MULTI-STATE ZEV ACTION PLAN

May 2014

ZEV Program Implementation Task Force

CONTENTS

Overview 2

Current State of the ZEV Market 6

Key Actions

Action #1 11
Promote the availability and effective marketing of all plug-in electric vehicle models in our states and support these efforts

Action #2 12
Provide consumer incentives to enhance the ZEV ownership experience

Action #3 14
Lead by example through increasing ZEVs in state, municipal, and other public fleets

Action #4 15
Encourage private fleets to purchase, lease, or rent ZEVs

Action #5 16
Promote workplace charging

Action #6 17
Promote ZEV infrastructure planning and investment by public and private entities

Action #7 18
Provide clear and accurate signage to direct ZEV users to charging and fueling stations and parking

Action #8 19
Remove barriers to ZEV charging and fueling station installations

Action #9 20
Promote access, compatibility, and interoperability of the plug-in electric vehicle charging network

Action #10 21
Remove barriers to retail sale of electricity and hydrogen as transportation fuels and promote competitive plug-in electric vehicle charging rates

Action #11 23
Track and report progress toward meeting the goal of 3.3 million ZEVs on our roadways by 2025

Research and Partnerships 24

OVERVIEW

Governors' Memorandum of Understanding and Action Plan

On October 24, 2013, the governors of California, Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island, and Vermont signed a memorandum of understanding (MOU) committing to coordinated action to ensure the successful implementation of their state zero-emission vehicle (ZEV) programs. ZEVs include pure battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs), and hydrogen fuel cell electric vehicles (FCEVs). Collectively these states are committed to having at least 3.3 million ZEVs operating on their roadways by 2025. The MOU identifies joint cooperative actions the signatory states will undertake and additional actions that individual jurisdictions are considering to build a robust market for ZEVs.

The signatory governors created a multi-state ZEV Program Implementation Task Force and called for the development of this action plan. The Task Force, composed of state officials, serves as a forum for coordination and collaboration on the full range of program development, support and implementation issues to promote effective and efficient implementation of ZEV regulatory initiatives. NESCAUM, a nonprofit association of state environmental agencies, serves as the facilitator and provides technical and policy assistance to the Task Force.

This multi-state ZEV action plan provides additional detail and specificity to the commitments in the MOU and is intended to assist in developing consistent and complementary measures within and across our states to foster efficient market development and maximize the ownership experience for consumers. It identifies priority actions intended to promote and accommodate market growth consistent with ZEV sales requirements and includes a research agenda to inform future actions. This plan is designed to guide inter-state coordination and advise state-specific action. It is not intended to provide a uniform pathway for all states to follow. Each state will promote ZEV market growth in ways that best address its own needs and advantage its unique opportunities.

While this document targets the needs of states with ZEV programs, many of the proposed actions could be implemented in other jurisdictions. In the interest of promoting a strong national market for plug-in electric vehicles (PEVs) and FCEVs, other states and municipalities are encouraged to consider the measures contained in this plan.

The Governors' MOU acknowledges the key role states will play in promoting ZEV market preparation and growth, and this plan identifies specific actions to help achieve those goals. However, states must rely on the automobile manufacturers, car dealers, the electric vehicle supply equipment industry, electricity providers, and others to: (1) produce, market, and sell desirable vehicles; (2) identify the right business model(s) and build out a viable fueling infrastructure; and (3) ensure that competitively priced fuels are available for ZEVs. Therefore, this plan identifies a series of partnership opportunities among states and key stakeholders that are critical to market acceleration.

The action plan builds on work already underway in MOU signatory states. California's leadership has been instrumental to the advancement of zero-emission vehicle technologies. NESCAUM has supported state adoption and implementation of the California low-emission vehicle standards for more than two decades, helped launch the multi-state ZEV initiative, and will coordinate implementation efforts among the states. In addition to the individual efforts of the MOU states, which are described in more detail below and highlighted throughout this action plan, through the Transportation and Climate Initiative (TCI), the Northeast and Mid-Atlantic states, along with the District of Columbia, have worked together to strengthen their state programs and develop regional initiatives. With research and program support from the Georgetown Climate Center, TCI has undertaken foundational work on many of the specific action items identified in this plan and will continue to be a key player in implementing them.

Since the release of the Governors' ZEV MOU, the multi-state ZEV Program Implementation Task Force has reached out to key stakeholders to inform this action plan. The Task Force met with representatives from 16 automobile manufacturers and their trade associations for a two-day workshop in November 2013 to discuss key actions necessary to build a viable market for increasing numbers of ZEVs. An outcome of that meeting was the creation of workgroups composed of state and automobile industry representatives to develop recommendations to inform this action plan. Similarly, the states solicited input from electricity providers, public utility and service commissions, charging infrastructure providers, academic partners, and the nonprofit community through a workshop in February 2014. Many recommendations from those discussions are reflected in this plan. The participating states thank all of

these groups and individuals for their input and insights, and anticipate significant on-going engagement with these partners.

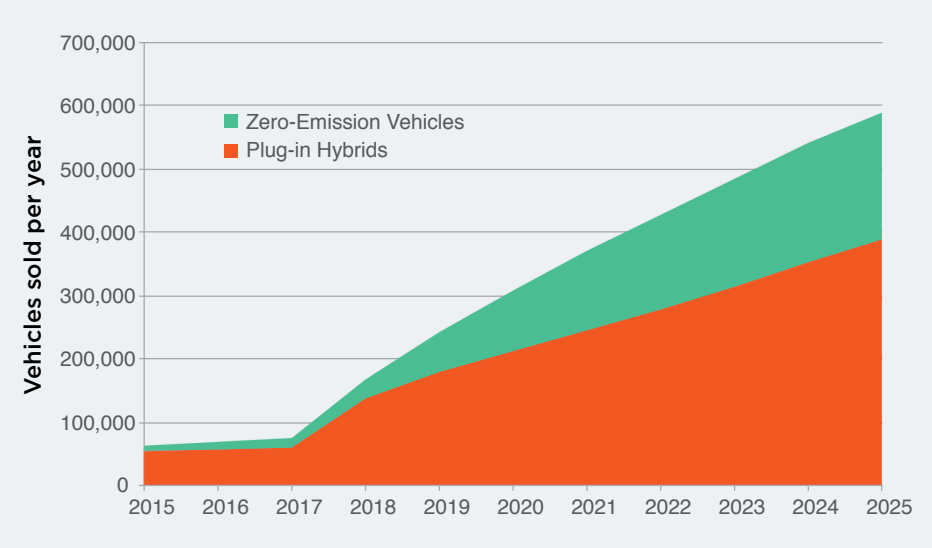
A strong market of "early adopters" interested in pioneering innovative technology is already building demand in our states. Achieving future program sales targets will require creating a broader consumer base. The actions identified in this plan are intended to increase awareness and maximize the benefits of ZEV ownership.

The multi-state ZEV Action Plan includes four sections: (1) this overview; (2) a summary of the current state of the ZEV market; (3) priority state actions; and (4) a research agenda and proposed stakeholder partnerships.

ZEV Program Requirements and Benefits

Ten states (the eight MOU states plus Maine and New Jersey), representing 28 percent of the automobile market in the United States, have embarked on an ambitious effort to revolutionize the transportation sector by requiring increasing sales of zero-emission vehicles under the auspices of the California low-emission vehicle (LEV) program. The annual sales requirements in state programs are modest at the outset, but increase over time, anticipating that demand will expand as consumers become more familiar with a growing range of continually improving ZEV products. By 2025, about 15 percent of new vehicles sold in the participating states will be required to be ZEVs.

Projected ZEV Compliance Scenario for the MOU States



LEV programs, authorized by the federal Clean Air Act, have been a critical component of states' air quality improvement plans for many years, and have been a major contributor to the successful commercialization of hybrid-electric vehicles and ultra-low-emission technologies. The ZEV component of the program provides manufacturers substantial flexibility through mechanisms such as credit banking and trading, alternative compliance options, cross-state credit pooling, and by allowing manufacturers to develop their preferred compliance strategy using FCEVs, BEVs, PHEVs, or some combination of these technologies.

