

50 STATES OF ELECTRIC VEHICLES

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NC CLEAN ENERGY
TECHNOLOGY CENTER

EV

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The [NC Clean Energy Technology Center](#) is a UNC System-chartered Public Service Center administered by the College of Engineering at North Carolina State University. Its mission is to advance a sustainable energy economy by educating, demonstrating and providing support for clean energy technologies, practices, and policies. The Center provides service to the businesses and citizens of North Carolina and beyond relating to the development and adoption of clean energy technologies. Through its programs and activities, the Center envisions and seeks to promote the development and use of clean energy in ways that stimulate a sustainable economy while reducing dependence on foreign sources of energy and mitigating the environmental impacts of fossil fuel use.

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PREVIOUS EDITIONS AND OTHER 50 STATES REPORTS

The full version of this report may be purchased [here](#). Previous executive summaries of *The 50 States of Electric Vehicles* are available for download [here](#).

In addition to *The 50 States of Grid Modernization*, the NC Clean Energy Technology Center publishes additional quarterly reports called *The 50 States of Solar* and *The 50 States of Grid Modernization*. These reports may be purchased at [here](#). Executive summaries and older editions of these reports are available for download [here](#).

ABOUT THE REPORT

PURPOSE

The purpose of this report is to provide state and local lawmakers and regulators, electric utilities, the electric power industry, the transportation industry, and other energy stakeholders with timely, accurate, and unbiased updates about how states are choosing to study, adopt, implement, amend, or discontinue policies associated with electric vehicles. This report catalogues proposed and approved legislative, regulatory, and utility rate design changes affecting electric vehicles during the most recent quarter, as well as state and investor-owned utility proposals to deploy electric vehicles and charging infrastructure.

APPROACH

The authors identified relevant policy changes and deployment proposals through state utility commission docket searches, legislative bill searches, popular press, and direct communications with stakeholders and regulators in the industry.

Questions Addressed

This report addresses several questions about the U.S. electric vehicle landscape, including:

- How are states addressing barriers to electric vehicle and charging infrastructure deployment?
- What policy actions are states taking to grow markets for electric vehicles and related infrastructure?
- How are utility companies designing rates and electric vehicle supply equipment companies designing charging equipment and controls to influence charging behavior of electric vehicle owners?
- Where and how are states and utilities proposing to deploy or pay for electric vehicles and electric vehicle charging infrastructure?

Actions Included

This report focuses on cataloguing and describing important proposed and adopted policy changes related to electric vehicles. For the purpose of this report, the definition of electric vehicle includes all-electric vehicles (EVs), hybrid electric vehicles (HEVs), and plug-in electric vehicles (PHEVs). In order to explore all policy actions related to electric vehicles, this report catalogs and describes actions related to the deployment of electric vehicle charging equipment, which is often referred to as electric vehicle supply equipment (EVSE). Additionally, the electric

grid is impacted by electric vehicle charging, so legislative and regulatory actions related to electric utilities are included in this report.

In general, this report considers an “action” to be a relevant (1) legislative bill that has been introduced, (2) executive order, or (3) regulatory docket, utility rate case, or rulemaking proceeding. Only statewide actions and those related to investor-owned utilities are included in this report. Specifically, actions tracked in this issue include:

Studies and Investigations

Legislative or regulatory-led efforts to study electric vehicles specifically, or electric vehicles as part of a broader grid modernization study or investigation.

Regulation

Changes to state rules related to electric vehicles, including registration fees, homeowner association limitations, and electricity resale regulations affecting vehicle charging.

Utility Rate Design

Proposed or approved changes to investor-owned utility rate design for electric vehicles, including new electric vehicle tariffs and significant changes to existing electric vehicle tariffs.

Market Development

New state policy proposals or changes to existing policies aimed at growing the electric vehicle market.

Financial Incentives

New state or investor-owned utility incentive programs or changes to existing incentive programs for electric vehicles and charging infrastructure.

State and Utility Deployment

Utility-initiated requests, as well as proposed legislation, to deploy electric vehicles or charging infrastructure.

Actions Excluded

While actions taken by municipal utilities and electric cooperatives are not comprehensively tracked in this report, particularly noteworthy or high-impact actions are included. The report also excludes actions related to grid modernization without an explicit electric vehicle component, as well as actions related to general time-varying rates not specific to vehicle charging; these types of actions are tracked in the 50 States of Grid Modernization report series.

EXECUTIVE SUMMARY

2018 ELECTRIC VEHICLE ACTION

In 2018, 47 states plus DC took a total of 424 policy and deployment actions related to electric vehicles and charging infrastructure. Table 1 provides a summary of state and utility actions on these topics. Of the 424 actions cataloged, the most common were related to regulation (102), followed by financial incentives (89), and market development (78).

Table 1. 2018 Summary of Electric Vehicle Actions

Type of Action	# of Actions	% by Type	# of States
Regulation	102	24%	38
Financial Incentives	89	21%	26 + DC
Market Development	78	18%	20 + DC
Studies and Investigations	53	13%	29 + DC
Deployment	52	12%	24 + DC
Rate Design	50	12%	24 + DC
Total	424	100%	47 States + DC

Note: The “# of States/ Districts” total is not the sum of the rows because some states have multiple actions. Percentages are rounded and may not add up to 100%.

TOP TEN MOST ACTIVE STATES OF 2018

Ten states taking the greatest number of actions related to electric vehicles, or some of the most impactful actions, are noted below.

California

The California Public Utilities Commission approved major transportation electrification plans from the state’s investor-owned utilities and considered proposals for additional utility investments in charging infrastructure, as well as new rebate programs and rate offerings. The California State Legislature enacted several bills related to electric vehicles, initiating studies, modifying incentives, and establishing a clean miles standard for ridesharing companies.

