50 STATES OF ELECTRIC VEHICLES

Q4 2022 Quarterly Report & 2022 Annual Review

Executive Summary

NC CLEAN ENERGY TECHNOLOGY CENTER

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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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PREFERRED CITATION

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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

2022 ELECTRIC VEHICLE ACTION

In 2022, 50 states plus DC and Puerto Rico took a total of 790 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 790 actions identified, the most common were related to financial incentives (222), followed by market development (164) and regulation (155). All 50 states, plus DC and Puerto Rico also took actions planning for National Electric Vehicle Infrastructure (NEVI) program funding distribution.

Table 1. 2022 Summary of Electric Vehicle Actions

Type of Action	# of Actions	% by Type	# of States
Financial Incentives	222	28%	38 + DC
Market Development	164	21%	27 + PR
Regulation	155	20%	40 + DC
Studies and Investigations	90	11%	37
Rate Design	84	11%	36 + DC, PR
Deployment	75	9%	27 + DC
NEVI Planning *(Not Included in Totals)*	52	-	50 + DC, PR
Total	**790**	**100%**	**50 States + DC, PR**

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 2022

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

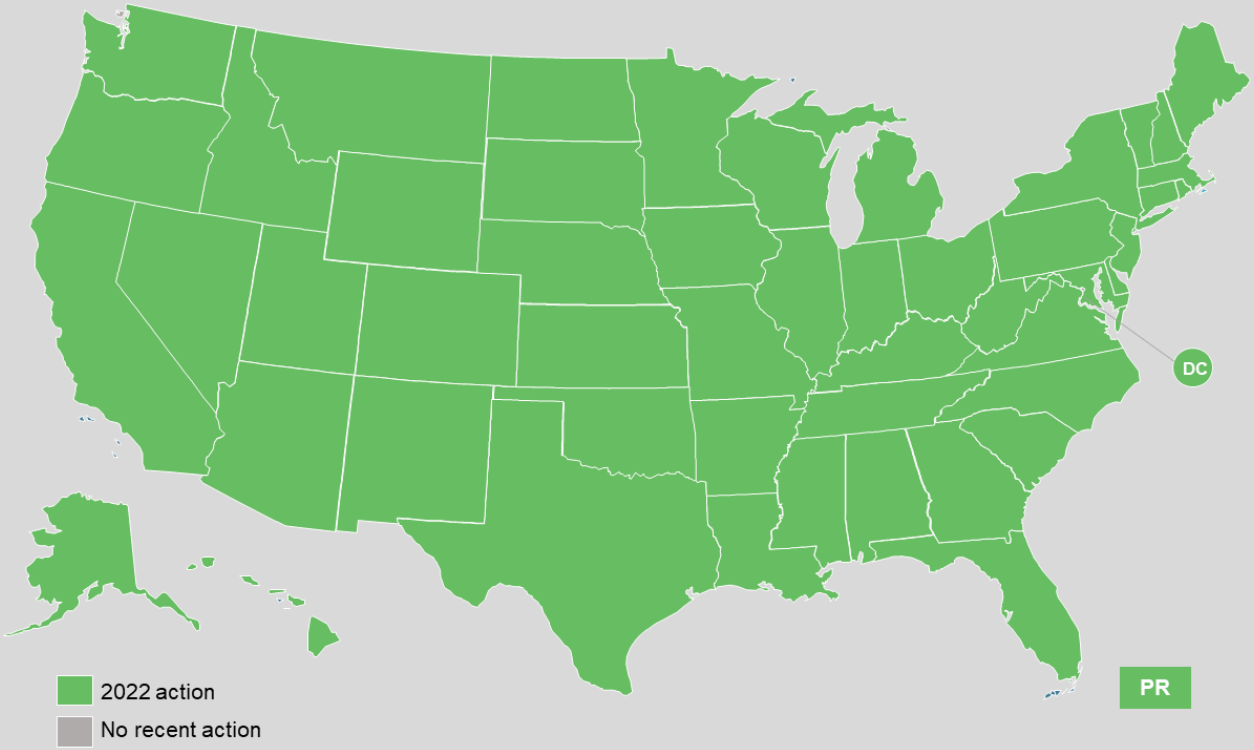
California

The California Air Resources Board approved rules requiring all new passenger vehicles, trucks, and SUVs sold in the state to be zero emission starting in 2035. The California Public Utilities Commission also adopted an electric vehicle submetering protocol and approved a new $1 billion charging infrastructure rebate program. State lawmakers enacted several bills during the year, including bills establishing a zero-emission vehicle equity advocate and uptime reporting requirements for certain charging stations.

Massachusetts

Massachusetts legislators enacted a major energy bill during 2022 with numerous electric vehicle provisions, including establishing a new zero-emission vehicle incentive program, creating a plan to end non-zero-emission vehicle sales in the state by the end of 2035, and setting an electric bus procurement target. The Department of Public Utilities also approved electric vehicle plans proposed by Eversource, National Grid, and Unitil, which involve new incentives and rate designs, as well as a variety of pilot programs.