The market demand created by these state programs can further lower ZEV costs through economies of scale and help expand the range of product lines available to consumers. Accelerating the ZEV market will help states protect public health and the environment by reducing transportation-related air pollution and greenhouse gas (GHG) emissions, and will enhance energy diversity, save consumers money, and promote economic growth.

ZEVs operating in the electric mode have no direct emissions. The overall air quality and GHG benefits of ZEVs compared to conventional gasoline and diesel vehicles are a function of the source of the electricity or hydrogen they use as fuel and the inherently high efficiency of ZEV powertrains. All ZEV MOU states have standards or goals to increase the amount of electricity supplied from renewable energy sources such as wind, solar, hydro, biomass, and geothermal. The growth of low and zero-emission sources of electricity will increase the environmental benefits of electric vehicles over time. Similarly, the increased use of cleaner feedstocks and continued advances in production processes are expected to further enhance the environmental benefits of hydrogen as a transportation fuel.

In 2012, the annual cost of gasoline for the average family in the United States was $2,850. For the first time, gasoline costs exceeded the cost of owning a vehicle (including loan payments, maintenance, repairs and insurance).[1] On average, electricity costs about one-third as much as gasoline or diesel on a per-mile basis. That gap is expected to widen over time with oil prices projected to rise as global demand increases, while electricity prices are expected to remain relatively stable. Expanding choice in vehicle technology and fuels can help lower the cost of transportation for individuals and businesses, as ZEVs already have a lower cost of ownership than comparable conventional vehicles for many households.

ZEVs will enhance energy security, diversity, and reliability by reducing our dependence on petroleum products for transportation fuel. Gasoline and diesel currently account for about 95 percent of transportation fuel for cars and trucks in the United States. Nearly 99 percent of passenger cars are fueled by gasoline or a gasoline and ethanol blend. ZEV programs will help reduce vulnerability to price swings in the international petroleum market by diversifying the transportation fuel supply and enhancing consumer choice. The heavy reliance on imported petroleum for transportation fuel results in an outflow of billions of dollars from our states. Investing that money instead in our states' economies will have a positive multiplier effect on jobs, personal income, and gross state product.

[1] Consumer Federation of America, *"A Key Step to Ending America's Oil Addiction: Policymakers, Consumers and Automakers are Shifting New Vehicles to Higher Fuel Economy".* Released July 2012.(http://www.consumerfed.org/pdfs/Studies.CooperHigherFuelEconomy.7-7.pdf)

CURRENT STATE OF THE ZEV MARKET

Twenty-two plug-in electric vehicle models from nine manufacturers are expected to be available for sale or lease in 2014. Thirteen models run entirely on batteries and nine are plug-in hybrid electric vehicles that can run on gasoline as well as the battery. A number of these models are not currently offered for sale in all ZEV states. One hydrogen fuel cell electric vehicle model is currently available for lease in California and another two are expected beginning in model year 2015. The number and type of models available will continue to increase as manufacturers develop a portfolio of ZEV technologies to match their full product lines, which will further enhance consumer choice and market growth.

Significant progress is being made to overcome the primary obstacles to the development of a robust ZEV market: consumer acceptance, availability of fueling infrastructure, and vehicle cost.

Consumer Acceptance is Growing

A recent National Academy of Sciences report concluded, "Most potential PEV customers have little knowledge of PEVs and almost no experience with them. Lack of familiarity with the vehicles and their operation and maintenance creates a substantial barrier to widespread PEV deployment."[2]

Some dealers have been reluctant to aggressively market PEVs, citing a greater time commitment required to sell them and lower profit margins compared to conventional vehicles with internal combustion engines (ICEs).[3]

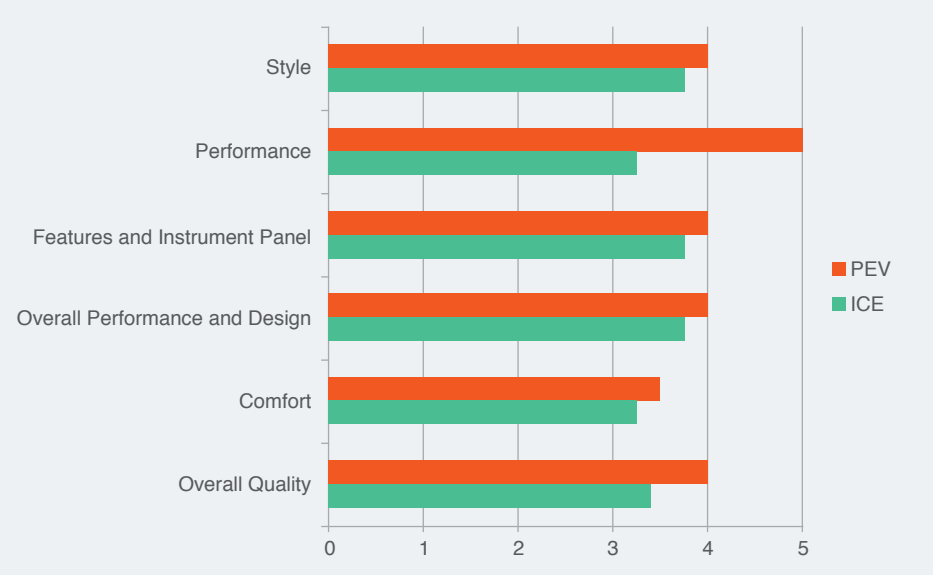
However, the new generation of plug-in electric cars is receiving high grades from consumers who purchase them. Drivers rate the overall quality and appeal of PEVs more highly than ICE vehicles across a wide range of criteria.

2 National Academy of Sciences, "Overcoming Barriers to Electric Vehicle Deployment," Interim Report, 2013.

3 The Electrification Coalition, 2013. State of the Plug-in Electric Vehicle Market: EV Market Outlook., http://electrificationcoalition.org/StateEVMarket

Consumer interest and ZEV sales are growing concurrent with the availability of top-rated models from an increasing number of manufacturers. In 2011, the Chevy Volt was named the '*Motor Trend* Car of the Year,' with *Motor Trend* stating, "This automobile is a game-changer." The Volt also won the *Automobile Magazine* 'Automobile of the Year' and 'North American Car of the Year' awards, and was included in the *Car and Driver* '10Best' list. The Nissan Leaf was named the 'World Car of the Year' and the 'European Car of the Year' in 2011, and was noted in the *Popular Mechanics* 'Breakthrough Awards' of 2010, which stated that "the real triumph lies in its family-car practicality and normalcy." For 2013, the Tesla Model S was named 'Automobile of the Year' by *Automobile Magazine*, the '*Motor Trend* Car of the Year,' and *Consumer Reports* awarded the Model S a score of 99 out of a possible 100 in the magazine's tests, the highest score any automobile has received.

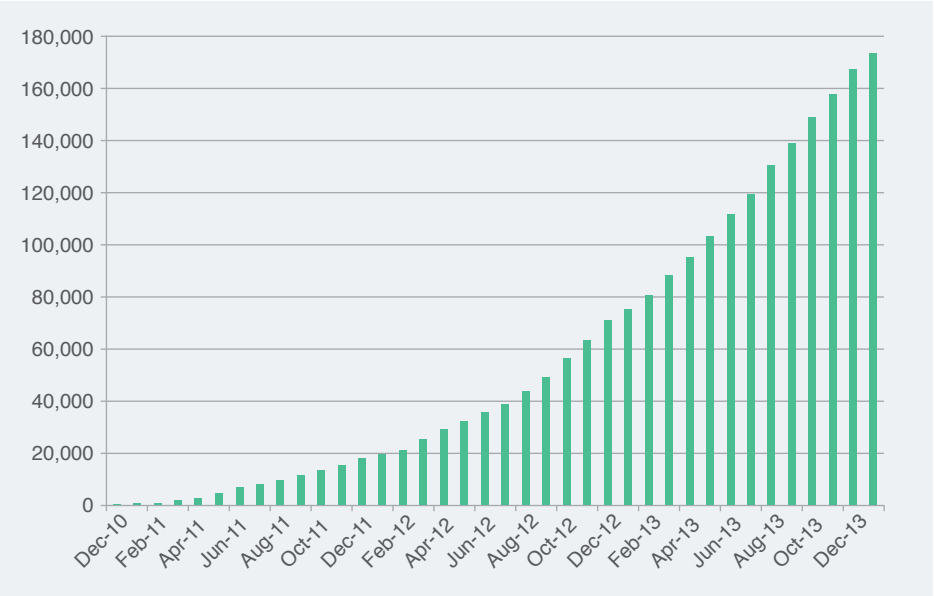
Consumer Satisfaction with Plug-in Electric Vehicles



State of Plug-ins, p. 7. EC Analysis of J.D. Power and Associates data.