New Jersey

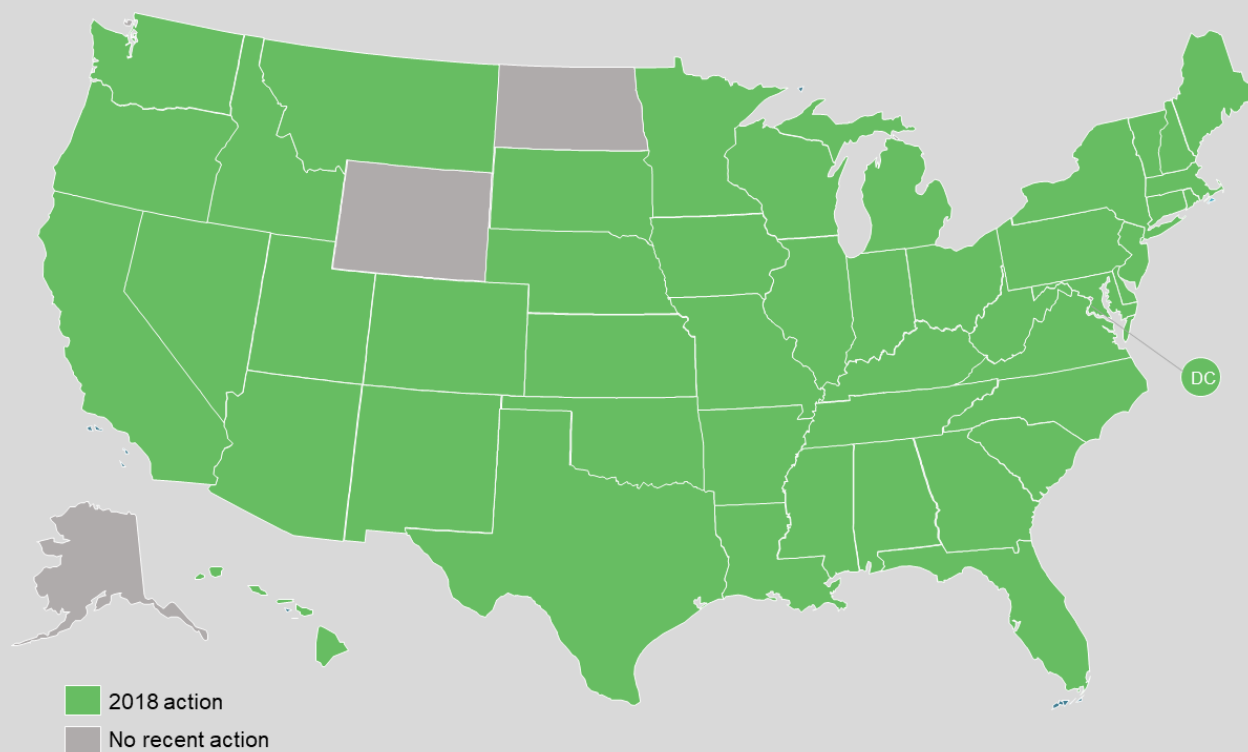
Atlantic City Electric and PSE&G New Jersey proposed new electric vehicle programs in 2018, totaling \$14.9 million and \$261 million in investment, respectively. The programs include charging infrastructure deployment, rebate programs, and a new rate option. The state is also

addressing clean transportation within its Energy Master Plan, and the Governor signed onto the multi-state memorandum of understanding to support zero-emission vehicles.

New York

New York regulators considered several electric vehicle rate design proposals in 2018, including rates to encourage fast charging development, as well as rebate programs proposed by utilities. The Governor also announced the \$250 million EVolve NY Initiative to expand charging infrastructure in the state. State lawmakers considered a large number of bills related to electric vehicles, although none of these were enacted.

Figure 1. 2018 Legislative and Regulatory Action on Electric Vehicles



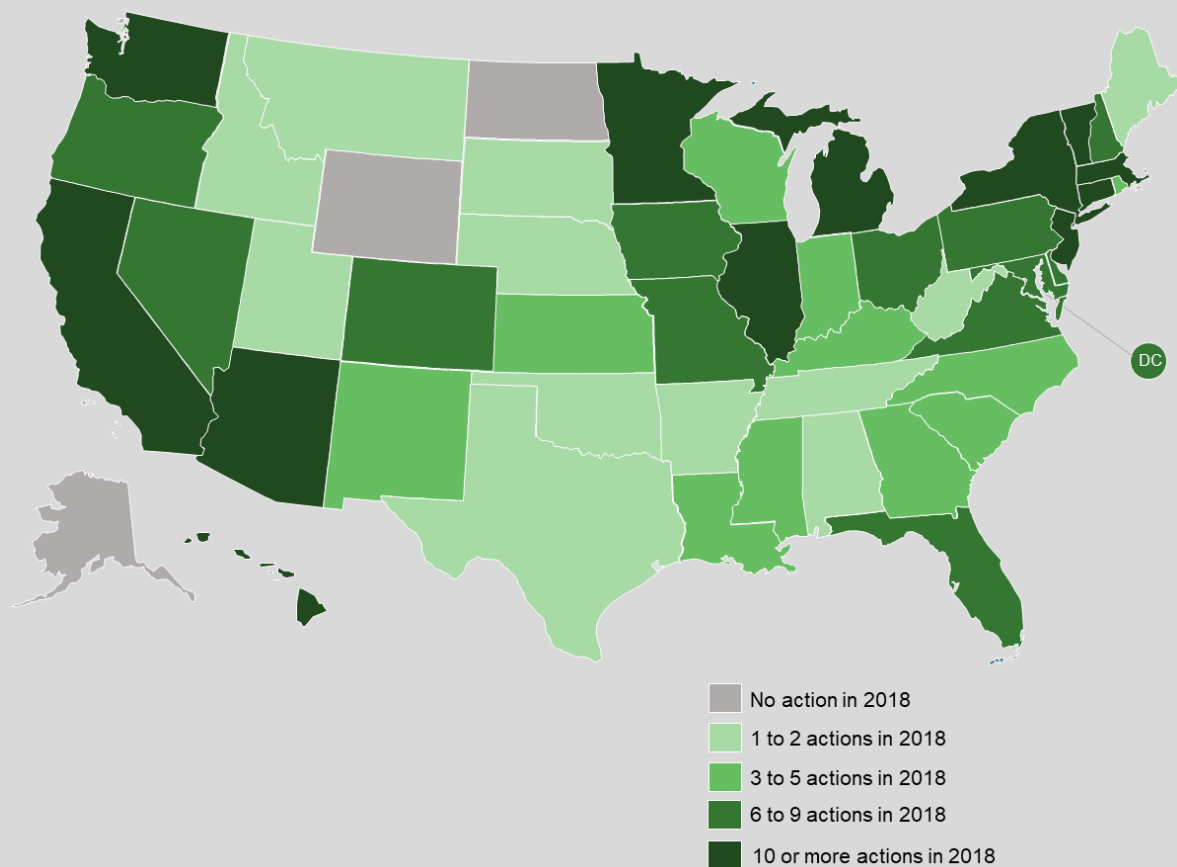
Massachusetts

Massachusetts regulators approved National Grid's Phase I Electric Vehicle Market Development Program in 2018, and the utility also filed for approval of its Phase II program, totaling \$166.5 million in investment. Regulators also determined that electric vehicle charging service is not within the Department of Public Utilities' jurisdiction, while lawmakers enacted a bill prohibiting homeowner associations from preventing charging station installation.

Maryland

The Maryland Public Service Commission considered an expansive electric vehicle program proposal arising out of the state's PC 44 grid modernization proceeding. The program covers the state's four investor-owned utilities and includes rate designs, a variety of incentives, grants for innovative ideas, and technology demonstration projects. The Maryland General Assembly also enacted legislation extending the expiration date for electric vehicle access to high-occupancy vehicle lanes.

