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# New Initiatives in Distributed Energy Resources: Evolutions in EV Infrastructure

Joint Action Conference  
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Greg Cullen  
Generation & Technology Development Director  
Energy Northwest  
[gvcullen@energy-northwest.com](mailto:gvcullen@energy-northwest.com)  
509-377-6105





# Agenda

- Energy Northwest Overview
- Washington State EV Landscape
- Washington Utilities: EVITA
- Opportunities for Collaboration

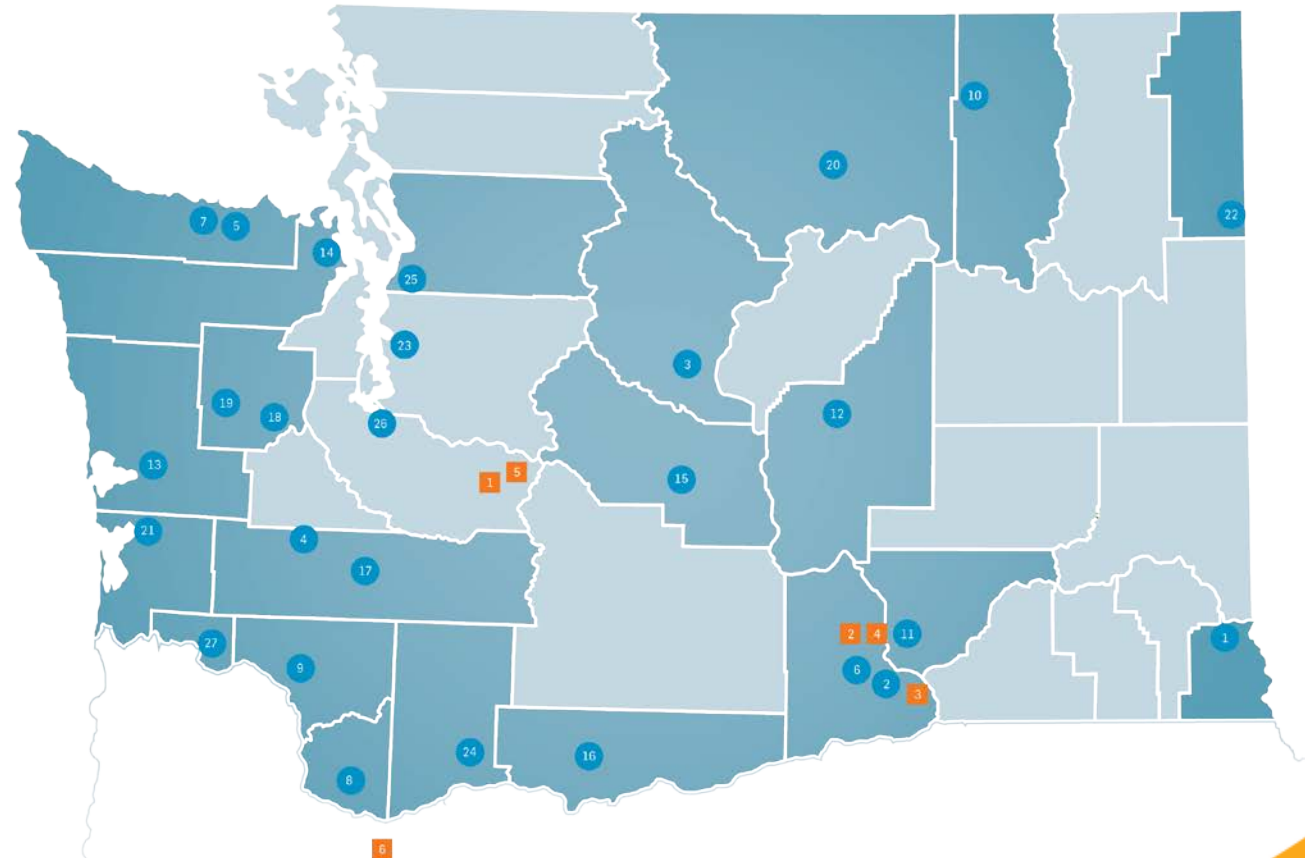
# Members and Projects



**ENERGY  
NORTHWEST**



- 1 Asotin County Public Utility District
- 2 Benton PUD
- 3 Chelan County PUD
- 4 Centralia City Light
- 5 City of Port Angeles
- 6 City of Richland Energy Services
- 7 Clallam County PUD
- 8 Clark Public Utilities
- 9 Cowlitz PUD
- 10 Ferry County PUD
- 11 Franklin PUD
- 12 Grant PUD
- 13 Grays Harbor County PUD 1
