EV COUNCIL

INTERAGENCY ELECTRIC VEHICLE COORDINATING COUNCIL

Washington State Department of Commerce

Electric Vehicles in Washington State

TRANSPORTATION ELECTRIFICATION STRATEGY: WASHINGTON'S ELECTRIC VEHICLE ACTION ROADMAP

Steven Hershkowitz
TRANSPORTATION ELECTRIFICATION POLICY LEAD

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On-road emissions must decline 57% by 2030

Subsector	MMT	Percent
Light-duty vehicles (primarily gasoline)	16.3	40%
Heavy-duty vehicles (primarily diesel)	7.2	18%
On-road total	**23.5**	**58%**
Marine	7.2	18%
Aviation	6.3	16%
Rail	0.3	1%
Other ground non-road	2.8	7%
Non-road total	**16.7**	**42%**
Total	**40.3**	**100%**

2019 Emission Inventory – Ecology

Transportation emissions must be cut in half by 2030

- State Energy Strategy (2021) finds that transportation sector emissions must be 20 million metric tons (MMT) or less in 2030 to comply with emissions limit
- On-road emissions will be much easier to decarbonize than non-road emissions

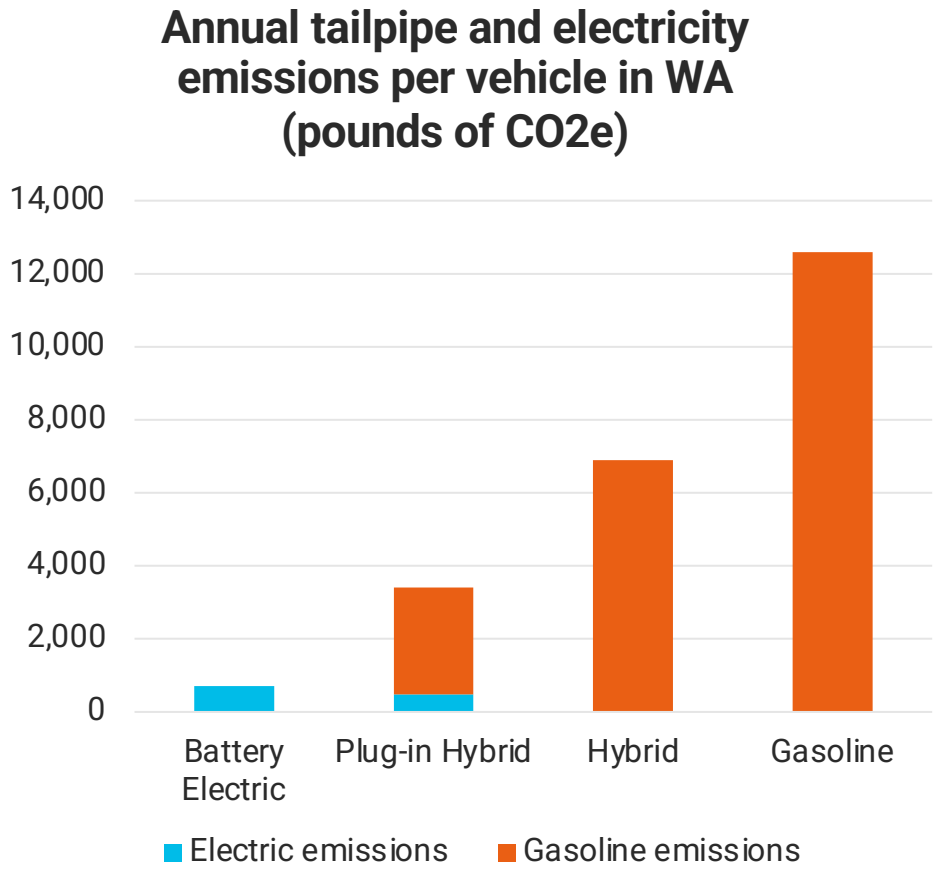
On-road emissions must be 10 MMT or less in 2030