The availability of high quality vehicles that consumers like to drive resulted in more PEVs being sold in the past year than in all previous years combined. The United States has the largest fleet of plug-in electric vehicles in the world. In their third full year of sales – 2013 – about 96,000 PEVs were sold nationally, nearly double 2012 sales of 53,000 and more than five times first year sales of 17,500 in 2011. Sales of full battery electric vehicles increased by more than 330 percent, from 14,251 in 2012 to 47,694 in 2013.

Cumulative U.S. Plug-in Vehicle Sales



Electric Drive Transportation Association, 2014.

Automobile manufacturers offer a variety of pure battery electric, hybrid, and "assist system" models that provide growing consumer choice. The all-electric capacity for current models ranges from about 10 miles per charge to more than 250 miles. Plug-in hybrids and gasoline assist models are available for those needing a greater range or interested in enhanced flexibility.

Fueling Infrastructure is Expanding

Consistent with the growing fleet of PEVs, the number of public and shared residential electric vehicle charging stations increased four-fold in 2013. Nationally, there are currently 17,945 publicly accessible charging stations distributed across 9,330 sites and more coming on-line every day. There is a significant commitment from both the public and private sectors to quickly build-out the charging infrastructure. States are investing in public charging. A number of private electric vehicle supply equipment (EVSE) firms are competing in the PEV charging market. Some automobile manufacturers such as Nissan and Tesla are developing fast charger networks to support the needs of their customers. Large employers are partnering with EVSE companies to install workplace charging.

California is taking the lead in developing a hydrogen fueling infrastructure. Currently there are nine public hydrogen stations in operation, with an additional 16 stations already funded and in various phases of development. Almost all of these stations have been built through public-private partnerships. These 25 stations are expected to be in operation by the end of 2015 and will be capable of fast refueling of up to 4,000 FCEVs, such as the Hyundai Tucson SUV, which can travel about 300 miles per tank and can be refueled in less than ten minutes.

PEV Pricing is Competitive and the Ownership Cost is Attractive

After the federal tax rebate of $7,500, many plug-in electric cars are available for less than the average price of a new car in the U.S., which was $32,769 in November 2013.[4] With an average price of around $20,000 after the tax credit, models such as the Nissan Leaf and Chevy Spark are now priced to cover three-quarters of U.S. car-buyers.[5] Manufacturers and dealers offer highly competitive lease rates for ZEVs.

However, more may be needed to induce a broader cross section of consumers to move to these new technologies. For example, the federal tax credit is only available to "well-qualified" buyers and lower income consumers may not have a sufficiently high tax obligation to take advantage of the full rebate.

The current cost of batteries is the primary reason the price of PEVs is generally higher than similarly equipped conventional cars. With the cost of lithium-ion batteries expected to decline by about 50 percent

4 Kelly Blue Book

5 Green Car Reports, *Electric-Car Market Share In 2013: Understanding The Numbers Better,* January 11, 2014.

Retail Prices and Lease Rates for Plug-in Electric Vehicles
(includes models currently available for less than $32,000)

Model	Technology	MSRP for Base Model (after Federal tax credit)	Lease Rates
Smart ForTwo Electric Drive	Battery Electric	$12,490	$139/mo
Mitsubishi i	Battery Electric	$15,495	N/A
Chevy Spark EV	Battery Electric	$19,995	$199/mo
Nissan Leaf	Battery Electric	$21,300	$199/mo
Fiat 500e	Battery Electric	$24,300	$199/mo
Chevy Volt	Plug-in Hybrid Electric	$26,685	$269/mo
Toyota Prius Plug-in Hybrid	Plug-in Hybrid Electric	$27,490	N/A
Ford Focus Electric	Battery Electric	$27,700	$175/mo
Ford C-MAX Energi Plug-In Hybrid	Plug-in Hybrid Electric	$28,943	$240/mo

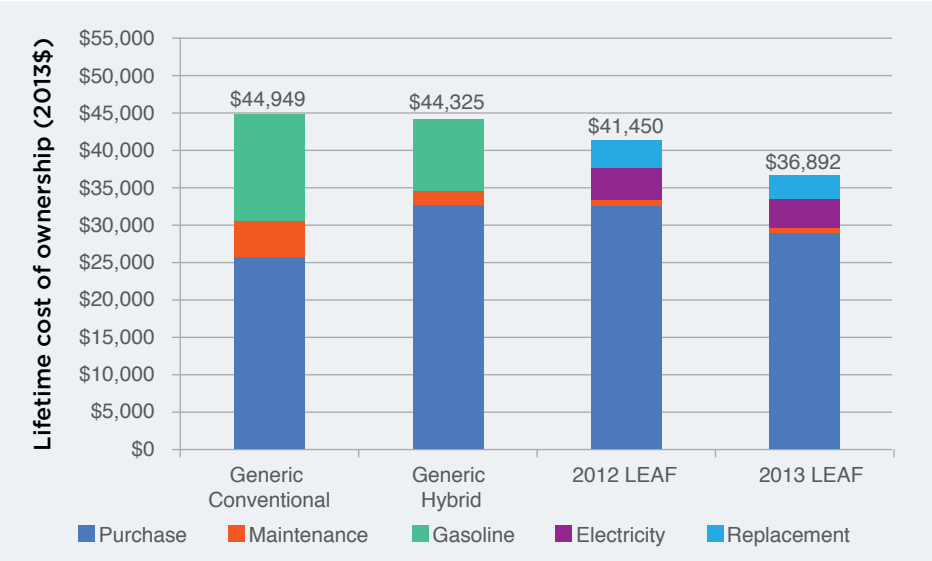
by 2020,[6] manufacturers will be able to lower vehicle prices and/or increase their range by adding more batteries.

Although some PEVs are currently more expensive to purchase than comparable ICE models, for many households, they are already less expensive to own and operate over their lifetime due to the low price of electricity relative to gasoline and lower maintenance costs.

The fuel cell stack is currently the most expensive component of a FCEV. However, when cost targets are achieved, an 80kW FCEV would have a $2,400 fuel cell system, making the cost comparable to gasoline cars. The early commercial launch of limited-production fuel cell vehicles is expected to occur in fully equipped upper-end vehicle models that will be relatively larger than most early PEVs. While prices have not been announced, the price for these vehicles is therefore expected to reflect a higher introductory cost. Hyundai is currently leasing its FCEV in California for $499 per month, which includes maintenance and hydrogen fuel for the complete lease period.

The fueling cost for FCEVs is already competitive with an average gasoline-powered vehicle. The California Air Resources Board estimates that, when

Five Year Total Cost of Ownership



Electric Power Research Institute, 2013

6 State of the Plug-in Electric Vehicle Market: EV Market Outlook, July 25, 2013.

fueling station installation costs are included, the fuel cost of driving 100 miles in a FCEV is $13.33, compared to $14.60 for a mid-size gasoline powered car.

Plug-in and fuel cell electric vehicles have unique advantages and both will ultimately serve to maximize choice and provide a full range of options to meet consumer demand.