- 14 Jefferson County PUD
- 15 Kittitas County PUD
- 16 Klickitat County PUD
- 17 Lewis County PUD
- 18 Mason County PUD 1
- 19 Mason County PUD 3
- 20 Okanogan County PUD
- 21 Pacific County PUD 2
- 22 Pend Oreille County PUD
- 23 Seattle City Light
- 24 Skamania County PUD
- 25 Snohomish County PUD
- 26 Tacoma Public Utilities
- 27 Wahkiakum County PUD
- 1 Packwood Lake Hydroelectric Project
- 2 Columbia Generating Station
- 3 Nine Canyon Wind Project
- 4 White Bluffs Solar Station
- 5 Tieton Hydroelectric Project
- 6 Portland Hydroelectric Project



# Washington State EV Landscape

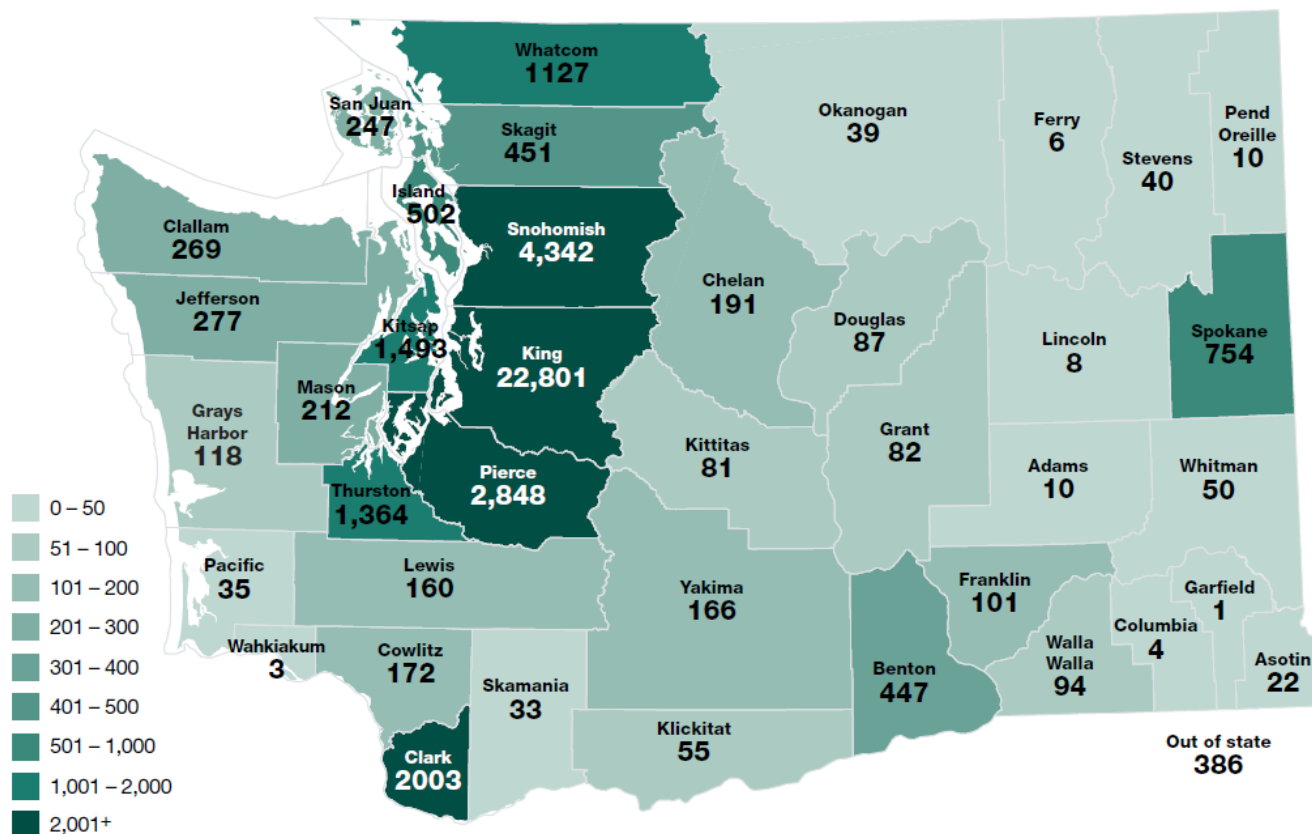
- 41,091 plug-in electric vehicles registered in Washington as of November 30, 2018
  - Increase of 37% since December 2017
- State's goal is to have 50,000 plug-in electric vehicles on the roads by 2020
- Increase due to aggressive incentives offered by state agencies as well as federal incentives



