



STATE OF CONNECTICUT

Electric Vehicle Infrastructure Council



Final Report
September 1, 2010

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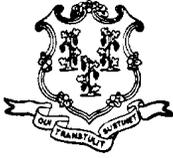
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I. Executive Summary

This constitutes the final report of Connecticut's Electric Vehicles Infrastructure Council. In accordance with Executive Order No. 34, this document is submitted on September 1, 2010 (following the preliminary report issued on February 1, 2010).

Electric vehicles are referred to herein as "EVs" and include all forms of electrified vehicles, such as plug-in hybrid electric vehicles (PHEVs), pure battery electric vehicles (BEVs) and conventional vehicles converted to plug-ins.

During the past nine months, concurrent with the activities of the Electric Vehicle Infrastructure Council (the Council), interest in electric vehicle technology has grown exponentially in Connecticut and throughout the U.S. and beyond. Potential buyers and sellers alike are paying close attention to this evolving clean-transportation alternative and its transformative potential for carbon reductions, energy independence and fuel-cost savings for consumers.

In November 2009, the Honorable Governor M. Jodi Rell's Executive Order No. 34 established the Council and its ground-breaking mission: To prepare Connecticut for the introduction and integration of the new generation of electric cars, thereby positioning our state as a national leader in this emerging industry. Specifically, the Council was tasked with analyzing and making recommendations for developing and implementing an innovative yet prudent course of action such that our citizens, businesses and communities can experience the potentially significant environmental, economic and energy benefits EVs offer.

At a series of open monthly meetings that began in December 2009, the Council listened to presentations by numerous agencies and stakeholders on Connecticut's readiness to assimilate EVs as a clean-fuel transportation option. This Final report reflects information the Council received on advancing EVs, from early adoption to eventual mainstream acceptance, by focusing on: availability of EV incentives and grants, infrastructure issues related to charging station installations, potential rate-making methodologies, and potential legislation that would create such initiatives.

In May 2010, the Council saw firsthand the current level of interest in EVs when it co-hosted a public EV Forum at the Legislative Office Building, in collaboration with the Regional Electric Vehicle Initiative (REVI) utilities working group. The event featured presentations by six leading automakers (Nissan, General Motors, Ford, Toyota, BMW and Mitsubishi), organizer Connecticut Light & Power, United Illuminating, the Connecticut Municipal Electric Energy Cooperative and NRG Energy, among others. Attendees included municipal officials, environmental experts, charging equipment providers and other interested stakeholders from throughout the Northeast region. Concurrently, pre-production EV models were on display on the grounds of the State Capitol building (cover photo), as test drives by Governor Rell and Council members attracted news media coverage of the event.

Connecticut's progress and collaborative approach has not gone unnoticed beyond our borders, as the state was selected in July 2010 to be one of General Motors' early-launch markets for the Chevy Volt. Plans are also under way for a September 2010 event to pre-promote the roll-out of the Nissan Leaf.

Key Recommendations

Reflecting the above efforts and the consensus of its members, the Council proposes a goal of 25,000 electric cars statewide by 2020. This is a viable target that aligns with President Obama's national goal of one million plug-in vehicles on the road by 2015.

The Council developed five additional strategic priorities which are discussed in detail later in this report. They are:

- 1) Gaining early access to the first wave of mass-produced electric vehicles;
- 2) Enacting legislation in the next session of the General Assembly to provide consumers and businesses with tax incentives/grants or other convenience benefits that afford some price parity with gasoline-powered vehicles;
- 3) Supporting the build-out of an appropriately sized, statewide EV charging infrastructure network through partnerships with public and private entities;
- 4) Developing a suitable framework for regulatory and energy policies to address time-of-use rates, pricing and charging infrastructure options for consumers; and
- 5) Working collaboratively with neighboring states to develop a regional corridor for access to public charging stations.

Lastly, the Council's recommendations include a compendium of over 30 specific action items which are presented in the "Summary of Recommendations," Section V.

II. BACKGROUND

On November 10, 2009, under Executive Order 34, Connecticut's Electric Vehicle Infrastructure Council was established. Initially consisting of 15 members, the Council was directed to:

- a. Strategize on preparing the State for the rapid and seamless integration of Electric Vehicles into the market;
- b. Coordinate interagency decision-making on critical issues;
- c. Establish performance measures for meeting infrastructure, funding, environmental, and regulatory goals; and
- d. Align State goals with what is occurring on the national level for Electric Vehicles.

The Council is made up of various state agency representatives as well as other members of the public and private sector. The Council was tasked with analyzing and making recommendations to the State on how to overcome challenges on several fronts:

- Attracting automakers to make Connecticut part of their initial marketing test zones;
- Addressing unresolved issues regarding building code requirements for the installation of charging stations in the home;
- Creating options for home charging and metering (including: on-street, parking garages, workplaces and retail locations);

- Developing infrastructure planning and policies by identifying costs, evaluating technology options, streamlining building permits for charging stations and developing a framework of rate design options for charging and metering;
- Encouraging the development of market-based electric rates for EVs that encourage and reward EV owners for charging during off-peak hours;
- Considering the impact of EV charging on overall electricity demand, methods to mitigate increased peak demand and the interplay of air quality programs affecting utility and transportation sectors;
- Developing strategies to encourage off-peak charging that improves efficiency of the electric system, avoids adding to the growing daily peak demand for power and reduces negative impacts on air quality in Connecticut;
- Identifying state and local incentives and policies that will encourage significant increase in the adoption of EVs and growth in related industries; and
- Developing outreach materials and a network of peers to educate consumers and provide training for workers in support of EVs.

In the last year, EVs and their development have become increasingly prominent subjects in the national dialogue. Manufacturers have announced more than a dozen highway-capable electric vehicle models for introduction between 2010 and 2012. The Obama administration has committed more than \$4 billion dollars in support of the design, manufacture, and purchase of electric vehicles. EVs represent a clear economic and environmental opportunity for governments, consumers and manufacturers to play an active role in reducing our dependence on foreign energy sources and in integrating available technologies in a way that will reduce emissions.

Transitioning to EVs will help to significantly reduce greenhouse gas emissions and local air pollution for Connecticut residents; offer drivers reduced operating costs, a quieter ride, and less maintenance; and potentially utilize more kilowatt hours (kWh) generated in the off-peak period, thereby raising the operating efficiency of the existing electric grid and generators.

II. A. PROCEEDINGS OF THE ELECTRIC VEHICLES INFRASTRUCTURE COUNCIL

The chart on the following page lists the 19 members of the Electric Vehicles Infrastructure Council.

MEMBERS OF THE ELECTRIC VEHICLE INFRASTRUCTURE COUNCIL

Name	Title	Representing
Kevin DelGobbo	Chairman	Dept. of Public Utility Control
Joan McDonald	Commissioner	Dept. of Economic Development
Jack Carey	Transportation Division Chief, Traffic Engineering	Dept. of Transportation
Michael Cassella	Director, Energy Efficiency Services	Connecticut Municipal Electrical Energy Cooperative
Watson Collins	Manager, Business Development	Northeast Utilities/Connecticut Light & Power
Roddy Diotalevi	Senior Director	The United Illuminating Company
Lise Dondy	President	CT Clean Energy Fund
John Getsie	Motor Vehicle Emissions Contract Compliance Officer	Dept. of Motor Vehicles
Robert Hammersley	Staff	Transportation Strategy Board
Kevin Hennessy	Associate Counsel	CT Business & Industry Association
Stephen J. Humes	Partner	McCarter & English, Attorneys at Law
William Leahy	Director	Institute for Sustainable Energy at Eastern Connecticut State University
Peter Longo	President	CT Innovations
John Mengacci	Undersecretary	Office of Policy Management
Marie O'Brien	President	CT Development Authority
Frank Sanzo	Director of Fleet Operations	Dept. of Administrative Services
Dan Smachetti	Director of Properties & Facilities	Dept. of Transportation
Graham Stevens	Chief of Staff	Dept. of Environmental Protection
Jamie Young	Associate Counsel	Office of Governor M. Jodi Rell

Note: As shown above, the Council was expanded to include members beyond those specified in the Executive Order. All appointments were made prior to the Council's kick-off meeting.

In addition to the Council's main members, other workgroup participants are:

- Peggy Diaz, Legislative Manager, Department of Public Utility Control
- Joseph Oros, Director of Government Relations, Department of Economic and Community Development
- David Goldberg, Connecticut Clean Energy Fund
- Lisa Humble, State Building Inspector, Department of Public Safety
- Robert Nuzzi, State Electrical Inspector, Department of Public Safety
- Ellen Pierce, Department of Environmental Protection
- Megan Pomeroy, United Illuminating Company

The Electric Vehicles Infrastructure Council convened its meetings on a monthly basis beginning in December 2009 and concluding on September 1, 2010, with the release of the final report to Governor Rell.

Meetings were open to the public and held on the following dates:

December 9, 2009	March 19, 2010	July 9, 2010
January 28, 2010	April 9, 2010	August 16, 2010
February 11, 2010	May 21, 2010	September 1, 2010
	June 4, 2010	

Several of the Council's monthly meetings were televised on the Connecticut Network (CT-N) and available for public viewing. In addition, the Department of Public Utility Control's website features a link on its home page for the Electric Vehicle Infrastructure Council. The Council's web pages offer online access to meeting agendas, archived presentations and other relevant materials, including this report. The website address is: www.ct.gov/dpuc/evic.

The Council benefited from presentations and other information provided by a number of contributors and stakeholders, such as: representatives from the Greater New Haven Clean Cities Coalition, the Connecticut Automotive Retailers Association, NRG Energy, interested consumers and local business entrepreneurs.

The Council also co-hosted an EV Forum with the Regional Electric Vehicle Initiative (REVI) utilities working group on May 21, 2010. The public event was held at the Legislative Office Building and featured presentations by six leading automakers (Nissan, General Motors, Ford, Toyota, BMW and Mitsubishi) as well as representatives from organizer Connecticut Light & Power, United Illuminating and the Connecticut Municipal Electric Energy Cooperative, among others. Next door on the grounds of the State Capitol building, the Governor, Council members and the public had the opportunity to view and test drive some of the models the automakers brought to Hartford for the day.

II. B. INDUSTRY UPDATE

Within the last year, car manufacturers have announced more than a dozen highway-capable electric vehicle models for introduction between 2010 and 2012. Among these, the Chevrolet Volt and Nissan Leaf will be the first vehicles available for purchase as early as the 4th quarter of 2010. In order to optimize the consumer experience and balance buyer interest with a very limited, first-production supply of vehicles, Chevrolet and Nissan will initially limit sales to a handful of selected markets. States not included in the initial markets will have to wait until late 2011 or beyond for vehicle availability. Automakers are prioritizing their roll-out plans based on the level of market readiness and anticipated consumer interest in the vehicles. States or regions that have enacted policies that attempt to reduce the barriers or provide incentives to encourage consumers to purchase electric vehicles are viewed more favorably by the automakers.

The level of consumer interest, perceived and actual availability of desired EV models, and other market dynamics will be a major factor in the successful launch of these cars. Market data for traditional (non-plug-in) hybrid electric cars can provide some indication of potential EV purchase interest. For example, Connecticut is among the top 10 states for hybrid electric vehicle registrations on a per capita basis. For every 1,000 residents in Connecticut, there are 1.21 hybrid electric vehicles registered. This is significantly higher than the national average of 0.87 hybrid electric vehicles registered per 1,000 residents; California leads the nation with 1.54 hybrid electric vehicles registered per 1,000 residents.¹

The Obama administration has taken several steps to spur electric vehicle development, through both economic incentives and regulatory action. The President announced a goal of putting one million plug-in hybrid vehicles on the road by 2015 and dedicated over \$4 billion to the design, manufacture, and purchase of these vehicles. In March 2009, President Obama announced two electric vehicle programs as part of the American Recovery and Reinvestment Act (ARRA). The U.S. Department of Energy (DOE) released a \$2 billion funding solicitation for EV batteries and related drive-train components, and a \$400 million solicitation for transportation electrification demonstration projects. The federal government has also created a tax credit of up to \$7,500 per vehicle to reduce the high initial purchase price for electric vehicles.

Furthermore, in July 2010, the U.S. Department of Energy held a Plug-In Vehicle and Infrastructure Workshop to a packed auditorium that was simulcast to more than 500 additional locations around the nation.

Washington also announced this summer a new international Electric Vehicles Initiative² (EVI) that underscores the role of electric vehicles in accelerating the global transition to clean energy. The governments of China, France, Germany, Japan, South Africa, Spain, Sweden, the United Kingdom, and the United States will collaborate "through sister-city partnerships, cooperation to develop key technologies, and dialogue to identify and encourage best-practice deployment strategies." The International Energy Administration estimates that delivering on these targets will put participating countries on the path to deploy at least 20 million electric vehicles by 2020, thereby reducing global oil consumption by approximately one billion barrels over the next decade. Participants agreed to launch pilot programs in coordination with industry, academia

¹ December 2009 Dashboard: Year-End Tally, www.hybridcars.com

² Clean Energy Ministerial, event fact sheet published for July 19-20, 2010 event in Washington, D.C.

and other stakeholders, and share best practices, data and lessons learned to dramatically scale up electric vehicle sales.

Also in July 2010 but closer to home, General Electric unveiled its new WattStation, the aesthetically streamlined, Level 2 EV charging equipment for city streets. With GE corporate headquarters in Fairfield and a major WattStation division in Plainville, Connecticut, the state as a whole could benefit from the global visibility of this innovative technology coming to market in 2011.

II. C. EV Findings from 2010 Integrated Resource Plan for Connecticut

The Integrated Resource Plan for Connecticut (IRP), dated January 1, 2010, explored the potential impact of plug-in electric vehicles on New England system demand and referenced two industry studies:

- Pacific Northwest National Laboratory's recent study shows that up to 84 percent of the cars, pick-up trucks and SUVs in the U.S. could theoretically be converted to plug-in hybrids without the need for additional electric infrastructure, if all the excess generating capacity could be utilized (i.e., by charging only during off-peak times when much of the electric generating capacity is idle).³
- Oak Ridge National Laboratory's study examines how increased penetration of plug-in hybrids could affect regional power requirements, depending on when and how quickly the EV batteries are recharged.⁴ It estimates that the increase in on-peak energy demand will be about 1% to 2% in 2020, and about 2% to 5% in 2030 (assuming that plug-in hybrids will have 10% fleet penetration by 2020, and 25% by 2030).

Additionally, the utility team developing the IRP for Connecticut utilized The Brattle Group to model the potential grid impact of plug-in electric vehicles on the New England grid. Several charging scenarios were explored. The most aggressive scenario assumed that all EV charging occurs during the exact same hours, while the other scenarios assumed some diversity in the charging times, including off-peak charging. The results indicated that the peak increase due to plug-in hybrids in the most aggressive charging scenario would be limited to 3.5% (an extreme scenario) in 2020, and less than 0.5% in all the remaining scenarios. The study concluded that even an optimistic view of plug-in electric vehicle penetration in New England over the next two decades is unlikely to pose any unmanageable issues for maintaining reliable electric service.

The IRP also studied the impacts of plug-in electric vehicles on CO₂, NO_x and SO₂ emission rates. The study concluded that the electrification of a single vehicle results in a 70% reduction of CO₂ emissions. Therefore, a 5% conversion of New England's passenger cars would translate into an overall reduction of 1.5 million tons of CO₂ per year (equivalent to 4% of the total CO₂ emissions associated with power generation in New England in 2020). Similarly, a 50% reduction in NO_x emissions from 5% of New England's passenger cars would reduce the emissions by about 250 tons per year (equivalent to 1.5% of the total NO_x emissions from power generation in 2020). On the other hand, an increase of less than 4% in SO₂ emissions from 5%

³ Kintner-Meyer, et al. Impacts Assessment of Plug-in Hybrid Vehicles on Electric Utilities and Regional U.S. Power Grids. Part 1: Technical Analysis. Pacific Northwest National Laboratory (2007).

⁴ Hadlew, S.W. and A. Tsvetkova. Potential Impacts of Plug-in Hybrid Electric Vehicles on Regional Power Generation. ORNL/TM-2—7/150, Oak Ridge National Laboratory (2008).

of New England's passenger cars increases emissions by 170 tons per year (equivalent to less than 0.4% of the SO₂ emissions from power generation in 2020).

The equivalent of an increase of less than 0.4% of the SO₂ emissions from power generation in 2020 would be expected from the shifted power use produced by electrification of 5% of New England's passenger cars. While this equates to an increase in emissions of approximately 170 tons per year, this may be a worst-case scenario, as factors such as charging predominantly during off-peak hours may mitigate the magnitude of this estimate. Based on numerous studies that indicate that the majority of charging will occur during off-peak hours, the effect should be considerably less. Therefore, presuming a reasonable level of consumer acceptance in New England, EVs are likely to produce some environmental benefits whereby net CO₂ and NO_x emissions decrease and offset a negligible increase in SO₂ emissions.