Accelerating Market Growth

The proposed actions described in the next section are intended to ensure the continued growth in ZEV sales through effective marketing and consumer education, fueling infrastructure development, and targeted government policies and incentives.

The actions will build on significant early and ongoing work by MOU signatory states. Over the past 20 years, California has invested substantial resources in supporting vehicle technology advancements and developing regulatory and policy drivers for ZEVs, including development and implementation of Governor Brown's ZEV Action Plan and Community Resource Guidebook. The State has also directly allocated hundreds of millions of dollars to provide rebates for the purchase of ZEVs and to deploy public electric charging and hydrogen fueling infrastructure. Connecticut has instituted a first-of-its-kind dealership recognition program and has supported deployments of more than 94 charging stations throughout the state. Connecticut is also announcing plans to extend its charging initiative to continue to build range confidence by funding between 100 and 150 chargers for public and private sector facilities in summer 2014. Through the provision of tax credits, grants, and rebates, Maryland has invested significant public funding in the development of a statewide charging infrastructure that now includes more than 450 public charging stations. In addition, legislation signed into law this year extended and enhanced the state's popular tax credit that is available to consumers for purchase of electric vehicles.

Massachusetts announced substantial rebates for purchases or leases of new ZEVs through the MOR-EV program, expected to begin in the summer of 2014. Massachusetts is also actively advancing infrastructure and vehicle deployments through its Massachusetts Electric Vehicle Task Force and the Massachusetts Electric Vehicle Incentive Program. New York, through its Charge NY initiative, is making significant investments to improve the development and use of electric vehicles and the necessary technology and infrastructure. In Oregon, numerous initiatives including the West Coast Electric Highway, an EV fast charger network that covers most of the state

and close to 90% of the population, the Energize Oregon coalition, a voluntary public-private partnership working to ensure a strong and enduring market for plug-in electric vehicles in Oregon, significant investments in EV and EVSE state tax incentive programs, the Oregon Electric Byways EV tourism initiative, and many other public-private partnerships are accelerating a rapid adoption of electric vehicles. Rhode Island is leading by example by transitioning the state fleet to alternative fuel vehicles, and has installed a network of 50 charging stations at convenient locations throughout the state. Vermont is promoting EV adoption through Drive Electric Vermont, in partnership with the Vermont Energy Investment Corporation, and is supporting EVSE deployment with grants and loans for publicly available EVSE. The efforts above represent only a sample of each state's portfolio of efforts to promote ZEV deployments.

Connecticut, Maryland, Massachusetts, New York, Rhode Island and Vermont have also been coordinating their ZEV activities with other Northeast states through TCI since it began in 2010. TCI has developed and widely disseminated a suite of guidance documents and model codes to help states and local jurisdictions become "EV ready." TCI is deeply engaged with ZEV stakeholders and relevant federal policymakers through ongoing conferences, webinars, and meetings facilitated by the Georgetown Climate Center (GCC). TCI is a forum for sharing best practices and a repository of performance indicators including state EV registration data, incentives, programs, and charging infrastructure. TCI's recent application for a U.S. DOT TIGER planning grant to develop a DC fast charging network in the Northeast builds on its existing work and proposes to include an examination of the states' utility regulatory frameworks, informed by GCC research.

NESCAUM is assisting states in implementing their LEV regulatory programs, including the ZEV program, and helps facilitate dialogue among state regulators and with the automobile manufacturers on program implementation issues. It has hosted meetings with a wide range of interested parties to solicit input on this Action Plan, and will help to ensure continued broad stakeholder collaboration to promote ZEV market growth. On behalf of the multi-state ZEV Implementation Task Force, NESCAUM facilitated the development of the Governors' MOU and of this Action Plan, will coordinate Action Plan implementation, and will help raise funds to support this effort.

KEY ACTIONS

This plan identifies priority multi-state actions our states are committed to take to ensure continued growth in sales consistent with ZEV program requirements. Other actions are provided for consideration by individual states. A number of these activities are already underway or planned in some states, and existing programs are highlighted as models. Some of these actions are best addressed through collaborative partnerships between our states and stakeholders.

ACTION #1

Promote the availability and effective marketing of all plug-in electric vehicle models in our states

Priority Multi-State Actions:

- Work with the automobile manufacturers and dealers to ensure that all plug-in electric vehicle models are available for sale and aggressively marketed in all MOU states:
  - Create a MOU state web-based "ZEV landing page" to provide consumers and dealers with up-to-date information on ZEVs that are available in each state and links to state and automobile manufacturer websites.
  - Invite automobile dealers and dealer associations to join the MOU states and automobile manufacturers in our on-going "New Collaboration for ZEV Success"

Model Programs:

The State's Chief EV Officer and the Energizing Oregon Coalition are working with the Oregon Automobile Dealers Association to support ZEV training sessions for dealers around the state. Topics for the sessions include PEV technology, DC fast charger installation, codes and permitting, public infrastructure build-out, and incentives.

The Ford Motor Company arranged a dealer training program for all Ford EV Certified dealerships titled "Understanding and Selling EVs" to educate sales consultants and other dealership staff members on the benefits of the company's EV lineup.

EV Connect, a leading provider of electric vehicle infrastructure solutions, has launched a new Dealer EV program designed to make electric vehicle sales easier by helping car dealerships quickly and easily overcome the most persistent customer objections to an EV purchase, ensure a positive customer experience, and enhance dealer revenue generation.

California and Connecticut recognize top ZEV dealers though annual Governors' award programs.

initiative to encourage dealer education, consumer awareness, and effective marketing for the full range of ZEVs in our states.

- Collaborate with automakers and dealers to identify, evaluate, and implement creative financing approaches and other effective strategies to reduce vehicle purchase price and increase ZEV sales.
- Collaborate with automobile manufacturers, dealers, Clean Cities programs, and other interested stakeholders to incorporate ZEV outreach and education events for consumers in conjunction with auto shows, Earth Day celebrations, and National Plug-In Day.
- Institute programs to identify and highlight "ZEV champions" among dealers through Governor-recognition programs and other profile-raising approaches.

ACTION #2

Provide consumer incentives to enhance the ZEV ownership experience

Priority Multi-State Actions:

- Support and enable reciprocity for non-monetary ZEV incentives across MOU states and establish a common image or decal to identify qualifying vehicles.
- Evaluate opportunities to increase the effectiveness of state-provided purchase incentives by converting them to "point-of-purchase" rebates to provide a stronger incentive at the time of sale and to qualify more consumers for the full value of this sales incentive.
- Support the continuation of the federal tax credit for PEVs and FCEVs.
- Conduct a collective study to evaluate the effectiveness of various local, state, and national ZEV incentives to inform state and local government policy.
- Provide key local jurisdictions with models for partnering with businesses to develop ZEV-ready plans that include consumer incentives.

Model Programs:

California offers rebates of $2,500 per light-duty vehicle for individuals and business owners who purchase or lease new BEVs and FCEVs and $1,500 for plug-in hybrids.

The Massachusetts Offers Rebates for Electric Vehicles (MOR-EV) program will be active in Summer 2014, and will provide a rebate of $2,500 for fuel cell vehicles and plug-in electric vehicles with large batteries, and a rebate of $1,500 for plug-in electric vehicles with smaller batteries.

The Maryland General Assembly passed legislation in the 2014 session that expanded the existing tax credit to provide $125 per kWh of PEV battery capacity up to a cap of $3,000 (HB1345/SB908).

Model Programs:

California plug-in hybrid electric vehicles meeting specified state and federal emissions standards and affixed with a California Department of Motor Vehicles Clean Air Vehicle sticker may use HOV lanes regardless of the number of occupants in the vehicle.

New York State's Clean Pass is a multi-agency pilot program among the State Departments of Transportation, Motor Vehicles, and Environmental Conservation that allows electric vehicles and other low emission and energy-efficient vehicles to use the HOV facilities of the Long Island Expressway regardless of occupancy.

