Planning for Medium- and Heavy-Duty Electric Vehicles

Washington State Transportation Electrification Strategy, Policies & Funding

Steven Hershkowitz

TRANSPORTATION ELECTRIFICATION POLICY LEAD

10/18/2023

Washington State Department of Commerce

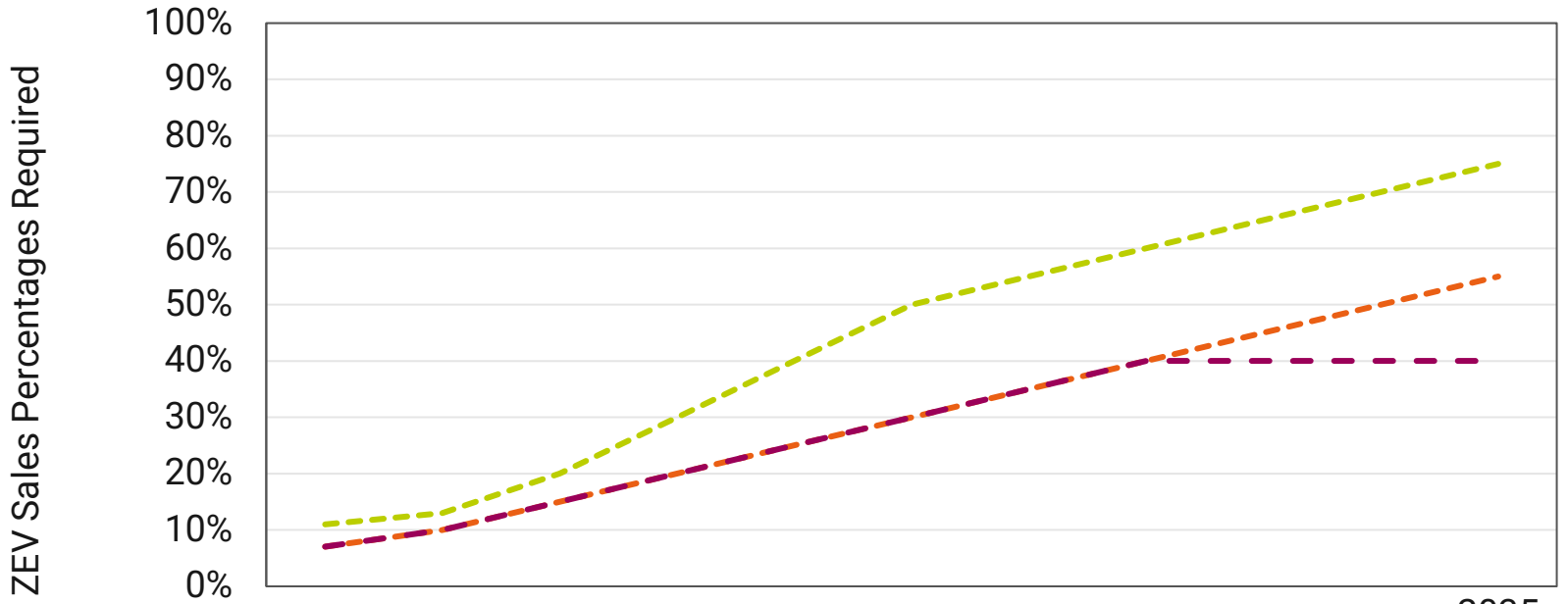
v1.5

Topics covered

- Advanced Clean Trucks and Advanced Clean Fleets
- Washington State Transportation Electrification Strategy (TES)
- Federal and state funding
- Gaps that need to be addressed
- Grid infrastructure planning

Advanced Clean Trucks (ACT)

