 501c3)

Established: 2011

Mission is to grow the electric vehicle industry and promote electric transportation in Oregon

Funded by Oregon Innovation Council (state lottery) and member companies

Membership 120+ companies, utilities, local governments, other stakeholders

Who we are now:

Nonprofit (501c6 & 501c3)

Mission: Forth is transforming the way we get around. Through innovation, demonstration projects, advocacy and engagement, we are advancing electric, smart, and shared transportation in the Pacific Northwest and beyond.

Funded by grants, member companies, and EV Roadmap—our annual conference

Membership 120+ companies, utilities, local governments, other stakeholders

Electric Vehicle Types

Battery Electric Vehicle (BEV):

- 100% electric, completely battery powered
- Never go to a gas station
- Ex: Chevy Bolt (pictured), Nissan LEAF
- Good for less than 80 miles per day

Plug-in Hybrid Vehicle (PHEV)

- Both electric and gasoline powered
- Plug-in to recharge, fill tank when needed
- Ex: Prius Prime (pictured), Ford C-Max Energi
- Good for lack of electrical infrastructure

Electric Extended Range Vehicle (EERV)

- Primarily electric, but has gasoline generator to recharge battery
- Ex: Chevy Volt, BMW i3 Rex (pictured)
- Good for more than 100 miles per day

Available Models





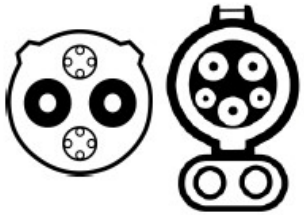








Types of Charging

	TYPE	POWER RATING	RANGE ADDED	PROS	CONS
	LEVEL I	1.4 kW/HR	3-5 miles per hour	·NO INFRASTRUCTURE COSTS ·GOOD FOR LONG DWELL TIMES ·GOOD FOR PLUG-IN HYBRIDS ·STANDARDIZED CHARGE PORT	·SLOW FOR FULL BATTERY ELECTRIC EVS
	LEVEL II	3.3 kW/HR 6.6kW/HR 7.7kW/HR 10kW/HR	12-40 miles per hour	·FASTER ·GOOD FOR FULL BATTERY ELECTRIC HOME CHARGING ·STANDARDIZED CHARGE PORT	·CAN BE EXPENSIVE FOR OLDER BUILDINGS ·MUST HAVE ROOM ON YOUR PANEL FOR ANOTHER 240V OUTLET
	LEVEL III (DC Fast Charging)	25kW/HR 50kW/HR 100kW/HR 150kW/HR	35-100 miles per hour (more in the future with 100kW+)	·THE QUICKEST FORM OF CHARGING ·BYPASSES ON BOARD CHARGING ·GOOD FOR ROAD TRIPS AND LONG DRIVES	·NOT AVAILABLE AT HOME ·3 DIFFERENT STANDARDS ·LESS INFRASTRUCTURE ·EXPENSIVE DUE TO STRAIN ON THE GRID

What do the EV Chargers look like?