# Washington State EV Landscape (cont.)

## 41,091 Plug In Electric Vehicles Registered in Washington

As of November 30, 2018

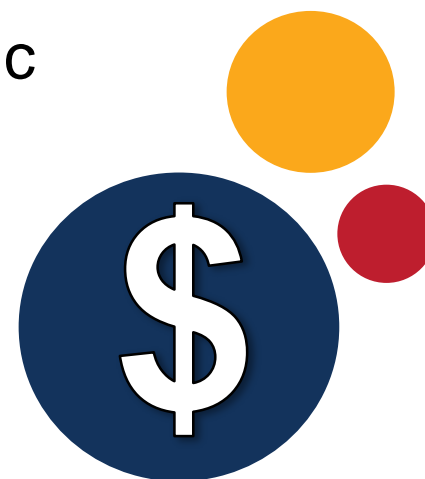


Map includes Electric Vehicles (EVs) produced by major automakers since about 2011. It does not include cars that were converted to EVs by their owners, neighborhood EVs or EV models from the 1990's that are still registered in Washington, or motorcycles. WSDOT created this map based on data provided by the Washington State Department of Licensing.

# Washington State EV Landscape (cont.)

- Incentives

- Sales/use tax exemption for electric vehicle batteries and electric vehicle infrastructure to help spur development
  - Valid through December 2019
- Leasehold tax exemption for electric vehicle infrastructure
  - Valid through December 2019
- Sales tax exemption for electric vehicle purchase
  - Expired in May 2018



# Washington State EV Landscape (cont.)

- Opportunities and a case for change
  - Transportation sector is the largest emitter of carbon dioxide in Washington state
    - On-road gasoline created 21.71 Million Metric Tons CO<sub>2</sub>e in 2013 (most recent publication)
    - Equivalent to 2.3 billion pounds of coal burned, or 5 billion barrels of oil consumed
  - Charging gap exists between eastern and western Washington, with existing DC fast charging installed mainly along I-5 in the western part of the state





# Washington State EV Landscape (cont.)



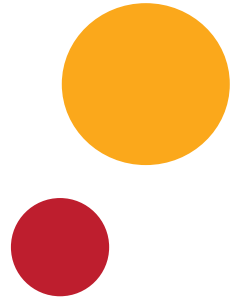
- Legislative position on public utility incentives remains unclear
  - State constitution prohibits agencies from gifting of public funds
  - Public utilities have concerns that this prohibition prevents publicly owned electric utilities from supporting electrification outside of “pilot projects”



# Washington State EV Landscape (cont.)



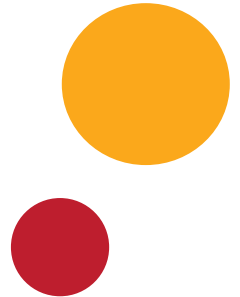
- Public utilities would like clear authority to engage in and promote electrification
  - Customer assistance for financing installation of materials and equipment
  - Offer programs, services, or investments in electrification for customers in a way to benefit ratepayers
  - PUDs are seeking the authority to provide incentives for EV charging equipment that would support the state's carbon reduction goals and maximize the value of their clean energy resources



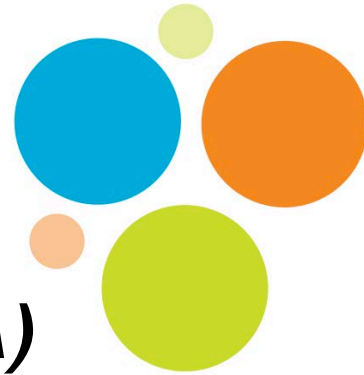
# Washington State EV Landscape (cont.)



