

## Electric Vehicles in Minnesota

Electric Vehicles,<sup>1</sup> including Battery Electric Vehicles and Plug-in Hybrid Electric Vehicles, are a growing portion of vehicle ownership in Minnesota. As of January 2023, there were EVs registered in every Minnesota county, including more than 24,270 BEVs and 11,672 PHEVs registered statewide.

### National trends

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- EVs had their best-selling year in 2022 – in 2023 their share of new car sales in the U.S. surpassed 7%.<sup>2</sup>
- BEVs make up about 75 percent of new EV sales.
- Edmunds car shopping analysts anticipate that nearly 50 EV models will be available for sale in 2023, compared to 30 models in 2021.<sup>3</sup>
- In 2020, 25 percent of Americans said their next car will be electric, up from 20 percent in 2018.<sup>4</sup>
- 77 percent of potential EV-owners cite lower fuel costs as the primary motivator and 73 percent said environmental benefits would influence their decision.
- Globally, EV sales surged from 2.1 million in 2019 to 16 million in 2022. Bloomberg forecasts worldwide EV sales will increase to 20.6 million by 2025 as battery prices continue to decrease and more models are available.

### EV impacts to transportation funding

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States have different tax and fee structures used to generate transportation funding. As of March 2023, 32 states have laws requiring a special registration fee for EVs. Of those, 19 states also assess a separate, slightly lower fee on PHEVs. Fees range from \$50 per year in Colorado, South Dakota, and Hawaii to \$225 in Washington. A few states also allocate some fee revenue to support EV charging, including Alabama, where \$50 of the \$200 fee is used to pay for EV chargers. Colorado dedicates \$20 of the \$50 EV fee to the Electric Vehicle Grant Fund to support charging stations.<sup>5</sup>

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<sup>1</sup> For more information on EVs, see [Accelerating Electric Vehicle Adoption: A Vision for Minnesota](#)

<sup>2</sup> <https://www.mprnews.org/story/2023/04/12/epa-pollution-limits-aim-to-boost-us-electric-vehicle-sales>

<sup>3</sup> Ibid.

<sup>4</sup> <https://newsroom.aaa.com/2022/07/americans-reveal-fresh-thoughts-on-electric-vehicles/>

<sup>5</sup> <https://www.ncsl.org/energy/special-fees-on-plug-in-hybrid-and-electric-vehicles>

## Current law

Transportation funding in Minnesota is from three primary sources: Motor Vehicle Sales Tax, annual motor vehicle registration taxes, and the motor fuel excise tax (gas tax). Currently, fuel taxes are the largest source and make up about 45 percent total transportation revenue in Minnesota. MVST and registration taxes are based on the retail value of the vehicle, which is often higher for EVs than for internal combustion engine vehicles. BEVs also pay an annual \$75 registration tax.

Since EVs don't pay gas taxes, there are questions about their contribution to the Highway User Tax Distribution Fund. The table below compares transportation revenue over 10 years from Hyundai models that offered a BEV, HEV and ICEV versions in model year 2023. The comparison assumes an average of 15,000 miles traveled at 35 miles per gallon.

## Transportation revenue in Minnesota

The table below includes two sets of comparisons of HUTD revenue generated over 10 years between two sets of vehicles.

1. 2023 Hyundai models that have ICE, conventional hybrid (HEV), and BEV powertrain options
2. 2023 models of three comparable luxury vehicles with ICE, PHEV and BEV powertrains

### ICEs, PHEVs and BEVs 10-Year Tax Estimator

Year	Make/Model	Type	MSRP	MPG	Current Law: 10-year impacts				
					Gas Tax	MVST & Tab Fees	BEV Tax	HUTD Revenue	Relative contribution
2023	Hyundai Sonata	ICE	\$25,250	32	\$1,336	\$3,526	\$0	\$4,862	-
2023	Hyundai Sonata	HEV	\$28,250	52	\$822	\$3,933	\$0	\$4,755	98%
2023	Hyundai Kona	BEV	\$33,550	-	\$0	\$4,652	\$750	\$5,402	111%
2023	Lexus LS 500	ICE	\$78,535	22	\$1,943	\$10,755	\$0	\$12,698	-
2023	Volvo XC90 Recharge	PHEV	\$71,900	58	\$737	\$9,855	\$0	\$10,592	83%
2023	Tesla Model S	BEV	\$87,490	-	\$0	\$11,970	\$750	\$12,720	100%

The table shows that EVs currently contribute more revenue to the HUTD fund. If EVs reach price parity with ICE vehicles, the above story could change. It is notable that conventional hybrid vehicles may also disproportionately contribute to the HUTDF under the current tax scheme as the fuel efficiency benefits may not outweigh the added purchase cost.