An additional factor which should further decrease any potential adverse effects of EVs is that the U.S. Environmental Protection Agency (EPA) has recently proposed their Transport Rule which, if implemented as proposed, should significantly reduce SO₂ from power generation in 28 states including Connecticut.

II. D. POTENTIAL BARRIERS AND OPPORTUNITIES

Electric cars have many attributes that ultimately will determine consumer acceptance. However, from a strictly economic perspective, a consumer's decision to purchase may be based on:

- Calculating the potential fuel cost savings compared to a gasoline-powered car; and
- Applying that savings to offset the EVs incrementally higher retail purchase price.

Currently, the cost of buying a hybrid car (non-plug-in) with a 1.5 kWh NiMH battery pack is about \$5,000 higher than a conventional gasoline-powered internal combustion engine (ICE) car, a premium that is expected to decrease by about 50% over the next 20-25 years. A plug-in hybrid, on the other hand, needs much bigger batteries than a conventional hybrid (about 4-14 kWh capacity depending on all-electric mileage target), which increases the total costs. In 2008, the Energy Information Administration⁵ (EIA) estimated that the incremental costs for plug-in electric vehicles will be about \$6,000 for a 10-mile range car, and about \$13,000 for a 30-mile range car in 2010 (about \$3,600 and \$6,700 after the tax credits).⁶ It is anticipated that EIA figures will be updated in the future and incorporate actual sticker prices and performance characteristics of EV models now coming to market.

In the long-term, the cost of lithium-ion (li-ion) battery packs is expected to drop significantly due to the industry's learning curve and economies of scale. EIA projects battery costs will fall by about 25% to 30% by 2020. More dramatic cost reductions are possible, and a recent McKinsey study estimates that the cost of batteries may be as low as \$250 to \$500 per kWh in

⁵ Maples, J. and Chase N. Issues in Focus: Economics of Plug in Hybrid Electric Vehicles. Energy Information Administration AEO2009 (2009).

⁶ Energy Improvement and Extension Act of 2008, Title II, Section 205, grants a tax credit of \$2,500 for PHEVs with at least 4 kWh battery capacity, with larger batteries earning an additional \$417/kWh up to a maximum \$7,500 for light-duty vehicles.

2020. That would represent a reduction of about 30% to 60% from current levels of an EVs incremental cost.⁷

Offsetting the vehicle's additional initial capital cost to the consumer, operating costs of an EV are significantly lower than those of a gasoline-fueled conventional vehicle. This holds true across a wide range of electricity rates. Assuming a conventional vehicle efficiency of 25 miles per gallon, a plug-in electric vehicle efficiency of 5 miles per kWh, an electricity cost of \$0.1682/kWh⁸, and a gasoline cost of \$3.00 per gallon, the cost per mile for a plug-in vehicle in all-electric mode operates at a cost of \$0.034 per mile compared to the gasoline-fueled vehicle at \$0.12 per mile. Off-peak charging with its reduced pricing of electricity will result in even lower costs per mile for EVs. Electric vehicle purchase incentives, the initial absence of highway fuel taxes or petroleum fuel taxes, and other explicit alternative-fuel subsidies would also lower the cost of owning an EV. A further benefit of EV technology, maintenance costs are expected to be lower overall and with no late-in-life engine repairs.

EV owners face a challenge to which owners of conventional vehicles are unaccustomed. They will require convenient, dedicated battery charging wherever they park their vehicle for the longest duration – that is, at “home.” The time, cost and complexity of installing electric vehicle service equipment is an additional hurdle for consumers who purchase electric vehicles. These challenges were evident in the summer of 2009, when BMW rolled out its experimental fleet of 450 Mini-e electric Mini Coopers to drivers in the Los Angeles and New York City areas. The company reported that the time to complete the installation process for home charging equipment was between 22 and 38 days. Such delays highlight the coordination challenges associated with obtaining permits, performing inspections, customer availability, contractor schedules and utility metering installations.

II. E. CONNECTICUT POLICY ACTIONS

In August 2009, Connecticut's Office of Legislative Research (OLR) published a research report on new energy technologies (See, 2009-R-0293).⁹ This report lists the existing legislative actions with respect to sales tax exemptions, environmental policies and Department of Motor Vehicles (DMV) incentives in Connecticut which support the overall adoption of EVs in the state, such as:

- State law exempts passenger vehicles with city or highway fuel efficiencies of at least 40 miles per gallon from sales tax until July 1, 2010 (CSG § 12-412(110)). It appears that this exemption would apply to electric and plug-in electric vehicles. The law also allows municipalities to exempt such vehicles from the property tax (CSG § 12-129s).
- The legislature passed several additional tax incentives for electric vehicles but these have expired. One example is the sales tax exemption for vehicles powered by alternative fuels (including electricity) and for equipment used in electric recharging stations. In addition, there were business tax credits for the purchase of alternative fuel vehicles and investments in alternative fuel facilities and equipment. The credits applied to, among other things: (1) the incremental cost of buying a vehicle exclusively

⁷ Hensley, R., et al. *Electrifying cars: How three industries will evolve*. McKinsey Quarterly (2009).

⁸ A summation of all per kWh charges. CL&P. Rate 1. Effective January 1, 2010.

⁹ McCarthy, K. Policy Questions and Implications of New Energy Technologies. 2009-R-0293, Connecticut General Assembly, Office of Legislative Research (2009)

powered by an alternative fuel and (2) the purchase and installation of equipment incorporated into or used in an electric recharging station.

II. E. 1. ENVIRONMENTAL POLICIES

Environmental impact projections are generally positive for widespread use of electric vehicles. Moreover, there are two significant legislative policy drivers supporting this timely review and analysis of EV infrastructure. First, Connecticut¹⁰ is one of fourteen states that adopted the California Low Emission Vehicle (LEV) program, including the Zero Emission Vehicle (ZEV) in order to reduce pollutants that contribute to the formation of ground level ozone and to commercialize clean car technologies. These standards have since been amended to also include the California Greenhouse Gas tailpipe emission standards (Pavley Standards). Second, the General Assembly recently adopted Public Act 08-98, An Act Concerning Connecticut Global Warming Solutions (GWSA). This Act established the following mandatory greenhouse gas (GHG) emission reduction requirements:

- 10% below 1990 levels by 2020; and
- 80% below 2001 levels by 2050.

In Connecticut, almost 91% of in-state GHG emissions result from the combustion of fossil fuels. The transportation sector accounts for 43% of all fossil fuel related GHG emissions in Connecticut. Achieving the GHG emission reduction targets required by GWSA will be impossible without significant reductions from the transportation sector.

Federal action provides an additional policy framework in which electric vehicles will play an important role. By the fall of 2010, Connecticut expects the EPA to finalize a more stringent national ambient air quality standard (NAAQS) for ground level ozone (i.e., smog). The entire state will likely be considered nonattainment with respect to the new ozone NAAQS and preliminary screening modeling indicates that significant emission reductions will be required to meet the new standard. Additional emissions reductions from the mobile source sector, including benefits derived from EVs, will be necessary to meet future air quality goals.

It is important to recognize that vehicles and fuels operate as a system and should be viewed holistically. In addition to tailpipe emission standards, the regulation of vehicle fuels has the potential to reduce air pollutants and GHG emissions.

II. E. 2. DEPARTMENT OF MOTOR VEHICLES POLICIES

According to the Department of Motor Vehicles (DMV), as of August 2010, there are currently 24 electric vehicles registered in the State of Connecticut. This includes 9 vehicles that were manufactured as electric, as well as 15 others that were converted to electric after manufacturing. Vehicles that are converted to electric after manufacturing must undergo a vehicle inspection at a DMV location to ensure compliance with safety and inspection guidelines.

As a point of interest, a map has been created to show the locations of the currently registered vehicles and their proximity to known and proposed electric charging stations in the State (see page 22).

¹⁰ See Public Act 04-84 amending Conn. Gen. Stat. section 22a-174g

II. E. 2. a. DEPARTMENT OF MOTOR VEHICLE'S EXISTING EV INCENTIVES

The Connecticut Department of Motor Vehicles (DMV) notes the following concerning registration and emissions test standards for EVs.

There are several incentives to encourage Connecticut consumers to buy and operate EVs in the state including an exemption from emissions testing, a reduced registration fee, and exemption from sales and use tax and other registration fees.

- **Registration Fee:** The registration fee for an electric vehicle is \$18.00 per year (or \$36.00 for two years). This is less than half the cost of a registration for a regular passenger vehicle which is \$37.50 per year (or \$75.00 for two years). (See, C.G.S. § 14-49f)

In addition, EV registrants do not have to pay additional registration fees that apply to conventional vehicles.

- **Exemption from Clean Air Act Fee:** The Clean Air Act fee is a \$10.00 fee that is charged to all vehicles when they are initially registered and upon each renewal of the registration thereafter. (See, C.G.S. § 14-49b)
- **Exemption from Sales and Use Tax:** As noted in the August 2009 OLR Report cited above, since January 1, 2008 any passenger motor vehicle, including an electric motor vehicle, that has a US EPA estimated city or highway mileage rating of at least 40 miles per gallon are exempt from the 6% Sales and Use tax requirement until July 1, 2010. (See, C.G.S. § 12-412(110))
- **Exemption from Emissions Testing and Emissions Fees:** Electric vehicles are exempt from emissions testing and therefore also exempt from the two-year testing fee of \$20.00. (See, C.G.S. § 14-164c)
- **Exemption from Emissions-related Administrative Fee:** This is an additional administrative fee of \$40.00 that is charged on new vehicles (four years old or less) that require emissions testing at the time of registration. Electric vehicles are exempt from this fee because they do not require emissions testing. (See, C.G.S. § 14-164c(k)3)
- **Exemption from Greenhouse Gas Reduction Fee:** There is a \$5.00 fee charged at the time of registration for each new motor vehicle with a gross vehicle weight rating of 10,000 pounds or less. Electric vehicles are exempt from this fee. (See, C.G.S. § 22a-201c)

II. E. 2. b. DEPARTMENT OF MOTOR VEHICLE'S WEBSITE (ct.gov/dmv)

The DMV is in the process of developing a webpage dedicated to explaining the requirements and consumer incentives for electric vehicles.

II. E. 3. STATE FLEET PRIORITIES

The State of Connecticut's purchase of state vehicles supports the integration of EVs into its fleet. These purchases must consider not only agencies' needs but also must comply with relevant state and federal laws and other State policy goals.

The Department of Administrative Services (DAS) Fleet Operations provides vehicles for approximately 70 state agencies in support of their transportation needs. In determining what vehicles are necessary and appropriate to purchase, Fleet Operations is governed by a number of different factors:

- Federal law: The Energy Policy Act (EPAAct) mandates that 75% of new purchases consist of alternative fuel vehicles (AFVs).
- State law C.G.S. §4a-67d imposes several requirements on the purchase of fleet vehicles. This requirement includes 50% of all vehicles purchased meet the EPA rating of at least 40 MPG which can include hybrid, AFV or plug-in electric vehicles. In 2012, this requirement increases to 100% of all purchases.
- Agency needs: In order to perform their core missions, agencies may have specific needs with regard to the vehicle size, engine size, trunk capacity, special equipment and/or range.
- Environmental concerns: DAS Fleet makes every effort to purchase vehicle makes and models that have the best MPG and lowest emission output in their vehicle class.
- Availability and cost: With some vehicles, such as hybrids, the number of vehicles available from the manufacturer has been limited. Moreover, DAS must be mindful of the costs of the vehicles, with regard to the initial purchase price, relative fuel costs and other costs over the life of the vehicles.

DAS Fleet has had mixed experiences with vehicles powered by compressed natural gas (CNG) and ethanol (E85). Although these alternative fuel vehicles (AFVs) have certain benefits, they have also posed challenges in the areas of performance, cost, availability and effectiveness in meeting agencies' needs.

DAS Fleet is enthusiastic about the possibilities of plug-in electric vehicles; however, DAS Fleet also recognizes the difficulty in purchasing or assigning these vehicles without a charging infrastructure in place to provide agencies the necessary support to operate plug-in electric vehicles. DAS Fleet believes that using the State's universities as a test-bed would allow personnel to evaluate the performance, range and practicality of these vehicles in a controlled campus setting. Test results would be used by DAS Fleet to help determine which agencies are best suited for plug-in electric vehicles. DAS Fleet is also exploring the feasibility of purchasing or leasing one or more plug-in electric vehicles on a pilot basis to assess cost efficiency and suitability with state agency needs.

III. AREAS OF FOCUS

The intent of this Council has been to focus on and provide analysis of the following key issues:

- Infrastructure – In order to entice automakers to enter Connecticut as an attractive geographic market in their initial EV roll-outs, the state will need to create options for the development of metering and charging infrastructure including placement opportunities;
- Home-based EV charging – Consideration must be given to the installation process and ways to streamline permitting requirements, contractor training for residential equipment installation, and existing limitations in many older homes to support 240-volt electric service for AC charging;
- Further policy planning – Time-of-use (TOU) rate design options for EV charging, metering requirements and highway user fees, given that currently almost 35% of the Special Transportation Fund revenues are derived from taxes on the sale of gasoline;
- Environmental considerations – The interplay of CO₂ reduction programs affecting utility and transportation sectors;
- EV incentives – Identifying ways to encourage Connecticut consumers to buy and operate EVs, including tax incentives, financing and grants; and
- EV education – Building awareness and understanding among consumers, contractors, electrical code inspectors and stakeholders, including but not limited to first responders and other emergency personnel.

III. A. VEHICLES

The overall benefits associated with EVs have been well publicized and are in the news almost daily. The auto industry is touting its new generation of EVs as true zero emission vehicles for the future. The expected benefits are a greener carbon footprint for the consumer, reduced dependence on fossil fuels, and overall affordability given the support of currently available federal and state incentives. It is expected that EVs will have a lower total cost of ownership compared to a conventional car with an internal combustion engine (ICE) over the life of the vehicle, as well as lower maintenance costs since EVs are less complex and do not require an engine or other traditional maintenance charges.

The industry provides an estimated cost-per-mile comparison as follows:

- Gasoline-fueled cars will incur an estimated \$1,800 annually or \$0.12 per mile, assuming an average 25 miles per gallon at \$3.00 per gallon of gasoline;
- Battery-powered EVs will incur an estimated \$396 annually or \$0.026 per mile, assuming electricity at \$0.11 per kilowatt-hour.¹¹

¹¹ See Nissan's "Zero Emissions Future" presentation to the Council on May 21, 2010, p. 11 (available online at: <http://www.ct.gov/dpuc/evic>).

Eventual mass market deployment of EVs in Connecticut would support the state's strict environmental air quality standards, develop green job growth and business opportunities, provide consumers with an alternative fuel vehicle choice and provide fuel cost savings for the State and consumers alike. In order for these benefits and savings to materialize, Connecticut needs to be in the forefront for promoting EV technology and attracting automakers to include Connecticut in their initial roll-out and delivery schedules.

While EVs are nearing introduction in the next 12 months, initial availability is not a given in all geographic markets. Automakers such as Chevrolet and Nissan will be introducing EVs to selected markets in late 2010 and early 2011. The states and markets not included in the initial roll-outs will wait longer to receive vehicles. Availability of programs to deploy charging infrastructure and incentives for EV owners will favorably influence early vehicle placement and support early consumer acceptance in Connecticut.

In order for Connecticut to be EV ready, it is imperative that the State partner and work with car manufacturers in order to be included in the early roll-outs of EVs. As the Governor is well aware and the Council is pleased to report, two major developments transpired in recent months that demonstrate significant progress in achieving the goal of partnering with EV auto manufacturers. On July 1, 2010, GM made an announcement that Connecticut is one of four states added to GM's Chevy Volt initial roll-out. Also, the State of Connecticut is prepared to enter into a letter of understanding with Nissan to work on developing infrastructure, addressing permitting processes for residential charging equipment installations, and informing the public about the benefits relating to EVs and air emission reductions. Being selected for early EV roll-outs confirms Connecticut's pioneering role to advance clean energy technologies and to lead the way in offering residents an alternative-fuel transportation option. As a result of Governor Rell establishing the Electric Vehicle Infrastructure Council to commence discussions on preparing the state for "the rapid and seamless integration of EVs," Connecticut is now working to make EVs part of our transportation, energy and climate future.