- From Benton PUD:
  - At a time where electric utilities are seeing declining load-growth rates due in part to energy efficiency and customer self-generation, electric sales associated with EVs represent an opportunity for utilities to preserve or grow customer loads. Utilities have long sought new electric customers to build loads. Similar to any other new business that enters the community, EVs can generate more sales over the long run, with minimal investment from the utility toward the charging stations, that will help mitigate upward pressure on rates.



# Energy Northwest Projects



## ***Electric Vehicle Infrastructure Transportation Alliance (EVITA)***

- Public/private partnership
- Benton PUD, Franklin PUD, City of Richland Energy Services, Ellensburg Energy Services, Benton REA, Kittitas PUD and Energy Northwest
- Collaborated to participate in Washington State Department of Transportation pilot project to install nine DC Fast Charging stations along underserved corridors in Washington state

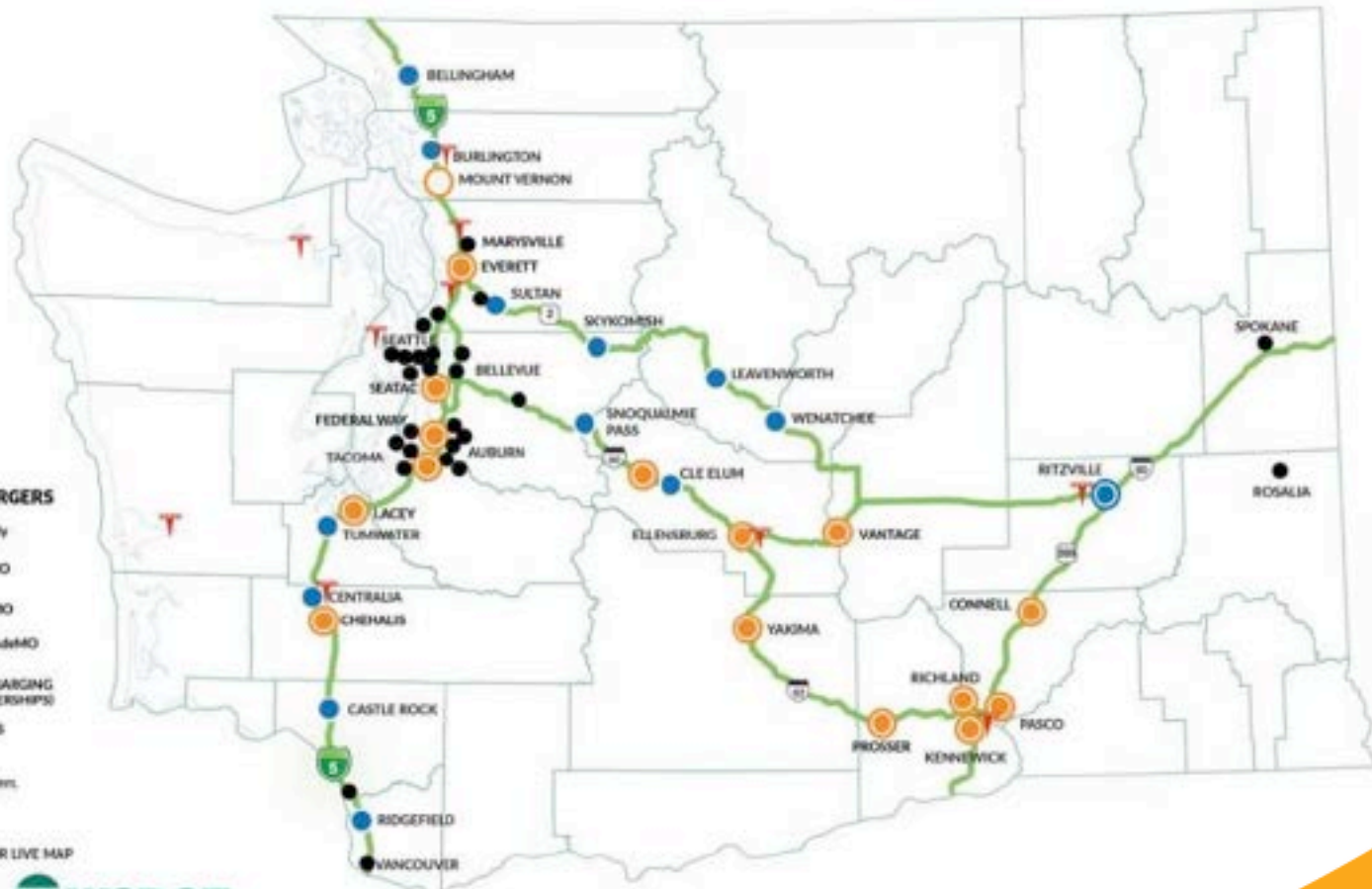
# Energy Northwest Partners



# Existing and planned DC Fast Charging in WA



WEST COAST ELECTRIC HIGHWAY



**TYPES OF FAST CHARGERS**

- EXISTING CHAdeMO only
- EXISTING CCS/CHAdeMO
- PLANNED CCS/CHAdeMO
- PROVISIONAL CCS/CHAdeMO
- OTHER PUBLIC FAST CHARGING (NOT INCLUDING DEALERSHIPS)
- ⚡ TESLA SUPERCHARGERS

CCS = combined charging system, also known as "SAE Combo."

AS OF NOVEMBER 2017  
CHECK PLUGSHARE.COM FOR LIVE MAP



WEST COAST ELECTRIC HIGHWAY



# EVITA Charging Stations



# EVITA

- Utilities agreed to set rate schedules for duration of project to include waiving the demand fees
- Participating utilities provided up to \$15,000 per station towards line extension / infrastructure
- WSDOT grant provides \$45,000 per station reimbursement
- Project includes varying ownership models
  - Greenlots owned
  - Host owned
  - Energy Northwest owned







# EVITA (cont.)

- Participating utilities are able to view charging station data from Greenlots' platform
  - Data includes details on charging sessions, kWh consumed, revenue received, pounds of CO<sub>2</sub> saved, and gallons of gas saved
- EVITA utilities believe EV adoption can increase utility asset utilization, spread fixed costs over a larger base of energy sales, and ultimately reduce utility rate pressures



# Available Technologies

- Each station in EVITA project includes one DC Level 3 fast charger and one AC Level 2 charger
