



Transportation Electrification

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Delivering reliable energy service and the choices that matter most to our customers.



Customer

Shareholder

Community

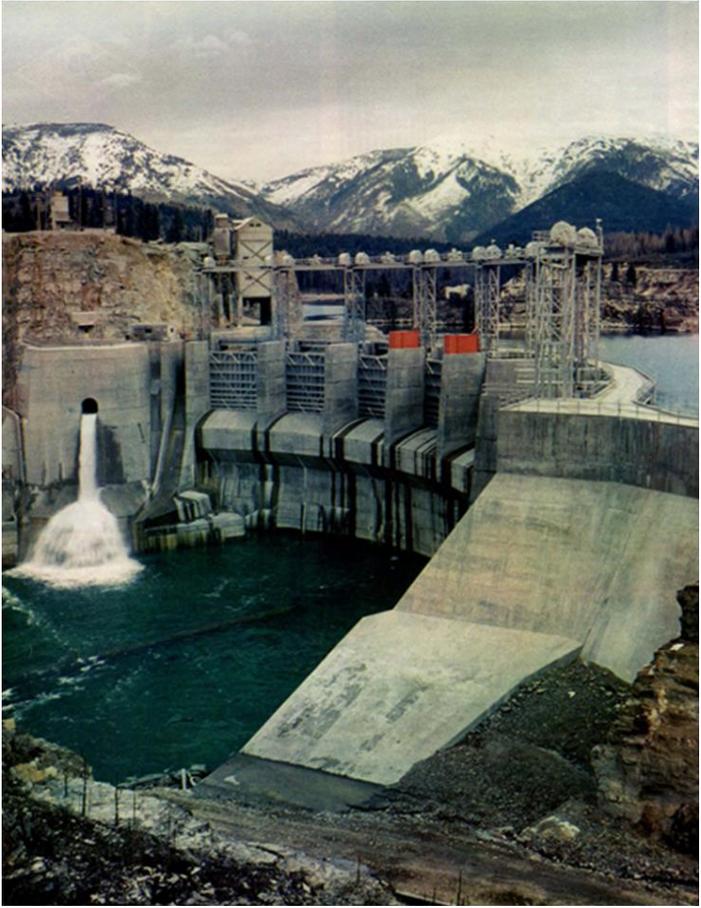
Employee



Electric Transportation

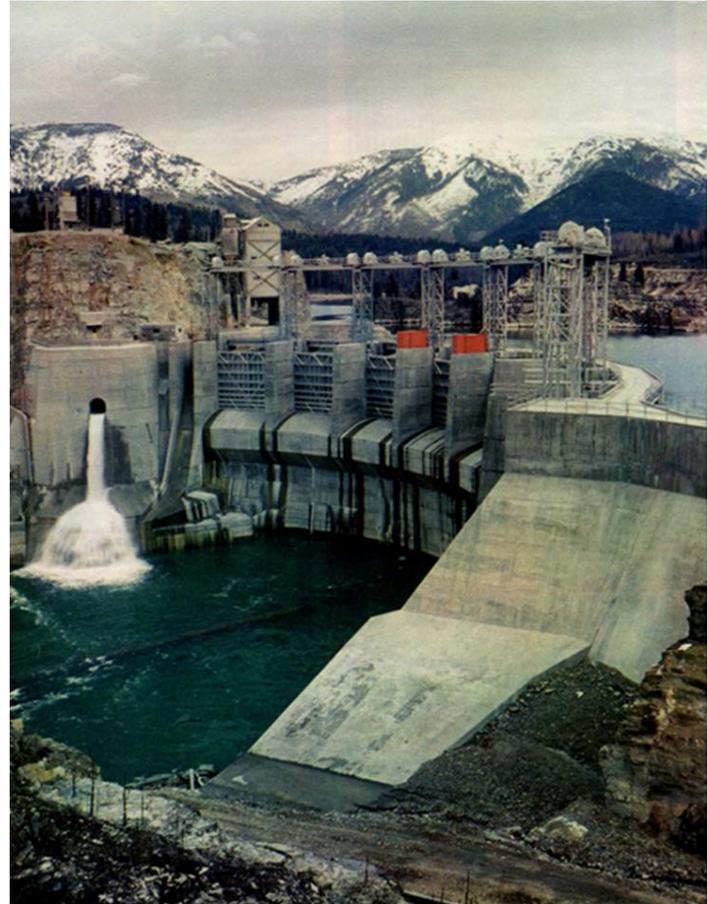
The movement of people and goods using electricity as a transportation fuel