Figure 1. 2022 Legislative and Regulatory Action on Electric Vehicles



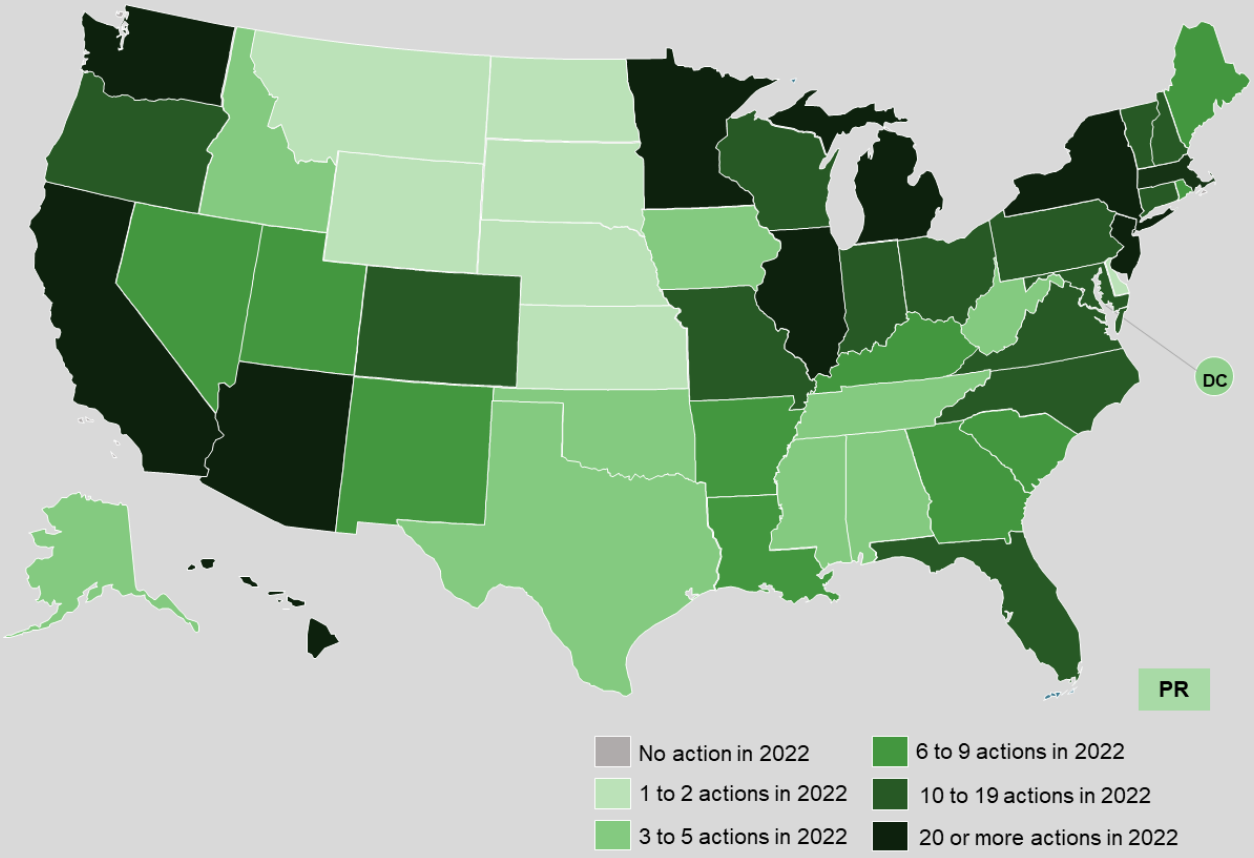
New York

New York adopted rules requiring all new light-duty vehicles sold in state to be zero-emission vehicles by 2035, while legislators set new targets for state procurement of zero-emission vehicles. Lawmakers also enacted legislation setting a zero-emission bus adoption target and prohibiting homeowners' associations from unreasonably restricting charger installation. Regulators also opened a proceeding to establish alternatives to traditional demand-based rate structures for commercial charging.

Washington

Washington lawmakers enacted several bills during the year, including legislation creating a target for all light-duty vehicles model year 2030 or later sold and registered in the state to be zero-emission vehicles. Other enacted legislation includes creating an interagency electric vehicle coordinating council, setting efficiency standards for charging stations, and prohibiting homeowners' associations from unreasonably restricting charger installation.

Figure 2. 2022 Electric Vehicle Activity, by Number of Actions



North Carolina

Duke Energy Carolinas filed an application for approval of a residential vehicle-to-grid pilot in 2022, while regulators approved Duke Energy's make-ready credit program and a new managed charging program. The Governor signed an executive order directing the Department of Environmental Quality to establish an advanced clean trucks program, setting targets for medium- and heavy-duty zero-emission vehicle sales.

Connecticut

Connecticut legislators enacted an expansive bill moving up the target date to 2030 for 100% of state light-duty vehicle procurement to be zero-emission vehicles. The bill also increases appropriations for state electric vehicle incentives and prohibits homeowners' associations from unreasonably restricting charger installation. United Illuminating also requested approval for a municipal curbside charging pilot and a medium- and heavy-duty make-ready incentive program.

Maryland

The Maryland General Assembly enacted several bills related to zero-emission vehicles in 2022, including legislation creating an electric school bus pilot program, setting efficiency standards for charging stations, extending an excise tax credit for zero-emission plug-in and fuel cell vehicles, and establishing a target for 100% of state passenger vehicle purchases to be zero-emission by 2027 (2033 for all light-duty vehicles).

New Jersey

The Board of Public Utilities approved a stipulation approving a $39.88 million EV Driven Program for Jersey Central Power & Light, which includes a variety of charging infrastructure incentives and a demand charge discount for DC fast chargers. Rockland Electric requested approval for a managed charging program, and state legislators enacted a bill establishing an electric school bus pilot program. Regulators also worked to develop a medium- and heavy-duty charging program.

Arizona

Arizona Public Service, Tucson Electric Power, and UNS Electric filed their transportation electrification plans during 2022, which include plans for new incentives and rate structures. Arizona Public Service filed its proposed residential and general service charging service rates, which the Commission later approved. State legislators also enacted a bill allowing school districts to select a preapproved contract carrier or private party that provides electric school buses, charging infrastructure, or charging services.

