Oregon Department of ENERGY

Electrification of Medium- and Heavy-Duty Vehicles

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Progress on EV Adoption Targets

Oregon's EV Adoption Targets

- By 2020, 50,000 registered motor vehicles will be zero-emission vehicles;
- By 2025, at least 250,000 registered motor vehicles will be zero-emission vehicles;
- By 2030, at least 25 percent of registered motor vehicles, and at least 50 percent of new motor vehicles sold annually, will be zero-emission vehicles; and
- By 2035, at least 90 percent of new motor vehicles sold annually will be zero-emission vehicles.



As of July 2023, Oregon has over 74,000 registered electric vehicles across all 36 counties



Agency Coordination

Interagency Actions Addressing Barriers to Zero Emission Vehicle Adoption







- Clean Vehicle & Charge Ahead EV Rebates (DEQ)
- Investor-Owned Utility (IOU) Transportation Electrification Investments and Rates (OPUC)
- School Bus Funding (ODE, DEQ)
- Public Purpose Charge Schools Funds (ODOE)
- Diesel Emission Reduction Grants (DEQ)
- Transit Bus Funding (ODOT, DEQ)
- Utility Grants Funded by Clean Fuels Program (DEQ)
- State Fleet Pricing Agreements (DAS)

Vehicle Costs

- Transportation Electrification Infrastructure Needs Analysis Study (ODOT)
- Guide for Oregon EV Charging Deployment (ODOT)
- Federal EV Funding IIJA (ODOT, ODOE)
- Community Charging Program (ODOT)
- IOU TE Infrastructure Investments (OPUC)
- CFP funding for Chargers and Utility Grants (DEQ)
- Public Purpose Charge Schools Funds (ODOE)
- Consumer-owned Utility EV Mapping Tool (ODOE)
- State Pricing Agreements (DAS)
- State Agency EV and Infrastructure Cost Analysis Tool (DAS, ODOE)

Infrastructure Needs & Costs

OVERARCHING

- ZEVIWG and Every Mile Counts Interagency Coordination (ODOT, ODOE, DEQ, OPUC, DAS, DLCD, OHA)
- Clean Fuels Program (DEQ)
- ZEV Regulations (DEQ)
- Investor-Owned Utility Transportation Electrification Investments (OPUC)
- State Fleet ZEV Goals (DAS)
- Climate Protection Program (DEQ)
- State Clean Electricity and Renewable Electricity Goals (OPUC, ODOE)
- Advanced Clean Cars I and II
- Advanced Clean Trucks

- Charge Ahead EV Rebate (DEQ)
- Every Mile Counts Equity Engagement (ODOT, DEQ, ODOE, DLCD)
- TEINA Assessment for rural, low-income, and BIPOC needs (ODOT)
- IOU TE Surcharge and CFP Investments in Underserved Communities (OPUC, DEQ)
- Prioritize Equity in Federal EV Funding (ODOT)
- Biennial ZEV Report EV Adoption Demographic Assessment (ODOE)

Equity

- Biennial ZEV Report (ODOE)
- Go Electric Website (ODOE)
- EV Dashboard (ODOE)
- EV Rebate Outreach (DEQ)
- Community Charging Program Outreach (ODOT)
- Transit and School Bus Cost Analysis Tools & Electric Bus Guidebooks (ODOE, ODOT, DEQ)
- Oregoin' Electric Support (DEQ, ODOT, ODOE, DAS, OPUC)
- . Biennial Energy Report (ODOE)





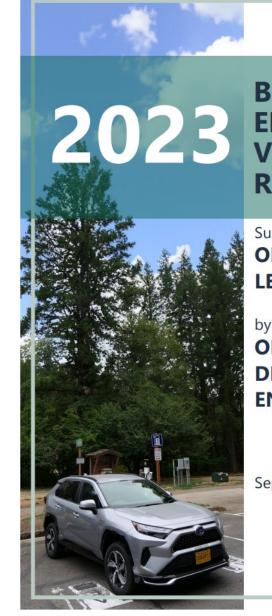






About the Report

- Established in 2019 by Senate Bill 1044
- Covers electric vehicle adoption and related progress on Oregon's greenhouse gas emissions in the transportation sector
- Focus on commercially available or nearcommercially available vehicles
- Use existing studies, market reports, polling data, or other publicly available information
- 11 specific reporting requirements



BIENNIAL ZERO EMISSION VEHICLE REPORT

Submitted to the

OREGON LEGISLATURE

by the

OREGON
DEPARTMENT OF
ENERGY

September 2023

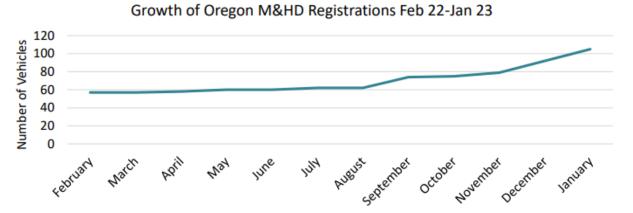




https://tinyurl.com/2023BIZEV

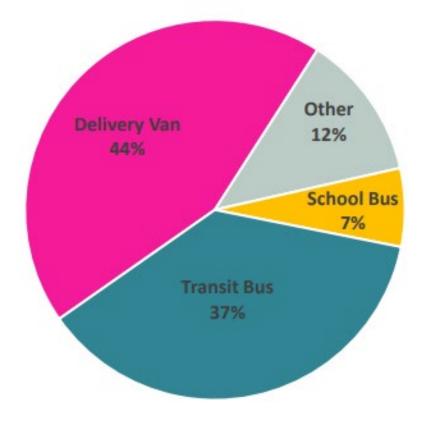
Electric Medium- and Heavy-Duty Vehicles