Figure 2. 2018 Electric Vehicle Activity, by Number of Actions



District of Columbia

Pepco filed a revised electric transportation program proposal in 2018, totaling \$15.2 million in investment. The proposed program includes off-peak charging rates, incentives for charging infrastructure, and direct deployment of fast charging infrastructure. The DC City Council also enacted the Electric Vehicle Public Infrastructure Expansion Act, creating a new charging station pilot program.

Nevada

The Public Utilities Commission of Nevada approved NV Energy's Electric Vehicle Infrastructure Demonstration Program in 2018, which includes rebates for various types of charging equipment, as well as incentives for off-peak charging. The Commission also determined that NV Energy may own and operate charging stations and considered a transitional demand charge proposed by NV Energy for customers with fast charging stations.

Minnesota

Minnesota regulators considered electric vehicle charging and infrastructure through an investigatory proceeding in 2018. Xcel Energy proposed two new electric vehicle pilot programs aimed at fleets and public charging, while the Commission approved a new residential electric vehicle service pilot for the utility. Minnesota Power also requested approval for modifications to its electric vehicle charging tariff.

Missouri

Kansas City Power and Light (KCP&L) requested approval for cost recovery and a tariff for its utility-owned charging network in 2018, although the Public Service Commission had previously ruled that charging stations are not electric plants and eligible for cost recovery. The Missouri Court of Appeals overturned this decision in 2018, determining that the Commission does have jurisdiction over KCP&L's charging stations. The Commission also considered an incentive program proposed by Ameren.

Pennsylvania

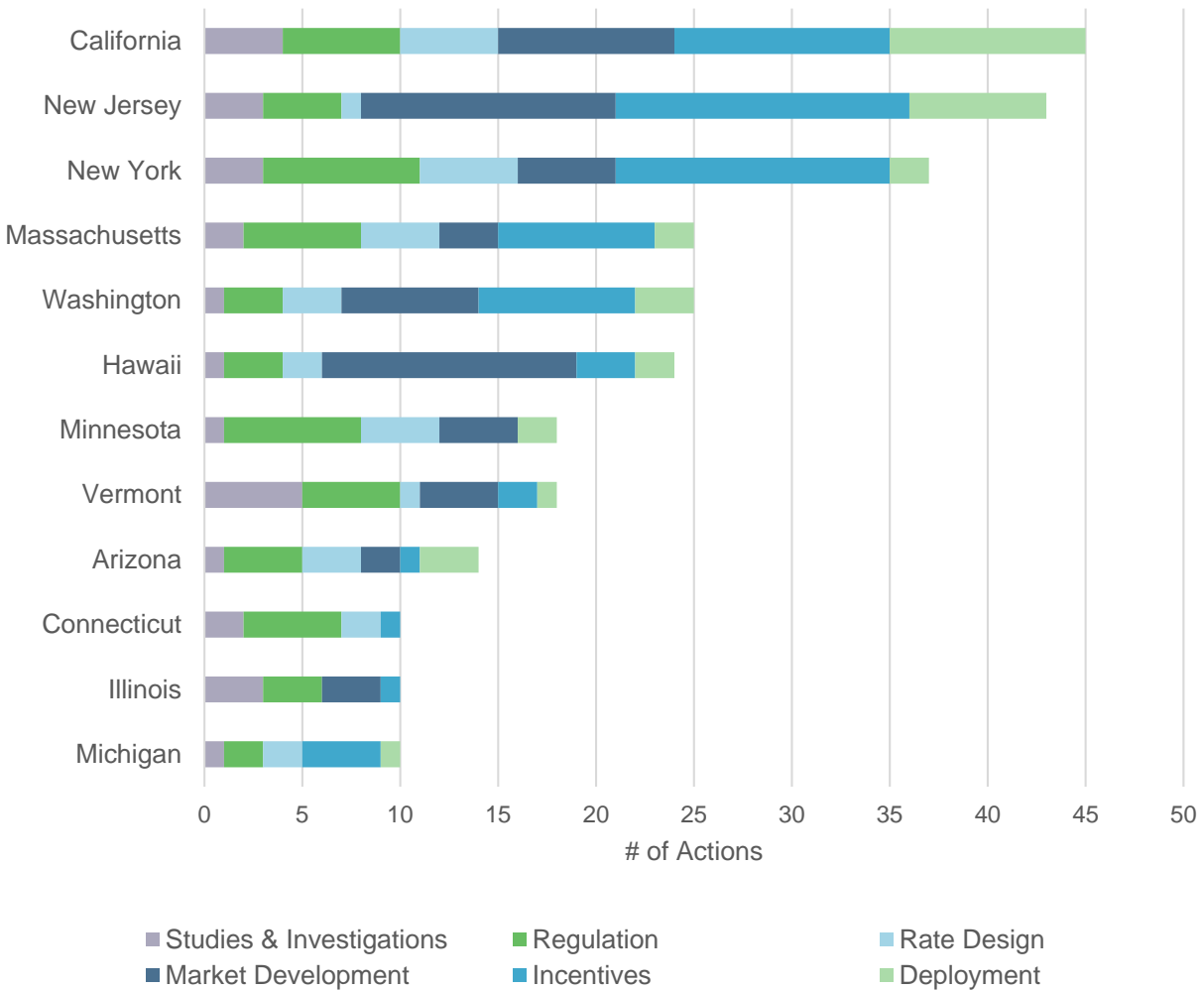
The Pennsylvania Public Utility Commission adopted a policy statement in 2018, clarifying that third-party electric vehicle charging does not constitute a resale of electricity. Duquesne Light Company, PECO, and UGI Utilities proposed new electric vehicle programs in 2018, including charging infrastructure investments, a rebate program, and a pilot rate rider for fast charging stations.

TOP ELECTRIC VEHICLE TRENDS OF 2018

States Clarifying Commission Jurisdiction Over Electric Vehicle Charging Stations

Policymakers and regulators in several states, including Alabama, Missouri, New Hampshire, Pennsylvania, and Vermont considered whether utility regulators have jurisdiction over electric vehicle charging stations. Alabama and New Hampshire clarified that electric vehicle charging station operators are not classified as public utilities, and Pennsylvania regulators adopted a policy statement that third-party charging does not constitute a resale of electricity.

Figure 3. Most Active States of 2018, by Number of Actions



Utilities Proposing Demand Charge Reductions or Alternatives for Fast Chargers

Several utilities proposed limited-time demand charge reductions or alternative charges for DC fast charging station operators in order to promote the development of these stations, since demand charges can often make fast charging stations cost-prohibitive. Demand charge reductions were approved in Nevada, Oregon, Pennsylvania, and Rhode Island, while utility proposals are under consideration in California, Massachusetts, and New York.