Model Programs:

The Bay Area Toll Authority in California grants reduced rate passage on bridges to electric cars with DMV-issued decals that use FasTrak® to pay the toll. The reduced rate is the same as the reduced rate for high-occupancy vehicles and applies only during the hours when the reduced rate applies to high-occupancy vehicles.

The Port Authority of New York and New Jersey offers a Green Pass Discount Plan that rewards drivers using PEVs and other low-emission vehicles with a substantial discount on tunnel and bridge tolls. Drivers with qualifying vehicles receive a green E-ZPass tag and are charged a reduced toll during off-peak hours. The New York State Thruway provides a 10 percent toll discount for ZEVs.

Model Programs:

The Massachusetts Bay Transportation Authority's (MBTA) Electric Vehicle Charging Parking program provides customers with an opportunity to charge electric vehicles while they are parked at MBTA stations. The parking spaces at MBTA rapid transit and commuter rail properties are designated for PEV charging only, as indicated by installed electric vehicle chargers dedicated to each parking space and the signage that reads "Electric Vehicle Parking Only".

The City of Sacramento offers free parking to individuals or small businesses certified by the city's Office of Small Business Development that own or lease EVs with an EV parking pass in designated downtown parking garages and surface lots. Free EV charging is also provided in several parking garages.

- Foster the development of a viable secondary market for used ZEVs to ensure the owners can achieve a fair trade-in value and make these vehicles available to used car buyers.

Additional Actions for Consideration by Individual States:

Purchase incentives

- Continue existing state rebates, sales tax credits, and other programs such as excise tax exemptions, and consider new programs as further incentives for ZEV buyers in the near-term.
- Consider alternative models such as electric utility tariffs that compensate owners of electric vehicles for services provided.

High Occupancy Vehicle (HOV) lane access for ZEVs

- States with such facilities will maintain access and, where appropriate, create HOV lane access for ZEVs in the near term, regardless of number of passengers.
- Explore options to streamline issuance of HOV stickers, including the possibility of providing the stickers at the point of sale.
- Provide HOV lane access to ZEVs registered in other states.

Reduced road, bridge and tunnel tolls

- Reduce tolls for ZEVs in the early years of the program and advertise those discounts at toll plazas.

Preferential parking

- Consider statewide policy that provides parking benefits for ZEVs in the near term at government-owned buildings, parking lots, and other properties, including preferential parking and reduced or waived parking fees.
- Work with municipalities and private companies to encourage preferential parking and reduced parking rates for ZEVs.
- Coordinate with local authorities to put ordinances in place to enforce compliance with PEV-restricted spaces.

ACTION #3

Lead by example through increasing ZEVs in state, municipal, and other public fleets

Priority Multi-State Actions:

- Establish a goal that a minimum of 25 percent of new light-duty state fleet purchases and leases for applicable uses, to the extent available, will be ZEVs by 2025.
- Encourage other fleets to adopt similar goals.
- Develop best practice policies to maximize the "electric miles" driven by government fleet vehicles.
- Include ZEVs and electric vehicle supply equipment (EVSE) on state purchase and rental car contracts.
- Establish a multi-state ZEV Fleets Users Forum to organize communication with ZEV manufacturers on fleets' needs, serve as an information and best-practices clearinghouse, and provide a venue for coordinating research and data collection.
- Use common data collection elements and protocols to collect and share information among states on ZEV fleet purchases and operational cost savings.
- Assess feasibility and opportunities for pooled purchases with other government and private fleets to secure greater price discounts, stronger contract terms and conditions, and improved maintenance and service agreements.

Additional Actions for Consideration by Individual States:

- Develop implementation plans for state fleet ZEV purchases, with metrics to measure success.
- Establish state fleet rules or procedures that enable the full range of ZEVs to compete for state contracts.
- Encourage leasing of ZEVs for state fleets to maximize the potential savings from the federal tax incentive.

Model Programs:

Governor Chafee announced that the State of Rhode Island would lead by example by transitioning the state fleet to alternative fuel vehicles. All new state fleet vehicle purchases will be electric vehicles or hybrids wherever possible. The State Agencies will use Federal American Recovery and Reinvestment Act dollars to pay for the differential cost between an alternative fuel vehicle and a comparably sized gasoline-powered car.

California Governor Jerry Brown's executive order B-16-12 requires that at least 10 percent of new state fleet vehicle purchases of light-duty vehicles be ZEVs by 2015, and at least 25 percent must be ZEVs by 2020. Vehicles that have functions specific to protecting public safety and welfare are exempt from this rule.

The Bay Area Climate Collaborative (BACC) is a nonprofit public-private partnership accelerating clean energy implementation in the Bay Area of California. The BACC has facilitated the deployment of nearly 150 electric vehicles to local municipal fleets, in addition to driving electric vehicle innovation through co-facilitation of the EV Strategic Council, the executive forum driving the region's vision to be the "EV Capital of the US," and co-managing the Experience Electric EV marketing campaign with the Metropolitan Transportation Commission.

Model Program:

The Massachusetts Electric Vehicle Incentive Program (MassEVIP) provides incentive funding to cities and towns, public universities and colleges, car share companies, and the state fleet for the acquisition of PEVs and Level 2 charging stations. Public fleets and universities receive $5,000 for PHEV purchase, $7,500 for BEVs, and up to $10,000 for Level 2 charging stations. Car share companies are eligible for $2,500 for PHEVs, $3,750 for BEVs and up to $5,000 for chargers.

- Integrate ZEV-based car sharing into the state's fleet management system.
- Direct state agencies responsible for vehicle fleet purchasing to consider cooperative contracts to aggregate demand when going out to bid on ZEVs and electric vehicle charging equipment.
- Provide incentives for state, municipal, and public university ZEV and EVSE purchases.
- Assist fleet managers by:
  - Providing information about the availability and applicability of ZEV vehicles.
  - Developing near-term pilot projects to enhance understanding of PEVs and charging infrastructure within state departments.
  - Promoting training for fleet mechanics.

ACTION #4

Encourage private fleets to purchase, lease, or rent ZEVs

Model Programs:

General Electric has committed to going electric, and announced its intention to replace half of its 30,000 vehicles with EVs by 2015.

Hyundai is partnering with Enterprise Rent-A-Car to make the Tucson Fuel Cell SUV available to consumers at select locations in the Los Angeles/Orange County region. This partnership will enable interested consumers to evaluate the Tucson Fuel Cell for their lifestyles on a multi-day basis.

Priority Multi-State Actions:

- Implement high profile public-private programs, such as Governors' events and recognition programs, to promote and encourage ZEVs in private fleets and workplace charging programs.
- Coordinate with academics, nonprofit partners, and the U.S. DOE to help fleet managers develop the business case for integrating ZEVs into their fleets.

Additional Actions for Consideration by Individual States:

- Explore opportunities to promote ZEV car-share programs.

ACTION #5

Promote workplace charging

Priority Multi-State Actions:

- Lead by example by promoting state agency workplace charging with a goal that, by 2020, all interested state agency employees with PEVs will have a place to charge them.
- Promote the installation of charging infrastructure for commuters at public transit hubs.
- Implement high profile public-private programs, such as Governors' events, to promote and encourage the deployment of workplace charging, particularly at large companies, universities, and hospitals.
- Coordinate with the U.S. DOE Workplace Charging Challenge initiative to educate major employers about the need for and benefits of workplace charging infrastructure.
- Develop and circulate surveys and educational materials to help employers gauge employee interest, determine the appropriate charging systems, estimate capital and operating costs, and understand installation requirements.
- Encourage automobile manufacturers, dealers, and charging companies to engage with large employers to promote workplace charging.

Additional Actions for Consideration by Individual States:

- Leverage EVSE providers to develop outreach campaigns targeting major employers in our states on the benefits of installing charging infrastructure and the process involved.
- Develop ZEV charging infrastructure policy for major new developments and include PEV charging requirement criteria in state environmental project reviews.