A potential hurdle to accelerating acceptance and integration of EVs in the market relates to the initial purchase cost of these vehicles. Section II D of this report discusses the challenge presented by the higher average cost of purchasing an EV compared to traditional ICE vehicles. Bringing down initial purchase costs for consumers remains a significant issue. In order to fully promote the integration of EVs, serious effort by state policy makers, stakeholders and private entities alike should be undertaken with the intent of collaborating and entering into partnerships to make these vehicles more affordable to Connecticut consumers.

Therefore, it is the Council's recommendation that any incentives, grants or tax rebates would further the State's objectives to diversify its transportation and fuel sources, to meet established goals for carbon reductions, and to create further job growth. To that end, the Council recommends continuing the sales tax exemptions for alternative fuel vehicles which expired on July 1, 2010. The Council also recommends that other benefits and conveniences be offered to potential EV customers in the form of access to High Occupancy Vehicles (HOV) highway lanes regardless of the number of passengers, and preferential parking opportunities at public garages and public transportation sites.

Regarding HOV lane access for EVs, there are several steps that must be taken first by the U.S. DOT and subsequently by the State in order to obtain Federal Highway Administration (FHWA) acceptance to change Connecticut's present HOV occupancy requirements to allow for EVs and to accommodate single occupant EVs. These steps are identified below and would involve and incur additional costs by the Departments of Motor Vehicles, Public Safety and Transportation:

- 1) Develop and implement a program to identify, register and designate EVs;
- 2) Develop and implement a program for monitoring, evaluating and reporting the use of HOV facilities by single-occupant EVs;
- 3) Expand existing HOV facility enforcement program to address the addition of single-occupant EVs to the HOV facilities;
- 4) Develop and implement a public information program addressing the addition of single-occupant EVs to the HOV facilities; and
- 5) Establish policies and procedures which trigger a restriction or discontinuation of single-occupant EVs in the HOV facilities should levels of service be degraded.

The above steps assume the continuation of current federal requirements for states to allow single-occupant EVs to utilize HOV facilities. However, current regulations are approaching expiration. While they were extended by Congress through December 31, 2010, the regulations final form are not likely to be established until reauthorization of national surface transportation legislation. It is therefore recommended that any actions to allow single-occupant EVs in Connecticut's HOV facilities be postponed until reauthorization is completed. However, the DOT is prepared to coordinate an interagency study of the potential use of HOV lanes for single-occupant EVs upon the reauthorization of federal HOV guidelines.

The issue of who pays for EV charging infrastructure remains a challenge. It is the Council's expectation that both public and private money will need to be utilized to promote the development of sufficient infrastructure to avoid "range anxiety" - that is, the fear of not having enough power once out on the road. Local employers and retailers could provide some charging stations as a marketing tool. Utilities and other stakeholders could install public charging units in high-traffic zones and parking areas. Car dealerships could consider providing affordable or free Level 2 home charging units for a limited time to ensure smooth transitioning for the EV market. Without solutions provided by both private and public collaboration, consumers will be hesitant to transition to EVs.

The Council is optimistic about the prospect of federal funding as exemplified by the work of the Greater New Haven Clean Cities Coalition. The Council was informed by Coalition director Lee Grannis at its April 2010 meeting that his organization applied for and was one of 25 award winners of a grant offered by the U.S. DOE in the amount of \$13,195,000. New Haven Clean Cities is using its federal funds to purchase several alternative fuel vehicles for the City's use and to purchase and install charging units in 3 locations across the state that will have 11 charging stations in total. Furthermore, both regulated electric utilities in the state, Connecticut Light and Power and United Illuminating, as well as the municipal utilities are also considering installing several charging units as part of their respective business plans. The Council is optimistic that this statewide momentum will serve to attract additional public and private investment to meet infrastructure and funding needs.

Consideration should also be given to the ability to quickly identify EVs by sight in an emergency situation. Since different manufacturers utilize different methods and insignias to "badge" their particular models, it would be extremely valuable to emergency response personnel for the State to implement a standardized and complementary system that would immediately and accurately indicate the vehicle's specific alternative-fuel type. Such a system would also assist

State Police in enforcing the potential usage of HOV lanes by single-occupant EVs. As a result of the work of the EVIC and its preliminary report, the Governor's Office has already convened an extensive working group, EV Licensing, Electricians, Chargers, Training, Responders & Installation Committee (ELECTRIC) that has begun to address these very issues among others.¹²

The second safety-related concern about EVs is their low - or no-sound operating characteristic. Pedestrians both sighted and blind, as well as bicyclists, rely on the sounds of approaching motor vehicles to detect the presence of possible conflicts. A report to the United States Congress in October 2009 by the National Highway Traffic Safety Administration (NHTSA) National Center for Statistics and Analysis (NCSA), examined the incidence rates of crashes involving pedestrians and bicyclists with plug-in hybrids, and compared the results to crashes involving conventional gasoline-powered vehicles under similar conditions. The NCSA study found that plug-in hybrids have a higher incident rate of pedestrian and bicyclist crashes in certain vehicle maneuvers at slow speeds (under 6 mph). As a result of these findings, NHSTA is currently working to assess how plug-in hybrids and EVs could be required to emit a base level of sound at low speeds to provide some audio cues to bicyclists and pedestrians that a vehicle is approaching. The Council notes that in Congress, the Pedestrian Safety Enhancement Act has been proposed which would require the Secretary of Transportation to establish safety standards so that plug-in hybrids and EVs in motion would produce sounds for alerting pedestrians.

III. B. HOME-BASED CHARGING

One of the most significant factors in advancing EVs is the development, installation and maintenance of the charging infrastructure. Charging will occur at home, at work or at public spaces. However, it is estimated that about 70 to 80% of EV charging will occur at home – for consumers, this is their house, condominium or apartment. The time, cost and complexity of installing charging equipment may be a hurdle for EV buyers. This challenge was experienced in summer 2009 when BMW rolled out an experimental fleet of 450 Mini-e electric Mini Coopers in the Los Angeles and New York City metro areas. Installation of home charging equipment ran between 22 and 38 days. The delays highlight the coordination challenges associated with obtaining permits, performing inspections, customer availability, contractor schedules and utility metering installations. Consequently, one EV manufacturer, Nissan, will be offering, if not requiring, an on-site installation and service assessment before a vehicle will be leased to a consumer. The ELECTRIC working group convened by the Governor's Office has begun to proactively address some of these issues (See, Appendix H for contact list).

There are three levels of EV charging stations, one of which is currently not available for use in homes and places of business.

- Level 1 uses the typical 120-volt, 15 amp circuit found in both residential and commercial buildings in the United States. Level 1 charging equipment is typically installed on the vehicle and the 120-volt alternating current (AC) is brought to the vehicle via a plug and cord set. Depending on the car and the state of charge of the battery, it can take as long as 8-16 hours to charge the battery.
- Level 2 charging can be used in both public and private facilities and specifies a 240-volt AC, 40 amp circuit. A typical full charging time can be as little as 4 hours.

¹² See list of ELECTRIC working group members and affiliations in the appendix.

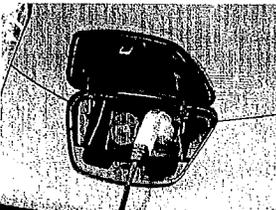
- Level 3 or “fast charging” is intended for use in commercial and public applications to function like a commercial gasoline service station. By far the most expensive of the three charging technologies, (due to its complex technical components and associated staffing requirements), it will use a 480-volt AC three-phase circuit and will have a huge advantage in speed, charging some vehicles in about 15 minutes.¹³ However, the Level 3 charging stations are not yet readily available.

The following charts detail the different charging stations as well as cost estimates for Level 1 and 2 equipment.

CHARGING BASICS



EVSE	Utility Service	Usage	Charge Power	Time to charge
Level I	120V - 12A	Opportunity	1.4 kW	16 hrs
Level II	240V - 15A to 30A	Home/Public	3.3kW - 6.6 kW	4-8 hrs
Level III	480V – 100A to 400A	Public/Private	50 - 200 kW	20 mins (80% SOC)



- Level 2 charging universal standard (SAE 1772) and used by all OEMs
- Level 2 highest penetration for home and public charging
- NEC requires Level 2 chargers be “hardwired”
- **The standard for Level 3 charging is still pending as of Q1 2010.**




¹³ Sources: US DOE Technologies Program- Advanced Vehicle Testing Activity, Plug-In Hybrid Electric Vehicle Charging Infrastructure Review – Final report Battelle Energy Alliance Contract No. 58517, November 2008.

Directional Cost Estimates for Level 2 Infrastructure

	Level 2 Home Charge Point	Level 2 Public Charge Point
Hardware (EVSE)	\$700	\$3,000
Quote/Permitting/ Admin	\$200	\$500
Labor - Typical	\$900	\$3,500
Labor - Range	\$200 - \$5,000	\$1,000 - \$10,000
Materials	\$200	\$500
Total Estimate (Typical)	\$ 2,000	\$ 7,500

Affordability will be Key



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Sources:

- Charging Basics (Plug-In Vehicle Charging Standards for North America), page 14 of Nissan's PowerPoint presentation to the Council on May 21, 2010. (See: www.ct.gov/dpuc/evic website).
- Directional Cost Estimates for Level 2 Infrastructure, page 17 of Ford's PowerPoint presentation to the Council on May 21, 2010. (See: www.ct.gov/dpuc/evic website).

EV buyers will desire a quick turnaround from the time they purchase their car to when they can charge them at home. To that end, the Council recommends that Connecticut car dealerships assist customers by getting their permission to inform local building inspectors thus expediting the process required for inspection of charging stations at homes and businesses. Dealerships could also play a role in educating potential EV customers on safety issues, getting them into the routine of overnight charging, and suggesting how to find trained mechanics and electricians. The Council would further suggest that car dealerships consider creating a liaison position with the State Building Inspector's Office to help streamline the process of in-home charging installations.

It should also be noted that Governor Rell has taken several steps since establishing the Council to further the development and growth of the electric vehicle industry in Connecticut. On February 9, 2010 Governor Rell requested that the state Codes and Standards Committee establish a plan for updating the state building code to accommodate and set goals for EV infrastructure needs at commercial and residential dwellings throughout the state. The Governor also requested that there be a streamlined permit process for implementing these standards. (Letter is in Appendix C)

More work is needed to develop standards for EV charging equipment installation, permitting and interconnection requirements for homeowners, drivers and businesses to establish uniform

best practices and to streamline the process for EV ownership. The Council notes that a working group has been established and has begun to meet to address the issues of preparing building inspectors, code officials, contractors and electricians for the arrival of EVs and the installation of EV charging equipment in homes and businesses.

III. C. INFRASTRUCTURE PLANNING AND POLICIES

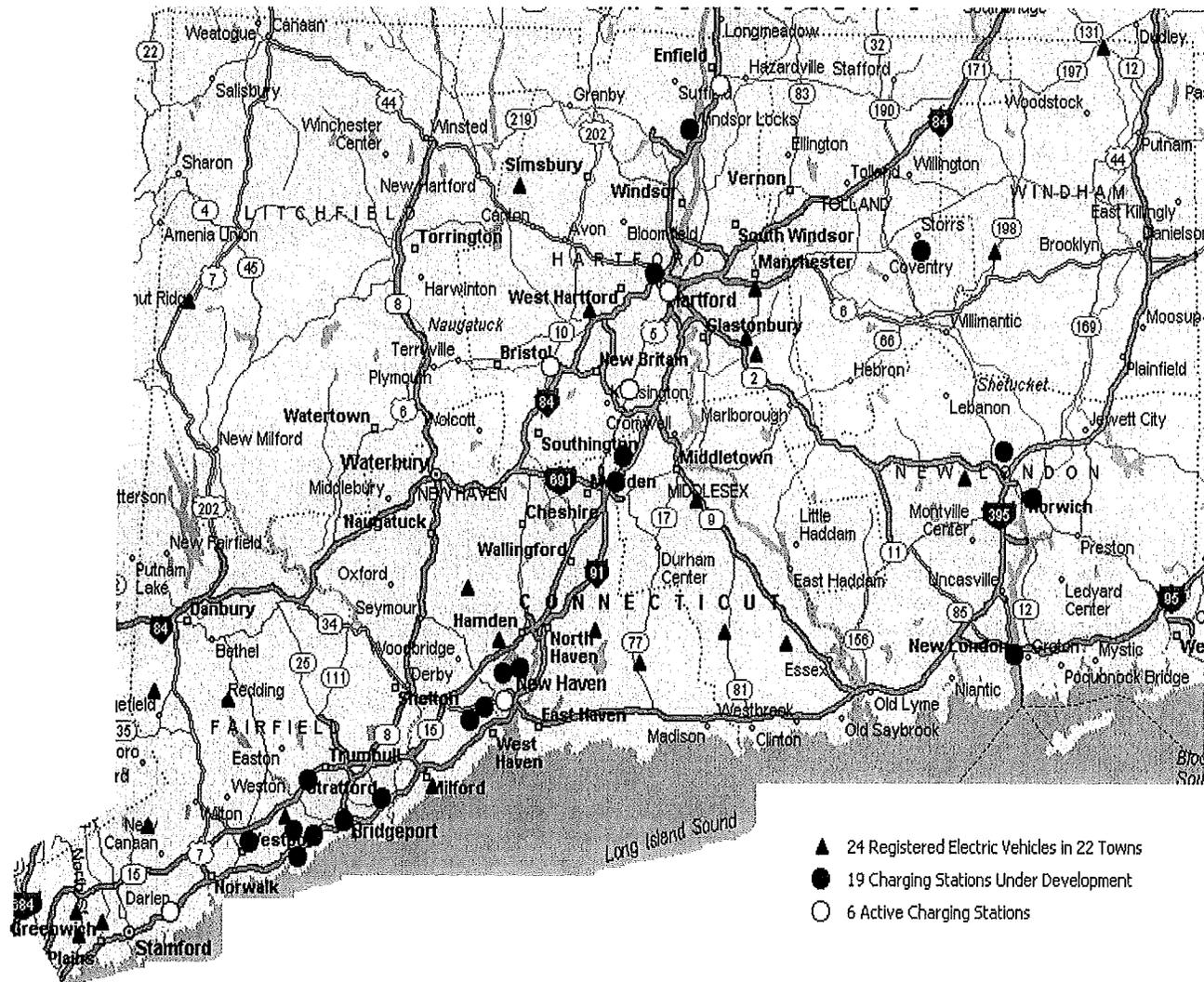
In order to prepare for the initial arrival of EVs and their eventual transition to wider market integration, Connecticut must develop infrastructure for EV charging. This will require policies and technology deployment in order to encourage growth of EVs as a viable option for consumers. It is the Council's belief that infrastructure for convenience charging (retail, workplace, curbside locations, parking garages, etc.) will evolve over time with proper support, oversight and consumer protection laws in place.

The Council closely examined the degree to which consumers will need options for both home and public charging and metering. Several auto manufacturers attended the Council's May 2010 meeting and noted that EVs being developed for the mass market have an expected range of 40 miles before requiring recharging. The industry estimates that on average 95% of the U.S. population drives less than 100 miles a day.¹⁴ Their research also indicates that the typical user will charge their vehicle at home. However, there were some concerns raised regarding "range anxiety", thus necessitating the availability of public charging. To further understand and overcome this concern, the Council has recommended that CBIA query its members in its next survey on whether they would consider installing charging stations in their parking facilities for their employees/fleets as well as for the public. The Council further recommends that the state DOT consider when re-evaluating any new contracts at its train stations, airports, commuter parking lots, service plazas and visitor centers whether charging stations can be included in any proposals it receives.

The Council is pleased to provide a map on the following page which shows current and planned EV charging stations available for public use in Connecticut.

¹⁴ See Nissan's "Zero Emissions Future" presentation to the Council on May 21, 2010, p. 7 (available online at: <http://www.ct.gov/dpuc/evic>).

Map of Registered Electric Vehicles and Electric Vehicle Charging Stations (As of 8/31/10)



The Council believes that an opportunity exists for a regional collaboration to enhance infrastructure and build customer confidence that neighboring states will proactively support EV use throughout the Northeast. The Council recommends that Connecticut consider initiating the establishment of a “regional alternative fuel corridor” and collaborate with the Council of State Governments (Eastern chapter), the New England Governors Council, and the Clean Cities organization to further explore such development.

