



Electric Vehicle Transportation Center

Policies that Impact the Acceleration of Electric Vehicle Adoption

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EVTC Project 2 – Identify and Analyze Policies that Impact the Acceleration of Electric Vehicle Adoption

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The objective of this project was to examine state and federal regulatory policies to determine their ability to influence the adoption of electric vehicles in the long term. The work included a literature review of alternative fuel vehicle policy databases and reports, a review of electric vehicle industry publications on the topic of incentives and trends, and a review of state and federal government alternative fuel vehicle deployment programs. The work was conducted by Colleen Kettles, J.D., Program Director at the Florida Solar Energy Center. She would like to acknowledge the work of Stephen L. Reich and Alexander Kolpakov of the University of South Florida Center for Urban Transportation Research for the extended excerpt from the report “State Incentives for Alternative Propulsion Technologies/Fuels” which has been used with permission.

Final Research Project Report
Policies that Impact the Acceleration of Electric Vehicle Adoption

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ABSTRACT

To better understand the influence of policy initiatives that relate to electric vehicles (EVs) have on accelerated deployment, this project focused on a number of successful public and private initiatives and policies designed to encourage the adoption of EVs and related infrastructure. References to databases that keep pace with this rapidly evolving and transformative industry are included, and best practices for design of laws and incentives are provided.

INTRODUCTION

This project began as an effort to research and analyze policies designed to accelerate the transition to electrified transportation. However, since the EV industry is a dynamic and transformative sector, keeping pace with incentives, programs, and policies became a challenge. As such, this report highlights programs that have influenced adoption, provides a critique of best practices, and provides references to databases where current information can be found so that interested parties can access the most recent developments in EV policy initiatives.

RESEARCH RESULTS

The research results include a description of exemplary programs, a state-by-state listing of policies, and a discussion of the impact of federal policy and regulations relative to vehicle fleets. Finally, an excerpt from a study of state incentives to identify best practices is provided to help guide the development of future regulatory schemes.

Exemplary Programs

ZEV Action Plans

California Zero Emissions Vehicle (ZEV) Action Plan¹. California accounts for approximately one-half of the U.S. EV sales. California Governor Jerry Brown, his staff, and a California Interagency working group initiated and updated a comprehensive ZEV Action Plan. This plan builds upon the strong foundation for the ZEV market and further outlines the steps state agencies will take in order to achieve the Governor's goal of 1.5 million ZEVs on the road in California by 2025. An Executive Order issued in January 2018 implemented a revised target of five million ZEVs in California by 2030. The

¹ https://www.gov.ca.gov/wp-content/uploads/2018/01/2016_ZEV_Action_Plan-1.pdf

Governor also proposed a \$2.5 billion initiative to support the state’s clean vehicle rebates and spur more infrastructure investments that would help bring 250,000 vehicle charging stations and 200 hydrogen fueling stations to California by 2025. The new Executive Order builds on past efforts to boost zero-emission vehicles, including: legislation signed in 2017, 2014 and 2013; adopting the 2016 Zero-Emission Vehicle Plan and the Advanced Clean Cars program; hosting a Zero-Emission Vehicle Summit; launching a multi-state ZEV Action Plan; co-founding the International ZEV Alliance; and issuing Executive Order B-16-12 in 2012 to help bring 1.5 million zero-emission vehicles to California by 2025.

Currently nine states have committed to coordinated action to ensure the success of their respective zero emission vehicles (ZEV) programs. This initiative originated in 2013 when the governors of eight states signed a memorandum of understanding to acknowledge their commitment. In 2018, the ninth state joined the task force.



The members of the Multi-State ZEV MOU are committed to having at least 3.3 million ZEVs operating by 2025. The plan - agreed to by California, Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island, Vermont, and most recently New Jersey – identifies “joint cooperative actions the signatory states will undertake, and additional actions that individual jurisdictions are considering, to build a robust market for ZEVs.” All states that signed the Memorandum of Understanding (MOU) have undertaken programs that support the deployment of electric vehicles. For

example, Vermont developed a Vermont Zero Emission Vehicle Action Plan to identify strategies and actions that can facilitate achievement of the commitments outlined in the ZEV memorandum. In October 2016, California released an updated roadmap to achieving the goal of 1.5 million zero-emission vehicles on California roadways by 2025. Some states, such as Connecticut, Illinois, and the District of Columbia have reduced annual registration fees for electric or alternative fuel vehicles. Eighteen states, however, have imposed additional annual fees for the registration and licensing of certain hybrid and electric vehicles.

Zero Emission Vehicle (ZEV) Challenge.² The Climate Group and C40 Cities launched the ZEV Challenge on July 10, 2018, in advance of the Global Climate Action Summit (GCAS), which convened in San Francisco this month (September 12-14, 2018). The ZEV Challenge “urges the global auto industry to accelerate the manufacture of electric vehicles and increase production to fulfill growing demand, bringing together the collective purchasing power and influence on the market of stakeholders and existing programs, which have until now been focused on separate sectors. In this way, the challenge provides an opportunity for the auto sector to take the lead in the large-scale transition to electric vehicles and help deliver the goals of the Paris Agreement on climate change.”³ Parties to the challenge are currently the State of California, New York City, Paris, Los Angeles, London, Milan, Rome, Copenhagen, Pittsburgh, Mexico City, Medellin and the regions of Australian Capital Territory and Navarra, EDF Energy, LeasePlan, and Unilever.

Drive Electric Florida

Drive Electric Florida (DEFL) is a non-profit consortium of approximately 20 organizations (electric utilities, EV industry, local governments, universities, etc.) formed to advance EVs in Florida. DEFL is an example of a diverse group of organizations coming together to develop a unified approach to educate decision makers and the public about the value of EVs. The organization supports the growth of electric vehicle ownership and accompanying infrastructure to promote the economic and environmental security of Florida.

Drive Electric Florida has hosted events that engaged state legislators and their staff members, as well as state agency representatives in an effort to support EV friendly policies. One example of their legislative success is the adoption of a statute that requires community associations to allow the installation of EV charging stations by EV drivers.⁴ Drive Electric Florida has also played a leading role in raising awareness of the opportunities for transportation electrification under the Volkswagen Mitigation Trust Fund.

The primary goal of the environmental mitigation trust is to reduce NO_x emissions. Prime movers (including diesel and gasoline vehicles) are currently the largest source of

² <https://www.theclimategroup.org/project/zev-challenge>

³ <https://unfccc.int/news/zero-emission-vehicle-challenge-launched>

⁴ <https://www.flsenate.gov/Session/Bill/2018/841>

NO_x emissions. Among alternative fuel options eligible under the terms of settlement, electric vehicle (EV) support is highly encouraged especially in conjunction with the electric grid as one integrated system. Technologies such as electric school and transit buses fit very well into such renewables-based power generation scheme. Buses can charge using solar power during the day between services and if necessary, they can be charged again at night, when electricity use is at its lowest. EVs, as a part of a more dynamic, smarter grid, also offer the opportunity for energy storage and by feeding power back to the grid during peak demand periods.

Volkswagen Clean Air Act Violation Settlement⁵

In October 2016 and May 2017, Volkswagen (VW) settled with the U.S. government resolving claims that it violated the Clean Air Act by selling diesel vehicles that violated the U.S. Environmental Protection Agency's (EPA) mobile source emission standards. The violation involved installation and use of emission testing "defeat devices" in nearly 600,000 turbocharged direct injection (TDI) 2.0-liter and 3.0-liter diesel engine vehicles sold and operated in the United States. The defeat devices allowed the diesel vehicles to meet the applicable nitrogen oxides (NO_x) emission limits during emissions tests while not meeting these limits during normal vehicle operation. To resolve these Clean Air Act violations, VW has agreed to provide approximately \$16 billion to fund the following actions:

- A requirement that VW spend \$11 billion to buy back or install pollution control equipment for at least 85 percent of the 2.0-liter and 3.0-liter TDI engines;
- A \$2 billion investment to promote the use of zero emission vehicles and infrastructure; and
- \$2.925 billion to fully remediate the excess NO_x emissions that were emitted by the approximately 500,000 2.0-liter and 80,000 3.0-liter vehicles equipped with defeat devices (the "Mitigation Trust Fund").

In October 2, 2017, the executed Final Trust Agreement was filed with the court, establishing the terms and conditions of the Mitigation Trust Fund. Under the terms of Final Trust Agreement, all 50 states, the District of Columbia and Puerto Rico are eligible to become beneficiaries under the Environmental Mitigation Trust Agreement for State Beneficiaries. Each eligible beneficiary can receive a predetermined share of \$2.925 billion, which is based upon the number of 2.0-liter and 3.0-liter diesel vehicles sold in each jurisdiction. The purpose of the Mitigation Trust Fund is to provide money for specified diesel emission reduction projects. These projects are intended to offset excess emissions of NO_x caused by the subject vehicles in order to fully mitigate the total, lifetime excess NO_x emissions from the 2.0-liter and 3.0-liter vehicles.

The Environmental Mitigation Trust Agreement for State Beneficiaries provides a process that the states must follow in order to become beneficiaries under the Volkswagen Environmental Mitigation Trust Agreement. The "Trust Effective Date" is October 2, 2017. For a state to become a Beneficiary, the state must execute and file the Certificate for Beneficiary Status contained in Appendix D-3 by December 1, 2017 –

⁵ <https://floridadep.gov/air/air-director/content/volkswagen-settlement-florida-mitigation-fund>

60 days after the Trust Effective Date. Once the trustee has approved beneficiary status, the state is required to prepare and submit to the trustee a Mitigation Plan before the trustee will distribute funds to the state.