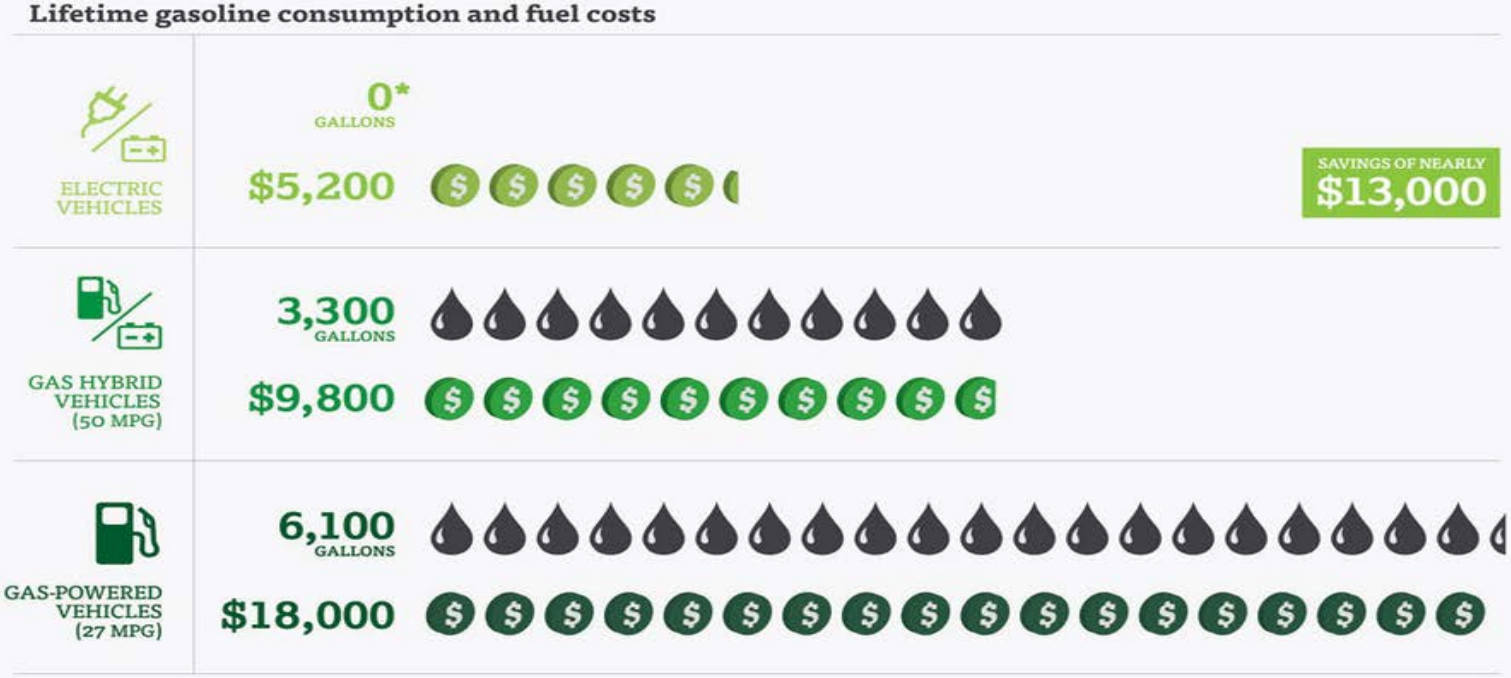
Level I

Level II

DC Fast Charger

Fuel Consumption Comparison

Electric vehicles **slash** oil consumption and cost thousands of dollars **less** to fuel compared with gasoline vehicles.

