

Fuels Institute



EXECUTIVE SUMMARY

Evaluation of Policies for Electric Vehicle Charging Infrastructure Deployment

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Effective Policy Approaches for EV Charger Deployment

The availability of electric vehicle (EV) charging infrastructure, formally referred to as electric vehicle supply equipment (EVSE), is a primary concern with respect to the developing EV market in the United States (U.S.). According to the Alternative Fuels Data Center (AFDC), a resource of the US Department of Energy’s Vehicle Technologies Office (US DOE VTO), there were 45,532 publicly available Level 2 and direct current fast charger EV charging stations in the U.S. containing 111,347 charging ports in November 2021.

While estimates vary, a 2021 study by the International Council on Clean Transportation suggests that 900,000 public Level 2 and 180,000 direct current fast chargers (DCFCs) will be needed to support a U.S. EV stock of twenty-six million by 2030.

Relatedly, the Biden Presidential Administration has set a goal of deploying 500,000 EV charging stations by 2030, representing a buildout of over 454,000 charging stations from November 2021 to 2030.

To help guide federal, state, and local policymakers in the development of policies and programs focused on EVSE deployment, this study evaluated the effectiveness of various policy approaches in contributing to deployments and broader EV charging market development.¹ Using both statistical analysis and interviews of policymakers and business leaders across key states, this study aimed to identify the major existing U.S. policies, incentives, laws, regulations, and programs

¹ EVSE Market Development is a weighted average of state-level EV charging station deployments (75% weight) from 2016 through 2020 and state-level EV sales (25% weight) in the same timeframe.

(collectively referred to as ‘policies’) adopted between 2016 and 2020; to evaluate the effectiveness of these policies; to evaluate the relationship between policies and the development of the broader EV charging market; and, to identify opportunities for future policy formulation.

Several policy types contribute to EVSE market development in their own ways: Several incentives, laws, and regulations were associated with higher levels of EVSE market development.

When examining differences in measures of EVSE market development between states with and without individual policy types, a number of policies categorized as both “incentives” and “laws and regulations” were found to have significant positive associations with market development. Incentives include grants, rebates, tax incentives, loans and leases, and utility incentive programs. Laws and regulations include air quality and emissions reduction programs, concerted efforts to increase charger deployments, legislation clarifying that EV charger owners and operators are not to be regulated as public utilities, and requirements related to alternative vehicle procurement and fuel use. Statistical analysis shows that for each of these policy types, the differences between states with and without each one individually is greater than the variation within those two groups of states and that this difference is statistically significant.

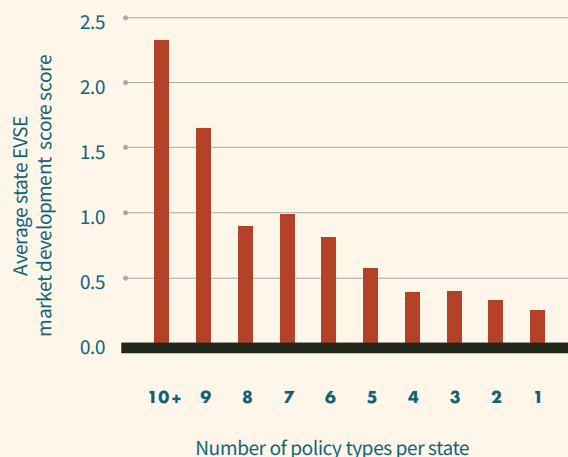
States employing a broader set of policy approaches have higher measures of EVSE market development, especially states mixing incentives with state programs focused on transportation emissions reduction and clear deployment goals or mandates.

In general, states with higher measures of EVSE market development have adopted a larger quantity of policies across a wider range of policy types.

The figure shows the average EVSE Market Development Score for states based on how many different policy types they have adopted.

States with a broader range of policies have more developed EV Charging Markets

AVERAGE STATE EVSE MARKET DEVELOPMENT SCORE BY NUMBER OF POLICY TYPES ADOPTED



EVSE Market Development Score is a weighted average of charging stations deployed per capita (75% weight) and EV sales per capita (25% weight).

While this figure shows scores in ones and tenths, original scores were in thousandths and then-thousandths; scores were multiplied by a factor of 1,000 to improve readability of this figure.