Colorado

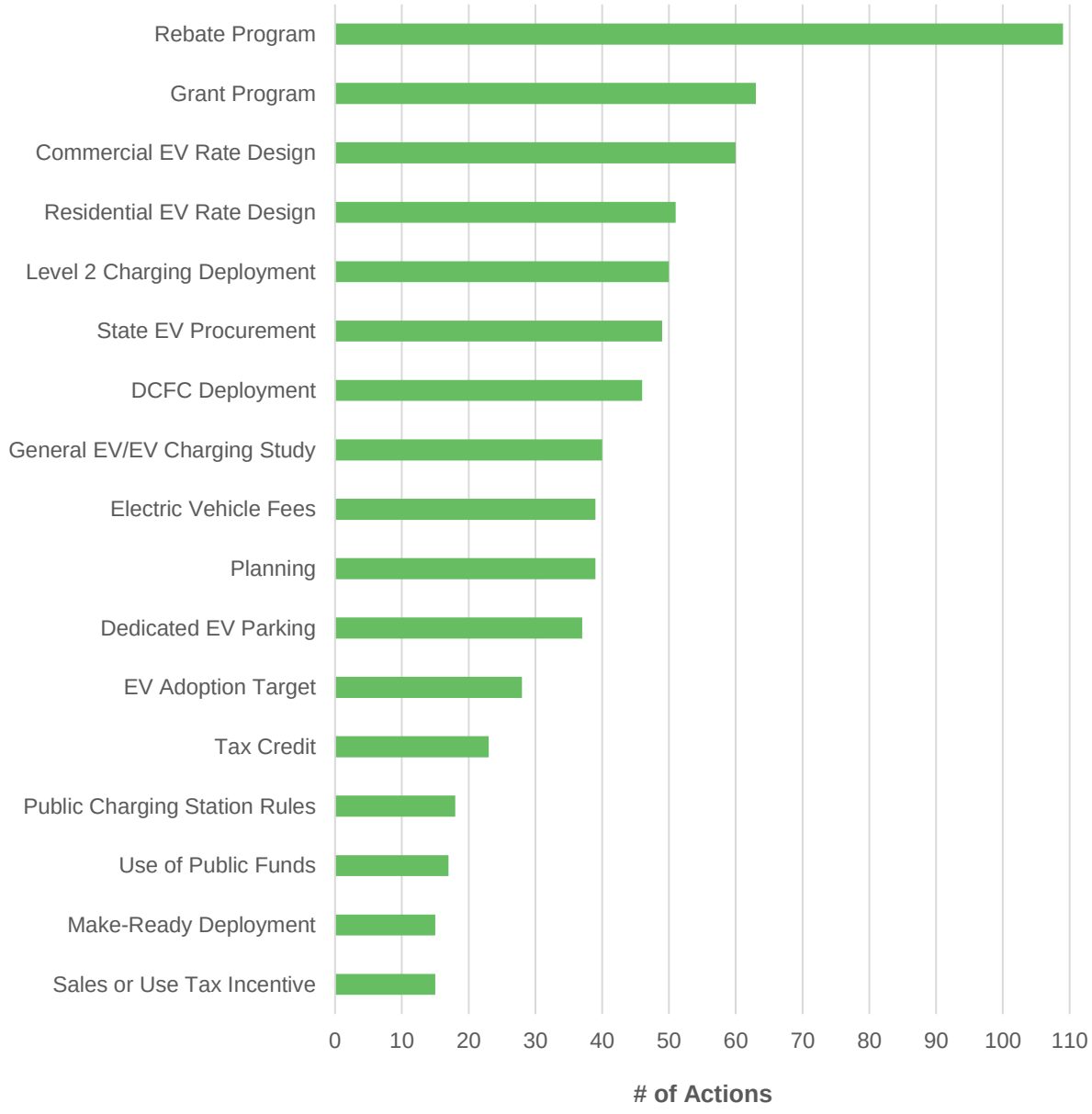
Colorado legislators enacted multiple bills related to electric vehicles during 2022, including legislation that creates an electric school bus grant program, a clean air grant program, and an electric bicycle rebate program. The Colorado Energy Office filed its draft concept for the state's Electric Vehicle Plan 2023, and Xcel Energy proposed modifications to existing vehicle charging rates, as well as new rate structures.

TOP ELECTRIC VEHICLE TRENDS OF 2022

States Planning for Distribution of National Electric Vehicle Infrastructure (NEVI) Program Funding

All 50 states took steps to plan for the distribution of National Electric Vehicle Infrastructure (NEVI) program funding during the year, starting with the development of NEVI plans and identification of alternative fuel corridors on interstate highways. The federal Infrastructure Investment and Jobs Act allocated approximately $5 billion to states for the NEVI program through 2026.

Figure 3. Top Electric Vehicle Actions of 2022



Focusing on Incentives Over Utility Infrastructure Deployment

While utilities continue to take a variety of approaches to transportation electrification, many utilities are focusing on offering incentives for charging infrastructure rather than directly deploying and owning the infrastructure themselves. In 2022, proposed incentive programs were much more common among utilities than direct deployment; however, many utilities continue to deploy infrastructure particularly for the purposes of discrete pilot projects, charging-as-a-service programs, and public fast charging networks.

Figure 4. Number of Electric Vehicle Actions 2017-2022

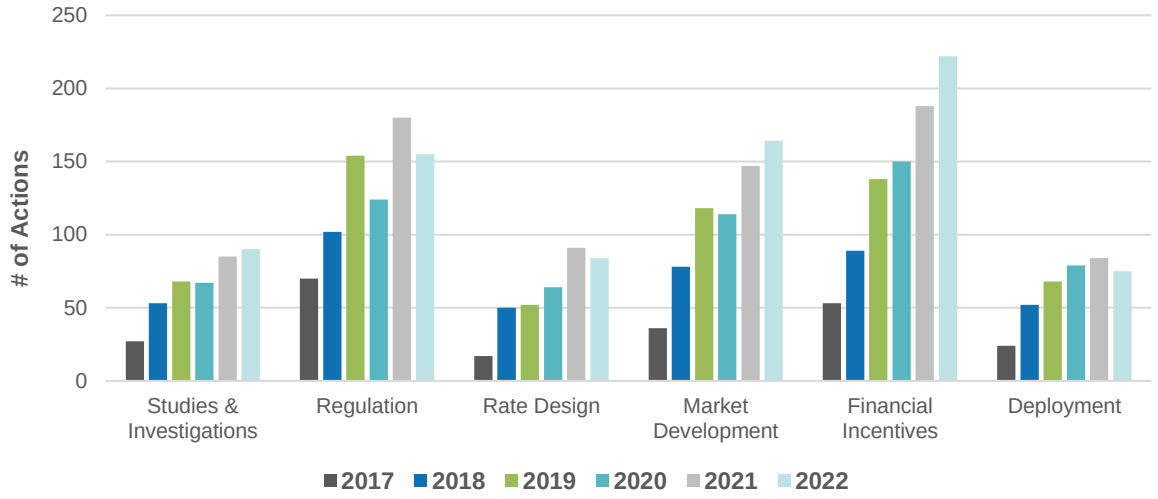
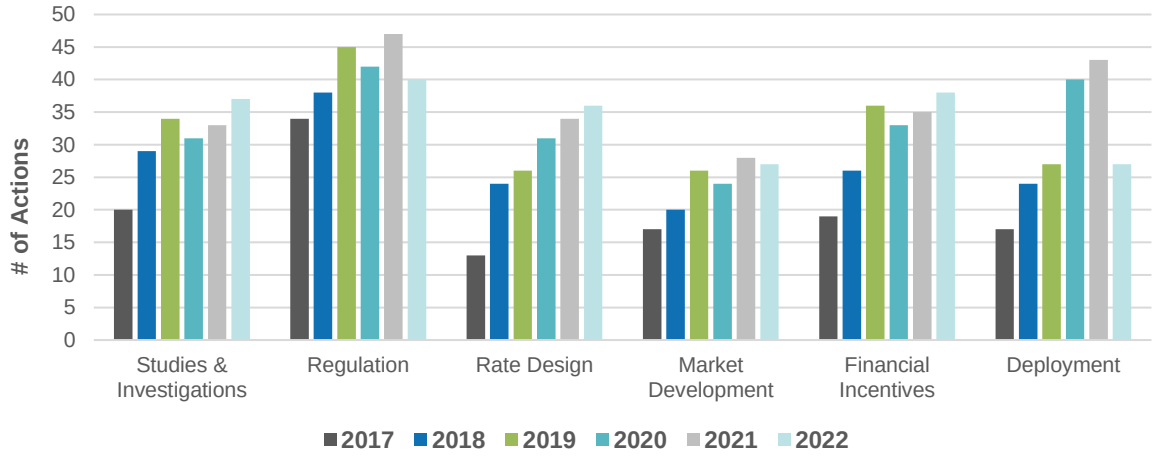