The [Environmental Mitigation Trust Agreement for State Beneficiaries](#) specifies that the following issues be addressed in the Mitigation Plan:

- The state's overall goal for the use of the funds;
- The categories of Eligible Mitigation Actions that the state anticipates will be appropriate to achieve the stated goals, and the preliminary assessment of the percentages of funds anticipated to be used for each type of Eligible Mitigation Action;
- A description of how the state will consider the potential beneficial impact of the selected Eligible Mitigation Actions on air quality in areas that bear a disproportionate share of the air pollution burden within its jurisdiction;
- A general description of the expected ranges of emission benefits that the state estimates would be realized by implementation of the Eligible Mitigation Actions identified in the Mitigation Plan; and
- An explanation of how the state will seek and consider public input on its Mitigation Plan.

Eligible mitigation actions include projects to reduce NO_x from heavy-duty diesel sources near population centers, such as large trucks that make deliveries and service ports, school and transit buses, and freight switching railroad locomotives. Thus, for example, eligible mitigation actions could include replacing or repowering older engines for newer engines at a rail switchyard, or could include replacing older city transit buses with new electric-powered city transit buses. Eligible mitigation actions may also include, in a more limited capacity, charging infrastructure for light duty zero emission passenger vehicles. Beneficiaries have the flexibility to choose which projects on the list of eligible mitigation actions are the best options for their citizens.⁶

In addition to the Mitigation Trust, the settlement with US EPA requires Volkswagen to invest \$2 billion in Zero Emission Vehicle (ZEV) charging infrastructure and in the promotion of ZEVs over the next ten years. California will see the greatest amount with a \$800 million investment, while the rest of the country will share \$1.2 billion. California's pivotal role in the case and the market demand for charging infrastructure in California justified that amount. The ZEV investments are intended to address the fact that consumers purchased these illegal vehicles under the mistaken belief that such vehicles were lower-emitting than others. Examples of ZEV investment for which Volkswagen may obtain credit against the \$1.2 billion commitment include, for example, level 2 charging at multi-unit dwellings, workplaces, and public sites, direct current fast charging facilities accessible to all vehicles utilizing non-proprietary connectors, and brand-neutral education or public outreach that builds or increases public awareness of ZEVs.⁷

⁶ <https://www.epa.gov/enforcement/volkswagen-clean-air-act-civil-settlement#mitigation>

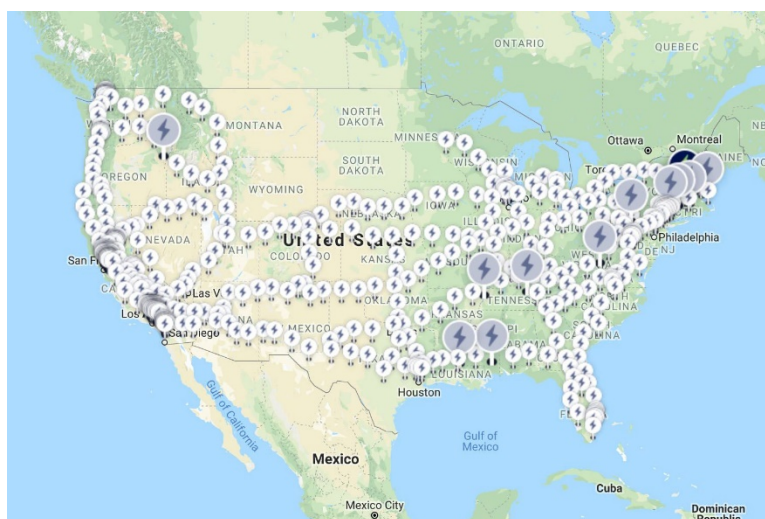
⁷ <https://www.epa.gov/enforcement/volkswagen-clean-air-act-civil-settlement#mitigation>

The Mitigation Fund and ZEV Investment initiatives have resulted in response from states, territories and Indian tribes with plans for use of the funds. In addition, groups like Drive Electric Florida have made specific recommendations that support, to the extent possible, investments of funds to accelerate electrified transportation. For its part, DEFL has strongly encouraged the State of Florida Beneficiary to apply the Appendix D Mitigation Trust fund in two key areas:

- Allocation of funds for Class 4-8 electric buses
- Allocation of 15% for Light Duty EV infrastructure

“EVs have zero tailpipe emissions, and as light-duty vehicles in Florida represent the sector most responsible for NOx emissions (34%), it is important to transition this sector to electric. The increasing use of fuels like natural gas and renewables to power the grid will compound the over positive impact that EVs will have on the environment. DEFL believes these two eligible mitigation opportunities significantly address the mitigation trust goal to reduce NOx through the use of zero emission vehicles in Florida. Additional benefits of these investments include the economic benefits of lower fuel and maintenance costs inherent in electric drive technologies, and the benefit of transitioning to electricity produced and delivered by the state’s electric utilities. DEFL advocates for the best and most equitable use of funds that address NOx reductions and gives all Florida communities the opportunity to develop infrastructure that promotes the adoption of electric transportation.”⁸

In an effort to respond to the ZEV Investment initiative, Volkswagen has established Electrify America as a wholly owned subsidiary. Electrify America hopes to install or start construction on more than 2,000 EV chargers across the continental US by the end of 2019. In addition, a robust public education campaign has been initiated, directed at car buyers not yet in EVs. Electrify America is developing a marketing and public relations campaign that will feature advertising, social media, learn and drive events, and other brand neutral approaches to building EV awareness and consideration in the United States.⁹ Plans for use of the ZEV Investment are subject to the advance approval of California and the EPA, and are available on the Electrify America Website.



Electrify America ZEV Charging Map

⁸ Guidance Document for “Beneficiary Mitigation Plan,” Prepared for State of Florida Trustee pursuant to Volkswagen Partial Consent Decree Appendix D – Mitigation Trust Light Duty ZEV Investment; Submitted by Drive Electric Florida, June 22, 2017

⁹ <https://www.electrifyamerica.com/our-plan>

Education and Marketing Initiatives

One of the predominant needs identified by EV and EVSE stakeholders is educating potential customers on the benefits and value of EV ownership. Education, outreach and marketing initiatives in this area are robust. Several examples are provided in more detail below.

Clean Cities. As part of the U.S. Department of Energy's (DOE) Vehicle Technologies Office (VTO), Clean Cities coalitions foster the nation's economic, environmental, and energy security by working locally to advance affordable, domestic transportation fuels and technologies. Clean Cities coalitions have saved more than 8.5 billion gallons of petroleum since its inception in 1993. Nearly 100 local coalitions serve as the foundation of Clean Cities by working in communities across the country to implement alternative fuels and advanced vehicle technologies. Clean Cities coalitions are comprised of businesses, fuel providers, vehicle fleets, state and local government agencies, and community organizations. Each coalition is led by an on-the-ground Clean Cities coordinator, who tailors projects and activities to capitalize on the unique opportunities in their communities. Nationwide, nearly 15,000 stakeholders participate in Clean Cities coalitions, and through their collective efforts they are transforming local and regional transportation markets.

Clean Cities Mission

Clean Cities coalitions foster the economic, environmental, and energy security of the United States by working locally to advance affordable, domestic transportation fuels and technologies.

In 2017, the United States imported 19% of the approximately 19.9 million barrels of petroleum it consumed per day. Because transportation accounts for nearly three-fourths of total U.S. petroleum consumption, improving efficiency and reducing costs in this sector supports our economy and our energy security.

Increased economic and energy security aren't the only benefits. Widespread use of alternative fuels and advanced vehicles could reduce the emissions that impact our air quality

At the national level, VTO develops partnerships and provides publications, tools, and other resources. At the local level, coalitions leverage these resources to create networks of local stakeholders and provide technical assistance to fleets implementing alternative and renewable fuels, idle-reduction measures, fuel economy improvements, and emerging transportation technologies.¹⁰

The Alternative Motor Fuels Act of 1988 and the Clean Air Act Amendments of 1990 led to the creation of the Alternative Fuels Data Center (AFDC) in 1991. The AFDC's mission was to collect, analyze, and distribute data used to evaluate alternative fuels and vehicles. In 1992, the enactment of the Energy Policy Act of 1992 (EPAct) required certain vehicle fleets to acquire AFVs. Subsequently, DOE created Clean Cities in 1993 to provide informational, technical, and financial resources to EPAct-regulated fleets and voluntary adopters of alternative fuels and vehicles. The Clean Cities Program is

¹⁰ <https://cleancities.energy.gov/about/>

fuel neutral, and supports the advancement of the full range of alternative fuel vehicles, including electrified transportation.

The AFDC has become a clearinghouse for a host of resources and is referenced later in this report for the information it provides on local, state and federal policies and incentives. A related website, FuelEconomy.gov, provides consumers with information on fuel economy, emissions, and energy impact of light-duty vehicles, based on vehicle data from the U.S. Environmental Protection Agency.¹¹

National Drive Electric Week (NDEW). NDEW is a nationwide celebration to heighten awareness of today's widespread availability of plug-in vehicles and highlight the benefits of all-electric and plug-in hybrid-electric cars, trucks, motorcycles, and more. Started in 2011 as National Plug In Day with the simple idea to hold simultaneous events across the country on the same day, by popular demand it has expanded to an entire week of events and changed the name accordingly. Each event is led by local plug-in drivers and advocates and typically includes some combination of EV parades, ride-and-drives, electric tailgate parties, press conferences, award ceremonies, informational booths, and more. Plug In America, Sierra Club, and the Electric Auto Association serve as the national team providing support to the events throughout the country.¹²

Project Get Ready. Project Get Ready Central Florida was part of a larger effort to supply key cities and regions with a robust electric vehicle charging infrastructure. Operated by the Rocky Mountain Institute, Project Get Ready partnered with electric vehicle and charging manufacturers to accelerate the availability of charging stations. The result in the Orlando area alone was the installation of more than 300 stations, which led to the earlier than anticipated delivery of several models of EVs, including the Nissan Leaf and Chevy Volt.¹³

The Electrification Coalition. The Electrification Coalition (EC) is a nonpartisan, nonprofit group of business leaders committed to promoting policies and actions that reduce America's dependence on oil by facilitating the deployment of electric vehicles on a mass scale. The members of the Electrification Coalition are leaders of companies representing the entire value chain of an electrified transportation system. The EC develops and implements a broad set of strategies to advance electric mobility beyond early adopters and drive economies of scale. These strategies include policy development, cultivating bipartisan support, consumer experience and education, fleet electrification, EV supply chain development, sustainable business models, and others.¹⁴

Drive Electric Orlando. Among the programs that have been initiated by the EC is Drive Electric Orlando (DEO), a partnership with Enterprise Car Rental and the City of

¹¹ <https://www.fueleconomy.gov/>

¹² <https://driveelectricweek.org/>

¹³ <https://rmi.org/insight/project-get-ready-menu-for-community-plug-in-readiness/>

¹⁴ <https://www.electrificationcoalition.org/>

Orlando to provide visitors to the area with an opportunity to “test drive” an EV.¹⁵ The program was launched in cooperation with the city, Orange County, and the tourism industry in 2013 and subsequently expanded with support from the US Department of Energy’s Clean Cities Program. Visitors to Orlando, whether for business or pleasure, are able to rent one of a fleet of Chevy Volts at the Orlando International Airport while they are in town. Area hotels and tourist attractions provide “perks” for DEO renters, including free valet parking with access to an EV charging station, not to mention all of the benefits of driving electric. The goal of the program is to provide drivers with an extended test drive so they will be more likely to consider purchasing an EV in the near future.