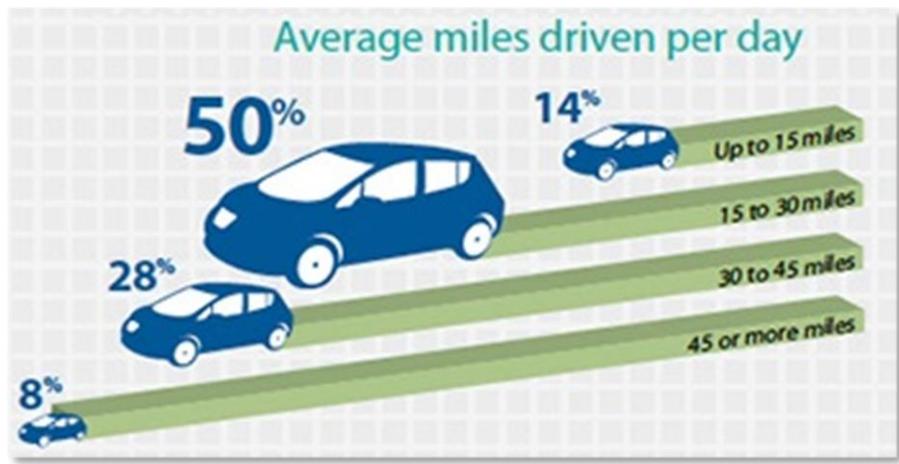
Drivers & Benefits

- Technology Advances
- Emission Reductions
- Energy Independence
- Operational Cost Savings
- Economic Growth
- High Customer Satisfaction