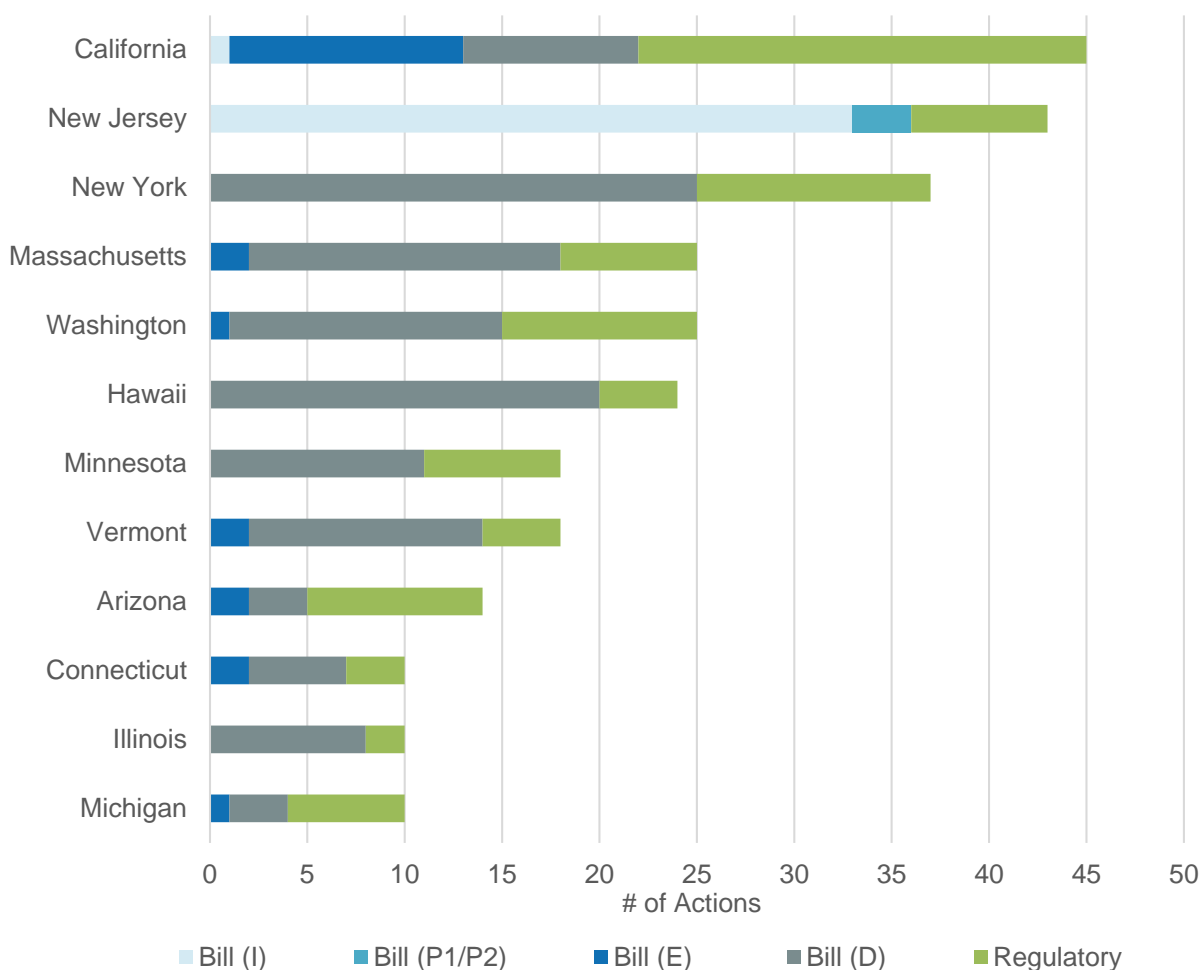
Governors Establishing Statewide Zero-Emission Vehicle Goals

Governors in several states established statewide goals related to electric vehicle adoption and charging infrastructure development in 2018. In North Carolina, Executive Order 80 sets a goal of 80,000 registered zero-emission vehicles by 2025, and California’s Executive Order B-48-18 establishes a goal of 5 million zero-emission vehicles by 2030. Governors in Colorado, New Jersey, and Virginia also set goals or made recommendations related to electric vehicles and charging infrastructure development.

States Addressing the Future of Transportation Infrastructure Funding

Many states are addressing the future of transportation infrastructure funding, due to increased electric vehicle adoption and an associated decline in gasoline tax revenues, among other reasons. The Iowa Department of Transportation conducted a study of the impact of electric vehicles on transportation funding, while the Vermont Public Utility Commission considered funding mechanisms within its ongoing electric vehicle investigation. Many states considered bills establishing additional registration fees for electric vehicles in 2018.

Figure 4. Most Active States of 2018, by Action Status



Utilities Collecting Data on Electric Vehicle Charging Patterns

As a part of many utilities' electric vehicle programs, they are collecting data on customer charging patterns to inform future programs and rates, as well as to better understand the potential impact of electric vehicle charging on the electric grid. Duke Energy Florida, Lincoln Electric System in Nebraska, and the Tennessee Valley Authority all announced studies specifically collecting data on customer charging and offering incentives for participation.

Utilities Focusing on Different Methods to Promote Off-Peak Charging

Most of the utility-led electric vehicle programs under consideration in 2018 included some method to promote off-peak charging. Several utilities proposed deployment of or rebates for smart chargers, including DTE Electric in Michigan and National Grid in Massachusetts. Other utilities proposed rebates for off-peak vehicle charging or rate structures that encourage off-peak charging.

Utilities and Stakeholders Finding Agreement on Electric Vehicle Programs

Utilities and stakeholders are often agreeing on electric vehicle program proposals and policy issues. Many stakeholders filed letters of support for Duke Energy's proposed electric vehicle plans in South Carolina, and parties reached unanimous agreement on NV Energy's new rate offering for fast charging stations. Utilities and stakeholders were also in agreement on the issue of Commission jurisdiction over charging stations in Alabama.

State Agencies Publishing Spending Plans for Volkswagen Settlement Funds

States agencies published their Beneficiary Mitigation Plans in 2018, outlining plans to spend funding received through the 2016 Volkswagen Settlement, paying out \$2.7 billion to states for environmental mitigation. States are permitted to allocate up to 15% of funds for charging infrastructure for zero-emission vehicles, and several states are also allocating funds for electric buses. Several state legislatures are considering funding priorities or providing additional resources to complement Mitigation Plan activities.