Model Program:

In 2013, the California PEV Collaborative's "Drive The Dream" event brought Governor Jerry Brown and 40 Fortune 500 executives together to announce corporate commitments to PEV workplace charging. The event generated corporate commitments for 2,033 chargers and 1,509 plug-in electric vehicles by September 2014.

Model Programs:

Nissan's EV Partnership Program Workplace Charging Initiative establishes relationships with employers to promote PEVs through town hall meetings and ride-and-drives. The program helps companies develop workplace charging plans and provides employees with preferred Leaf pricing.

The Transportation and Climate Initiative announced that seventy organizations have pledged to help facilitate the deployment of electric vehicles in the northeastern United States, in large part due to work being done by states to develop the Northeast Electric Vehicle Network.

ACTION #6

Promote ZEV infrastructure planning and investment by public and private entities

Model Programs:

The West Coast Electric Highway, a public-private partnership between agencies and businesses, has developed a network of charging stations on Interstate 5 that will ultimately provide charging facilities along all 1,381 miles of the corridor from Canada to Mexico, making owning a PEV more convenient for longer distance travel.

Currently the Washington and Oregon state Departments of Transportation have deployed stations every 25 to 50 miles at shopping centers, hotels, and similar locations along the entire length of I-5 in their states.

Priority Multi-State Actions:

- Research driver charging behavior to determine the need for non-residential charging, including the level of charging and importance of location.
- Collaborate in the coordinated deployment of DC fast chargers along key inter-state corridors to facilitate long-range PEV travel along priority roadways such as the I-95 Northeast Corridor and the I-5 West Coast Highway.
- Coordinate with researchers to undertake multi-state mapping and modeling analyses to inform the design and implementation of efficient corridor charging networks.
- Pursue resource partnerships to design and execute a hydrogen fuel cell vehicle infrastructure feasibility study for the MOU states outside of California.
- Strive to ensure that all appropriate charging/fueling installations receiving public funding be open to the public and accessible to all PEV/FCEV drivers.
- Initiate a dialogue to address federal restrictions on electricity and hydrogen sales within certain limited access right-of-ways.

Additional Actions for Consideration by Individual States:

- Continue or expand state financial incentive programs for public charging stations in the near-term.
- Explore opportunities for coordinated fueling station equipment procurement across local, state, and federal agencies.
- ZEV data collection and dissemination:
    - Collaborate with auto manufacturers to provide ownership trends data to utilities, EVSE providers, local and regional planning agencies, and other interested parties through the ZEV landing page to inform effective charging network design.

- Promote and support efforts by utilities to improve understanding of ZEV charging demand patterns, needed system upgrades, and associated grid impacts.

- Work with other stakeholders to conduct outreach to commercial facility operators and retailers to highlight the business case for convenient access to PEV parking and EVSE.

ACTION #7

Provide clear and accurate signage to direct ZEV users to charging and fueling stations and parking

Priority Multi-State Actions:

- Coordinate with the Federal Highway Administration (FHWA) to ensure sufficient and up-to-date coverage of uniform signage on federal highways using the "Alternative Electric Vehicle Charging Symbol Sign."

- Develop and install uniform signage consistent with FHWA's Manual on Uniform Traffic Control Devices for use on state and local roadways to direct drivers to charging and hydrogen fueling stations.

- Support the adoption of national standards for highway signs indicating hydrogen fueling stations.

Additional Actions for Consideration by Individual States:

- Work with municipalities and the private sector to institute consistent regulatory signage programs that identify the availability of parking for ZEVs.

- Develop uniform and effective regulatory signs to indicate PEV parking regardless of charging status or restrict parking to PEV charging only.

Model Programs:

The Connecticut Department of Energy and Environmental Protection offers financial assistance for the installation of publicly available EV chargers. Those in priority areas are eligible for grants of up to $5,000 per unit or $10,000 per site. Chargers in other areas may receive up to $2,000 per unit or $4,000 per site. Awardees must commit to installing, operating, and maintaining these chargers for a minimum of three years.

Vermont's State Infrastructure Bank (SIB) loan program helps municipalities and businesses obtain loans for the construction and installation of public-use EV charging stations at a fixed interest rate of 1 percent. The state also provides matching grants to build a statewide network of municipal publicly accessible charging stations within Vermont's 24 Designated Downtowns. The program will fund 75 percent of the cost of installing electric vehicle charging stations in eligible areas.

California's Assembly Bill 8 extends the programs that accelerate the turnover of older vehicles and equipment and invest in the development and deployment of advanced technologies. The bill includes a provision to fund at least 100 hydrogen stations with a commitment of up to $20 million a year from the Alternative and Renewable Fuel and Vehicle Technology Program.

Connecticut is conducting surveys to assess the automakers' commitment to making and delivering vehicles, and to identify where and how hydrogen fueling stations will be deployed. The early market focus is on public and private fleets.

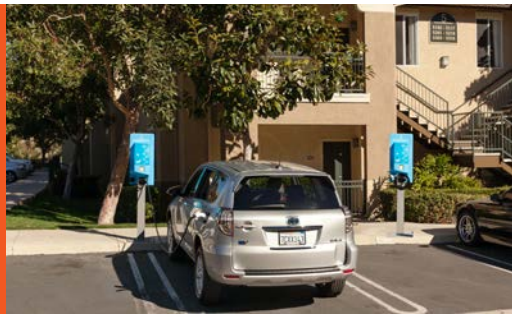
Model Programs:

Through the West Coast Electric Highway initiative, the departments of transportation in Washington, Oregon, and California adopted a standardized symbol to identify publicly accessible electric vehicle charging stations along major roadways.

Washington state law (RCW 46.08.185) requires that EV charging stations are clearly identified with the following: (1) an "EV Charging Station" sign; (2) a "No Parking Except for Electric Vehicles Charging" sign; and (3) green pavement markings.

ACTION #8

Remove barriers to ZEV charging and fueling station installations



Priority Multi-State Actions:

- Coordinate with nonprofit groups developing model codes and standards to promote consistency in the development of state and local government requirements related to the installation of PEV charging infrastructure.
- Establish consistent codes and standards for ZEV infrastructure through revisions to national and state building codes.
- Promote the development of consistent policies, codes and standards to facilitate the deployment of charging stations:
  - Consider amendments to state building or electrical codes to ensure that new buildings are ZEV-ready, including criteria such as pre-wiring and electric panel capacity requirements.
  - Develop model local government requirements to incorporate EVSE into new multi-family dwellings and non-residential buildings, and model ordinances requiring them to dedicate a portion of their parking spaces to PEV charging.
  - Develop a streamlined model permit and zoning process that local governments can adopt to ensure timely approval of DC fast charge installations.
  - Develop siting and cost allocation criteria for public charging and responsibility for outreach.
  - Design utility demand charges and interconnect fees for PEV charging.
- Provide planning and siting assistance and resources to municipalities and other local planning entities.
- Develop Governor-recognition programs for local government ZEV champions.

Additional Actions for Consideration by Individual States:

- Develop policies that guide businesses and homeowner

Model Programs:

The Transportation and Climate Initiative has produced a series of reports on reducing barriers to widespread deployment of EVSE. The reports offer guidance to local and state practitioners in assessing code-specific barriers and identifying the code provisions that would encourage a basic or advanced level of EV readiness in local policies and regulations.

The California PEV Collaborative provides information and model programs to facilitate and expedite EVSE installations, including a report on "Streamlining the Permitting and Inspections Process for Plug-In Electric Vehicle Home Charger Installations." The California Governor's Office is hiring a ZEV Infrastructure Project Manager to facilitate installation of ZEV infrastructure and assist with permit streamlining.

Oregon amended the electrical code to reflect a need to address EV charging infrastructure in an inefficient statewide market with many early adopters concentrated in specific geographic areas and corridors, opting instead to expedite and dramatically reduce costs associated with the permitting process for residential EVSE.

associations on how to approach requests for charging, along with provisions that ensure that these requests cannot be ignored.