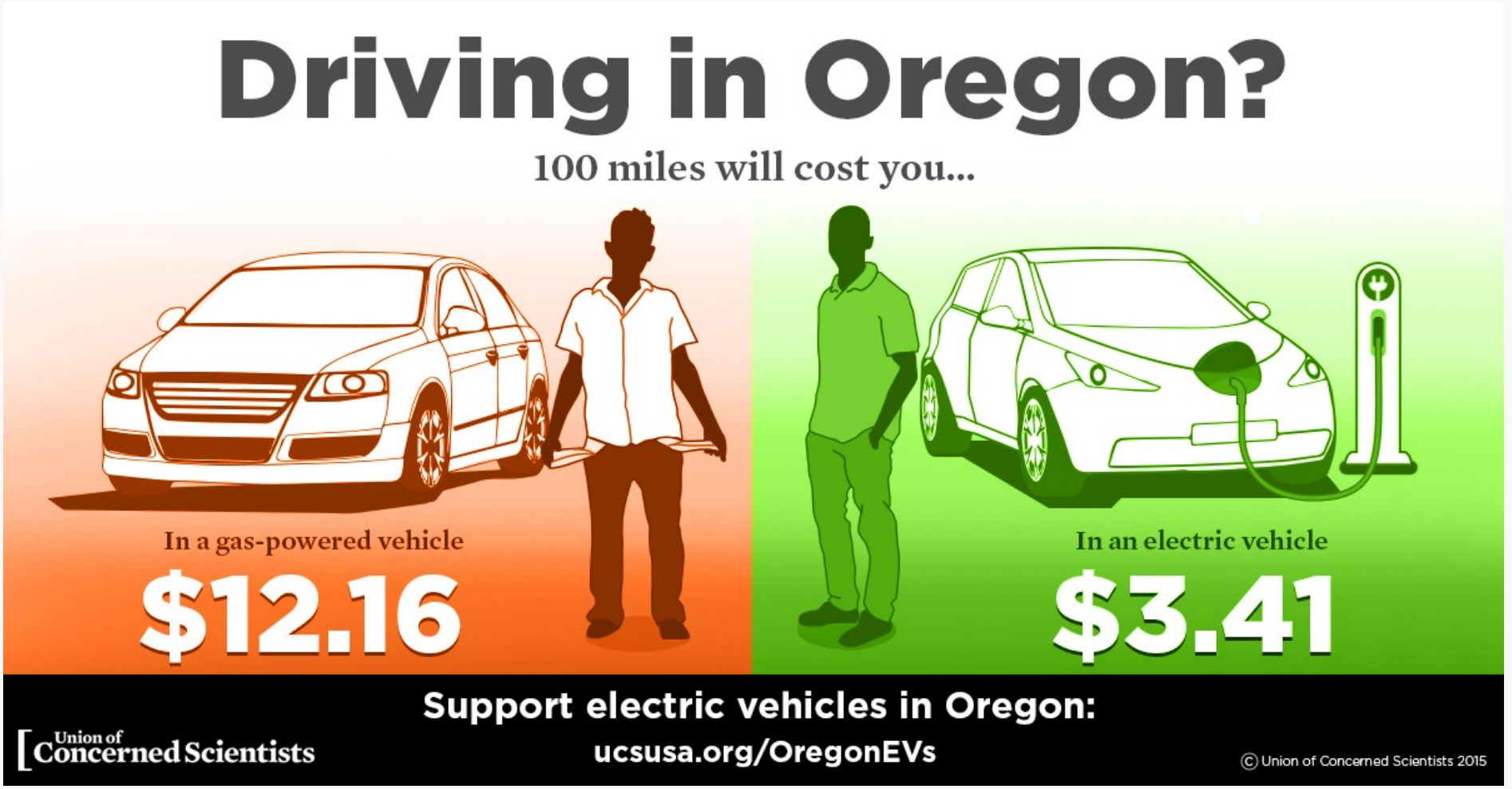


*Electric vehicles consume no gasoline and contribute very little to oil consumption, since less than 1 percent of the electricity in the U.S. is generated with petroleum.

