UNITED STATES ELECTRIC VEHICLE MARKET SUMMARY: Q1 AND Q2 2022

A summary of key transportation electrification developments in the United States during the first half of 2022

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Executive Summary

Atlas Public Policy presents its second market summary report for the U.S. Department of Energy's Clean Cities network.¹ This report summarizes major developments in transportation electrification in the United States with a focus on activities during the first and second quarters of 2022 ("Q1 and Q2 2022").

The first half of 2022 showed strong momentum for transportation electrification in the United States. June 2022 and Q2 2022 set new monthly and quarterly records for the number of light-duty electric vehicle (EV)² sales as well as the percentage of light-duty sales that were EVs. The private sector continued to invest in transportation electrification, with Hyundai and General Motors (GM) both announcing major investments in EV and battery manufacturing plants in the U.S.

While this report focuses on activity in the first half of 2022, the passage in August 2022 of the federal Inflation Reduction Act (IRA) is significant enough to merit mention in this report. The IRA is by far the largest climate investment from the U.S. government to date and includes at least \$369 billion in climate investments, including \$106 billion eligible for EV-related investments³ such as support for vehicles or charging infrastructure [1].⁴ Policy at the state level was also strong during the first half of the year, with Maryland and Vermont passing legislation that includes funding for EVs and other states, including Connecticut and Maine, passing zero-emission vehicles sales targets. Figure 1 summarizes key developments in transportation electrification that occurred during Q1 and Q2 of 2022.

Investor-owned utility (IOU) activity during the first half of the year was considerably lower than during the first half of 2022, with \$49 million approved compared to \$421 million during Q3 and Q4 of 2021 and \$76 million proposed compared to \$1.3 billion proposed during Q3 and Q4 of 2021. In addition, medium- and heavy duty (MDHD) EV registrations remained low overall, at just over 3,500 out of more than 26 million registered MDHD vehicles. Still, despite decreased IOU activity and low MDHD EV registrations, record light-

⁴ This number is a result of Atlas's efforts to identify all sections of the IRA that could provide funding for climate investments. There may be additional sections of the law that could fund climate investments.



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² In this report, EVs include fully electric battery EVs and plug-in hybrid EVs. EVs in this report do not include hydrogen fuel cell vehicles.

³ This report describes funding as "eligible" to support EVs if the funding could go toward EV-related investments but could also go to other fuel types and technologies.

duty EV sales and strong state and federal policy support suggest EV adoption will continue to gain momentum in the coming years.

Q1 and Q2 2022 Highlights					
	Sales	 June 2022 was the highest month and Q2 2022 was the highest quarter on record for light-duty EV sales (90,000 and 230,000, respectively). 7.9 percent of light-duty vehicle sales in June were EVs (previous monthly record was 6.6 percent in March 2022). 			
4	Industry	 Hyundai announced plans to invest \$6.5 billion in an EV and battery manufacturing plant in Georgia [2]. General Motors announced plans to invest \$7 billion in manufacturing in Michigan for its electric Silverado and GMC Sierra as well as a battery manufacturing plant through their joint venture with LG Chem [3]. 			
	Utility	 Approved and proposed IOU investment was down in first half of 2022 compared to second half of 2021 (\$49 million approved compared to \$421 million during Q3 and Q4 2021; \$76 million proposed compared to \$1.3 billion proposed during Q3 and Q4 of 2021) 			
	Policy and Investment	 In August 2022, President Biden signed into law the Inflation Reduction Act, by far the largest U.S. investment in climate change mitigation to date.⁵ 			

Figure 1: Major Developments in Transportation Electrification During Q1 and Q2 2022

⁵ While this report covers activity in Q1 and Q2 of 2022, the unprecedented scale of the climate investments in IRA makes it important to describe here.



 In September 2022, all 50 states, Puerto Rico, and the District of Columbia received approval from the Federal Highway Administration for their plans to use the funds in the National Electric Vehicle Infrastructure (NEVI) program.

Light-duty EV Sales and Models

Sales

Light-duty EV⁶ sales hit a monthly record in June 2022, reaching 90,000 sales. This is 32,000 more than the 68,000 that were sold in June 2021 and 7,000 more than the previous monthly record of 83,000, which occurred in March 2022. Q2 2022 had the most light-duty EV sales of any quarter so far and every month during the first half of 2022 exceeded EV sales that occurred during the same month in 2021. June 2022 set a record for EV market share as well, reaching 7.9 percent of light-duty sales, exceeding the previous monthly record of 6.6 percent set in March 2022 by more than a full percentage point. Figure 2 shows monthly light-duty EV sales by automaker through June 2022.