Figure 5. Number of States Taking Electric Vehicle Actions 2017-2022



Utilities Proposing Charging-As-A-Service Programs

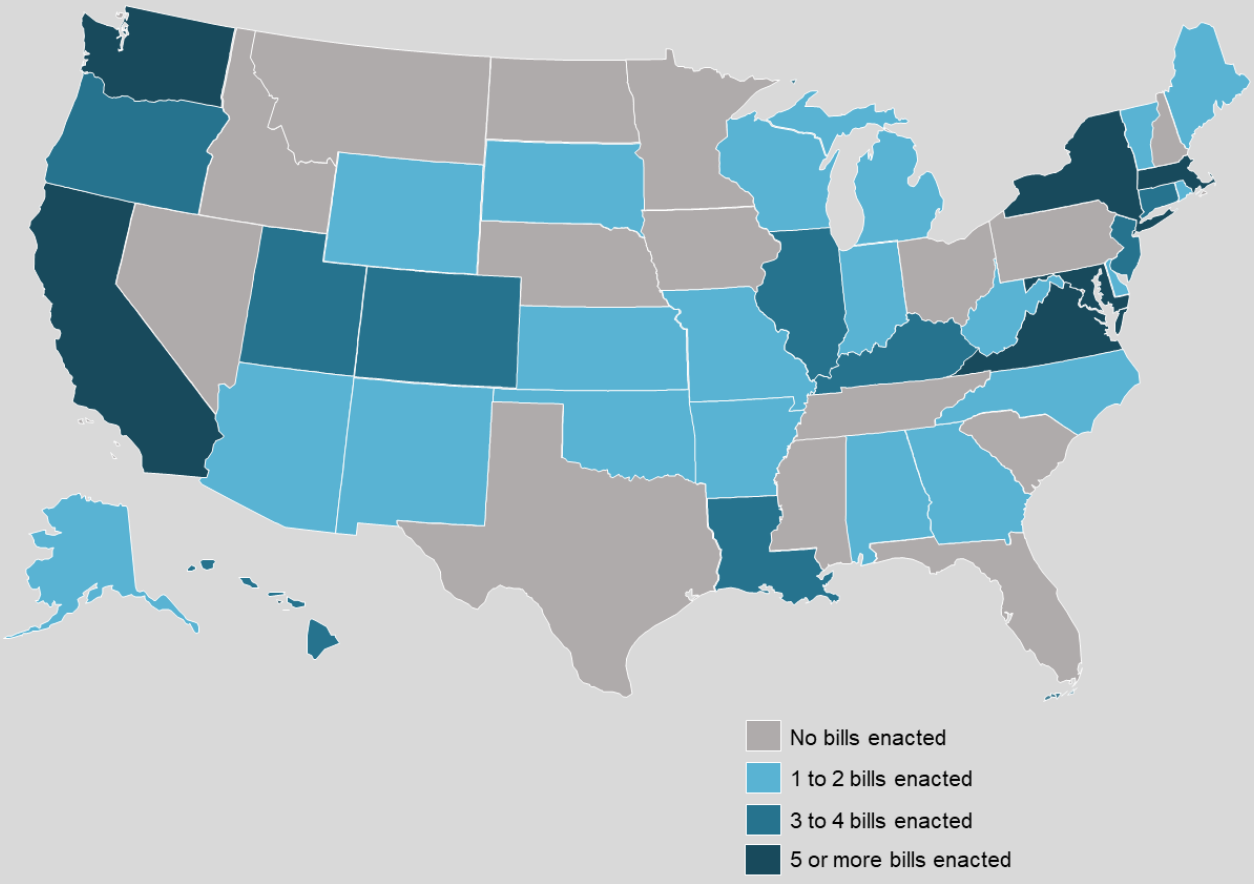
A growing number of utilities are proposing “charging-as-a-service” programs, in which utilities install, own, and maintain charging stations at customer locations, with participating customers

typically paying a monthly fee for use of the charger. Entergy requested approval for new offerings in Arkansas and Mississippi during the year, while Michigan regulators approved DTE Electric's new charging-as-a-service programs.

Pursuing Electric Vehicle Charging Solutions at Multi-Unit Dwellings

States and utilities are increasingly pursuing charging solutions for multi-unit dwellings, a market segment that has faced some unique challenges. One model being proposed in various states is curbside charging, which can provide access for residents without off-street parking. United Illuminating proposed a curbside charging pilot in Connecticut, while Xcel Energy in Wisconsin requested approval for a new multi-family electric vehicle service pilot.