Vehicle Fleets¹⁶

There are several federal regulatory requirements that play an important role in fleet management, most notably the Corporate Average Fuel Economy (CAFE) standards, the Clean Air Act (CAA) and the Energy Policy Act (EPAct). Compliance with these requirements is varied and is based on application and use. For example, fleet owners see a very direct impact from EPAct regulations, whereas, fleet manufacturers may be more affected by CAFE and CAA requirements. The impacts and relationships in the regulatory environment are complex. As an example, CAFE standards are set and enforced by the National Highway Traffic and Safety Administration (NHTSA), while the Environmental Protection Agency (EPA) calculates the average fuel economy levels for the vehicle manufacturers.

Additionally, it is important to remember that state and local jurisdictions also establish requirements that impact fleet operations; the California Air Resources Board (CARB) is just one of several high profile, non-federal agencies that establish requirements that address local needs. Equally important is the understanding that many regulatory requirements are the result of goals that are negotiated and agreed to by the regulatory agencies in cooperation with manufacturers, unions, consumer and environmental groups and the public.

Corporate Average Fuel Economy (CAFE) Standards. CAFE standards are the NHTSA fuel efficiency goals that auto manufacturers have agreed to meet. The standards are established to reduce petroleum use, lower GHGs and save the public money. Petroleum imports in 2025 from OPEC countries are expected to be approximately half of the 2012 levels, and the average driver can expect about \$8000 in lifetime fuel savings with a 2025 vehicle when compared to a 2012 model.

The goals are reviewed and revised periodically, the current compliance period for passenger and light trucks ends with model year 2016 and new goals have been adopted for model years 2017-2021. The compliance goal for 2016 is 35.5 mpg, rising to 41 mpg in model year 2021. NHTSA and EPA established the first standards for

¹⁵ <http://pluginperks.com/>

¹⁶ Excerpt from EVTC Project Report “Electric Vehicle Fleet Implications and Analysis; <http://evtc.fsec.ucf.edu/publications/documents/FSEC-CR-2031-16.pdf>

medium and heavy-duty vehicles in 2011, new standards for model years 2021-2027 are currently being formulated. An excellent source for more information on federal fuel efficiency standards is available from the Center for Climate and Energy Solutions website at: http://www.c2es.org/federal/executive/vehicle-standards#more_info.

Clean Air Act. Smog and other pollution prompted Congress to establish the Clean Air Act in 1970. The Act, which was last amended in 1990, requires the EPA establish and enforce air quality standards. The EPA monitors the concentration of six common air pollutants, four of which are among the six major pollutants from vehicles. The EPA enforces its mandate using several mechanisms, including, reducing pollution from vehicle exhaust and refueling evaporation, and requiring the seasonal reformulation of gasoline to maintain air quality. EPA also promotes the use of alternative fuels such as electricity. Policy goals are also established that require that federally funded transportation projects conform to air quality standards. There are also requirements for on board vehicle diagnostics to monitor performance, and vehicle inspection and maintenance programs are required for areas that do not meet air quality attainment standards.

Obviously, there is a significant amount of effort and expense associated with the mitigation of the detrimental environmental effects of conventional fueled vehicles. The integration of electric vehicles into fleets has the potential to significantly reduce much of this effort and expense. More information on the role of the EPA can be found at: <https://www.epa.gov/clean-air-act-overview/plain-english-guide-clean-air-act>.

Energy Policy Act (EPAAct). The Energy Policy Act (EPAAct) of 1992 called on the U.S. Department of Energy (DOE) to expand research and development in the transportation sector and to create programs for accelerating the introduction of alternative fuel vehicles (AFVs) to replace conventional models fueled by petroleum (gasoline and diesel). EPAAct 1992 and subsequent amendments to it, including the Energy Conservation Reauthorization Act of 1998 (ECRA), EPAAct 2005, and the Energy Independence and Security Act of 2007 (EISA), established compliance options and petroleum-use-reduction measures. Taken together, these requirements are intended to create a core demand for alternative fuels and advanced vehicles, stimulating markets for these technologies while reducing petroleum use in regulated fleets.

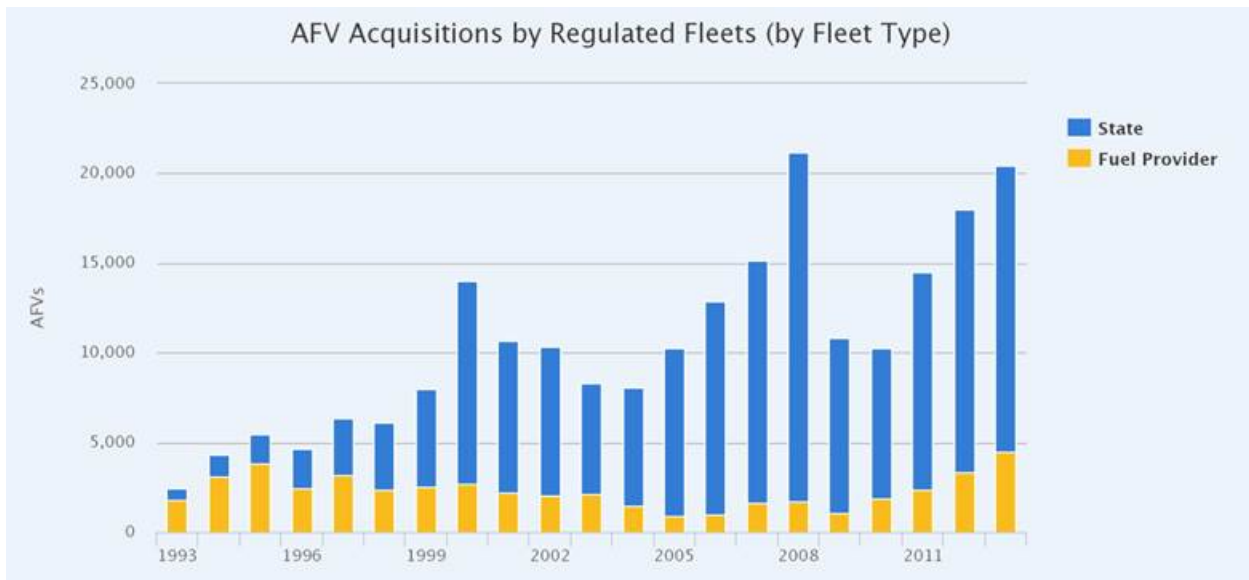
The DOE Alternative Fuel Transportation Program, as codified in 10 CFR Part 490, implements provisions in Titles III and V of EPAAct, as amended. These provisions:

- Call for DOE to establish rules requiring state government fleets and alternative fuel provider fleets to acquire AFVs in certain percentages
- Develop a program of marketable AFV credits for fleets that purchase or lease AFVs either earlier than required or in greater numbers than required, and for fleets that acquire specified electric vehicles that are not AFVs (e.g., gasoline-fueled hybrid electric vehicles) or that make other investments
- Require DOE to establish regulations allowing fleets to reduce petroleum use in lieu of acquiring AFVs

- Establish reporting procedures
- Implement exemption provisions
- Institute enforcement procedures and provisions

State agencies and alternative fuel providers must determine whether they are covered by these provisions and, if covered, must take steps to ensure compliance. Covered fleets have two methods through which to comply with EPOA requirements: Standard Compliance (primarily AFV acquisitions) or Alternative Compliance (petroleum-use reductions in lieu of AFV and other vehicle acquisitions).

In general, compliance with the Alternative Fuel Transportation Program (AFTP) requirements is mandatory for most state and local government fleets, and most businesses whose principal activity is based on the production or sale of EPOA-defined alternative fuels. Typically, covered alternative fuel providers have included electric and gas utilities and propane providers. Covered fleets are usually entities that own, operate, lease or otherwise control 50 or more light-duty vehicles (LDVs).



Under the [Energy Policy Act of 1992](#) (EPOA) and subsequent regulations, certain vehicle fleets operated by state agencies or alternative fuel providers are required to acquire alternative fuel vehicles (AFVs) as a fraction of their light-duty vehicle fleet. This chart shows the number of AFV acquisitions these fleets made from 1992 through 2014. The economic downturn of 2008 led to fewer overall vehicle acquisitions, which in turn reduced AFV acquisition requirements. However, overall AFV acquisitions have since rebounded to pre-Great Recession levels.