⁶ EVs include fully electric battery electric vehicles and plug-in hybrid electric vehicles. EVs do not include hydrogen fuel cell vehicles.



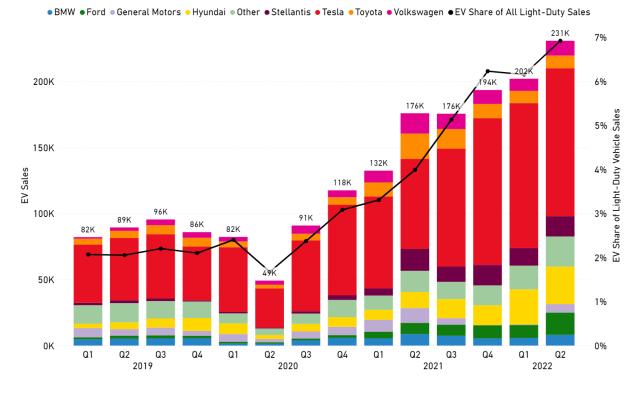


Figure 2: U.S. Quarterly Light-Duty EV Sales and Market Share by Parent Company

Source: [4]

Models

Tesla continued to lead the EV market, making up 52 percent of U.S. light-duty EV sales during the first half of 2022. This is up from 45 percent during the first half of 2021 but down slightly from the 54 percent share during the second half of 2021, indicating Tesla is maintaining but not necessarily growing its dominance of the U.S. light-duty EV market. Hyundai had the second highest share of light-duty EV sales during the first half of the year at 13 percent, significantly higher than its six percent share during the first half of 2021.

Medium- and Heavy-Duty EVs

There were slightly more than 1,500 new medium- and heavy-duty ("MDHD") EV registrations (vehicle classes 3 – 8) during the first quarter of 2022, representing a 76



percent increase in total registered MDHD EVs.⁷ Despite this significant growth, MDHD EV registrations remain low overall, at just over 3,500 out of more than 26 million registered MDHD vehicles. About 45 percent of registered MDHD EVs were in California. Washington state was second highest with 429 registrations, and no other state had more than 200 MDHD registrations.

Despite the low number of MDHD registrations, policy support for MDHD electrification suggests adoption will increase rapidly in the coming years. By the end of June 2022, six states – California, Massachusetts, New Jersey, New York, Oregon, and Washington – had adopted the Advanced Clean Trucks ("ACT") regulation. The ACT regulation requires manufacturers that sell MDHD vehicles to sell zero-emission vehicles as an increasing percentage of their annual sales from 2024 to 2035. The ACT originated in California and may be adopted by other states under the authority of the Clean Air Act. Nine other states and the District of Columbia (D.C.) signed a Memorandum of Understanding in July 2020 to stop selling internal combustion engine MDHD vehicles by 2050 [5].⁸ These states and D.C. may be the next to adopt the ACT.

At the federal level, the recently enacted BIL and IRA together provide tens of billions of dollars that could support MDHD EVs, including billions of dollars in expansions of existing programs such as the Low or No Emissions program, the Buses and Bus Facilities program, the Congestion Mitigation and Air Quality Improvement Program (CMAQ), and the Diesel Emissions Reduction Act (DERA) [6]. In March 2022, the U.S. Environmental Protection Agency issued a proposed rule, the "Clean Trucks Plan," which would establish new and stronger emissions standards for MDHD vehicles starting with model year 2027 [7].

Private Investments

Private investment in transportation electrification has been increasing rapidly, and the first half of 2022 saw several major announcements. Nearly every major U.S. automaker has announced plans for substantial electrification of their vehicle lineup in the near future, including eight automakers that have announced targets for 100 percent electrification by dates ranging from 2025 to 2040. These include General Motors, Volvo, Honda, Audi, Lexus, Hyundai, Jaguar, and Mini [8]. Other automakers have also announced substantial

⁸ On July 14, 2020, 15 states and the District of Columbia signed the memorandum of understanding. The 15 states are California, Connecticut, Colorado, Hawaii, Maine, Maryland, Massachusetts, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, and Washington.



⁷ Except where stated otherwise, the information in this section is from the Medium- and Heavy-Duty Vehicle Electrification Dashboard on EV Hub [24].

electrification targets including: Nissan, which announced plans for 40 percent of its U.S. sales to be electric by 2030; Ford, which announced plans for one-third of global sales to be electric by 2026; Kia, which plans for 40 percent of its global sales to be electric by 2030; and Subaru, which plans to only sell EVs worldwide by the end of 2035 [8].