Figure 6. Electric Vehicle Legislation Enacted in 2022



Utilities Designing Managed Charging Programs

Many utilities proposed new managed charging programs during 2022, including a growing number of active managed charging programs that allow for utility control of chargers. North

Carolina regulators approved a new managed charging pilot for Duke Energy that offers participants a fixed monthly fee for at-home charging. Utilities in Connecticut, New York, and Wisconsin, among others, proposed new managed charging programs, and Minnesota regulators approved Xcel's Electric Vehicle Optimization pilot.

Establishing Statewide Targets for Zero-Emission Vehicle Adoption

While many states have been setting targets for government procurement of zero-emission vehicles (ZEVs), a growing number of states are now setting statewide targets for sales and adoption of ZEVs. California regulators adopted rules requiring new passenger cars, trucks, and SUVs sold in the state to be zero emission starting in 2035. In Washington, lawmakers set a target for all light-duty vehicles model year 2030 or later sold in the state to be electric.

Utilities Exploring Vehicle-to-Grid Capabilities Through Pilots

Utilities are increasingly taking steps to explore vehicle-to-grid capabilities and program designs, particularly through pilot programs. In North Carolina, Duke Energy Carolinas proposed a residential vehicle-to-grid pilot, while utilities in Minnesota and Nevada requested approval for vehicle-to-grid pilots using electric buses. In California, regulators considered utility tariffs regarding electricity exported from vehicles.

Policymakers Addressing Siting Issues and HOA Restrictions

Legislators in a number of states enacted bills addressing siting issues and homeowners association (HOA) restrictions related to electric vehicle charging infrastructure. Lawmakers in Connecticut, New York, and Washington enacted legislation prohibiting HOAs from unreasonably restricting the installation of charging stations. In Delaware, legislators enacted a bill requiring larger municipalities to adopt ordinances with siting, installation, and permitting requirements for certain charging stations.

Dedicating Funding to Transportation Electrification for Low-Income Customers

States and utilities are frequently designing transportation electrification programs that offer higher incentive levels to low-income customers for electric vehicles and charging infrastructure, while a number of utility infrastructure deployment programs are setting aside dedicated funding to develop charging infrastructure in underserved areas. California lawmakers took a cross-cutting approach, enacting legislation that creates a state zero-emission vehicle equity advocate's office.

Advancing Deployment of Electric School and Transit Buses

Across the country, many states and utilities made dedicated efforts to advance the deployment of electric school and transit buses. Legislators in Maryland and New Jersey enacted bills creating electric school bus pilot programs, while Massachusetts lawmakers set

targets for zero-emission transit buses, and Colorado legislators approved an electric school bus grant program. Several utilities proposed new incentives or deployment initiatives focused on electric buses as well.