The vehicles above are just examples but are believed to be representative of the broader market, with a bias towards lower relative cost vehicles to avoid unfairly skewing the analysis. For example, the least expensive Tesla Model S was used, instead of the "Plaid" version with a list price of \$107,490, which would contribute about \$1,500 more to the HUTD than a similar ICE vehicle.

## Future transportation revenue implications from EVs

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MnDOT modeled funding scenarios to evaluate potential future impacts of BEVs to state transportation funding over time if people chose to replace their ICEV with an EV. The analysis begins in 2030 and assumes the following:

- 20 percent of the pickup/passenger vehicle (light duty vehicles) fleet would be EVs in 2030.
- More than 40 percent of new vehicle sales are EVs in 2030.
- Vehicle miles traveled growth per capita is 14% lower than 2029.
- Revenue impacts are based on the current 10-year tax structure applied to years 2030-2039. This includes MVST, gas tax (\$0.285), and registration taxes, including the \$75 BEV tax.

## MVST, registration and license fees

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MnDOT compared EV prices to ICEVs. EVs generally cost between \$7,000 higher and \$5,000 lower than comparable models. The higher the “EV price premium,” the more an EV will pay in MVST, registration and license fees, not including the \$75 BEV registration fee.

## Gas taxes

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MnDOT also considered the trade-off in gas taxes that would come from replacing a non-EV with an EV, based on the fuel efficiency of the ICEV being replaced. ICEVs with lower miles per gallon (e.g., 26 MPG) pay more gas taxes while higher MPGs (e.g., 50 MPG) pay fewer gas taxes. Therefore, replacing a Toyota Prius (50 mpg) with an EV will have less impact on gas tax revenue than replacing a Dodge Charger (22 MPG) with an EV. PHEVs can operate only on electricity for shorter trips and switch to gasoline power for longer distances. PHEVs have comparable fuel efficiency to higher-mileage internal combustion engine vehicles.

The following table shows the potential revenue impacts for 2030 - 2039 where 20 percent of all light-duty vehicles are BEV under the current funding structure, including the \$75 EV registration fee. For reference, the current national projection for average ICE fuel economy in 2030 is 31 mpg.

**Modeled Funding Scenarios – Percent Change in Revenue Between ICE and BEV**

		Average MPG of non-EVs displaced by EVs						
		19	23	27	31	35	39	43
EV Price Premium	\$9,000	4%	7%	10%	12%	13%	15%	16%
	\$7,000	1%	4%	7%	9%	10%	12%	13%
	\$5,000	(2%)	2%	4%	6%	7%	8%	9%
	\$3,000	(4%)	(1%)	1%	3%	4%	5%	6%
	\$1,000	(7%)	(4%)	(2%)	0%	2%	3%	4%
	(\$1,000)	(11%)	(8%)	(5%)	(4%)	(2%)	(1%)	(0%)
	(\$3,000)	(13%)	(10%)	(8%)	(6%)	(5%)	(4%)	(3%)

- Green colored cells indicate additional transportation revenue with an EV.
- The highest revenue producing scenarios are when there is a high EV price premium and/or where EVs are replacing non-EVs with high MPG ICE vehicles.
- Even a small (\$4,000) EV price premium would keep revenues neutral or positive in all scenarios.

**Future uncertainty/risk**

The higher purchase price of EVs is the primary contributor to the higher HUTD revenue of EVs compared to ICEVs. Some forecasts suggest that EVs could become less expensive than their ICEV counterparts by 2025 if the cost of batteries continues to fall. If ICE vehicles cost the same or more than EVs, transportation revenues could be negatively affected.