Source: <http://www.afdc.energy.gov/data/10355>

The Federal Fleet initiative is shaped by the requirements of Title III of the Energy Policy Act (EPOA) of 1992, as amended by EPOA of 2005, and Executive Order (EO) 13423. Title III of EPOA 1992 requires that 75% of a Federal fleet's light-duty vehicle (LDV) acquisitions in U.S. metropolitan areas must be alternative fuel vehicles (AFVs).

Compliance with the AFTP has resulted in a significant change in the composition of covered fleets. According to the DOE, 201,000 AFVs were acquired in model years 2000 through 2011, and acquisition of AFVs continues at a pace of 10-14,000 per year. Information on EPA's and state and alternative fuel provider covered fleets is available at http://www1.eere.energy.gov/vehiclesandfuels/epact/covered_fleets.html

Executive Order 13693, Planning for Sustainability in the Next Decade. The importance of this Executive Order (EO) in the discussion of EV fleets is that it directs federal agencies to establish defined goals for the reduction of GHGs, the acquisition of PEVs for their fleets, and the planning for appropriate infrastructure to support these vehicles. On March 19, 2015, President Obama issued the new EO directing federal agencies to increase energy efficiency and improve their environmental performance.¹³ EO 13693's primary goal is to enhance the directives established by previous EOs. An example of a 13693 enhancement can be found in the new requirement that establishes defined goals in the acquisition of zero-emissions or plug-in hybrid vehicles, the previous EO only had a requirement to use plug-in hybrid vehicles where commercially available at a reasonably comparable life-cycle cost. The new EO requires 20% of all new agency passenger vehicle acquisitions be zero-emissions or plug-in hybrid by the end of 2020, increasing to 50% by the end of 2025.¹⁷

Obama Administration and Private Sector Electric Vehicle Initiative. The Obama administration presented a comprehensive initiative in late July of 2016 to accelerate the adoption of EVs. The initiative included:

- Making up to \$4.5 billion in loan guarantees through the DOE's Loan Program Office to support commercial scale deployment of EV charging facilities
- Supporting the FAST Act requirement to designate alternative fuel corridors, specifically a national EV charging network
- Federal Cooperation with state and local governments in the acquisition of EVs

The announcement formalized a collaboration between the White House in partnership with DOE and the Department of Transportation (DOT), the Air Force and the Army, and the Environmental Protection Agency; it is based on *Guiding Principles to Promote Electric Vehicles and Charging Infrastructure* that nearly 50 organizations have joined.

FAST Act, Section 1413, Alt Fuel Corridor Designation. Section 1413 of the Fixing America's Surface Transportation (FAST) Act requires the U.S. Department of

¹⁷ Executive Order (EO) 13834: Efficient Federal Operations was signed by President Trump on 17 May 2018. This EO affirms "that agencies shall meet such statutory requirements in a manner that increases efficiency, optimizes performance, eliminates unnecessary use of resources, and protects the environment." Section 8 of the new EO revokes EO 13693 of 19 March 2015 (Planning for Federal Sustainability in the Next Decade.); Pending issuance of E.O. 13834 implementing instructions or further direction from CEQ, agencies should continue to use existing guidance unless revised or revoked, particularly with regard to established procedures, reporting processes, definitions, and technical matters

Transportation’s Secretary to designate national electric vehicle (EV) charging, hydrogen, propane, and natural gas fueling corridors by December of 2016. The FHWA will solicit nominations for corridors from State and local officials and involve other stakeholders. During the designation and re-designation of the corridors, the FHWA will issue a report that identifies infrastructure for EV charging, hydrogen fueling, propane fueling, and natural gas fueling; it will also address the standardization needs for electricity, industrial gas, natural gas, infrastructure providers, vehicle manufacturers, electricity purchases, and natural gas purchases. The FHWA report will establish goals for achieving the deployment of EV charging infrastructure by the end of fiscal year 2020. Five years after establishing the corridors, and every 5 years thereafter, the U.S. DOT must update and re-designate the corridors.

Best Practices for Developing Incentives

The Center for Urban Transportation and Research at the University of South Florida, under contract to the University of Central Florida, conducted an in depth analysis of state level incentives for the full range of alternative fuels and vehicles. The report provided an in depth inventory of the incentives as well as the identification of best practices in developing incentives¹⁸. The following are excerpts from that report that provide an overview of the range of incentives that pertain to EVs. This report will be particularly helpful as policy- and decision-makers consider the broad range of tools available to support the growth of EV adoption.

State Incentives

To expedite the adoption of advanced propulsion technologies and to promote the use of alternative fuels (AF), both the federal government and state officials around the country have established various economic incentives to make alternative technologies attractive, or at least competitive with traditional technologies and fuels. These incentives vary by type, form, and application. [In reference to the tables below,] the type of the incentive describes the form of enticement used to incentivize certain activities. A review of state incentives currently in place in the U.S. revealed 25 common incentive types.

Table 1. Types of Alternative Fuel Vehicle Incentives

Type of Incentive	Description
Alternative Fuel Vehicle Demonstration	This incentive typically refers to sponsoring or otherwise supporting testing and/or demonstrating the operation and/or efficiency of a vehicle powered by alternative propulsion technology, or running on alternative fuel.

¹⁸ “State Incentives for Alternative Propulsion Technologies/Fuels,” Kopakov, A., and Stephen L. Reich, Center for Urban Transportation Research and Tampa Bay Clean Cities Coalition at the Patel College of Global Sustainability, University of Central Florida. Prepared for the University of Central Florida, April 2014.

Driving Restriction Exemption	Certain alternative fuel vehicles are exempt from time-of-day and time-of week restrictions and commercial vehicle bans, or may be allowed to exceed the existing limit for the time remaining in operation before vehicle retirement.
Financing Assistance	This incentive refers to any financial or organizational assistance that state and local authorities/organizations provide to help finance the development of AF technologies or installation of AF infrastructure.
Grant	Grants are any non-repayable funds provided by a state government to a qualified recipient for the purpose of acquiring alternative fuel vehicles, installing alternative fueling infrastructure, or for other activities related to the development or commercialization of alternative technologies and fuels.
HOV/HOT Exemption	Some states allow certain alternative fuel vehicles to travel in high occupancy vehicle (HOV) or high occupancy toll (HOT) lanes, regardless of the number of passengers.
Information Support/Assistance/Training	This refers to any non-financial assistance offered by the state to users of AFVs or producers of alternative technologies and fuels. Examples of this assistance include information support, alternative vehicle promotion, public education on AF technologies, and training related to safety and maintenance procedures of AFVs and AFs.
Insurance Discount	AFV owners can receive discounts on car insurance premiums for qualified vehicles.
License/Permit Exemption	Producers, blenders, or retailers of alternative fuels may be exempt from the requirement to obtain a fuel distributor's license or a pollution permit, and any fees associated with them.
Loan	Special programs established by the state government may provide financial assistance to public-sector organizations (e.g., school boards) and businesses to support development, adoption, and acquisition of energy saving technologies. Eligible projects may include alternative fuel vehicle acquisition or conversion, development of AF technologies, installation of fueling infrastructure, idle reduction technologies, etc.
Loan Guarantee/Subsidy	States may provide loan guarantees or subsidize loan interest for private businesses or public-sector entities involved in the production, blending, or retail sale of an alternative fuel.

Outreach and Marketing Support	States may establish programs aimed at promoting the adoption of AF technologies. The programs may support activities ranging from recognizing state alternative fuel pioneers to providing additional marketing opportunities that encourage the adoption of clean energy technologies in state fleets.
Parking Fee Exemption	States and local jurisdictions may allow qualified AF vehicles to park in public parking areas without paying a fee.
Pollution Control Equipment Exemption	Certain original equipment manufacturer (OEM) alternative fuel vehicles—mostly natural gas and all-electric vehicles—may not be required to be equipped with pollution control systems.
Rebate	Both states and public utilities may offer rebates to offset the incremental cost of acquiring AFVs or converting vehicles to run on alternative fuels, producing or blending alternative fuels, installing fueling/recharging infrastructure, or just using/purchasing alternative fuels. The rebate amount may vary from few hundred dollars to thousands, depending on the program and the technology funded.
Regulation Exemption	Entities that offer battery charging facilities to the public for hire may be exempt from state regulations regarding rates and services provided.
Special Fuel Rate	Public utilities and state entities may offer AFV owners a special fuel rate or a discount to fuel their vehicles at a specified time (e.g., off-peak EV charging).
Tax Credit	States that levy income tax can offer an income tax credit for individuals and businesses involved in the development, production, operation, or acquisition of alternative fuel technologies or alternative fuels.
Tax Deduction	Certain activities related to the production, blending, storage, or sale of alternative fuels may qualify for a state tax deduction.
Tax Exemption	States may exempt alternative fuel vehicles, fueling infrastructure, and activities related to the development, production, and distribution of advanced energy saving or emission reduction technologies from various excise taxes, including state sales taxes and user taxes.
Tax Reduction	Alternative fuel facilities and infrastructure may be granted preferential property taxation, including a reduced property tax rate and/or a reduction in the assessed taxable property value.
Tax Refund	Producers, blenders, distributors, and retailers of certain AFs may qualify for a refund of state sales or use taxes paid on purchases.

Toll Discount	Vehicles with certain fuel economy and meeting certain emissions standards, including alternative fuel vehicles, may be given a discount for using state toll facilities.
User Fee Exemption/Reduction	Alternative fuel vehicles or vehicles with certain fuel economy may qualify for a reduced vehicle registration fee or may be exempt from a vehicle user fee.
Vehicle Inspection Exemption	Some states may exempt qualified AFVs from the state vehicle or emission inspection requirements. This incentive is only available in states that require regular inspections for motor vehicles registered in the state.
Weight Exemption	Motor vehicles (personal or commercial) equipped with qualified idle reduction technology may be allowed to exceed the state's gross vehicle weight rating by up to 400-550 pounds to compensate for the additional weight of idle reduction technology. Also, a state's gross vehicle weight rating limits for AFVs may be increased by 1,000-2,000 pounds compared to correspondent conventional vehicles.