EVs get us 70%+ of the way there, and other strategies can fill the gap

Million metric tons CO2e for on-road transportation in 2030

	2019 emissions: **23.5**
Current EV policies and funding	**14.1**
Stronger electrification policies and funding	13.9
VMT per capita declines about 3x faster	≈13.1
Vehicle efficiencies and early diesel retirement	≈12.2
Renewable diesel, biofuel, e-fuel blending	≈10.0

EVs reduce emissions even when factoring in electricity generation and battery manufacturing



Source: U.S. Department of Energy

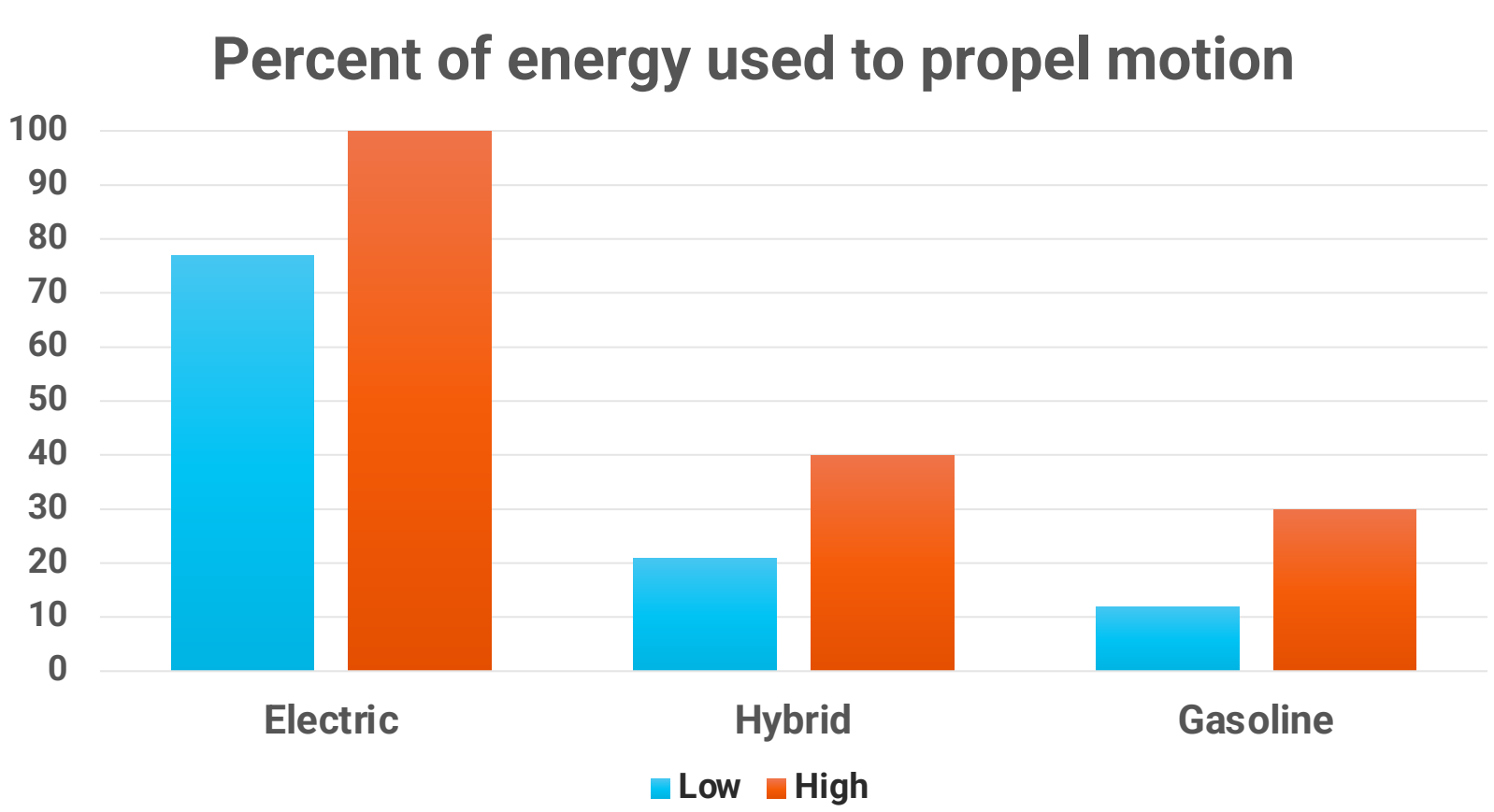
"EVs achieve net greenhouse gas emissions reduction of nearly 580 million metric tons on a well-to-wheel basis compared to an equivalent use of ICE vehicles."