The Council appreciates and recognizes that Connecticut’s electric distribution companies (EDCs) are also preparing for and promoting the arrival of EVs in the near future. Through their separate efforts and those of the Regional Electric Vehicle Initiative (REVI)¹⁵, representatives of

¹⁵ Regional Electric Vehicle Infrastructure (REVI) consists of six utilities including NU/CL&P, UI, NStar, National Grid, CMEEC and MMWEC. REVI supports regional and state policy goals to reduce greenhouse gas emissions and develop alternative fuel resources, utilizing the region’s existing electric system for the charging infrastructure of plug-in electric vehicles (EVs) coming to market beginning in late 2010. The group is organized to exchange information and establish shared positions and priorities for the region.

the regulated utilities and municipal utilities along with NRG Energy have spent numerous hours participating in local and regional stakeholder group discussions, volunteering their time and expertise to further advance the transition to EVs. The utilities can continue to play a variety of roles in this regard. A utility may conduct system impact studies; offer attractive rate options to customers with EVs that encourage off-peak charging; deploy safe and reliable electricity metering at key locations (to include related home-based infrastructure, commercial charging infrastructure and public charging infrastructure); monitor and manage distribution system level infrastructure needs; and encourage the use of renewable energy resources to serve plug-in electric vehicle load.

The Council is informed that numerous EV initiatives are being spearheaded by the state's energy providers:

Connecticut Light & Power (CL&P) is implementing its 2010 Electric Vehicle Infrastructure plan which emphasizes: the deployment of charging infrastructure and other infrastructure necessary to adequately support the use of plug-in electric drive vehicles; adherence to standards of interoperability and compatibility with products of all vehicle manufacturers to the extent possible; and the development of an overall regulatory framework for providing safe, reliable EV charging services to residential, business and municipal customers. CL&P's current initiatives and focus areas include:

- Maintaining positive relationships with leading automakers to facilitate Connecticut's opportunities for early vehicle availability (i.e., Chevy Volt and Nissan Leaf);
- Conducting 2010/2011 research pilots with EV charging equipment based at company locations initially and expanding to approximately two dozen participating businesses and communities;
- Providing pilot results and shared data as available to inform pricing and policy recommendations for 2011 implementation;
- Developing a forecasting model to predict EV purchase penetration, recharging and distribution system demand scenarios, building on the EPRI-supported distribution system analysis;
- Coordinating potential expressions of interest for EV purchases by state utilities, agencies and other organizations as liaison with automakers;
- Actively participating in the Electric Power Research Institute, (EPRI), Infrastructure Working Council and other numerous other national groups to formulate industry specifications and guidelines;
- Collaborating with neighboring states and peer utilities in New York, Massachusetts, Rhode Island in support of a regional corridor for EV charging in the Northeast; and
- Providing technical guidance to trade allies and other stakeholders through training sessions and educational materials.

The United Illuminating Company (UI): has also been deeply involved in EV technology for some time. Two years ago, the company commissioned its own EV by having a Toyota Prius

converted to a plug-in hybrid EV. Currently, UI is supporting the arrival of EVs in its service areas by:

- Providing ongoing education to interested customers through numerous community events and expos on EV technology;
- Participating in industry groups such as the Electric Drive Transportation Association (EDTA) and staying engaged with EV happenings at the federal level;
- Working with EPRI and other EV partners on programs such as the EPRI/GM/Utility collaboration and the Ford “trouble truck” pilot test to gain insight on EV operational opportunities;
- Developing a program offering for in-home Electric Vehicle Supply Equipment (EVSE) which will serve as the charging infrastructure for residential customers;
- Conducting a pilot program to determine test locations and install a network of public and residential EVSE charging stations, with the ability to collect information such as installation costs, consumer charging behaviors, and related criteria;
- Collecting and analyzing test data to design an energy efficiency offer to customers similar to UI’s DPUC-approved, off-peak water heater leasing program, whereby the costs of the charging station, installation services and permitting, and ongoing maintenance would be paid monthly by the customer over the life of the equipment; and
- Working with peer utilities to promote informed customer choices and open-access standards throughout the state and the region.

NRG Energy: One of Connecticut’s largest power generators, is also working to stimulate broad, rapid adoption of EVs in Connecticut. In a presentation to the Council, NRG representatives demonstrated that new EV buyers want to know when they drive out of the dealership that their home charging set-up will be ready to go and that a public charging network is conveniently available. NRG reported it is:

- Working on deploying EV infrastructure nationally, with plans to make a significant investment in EV infrastructure in the Northeast.
- Piloting a unique EV ‘Ecosystem’ approach in Houston, Texas.
- Taking steps to bring a hybrid of the Ecosystem model to Connecticut consumers by partnering with automakers and competitive retail electric suppliers to provide a seamless, turnkey driving experience for EV purchasers right out of the auto dealer’s showroom.
- Bundling the cost of the home charger with a mileage contract to lock in the cost per mile for a fixed term, and rolling these costs into the EVs initial purchase price to provide convenience, finance-ability, and price certainty to consumers as they shop the EV option.

The Council encourages continued progress on the above initiatives. The Council also notes that certain issues would be best addressed using existing regulatory channels. For example, any new tariff by a regulated electric utility would need to be filed at the appropriate time for the review and approval of the DPUC as are all tariff-based electric utility offerings currently available to customers.

Additional roles necessary for EDCs or other EV service providers to perform may include:

- EV customer service support to build customer readiness;
- Streamlining processes for on-site EV charging equipment installation EV purchase rebate incentives;
- Low-interest bill finance options for infrastructure upgrades on the customer side of the meter; and
- Innovative solutions from both the wholesale and retail energy market participants on business opportunities beyond what is mentioned here, in order to expand consumer choices and support the State's vision for growing Connecticut-based green jobs.

Moreover, the Council notes the need to develop infrastructure using open standards to best achieve access and interoperability of EV supply equipment. State officials and policy makers will also need to establish clear policy approaches to promote installation of charging equipment in homes, public places and state-controlled locations. As noted previously, further dialogue and collaboration should be pursued with regional groups and neighboring states to develop an EV action plan for the Interstate 95 travel corridor.

III. D. ENERGY & ENVIRONMENTAL PLANNING AND POLICIES

The Council devoted substantial time to understanding, discussing and, as appropriate, developing recommendations for various environmental and energy policy initiatives related to the emerging EV market and what it will mean for Connecticut.

III. D. 1. ENERGY POLICIES

Plug-in electric vehicles are expected to impact the electricity system in various ways. Vehicle electrification will increase energy demand and alter peak load shapes; and although the electricity generation sector's emissions will be increased in future years once there are large numbers of EVs in use, the net result will be a reduction in CO₂ emissions overall.

Managed load from plug-in electric vehicles, through an appropriate tariff or other command and control mechanisms, has the potential to increase off-peak demand. This would flatten the electricity system load shape and also improve utility system utilization while increasing the system load factor. In the long-term, according to industry reports, there is an opportunity to use plug-in electric vehicle load to provide "supply-following" demand that supports intermittent renewable resources such as wind energy.

Determining how EV charging will impact electricity demand must be considered in the infrastructure planning process. As previously mentioned, it is expected that about 80% of EV charging will take place in the EV owner's home garage when the car is parked overnight. To

optimize off-peak hours when ample electric supply capacity is available, time-of-use rates could be implemented to provide additional incentives for nighttime charging. Given this anticipated behavior and projected initial purchase levels for EVs, the current power generation infrastructure will be more than sufficient to support significant adoption of EVs well into the future. With a gradual increase expected in the number of EVs purchased year to year, there will be time to gauge market activity and deliberate whether new electric supply is needed to meet future load requirements. This would be driven by EVs as well as other yet-to-be-determined factors that could increase end-use electric demand.

Furthermore, a comprehensive and wide-ranging 2007 joint study by EPRI and the Natural Resources Defense Council (NRDC) looked at the impact on power demand of drivers charging plug-in vehicles at different times during the day. The study assumed a gradual ramping up of electric vehicles into the current U.S. fleet of 300 million vehicles and concluded that electric cars will only impose marginal increases on the electric grid. The load of one plug-in recharging (about 2 kilowatts) is roughly the same as that of four or five plasma television sets in use. Two other studies by the Pacific Northwest National Laboratory and Oak Ridge National Laboratory concluded essentially the same thing. Finally, upgrading local distribution equipment is an issue that utilities plan for and manage on a continuing basis as household electric usage inches up due to new consumer electronics and other equipment. CL&P participated in EPRI's 2010 study that examined individual circuits under various charging scenarios; results indicated no significant strain to the local network and validated that CL&P's ongoing distribution management system will adequately address EV load as part of normal operations.

According to the utilities, the addition of utility metering or similar technologies dedicated to measuring plug-in electric vehicle loads could be helpful on several fronts: measuring the net reductions of CO₂ emissions, providing rate incentives for off-peak charging, supporting supply-following of demand with renewable resources, load management functions, measuring usage for possible highway user fees, and other functions. However, additional metering has a cost in terms of installation time, expenses and impact on consumers. Additional study of this matter will be useful for determining Connecticut's recommended practice. The telecommunication industry is also engaged in technology applications and product development for communication connectivity and data acquisition from EVs and EV charging stations that will enable many of the activities listed above; many of those functions are expected to be achievable within ten years.

Market experts are projecting that the volume of EVs purchased by consumers will gradually increase over time as the technology becomes more accepted and consumer confidence in driving EVs grows. A manageable level of growth will provide utilities with the flexibility to react to any volatile external factors and changes to demand on the grid.

Consideration was also given to developing a better understanding of Vehicle-to-Grid technology (also referred to as V2G). Some theories envision the future possibility of a system whereby EVs plugged into the grid could charge their batteries when needed and also store excess electricity that can be sent back to the grid when demand is high. In other words, electricity flows from generators through the grid to EVs when they are charging; conversely, electricity could flow back to the grid from the batteries in EVs, when triggered remotely from the Independent Grid Operator (ISO) via broadcast radio signal, a cell phone network, or power line carrier. The grid operator could send a request for power to a large number of vehicles. The signal may go directly to each individual vehicle, to a fleet operator, or through a third-party aggregator to dispatch power from individual vehicles.

Although this future V2G model seems possible, two elements are currently missing: a sufficient number of EVs deployed to ensure reliable demand response to support the grid, and communication capabilities to send the signal and validate the response. Automakers have expressed concerns about the impact on battery reliability if this strategy were deployed (currently equipment warranties apply to “one way” charging only). The utilities project this strategy could take ten years to be developed.

III. D. 2. CLIMATE-RELATED INITIATIVES AND THE TRANSPORTATION SECTOR

On December 30, 2009, the Governors of 11 Northeast and Mid-Atlantic states, including Governor Rell, took the next step toward developing a regional Low Carbon Fuel Standard by signing a Memorandum of Understanding (MOU) that commits their states to continued participation in a regional effort to reduce greenhouse gas emissions from fuels for vehicles and other uses. A low-carbon standard is a market-based, fuel-neutral program to address the carbon content of fuels. If adopted by states, it would apply to the transportation sector and potentially to fuels used for heating buildings. A regional agreement has the potential to reduce transportation-related greenhouse gas emissions, which represent approximately 30 percent of emissions in the region, and reduce regional vulnerability to petroleum. Electricity for EVs would be included in this program and would potentially receive allowances in such a program because of the favorable CO₂ emission profile.

On June 15, 2010 in Wilmington, Delaware, the Northeast and Mid-Atlantic states, including Connecticut, entered into a “Declaration of Intent” whereby the heads of the state-level environment, transportation and energy agencies affirmed their intent to work together to reduce Green House Gas (GHG) emissions from the transportation sector. This group is an extension of the original Regional Greenhouse Gas Initiative (RGGI) states. Working within the respective federal and state authorities, the officials agreed to establish a Transportation and Climate Initiative (TCI) in order to:

- Further reduce GHG emissions;
- Minimize the transportation system’s reliance on high-carbon fuels;
- Promote sustainable growth;
- Address the challenges of calculating vehicle-miles travelled; and
- Help build the clean energy economy.

The group’s next steps include launching a three-year plan to explore and develop policies and programs that can result in greater energy efficiency of regional transportation systems and yield reductions of regional GHG emissions in the transportation sector. The draft plan is expected to be reviewed and considered for approval at the next meeting of the TCI in the fall of 2010. Key staff and commissioners from Connecticut’s Department of Environmental Protection, Department of Public Utility Control and Department of Transportation are participating in the TCI endeavors on behalf of the state.

The Council views the above-mentioned initiatives as a means of linking EV programs to regional transit and air quality programs and as an opportunity to integrate them into Connecticut’s transportation and air pollution policies. Also, through collaboration with these

national and regional organizations, the state may find resources and potential sources for funding infrastructure and vehicles.

Lastly, while concerns have been voiced over potential environmental issues associated with the batteries of electric vehicles, the effect, if any, should be negligible. Automobile manufacturers have all instituted return protocols, with one offering incentives to ensure the recycling of the batteries. If the manufacturers proscribed recycling recommendations are adhered to, any increase in volume of batteries should not present environmental issues.

Recommendations on education or training for automobile dealers and repairers as well as emergency response, fire and public safety personnel should include attention to proper disposal through recycling of the batteries to avoid environmental contamination.

III. E. ECONOMIC DEVELOPMENT

Over the past nine months, the Electric Vehicles Infrastructure Council has heard from many of the participants and stakeholders of the electric vehicle industry that this emerging field with its associated technology promises not only environmental benefits but that it has potential to become a significant economic driver.

Based on the Council's due diligence, it is apparent that Connecticut is well positioned to be a major contributor to and beneficiary of this emerging industry for four key reasons, each of which is discussed in detail below:

- Intellectual Capital
- Geography
- Infrastructure
- Incentives

III. E. 1. INTELLECTUAL CAPITAL

One of Connecticut's competitive advantages is the state's significant intellectual capital in terms of a highly educated workforce, network of public universities, numerous private research and development (R&D) facilities, and a rich trove of intellectual property.

The Connecticut Business and Industry Association (CBIA) reports that:

- Connecticut ranks 3rd in the U.S. for having a highly educated workforce with 15% of the adult population holding advanced degrees;
- Connecticut has strong R&D companies and is ranked 2nd for industrial R&D as a share of the Gross State Product; and
- Connecticut is ranked 8th in U.S. patents with 93.9 per 100,000 workers

III. E. 2. GEOGRAPHY

One of the keys to successful adoption of EVs is the availability of adequate charging facilities to overcome consumers' potential "range anxiety," a major obstacle to broad acceptance. Connecticut's geographic size should be viewed favorably by the automotive industry as well as potential buyers since all points in the state can be reached within a 70 to 110 mile radius. Given the range of most EVs, This geography should allow for efficient, timely and economic

deployment of the necessary and appropriate infrastructure around the state. The state's major highways would provide adequate charging corridors as infrastructure is installed along those travel routes.

III. E. 3. INFRASTRUCTURE

Connecticut is home to several companies that are well positioned to become leaders in the development and provision of the technology needed to produce and support electric vehicles. These companies have the potential to develop future products and infrastructure support and their R&D efforts should be encouraged to achieve growth and improve economic and business opportunities in this area.

Some of these Connecticut-based companies include:

- Amphenol, Wallingford
- Blu Print Automotive Conversion, South Windsor
- Control Module and CabAire, Enfield
- General Electric, Plainville and Fairfield (corporate headquarters)
- Integro, Meriden
- ITT Cannon, Watertown
- Proton Energy, Wallingford
- Yardney, Pawcatuck
- Utility companies – NU/CL&P, UI and CMEEC

One example of an infrastructure supplier in Connecticut is CabAire LLC which operates a major truck electrification installation on Interstate-95 in North Stonington. Trucks using the facility can shut off their engines in order to stop idling and wasting diesel fuel to run heaters, air conditioners, etc. CabAire uses charging posts to provide HVAC to the trucks currently and, in the future, they will be adapted to allow the standard J1772 plug to connect to one of the outlets on the truck electrification tower. New EVs and all electric trucks can use this adapter for battery charging. This existing infrastructure will serve as a model for travel plazas and other high traffic areas around the state.

Through the course of its research and presentations, the Council also learned that:

- Jobs in the energy field have a 9% anticipated growth rate over the next 10 years with job multipliers of 1.51 per worker (See, CBIA presentation, June 4, 2010 available on: www.ct.gov/dpuc/evic).
- The Connecticut Development Authority (CDA) has been qualified by the U.S. DOE to participate in the Loan Guarantee Program that receives funding through the American Recovery and Reinvestment Act to help lower the costs of financing energy projects.

In addition to gauging consumer interest in EVs, the Council understands that businesses and other organizations throughout the state may incorporate clean transportation programs into their various climate change and sustainability initiatives. The Council is working with CBIA to include questions about EV attitudes and purchase intent in the trade association's annual member survey (to be released in the fall of 2010).

III. E. 4. INCENTIVES

The Council's February 2010 report indicated that Connecticut had no targeted state incentives to support the deployment of charging infrastructure or encourage consumer usage of electric vehicles. However, the Council in this final report has delineated some of the current incentives contained in state law under DMV and DAS's purview. In addition, traditional economic development programs also exist to assist manufacturers and certain types of companies that locate in Connecticut to develop technology and produce products as well as to deploy needed infrastructure.