Figure 7. Most Active States of 2022, by Number of Actions

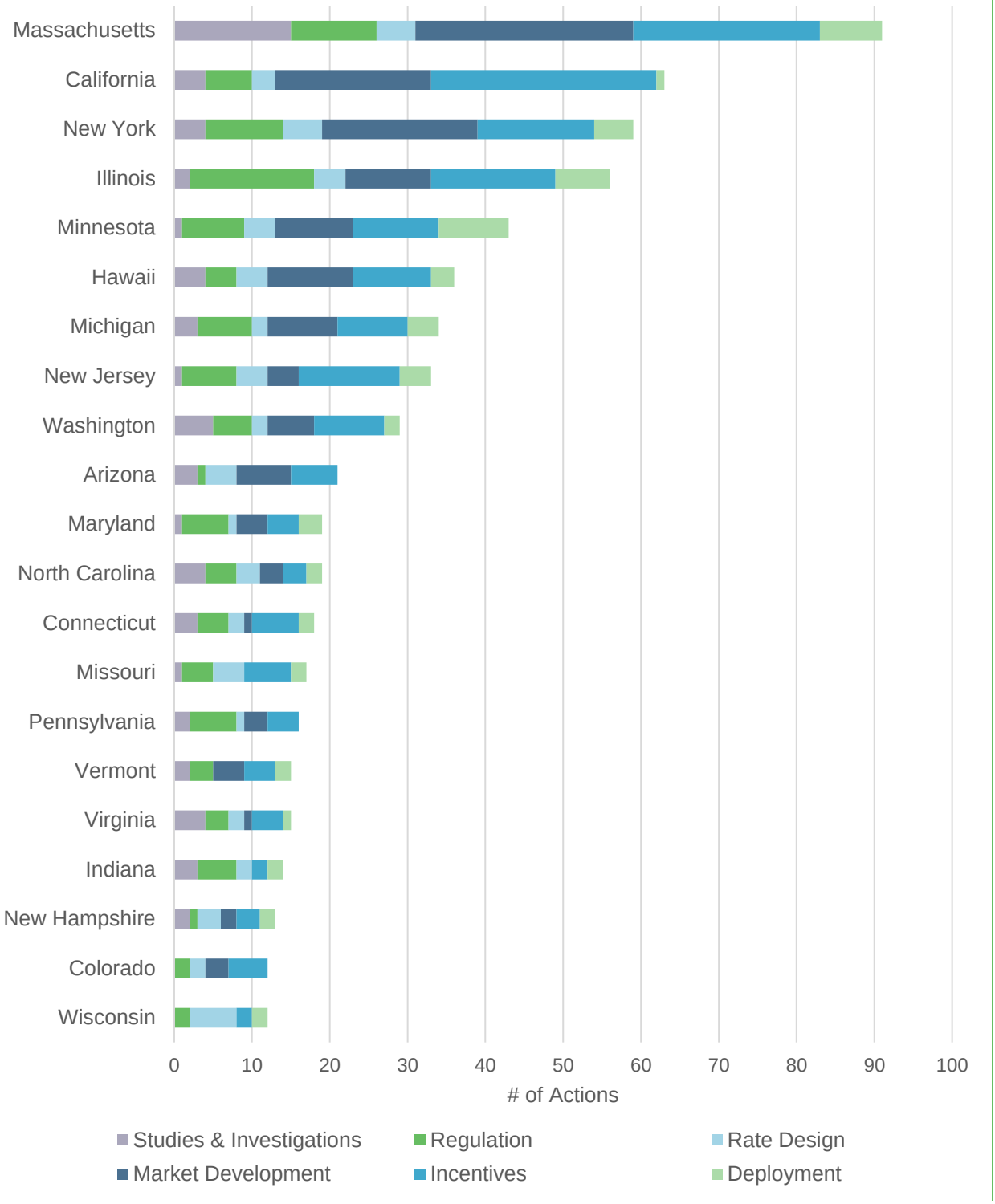
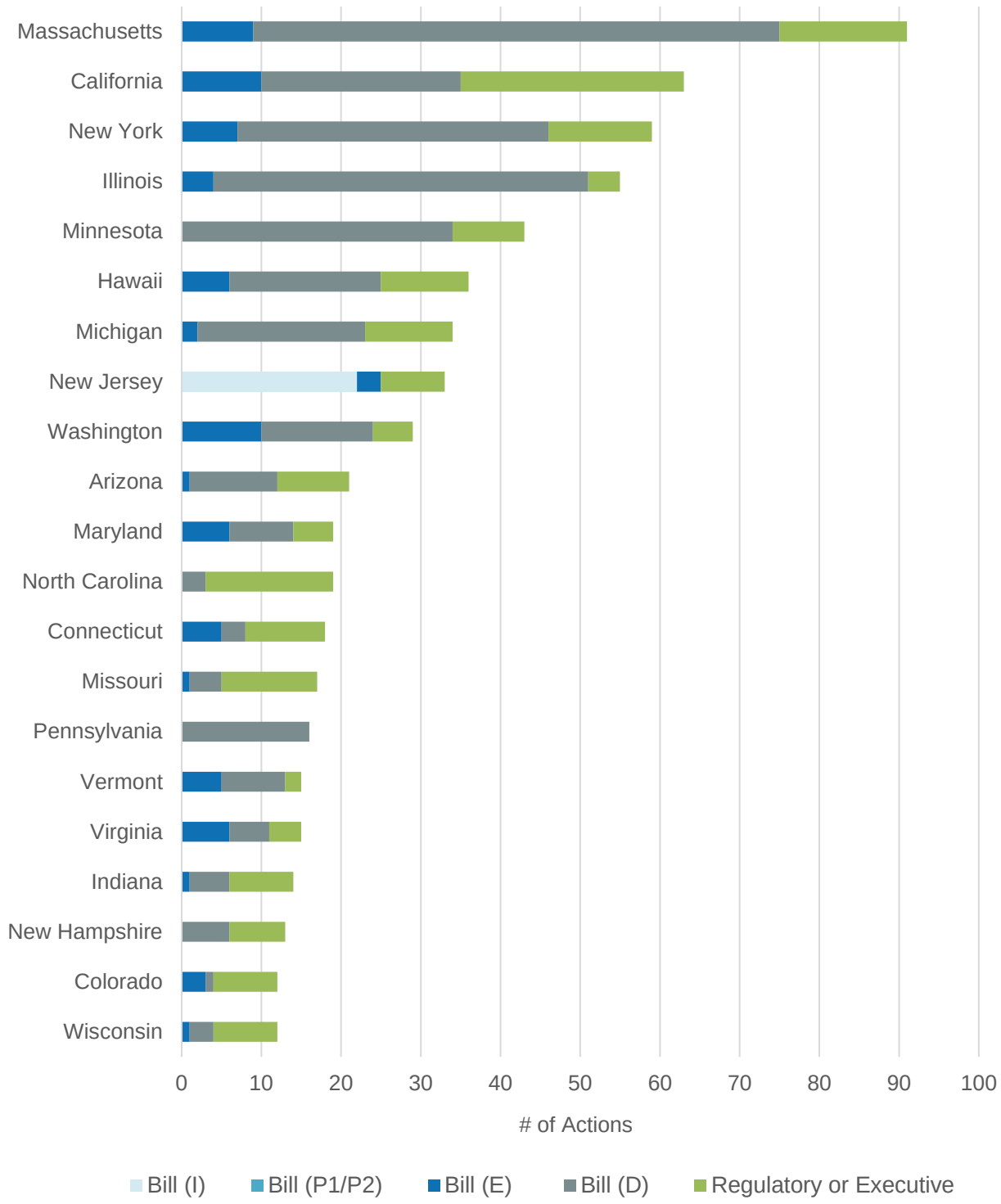


Figure 8. Most Active States of 2022, by Action Status



Q4 2022 ELECTRIC VEHICLE ACTION

In Q4 2022, 38 states plus DC and Puerto Rico took a total of 361 legislative and regulatory actions related to electric vehicles. Table 2 provides a summary of state and utility actions occurring during Q4 2022. Of the 361 actions catalogued, the most common were related to Financial Incentives (98), followed by Market Development (81), and Regulation (53). All 50 states, plus DC and Puerto Rico took actions planning for National Electric Vehicle Infrastructure (NEVI) program funding distribution.

Table 2. Q4 2022 Summary of Electric Vehicle Actions

Type of Action	# of Actions	% by Type	# of States
Financial Incentives	98	27%	17
Market Development	81	22%	15 + PR
Regulation	53	15%	16
NEVI Planning *(Not Included in Totals)*	52	-	50 + DC, PR
Rate Design	48	13%	26 + PR
Studies and Investigations	44	12%	24
Deployment	37	10%	18 + DC
Total	**361**	**100%**	**38 States + DC, PR**

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 2022

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

Massachusetts Regulators Approve Utility Electric Vehicle Infrastructure Plans

In December 2022, the Massachusetts Department of Public Utilities approved electric vehicle infrastructure plans filed by Eversource, National Grid, and Unitil. The plans include a variety of new incentives for charging stations, new rates for commercial charging, and demand charge alternatives. Regulators approved four-year program budget caps of $188 million for Eversource, $205 million for National Grid, and $998,000 for Unitil.