International Energy Agency, 2022 Global EV Outlook

"Announcements on battery manufacturing capacity delivered by 2030 are more than sufficient to meet the demand implied by government pledges."

International Energy Agency, 2023 Global EV Outlook

EVs are much more energy efficient



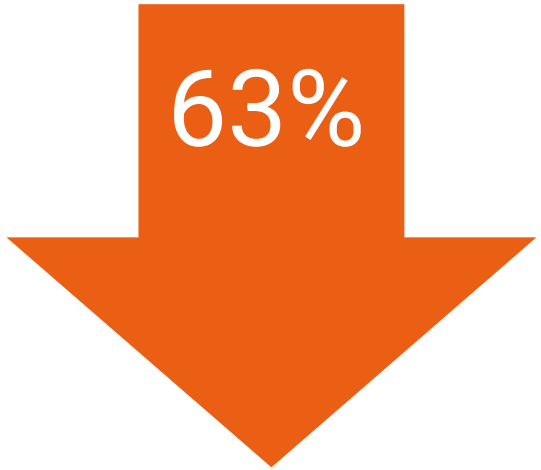
Electric vehicles gain back 22% of their energy losses from regenerative breaking.

Gasoline vehicles lose most of their energy to engine inefficiencies and wind resistance before the gasoline ever creates motion.