Moreover, Connecticut has one of the most competitive Research and Development tax credit programs in the nation. In addition, companies seeking to expand their new and/or existing technology into the electric transportation industry have a financing resource in the Clean Technologies Fund, administered by the Connecticut Clean Energy Fund.

The Council notes that several legislative initiatives were initially proposed during the 2010 Legislative Session:

1. HB 5440 AN ACT CONCERNING AN ELECTRIC VEHICLE INFRASTRUCTURE

This proposed bill would promote and incentivize the use of electric and hybrid vehicles in Connecticut. Substitute Bill 5440 was a revision to the underlying bill which called for the State Building Inspector and the Codes and Standards Committee to revise the State Building Code to provide for an EV infrastructure. The amendment also required the EDCs to file plans with the DPUC on their proposals for time-of-use rates specific for the class of EV owners to encourage them to charge during off-peak times. The amendment would also facilitate the more rapid consideration of issues necessary to deploy infrastructure to support EVs including that deployed infrastructure be interoperable with products of all vehicle manufacturers to the extent possible. The amendment included consideration that the DOT review the process to allow EVs and hybrids access to HOV lanes regardless of number of occupants, and include a report to the Governor and the General Assembly of its findings.

2. HB 5465 AN ACT CONCERNING THE DEVELOPMENT OF GREEN JOBS

The bill in part would authorize Connecticut Innovations to use its fund to foster the growth, development and commercialization of renewable energy sources and related enterprises; to stimulate demand for renewable energy and deployment of renewable energy sources that serve end-use customers in this state; and to support operational demonstration projects for advanced technologies that reduce energy use from traditional sources and for transportation projects, such as those supporting plug-in EVs.

While these legislative proposals ultimately failed to receive action by the legislature, they did signal an interest by state policy-makers that investments and additional incentives should be considered in order to spur economic growth and consumer acceptance of EVs in Connecticut. To keep Connecticut competitive with other states, the Council strongly supports the timely development of a legislative proposal for the 2011 session that offers some form of targeted state incentives to promote EV infrastructure and consumer usage. Presently, Connecticut has no such targeted incentives. Fiscal/budgetary constraints will need to be considered when proposing these incentives.

III. E. 5. FEDERAL INCENTIVES/PROGRAMS

The federal government is presently considering several pieces of legislation which could benefit the state of Connecticut. These proposals would include joint efforts from the public and private arena. The federal legislative proposals of interest which the Council wishes to highlight here include:

- **Pending U.S. Senate and House Legislation**

There are two bipartisan legislative proposals to develop infrastructure, incentivize the adoption of EVs, and conduct various research studies. The Electric Drive Vehicle Deployment Act recently passed the Senate's Energy and Natural Resources Committee and the other bill was introduced in the House.

Respectively, the separate bills were sponsored by: U.S. Sens. Byron Dorgan (D-N.D.), Lamar Alexander (R-Tenn.), and Jeff Merkley (D-Ore.); and U.S. Reps. Edward Markey (D-Mass.), Judy Biggert (R-Ill.), Jerry McNerney (D-Calif.) and Anna Eshoo (D-Calif.).

- **S 1462 American Clean Energy Leadership Act**

Section 422 authorizes funds for a Domestic Vehicle Manufacturing Program to assist with the development of a domestic battery manufacturing industry.

- **Kerry-Lieberman American Power Act**

Use of materials or equipment associated with the construction or maintenance of transportation projects that reduce greenhouse gas emissions; public facilities for supplying electricity to electric or plug-in hybrid-electric vehicles.

Authorizes the auction of 1% of allowances in 2013-2020 and 0.5% in 2021, the revenues from which will be deposited in the Clean Vehicle Technology Fund (section 4111) to fund facility conversion grants to vehicle manufacturers and component suppliers to pay the costs of re-equipping or expanding an existing manufacturing facility in the United States to produce qualifying advanced technology vehicles; plug-in electric drive or hybrid electric, hybrid hydraulic, plug-in hybrid, electric, and fuel cell drive medium- and heavy-duty motor vehicles (including transit vehicles); or qualifying components; and engineering integration, performed in the United States, of qualifying vehicles and qualifying components that are produced in the United States.

Not less than 20% of the proceeds of the auction of this pool of allowances shall be available to assist with the deployment, integration, and use of advanced technology vehicles and plug-in electric drive or hybrid-electric, hybrid, hydraulic, plug-in hybrid, electric, and fuel cell drive medium- and heavy-duty motor vehicles (including transit vehicles and over-road buses).

Not less than 5% of the proceeds of the auction of this pool of allowances shall be available for development of the national strategy

- **HR 2454 American Clean Energy and Security Act and HR 5019 Home Star Energy Retrofit Program**

Provides 3% of the allowances from 2012-2017 and 1% from 2018-2025 for electric vehicles and advanced automotive technology and deployment.

Provides 1.5% of allowances for clean energy and energy efficiency R&D.

Requires the EPA Administrator to promulgate carbon emission standards for heavy-duty vehicles, heavy duty vehicle engines, non-road vehicles and non-road vehicle engines. The Administrator may establish a credit trading program for these vehicles (See: section 223).

The Council recommends that the state should lobby and educate the Connecticut Federal delegation on the importance of these proposals and on how Connecticut could benefit from federal programs. Additionally, federal grants programs should be aggressively explored to complement any state incentive programs that could be established.

As a result of the Council's research and deliberations, it has formulated a host of recommended actions to stimulate growth in the use and development of EVs. Refer to Section V for the complete list.

In keeping with the spirit of Governor Rell's goal to make the state a national leader in the EV market, the Council will consider and evaluate how EVs fit into Connecticut's business and community development efforts. The Department of Economic Development has provided a research tool inventories state-by-state initiatives and funding opportunities currently available around the country to encourage the deployment of electric vehicles. Going forward, the Council hopes this data will be used by policy makers in identifying models to consider as they formulate their own recommendations to support the promotion of EVs in the state. The Council is also interested in considering and assisting in financing opportunities such that the state's colleges and universities, other state-owned transportation assets, may be used as EV test beds for state fleet opportunities. These campus locations provide significant resources and opportunities due to volume and usage patterns.

III. F. OUTREACH

Customer support, education and outreach opportunities are critical to highlight the benefits of electricity as an alternative transportation fuel. In order for Connecticut to experience the desired seamless introduction and integration of EVs, customers will need public and private sector support to take the steps necessary to get plug-in ready and, as an example, understand the importance and benefits of off-peak charging.

Considerations and timing for other customer and stakeholder education, including workforce development and marketing strategies, will need to be further examined. Multi-faceted outreach plans should be developed to include consumer-friendly website content, energy bill mail inserts, cross-promoting with auto dealerships and DMV, public service announcements focusing on EVs, and more. As an example, the Connecticut Automobile Retailers Association has identified the Connecticut International Autoshow in November 2010 as an opportunity to reach a large audience potentially interested in EVs.

An important ongoing opportunity is for Connecticut's technical high schools and community colleges to train workers in support of EVs and charging infrastructure. The state's utilities can

also provide information and reference materials through their contractor relationships. For example, CL&P's annual Trade Ally training sessions in October 2010 will include an EV overview and a related presentation by the State Building Inspector. (See Appendix G for the meeting schedule at ten locations across the state.)

Connecticut must also be fully prepared from a public safety standpoint for the introduction of EVs to our roadways and communities. All first responders in the state (Police, Fire and EMS agencies) should be fully trained to handle the unique aspects of EVs and know how to safely address traffic accidents and other emergency situations that will occur. Perhaps the best way to accomplish this would be to provide access to a standardized training program that would focus on immediate EV nameplate identification, vehicle systems, hazards unique to EVs, and emergency response procedures for various types of EV-related incidents.

While original equipment manufacturer (OEM) vehicles are designed extremely well in many regards, there are a few simple precautions that responders must take in order to assure the safety of all involved in an emergency response situation. If Connecticut intends to promote itself as an EV-friendly state, the training of its responders will be of significant importance both from a public safety standpoint as well as a marketing one. Previously in Connecticut, during the initial introduction of hybrid vehicles, several news media reports focused on the perceived "dangers" of these new models and it was clear that emergency personnel did not always have the benefit of accurate information. Should this happen again with plug-in EVs, the public could mistakenly have safety concerns about purchasing EVs.

III. G. COUNCIL FINDINGS

The Council has prepared a table containing all of its recommendations and action items (See Section V of this report for the Council's recommendations).

In sum, the Council strongly recommends that statewide incentive programs for consumers, auto dealers and auto manufacturers, and for EV infrastructure supported by EV-related R&D be proposed for the 2011 legislative session in order to promote further dialogue and public input on this topic. The Council recommends that consideration be given to initiating several legislative proposals that offer complementary incentive programs to promote EV usage and infrastructure in Connecticut. This will further demonstrate Connecticut's EV commitment and continue our momentum as we send positive signals to the auto industry and encourage public interest in EVs in order to grow overall EV usage in Connecticut.

When the Council first began its work, it appeared that Connecticut had only one local ordinance in place that specifically encourages the use of electric vehicles (i.e., the City of New Haven's parking program for hybrid cars). Additional support and development are available currently through the State's DAS policies, DMV incentives and economic incentive programs.

Consistent with Connecticut's goal of EV leadership, future considerations should include, but not be limited to, the following concepts:

- Sales and property tax exemptions for alternative fuel cars (extending provisions that expire after the summer of 2010);
- Electric vehicle battery and infrastructure tax exemptions or tax credits;
- FHWA High Occupancy Vehicles (HOV) lane exemption approval;

- Alternative Fuel Vehicle (AFV) and fueling infrastructure grants and loans;
- Infrastructure development program;
- Clean vehicle parking incentives;
- EV procurement for State of Connecticut fleets and at public universities; and
- Research and development incentives for EV technology

The State should also continue to actively pursue any federal stimulus or other funds (U.S. DOE) that assist in the costs associated with EV infrastructure or research and development. This should include active lobbying of the Connecticut Congressional Delegation to earmark funding for potential R&D projects here in Connecticut since the state is home to several battery manufacturers and EV technology companies.

Finally, in order for the State to be vigilant of any public or private funding to further promote the transition to EVs in the state, the Council recommends that it continue in a series of smaller working groups that meet monthly and report quarterly to the full Electric Vehicle Infrastructure Council as new information and opportunities present themselves.

IV. CONCLUSION

The Council concludes there are numerous demonstrable advantages to be derived as the EV market takes hold in Connecticut. These include lower carbon emissions, reduced dependence on imported oil, fuel-cost savings for EV drivers, and potential economic development benefits for the state's residents, businesses and communities.

Many challenges and barriers exist to creating and maintaining a new infrastructure and plug-in ready mentality for consumers, utilities, ratepayers, municipalities and government officials as outlined in this report. Overcoming these barriers will not happen over night and will require cross-community collaboration.

When addressing the possibility of extending the Council's duration, it should be noted that the existence of this body added much needed credibility in overcoming Connecticut's relatively small size as an EV market and in establishing relationships with external parties such as the leading automakers, equipment manufacturers, and other influential groups who have a voice in the national EV dialogue.

In summary, the Council sets forth the following strategic priorities for Connecticut's successful introduction and integration of electric vehicles:

- 1) Achieving a statewide goal of 25,000 electric vehicles in Connecticut by 2020;
- 2) Gaining early access to the first wave of mass-produced electric vehicles;
- 3) Enacting legislation in the next session of the General Assembly to provide consumers and businesses with tax incentives/grants or other convenience benefits that afford some price parity with gasoline-powered vehicles;

- 4) Supporting the build-out of an appropriately sized, statewide EV charging infrastructure network through partnerships with public and private entities;
- 5) Developing a suitable framework for regulatory and energy policies to address time-of-use rates, pricing and charging infrastructure options for consumers; and
- 6) Working collaboratively with neighboring states to develop a regional corridor for access to public charging stations.

It is the Council's goal that this report better inform government leaders, communities and other stakeholders, and encourage collaboration to achieve the full promise and benefits of EVs to our state, as first envisioned by Governor M. Jodi Rell.

V. SUMMARY OF RECOMMENDATIONS

This is the compendium of over 30 separate recommended actions, including lead agency assignments to further prepare Connecticut for the arrival and integration of EVs.

Recommendation		Electric Vehicle Infrastructure Council Recommendations 9/1/10		Status
Lead Agency	Action	Lead Agency	Action	Status
LEGISLATION				
1	Propose legislation in the next session of the General Assembly that affords consumers and businesses with some tax incentives/grants or other convenience benefits to aide in achieving some price-parity to gasoline vehicles.	GOV OPM DPUC DECD	Fall- Prepare draft legislation and submit to OPM for review.	Pending review
2	Identify EV incentives to encourage CT consumers to buy & operate EVs including tax incentives, financing & grants.	DECD OPM/DRS DRS/OPM	Establish working group to discuss and draft proposal.	
3	Extend the sales and property tax exemptions for alternative fuel cars which expires this summer 2010.	DRS/OPM	Fall- Prepare draft legislation and submit to OPM for review.	
4	Propose statewide incentive programs or that existing programs be reviewed and modified for consumers, auto dealers and auto manufactures and EV infrastructure/R&D.	DECD/DPUC/DRS	These incentives should be proposed or modified for the 2011 legislative session in order to promote public hearings and further dialogue on this topic.	
ECONOMIC DEVELOPMENT				
5	Review the existing PILOT (payment in lieu of Property Taxes) program to determine if expanding it to cover manufacturers that produce components related to electric vehicles or infrastructure is feasible and advisable.	OPM	Prepare report to Governor by Dec. 1, 2010.	
6	Review traditional lending programs administered by the state's Economic Development agencies (DECD, CDA and CII) should look to target/market some of these programs to support existing manufactures and startups in the electric vehicle industry.	DECD CDA CII	Prepare report to Governor by Dec. 1, 2010.	
7	Implement an alternative fuel tax credit or tax rebate similar to what 30 other states have already implemented.	DRS OPM	Establish working group to discuss and draft proposal.	
8	Review existing Research and Development Tax credits to determine if they are inclusive to the R&D related to alternative energy vehicles, especially on the battery development and propose changes to such credits if they are not.	DECD/DRS	Study business taxes and incentives, report findings back to EVIC.	In progress - PA 10-1 section 27 tax study due Jan 1, 2011
9	Existing programs such as transit oriented development should incorporate provisions for electric vehicle infrastructure (potentially tap some of these resources for infrastructure upgrades).	DECD/DPUC/OPM	Establish working group to discuss and draft proposal.	
10	Connecticut should recruit established CA EV companies to make CT their east coast affiliate. Utilize EVIC and the strong public/private support that is already in place in CT.	DECD/CII/CDA/CCEF	CT Economic agencies should establish marketing plan to target EV companies and package existing programs that could incentivize relocation.	
11	Perform survey of business entities to gage their awareness and interest in supporting infrastructure.	DECD/CBIA	Fall release date expected for results of survey.	
REGULATORY				
12	Deploy electric vehicle charging stations at state destination locations such as museums, aquariums, rest stops, train stations, multi-modal transportation hubs, public buildings, libraries and public parking lots/garages.	DPW/DPUC/DAS/Municipalities	Establish working group to discuss and draft proposal.	Ongoing- ie LOB unit, Westport Train Ctr., State rest-stops discussion underway, Town of Mansfield application for federal grant