Private companies are also making substantial investments in charging infrastructure. In July, GM announced plans to partner with the charging company EVGo to build a nationwide DC fast charging network. The companies plan to install more than 3,200 chargers at Pilot Flying J truck stops across the county by 2025 [9]. In addition, in June 2022, Electrify America, the largest open network of DC fast chargers in the US, announced that it raised an additional \$450 million of equity investments and Siemens became its first external investor [10].

Beyond automaker electrification targets and charging infrastructure investments, private companies are making significant investments in EV manufacturing. The largest single investment during the first half of 2022 was from Hyundai, which in May announced plans to invest \$6.5 billion in a manufacturing plant in Georgia. In January, GM announced plans to invest \$7 billion across two facilities in Michigan for production of its electric Silverado and GMC Sierra as well as the construction of a battery manufacturing plant with Ultium Cells, GM's joint venture with LG Chem [3, 2]. Table 1 summarizes the five largest U.S. EV and battery manufacturing investment announcements from private companies during the first half of the year.

Table 1: Top Five Largest U.S. EV Manufacturing Investment Announcements Made During the First
Half of 2022

Company	Parent Company	Facility Name	State	Sum of EV-only Investment (\$Billion)
Hyundai Motor	Hyundai Motor	Hyundai Factory	GA	\$6.5
America	Company			
Statevolt	Statevolt	Imperial Valley Gigafactory	CA	\$4.0
General Motors	General Motors Company	Orion Factory	MI	\$4.0
General Motors	General Motors Company	Lansing Battery Plant	МІ	\$2.6



Company	Parent Company	Facility Name	State	Sum of EV-only Investment (\$Billion)
Јеер	Stellantis	Stellantis Factory	IN	\$2.5

Source: [4]

Public Policy

Federal Policies and Investment

In August 2022, President Biden signed into law the Inflation Reduction Act ("IRA"), by far the largest U.S. investment in climate change mitigation to date. While this report covers activity in Q1 and Q2 of 2022, the unprecedented scale of the climate investments in IRA makes it important to mention. IRA includes at least \$369 billion in climate investments, including \$106 billion eligible for EV-related investments,⁹ such as support for vehicles or charging infrastructure [1]. Back in November 2021, President Biden signed into law the \$1 trillion Bipartisan Infrastructure Law (BIL), formally known as the Infrastructure Investment and Jobs Act. BIL includes \$7.5 billion dedicated to EVs and \$32 billion eligible to support EVs. Combined with the EV investments in IRA, the federal government could invest nearly \$150 billion in EVs. An additional \$67 billion eligible for EVs in the Creating Helpful Incentives to Produce Semiconductors (CHIPS) Act, also signed into law by President Biden in August 2022, brings this total to more than \$200 billion [11]. Prior to IRA, BIL, and the CHIPS Act, the federal government had invested about \$3.3 billion in EVs across all programs since 2008 [12]. These new federal investments, combined with continued support from states, utilities, and the private sector have the potential to be transformative for transportation electrification and climate change mitigation.

During the first half of 2022, states continued to work on their deployment plans for the \$5 billion National Electric Vehicle Infrastructure (NEVI) program. Through the NEVI programs, states will invest in installing DC fast charging stations every 50 miles along corridors. NEVI

⁹ This report describes funding as "eligible" to support EVs if the funding could go toward EV-related investments but could also go to other fuel types and technologies. These funding totals is a result of Atlas's efforts to identify all sections of IRA that could provide funding for climate investments. There may be additional sections of the law that could fund climate investments.



plans were due August 1, and all 50 states, DC and Puerto Rico submitted plans [13]. As of late September, all 50 plans were approved by the Federal Highway Administration [14].

State and Local Policies

States were also active in supporting EVs during the first half of the year by enacting policies that provide funding for EVs and charging infrastructure, establishing zeroemission sales targets and requirements, and by electrifying their own fleets. Maryland and Vermont both passed legislation with funding for EVs. Vermont passed the largest transportation bill in the state's history, H736, which appropriates \$868 million, including \$6.25 million for the installation of DC fast chargers along the state highway network, \$10 million for workplace and multi-family dwelling EV charging programs, \$12 million for a new EV incentive program, and \$3 million for purchase incentives for new or used EVs [15]. In Maryland, the legislature passed HB 1391, which includes \$7 million in grants for medium-and heavy-duty zero-emission vehicles.