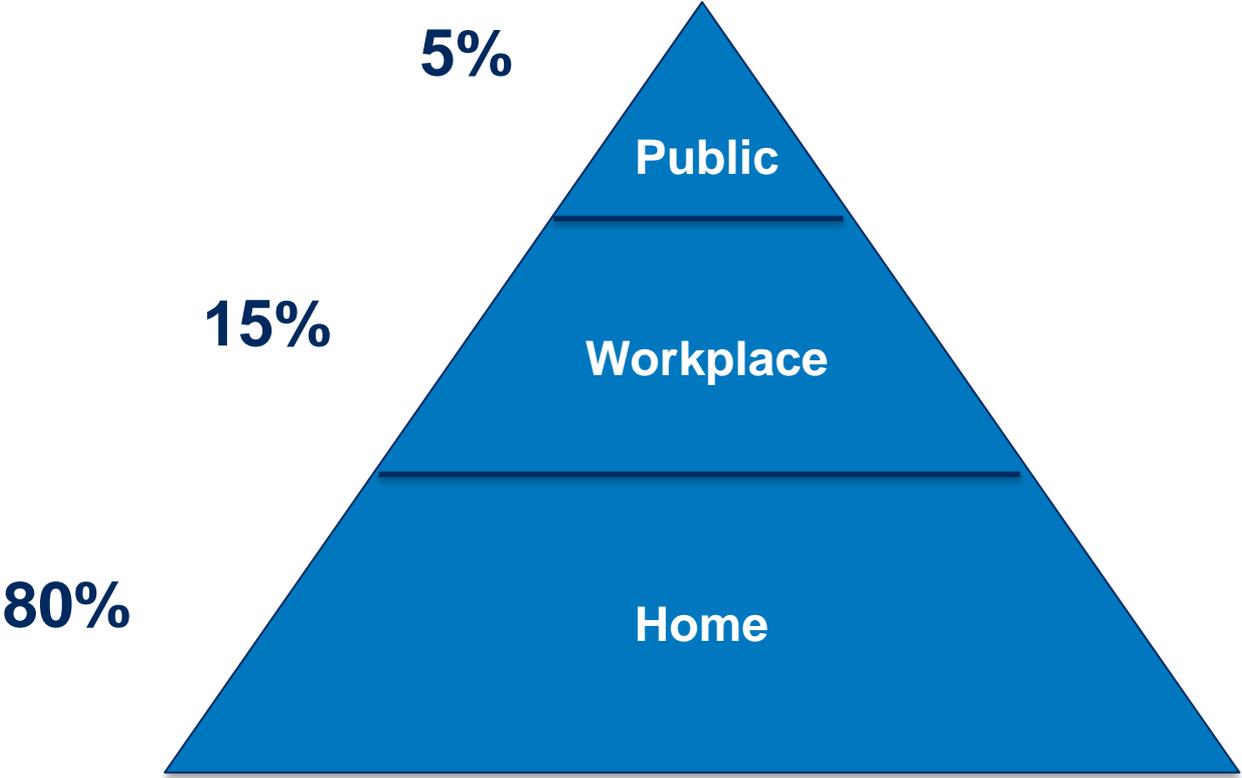


Adoption Barriers

- Low Awareness & Misperceptions
- Upfront Cost
- Limited Vehicle Choices
- Range Anxiety
- Low Infrastructure Investment



EV Charging Pyramid



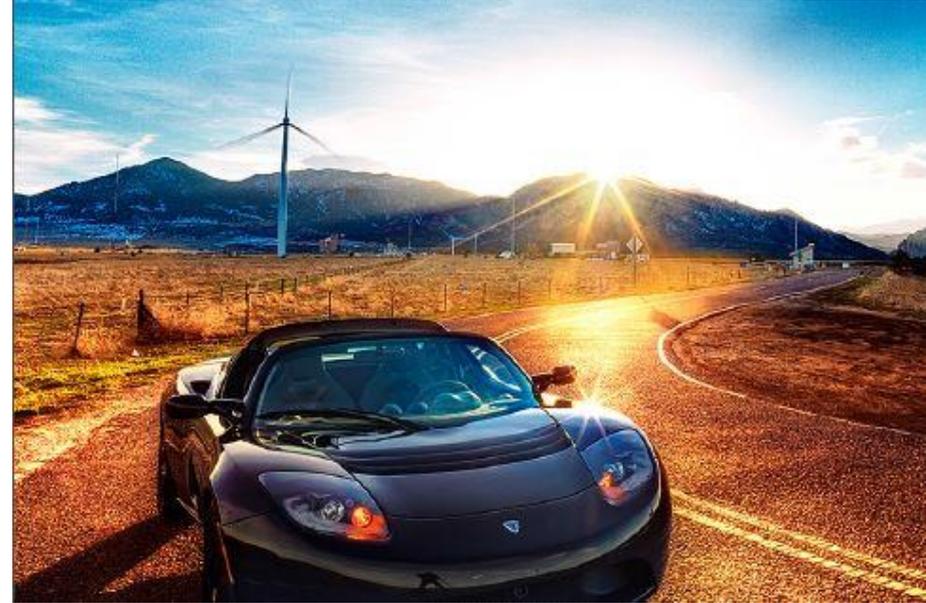
Future Power Requirements

Current State

1,638 MW peak required load

Extreme Future Scenario

- 500,000 EVs on Avista's system
- 20kW simultaneous demand per EV
- 10,000 MW peak load



photograph courtesy Tesla

A Less Extreme Scenario . . .