Electric Vehicle Infrastructure Council Recommendations 9/1/10

Recommendation	Lead Agency	Action	Status
13 Develop recommendations to streamline, standardize the installation, permitting and interconnection requirements for homeowners and businesses.	GOV/DPS DCP	Establish working group to discuss cross cutting stakeholder issues.	Working Group established and meetings are in progress.
14 Request utilities to perform and report on studies to evaluate the capability of the utility system to respond to an increased demand on the electric distribution system due to Level 2 & Level 3 EVSE being installed in residential neighborhoods and business hubs.	CL&P, UI & CMEEC DPUC	Utilities and CMEEC to draft report to DPUC &/or CEAB including any cost estimates for system enhancements and ratepayer impacts.	
15 Request utilities to perform and report on studies to evaluate smart meters, Time of Use rates and need for uniform standards for EVSE for charging electric vehicles.	CL&P, UI & CMEEC DPUC	DPUC could handle through administrative process	Pending review and discussion
16 Develop options to incorporate EV and PHEV charging with renewable energy supply.	UI & CL&P/CMEEC/NRG/CCEF	Establish working group to discuss and draft proposal for EVIC review..	
17 Maintain data and track benefits related to increased registrations of Evs/PHEVs for reductions in GHG emissions.	DEP	Prepare data and analysis in subsequent Climate Change reports.	
18 High Occupancy Vehicle (HOV) Lane Exemption	TRANSPORTATION/SAFETY DOT/DMV/DPS	DOT will coordinate interagency study/review of implementation of inclusion of HOV changes once federal reauthorization done 2011-any potential costs will be identified in study.	Pending Federal reauthorization
19 Prepare a costs/benefit analysis and feasibility of phasing in a transition of existing fleet to electric vehicles. Include in the C/B/A charging stations installed at DOT garages and existing state service stations.	DAS/DOT/DMV	DAS will establish working group to discuss and draft report for Dec 1, 2010.	Pending formation of working group
20 Maintain data and track EVPHEV registrations.	DMV/DPS/DOT	DMV will commence tracking by Dec. 1, 2010. Establish web based input and share data with DPS/DOT.	Pending deployment of new Evs/PHEV.
21 Consider any implications to state budget for loss of transportation tax issues.	OPM DOT	Establish working group to discuss and draft report.	
22 Ensure preparedness of 1st responders, road assistance & fire Marshalls.	GOV/DPS DCP/Munis	Establish working group to discuss and draft report.	Working Group in progress, meetings ongoing.
23 Develop mechanism to distinguish /brand Evs for police and 1st responders.	DMV/DOT/DPS	Draft proposal for Governor Dec. 1, 2010.	
24 Track any alternative Fuel Vehicle (AFV) and Fueling Infrastructure Grants and Loans.	INFRASTRUCTURE RESIDENTIAL/COMMERCIAL GOV/OPM	Draft proposal for Governor Dec. 1, 2010.	
25 Develop recommendations for policy approaches to installing charging infrastructure at state controlled locations	DAS/OPM/GOV DPW/DOT	Draft proposal for Governor Dec. 1, 2010.	
26 Explore need for an RFP to create a list of prequalified vendors or contractors for infrastructure improvements at state facilities	DAS/DPW/DOT/OPM	Follow existing RFP process.	DAS to review existing contract with Trade Labor
27 Clean Vehicle Parking Incentives	ENVIRONMENTAL CCEF/CCM/COST/OPM	Allow for local municipal ordinances-New Haven Model	

Electric Vehicle Infrastructure Council Recommendations 9/1/10

Recommendation	Lead Agency	Action	Status
28 Encourage procurement of EV in State of Connecticut fleets and at public universities, or entities that receive tax exempt bonding through CHEFA	DAS/Higher Education/CHEFA	Reach out to UCONN to encourage their consideration of purchasing EV/PHEVs. Governor to reach out to CHEFA	DAS Letter to UCONN on 7/19/10.
29 Identify opportunities to link EV programs to regional transit and air quality programs to integrate them into Connecticut's transportation and air pollution policies (potential sources for funding infrastructure and vehicles)	DOT/DEP/DMV/CCEF	RGGI states already incorporated into the Transportation and Climate Initiative. DEP in any future Municipalities Summit should include information on EVs as part of program.	Partially completed.
30 Explore and create battery disposal and recycle programs	DEP/Auto industry	Allow for recycling of batteries and develop disposal guidelines	TBD
EDUCATION/WORKFORCE DEVELOPMENT			
31 Develop a plan for consumer education (website, energy bill mail inserts, dealerships, DMV, PSA's).	DMV/ISE/OWC/IDOL/Higher Ed/DCP/CARS/Utilities	Establish workgroup to plan and implement marketing and release report by Dec. 1, 2010	
32 Establish and support a statewide EV charger/infrastructure build-out which includes, mapping, streamlining permit process and education of workforce and consumers.	DPS, DMV, DCP	DMV map/website of charging stations, Training sessions and marketing	TBD
33 Develop recommended approaches to develop a statewide service or workforce development strategies with a focus on green jobs to install home-based, commercial and public charging infrastructure	OWC/Higher Ed/CTC/ISE/Utilities	May 21, 2010 EV autos at capitol held	TBD
MARKETING			
34 Gain early access to the first wave of mass produced electric vehicles.	GOV/ I-95 Coalition and Transportation Climate Initiative	Continue to market the state as EV-friendly	Chevy Volt announcement Nissan MOU in progress
35 Work collaboratively with neighboring states to develop a regional corridor for access to public charging stations.	GOV	Marketing - Public Posting. Use Council of State Governments and New England Governors Assoc. as arena for discussions.	Discussions are ongoing in these forums.
36 Lobby and educate the Connecticut Federal Delegation on the importance of these proposals on how Connecticut could benefit from federal programs. Additionally federal grants programs should be aggressively explored to complement any state incentive programs that could be established - grants.	GOV/OPM/DECD	Send copy of final report to Congressional Delegation and provide updates. Letter from Governor to delegation supporting federal EV legislation	Ongoing
37 Either extend the role/term of the EV Council and appoint staff level contacts at state agencies to serve as technical contacts for consumers and businesses. Council or successor group should also meet quarterly to maintain a link and assist in driving CT EV successor.	DPUC/GOV/OPM/ multiple agencies	Maintain institutional knowledge to continue efforts in growing EV in CT.	TBD
38 Establish a state webpage dedicated to information related to CT EV including map of EV charging stations/contacts, etc.	DMV/DPS/IDOT/DPUC	Establish a web based registration for charging stations	TBD
39 Explore outreach to major employers concerning potential incentives for group purchases or leases of EV vehicles	DECD/CDA/OPM/CBIA/FIB	Economic Development Agencies to work with partners on outreach	TBD

VI. APPENDICES

Further supporting the Council's work, additional materials are provided in the appendix section. The following documents should be reviewed to get the full benefit of this final report.

APPENDIX A – GOVERNOR RELL'S EXECUTIVE ORDER NO. 34

Copy of Governor Rell's Executive Order No. 35 issues on November 10, 2009 establishing the Electric Vehicle Infrastructure Council.

APPENDIX B – SUMMARY OF STATE-BY-STATE INCENTIVES AND GRANTS

This summary is a compilation of state incentives across the nation to promote and encourage the use and/or purchase or manufacturing of electric and/or hybrid vehicles. Many of the incentives build upon the infrastructure necessary to encourage the use of the alternative fueled vehicles (AFVs). The information is broken down by state and indicates whether the incentives promote the use, purchase or manufacturing of AFVs.

APPENDIX C – GOVERNOR RELL'S LETTER TO STATE BUILDING INSPECTOR

Governor Rell's February 9, 2010 letter requesting that the state Codes and Standards Committee establish a plan for updating the state building code to accommodate and set goals for EV infrastructure needs at commercial and residential dwellings throughout the state. The Governor also requested that educational support training be provided to help implement minimum new Building code electrical infrastructure requirements and also new Fire Safety Code infrastructure requirements for uniform code implementation and enforcement. In addition that technical support be provided to municipalities desiring assistance to forge avenues to safely streamline their construction permitting requirements.

APPENDIX D – GM PRESS RELEASE

Copy of GM Press Release indicating Connecticut as on of its roll-out markets for the Chevy Volt.

APPENDIX E – PRESS COVERAGE OF THE ELECTRIC VEHICLE FORUM, MAY 21, 2010

Sample press coverage of the event held at the Legislative Office Building and on the grounds of the Capitol building of the EVIC and REVI.

APPENDIX F – 2010 HOUSE BILL 5440 AND HOUSE BILL 5465

Copies of proposed legislation from the 2010 session of the General Assembly.

APPENDIX G – SCHEDULE OF CL&P TRADE ALLY TRAINING MEETINGS

List of dates and times.

APPENDIX H – CONTACT LIST OF ELECTRIC WORKING GROUP

List of contacts and organizations represented on working group.

APPENDIX I – GLOSSARY OF TERMS

The Office of Governor M. Jodi Rell

STATE OF CONNECTICUT

BY HER EXCELLENCY

M. JODI RELL

GOVERNOR

EXECUTIVE ORDER NO. 34

WHEREAS, the arrival of electric vehicles (EVs) can be an integral piece of our nation's strategy to significantly lower emissions and reduce dependency on foreign energy resources; and

WHEREAS, EVs provide sustainable transportation solutions; and

WHEREAS, EVs will provide users with significantly reduced energy costs; and

WHEREAS, Connecticut has the opportunity to become a national leader by driving economic development, inspiring new small businesses, and creating green jobs through the coordinated introduction and integration of EVs and the accompanying infrastructure; and

WHEREAS, Connecticut is committed to being at the forefront of transitioning to the electrification of transportation; and

WHEREAS, it is imperative that the State, in collaboration with stakeholders, develop a comprehensive and visionary framework for the infrastructure and integration of EVs in Connecticut;

NOW, THEREFORE, I, M. Jodi Rell, Governor of the State of Connecticut, acting by virtue of the authority vested in me by the Constitution and by the Statutes of this State, do hereby **ORDER** and **DIRECT**:

1. That there is hereby created an Electric Vehicles Infrastructure Council (hereinafter Council) for the purpose of making recommendations concerning the State's investment in and the standardization of infrastructure in the State of Connecticut.
2. That the Council shall include, but not be limited to, a representative from each of the following:
 - Department of Public Utility Control
 - Office of Policy and Management
 - Department of Economic and Community Development
 - Department of Environmental Protection
 - Department of Motor Vehicles

- Department of Administrative Services
 - Department of Transportation
 - Connecticut Development Authority
 - Connecticut Innovations, Inc.
 - Connecticut Clean Energy Fund
 - The Institute for Sustainable Energy at Eastern Connecticut State University
 - Transportation Strategy Board
 - Connecticut Business and Industry Association
 - Northeast Utilities
 - United Illuminating
3. That the Commissioner of the Department of Public Utility Control shall serve as Chairman of the Council.
 4. That the Council shall:
 - a. Strategize on preparing the State for the rapid and seamless integration of EVs into the market;
 - b. Coordinate interagency decision-making on critical issues;
 - c. Establish performance measures for meeting infrastructure, funding, environmental, and regulatory goals, and
 - d. Align State goals with what is occurring on the national level for EVs.
 5. That the Council shall not later than February 1, 2010, submit a preliminary report and not later than September 1, 2010, submit a final report to the Governor of its recommendations on the infrastructure and regulation needs of EVs.
 6. That this order shall take effect immediately.

Dated in Hartford, Connecticut, this 10th day of November 2009.

M. Jodi Rell

Governor

Appendix B

2009 State-by-State Electric/Hybrid Vehicles Tax Credits/Incentives Summary

The summary is a compilation of state incentives across the nation to promote and encourage the use and/or purchase or manufacturing of electric and/or hybrid vehicles. Many of the incentives build upon the infrastructure necessary to encourage the use of the alternative fueled vehicles (AFV). The information is broken down by state and if it promotes the use, purchase or manufacturing of AFV's.

State	Type of Program	Incentive Program
		Alternative Fuels Promotion and Information The Center for Alternative Fuels (Center) was established within the Alabama Department of Agriculture and Industries to promote alternative fuels as a viable energy source in the state. The Center has been tasked with assessing the current status and development of sources of alternative fuels, ensuring that all alternative fuels sold in the state meet ASTM standards, and acting as an information center for alternative fuels and a clearinghouse for available federal grant funding for alternative fuel development. The Center has also been designated to administer a grant program funded by an income tax check-off program through the Alabama Alternative Fuels and Research Development Fund. (Reference Code of Alabama 2-2-90 and 2-2-91)
1 Alabama	Use	
2 Alaska	None	
3 Arkansas	None	
4 Arizona	Use	Electric Vehicle (EV) Equipment Tax Credit A tax credit of up to \$75 is available to individuals for the installation of EV charging outlets in a house constructed by a taxpayer. (Reference Arizona Revised Statutes 43-1090 and 43-1176)
5 Arizona	Use	Alternative Fuel Vehicle (AFV) Parking Incentive An individual driving a vehicle powered by an alternative fuel may park without penalty in parking areas that are designated for carpool operators. (Reference Arizona Revised Statutes 28-877)
		Alternative Fuel and Vehicle Research and Development Incentives The Alternative and Renewable Fuel and Vehicle Technology Program (Program), administered by the California Energy Commission, aims to increase the use of alternative and renewable fuels and innovative technologies. The Program provides grants and loans for projects that: <ul style="list-style-type: none"> • develop and improve alternative and renewable low-carbon fuels; • optimize alternative and renewable fuels for existing and developing engine technologies; • produce alternative and renewable low-carbon fuels in California; • decrease the overall impact of an alternative and renewable fuel's life-cycle carbon footprint and increase sustainability; • expand fuel infrastructure, fueling stations, and equipment; • improve light-, medium-, and heavy-duty vehicle technologies; • retrofit medium- and heavy-duty on-road and non-road vehicle fleets; • expand infrastructure connected with existing fleets, public transit, and transportation corridors; and • establish workforce training programs, conduct public education and promotion, and create technology centers. (Reference Assembly Bill 109, 2008, and California Health and Safety Code 44270-44274.7)
6 California	Use	
		High Occupancy Vehicle (HOV) Lane Exemption Qualified compressed natural gas, hydrogen, and electric vehicles meeting specified California and federal emissions standards may use HOV lanes regardless of the number of occupants in the vehicle. Qualified hybrid electric vehicles (HEV) are also exempt from HOV lane restrictions. Vehicles must be affixed with a Clean Air Vehicle sticker issued by the California Department of Motor Vehicles, which expire January 1, 2011. A limited number of Clean Air Vehicle stickers are available. Drivers of qualified HEVs registered to an address in the nine-county San Francisco Bay region must also obtain a Bay Area FasTrak account before using HOV lanes. For more information about qualified vehicles, see the California Air Resources Board Carpool Lane Use Stickers Web site. (Reference Assembly Bill 1209, 2008, and California Vehicle Code 5205.5 and 21655.9)
7 California	Use	
		Alternative Fuel Vehicle (AFV) and Fueling Infrastructure Grants The Assembly Bill (AB) 2766 Motor Vehicle Registration Fee Program provides funding for projects that reduce air pollution from on- and off-road vehicles. Eligible projects include purchasing AFVs and developing alternative fueling infrastructure. Contact local air districts for more information about available grant funding and distribution from the AB 2766 Motor Vehicle Registration Fee Program. (Reference Health and Safety Code 44220 (b))
8 California	Use/Purchase	
		Alternative Fuel Incentive Development The California Air Resources Board and California Energy Commission developed the Alternative Fuel Incentive Program to allocate \$25 million in incentives to promote the use and production of alternative fuels. Eligible projects include projects in California that promote high efficiency, high mileage, alternative fuel light-, medium-, and heavy-duty vehicles, for individual and public fleets. Incentives are available to replace the current state vehicle fleet with clean, high mileage alternative fuel vehicles and for the construction of publicly accessible retail alternative fueling stations and fleet fueling facilities, including E85. Incentives are also available for alternative fuel production in California and funding for research, development, and testing of alternative fuels and advancing vehicle technology. (Reference Assembly Bill 1811, 2006)
9 California	Use	
		Electric Vehicle (EV) Parking Incentive - Sacramento 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 downtown parking lots C, G, H, I, K, P, and R. Free vehicle charging stations are located in lots C, G, H, and I.
10 California	Use	