Certain combinations of policy types were also associated with both higher levels of market development and larger differences between states with and without the combinations, namely funding (grants, rebates, tax incentives) and a state program (intrastate and/or interstate collaboration) focused on deploying EVs, deploying EV charging infrastructure, and reducing transportation emissions.

Public Funding Has Been a Significant Contributor to Charging Station Deployments, Accounting for an Estimated One-Quarter of Variation in States' Deployments from 2016-2020

According to Atlas Public Policy's EV Hub, 31 states announced the investment of public dollars into the deployment of EV charging stations from 2016 through 2020. Levels of per capita funding vary by state, as does the ratio of EV charging stations deployed by funding amount. A linear regression of this data suggests that public funding may account for 26% of the variation in per capita charging station deployments across the states, on average. The same regression estimates that, on average, \$1.00 per capita spent may yield roughly 6.5 charging station deployments per 100,000 people.

Higher Demand Charges Alone Do Not Appear to Have a Negative Correlation with Public DCFC Station Deployments, but Other Research and Stakeholder Interviews Have Noted an Impact on Operating Costs, Which May Influence Future EVSE Deployment

Utility demand charges are commonly cited as a significant barrier to the deployment and operation of EV charging infrastructure due to prohibitively high operating costs that may result. Analysis comparing average commercial demand charge rates and the number of public charging stations with DCFC deployed by ZIP code shows little correlation between the two. While a more comprehensive analysis is required, these results

do not provide enough evidence to say that demand charges alone have had a significant impact on station deployments; other factors are likely also influencing deployments. Other studies show that demand charges can increase operating costs high enough to make higher-powered DCFC less likely to reach profitability or breakeven. This may be a significant barrier to deployment of high-powered DCFC.

Interviewed Experts Shared Best Practices: Set Clear and Actionable Goals, Establish Funding Programs, Encourage Flexibility, and Align State and Local Efforts

The research team interviewed state government officials, electric utility representatives, and electric vehicle service provider representatives. These experts shared that setting actionable goals for EV adoption, EV charger deployment, and emissions reduction are effective ways of aligning public and private efforts, increasing agency and multi-state coordination, and creating an environment that stimulates investment. Funding should support both EVSE deployment and operation, and grants, rebates, and tax incentives are reported to be effective mechanisms. Interviewees shared that streamlined permitting processes encourage EV charger deployment as well. Finally, interviewees cited programs with a higher degree of flexibility, clear guidance, and simplicity for applicants as more effective than overly prescriptive or complicated programs.

A higher degree of flexibility, clear guidance, and simplicity for applicants were noted qualities of effective programs.



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About the Electric Vehicle Council

The Electric Vehicle Council is a non-advocacy organization whose mission is to coordinate the efforts of organizations actively engaged in supporting the deployment of EV charging infrastructure. The EV Council works to distribute existing research and education materials to amplify and enhance its value to the market, as well as conducts original research to fill gaps in knowledge and further educate interested stakeholders concerning the opportunities, challenges, and successful strategies associated with the installation and operation of EV charging stations.

For more information on the Electric Vehicle Council and a current list of members, please visit: fuelsinstitute.org/Councils/Electric-Vehicle-Council

About the Fuels Institute

The Fuels Institute, founded by NACS in 2013, is a 501(c)(4) non-profit research-oriented think tank dedicated to evaluating the market issues related to vehicles and the fuels that power them. By bringing together diverse stakeholders of the transportation and fuels markets, the Institute helps to identify opportunities and challenges associated with new technologies and to facilitate industry coordination to help ensure that consumers derive the greatest benefit.

The Fuels Institute commissions and publishes comprehensive, fact-based research projects that address the interests of the affected stakeholders. Such publications will help to inform both business owners considering long-term investment decisions and policymakers considering legislation and regulations affecting the market. Research is independent and unbiased, designed to answer questions, not advocate a specific outcome. Participants in the Fuels Institute are dedicated to promoting facts and providing decision makers with the most credible information possible so that the market can deliver the best in vehicle and fueling options to the consumer.

For more about the Fuels Institute, visit fuelsinstitute.org.

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