- 30 miles/day average distance travelled = 9 kW-hr energy per day, per EV
- 500,000 EVs = 4,500 MW-hr/day
- Evenly spread over 18 hrs system off-peak = 250 MW peak load

Rate Impacts - Benchmark Comparison (California Transportation Electrification Assessment)

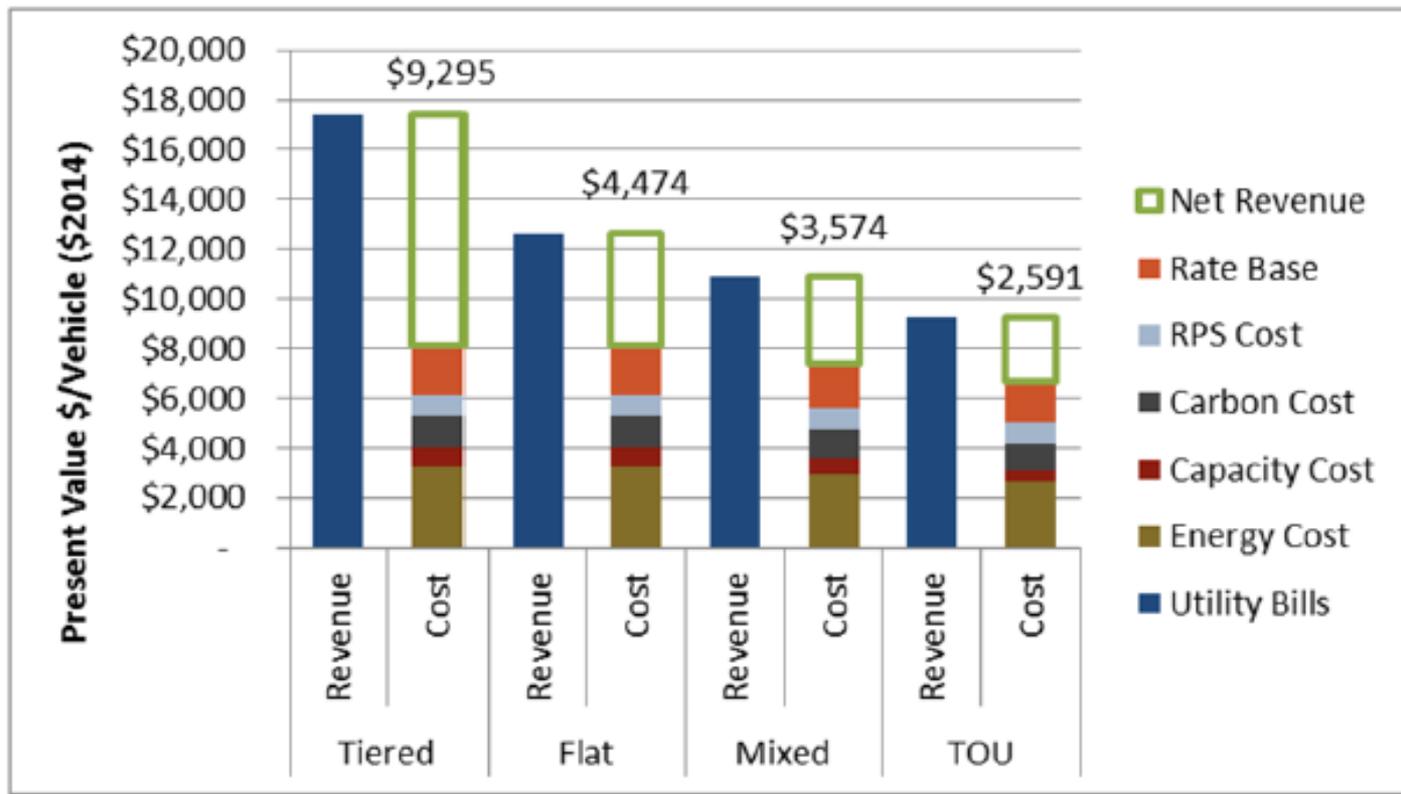


Figure 2. Utility Customer Benefits: Present Value of Revenue and Costs per Vehicle (Ratepayer Impact Measure Cost-test)