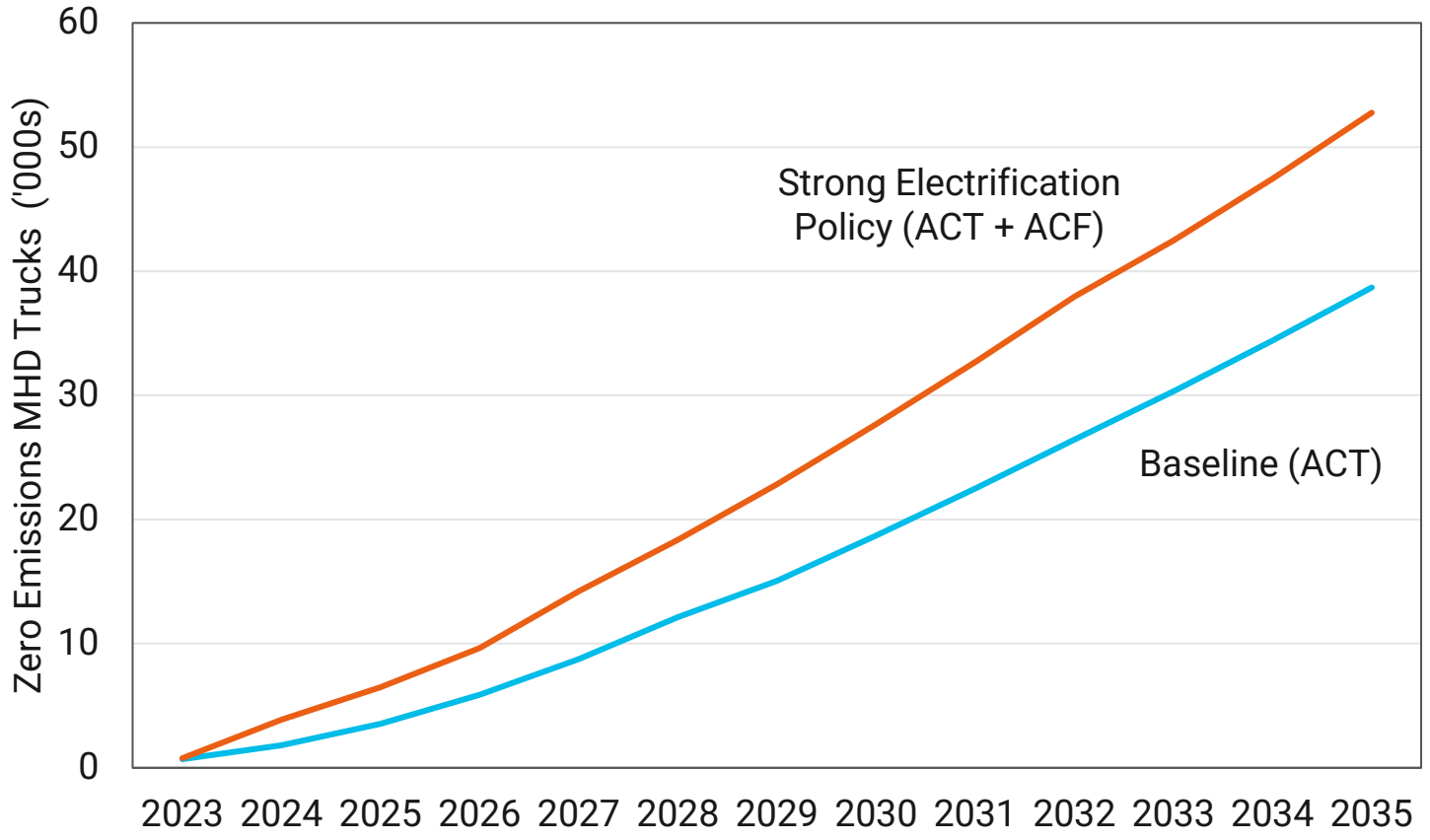
- Washington adopted ACT in 2021
- Goes into effect starting in model year 2025
- Fully focused on sales requirements



	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035 and beyond
Class 4-8	11%	13%	20%	30%	40%	50%	55%	60%	65%	70%	75%
Class 2b-3	7%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%
Class 7-8 Tractors	7%	10%	15%	20%	25%	30%	35%	40%	40%	40%	40%

Advanced Clean Fleets = 36% increase

- CA finalized but has not yet submitted a waiver
- Increases sales requirement for all classes to 100% in 2036
- Puts in place purchase requirements for priority fleets



Transportation Electrification Strategy

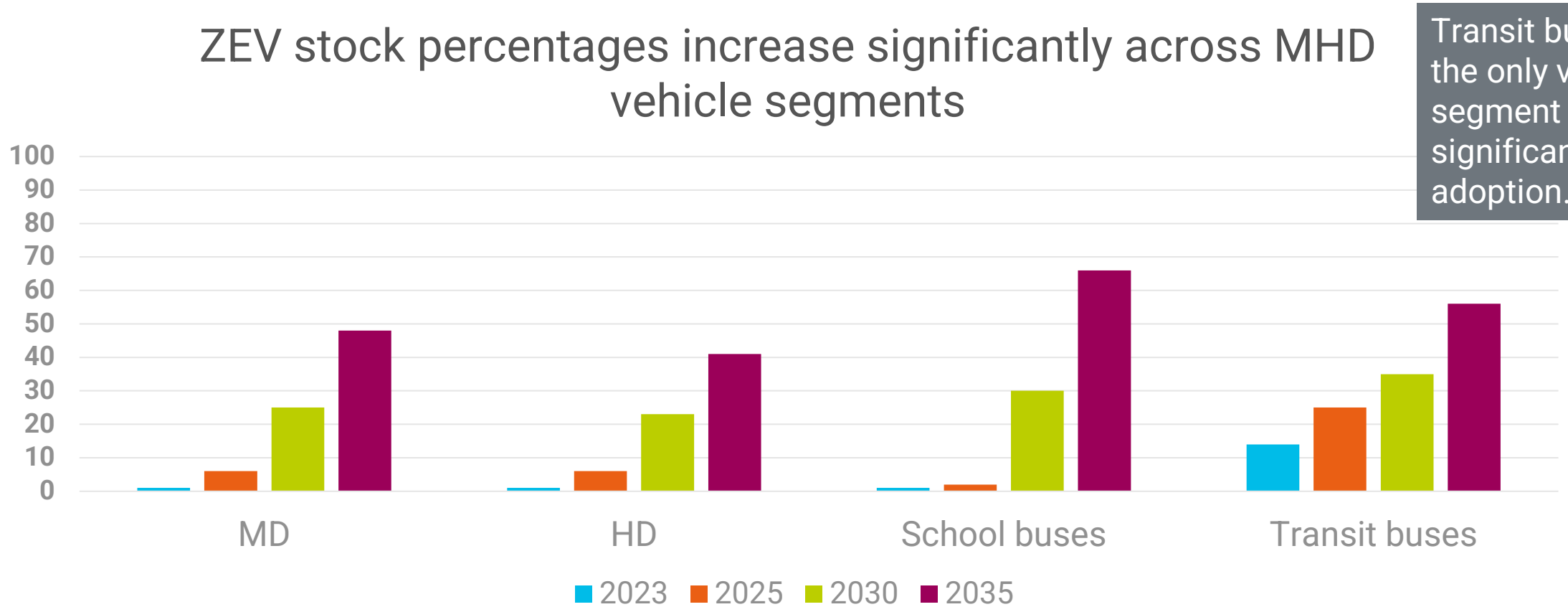
Vision: All Washington residents and fleets can use an EV and have access to convenient, reliable, and affordable charging stations.