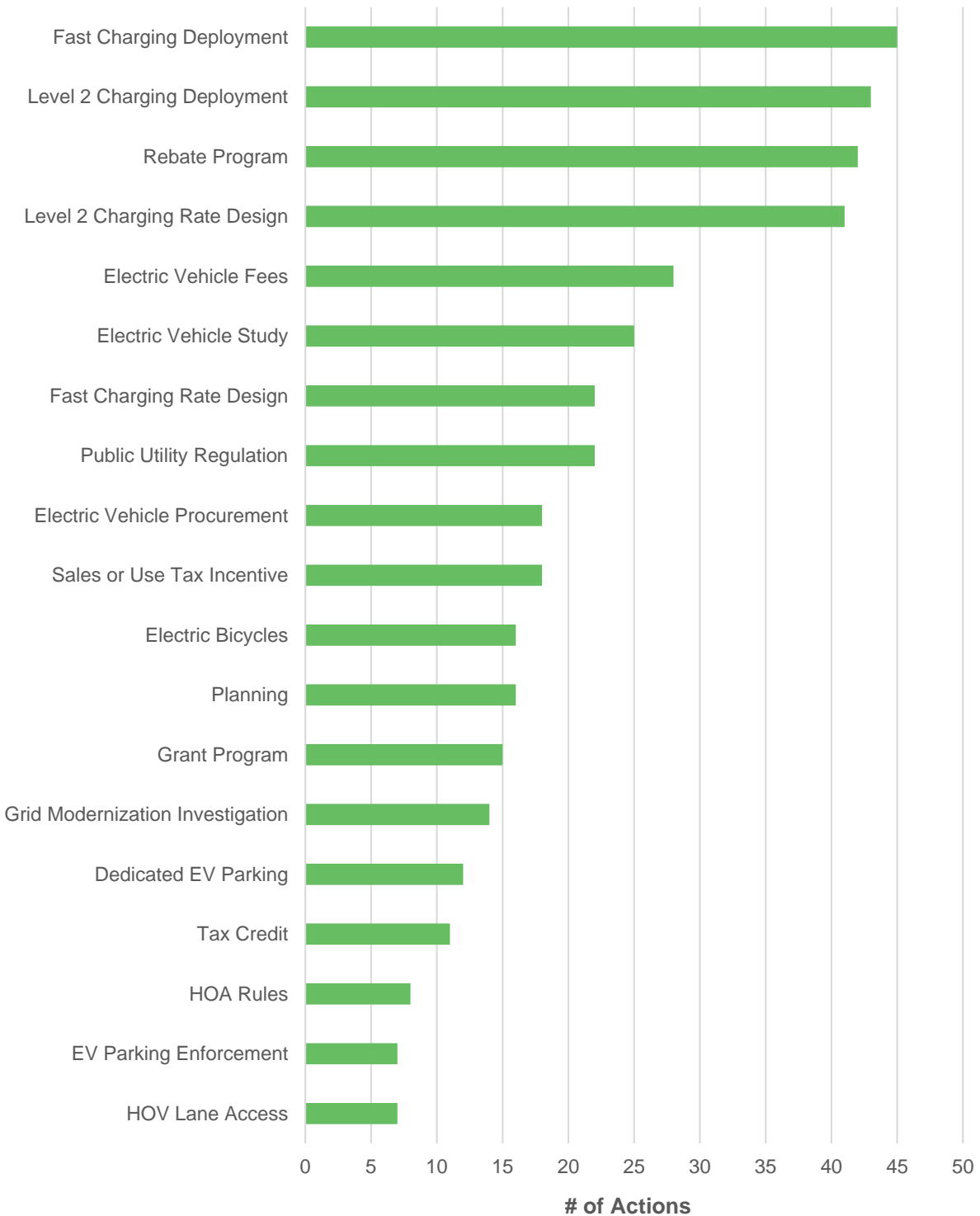
States and Utilities Investing in Electric Buses and Charging Infrastructure

Investment in electric buses and charging infrastructure ramped up in 2018, with several utilities including electric bus components within their transportation electrification programs. Pepco in DC, Delmarva Power & Light in Delaware, and National Grid in Massachusetts all proposed electric bus investments as part of broader electric vehicle programs. Arizona Public Service also proposed an electric school bus program as part of its Demand-Side Management Plan.

Utilities Piloting Vehicle-to-Grid Capabilities

Some utilities took steps to pilot vehicle-to-grid capabilities in 2018. PSE&G New Jersey proposed a program to test vehicle-to-grid and vehicle-to-building technology with electric buses. Duke Energy's proposed electric vehicle programs in South Carolina and a pilot proposed as part of San Diego Gas & Electric's Transportation Electrification Program would also test vehicle-to-grid capabilities with electric buses.

Figure 5. Top Electric Vehicle Actions of 2018



IN COMPARISON: 2017 VS. 2018

Total electric vehicle action increased by 87% over the past year, with states and utilities taking approximately 227 actions in 2017 and 424 actions in 2018. In 2018, activity increased in every category tracked by this report by the following amounts: Studies & Investigations: 96%, Regulation: 46%, Rate Design: 194%, Market Development: 117%, Incentives: 68%, and Deployment: 117%. The number of states taking actions in each electric vehicle category also increased from 2017 to 2018.

Figure 6. Number of Electric Vehicle Actions 2017-2018

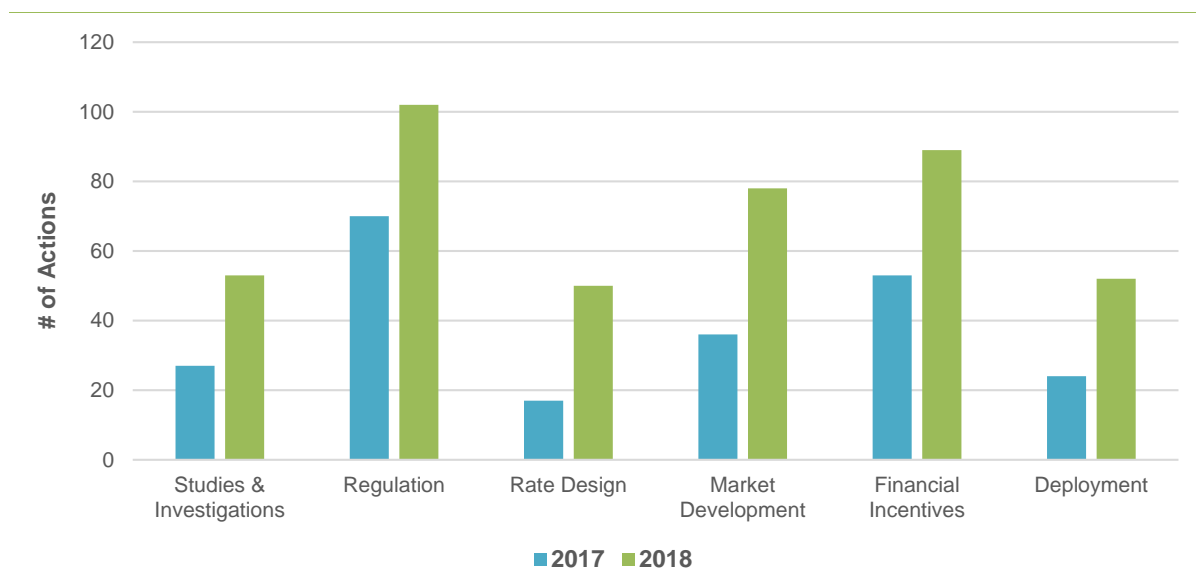
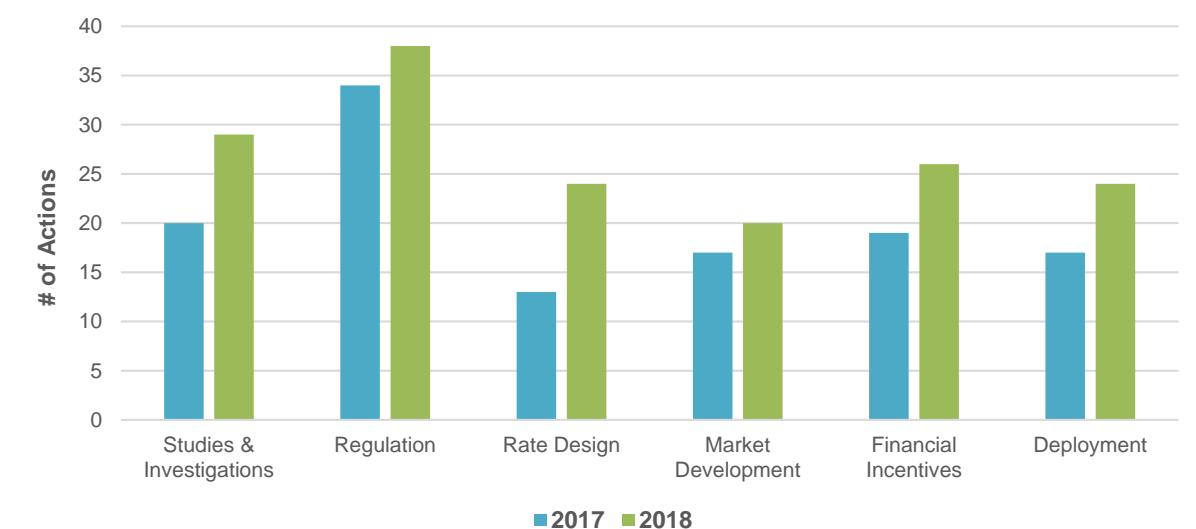