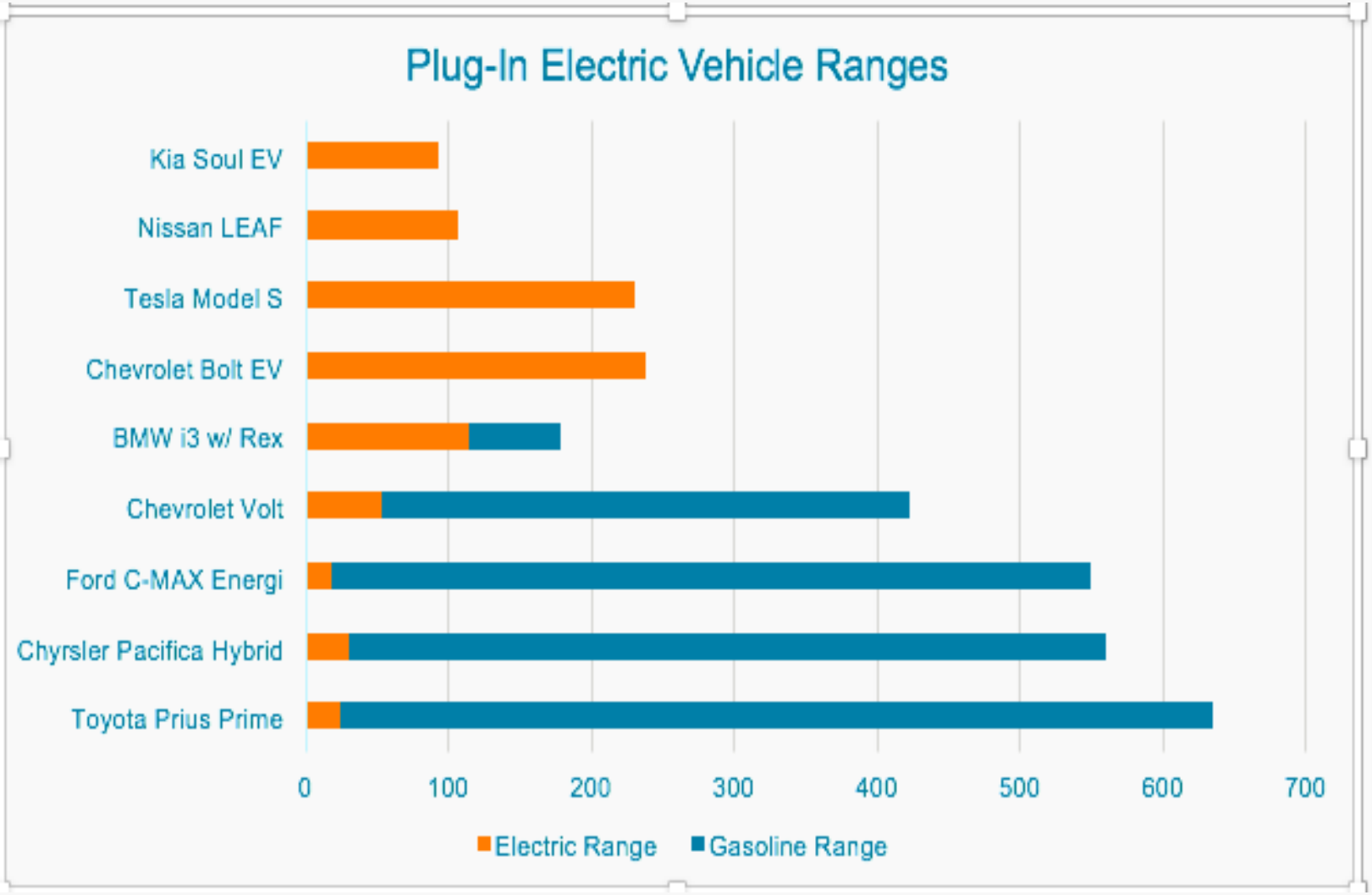
Note: Fueling/charging costs are based on $3.50-per-gallon gasoline, an electricity price of 11 cents/kWh, a discount rate of 3 percent, 166,000 lifetime miles, and an EV efficiency rating of 0.34 kWh/mile.

See the full report, State of Charge: Electric Vehicles' Global Warming Emissions and Fuel-Cost Savings Across the United States, at www.ucsusa.org/EVfacts for detailed assumptions.