Figure 9: Growth of Medium- and Heavy-Duty EV Registrations in Oregon Feb. 2022 – Jan. 2023¹





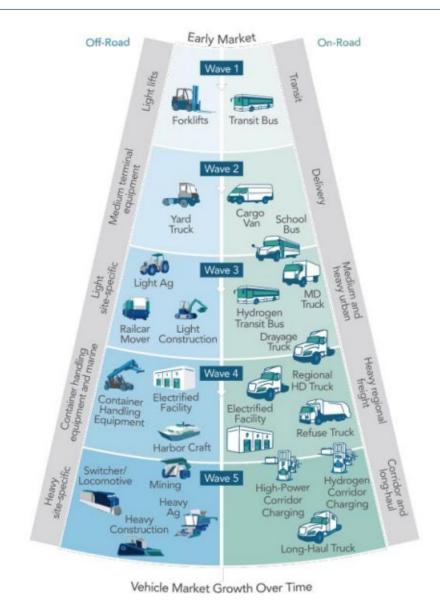
Medium- and heavy-duty vehicle electrification lags light-duty, largely because it is a much more complex vehicle sector, and the barriers to adoption are often more costly and challenging.



EV Platforms Available

There were 209 models of medium- and heavy-duty vehicle models available in the U.S. and Canada in 2022, up from 161 in 2021 – and model availability continues to grow.





EV Cost Differences with Internal Combustion

High up-front costs are likely to remain a barrier to widespread adoption of medium- and heavyduty EVs through at least 2030, when some analysts are predicting they will reach cost parity for diesel counterparts.

Table 7: Total cost of ownership analysis of four MHDV classes.

	Daily Miles per Vehicle	Days Used per Week	EV Vehicle Price	Gas Diesel Price	Rebates/ Incentives	10 Year TCO Gas	10 Year TCO Electric	Savings/Loss (electrification)
Municipal Bus								
Reference	120	7	\$785,000	\$400,000	\$62,650	\$1,093,623	\$844,590	\$148,377
Low-cost	120	7	\$628,000	\$400,000	\$62,650	\$1,093,623	\$687,590	\$406,034
High Usage	144	7	\$785,000	\$400,000	\$62,650	\$1,198,503	\$837,525	\$360,978
School Bus								
Reference	46	5	\$342,500	\$100,000	\$46,580	\$193,738	\$322,623	\$(128,885)
Low-cost	46	5	\$274,000	\$100,000	\$46,580	\$193,738	\$254,123	\$(60,385)
High Usage	55	5	\$342,500	\$100,000	\$46,580	\$206,415	\$320,463	\$(114,048)
Refuse Truck								
Reference	80	6	\$675,000	\$350,000	\$62,650	\$830,499	\$804,432	\$26,067
Low-cost	80	6	\$540,000	\$350,000	\$62,650	\$830,499	\$669,432	\$161,067
High Usage	96	6	\$675,000	\$350,000	\$62,650	\$882,559	\$805,201	\$77,358
Delivery Van								
Reference	48	5	\$65,000	\$50,000	\$14,080	\$142,526	\$82,025	\$60,500
Low-cost	48	5	\$52,000	\$50,000	\$14,080	\$142,526	\$69,025	\$73,500
High Usage	57	5	\$65,000	\$50,000	\$14,080	\$153,372	\$81,183	\$72,188



EV Charging Infrastructure

Table 3: Average Costs for Different Types of Commercial EV Chargers⁵⁴

	L1	L2	DCFC - 50 kW	DCFC - 150 kW	DCFC - 350 kW
Equipment Costs	Up to \$350	\$1,100 to \$7,000	\$22,000 to \$50,000	\$80,000 to \$120,000	\$150,000 to \$180,000

Table 2: Medium- and Heavy-Duty Charging Needs by Vehicle Type

Home Base, Level 2
Heavy-duty Pickup & Van School Bus Delivery Van Service Van Service Truck Box Truck (Class 3 – 5) Stake Truck (Class 3 – 5) Stake Truck (Class 6 – 7)

The cost to install charging is highly uncertain, depending on many variables, including the number of chargers to be sited, the amount of land needed, and power requirements.

Power requirements are the most variable portion of installation costs, depending on the type of charger needed, available electric circuit capacity, distance from the nearest utility interconnection, and the potential for distribution system upgrades.



EV Charging Availability & Reliability

Federal and state policies supporting EV charger availability

Federal Inflation Reduction Act Business and Personal Tax Credits for EV Chargers and

Installation

- ODOT National Electric Vehicle Infrastructure (NEVI) Formula Program
- ODOT Charging and Fueling Infrastructure Discretionary Grant Program
- ODOT Community Charging Rebates Program
- ODOT Carbon Reduction Program
- DEQ Clean Fuels Program
- DEQ Zero-Emission Fueling Infrastructure Grant Pilot Program
- ODOE Public Purpose Charge Schools Program
- OPRD Charging Infrastructure at Oregon State Parks
- DCBS Building Codes