Figure 7. Number of States Taking Electric Vehicle Actions 2017-2018



Q4 2018 ELECTRIC VEHICLE ACTION

In Q4 2018, 35 states plus DC took a total of 217 legislative and regulatory actions related to electric vehicles. Table 2 provides a summary of state and utility actions occurring during Q4 2018. Of the 217 actions catalogued, the most common were related to Financial Incentives (55), followed by Deployment (37), and Market Development (34).

Table 2. Q4 2018 Summary of Electric Vehicle Actions

Type of Action	# of Actions	% by Type	# of States
Financial Incentives	55	26%	14 + DC
Deployment	37	17%	18 + DC
Market Development	34	15%	13 + DC
Rate Design	31	15%	19 + DC
Studies and Investigations	30	14%	20 + DC
Regulation	30	14%	13
Total	217	100%	35 States + DC

Note: The “# of States/ Districts” total is not the sum of the rows because some states have multiple actions. Percentages are rounded and may not add up to 100%.

TOP ELECTRIC VEHICLE ACTIONS OF Q4 2018

Five of the quarter’s most notable electric vehicle actions are noted below.

National Grid Files Phase II Electric Vehicle Market Development Program in Massachusetts

As part of a general rate case filed in November 2018, National Grid requested approval for Phase II of its Electric Vehicle Market Development Program. The program includes a residential off-peak charging rebate, a demand charge discount for fast charging stations, charging station rebates, and utility deployment and ownership of Level 2 and fast charging stations.

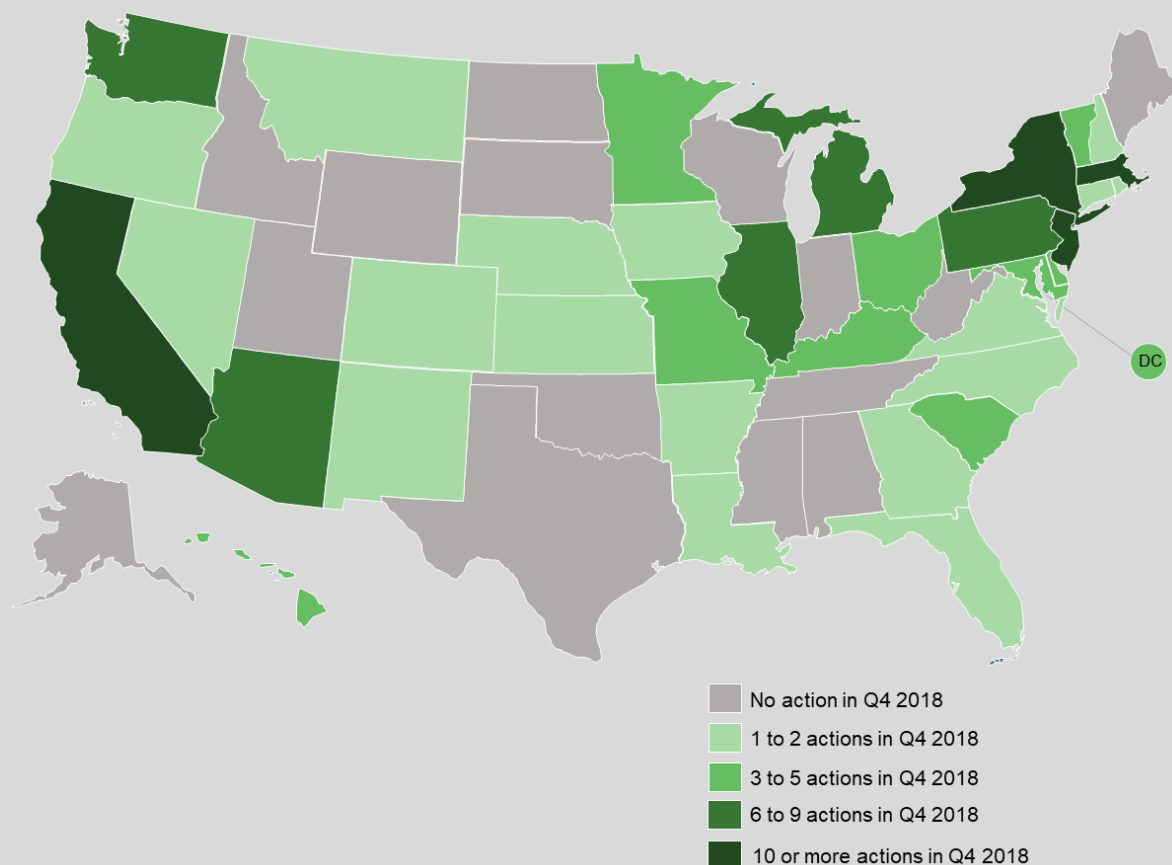
Kentucky Public Service Commission Opens Docket Considering Jurisdiction Over Charging Stations

In November 2018, the Kentucky Public Service Commission opened a proceeding to review the Commission’s jurisdiction over electric vehicle charging stations. The Commission noted increased ownership of electric vehicles in the state as a motivating factor for the investigation, as well as the fact that the state has fewer charging stations than neighboring states. The Commission is currently accepting comments on the issue.