Source: U.S. Department of Energy

EVs reduce air pollutants and save lives

NOx



PM2.5

88 lives saved

1,091 avoided asthma cases

$974,308,855 in avoided health costs

Modeling based on public & private sector data

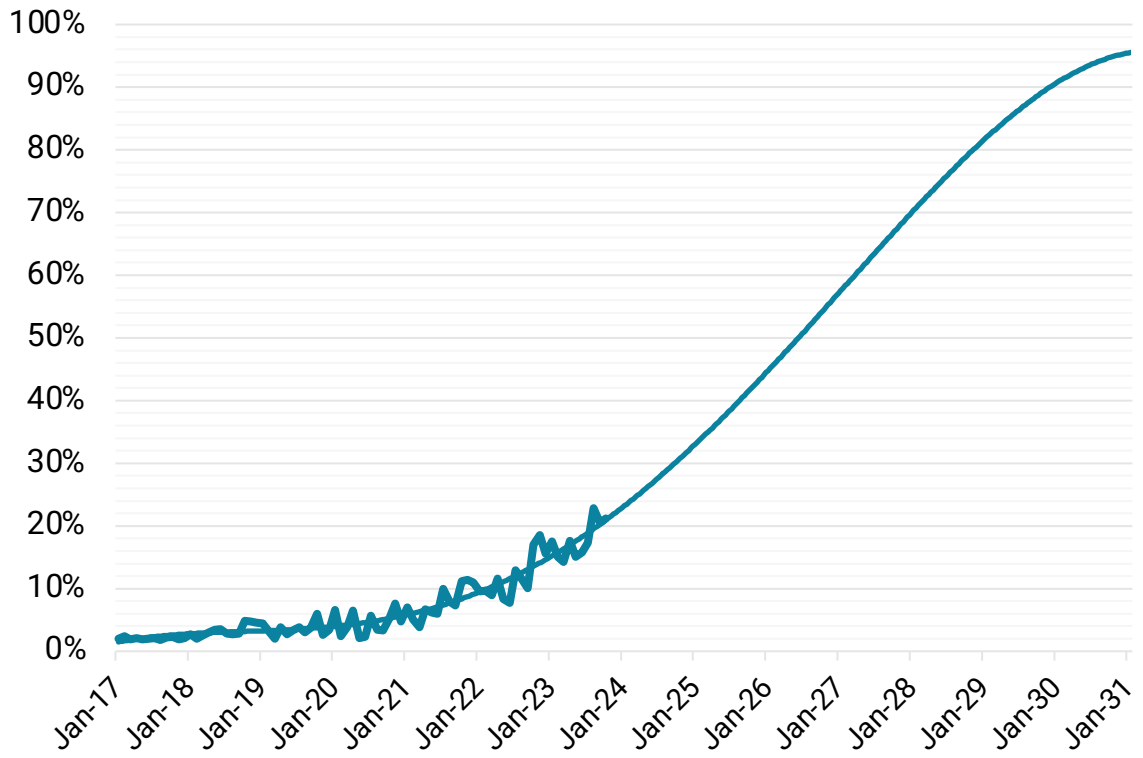
Model 1: EV sales

- S-curve based on continued trend plus:
  - Economics (total cost of ownership, incentives)
  - Charging and consumer awareness

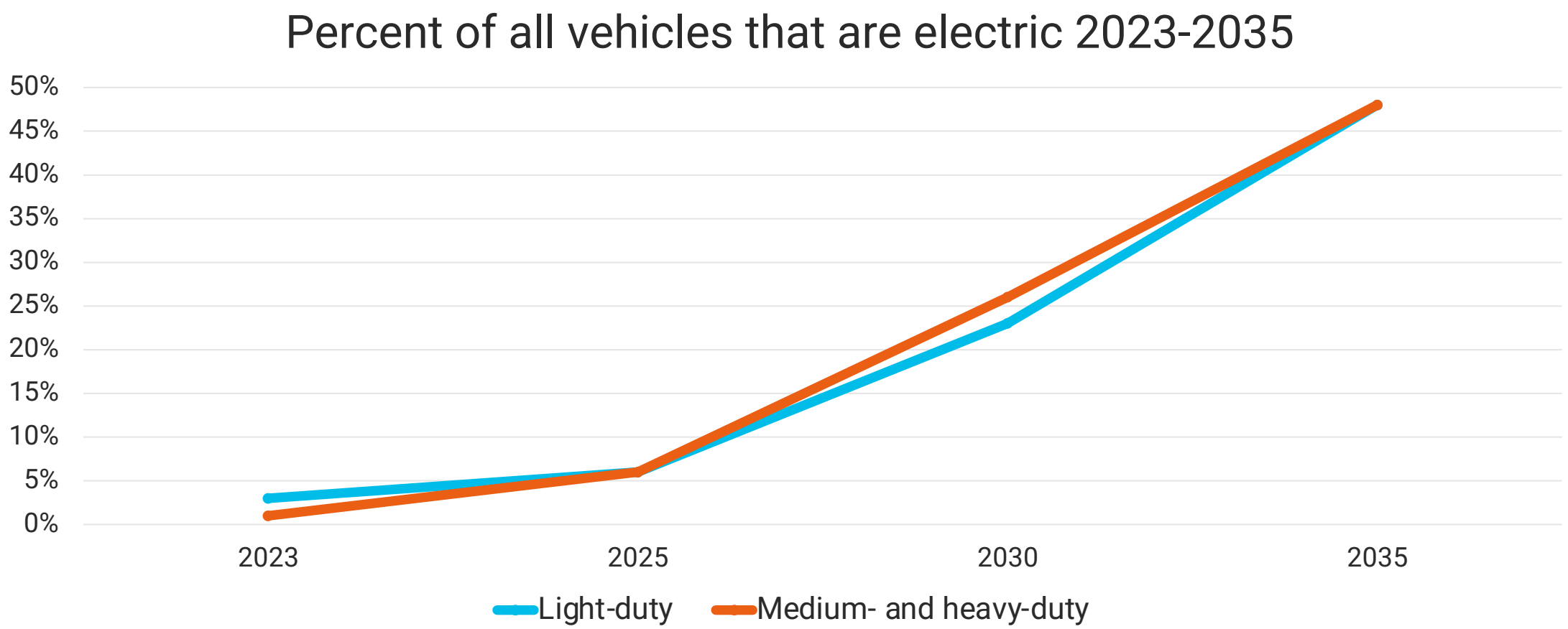
Model 2: EV charging

- Replica's synthetic trip data
- Assumes charging happens at longer "dwell time"

New EV sales market share trend line *without* economics, charging, or awareness factors (WA DOL)