- Provide incentives for businesses to install charging and provide liability protection for homeowner associations.
- Require that a certain percentage of parking spaces have charging stations.
- Hold regional planning workshops to educate local governments on EVSE issues.

ACTION #9

Promote access, compatibility, and interoperability of the plug-in electric vehicle charging network

Priority Multi-State Actions:

- Support the adoption and implementation of effective National Institute of Standards and Technology standards for EVSE interoperability.
- Work with EVSE providers to ensure that PEV drivers have the information and freedom to use any public charging station by allowing common forms of payment, not requiring subscription or membership status, encouraging use of open-source protocols, and making fees transparent to customers.
- Ensure that all ZEV charging/fueling installations are registered with the National Renewable Energy Lab's Alternative Fuels Data Center database to provide a simple means for PEV drivers to locate available charging stations, identify the type of charging available, and determine charging costs.
- Require all publicly funded chargers that are accessible to the public and networked to apply the Open Charge Point Protocol communication standard that allows charging stations and central systems from different vendors to communicate.
- Encourage dual-compatibility for all new public DC fast charge stations to ensure that all PEVs can utilize any

Model Program:

California passed the EV Charging Stations Open Access Act (SB454), which requires equal access to all charging stations regardless of membership; to accept credit card payments; and to fully disclose all fees (including roaming fees). If no interoperability billing standards have been adopted by a national standards organization by January 1, 2015, this bill would authorize the state board to adopt interoperability billing standards, as defined, for network roaming payment methods for electric vehicle charging stations, and would require, if the state board adopts standards, all electric vehicle charging stations that require payment to meet those standards within one year.

public charging station, whether equipped with CHAdeMO or Society of Automotive Engineers (SAE) charging ports.

- Follow and support national and California efforts to develop hydrogen infrastructure codes and standards for station configuration, fuel quality, and dispensing accuracy.
- Seek federal guidance on ensuring charging station compliance with the Americans with Disabilities Act.

Additional Actions for Consideration by Individual States:

- Monitor the development of interoperability and business models to evaluate the need for state regulatory action in the absence of an effective federal approach or industry standard.

ACTION #10

Remove barriers to the retail sale of electricity and hydrogen as transportation fuels and promote competitive plug-in electric vehicle charging rates

Priority Multi-State Actions:

- Promote necessary legislation, regulations, standards, or certifications to enable the commercial sale of electric vehicle charging and hydrogen as transportation fuel, including on a per-kilowatt-hour or on a per-kilogram basis, and ensure transparent pricing.
- Request that Public Utility/Service Commissions (PUCs/PSCs) open proceedings to:
    - Ensure electric vehicle service providers or others that operate charging facilities for the sole purpose of providing electricity as a transportation fuel are not defined as a "public utility" and therefore are not subject to regulation as such an entity.
    - Determine the appropriate level of consumer protection and regulatory oversight for providers of charging

facilities, including utilities and non-utilities.

- Evaluate residential and business electric utility rate structures or other mechanisms, consistent with statutory authority, that provide lower-cost electricity for off-peak charging.
- Encourage utilities to evaluate and revise, as necessary and consistent with statutory authority, appropriate rate structures based on PEV charging data, customer enrollment, and other customer feedback to promote off-peak charging and maximize consumer savings and grid reliability.
- Explore the role utilities, energy service companies, and other public or private entities can play in the deployment of ZEV fueling infrastructure, particularly with respect to fast charging to facilitate long distance travel and charging for those without dedicated home charging.
- Evaluate policies with respect to utility demand charges and interconnect fees for PEV charging.
- Explore the use of hydrogen for grid support, especially with regard to storage of excess electricity produced by renewables.

Additional Actions for Consideration by Individual States:

- Work with utilities to promote targeted outreach to homeowners and fleets with PEVs, to ensure they are aware of existing electric rate options and the potential cost savings.
- Coordinate on PEV outreach efforts within each utility's service area.
- Coordinate with electricity providers and PUCs/PSCs to explore opportunities to explicitly identify PEV electricity usage on consumers' utility bills to highlight savings compared to the use of conventional fuels.
- Establish policies to reduce costs and simplify the process for homeowners to install meters to access PEV-specific rates.
- Coordinate with electricity providers, PUCs/PSCs, and state energy offices to explore opportunities to connect renewable energy generation with PEVs.

Model Programs:

The Maryland Public Service Commission has approved the state's two largest utilities' time-of-use (TOU) pilot programs designed to incentivize residential electric customers to charge PEVs during off-peak hours at reduced rates. The pilots have different TOU rates based on seasons, whole house billing vs. separate metering for EV charging, and other factors

Pacific Gas and Electric Company (PG&E) has introduced new simplified rate plans that are intended to help ZEV owners better understand and manage EV energy costs. EV owners could realize annual savings of greater than $1,000 by switching from PG&E's standard rates to the EV TOU rate.

ACTION #11

Track and report progress toward meeting the goal of 3.3 million ZEVs on our roadways by 2025

Priority Multi-State Actions:

- Report annually on ZEV MOU state landing page:
  - The number of ZEVs registered in our states.
  - The number of public fueling stations in our states.
  - State fleet ZEV acquisitions.

Additional Actions for Consideration by Individual States:

- Track communities where ZEVs are registered in each state.
- Use annual reports to generate interest and educate the public and state legislatures about ZEVs.

RESEARCH AND PARTNERSHIPS

Our states will coordinate with a host of partners to develop and implement effective strategies, an outreach initiative, and a targeted research agenda to support maturation of the ZEV market. These efforts will entail collaboration with a wide range of groups engaged in understanding and promoting the use of zero-emission vehicles.

Research

States, automakers, and infrastructure providers all rely on innovation fostered through public and private universities, government research entities, including the U.S. DOE National Labs, and nonprofit entities. The activities highlighted in this section include consumer and market research, technology assessments, and policy analysis. The products of these studies would improve our understanding of how ZEVs are being used, promote consumer awareness, help technology develop, and inform effective government programs to accelerate the ZEV market. The needs identified in this document are intended to spur and inform an ongoing research inititative. The list is not intended to be all-inclusive and not all identified studies will be completed in the near-term.

The multi-state ZEV Program Implementation Task Force will work with stakeholders to prioritize the potential research efforts and seek partners to conduct these studies. The funding to support this research agenda will need to come from a range of sources outside of state government. Our states are, however, prepared to engage these partners in identifying needs, designing effective studies and campaigns, and providing letters of support and other encouragements to facilitate the allocation of appropriate resources for this work.

Key Research Needs

1. **Consumer charging behavior research** to evaluate the need for non-residential charging infrastructure in terms of location and charging level.

2. **Multi-state mapping and modeling analyses** to inform the design and implementation of efficient corridor charging networks.

3. **Evaluation of network designs** for optimal PEV charging.

4. **Design and execution of a hydrogen fuel cell vehicle infrastructure feasibility study** for the MOU states outside of California.

5. **Evaluation of the effectiveness** of various local, state and national purchase incentives.

6. **Assessment of creative vehicle financing innovations**.

7. **Consumer and market research** to better understand how ZEVs are being used, consumer needs, and owner interests to inform ZEV policies and programs.

8. **Outreach to fleet owners** to enhance understanding of their needs and interests and develop a business case for private fleet managers to integrate ZEVs into their fleets.

9. **Evaluation of best practices and innovative approaches** to ZEV marketing by automobile dealers and analysis of the effectiveness of ZEV marketing by manufacturers.

10. **Evaluation of the impact** of expanding ZEV model availability on unique state fleet mix issues.

11. **Evaluation of "smart" charging options** to save consumers money and minimize grid impacts.

12. **Promotion and support of research on emerging issues**, such as vehicle-to-grid options and the development of advanced technologies and methods for the safe and efficient recycling of battery packs from plug-in electric vehicles.

13. **Evaluation of the logistical and financial impact** on municipalities that provide preferential and reduced rate parking for ZEV.