Other states passed zero-emission vehicles sales or purchase targets, including Connecticut's SB 4, which established a target of 100 percent zero-emission school buses in environmental justice communities by 2035 and Maine's LD 1579, which established a target of 100 percent zero-emission vehicles ("ZEVs") for the state's light-duty and public school bus fleets by 2040 [16]. Connecticut also established a ZEV purchase requirement for its own light-duty state fleet by 2030 [17]. In July 2022, Massachusetts passed a major clean energy bill, H 5060. The bill includes rebates for EVs, a target for Massachusetts Bay Transit Authority buses to be 100 percent electric by 2040, and a requirement that all new light-duty vehicle sales be zero emission starting in 2035 [18].

New Mexico, Nevada, and Virginia adopted California's ZEV program in its Advanced Clean Cars I program, bringing the total number of states that have done so to 16 [19].¹⁰ The Advanced Clean Cars I program requires an increasing percentage of passenger cars, lightduty trucks, and medium-duty vehicle sales in the state to be electric each year until reaching 35 percent in 2026. On April 12, 2022, California proposed Advanced Clean Cars II, which establishes zero-emission vehicle sales requirements for model years 2026 and beyond, until reaching 100 percent zero-emission vehicle sales in 2035. In August, the Advanced Clean Cars II rule passed. Other states have the authority under the Clean Air Act to adopt the program [20].

¹⁰ States that have adopted California's Clean Cars I ZEV program are: California, New Mexico, Virginia, Nevada, Minnesota, Washington, Colorado, Oregon, Vermont, New York, Maryland, New Jersey, Massachusetts, Maine, Connecticut and Rhode Island.



Volkswagen Settlement Environmental Mitigation Trust

During the first half of the year, \$127 million from the Volkswagen ("VW") Settlement was awarded for EVs rather than other fuel types, representing 95 percent of all VW Settlement funds awarded during the period. Q2 2022 became the first quarter to have 100 percent of awards go to EVs as opposed to other fuel types. Prior to 2021, only 46 percent of VW Settlement awards went to support electrification. From the 2017 Settlement date through June 2022, a total of \$795 million has been allocated to supporting EVs. Nearly \$50 million of the \$127 million awarded for EVs during the first half of the year went to funding charging infrastructure. Transit buses ranked next with nearly \$37 million, followed by school buses with nearly \$23 million. About 45 percent of the \$2.8 billion available to states through the VW Settlement remains unspent.

Non-Governmental Organization Initiatives

Beyond public and private investment, non-governmental organizations also took actions to support transportation electrification in Q1 and Q2 2022. In December 2021, the Edison Electric Institute, a trade association representing U.S. investor-owned utilities, announced the formation of the National Electric Highway Coalition ("NEHC"). The NEHC is a collaboration of more than 60 IOUs, municipal electric companies, electric cooperatives, and the Tennessee Valley Authority that are committed to providing a reliable network of fast charging stations along major U.S. corridors by the end of 2023.



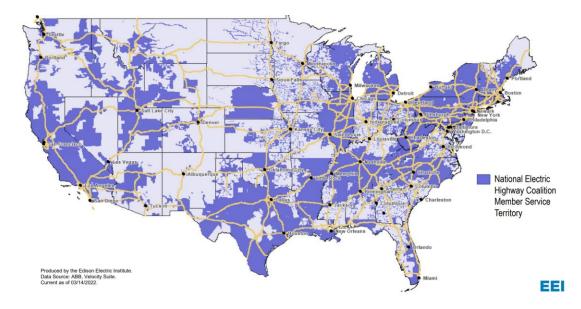


Figure 3: National Electric Highway Coalition Member Service Territories and Major U.S. Corridors

This map shows the service territories of members of the National Electric Highway Coalition as well as the major U.S. highways along which members seek to build a network of fast charging stations. This image was produced by the Edison Electric Institute.

Source: [21]

Utility Investments

During the first half of 2022, investor-owned utilities were approved to invest \$49 million in transportation electrification programs, significantly less than the \$421 million approved during the previous two quarters.¹¹ The programs included in this \$49 million could support 279 DC fast charging ports¹² and 5,400 Level 2 ports. The first half of 2022 also saw \$180 million of denied IOU EV investment proposals, representing nearly 80 percent of all investment decisions (approvals and denials), compared to 17 percent since 2012. Nearly all of the rejected investment came from a \$150 million EV purchase rebate program proposed by Xcel Energy in Minnesota as part of its COVID-19 Pandemic Economic Recovery Investments. The rebates would have helped with the purchase of private light-duty EVs, transit buses, and school buses. This program would have been unique in offering substantial incentives for vehicles. It has been more common for IOUs to help fund

¹² DC fast charging port counts refer to the number of ports that could be used simultaneously. A DC fast charger with two ports where only one can be used at a time counts as one port.