EVs become 48% of all vehicles in WA by 2035



Estimated charging plugs – Light-duty vehicles

Charger type	Today	Need Today	2025	2030	2035
Single-family residential	Unknown	126,910	281,474	1,078,275	2,378,680
Multi-family residential	Unknown	11,585	31,839	186,456	565,527
Workplace	Unknown	4,173	6,986	17,904	31,230
Public Level 2	4,085	2,426	3,912	8,671	13,068
Public DC fast	962	1,787	3,000	6,926	10,522

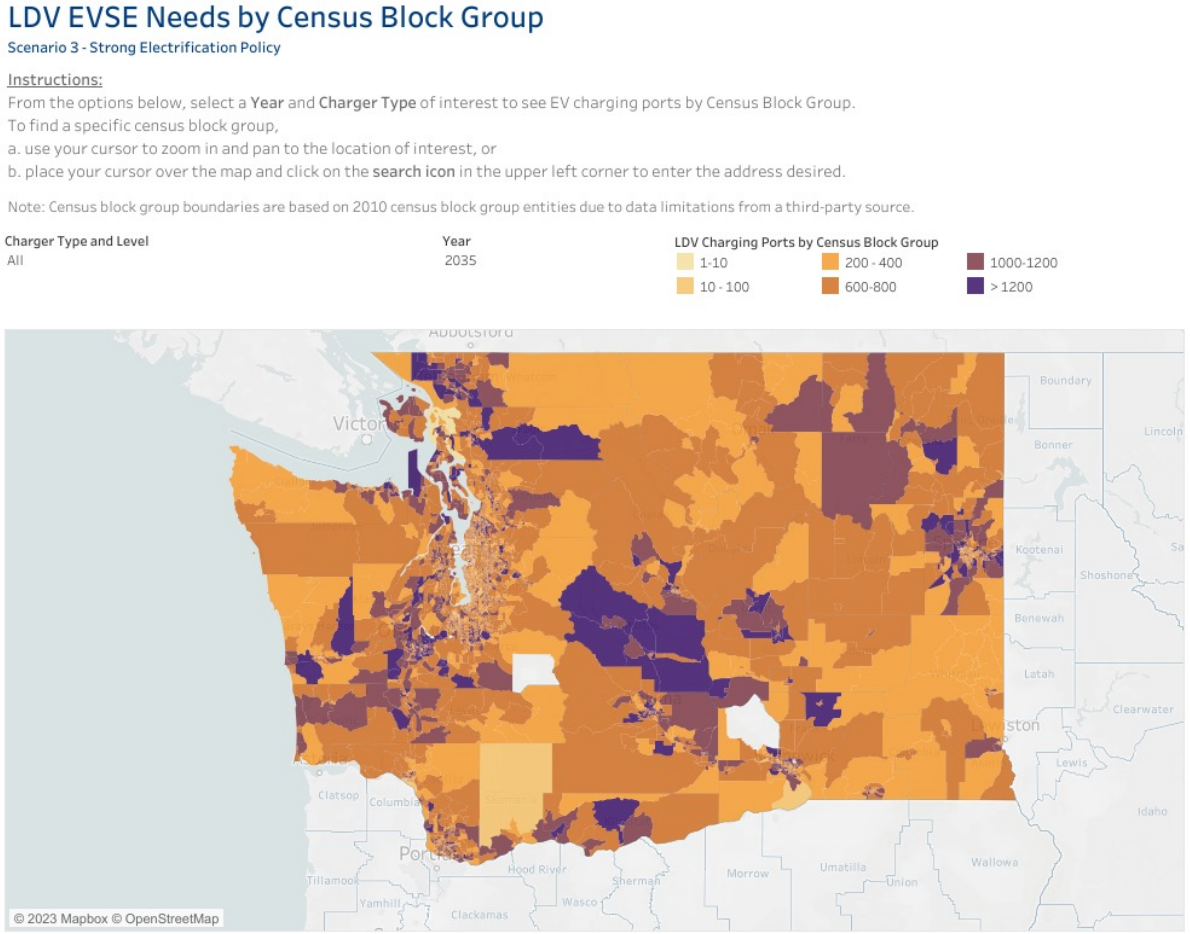
Red = needs state prioritization to fill gaps | Green = current charging needs are met