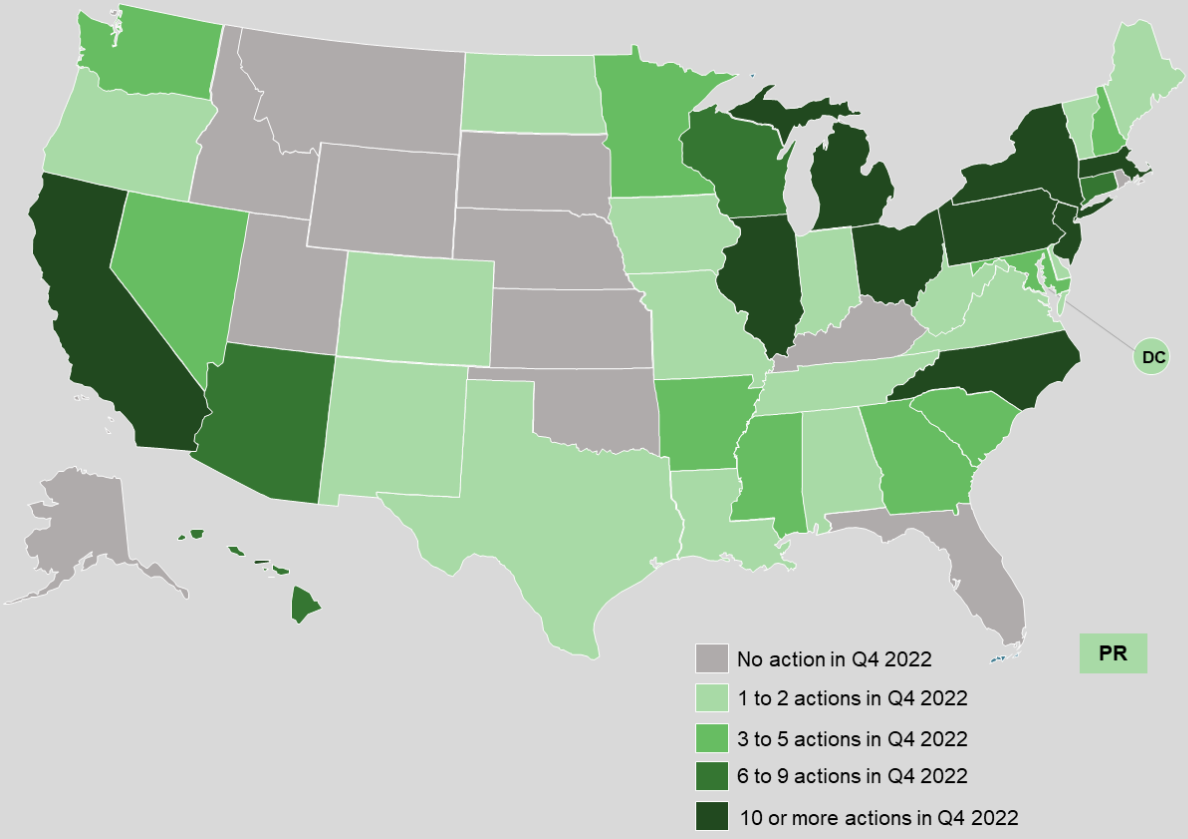
California Public Utilities Commission Approves New $1 Billion Transportation Electrification Program

The California Public Utilities Commission issued a significant decision in its expansive transportation electrification proceeding, approving a new five-year $1 billion transportation electrification program. The program will offer rebates for charging infrastructure investments, with higher incentive levels for underserved, disadvantaged, and tribal communities.

New York Adopts Light-Duty Zero-Emission Vehicle Sales Target

In December 2022, the New York Department of Environmental Conservation adopted the Advanced Clean Cars II rule, which requires all new cars, pickup trucks, and SUVs sold in the state to be zero-emission vehicles by 2035. By 2026, at least 35% of light-duty vehicle sales must be zero-emission vehicles. The Department is implementing the regulations through an emergency rulemaking.

Figure 9. Q4 2022 Legislative and Regulatory Action on Electric Vehicles



North Carolina Governor Signs Executive Order to Establish Advanced Clean Trucks Program

The Governor of North Carolina signed an executive order in October 2022, directing the Department of Environmental Quality to establish the North Carolina Advanced Clean Trucks Program, requiring manufacturers to sell an increasing percentage of medium- and heavy-duty zero-emission vehicles. The order also requires the development of a zero-emission vehicle infrastructure needs assessment.

South Carolina Governor Signs Executive Order to Promote Electric Vehicle Manufacturing

South Carolina's Governor signed an executive order in October 2022, directing the Department of Commerce to implement a strategic initiative to incentivize electric vehicle manufacturers and related suppliers to locate or expand research, development, and production facilities in the state. The order also calls for an evaluation of electric vehicle workforce availability and a plan for the strategic deployment of infrastructure in the state.