The category (form) of incentive refers to the activities that are being encouraged by the incentive. A review of state incentives currently in place in the U.S. revealed 19 categories of activities commonly promoted and incentivized.

Table 2. Categories of Incentives

Activities Encouraged	Description
AFV Acquisition and Conversion	States often encourage individuals, businesses, and public fleets to acquire AFVs or convert existing conventional vehicles to run on alternative fuels.
AFV and Fueling Infrastructure	States provide incentives to encourage the acquisition and installation of alternative fueling/charging infrastructure.
AFV Use/Operation	Various incentives encourage the use of alternative fuel vehicles by both individuals and fleets.
Alternative Fuel Facilities	States often incentivize the construction and installation of qualified alternative fuel facilities and their components.
Alternative Fuel Sale/Use/Storage	This incentive encourages the acquisition and use of alternative fuels by individual AFV owners, private and public fleets, as well as the storage and distribution/sale of AFs by fuel retailers.
Development of Alternative Fuel/Energy Technologies	Businesses and industrial properties involved in the manufacturing of alternative fuel technologies or other alternative energy products (including alternative fuel vehicles) may receive state incentives encouraging such activity.

Emissions Reduction Program	Fleet operators, especially heavy-duty fleets, are encouraged to invest in programs and projects that reduce diesel emissions.
EV Charging Equipment	Incentives are available for the purchase and installation of charging equipment for all-electric vehicles and plug-in hybrids. The incentives apply to equipment used both for private and public/commercial use.
Non-highway AFV	States may provide incentives to encourage alternative fuel use not only in highway vehicles, but also in non-highway vehicles/equipment.
Pollution Control Equipment & New Vehicle Acquisition	Private and public entities are encouraged to install emission reduction technologies and equipment on heavy-duty vehicles and the facilities that service them (e.g., truck stops, depots). Additionally, state incentives encourage heavy-duty fleets to replace older vehicles with newer, less polluting and more energy efficient vehicles.
Public Transportation	States sometimes encourage the use of public transportation, providing subsidies and tax breaks to public transit agencies. Additionally, certain incentives encourage alternative fuel use by public transit vehicles. The use of public transportation lowers energy consumption and produces emission reductions without sacrificing mobility.
Research and Demonstration of Advanced Technologies	States typically provide incentives to encourage activities related to the research, development, demonstration, and deployment of advanced transportation technologies, or to assist in the commercialization of such technologies.
Smart Grid Development	States provide incentives to private businesses and public entities that develop, implement, or utilize innovative technologies and methods to modernize the state's electric grid, allowing for smart grid features including, but not limited to, load adjustment, peak leveling, and time-of-use pricing.
Vehicle Registration/License	States may provide financial and organizational incentives encouraging registration and licensing of alternative fuel vehicles.
Vehicle Retirement/Replacement with AFV	States often encourage individual owners and fleet operators to retire old, energy inefficient vehicles and replace them with newer, more efficient, and less polluting vehicles. The incentives may apply to replacement with any new vehicle, or with a new vehicle running on alternative fuel.

Summary of State and Local Incentives

There are 25 types of incentives at the state and local (non-federal) levels. The most commonly used type of incentive is a grant; almost 22.0 percent of all non-federal incentive programs in the U.S. are grants. The second most popular incentive type is a tax credit (more than 20.0% of all non-federal incentives), followed by a tax exemption (13.2% of all incentive programs), and rebates (almost 10.0% of all non-federal incentives). Table 2 summarizes in more detail the various types of state and local incentives.

Best Practices in State AFV Incentives

Alternative fuel vehicle/technology incentives are designed to change established behavior and motivate individuals and organizations to perform actions desirable to the state and the public. While there are multiple reasons that may contribute to the success or failure of an incentive (and some of them may be unrelated to the incentive itself), the incentive program design is an important consideration. Some state incentives have worked better than others. The current section reviews and discusses the common characteristics of successful state incentive programs.

Previous research and anecdotal evidence indicate that successful alternative fuel/technology incentives typically have the following seven characteristics:

1. Focused on a specific goal
2. Incentive amount is large enough to entice investment in (more expensive) alternative technology
3. Grant-based
4. Easy for a potential applicant to use and for the state to administer
5. Focused on the development of fueling infrastructure in addition to acquiring alternative fuel technologies/vehicles
6. A cap and/or phase-out provision
7. Monitoring the program's success or failure

Focused on a specific goal: States should clearly identify the goals of a program and set up the incentives in the best way to meet those goals. For most states, the goal is to reduce petroleum use for transportation or reduce greenhouse gas emissions. A proper incentive encourages the use of dedicated alternative fuel technologies/vehicles for transportation needs, not just alternative fuel-capable technologies. However, some states (notably Arizona) developed incentive programs that encouraged people to buy vehicles capable of running on alternative fuels, but did not require that the vehicles actually operated on alternative fuel. Anecdotal evidence indicates that while this incentive encouraged people to buy vehicles dedicated to running on AFs, it also resulted in many people buying vehicles capable of running on both gasoline and AF who have no intention of actually running their vehicles on alternative fuel.¹⁹

¹⁹ Brown, M.H. and L. Breckenridge. State Alternative Fuel Vehicle Incentives: A Decade and More of Lessons Learned. National Conference of State Legislatures, February 2001.

Incentive amount is large enough: Successful incentives should be large enough to offset much or all of the incremental cost of alternative fuel technologies/vehicles. Aside from a few enthusiasts, most individuals and businesses do not want to pay a higher price just to test new alternative fuel technologies. Even potential tangible benefits of the new technology, such as reduction in operation and maintenance costs, are not always able to convince buyers to pay the higher up-front acquisition cost. Theoretical studies of consumer behavior, as well as the survey of fleet managers, support this conclusion.²⁰ Smaller incentives such as fuel price discount and sales tax exemption are typically ineffective unless packaged with bigger incentives. Except in rare cases, fuel price discount or sales tax reduction (or even exemption) typically yield insignificant savings and fail to provide a strong enough incentive.²¹ That being said, states should also avoid offering incentives that are too large. There is rarely a good reason to offer an incentive that covers more than the incremental cost of the new technology. Covering just the additional cost associated with the AF technology acquisition may be sufficient to promote the new technology.

Grant-based: The most effective incentives are often grants or rebates. Previous research found that consumers more readily take advantage of grant and rebate programs than tax-based incentives, and the findings indicate a clear preference for this incentive type. Grants offer immediate benefits and certainty, since customers know how much the grant or rebate is worth. They are also attractive to small companies (with small tax liability) and non-taxable entities, such as municipal governments or nonprofit organizations. Unlike a grant, a tax-based incentive such as a tax credit is limited to the size of the taxpayer's liability in a given year. However, some tax-based incentives work well, such as those incorporated in vehicle lease payments. If alternative fuel vehicles are not leased, a direct grant would provide better benefits. Another effective tax-based incentive is the refundable tax credit, which allows a taxpayer to receive the full amount of the credit regardless of his/her tax liability that year. Of course, refundable tax credits cannot be used by tax-exempt entities (e.g., local government and nonprofit organizations).²² An ineffective incentive is Florida's Electric Vehicle Supply Equipment (EVSE) Financing program, which does not provide any financial incentive per se. Instead, the program allows property owners to apply for funding with local jurisdictions for qualified EVSE improvements, and allows local jurisdictions to impose tax assessments to finance those improvements. Without a dedicated source to finance the program, the incentive is unlikely to noticeably affect EVSE installations. A direct grant or a rebate covering a portion or the entire amount of the incremental cost of EVSE installation would more likely achieve the program goals.

Easy to use and administer. Successful incentives typically are easy to apply for and do not require burdensome reporting, which often discourages potential applicants. In addition, a good incentive should dedicate adequate resources (including financial support) for marketing and administering the program. California's South Coast Air

²⁰ Ibid

²¹ Ibid

²² Ibid

Quality Management District offers a successful, easy-to-use incentive that provides a rebate for acquiring AF vehicles and is administered through auto manufacturers in cooperation with auto dealers. The dealer advertises the vehicle price including the incentive, passes the invoice to the manufacturer, the manufacturer immediately reimburses the dealer, and then applies for the incentive. This design keeps the incentive in the background for the consumer, yet provides an immediate benefit.²³

Focused on fueling infrastructure in addition to AFV. Infrastructure incentives are critical to the success of any government AFV program. Previous consumer opinion studies and fleet manager surveys concluded that the availability of fueling infrastructure significantly impacts the decision of individuals and fleets to acquire AFVs. Similarly, many industry participants agree that the lack of fueling infrastructure is a critical barrier to the growth of AFVs.²⁴

A cap and/or phase-out provision. States should be aware of the potential fiscal impact of incentives and make provisions to cap their total liability. Policy makers need to balance the cost and benefits of incentive programs, keeping in mind that achieving a high benefit/cost ratio may be unattainable and impractical given budget constraints. In some cases, the program goals can be realized with cheaper technologies/methods. For example, if achieving desired emission reductions with the use of AF vehicles/technologies is too expensive, the incentive program strategy may include support for the installation of advanced pollution control equipment as a cheaper alternative. Since the goal of an incentive program is to temporarily support the rollout of new technology until it becomes competitive, incentive programs often include a phase-out provision, allowing for declining support as time passes or as the market for the technology matures. It is generally recommended that states implementing incentive programs should commit and release funding in a way that ensures program continuity ranging from 5 to 10 years. This allows local markets to develop and stabilize with relatively steady funding. States also should consider establishing a gradually declining funding level, zeroing out after 10 years. Such an approach allows the state to set the maximum program cost and to correct annual payments in future years if the initial incentive level was too high.²⁵

Monitoring the program. It is a good practice to monitor the progress of an incentive program, evaluate its success in achieving the stated goals, and make adjustments to improve program performance. A good incentive program should be designed with provisions for collecting data to monitor its success, and should have the tools to make adjustments to program funding and incentive structure. Arizona and California, among other states, monitor incentive use and track progress toward meeting the program's goals.²⁶

²³ Ibid

²⁴ Ibid

²⁵ Clean Energy States Alliance. Developing an Effective State Clean Energy Program: Renewable Energy Incentives. Briefing Paper No. 2, March 2009.