2009 State-by-State Electric/Hybrid Vehicles Tax Credits/Incentives Summary

State	Type of Program	Incentive Program
11 California	Use/Purchase	<p>Employer Invested Emission Reduction Funding - South Coast The South Coast Air Quality Management District (SCAQMD) administers the Air Quality Investment Program (AQIP). The AQIP provides funding to allow employers within SCAQMD's jurisdiction to make annual investments into an administered fund to meet employers' emission reduction targets. The revenues collected are used to fund alternative mobile source emission/trip reduction programs, including alternative fuel vehicle projects, on an on-going basis. Programs such as procurement of low-emission, alternative fuel or zero emission vehicles, and old vehicle scrapping may be considered for funding.</p> <p>Technology Advancement Funding - South Coast The South Coast Air Quality Management District's Clean Fuels Program provides funding for research, development, demonstration, and deployment projects that are expected to help accelerate the commercialization of advanced low-emission transportation technologies. Eligible projects have included: power trains and energy storage/conversion devices (e.g., fuel cells and batteries); and implementation of clean fuels (e.g. natural gas, propane, and hydrogen), including their infrastructures. Projects are selected via specific requests for proposals on an as-needed basis or through unsolicited proposals. Approximately \$10 million in funding is available annually with expected cost-share from other project partners and stakeholders.</p> <p>Clean Vehicle Parking Incentive - Hermosa Beach Downtown Hermosa Beach offers free metered parking at silver poled meters for vehicles with the California Clean Air Decal and electric vehicles, including GEM vehicles. Vehicles may park free for the maximum time limit designated on the meter.</p> <p>Alternative Fuel Vehicle (AFV) and Hybrid Electric Vehicle (HEV) Parking Incentive - Santa Monica The City of Santa Monica offers free meter parking for dedicated electric vehicles displaying the Zero Emission Vehicle decal, and compressed natural gas and HEV's displaying properly affixed California Clean Air Vehicle Decals. Vehicles may park free for the maximum time limit posted on the meter per trip.</p>
12 California	Use	<p>Electric Vehicle (EV) Parking Incentive - Los Angeles Airport (LAX) offers free parking and recharging for EV's in the lower/arrivals level of Parking Structures 1 and 6.</p>
13 California	Use	<p>Low-Emission Vehicle Incentives and Technical Training - San Joaquin Valley The REMOVE II Program (Program) is administered by the San Joaquin Valley Air Pollution Control District (APCD) and provides incentives for the purchase of low-emission passenger vehicles, light-duty trucks, small buses, and trucks with Gross Vehicle Weight Ratings of 14,000 pounds or less. The purpose of the Program is to encourage the early introduction of low-emission vehicles in the San Joaquin Valley. The Program offers between \$1,000 and \$3,000 per vehicle and varies according to the emission certification level and size of the vehicle. Vehicles must be powered by alternative fuel, electric, or hybrid electric engines/motors. The Program also includes an Alternative Fuel Vehicle (AFV) Mechanic Training Component that provides incentives for the education of personnel on the mechanics, operation safety, and maintenance of AFVs, fueling stations, and tools involved in the implementation of alternative fuel technologies.</p>
14 California	Use	<p>Alternative Fuel and Advanced Technology Vehicle and Infrastructure Incentives - Vacaville The City of Vacaville provides incentives for the purchase of new battery-electric vehicles, dedicated compressed natural gas (CNG) vehicles, plug-in hybrid electric vehicles, and the Phill CNG vehicle home fueling appliance manufactured by FuelMaker.</p>
15 California	Use	<p>Clean Vehicle Parking Incentive - San Jose The City of San Jose has developed a Clean Air Vehicle Parking Program to reduce vehicle emissions, stimulate activity in the downtown, and increase sales of clean air vehicles at San Jose auto dealerships. For eligible vehicles, the program allows free parking at participating municipal off-street parking facilities, on-street meters, and regional park and recreation parking lots. Vehicles must display the Clean Air Vehicle Parking Permit, which is available for a \$30 application fee. Only eligible vehicles purchased in San Jose after January 1, 2000, can obtain a permit. Zero Emission Vehicles purchased outside San Jose are also eligible to apply as long as the vehicle is registered in San Jose.</p>
16 California	Use/Purchase	<p>Employer Invested Emission Reduction Funding - South Coast The South Coast Air Quality Management District (SCAQMD) administers the Air Quality Investment Program (AQIP). The AQIP provides funding to allow employers within SCAQMD's jurisdiction to make annual investments into an administered fund to meet employers' emission reduction targets. The revenues collected are used to fund alternative mobile source emission/trip reduction programs, including alternative fuel vehicle projects, on an on-going basis. Programs such as procurement of low-emission, alternative fuel or zero emission vehicles, and old vehicle scrapping may be considered for funding.</p>
17 California	Purchase	<p>Electric Vehicle (EV) Charging Infrastructure Grants Grants are available to local governments for the installation of EV charging stations. Grants are prioritized based on the local government's commitment to energy efficiency. (Reference Senate Bill 075, 2009 and Colorado Revised Statutes 24-38.5-102 and 24-38.5-103)</p>
18 California	Use/Purchase	
19 California	Purchase	
20 Colorado	Use	

2009 State-by-State Electric/Hybrid Vehicles Tax Credits/Incentives Summary

State	Type of Program	Incentive Program
21 Colorado	Purchase	<p>Alternative Fuel Vehicle (AFV) and Hybrid Electric Vehicle (HEV) Tax Credit</p> <p>An income tax credit is available from the Colorado Department of Revenue for a motor vehicle titled and registered in Colorado that uses or is converted to use an alternative fuel, is a hybrid vehicle, or has its power source replaced with one that uses an alternative fuel. For vehicles purchased or converted between January 1, 2007, and January 1, 2010, the percentage of the actual or incremental cost that may be claimed as a credit is as follows:</p> <p>Type of Vehicle Percentage</p> <p>Low Emission Vehicle 50%</p> <p>Ultra Low or Inherently Low Emission Vehicle 75%</p> <p>Zero Emission Vehicle (ZEV) 85%</p> <p>Beginning January 1, 2010, tax credits are based on specified state-defined vehicle categories as follows:</p> <p>Category January (Jan.) 1, 2010, to Jan. 1, 2012, to Jan. 1, 2013 Jan. 1, 2013, to Jan. 1, 2014 Jan. 1, 2014, to Jan. 1, 2015 Jan. 1, 2015, to Jan. 1, 2016</p> <p>1 - Vehicle meeting Tier 2, Bin 1 federal emissions standards 85% 75% 75% 75%</p> <p>2 - Light-duty diesel-electric hybrid passenger vehicle with a minimum fuel economy of 70 miles per gallon (mpg) 65% 45% 25% 15%</p> <p>3 - Light-duty passenger vehicle, light-duty truck, or medium-duty diesel-electric truck conversion that increases original fuel economy by at least 40% AND (for 2010 and 2011)</p> <p>4 - Light-duty passenger vehicle, light-duty truck, or medium-duty truck natural gas conversions 75% 55% 35% 25%</p> <p>5 - Idle reduction technologies 25% 25% 25% 25%</p> <p>6 - Vehicle meets Tier 2, Bin 2 or 3 federal emissions standards, with a fuel economy of at least 40 mpg 75% 10% 10% 0%</p> <p>7 - Vehicle meets Tier 2, Bin 2 or 3 federal emissions standards, with a fuel economy of at least 30 but less than 40 mpg. (Excludes original equipment manufactured natural gas conversions)</p> <p>These credits are capped at \$6,000 for the following: AFVs, AFV conversions, HEVs, plug-in hybrid electric vehicles (PHEVs), PHEV conversions, idle-reduction technologies, and ultra-low emission vehicles.</p> <p>(Reference House Bill 1331, 2009, and Colorado Revised Statutes 39-33-101 to 39-33-106)</p>
22 Colorado	Purchase	<p>Alternative Fuel Vehicle (AFV) and Hybrid Electric Vehicle (HEV) Rebate</p> <p>The Colorado Department of Revenue offers a rebate for the purchase of an AFV, HEV, or for the conversion of a vehicle to operate using an alternative fuel. Vehicles must be owned by the State of Colorado, a political subdivision of the state, or a tax-exempt organization, and be used in connection with the official activities of the entity. The rebate is a percentage of the incremental cost if used toward purchasing a new vehicle, or is a percentage of the conversion cost if used towards the cost of converting a vehicle to operate using an alternative fuel.</p> <p>For costs incurred between July 1, 2006, and July 1, 2009, the rebate percentages are as follows:</p> <p>Certification Level Percentage</p> <p>Low Emission Vehicle 25%</p> <p>Ultra Low or Inherently Low Emission Vehicle 50%</p> <p>Zero Emission Vehicle (ZEV) 75%</p> <p>For an AFV purchase or conversion that permanently replaces a motor vehicle or power source that is at least 10 years old, the percentage specified in the table above is doubled, up to a maximum of 100% of the incremental or conversion cost.</p> <p>For costs incurred between July 1, 2009, and July 1, 2015, the rebate percentages are as follows:</p> <p>Category July 1, 2009, to July 1, 2010 July 1, 2010, to July 1, 2011 July 1, 2011, to July 1, 2012 July 1, 2012, to July 1, 2013 July 1, 2013, to July 1, 2015</p> <p>1 - Vehicle meeting Tier 2, Bin 1 federal emissions standards 85% 75% 75% 75%</p> <p>2 - Light-duty diesel-electric hybrid passenger vehicle with a minimum fuel economy of 70 miles per gallon (mpg) 65% 45% 25% 15%</p> <p>3 - Light-duty passenger vehicle, light-duty truck, or medium-duty diesel-electric truck conversion that increases original fuel economy by at least 40% AND (for 2010 and 2011)</p> <p>4 - Light-duty passenger vehicle, light-duty truck, or medium-duty truck natural gas conversions 75% 55% 35% 25%</p> <p>5 - Idle reduction technologies 25% 25% 25% 25%</p> <p>6 - Vehicle meets Tier 2, Bin 2 or 3 federal emissions standards, with a fuel economy of at least 40 mpg 75% 10% 10% 0%</p> <p>Each qualified entity is limited to \$350,000 per state fiscal year in total rebates paid.</p> <p>(Reference House Bill 1331, 2009, and Colorado Revised Statutes 39-33-101 through 39-33-106)</p>
23 Colorado	Use	<p>Alternative Fuel Infrastructure Tax Credit</p> <p>For tax years beginning prior to January 1, 2011, the Colorado Department of Revenue offers an income tax credit for the cost of construction, reconstruction, or acquisition of an alternative fueling facility that is directly attributable to the storage, compression, charging, or dispensing of alternative fuels to motor vehicles. The credit value is 35% of the cost if claimed during the 2009 tax year, and 20% of the cost if claimed during the 2010 or 2011 tax year.</p> <p>For an alternative fueling facility that will be generally accessible for use by the public, in addition to the person claiming the credit, the percentages specified above will be multiplied by 1.25. If at least 70% of the alternative fuel dispensed annually is derived from a renewable energy source for a period of 10 years, the credit percentages specified above will be multiplied by 1.25. Certification for the percentage of renewable energy must be presented, as requested, to the Department of Revenue. The credit has a maximum value of \$400,000 in any consecutive five-year period for each fueling facility. For more information about this credit, see the Colorado Department of Revenue website.</p> <p>(Reference Colorado Revised Statutes 39-22-516)</p>

2009 State-by-State Electric/Hybrid Vehicles Tax Credits/Incentives Summary

State	Type of Program	Incentive Program
24 Connecticut	Use	<p>Alternative Fuel Vehicle (AFV) and Hybrid Electric Vehicle (HEV) Parking - New Haven The City of New Haven provides free parking on all city streets for HEVs and AFVs registered in New Haven that have a U.S. Environmental Protection Agency city or highway fuel economy rating of 35 miles per gallon or greater. HEV and AFV vehicle owners must obtain a non-transferable pass from the Department of Traffic and Parking to place on the vehicle's dashboard or hang from the rearview mirror. AFVs and HEVs are subject to all time and other posted parking restrictions. (Reference New Haven Code of General Ordinances, Title III, Chapter 29, Article III, Division 1, Section 29-56)</p>
25 District of Columbia	Use	<p>Alternative Fuel and Fuel-Efficient Vehicle Title Tax Exemption Qualified alternative fuel vehicles (AFVs) and motor vehicles with a U.S. Environmental Protection Agency estimated average city fuel economy of at least 40 miles per gallon are exempt from the excise tax imposed on an original certificate of title. The District of Columbia Department of Motor Vehicles determines which AFVs qualify for this exemption. (Reference District of Columbia Code 50-2201.03(f))</p>
26 District of Columbia	Use	<p>Alternative Fuel Vehicle Exemption from Driving Restrictions Clean fuel vehicles are exempt from time-of-day and day-of-week restrictions and commercial vehicle bans, if part of a fleet that operates at least 10 vehicles in an ozone non-attainment area, as defined by the Clean Air Act. This exemption does not permit unrestricted access to High Occupancy Vehicle lanes, except for covered fleet vehicles that have been certified by the U.S. Environmental Protection Agency as Inherently Low Emission Vehicles (ILEV) and continue to be in compliance with applicable ILEV emission standards. A clean fuel vehicle is defined as a motor vehicle that has been certified to meet a set of emission standards that classifies it as a clean fuel vehicle. (Reference District of Columbia Code 50-702 and 50-714)</p>
27 Delaware	Use	<p>Vehicle-to-Grid Energy Credit Retail electricity customers with one or more grid-integrated electric vehicle (EV) will be credited in kilowatt-hours for energy discharged to the grid from the EV's battery at the same rate that the customer pays to charge the battery. A grid-integrated EV is defined as a battery-powered motor vehicle that has the ability for two-way power flow between the vehicle and the electric grid as well as communications hardware and software that allow for external control of battery charging and discharging. (Reference Senate Bill 153, 2009)</p>
28 Florida	Use	<p>High Occupancy Vehicle (HOV) Lane Exemption Inherently Low Emission Vehicles (ILEV) and hybrid electric vehicles (HEV) that are certified and labeled in accordance with federal regulations may be driven in HOV lanes at any time, regardless of the number of passengers in the vehicle. All eligible ILEVs and HEVs must comply with the minimum fuel economy standards set forth in Title 23 of the U.S. Code, section 166(f)(3)(B). The vehicle is required to display a decal issued by the Florida Division of Motor Vehicles and be renewed annually. Special fees may apply. Vehicles with decals may use any HOV lane designated as a HOV toll lane without requiring payment of the toll. An HEV is defined as a motor vehicle that draws propulsion energy from onboard sources of stored energy comprised of both an internal combustion engine using combustible fuel and a rechargeable energy storage system, and meets or exceeds the qualifying California standards for a Low Emission Vehicle. (Reference Florida Statutes 316.0741)</p>
29 Georgia	Purchase	<p>Zero Emission Vehicle (ZEV) Tax Credit An income tax credit is available for up to 20% of the cost to purchase or lease a ZEV, or \$5,000, whichever is less. ZEVs include, but are not limited to, battery-only electric vehicles and hydrogen fuel cell vehicles. Low-speed vehicles do not qualify for this credit. The credit cannot exceed the taxpayer's income tax liability, but any portion of the credit not used in the year the ZEV is purchased or leased may be carried over for up to five additional years. (Reference Georgia Code 48-7-40.16)</p>
30 Georgia	Purchase	<p>Alternative Fuel Vehicle (AFV) Tax Credit An income tax credit is available for the purchase, lease, or conversion of a vehicle that operates solely on an alternative fuel and meets the U.S. Environmental Protection Agency (EPA) certification of a Low Emission Vehicle (LEV). The credit is worth up to 10% of the cost of a new AFV or up to 10% of the cost of converting the vehicle to operate on an alternative fuel, or \$2,500, whichever is less. The credit cannot exceed the taxpayer's annual income tax liability, but any portion of the credit not used in the year the AFV is purchased or converted may be carried over for up to five additional years. This incentive does not apply to hybrid electric vehicles. (Reference Georgia Code 48-7-40.16)</p>
31 Georgia	Purchase	<p>Electric Vehicle (EV) Charger Tax Credit An income tax credit is available to any eligible business enterprise for the purchase or lease of each EV charger that is located in the state. The amount of the credit is 10% of the cost of the charger or \$2,500, whichever is less. (Reference Georgia Code 48-7-40.16)</p>
32 Georgia	Use	<p>Alternative Fuel Vehicle (AFV) High Occupancy Vehicle (HOV) Lane Exemption AFVs displaying the proper alternative fuel license plate are allowed to use HOV lanes, regardless of the number of passengers. (Reference Georgia Code 32-9-4 and 40-2-76)</p>
33 Idaho	None	<p>Alternative Fuel Vehicle (AFV) Demonstration Grants The Iowa Department of Natural Resources conducts marketing and education outreach to encourage the use of alternative fuels and, contingent upon funding, also awards demonstration grants to individuals who purchase vehicles that operate on alternative fuels, including but not limited to, E85, biodiesel, compressed natural gas, electricity, solar energy, or hydrogen. Grants may be used towards conducting research connected with the fuel or the vehicle. Grants may be used towards the purchase of the vehicle if the Department of Natural Resources retains the title of the vehicle, the vehicle is used for research, and the proceeds from the eventual sale of the vehicle are used for additional research. (Reference Iowa Code 214A.19)</p>
34 Iowa	Use	<p>Alternative Fuel Vehicle (AFV) Demonstration Grants The Iowa Department of Natural Resources conducts marketing and education outreach to encourage the use of alternative fuels and, contingent upon funding, also awards demonstration grants to individuals who purchase vehicles that operate on alternative fuels, including but not limited to, E85, biodiesel, compressed natural gas, electricity, solar energy, or hydrogen. Grants may be used towards conducting research connected with the fuel or the vehicle. Grants may be used towards the purchase of the vehicle if the Department of Natural Resources retains the title of the vehicle, the vehicle is used for research, and the proceeds from the eventual sale of the vehicle are used for additional research. (Reference Iowa Code 214A.19)</p>