- All stations use industry standard, nonproprietary electric vehicle supply equipment
  - Level 3 connectors: CCS Combo and CHAdeMO
  - Level 2 connector: J1772
- All stations employ open communication protocol standards

# Example: Pasco Station

- Station features Level 3 DC fast charger and Level 2 AC charger
- Solar array contains 15 SolarWorld SW300 modules connected with 4 3-phase APS YC500A Micro-inverters
- Projected output is ~14 kWh/day



# Example: Pasco Station

## Collaboration:

- Energy Northwest manages grant and program
- Franklin PUD contributed primary infrastructure, set EV rate and waived demand
- Property owner purchased and installed station
- Greenlots operates network, EV4 was construction manager





# Best Practices

- Leverage public and private funding to create a sustainable business model
- Consider indirect benefits, such as increased business for site hosts and surrounding businesses due to EV charging
- Create partnerships with other utilities to strengthen network, including municipalities, and investor and consumer owned utilities
- Stations can be privately owned with both private and public investors
- Site hosts can vary: city parks, gas stations, retail businesses, restaurants

# Best Practices (cont.)

- Other business models to consider
  - Automaker or battery supplier contributes to funding
  - Group of local businesses contributes to funding pool to subsidize costs (tourist areas)
  - Public subsidies greatly improve the financial performance of EV charging projects
  - Utility or publicly owned stations
  - Auto dealers can offer pre-paid subscriptions to charging network as incentive for new electric vehicle purchases





# Future Opportunities

- Bulk quantity procurement of electric vehicle supply equipment
  - To include Level 3 chargers, Level 2 commercial and in-home charging systems, in-home battery systems, fleet vehicles
- Provide consulting services to member utilities interested in developing electric vehicle charging station networks in their territories
- Encourage fleet electrification in member utilities and their customers
- Provide education regarding workplace charging



# Questions?

For more information on implementing an electrification program at your utility, contact

Jennifer Harper

Business & Programs Developer

509-377-4166

[jlharper@energy-northwest.com](mailto:jlharper@energy-northwest.com)

[EVITA@energy-northwest.com](mailto:EVITA@energy-northwest.com)