²⁶ Ibid, Brown, State Alternative Fuel Vehicle Incentives

Case in Point: Georgia Electric Vehicle Tax Credit Repeal²⁷

Georgia Electric-Car Sales Plummet After Incentive Replaced By Tax

[Note: This is an excerpt from a report by Green Car Reports Contributing Writer Stephen Edelstein, published November 4, 2015.

Source: https://www.greencarreports.com/news/1100751_georgia-electric-car-sales-plummet-after-incentive-replaced-by-tax

Electric-car buyers in Georgia have seen their prospects change dramatically over the past few months. The Peach State previously had one of the most generous incentive programs for new electric-car purchases, offering up to \$5,000 in income-tax credits to electric-car buyers. But earlier this year, legislators killed that incentive program. And seemingly adding insult to injury, they added a \$200 annual registration fee for electric cars at the same time.

The effects of those two policy decisions are already apparent in Georgia's plummeting electric-car sales, according to a report from Watchdog.org (via Transport Evolved). The tax credit expired July 1, and had an almost immediate impact on plug-in car sales, the report says. Between June and August, plug-in car sales in Georgia dropped almost 90 percent. (The precise figure is 88.9 percent.) There were only 148 new plug-in cars registered in the state in August--against 1,338 in June.

Note that these figures include sales and registrations of both all-electric cars and plug-in hybrids, although the tax credit only applied to all-electric cars. The June figure was likely higher than usual as buyers scrambled to take advantage of the tax credit while they still could. Hardest hit were three of the bestselling electric cars in the U.S.: the Nissan Leaf, Tesla Model S, and BMW i3. Nissan averaged 338 Leaf sales in the first four months of year, reaching a high of 1,029 units in May. But just 66 Leafs were sold in August.

Similarly, the Model S averaged 65 cars over the first four months of 2015, but just 29 were sold in August. BMW i3 sales fell from a four-month average of 42 cars month to 13 in August. Opponents of the tax credit--enacted way back in 1998--claim it unfairly privileged electric-car buyers over other citizens, including drivers of other green cars like hybrids and plug-in hybrids. And throughout the drawn-out legislative battle over the programs' fate, electric-car advocates claimed eliminating the tax credit would discourage adoption. A new legislative session begins in January, and those advocates reportedly hope to get the tax credit reinstated--and perhaps extended to include plug-in hybrids.

²⁷ The State of Georgia's \$5,000 tax credit for the purchase of an electric vehicle was eliminated in July 2015, and a \$200 registration fee took its place.

Listing by State of EV Related Actions/Policies²⁸

[Note: Current as of 2017. See footnote link to access regularly updated database]

Alabama

- Alabama Power offers a charging incentive to single residences and individual family apartments as an optional Rate Rider for PEVs: if charging occurs between 9pm - 5am, the customer will receive a discount of 1.7155 cents per kWh.
- Using a PEV for non-residential purchases may qualify the owner for the Alabama Power Business EV Time-of-Use Rate (BEVT). For this tariff, the electricity to charge the EV battery is metered separately from all other electricity use, and is billed according to time of year and time of day.
- No emissions testing required for registration, as with any vehicle.
- Some commercial entities offer parking for PEV customers only.
- Electric Vehicle Supply Equipment systems having a minimum voltage capacity of 208 volts (Level II Charging) qualify for an incentive when installed in a commercial building served directly by Alabama Power. Incentive calculations are per charging station, and typically around \$500 per port.
- AL Insurance companies may offer discounts on PEVs;
- PEVs and charging infrastructure are property tax exempt.

Alaska

- AK Insurance companies may offer discounts on PEVs.

Arkansas

- No emissions testing required for registration.
- AR Insurance companies may offer discounts on PEVs.

Arizona

- With a special license plate BEVS qualify for HOV lanes at any time. Currently the program has reached the limit of 10,000 participants and is suspended until further notification.
- Salt River Project offers a PEV Price Plan for the first 10,000 customers. Charging rates are based on time of year and time of day, lowest rates between 11pm and 5am during super off-peak hours.
- Arizona Public Service Electric recently offered an EV time-of-use rate through the end of 2015 as a pilot program, with reduced rates offered for charging the EV at night.

²⁸ Plug in America, <https://pluginamerica.org/why-go-plug-in/state-federal-incentives/>

- BEVS qualify for a reduced vehicle license tax (VLT). The VLT is changed to a rate of \$4 per \$100 of assessed valuation, which is determined by 1% multiplied by the factory list price in the first year and 15% depreciation for subsequent years. The minimum VLT is \$5.
- BEVS are exempt from emissions testing.
- Some commercial and public buildings offer parking for PEV customers only.
- BEVS may park in areas designated for carpool operators without charge.
- A residential electric vehicle supply equipment (EVSE) tax credit of up to \$75 is available for individuals who install EVSE in a house or housing unit, per the AZ Department of Revenue Section 319 Credit Forms.
- AZ Insurance companies may offer discounts on PEVs.
- If your vehicle has been converted to a BEV, you can receive an alternative fuels certificate from the AZ Department of Environmental Quality and receive a reduced tax rate during vehicle registration.

California

- Clean Vehicle Rebate Project (CVRP) offers up to \$2,500 for the purchase or lease of BEVs, \$1,500 for the purchase or lease of PHEVs, and \$900 for electric motorcycles and NEVs. Qualifying low-income households may also receive an additional \$1,500. As of June 10, 2016, funding is currently exhausted and new applicants will be placed on a wait list.
- BEVs and PHEVs are eligible for Clean Air Vehicle Decals which allow access to HOV lanes for single occupants.
- Various utilities offer discounted rates for residential vehicle charging during off-peak hours. PG&E offers two residential EV rates - one that combines the EV electricity costs with those of the residence, and one that keeps the EV electricity costs separate. The lowest rates are offered between 11pm and 7am. SCE offers an EV rate plan with off-peak pricing starting at 9pm. SDG&E offers an EV rate plan with off-peak hours from 6pm - midnight and super off-peak hours from midnight - 5am.
- The City of Sacramento offers free charging in public parking garages for EVs that apply and are certified by the City's Emerging Small Business Development program.
- Many hotels and commercial buildings offer reduced or free parking for EV drivers.
- The City of Sacramento offers free parking to those BEVs that apply and are certified by the City's Emerging Small Business Development program.
- The City of San Jose also offers free parking.
- Residential property owners may have access to Property-Assessed Clean Energy (PACE) financing to install EV supply equipment (EVSE), if the local government has a PACE program in place. PACE financing allows property owners to borrow funds to pay for EVSE, and repays the funds through a special assessment on the property over a defined time.
- For a limited time, NRG EVgo (a national public charging network) is offering eligible apartment buildings and workplaces up to 10 charge-ready parking

spaces for free. NRG EVgo will also manage the charging stations and cover the electricity costs through each driver's usage fee.

- The EV Charging Station Financing Program offers loans up to \$500,000 for the design, development, purchase, and installation of EV charging stations at small business locations throughout CA. The program may provide up to 100% coverage to lenders on certain loan defaults, and borrowers may be eligible to receive a rebate of 10-15% of the enrolled loan amount.
- CA Insurance companies may offer discounts on PEVs.
- Vehicles that do not pass emissions tests may be eligible for a retirement rebate of up to \$1,500 if the vehicle is removed from the road.

Colorado

- CO offers an income tax credit of up to \$6,000 for taxpayers who purchase a PEV. Beginning January 2017, this tax credit changes to \$5,000 for those that purchase an EV and \$2,500 for those who lease an EV.
- BEVs and PHEVs are eligible for the HOV lane with an application.
- Xcel Energy currently does not offer any specific EV charging rates.
- PEVs are exempt from emissions testing, but must pay a \$50 annual registration fee according to HB 1110, Section 12, 42-3-304.
- Some commercial and public buildings offer parking for PEV customers only.
- Charge Ahead Colorado (Regional Air Quality Council) offers funding for up to 80% of the cost for EVSE, up to \$3,260 for a level 2 station with a single port and \$6,260 for a multi-port, and \$13,000 for a level 3 station with a single port and \$16,000 for a multi-port.
- CO Insurance companies may offer discounts on PEVs.

Connecticut

- The Connecticut Hydrogen and Electric Automobile Purchase Rebate (CHEAPR) offers a rebate for PHEVs and BEVs between \$750 and \$3,000 depending on the size of the battery.
- PEV drivers receive a discounted registration rate of \$38.
- BEV drivers are exempt from the emissions testing.
- The City of New Haven offers free metered parking for all PEVs. Vehicles must display a parking decal.
- EVConnecticut has offered several charging incentives for private businesses and municipalities; however, as of August 2016 the application period is currently closed.
- CT Insurance companies may offer discounts on PEVs.

Florida

- Jacksonville Electric Authority (JEA) offers a rebate up to \$1,000 for the purchase or lease of a qualified PEV.

- PEVs are eligible for the HOV lane with Florida HOV decal.
- FPL currently does not offer specific EV charging rates.
- No emissions testing required for registration.
- Some commercial and public buildings offer parking for PEV customers only.
- The Orlando Utilities Commission (OUC) offers a rebate of \$500 per station until Sept. 30, 2016 for businesses to install workplace EVSE.
- Local governments may also offer funding to property owners within their jurisdiction to help with EVSE financing.
- FL Insurance companies may offer discounts on PEVs.