EVSE Pilot Design

120 AC Level 2 at Home



Integrated Network

45 AC Level 2 in Public



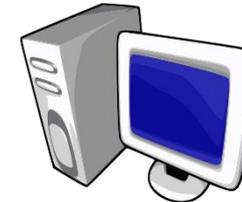
7 DC Fast Chargers



100 AC Level 2 at Work/Fleet/MUDs



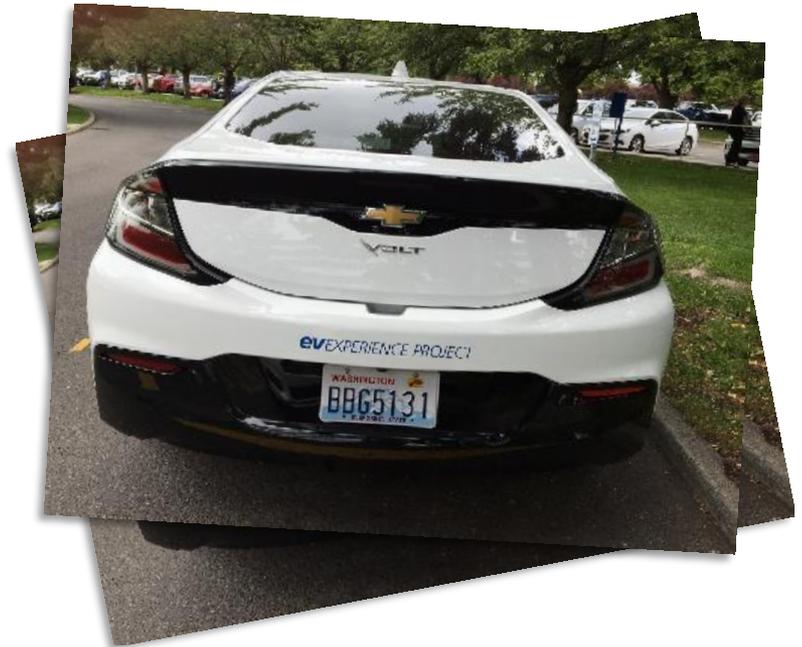
User Web Portal



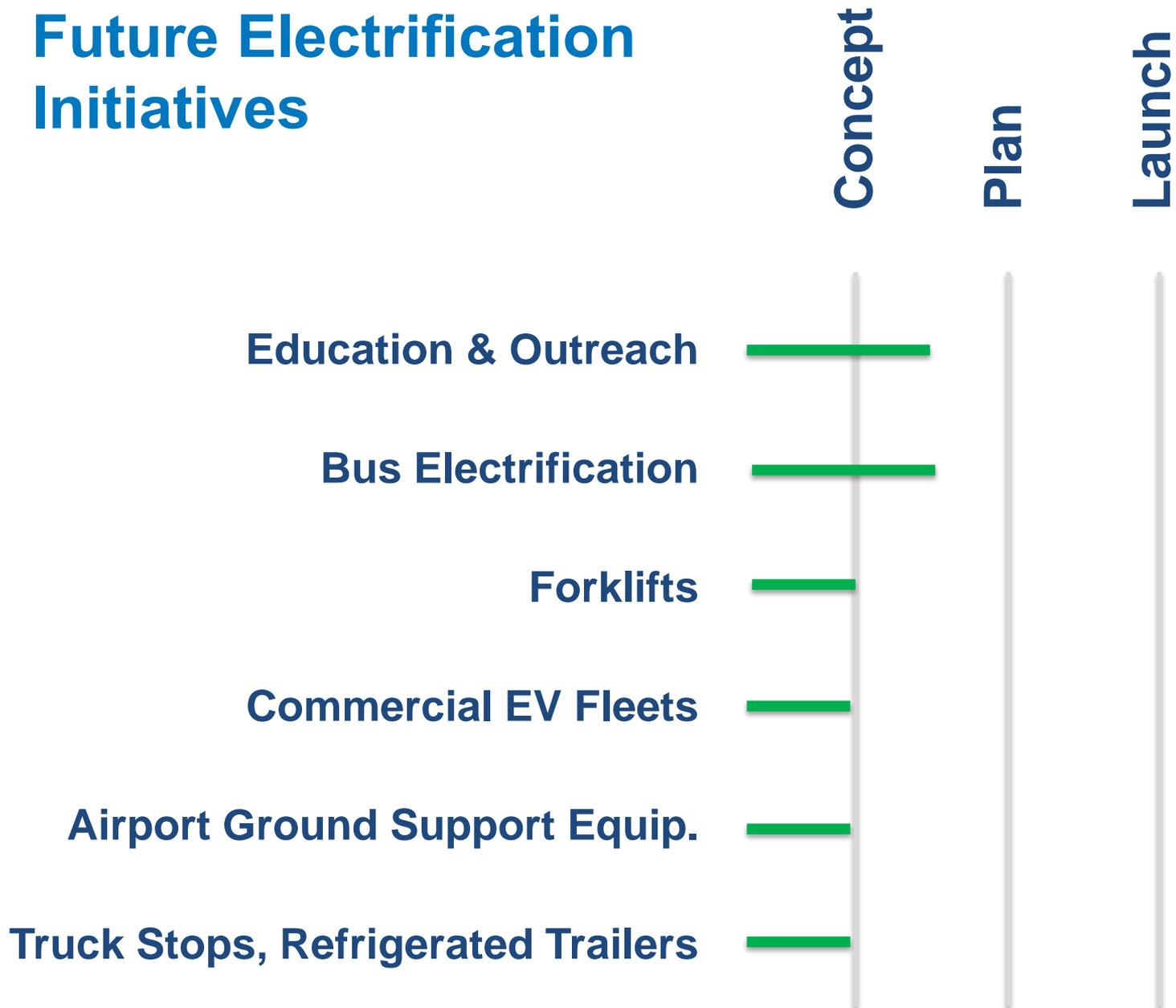
Utility Web Portal

EV Experience Project

- Drive one of 3 EVs for a week
- 6-9 month internal test to help develop a proposal for customers
- Is it the right fit for your life?
Now you can test it out, no risk
- Test before and after perceptions,
purchase decisions



Future Electrification Initiatives



Thank You!



Photo: Huntington Park, Spokane, Wash.