14. **Assessment of policies and incentives** to increase ZEVs in rental car and car-sharing fleets, particularly for use in high-profile locations such as airports, through financial subsidies or state contract preferences.

15. **Technology assessment of the performance, durability, and cost of battery and fuel cell technologies, including cold temperature operation.**

16. **Development of effective public outreach initiatives.**

17. **Development of a guide for costs and considerations** to install EVSE for businesses and governments, including the economic benefits associated with providing PEV charging services for industry members such as home builders associations, the hospitality industry, etc.

Partnership Opportunities

Fulfilling our mutual commitment to ZEVs will require effective partnerships among our states and a host of stakeholders, including municipalities, the federal government, the private sector, academia, and the nonprofit community. This section identifies partnership opportunities our states will pursue towards this end.

1. **Collaboration with automobile manufacturers** to grow the knowledge base and build consumer and dealer awareness

   - Continuation of the "New Collaboration for ZEV Success" initiative between ZEV states and OEMs related to:

     - Consumer education and awareness
     - Dealer engagement
     - State policies and incentives
     - Infrastructure

2. **Collaboration with automobile dealers and their associations to explore and develop effective ZEV marketing strategies and opportunities**

   - Collaborate to identify and implement creative financing approaches and other effective strategies to increase ZEV sales.
   - Collaborate with dealers and other interested stakeholders to sponsor ZEV outreach and education events.
   - Foster the development of a viable secondary market for used ZEVs.
   - Make dealers aware of multi-state ZEV "landing page" to provide consumers and dealers with up-to-date information on ZEVs and links to state and OEM websites.

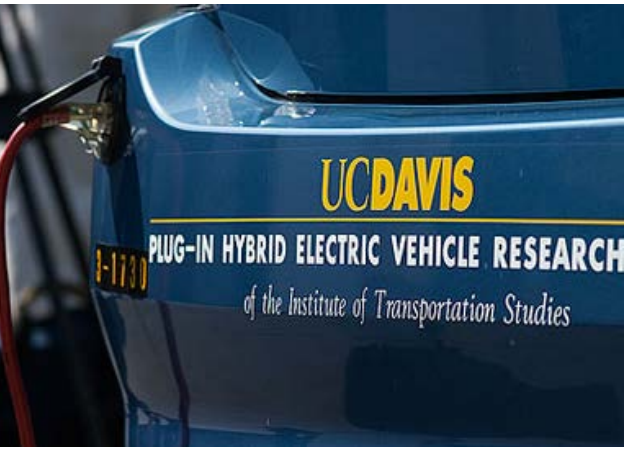
3. **Collaboration with EVSE manufacturers and providers**

   - Develop a working group with charging infrastructure manufacturers and providers to:
     - explore public/private partnership opportunities
     - discuss solutions to overcome barriers to network build-out
     - evaluate best use of government resources to jump-start charging and fueling networks
     - evaluate creative financing options for charging networks

4. **Development of partnerships** with electricity providers

   - Explore opportunities to distribute ZEV outreach and education materials with electric bills.
   - Track and share information on charging patterns.
   - Track and highlight consumer savings from rate design programs for PEVs.
   - Ensure that time-of-use (TOU) pricing or other PEV rate programs are practical for consumers.
   - Develop information exchange to promote timely and cost-effective infrastructure upgrades based on projected sales volumes and geographic distribution.
   - Explore potential incentives for level 2 home charging installations.
   - Explore vehicle-to-grid technology, using rooftop solar panels with battery packs to store electricity for night-time charging, and other opportunities for PEVs to enhance electric system reliability and avoid a shift in peak electric usage hours.

5. **Collaboration with academic and government research institutions**



   - Assemble joint working group of research institutions, automakers and state agencies focused on ZEV research.
   - Coordinate with the University of California at Davis Zero-Emission Market Acceleration Partnerships (ZE-MAP) program and other existing academic research initiatives to provide technical expertise to inform ZEV program implementation.
   - Coordinate implementation with the Georgetown Climate Center, which facilitates the Transportation and Climate Initiative, to build on its existing research and program support for MOU states on a range of ZEV issues. As needed, engage other academic institutions that can provide supplementary ZEV research and program support.

6. **Collaboration with nonprofit partners and federal agencies** to promote ZEV deployment

- Engage in collaboration with national and local nonprofit partners and academia to develop and implement a communication strategy to promote electric vehicle deployment and market development.
- Support nonprofit advocates' outreach campaigns to raise awareness about the availability and benefits of ZEVs.
- Leverage existing regional and national activities, such as Clean Cities programs and National Plug-in Day, and coordinate with OEMs and dealers to offer driving opportunities to prospective buyers.
- Coordinate with US DOE, H2USA, Breakthrough Technologies Institute, state hydrogen coalitions, and others to explore opportunities to advance hydrogen fuel cell vehicles in MOU states.
- Endeavor to engage with the Electric Drive Transportation Association (EDTA), the California PEV Collaborative, Clean Cities programs, and others promoting electric drive transportation, including local initiatives.
- Collaborate with the Department of Defense to evaluate potential synergies between state ZEV programs and the Vector II electric vehicle program, including pooled purchasing of vehicles and EVSE.

Credits

This Action Plan is a product of the multi-state ZEV Program Implementation Task Force whose members include:

California Air Resources Board:
Alberto Ayala, Analisa Bevan, Annette Hebert, Anna Wong

Connecticut Department of Energy and Environmental Protection:
Anne Gobin

Maryland Department of the Environment:
Kathy Kinsey

Massachusetts Department of Environmental Protection:
Christine Kirby

New York State Department of Environmental Conservation:
Steve Flint

New York State Energy Research and Development Authority:
Adam Ruder

Oregon Department of Environmental Quality:
David Collier

Oregon Department of Transportation:
Ashley Horvat

Rhode Island Department of Environmental Management:
Frank Stevenson

Vermont Department of Environmental Conservation:
Elaine O'Grady

NESCAUM support for this document was provided by:
Andrew Dick, Arthur Marin, Matt Solomon

Special thanks are extended to the many reviewers from these and other agencies in the participating states who provided invaluable input.

Photo Credits

Cover, top to bottom, left to right:

Row 1: Mitsubishi Motors, Honda Motor Co., Drive Electric Vermont, Fiat Chrysler Automobiles, General Motors, Shutterstock

Row 2: iStockphoto, Daimler AG, Honda Motor Co., Mitsubishi Motors, Daimler AG, Vermont Energy Investment Corporation

Row 3: General Motors, California Fuel Cell Partnership, BMW AG, Nissan Motor Co., Drive Electric Vermont, Washington Department of Transportation

Row 4: Charlene McBride - Flickr, Drive Electric Vermont, Honda Motor Co., Ford Motor Co., General Motors, Hyundai Motor Co.

Row 5: Honda Motor Co., Tesla Motors, Nissan Motor Co., Nissan Motor Co., Stephanie Vacher - Flickr

Row 6: Ford Motor Co., Kia Motors Co., Ford Motor Co., Oregon Department of Transportation

Inside cover:

iStockphoto.com

Section header:

Drive Electric Vermont, iStockphoto, Ford Motor Co., NRG eVgo, Drive Electric Vermont, Oregon Department of Transportation, Washington Department of Transportation, Oregon Department of Transportation, General Motors

Report body:

Page 2: Nissan Motor Co.
Page 3: Drive Electric Vermont
Page 5: General Motors
Page 10: Hyundai Motor Co.
Page 12: Nissan Motor Co.
Page 15: Bay Area Climate Collaborative
Page 16: Bay Area Climate Collaborative
Page 17: iStockphoto.com
Page 18: Oregon Department of Transportation
Page 19: Oregon Department of Transportation
Page 20: NRG eVgo
Page 21: Shutterstock
Page 22: California Fuel Cell Partnership
Page 24: iStockphoto.com
Page 25: Argonne National Laboratory
Page 26: Penn State - Flickr
Page 27: Oregon Department of Transportation
Page 28: University of California at Davis
Page 29: Ford Motor Co.