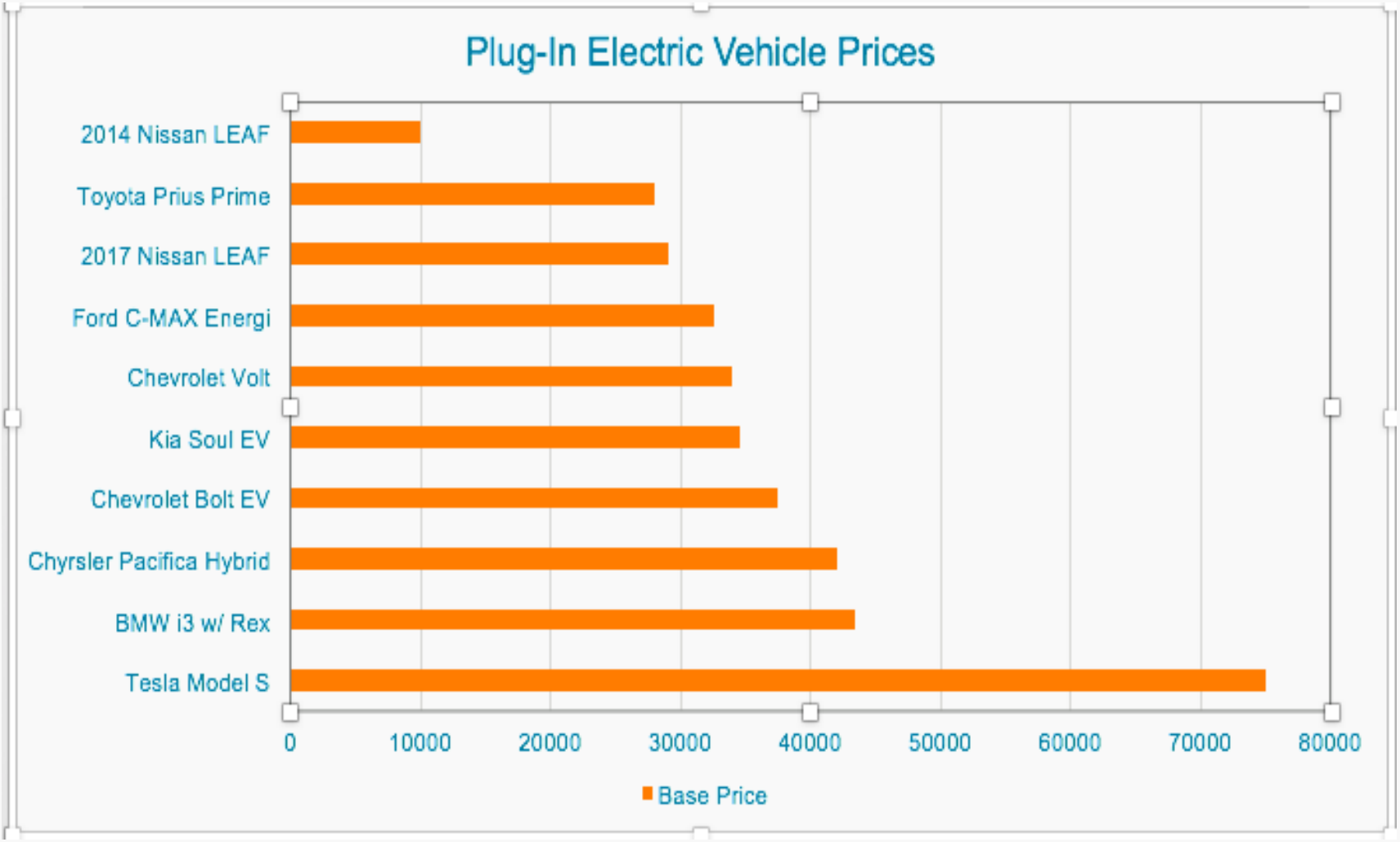
Cost of Driving EVs in Oregon



Electric Vehicle Range



Electric Vehicle Price

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EV Advantages in Emergency Preparedness

Fleet Diversity

- Create options and redundancy
- Electricity often restored quickly

Exporting Power

- Mobile source of power
- Temporary
- Charge and recharge

Clean and Quiet Operations

Electric Vehicles and Sandy: Lessons Learned

Power lines get restored relatively quickly
Fuel lines take much longer to restore
EVs helped with ad hoc transportation

Wished had more EVs

- **Emergency and community transportation**
- **Temprorary access to power**
- **Allow people to stay in homes/avoid evaucations**

•Emergency and community transportation
•Temporary access to power
•Allow people to stay in homes/avoid evacuations

Electric Vehicle

Resiliency in Energy through EVs

- Cascadia Subduction Zone

Zero-Emission Mandate

- Eight states collectively committed to having 3.3 million ZEV operating on their roadways by 2025.

Oregon Global Warming Commission

- “We appear to be on track to miss our 2020 goal…”
- “Oregon’s GHG emissions are not under control…Not all, or even the largest part, of Oregon’s GHG emissions are from utilities. The largest, and fastest growing such emissions are from transportation.”

Questions?

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