Chelan PUD and EV's

-Roadmap to Success



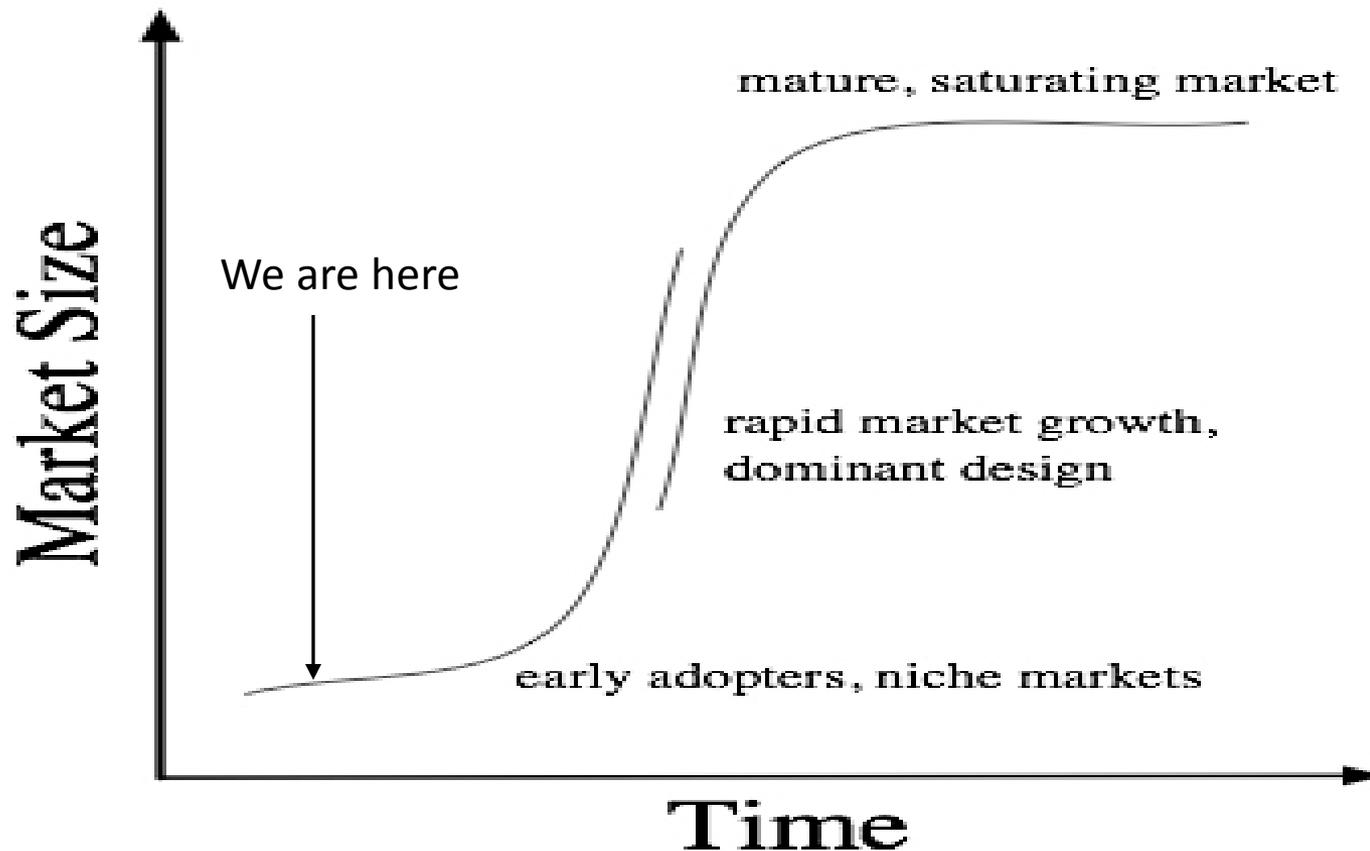
CHELAN COUNTY
POWER

www.chelanpud.org

What was Chelan PUD doing?

- Following EV news and watching trends
- 2015-2019 Strategic Plan Provided funding for charging stations at PUD facilities
 - Show support for Electric Vehicles
 - Provides a chance to gather data to inform future EV strategies