North Carolina Governor Establishes Zero-Emission Vehicle Goal

In October 2018, the Governor of North Carolina issued Executive Order 80, establishing a goal of having 80,000 registered zero-emission vehicles in the state by 2025. The order also directs state agencies to prioritize zero-emission vehicles when purchasing or leasing new vehicles and directs certain agencies to create a zero-emission vehicle plan and motor fleet zero-emission vehicle plan.

Figure 8. Q4 2018 Legislative and Regulatory Action on Electric Vehicles



Pacific Gas & Electric and Green Mountain Power File Subscription Rates

Pacific Gas & Electric (PG&E) in California and Green Mountain Power (GMP) in Vermont both requested approval for subscription rates for electric vehicle charging in Q4 2018. PG&E's proposed rates are available to commercial customers, while GMP's rate offers unlimited residential off-peak charging for a fixed monthly fee. GMP later withdrew its proposed rate in January 2019. Xcel Energy also indicated that it will file a subscription rate in Minnesota.

California Regulators Open Broad Rulemaking on Transportation Electrification

The California Public Utilities Commission opened a broad rulemaking proceeding on transportation electrification issues in December 2018. The proceeding will cover a transportation electrification framework for utility programs and investments, rate designs for electric vehicle charging, the Low Carbon Fuel Standard, low-income access to transportation electrification, vehicle-grid integration, cybersecurity, and more.