¹¹ All information in this section is from the Utility Filings dashboard on EV Hub unless noted otherwise [23].

charging infrastructure. In fact, since 2012, only \$8.7 million of IOU funding has been approved for EVs, compared to \$3.1 billion for charging infrastructure. There was also significantly less proposed investment from IOUs during the first half of the year, \$76 million proposed compared to \$1.3 billion proposed during Q3 and Q4 of 2021.

Fluctuations in IOU activity when comparing short periods of time are to be expected, since one or two large programs can cause major increases or decreases, and EV industry-leading IOUs are not expected to propose large programs every year. Still, the decrease in IOU activity is significant and may be due to factors other than arbitrary fluctuations. For example, given the recently established \$5 billion NEVI program, the decrease in IOU activity raises the question of whether some IOUs or state public utility commissions may think the utility role in providing transportation electrification funding is not as important as previously. Importantly though, studies indicate that significant funding in addition to the \$5 billion from NEVI is needed to meet certain electrification goals. For example, a study conducted by Atlas Public Policy in April 2021 based on the National Renewable Energy Laboratory's EVI Pro-Lite tool found that from 2021 to 2030, the United States needs to invest \$39 billion in public charging infrastructure to achieve 100 percent passenger EV sales by 2035 [22]. Table 2 summarizes IOU activity in transportation electrification programs during the first half of 2022.

Utility	State	Investment	Status	Docket Number
Xcel Energy	MN	\$152,000,000	Denied	E002/M-20/745
Jersey Central Power & Light	NJ	\$39,874,366	Approved	EO21030630
Puget Sound Energy	WA	\$38,314,000	Filed	UE-220294
San Diego Gas & Electric	CA	\$20,000,000	Filed	Advice 4021-E
DTE Energy Company	MI	\$17,900,000	Filed	U-20836
Evergy	МО	\$11,686,000	Denied	ET-2021-0151
Jersey Central Power & Light	NJ	\$6,725,000	Denied	EO21030630
Baltimore Gas and Electric Company	MD	\$6,162,000	Denied	9478
Xcel Energy	MN	\$5,000,000	Approved	E002/M-20/745

Table 2: U.S. Investor-Owned Utility Investment Activity During the First Half of 2022



Utility	State	Investment	Status	Docket Number
Delmarva Power	MD	\$1,750,000	Denied	9478
Potomac Electric Power Company	MD	\$1,750,000	Denied	9478
Baltimore Gas and Electric Company	MD	\$1,100,000	Approved	9478
Evergy	MO	\$1,087,500	Approved	ET-2021-0151
Potomac Edison	MD	\$742,000	Approved	9478
Duke Energy	NC	\$600,000	Approved	E-7, Sub 1266
Delmarva Power	MD	\$525,000	Approved	9478
Potomac Electric Power Company	MD	\$525,000	Approved	9478
Potomac Edison	MD	\$410,000	Denied	9478

Note: Only programs that included funding are listed in the table.

Source: [23]

Through the end of 2022, IOUs have been approved to invest nearly \$3.6 billion in transportation electrification. These approved programs could support more than 7,800 DC fast chargers and more than 304,000 Level 2 ports. Figure 4 summarizes approved, proposed, and denied IOU investments in transportation electrification from 2012 through June 2022.



United States Electric Vehicle Market Summary: Q1 and Q2 2022

Figure 4: U.S. Investor-Owned Utility Investments in Transportation Electrification Through June 2022

Approved	Pending/Filed	Denied/Withdrawn
34	25	22
States	States	States
138	<mark>62</mark>	47
Filings	Filings	Filings
55	<mark>36</mark>	28
Utilities	Utilities	Utilities
\$3,552,187,517	\$2,920,392,613	\$718,953,126
Investment	Investment	Investment
7,839	3,816	854
DC Fast Charging Stations	DC Fast Charging Stations	DC Fast Charging Stations
304,428	273,428	90,543
Level 2 Charging Stations	Level 2 Charging Stations	Level 2 Charging Stations

Source: [23]

Conclusion

The first half of 2022 saw major developments in transportation electrification. The passage of the BIL in late 2021 and the IRA in August of 2022 mark the largest climate investments from the federal government by far and will provide transformative levels of funding for transportation electrification. Light-duty EV sales hit a new monthly record in July and a new quarterly record in Q2 2022, and state legislatures continue to support transportation electrification through funding programs, electrification targets, and by adopting California's ZEV program. While approved investments from IOUs were down compared to the second half of 2021, and while MDHD EV adoption remains very low, strong policy support at the state and federal levels as well as record light-duty EV sales indicate that transportation electrification has strong momentum.

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