Figure 10. Most Active States of Q4 2022

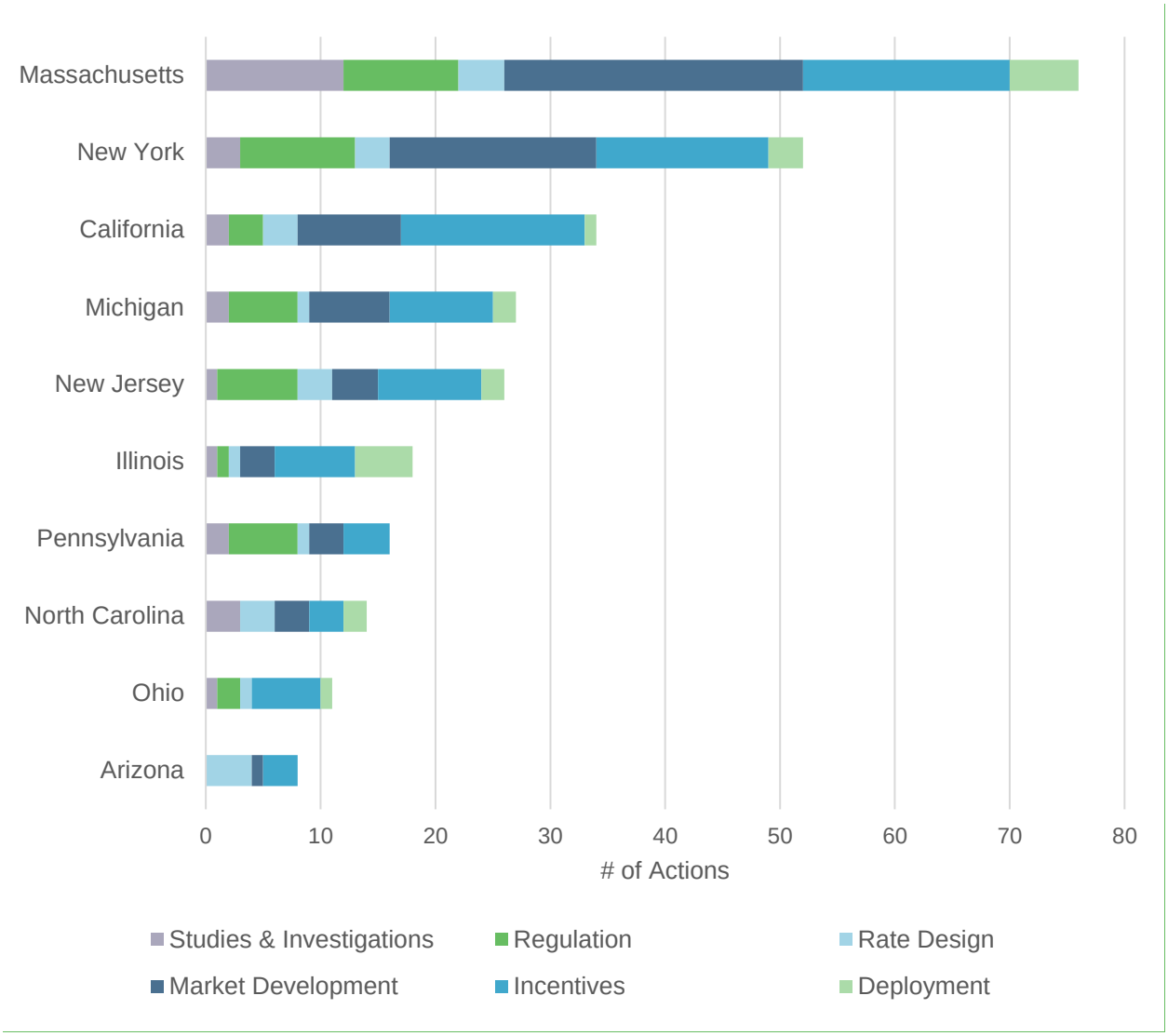
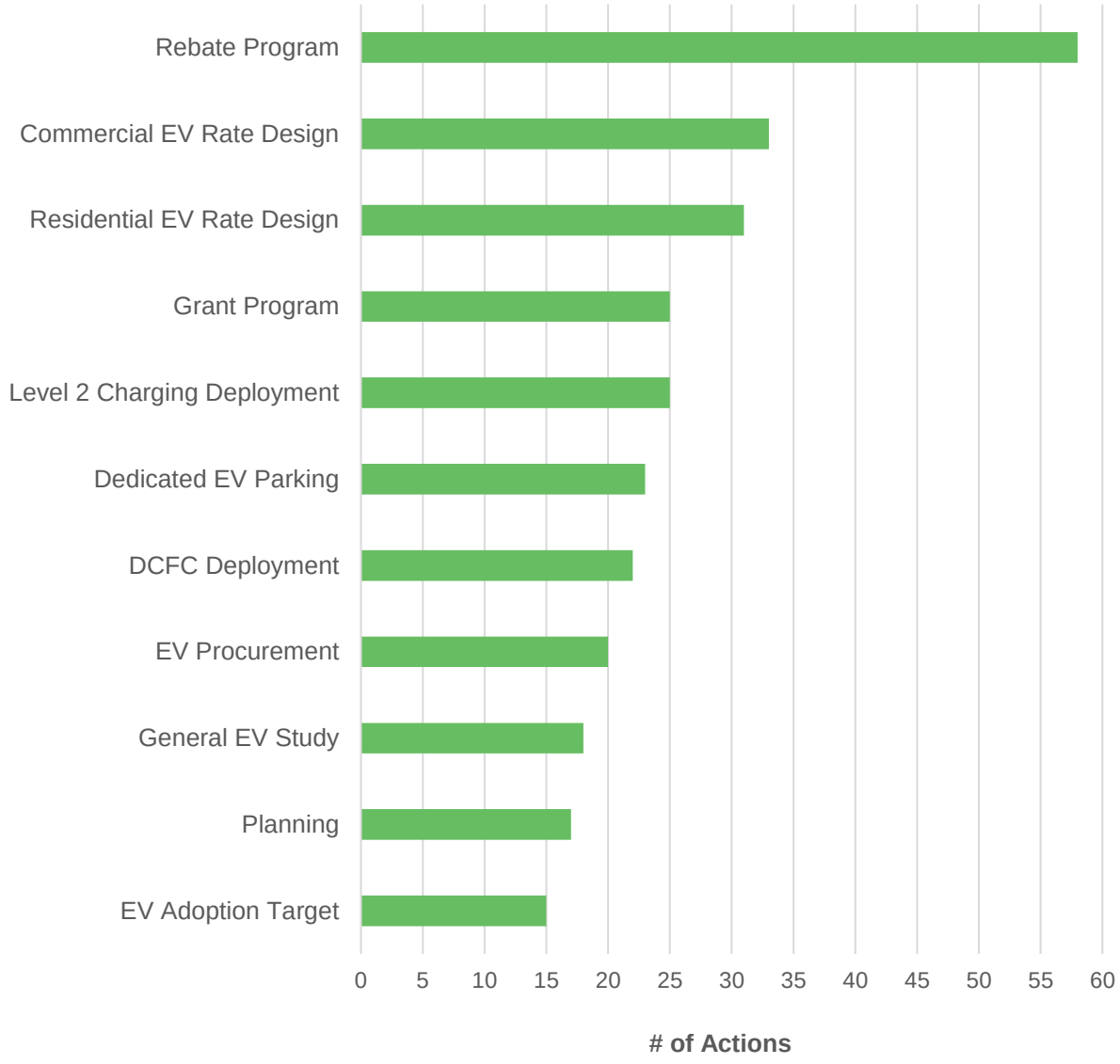


Figure 11. Top Electric Vehicle Actions of Q4 2022



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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