Georgia

- Commercial medium and heavy duty PEV trucks purchased on or after July 1, 2015 are eligible for a tax credit that is equal to the lesser of the income tax liability of the owner or \$250,000.
- BEVs are eligible for the HOV lane with the correct license plate displayed.
- Georgia Power offers three different charging rate options for residential customers. The Plug-In Electric Vehicle rate provides a discount on electricity from 11pm- 7am.
- BEVs are exempt from emissions tests.
- Some parking in the city of Atlanta for EV drivers only.
- EVSE programs at Georgia Power are currently fully subscribed.
- GA Insurance companies may offer discounts on PEVs.

Hawaii

- PHEVs are eligible for the HOV lane with the correct license plate displayed.
- Hawaii Electric Company offers two residential EV charging rates with savings at off-peak hours, and a commercial EV charging rate pilot program.
- The State of Hawaii has a free mobile app that shows public and private charging stations.
- No emissions testing required for registration.
- PEVs are exempt from parking fees and metered parking, but not beyond 2.5 hours or the maximum amount of time the meter allows, whichever is longest. The parking exemption only applies to daily fees, not weekly or monthly parking fees. The program sunsets on June 30, 2020.
- Public parking lots with greater than 100 spaces must offer an EV designated parking spot and offer EV charging.
- HI Insurance companies may offer discounts on PEVs.

Idaho

- PEVs are exempt from emissions testing.
- Idaho Power offered businesses a \$1,000 incentive for single port charging stations and \$1,500 for dual port charging stations up to a maximum of \$4,500

per company, per site. Charging stations must be installed between April 18 and Nov. 11, 2016.

- ID Insurance companies may offer discounts on PEVs.

Illinois

- The IL Alternative Fuel Rebate Program is currently suspended.
- ConEd offers three different charging rates for EV drivers.
- Ameren does not offer any specific EV charging rates.
- BEVs are eligible for a reduced registration fee of \$35 for a period of two years.
- BEVs exempt from emissions testing.
- Some parking in Chicago for EV drivers only.
- EVSE Rebate Programs are currently suspended.
- IL Insurance companies may offer discounts on PEVs.

Indiana

- Indianapolis Power and Light offers two EV charging rates: EVX for home charging, and EVP for public charging.
- Northern Indiana Public Service Company (NIPSCO) offers free overnight charging through January 2017.
- BEVs are exempt from emissions tests.
- The NIPSCO IN-Charge at home and IN-Charge Around Town EVSE incentives are fully subscribed.
- IN Insurance companies may offer discounts for PEVs.

Iowa

- No emissions testing required for registration.
- IA Insurance companies may offer discounts on PEVs.

Kansas

- An Alternative Fuel Tax Credit for BEVs is available to corporations that are subject to Kansas corporate income tax, not for individuals. The credit is 40% of the cost of the qualified vehicle, up to \$2,400 and below a certain weight limit. Other credit amounts are available based on vehicle weight.
- KCPL currently does not offer EV specific charging rates.
- No emissions testing required for registration.

Kentucky

- LG&E and KU currently do not offer any EV specific charging rates.
- No emissions testing required for registration.
- KY Insurance companies may offer discounts on PEVs.

Louisiana

- Taxpayers eligible for a 36% tax credit for converting a vehicle to an alternative fuel vehicle, including electric. PHEVs are eligible for a tax credit of 7.5% of the cost of the vehicle, up to \$1,500. To qualify, the PHEVs must be registered in Louisiana.
- Entergy does not offer any specific EV charging rates.
- No emissions testing required.
- Charging infrastructure projects may be eligible for certain green project tax credits.
- LA Insurance companies may offer discounts on PEVs.

Maine

- Central Maine Power currently does not offer EV specific charging rates.
- ME Insurance companies may offer discounts on PEVs.

Maryland

- PEVS eligible for a one-time excise tax credit up to \$3,000. Program ends June 30, 2017.
- PEVs eligible for the HOV lane, with permit displayed.
- PEPSCO currently does not offer any EV specific charging rates.
- Baltimore Gas and Electric offers reduced EV charging rates for charging during off-peak hours.
- PEVs must be scheduled for emissions testing at least 36 months after the model year of the vehicle.
- Some commercial and public buildings offer parking for PEV customers only.
- The EVSE Rebate Program offers a rebate for the purchase and installation of EVSE, on a first come first serve basis. The systems must be purchased and installed before June 30, 2017. Residential rebates are up to \$900 and commercial rebates are up to \$5,000.
- MD Insurance companies may offer discounts on PEVs.

Massachusetts

- The Massachusetts Offers Rebates for Electric Vehicles (MOR-EV) program offers rebates up to \$2,500 for the purchase or lease of PEVs. Vehicle must be registered in MA. Funding is available on a first come, first serve basis.
- Eversource currently does not offer any specific EV charging rates.
- BEVs are exempt from emissions tests.
- Some commercial and public buildings offer parking for PEV customers only.
- The Massachusetts EV Incentive Program (MassEVIP) provides grants to businesses with 15 or more employees for the installation of Level 1 or Level 2

EV charging stations. The program will provide 50% of the funding (up to \$25,000) for the hardware costs.

- MA Insurance companies may offer discounts on PEVs.

Michigan

- Various utilities throughout the state offer discounted rates for residential vehicle charging during off-peak hours.
- The Lansing Board of Water and Light offers an experimental residential EV charging rate.
- Indiana Michigan Power offers a specific EV charging rate.
- Consumers Energy offers a time-of-use EV charging rate, with reduced prices between 11pm - 7am.
- DTE Energy also offers two specific EV charging rates.
- BEVs are exempt from emissions tests.
- Beginning in January 2017, passenger PHEVs are subject to an increase in registration fees of \$30 and BEVs are subject to an increase of \$100.
- MI Insurance companies may offer discounts on PEVs.

Minnesota

- Dakota Electric offers two EV specific charging rates that offer reduced prices in off-peak hours.
- PEVs purchased before Dec. 31, 2016 are eligible for the REVOLT program, which provides free charging for the life of the EV from wind energy.
- Xcel Energy currently does not offer an EV specific charging rates.
- No emissions testing required.
- Some commercial and public buildings offer parking for PEV customers only.
- Dakota Electric offers a rebate of up to \$500 for installing a charger on their EV specific charging rate plans.
- MN Insurance companies may offer discounts on PEVs.

Mississippi

- No emissions testing required.
- MS Insurance companies may offer discounts on PEVs.

Missouri

- Ameren currently does not offer EV specific charging rates.
- PEVs are exempt from emissions testing.
- BEVs must purchase a special alternative fuel decal and pay an annual fee of \$78.50 (passenger vehicles).
- Subject to funding availability, residents and business owners are eligible for a state tax credit for the installation of EVSE before January 1, 2018. Residents

can receive up to \$1,500 and businesses can receive up to 20% of the total costs associated with the purchase and installation or \$20,000, whichever is less.

- MO Insurance companies may offer discounts on PEVs.

Montana

- No emissions testing required.
- MT Insurance companies may offer discounts on PEVs.
- A tax credit for the conversion of a vehicle to a BEV is available for 50% of the equipment and labor costs incurred, up to \$500 for vehicles weighing under 10,000 pounds, and up to \$1,000 for vehicles weighing more than 10,000 pounds.

Nebraska

- NE Insurance companies may offer discounts on PEVs.
- The Nebraska Dollar and Energy Savings Loans program offers low interest rate loans for the purchase of PEVs or the conversion of a vehicle to a PEV. The maximum loan term is 1-5 years for a new vehicle under 8,500 pounds, 1-7 years for new vehicles over 8,500 pounds, and 1-3 years for the conversion of a vehicle.

Nevada

- According to Nevada law NRS 484A.463, the NV Department of Transportation can adopt regulations to allow PEVs to access HOV lanes.
- NV Energy offers a specific EV charging rate with reduced prices from 10pm - 6am.
- PEVs are exempt from emissions testing.
- According to Nevada law NRS 484A.468, local authorities may choose to exempt PEVs from parking fees.
- The City of Reno has already established an Alternative Fuel Vehicle Parking program; PEVs are exempt from parking fees with the proper permit displayed.
- NV Insurance companies may offer discounts on PEVs.

New Hampshire

- Liberty Utilities offers a whole-house time-of-use rate with low nighttime pricing for PEVs.
- PEVs are exempt from emissions testing.
- NH Insurance companies may offer discounts on PEVs.

New Jersey

- A sales tax exemption is available for the purchase or lease of BEVs.

- PEVS are eligible for the HOV lanes on the NJ Turnpike.
- PSE&G offers a time-of-use rate for EV charging at reduced off-peak rates.
- BEVs are exempt from emissions testing.
- Some commercial and public buildings offer parking for PEV customers only.
- The NJ Workplace Charging Grant Program offers up to \$250 for the purchase and installation of a Level 1 charging station, and up to \$5,000 per Level 2 charging station.
- The “It Pay\$ to Plug In” program offers \$725,000 in reimbursement grants to employers to offset costs of purchasing and installing EVSE.
- NJ Insurance companies may offer discounts on PEVs.
- PEVs are also eligible for a Green Pass Discount, which provides a 10% discount on off-peak toll prices for the NJ Turnpike and NJ Garden State Parkway. The program sunsets Nov. 30, 2018.

New Mexico

- PNM offers free charging at 5 locations in Albuquerque and one in Santa Fe.
- BEVs are exempt from emissions testing.
- NM Insurance companies may offer discounts on PEVs.

New York

- The EV Consumer Rebate Program offers up to \$2,000 for a BEV or PHEV.
- PEVs are eligible for the HOV lanes on the Long Island Expressway with proper decal.
- ConEd offers a whole house residential time-of-use rate for EV charging, and a non-residential time-of-use rate for EV charging with a separate meter.
- National Grid does not offer any EV specific charging rate, aside from the normal time-of-use rate.
- BEVs are exempt from emissions testing.
- Some commercial and public buildings offer parking for PEV customers only.
- NY Insurance companies may offer discounts on PEVs.
- PEVs are also eligible for the Green Pass Discount Program, which offers a 10% discount to EZ-Pass toll road fees.
- The EV Charger Rebate program provides a credit for the installation of EVSE to certain qualified property up to \$5,000 or 50% the cost of the property, whichever is less.