Estimated charging plugs – Medium- and heavy-duty

Charger type	Power (kW)	Need Today	2025	2030	2035
Medium-duty depots	50	142	1,046	4,214	7,715
Heavy-duty depots	350	36	186	679	1,140
Medium-duty public	150	39	98	284	501
Heavy-duty public	350	29	102	258	384
School bus depots	19	28	95	1,000	2,224
Transit bus depots	350	129	217	309	502
Red = needs state prioritization to fill gaps					

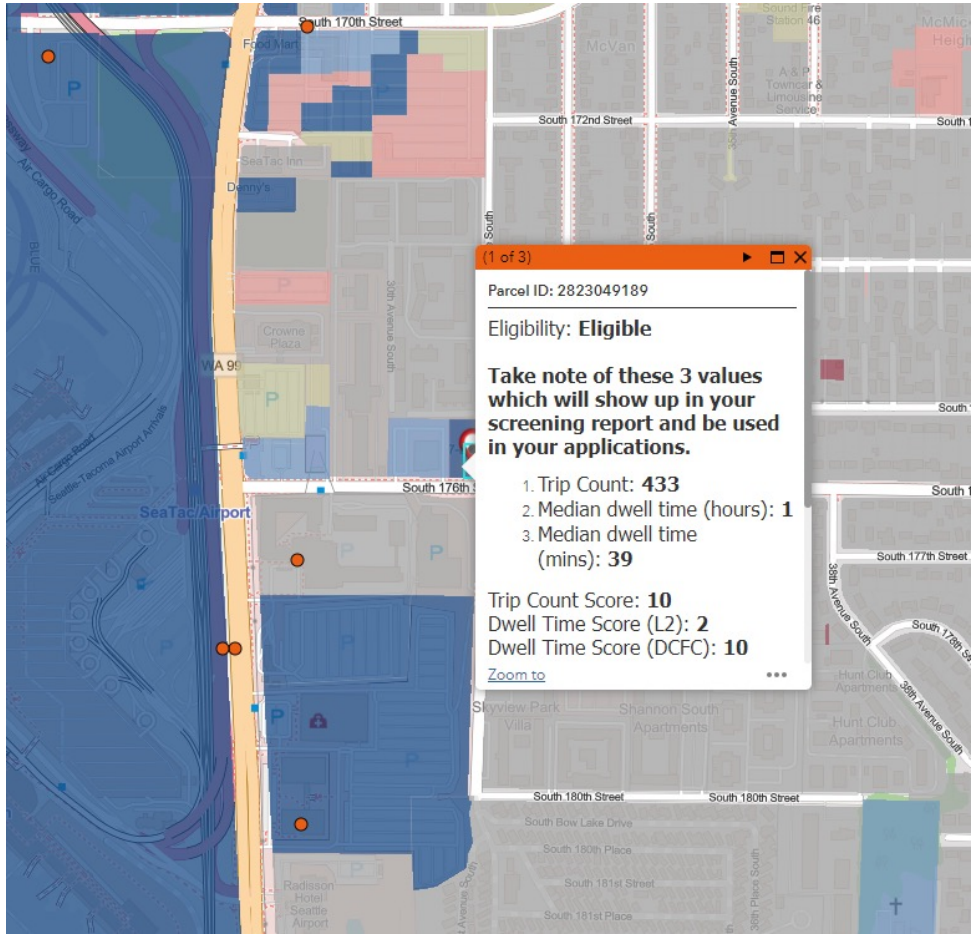
Deployment of data

- Draft TES links, including modeling results dashboard.
- Estimated EVs by county, charging plugs by Census block.
- Already being used by regional transportation planners.



Case study: WA EV Charging Program

- $64 million per year
- Prioritizing:
  - Multi-family housing
  - Community fast charging
- Mapping tool informs objective scoring criteria
  - Replica trip data to assess utilization
  - Existing charging locations to determine geographic gaps
  - Department of Health's environmental justice data



Thank you!

Steven Hershkowitz
TRANSPORTATION ELECTRIFICATION POLICY LEAD
Email: Steven.Hershkowitz@commerce.wa.gov
Phone: 360.688.4006

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