Figure 9. Most Active States of Q4 2018

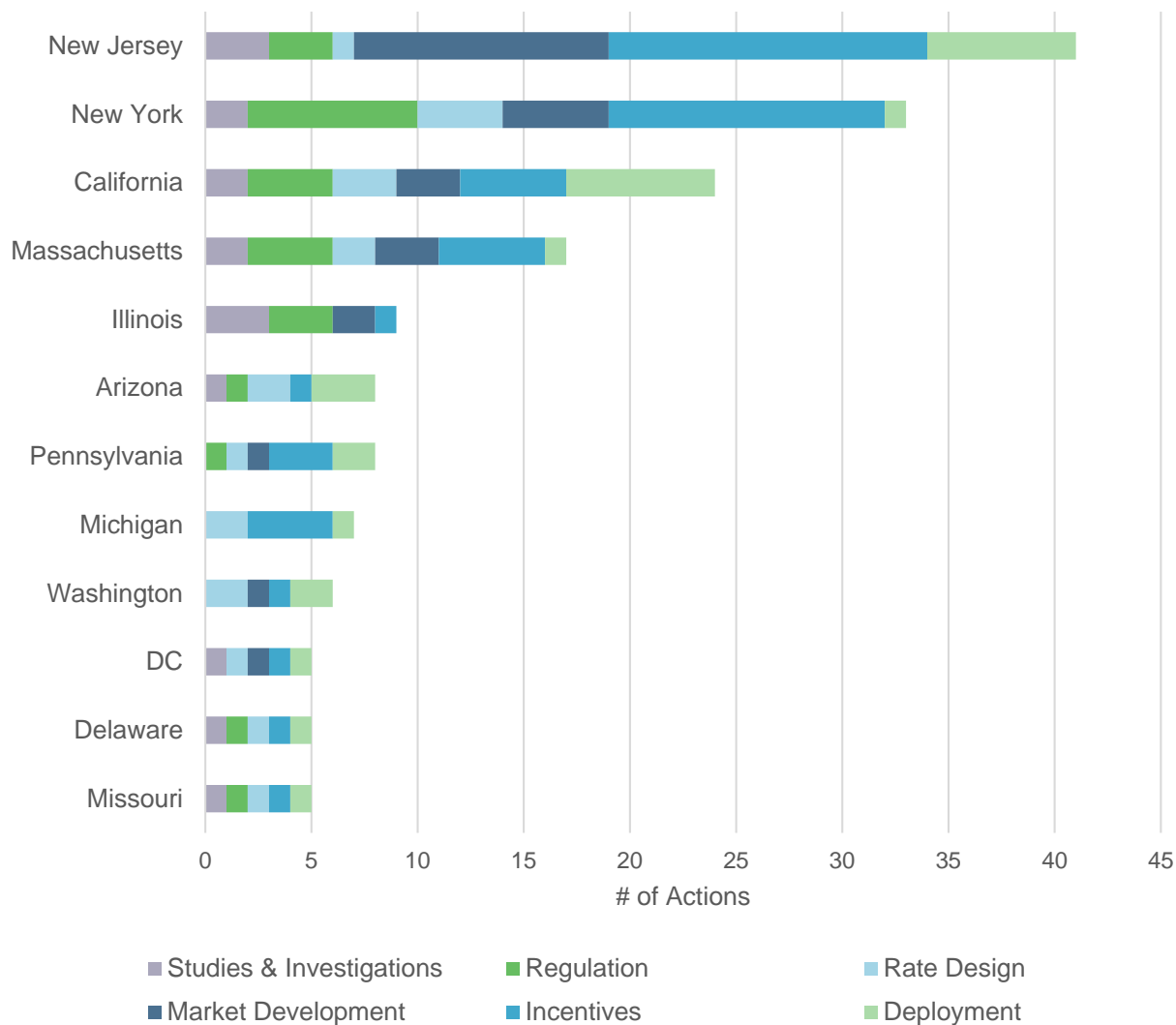


Figure 10. Electric Vehicle Action by Category, 2017 to Q4 2018

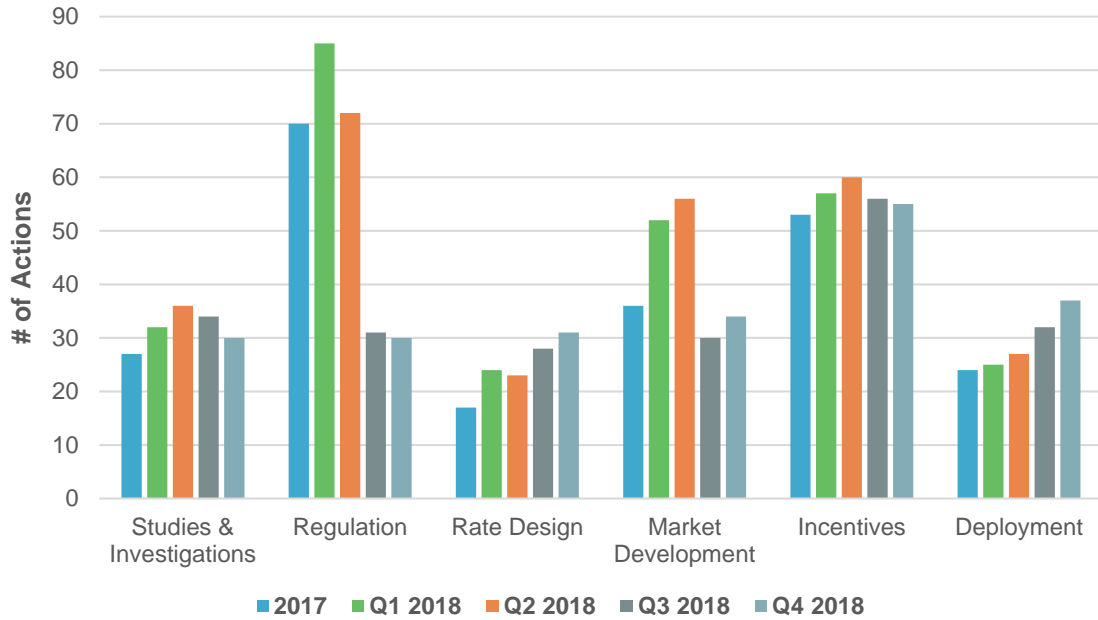
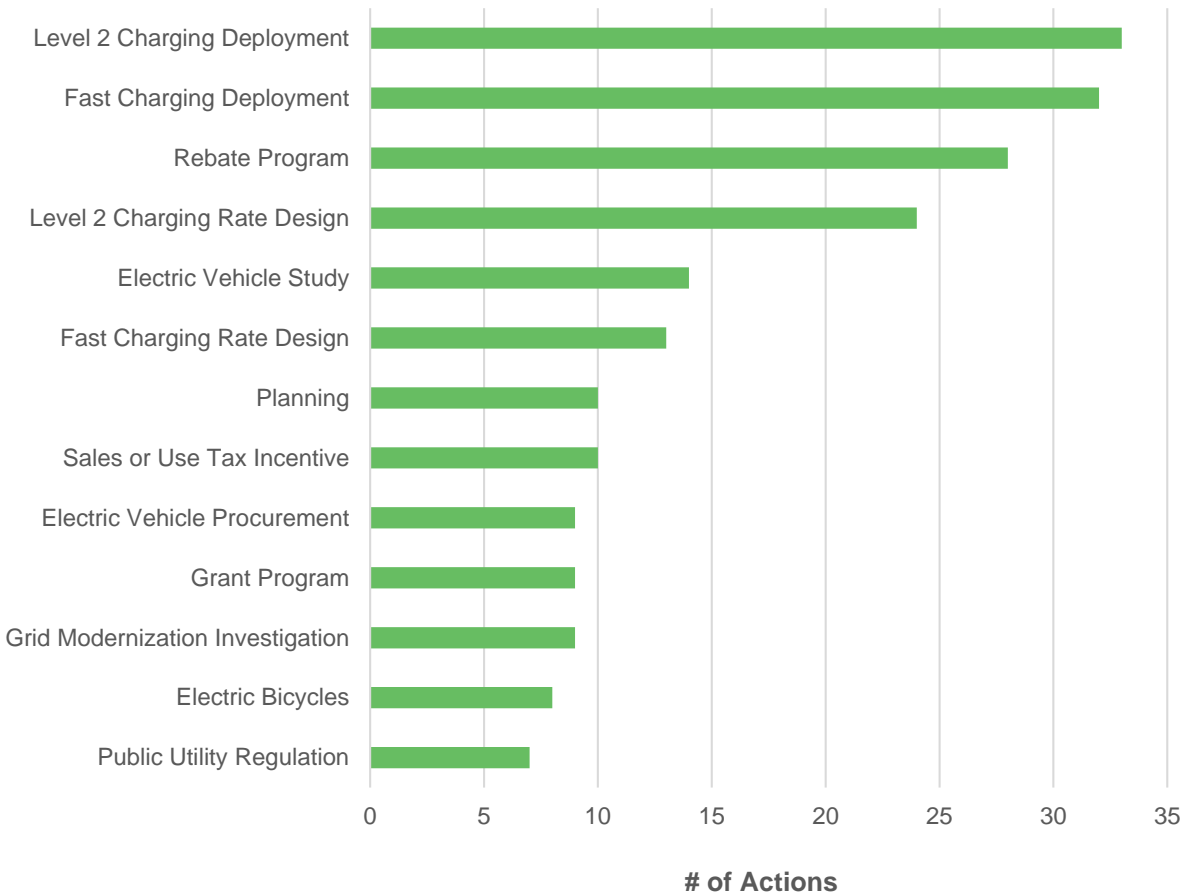


Figure 11. Top Electric Vehicle Actions of Q4 2018



FULL REPORT DETAILS & PRICING

FULL REPORT DETAILS

Content Included in the Full Quarterly Report:

- Detailed tables describing each pending and recently decided state and investor-owned utility action related to electric vehicles and charging infrastructure. Actions are broken out into the following categories:
 - Studies and Investigations
 - Regulation
 - Rate Design
 - Market Development
 - Financial Incentives
 - State and Utility Deployment
- Links to original legislation, dockets, and commission orders for each legislative and regulatory action
- Excel spreadsheet file of all actions taken during the quarter and separate Powerpoint file of all summary maps available upon request
- Qualitative analysis and descriptive summaries of electric vehicle policy action and trends
- Outlook of action for the next quarter

WHO SHOULD PURCHASE THIS REPORT

The 50 States of Electric Vehicles allows those involved in the electric and transportation industries to easily stay on top of legislative and regulatory changes. The report provides a comprehensive quarterly review of actions. At a cost of \$500 per issue (or \$1,500 annually), the 50 States of Electric Vehicles offers a significant time and financial savings. With direct links to original sources for all actions, customers may stay on top of legislative and regulatory developments between quarterly reports.

Electric Vehicle and Charging Infrastructure Companies

- Identify new market opportunities, as well as changing and risky markets
- Stay on top of state policy developments relevant to your business
- Give your own team a head start in tracking legislative and regulatory proceedings

Electric Utilities

- Learn about the approaches being taken by other utilities facing similar opportunities and challenges

- Stay on top of relevant state policy developments
- Utilize an objective source of information in legislative and regulatory proceedings

Investors and Financial Analysts

- Identify new investment opportunities and emerging areas of growth, as well as risky investments
- Identify active utility investment proceedings

Advocacy Organizations

- Learn about the electric vehicle actions under consideration across the country
- Learn about the outcomes of other states' policy discussions
- Utilize an objective source of information in legislative and regulatory proceedings

Researchers and Consultants

- Access valuable data requiring a vast amount of time to collect first-hand
- Identify research needs to inform electric vehicle proceedings
- Cite an objective source in your own research and analysis

PRICING

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50 States of Electric Vehicles Report	\$1,500	\$500
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All-Tech Subscription <i>(Includes 50 States of Electric Vehicles report, 50 States of Solar report, & 50 States of Grid Modernization report; plus biweekly legislative & regulatory tracking; policy data sheets, & quarterly webinars for solar, grid modernization/energy storage, & electric vehicles)</i>	\$10,500	N/A

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