- Developed by 10 state agencies and offices with **leadership from State Energy Office and Department of Transportation**
- **Action roadmap** to show what policies and investments are needed to achieve maximum electrification through 2035
- Modeling to set **key success metrics** for EV charging investments (location, type, quantity, power level, costs, timeline)

Strong electrification scenario components

- Advanced Clean Trucks (already adopted)
- Advanced Clean Fleets (reviewing authority)
- Increased vehicle incentives, charging infrastructure is sufficient, and fleets are aware of economics - leading to increase consumer demand
- Supply assumed to be a non-barrier

Sales requirements, economics drive growth



Transit buses are the only vehicle segment seeing significant FCEV adoption.

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					

Medium- and heavy-duty truck incentives

1. Largest opportunity to increase electrification of MHDVs is Advanced Clean Fleets or similar purchase requirements.
   - The roughly 200,000 tons CO2e reduced from fleet purchase requirements – if adopted – is essential to reach 2030 limit, with growing impact over time.
2. $40,000 federal commercial vehicle tax credit makes MHDV electrification cost effective for fleets with upfront capital.
   - This presents opportunity to scale up electrification of these vehicles beyond the levels required in sales and purchase requirements.
   - This can be achieved through a standard voucher AND equity-focused reserved funding and increased incentives.
   - Vehicles and charging must be funded together.

On-road emissions must be <10 MMT in 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

2030 targets for on- and non-road emissions

Two safe assumptions:

1. Transportation decarbonization is more likely than industrial sector
2. On-road emissions will be much easier to decarbonize than non-road emissions

Therefore, on-road emissions must make up for other sectors

- Very likely that non-road emissions end up being higher than on-road emissions by 2030
- **On-road emissions must be 10 MMT or less in 2030**

Achieving 2030 limit – On-road emissions

The TES modeled several scenarios that can "stack" onto each other to reach the 2030 limit

15.7 No public sector action (natural growth in electric vehicles + VMT)

13.1
- Current electrification/VMT policies successfully implemented

12.9
- Advanced Clean Fleets adoption rates for trucks

12.0
- Additional VMT strategies: land use, road pricing, and parking reforms

10.0
- Vehicle efficiency, early retirement of ICE vehicles, clean drop-in fuels

Million metric tons CO2e for on-road transportation in 2030.

Funding increases planned or needed

WA Legislature passed $120 million for an initial investment in MHD ZEVs

- $100 million program currently being designed
- $20 million for initial charging projects

MHDV represent the strongest opportunity to increased emissions reductions because the federal incentives are expected to be impactful

- $200 million a year increase with scrappage component could reduce 2030 emissions by another 330,000 tons

I-5 Corridor Charging and Fueling Infrastructure application

- Would fund up to four sites in WA

Training and public information/tools for fleet managers

Policy gaps

1. Data sharing between fleets and utilities
2. Siting additional parking with charging hosting capacity
3. Local capacity for project planning, especially for community-based organizations
4. Proactive make-ready investments, especially in utility-side grid infrastructure
5. School bus purchase requirements + substantial increase in funding for transition
6. Transit bus purchase requirements

Grid capacity cost assessment

- Will estimate costs for upgrades to electric utility grid infrastructure, down to the point of service delivery, needed to power all electric vehicle charging
- Anticipate that largest capacity constraints will be for heavy-duty charging.
- Study will not determine who should pay, but will assess potential impacts on ratepayers and commercial customers.
- Assessment is being shaped by steering group made up of four electric utilities, Public Counsel, and Tesla.
- Due Nov. 1, 2024 to the Legislature.

Thank you!

Washington State Department of Commerce

www.commerce.wa.gov

Steven Hershkowitz

TRANSPORTATION ELECTRIFICATION POLICY LEAD

Steven.Hershkowitz@commerce.wa.gov