North Carolina

- PEVs are eligible for the HOV lane.
- Duke Energy does not currently offer an EV specific charging rate.
- Duke Energy offers funding up to \$5,000 per charging port, \$20,000 per site, or \$50,000 per city for EV charging as part of the EV Charging Infrastructure Project.

- Some commercial and public buildings offer parking for PEV customers only.
- NC Insurance companies may offer discounts on PEVs.

North Dakota

- No incentives currently offered

Ohio

- BEVs are exempt from emissions testing after a one-time verification inspection conducted by Ohio EPA Mobile Sources Section.
- OH Insurance companies may offer discounts on PEVs.

Oklahoma

- OK Insurance companies may offer discounts on PEVs.

Oregon

- Portland General Electric does not offer an EV specific charging rate. However, PGE recommends EV customers switch to the time-of-use rate plan to take advantage of lower off-peak night rates.
- BEVs are exempt from emissions testing as long as the proper exemption form has been completed.
- Some commercial and public buildings offer parking for PEV customers only.
- The Alternative Fuel Vehicle Infrastructure Program provides a residential tax credit up to 25% of the cost of the EVSE, not to exceed \$750. Businesses may receive a tax credit up to 35% of the cost of the EVSE. Business applications are due Sept. 30, 2016.
- OR Insurance companies may offer discounts on PEVs.

Pennsylvania

- AFV rebates are available for PEVs up to \$2,000 for the purchase or lease of new PEVs. Rebates are available until 250 rebates have been disbursed or Dec. 31, 2016, whichever comes first.
- PECO offers a \$50 rebate to residential customers and businesses for the purchase of an EV.
- PECO currently does not offer any EV specific charging rates.
- Some PEVs may be exempt from emissions testing. Further details are at Drive Clean PA.
- Some commercial and public buildings may offer parking for PEV customers only.
- PA Insurance companies may offer discounts on PEVs.

Rhode Island

- DRIVE offers a rebate up to \$2,500 for the purchase or lease of a new PEV. Funding is limited.
- BEVs are exempt from emissions testing but must pass a safety inspection.
- Some commercial and public buildings offer parking for PEV customers only.
- RI Insurance companies may offer discounts on PEVs.
- PEVs in the town of Warren are exempt from the RI excise tax, up to \$100.

South Carolina

- SC offers an income tax credit for qualified PEVs of \$667, plus an additional \$111 if the vehicle has at least 5 kWh of battery capacity. Each additional kWh thereafter is eligible for another \$111, with a maximum credit of \$2,000, according to SC Law Section 12-6-3376.
- Duke Energy does not currently offer an EV specific charging rate.
- Duke Energy offers funding up to \$5,000 per charging port, \$20,000 per site, or \$50,000 per city for EV charging as part of the EV Charging Infrastructure Project.
- Some commercial and public buildings offer parking for PEV customers only.
- SC Insurance companies may offer discounts on PEVs.

South Dakota

- No emissions testing required for registration.

Tennessee

- TN offers a \$2,500 rebate for the purchase or lease of a BEV, and a \$1,500 for the purchase or lease of a PHEV. However, current funds were exhausted as of April 2016.
- PEVS are eligible for the HOV lane but must apply for the Smart Pass program and display the decal in the lower right side of the rear window.
- TVA currently does not offer any EV specific charging rates.
- BEVs are exempt from emissions testing in the counties that require the testing.
- Some commercial and public buildings offer parking for PEV customers only.
- TN Insurance companies may offer discounts on PEVs.

Texas

- Austin Energy offers an EV360 Pilot Program for EV charging with reduced off-peak rates from 7pm-2pm the next day on weekdays, and anytime on weekends. The lowest rates offered are \$30/month. There is a one-time enrollment fee of \$150.

- Austin Energy offers PEV owners a rebate of 50% of the cost to purchase and install a Level 2 charging station, up to \$1,500. Multi-family properties are also eligible for a rebate of up to 50% of the cost to install an approved Level 2 charging station.
- BEVs are exempt from emissions testing, where required.
- Some commercial and public buildings offer parking for PEV customers only.
- TX Insurance companies may offer discounts on PEVs.
- The AirCheckTexas Drive a Clean Machine program provides a rebate up to \$3,500 for vehicle replacement to a PEV if certain county and income requirements are met, and certain vehicle conditions are met.

Utah

- Utah offers an income tax credit through the Clean Fuel Vehicle Tax Credit of up to \$1,000 for qualifying PHEVs, and an income tax credit of 35% of the vehicle purchase price, up to \$1,500, for BEVs. An income tax credit of 50% of the cost of equipment for conversion, up to \$1,500 is also available for converting a vehicle to a BEV. The state also provides an income tax credit of \$750 for the purchase of a new electric motorcycle. These tax incentives expire Dec. 31, 2016.
- PEVs are eligible for the HOV lane with proper Clean Fuel Vehicle Decal and Permit. Limited number of decals still available.
- Rocky Mountain Power currently does not offer any EV specific charging rates.
- PEVs are eligible for free parking up to 2 hours at Salt Lake City parking meters, with a Green Vehicle parking permit.
- UT Insurance companies may offer discounts on PEVs.

Vermont

- Drive Electric Vermont offers a rebate of up to \$1,000 for the first 200 applicants who purchase a PEV. Incentive varies based on battery size.
- Green Mountain Power currently does not offer any EV specific charging rates.
- BEVs are exempt from emissions testing.
- BEVs also receive discounted registration fees.
- Some commercial and public buildings offer parking for PEV customers only.
- The VT EV Charging Station Loan Program offers loans up to \$100,000 for EVSE through the State Infrastructure Bank. There is a 1% fixed interest rate and a 2% commitment fee.
- VT Insurance companies may offer discounts on PEVs.

Virginia

- PEVs are eligible for HOV lanes on I-64 and I-264 with proper Clean Special Fuel Vehicle Plate displayed.

- Dominion offers an EV Only Pricing plan with reduced off-peak rates between 10pm and 6am. Dominion also offers an EV + Home Pricing Plan with off-peak prices for home and EV.
- BEVs are exempt from emissions testing, where required.
- Some commercial and public buildings offer parking for PEV customers only.
- VA Insurance companies may offer discounts on PEVs.

Washington

- BEVs and qualifying PHEVs are eligible for a sales tax exemption for the purchase or lease of the vehicle. The exemption is available until July 1, 2019.
- Businesses are eligible to receive tax credits on a first come, first serve basis up to 50% of the incremental cost of the PEV. The maximum commercial tax credit is based on the weight rating of the vehicle.
- PSE does not currently offer any EV specific charging rates.
- PEVs are exempt from emissions testing.
- PEVs are subject to an annual \$100 registration fee. The fees will go to the PEV Infrastructure Bank to build public charging stations.
- Some commercial and public buildings offer parking for PEV customers only.
- Puget Sound Energy offers a \$500 rebate to customers to purchase and install qualified Level 2 chargers.
- WA Insurance companies may offer discounts on PEVs.

West Virginia

- PEVS are eligible for a tax credit of 35% the purchase price of the vehicle, up to a maximum of \$7,500. Converting a traditionally fueled vehicle to a PEV is also eligible for a tax credit of 50% of the cost of the conversion, up to a maximum of \$7,500. The credit is available until Dec. 31, 2017.
- Appalachian Power currently does not offer any EV specific charging rates.
- No emissions testing required for registration.
- Some commercial and public buildings offer parking for PEV customers only.
- Businesses are eligible for a tax credit of up to 20% for the purchase and installation of qualified EVSE, up to a maximum of \$400,000 per facility. The credit is available until Dec. 31, 2017.
- WV Insurance companies may offer discounts on PEVs.

Wisconsin

- Madison Gas and Electric does not offer an EV specific charging rate, but recommends taking advantage of off-peak hours with their time-of-use rate.
- Alliant Energy also recommends taking advantage of their time-of-use rates.
- Alliant Energy offers a rebate of \$500 to residential customers for the purchase and installation of a Level 2 charger.
- BEVs are exempt from emissions testing.

- Some commercial and public buildings offer parking for PEV customers only.
- WI Insurance companies may offer discounts on PEVs.

Wyoming

- No emissions testing required for registration.
- PEVs must pay an annual decal fee of \$50, according to WY statute 39-17-301.
- Yellowstone-Teton Clean Cities offers a \$5,000 rebate to businesses who purchase and install EVSE. The funding is available on a first come, first serve basis.

ADDITIONAL DATABASES FOR EV POLICY TRACKING

The National Conference of State Legislatures tracks energy and environment legislation to provide up to date, real-time information on bills that have been introduced in the fifty states and the District of Columbia. The database is searchable for legislation from 2007 to 2018 by state, topic, keyword, year, status or primary sponsor. Bill information for the current year is updated each Tuesday. New measures are added as they are introduced or identified by NCSL staff. Link:

<http://www.ncsl.org/research/energy/energy-environment-legislation-tracking-database.aspx>

The Alternative Fuels Data Center (AFDC) provides information, data, and tools to help fleets and other transportation decision makers find ways to reach their energy and economic goals through the use of alternative and renewable fuels, advanced vehicles, and other fuel-saving measures. The database is searchable using an advanced or keyword search to find a specific federal or state law or incentive. There are also tables that allow the reader to view laws and incentives sorted by technology/fuel, incentive, regulation, or user. Links to a chronology and summaries of key federal legislation related to alternative transportation technologies are also provided. Finally, examples of laws and incentives from local governments that encourage or require individuals and/or public and private organizations to use alternative fuels, advanced vehicles, and strategies to decrease fuel use or increase fuel economy is provided. Link:

<https://www.afdc.energy.gov/laws>