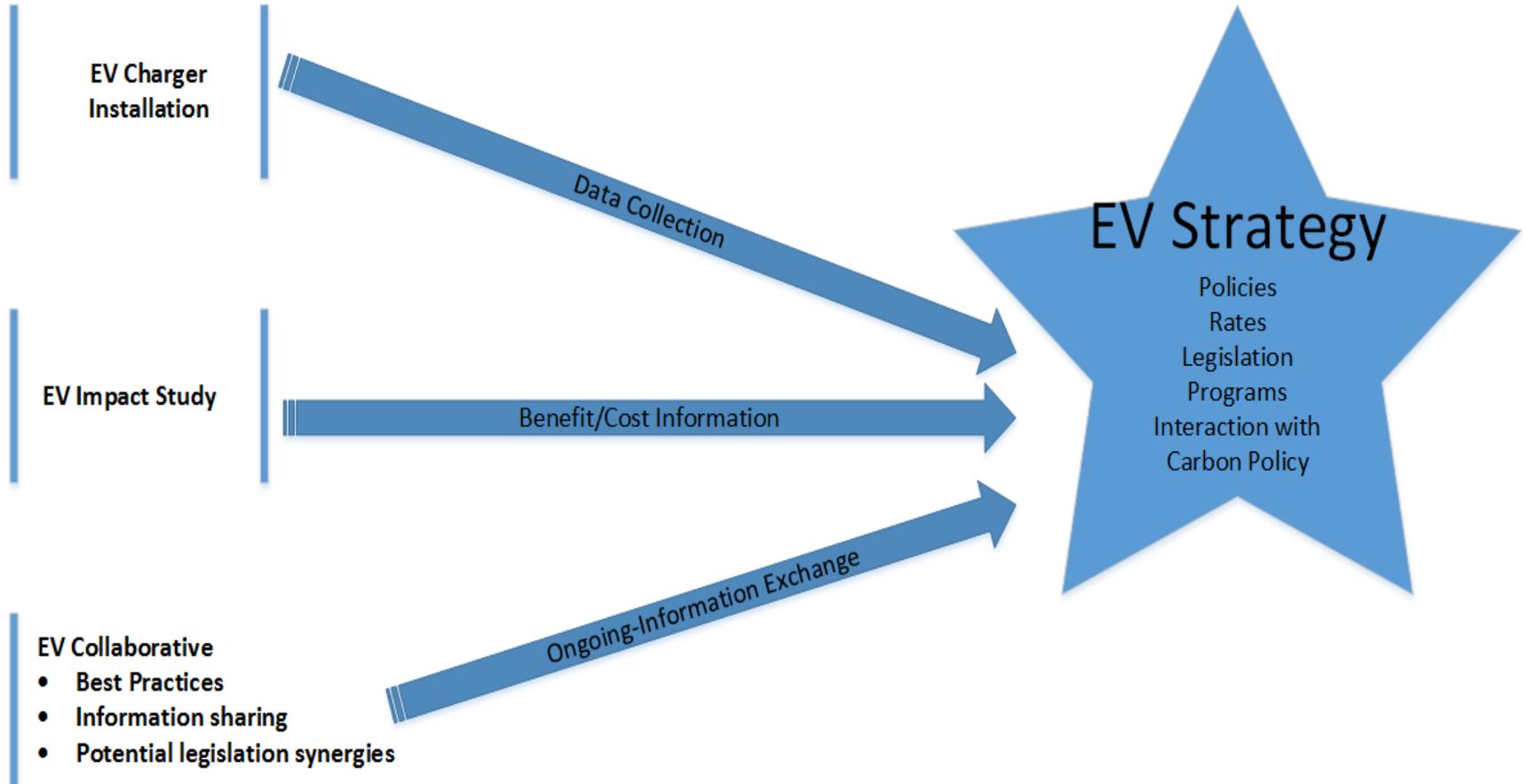
Early in the Adoption Cycle- We Have Time



How are we using this time?

- Installing 5 chargers at Chelan PUD facilities
 - Partnering with local EV Advocacy group
- Participant in a EV Benefit/Impact study
- Participating in a NW Utility EV Collaborative

Fitting the Pieces Together



In Parting

- Chelan PUD supports our customers choice to choose electric vehicles as their transportation option.
- Chelan PUD is very interested in how EV's work which is one of the reasons for supporting the installation of charging stations.
- Chelan PUD continues to work on the challenge of how we incorporate EV opportunities into Chelan PUD's business model that puts a high value on energy efficiency and conservation.
- From a energy and emissions perspective, what options are available to bridge the gap of EV's societal benefits with the impact to Chelan PUD customers.

Questions?



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