2009 State-by-State Electric/Hybrid Vehicles Tax Credits/Incentives Summary

State	Type of Program	Incentive Program
35 Iowa	Use	<p>Alternative Fuel Loan Program The Alternate Energy Revolving Loan Program (AERLP) for alternative energy projects is administered by the Iowa Energy Center. Through a participation agreement with the project lender, the program provides up to half the cost of biomass or alternative fuel production projects, up to a maximum of \$1 million per facility. The AERLP funds are provided at 0% interest with the lender's funds bearing market interest. Fuel production facilities must be located in Iowa. Funding is currently limited. (Reference Iowa Code 476.46)</p>
36 Iowa	Use	<p>Alternative Fuel Production Loans The Value-Added Agriculture Program offers a combination of forgivable and traditional low-interest loans for business projects involving the production of alternative fuels. The mixture of forgivable and low-interest loans varies according to the size of the award. Research and development projects are not eligible for this program.</p> <p>Alternative Fuel Production Tax Credits The Enterprise Zone Program and the High Quality Jobs Program offer state tax incentives to business projects for the production of biomass or alternative fuels. Depending on the program, incentives may include: an investment tax credit equal to a percentage of the qualifying investment, amortized over five years; a refund of state sales, service, or use taxes paid to contractors or subcontractors during construction; a doubling of the state's refundable research activities credit; additional funding for training new employees; and a local property tax exemption of up to 100% of the value added to the property.</p>
37 Iowa	Use	<p>Electric Vehicle (EV) and Infrastructure Grants The Hawaii Transportation Energy Transformation Grant Fund has been established within the Department of Business, Economic Development, and Tourism (Department) to provide grants for the acquisition of EVs, the installation of EV charging infrastructure, and the development of innovative programs or the coordination of activities that diversify transportation energy sources. The Department will review all applications and is required to provide annual statistical information regarding program participation to the Governor and state legislature. (Reference Senate Bill 1202, 2009, and Hawaii Revised Statutes 201)</p>
38 Hawaii	Purchase	<p>Alternative Fuel Vehicle (AFV) and Alternative Fuel Rebates The Illinois Alternate Fuels Rebate Program (Program) provides a rebate for 80% of the incremental cost of purchasing an AFV (up to \$4,000), 80% of the cost of federally certified AFV conversions (up to \$4,000), and for the incremental cost of purchasing alternative fuels. Eligible fuels for the program include E85, diesel fuel blends containing at least 20% biodiesel (B20), natural gas, propane, electricity, and hydrogen. A vehicle is only eligible to receive one rebate in its lifetime. The AFV or conversion system must be purchased from an Illinois-based company or vendor, except if the vehicle is a heavy-duty specialty vehicle that is not sold in Illinois. Only hybrid electric vehicles fueled with alternative fuels are eligible. To be eligible for a fuel rebate, the majority of fuel purchases must be made from Illinois retail stations or fuel suppliers. The E85 fuel rebate is up to \$450 per year (depending on vehicle miles traveled) for up to three years for each flexible fuel vehicle that uses E85 at least half the time. The biodiesel fuel rebate (for B20 and higher blends) is for 80% of the incremental cost of the biodiesel fuel, as compared to conventional diesel. The Program is open to all Illinois residents, businesses, go</p>
39 Illinois	Purchase/Use	<p>Clean Diesel Retrofit and Idle Reduction Grants The Illinois Clean Diesel Grant Program (Program) provides funding for the installation of diesel oxidation catalysts, closed crankcase ventilation systems, particulate matter filters, and anti-idling equipment, including direct-fired heaters and auxiliary power units. In addition, funding may be available for diesel-electric hybrid vehicles. The Program is part of the Illinois Green Fleets Initiative and targets school buses, shuttle buses, diesel vehicles operating in residential areas, and over-the-road trucks located and spending significant driving time in Illinois.</p>
40 Illinois	Use	<p>Alternative Fuel Vehicle (AFV) Grant Program Effective July 1, 2009, the Alternative Fuel Vehicle Grant Program, administered by the Indiana Office of Energy Development (OED), will offer grants to counties, cities, towns, townships, or school corporations to purchase Original Equipment Manufactured (OEM) AFVs and for AFV conversions. A recipient may be awarded \$2,000 for each OEM AFV purchased, and up to \$2,000 for each AFV conversion. Applications for the grant program must be reviewed and approved by OED, and the amount of grants awarded for all fiscal years may not exceed \$1 million. (Reference House Bill 1554, 2009, and Indiana Code 4-4-32.3)</p>
41 Indiana	Purchase	<p>Alternative Fuel Vehicle (AFV) Manufacturer Tax Credit The Indiana Economic Development Corporation (IEDC) may award tax credits under the Hoosier AFV Manufacturer Tax Credit to foster job creation, reduce dependency on imported energy sources, and reduce air pollution resulting from the manufacture or assembly of AFVs in Indiana. AFV manufacturers are eligible for tax credits of up to 15% of the qualified investment for which the credit is claimed. Qualified investments include expenditures in the state that are reasonable and necessary for the manufacture or assembly of AFVs. For the purpose of this incentive, AFVs are defined as vehicles designed to operate on E85, natural gas, liquefied petroleum gas, hydrogen, methanol, coal-derived liquid fuels, and non-alcohol fuels derived from biological material, P-Series fuels, or electricity. Applications for this incentive must be reviewed and approved by the IEDC. The credit applies to taxable years beginning after December 31, 2006, and before December 31, 2012. Unused credits may be carried forward for up to nine consecutive taxable years. (Reference Indiana Code 6-3-1-31.9)</p>
42 Indiana	Purchase	<p>Vehicle Research and Development Grants The Indiana 21st Century Research and Technology Fund is administered by the Indiana Economic Development Corporation and provides grants and loans to support proposals for economic development in areas including alternative fuel technologies and fuel-efficient vehicle production. (Reference Indiana Code 5-28-16-2)</p>
43 Indiana	Purchase	
44 Kansas	None	

2009 State-by-State Electric/Hybrid Vehicles Tax Credits/Incentives Summary

State	Type of Program	Incentive Program
45 Kentucky	Use	<p>Alternative Fuel and Vehicle Promotion The Kentucky Department for Energy Development and Independence (Department) encourages the responsible use of transportation fuels by supporting academic research, public education, and collaborative partnerships involving alternative fuels and alternative fuel vehicles (AFVs). The Department has implemented a number of projects to promote the use of AFVs and establish alternative fuel infrastructure in Kentucky.</p> <p>Alternative Fuel Vehicle (AFV) and Fueling Infrastructure Tax Credit The state offers an income tax credit worth 50% of the cost of converting a vehicle to operate on an alternative fuel, 50% of the incremental cost of purchasing original equipment manufactured AFV, and 50% of the cost of constructing an alternative fueling station. Only vehicles registered in Louisiana may receive the tax credit. A taxpayer may instead take a tax credit worth 10% of the cost of the motor vehicle or up to \$3,000, whichever is less. For the purpose of this incentive, alternative fuels include compressed natural gas, liquefied natural gas, liquefied petroleum gas, biofuel, biodiesel, methanol, ethanol, electricity, and any other fuels that meet or exceed federal clean air standards. (Reference House Bill 110, 2009, and Louisiana Revised Statutes 47:6035)</p> <p>Green Jobs Tax Credit The state offers a corporate or income tax credit for qualified capital infrastructure projects in Louisiana that are directly related to industries including but not limited to the energy efficient and advanced drive train vehicle industry and the biofuels industry. The tax credit is worth up to \$1 million per state-certified green project, calculated on the base investment costs of the project, for up to a total of \$5 million per year. Other restrictions may apply. (Reference House Bill 733, 2009, and Louisiana Revised Statutes 47:6035)</p>
46 Louisiana	Purchase/Use	<p>Hybrid Electric Vehicle (HEV) and Electric Vehicle (EV) Tax Credit A tax credit is allowed against the excise tax imposed for the purchase of qualified HEVs and EVs. For qualified EVs, the tax credit may not exceed \$2,000. For qualified HEVs, the credit may not exceed: a) \$250 if the vehicle battery provides at least 5% but less than 10% of maximum power available; b) \$500 if the vehicle battery provides at least 10% but less than 20% of maximum power available; c) \$750 if the vehicle battery provides at least 20% but less than 30% of maximum power available; d) \$1,000 if the vehicle battery provides at least 30% of maximum power available. Additional tax credits of \$125 to \$500 are available for HEVs equipped with regenerative braking systems that meet certain requirements, depending on the amount of energy created from breaking. A qualified EV must meet the definition set forth in the Internal Revenue Code. A qualified HEV must meet the current vehicle exhaust standard set under the federal Tier 2 program for passenger vehicles. (Reference Maryland Statutes, Transportation Code 13-815)</p>
50 Maryland	Purchase	
51 Mississippi	None	
52 Michigan	Manufacturing	<p>Alternative Fuel and Vehicle Research, Development, and Manufacturing Tax Credits Effective January 1, 2008, taxpayers certified by the Michigan NextEnergy Authority (MNEA) may claim a nonrefundable credit for tax liability attributable to research, development, or manufacturing of qualified alternative fuel vehicles (AFVs) and renewable fuel. For the purpose of this incentive AFVs include fuel cell, electric, hybrid electric, natural gas, E85, liquefied petroleum gas, and hydrogen vehicles. Renewable fuels include biodiesel blends of at least 20%. Additionally, businesses located within the designated Alternative Energy Zone that are engaged in qualified activities may claim a credit for the taxpayer's qualified payroll amount. (Reference Michigan Compiled Laws 207.821-207.827 and 208.1429)</p>
53 Michigan	Use	<p>Alternative Fuel Development Property Tax Exemption A tax exemption may apply to industrial property which is used for, among other purposes, high-technology activities or the creation or synthesis of biodiesel fuel. High-technology activities include those related to advanced vehicle technologies such as electric, hybrid, or alternative fuel vehicles and their components. In order to qualify for the tax exemptions, an industrial facility must obtain an exemption certificate for the property from the State Tax Commission. (Reference Michigan Compiled Laws 207.552 and 207.803)</p>
54 Michigan	Use	<p>Alternative Fuel Vehicle (AFV) Emissions Inspection Exemption Dedicated AFVs powered by compressed natural gas, propane, electricity, or any other source as defined by rule promulgated by the Michigan Department of Transportation are exempt from emissions inspection requirements. (Reference Michigan Compiled Laws 324.6311 and 324.6512).</p>
55 Michigan	Use	<p>Hybrid Electric Vehicle Research and Development Tax Credit For tax years beginning on or after January 1, 2008, and ending before January 1, 2016, a taxpayer engaged in research and development of a qualified hybrid system that has the primary purpose of propelling a motor vehicle may claim a tax credit under the Michigan Business Tax. This tax credit is equal to 3.9% of all wages, salaries, fees, bonuses, commissions, or other payments made in the taxable year on behalf of or for the benefit of employees for services performed in a qualified facility. The maximum amount of credit allowed for any one taxpayer is \$2 million per tax year. (Reference Michigan Compiled Laws 208.1101-208.1601)</p>
56 Michigan	Use	<p>Alternative Fuel and Vehicle Research, Development, and Manufacturing Tax Credits Effective January 1, 2008, taxpayers certified by the Michigan NextEnergy Authority (MNEA) may claim a nonrefundable credit for tax liability attributable to research, development, or manufacturing of qualified alternative fuel vehicles (AFVs) and renewable fuel. For the purpose of this incentive AFVs include fuel cell, electric, hybrid electric, natural gas, E85, liquefied petroleum gas, and hydrogen vehicles. Renewable fuels include biodiesel blends of at least 20%. Additionally, businesses located within the designated Alternative Energy Zone that are engaged in qualified activities may claim a credit for the taxpayer's qualified payroll amount. (Reference Michigan Compiled Laws 207.821-207.827 and 208.1429)</p>

2009 State-by-State Electric/Hybrid Vehicles Tax Credits/Incentives Summary

State	Type of Program	Incentive Program
57 Michigan	Use	<p>Alternative Fuel Development Property Tax Exemption A tax exemption may apply to industrial property which is used for, among other purposes, high-technology activities or the creation or synthesis of biodiesel fuel. High-technology activities include those related to advanced vehicle technologies such as electric, hybrid, or alternative fuel vehicles and their components. In order to qualify for the tax exemptions, an industrial facility must obtain an exemption certificate for the property from the State Tax Commission. (Reference Michigan Compiled Laws 207.552 and 207.803)</p>
58 Minnesota	Use	<p>State Agency Energy Plan and Vehicle Acquisition Priorities State agencies are required to use alternative fuels, including B20-B100 biodiesel blends, compressed or liquefied natural gas, E70-E100 ethanol blends, hydrogen, or liquefied petroleum gas, to operate state motor vehicles if the clean fuels are reasonably available at comparable costs to conventional fuels and are compatible with the intended use of the motor vehicle. Additionally, state agencies are required to purchase alternative fuel vehicles, which include those capable of being powered by the fuels listed above or motor vehicles powered by electricity or by a combination of electricity and liquid fuel, if such a motor vehicle is reasonably available at comparable costs to</p>
59 Missouri	None	
60 Montana	None	
61 New Hampshire	Use	<p>Alternative Fuel Vehicle (AFV) and Fueling Infrastructure Project Funding The New Hampshire Department of Environmental Services (DES) and the Granite State Clean Cities Coalition (GSCCC) provide competitive funding to expand the use of alternative fuels, AFVs, and advanced technology vehicles in New Hampshire. Only projects located in the ozone non-attainment or maintenance areas in the state are eligible for funding. For more information see the GSCCC Web site.</p>
62 New Jersey	Purchase	<p>Alternative Fuel Vehicle (AFV) and Hybrid Electric Vehicle (HEV) Rebate New Jersey's AFV Rebate Program offers rebates to local government entities that convert vehicles to operate on alternative fuels or purchase original equipment manufacturer (OEM) AFVs. The rebate amounts, shown in the table below, can be used to cover the cost of converting a vehicle to operate on an alternative fuel or to cover the incremental cost of purchasing an OEM AFV, and vary according to the gross vehicle weight rating (GVWR) and whether the vehicle is dedicated or bi-fuel. HEVs may also qualify for the rebates. Eligible entities include local governments, state colleges and universities, school districts, and governmental authorities. The initial funding for this program was provided by a federal Congestion Mitigation and Air Quality (CMAQ) Improvement Program grant.</p> <p>GVWR (in pounds) Rebate Amount (dedicated or hybrid) Rebate Amount (bi-fuel)</p> <p>Light-duty (<8,500) Up to \$4,000 Up to \$2,000 Medium-duty (8,500-14,000) Up to \$7,000 Up to \$4,000 Heavy-duty (>14,000) Up to \$12,000 Up to \$6,000</p>
63 New Jersey	Use	<p>Alternative Fuel Infrastructure Rebate New Jersey's Alternative Fuel Infrastructure Program has funding available to reimburse eligible local governments, state colleges and universities, school districts, and governmental authorities for 50% of the cost of purchasing and installing refueling infrastructure for alternative fuels. Up to \$50,000 is available per applicant. Eligible fuels include natural gas, propane, electricity, ethanol (E85), and hydrogen.</p>
64 New Jersey	Use	<p>High Occupancy Vehicle (HOV) Lane Exemption New Jersey Turnpike Authority (NJTA) allows hybrid electric vehicles (HEVs) and alternative fuel vehicles (AFVs) to travel in the HOV lanes on the New Jersey Turnpike. Permitted AFVs must operate on electricity, methanol, ethanol, natural gas, liquefied petroleum gas, hydrogen, coal derived liquid fuels, or fuels derived from biological materials. Any other federally approved AFVs are also permitted to utilize the NJTA's HOV lanes. For a complete list of eligible HEVs, see the New Jersey Turnpike Authority Web site.</p>
65 New Jersey	Use	<p>Zero Emissions Vehicle (ZEV) Tax Exemption ZEVs sold, rented, or leased in New Jersey are exempt from state sales and use tax. This exemption is not applicable to partial zero emission vehicles, including hybrid electric vehicles. For a list of qualifying ZEVs, see the New Jersey Department of the Treasury Web site. (Reference New Jersey Statutes 54:32B-8.55)</p>

2009 State-by-State Electric/Hybrid Vehicles Tax Credits/Incentives Summary

State	Type of Program	Incentive Program
66 New Jersey	Purchase	<p>Alternative Fuel Vehicle (AFV) and Hybrid Electric Vehicle (HEV) Rebate New Jersey's AFV Rebate Program offers rebates to local government entities that convert vehicles to operate on alternative fuels or purchase original equipment manufacturer (OEM) AFVs. The rebate amounts, shown in the table below, can be used to cover the cost of converting a vehicle to operate on an alternative fuel or to cover the incremental cost of purchasing an OEM AFV, and vary according to the gross vehicle weight rating (GVWR) and whether the vehicle is dedicated or bi-fuel. HEVs may also qualify for the rebates. Eligible entities include local governments, state colleges and universities, school districts, and governmental authorities. The initial funding for this program was provided by a federal Congestion Mitigation and Air Quality (CMAQ) Improvement Program grant.</p> <p>GVWR (in pounds) Rebate Amount (dedicated or hybrid) Rebate Amount (bi-fuel) Light-duty (<8,500) Up to \$4,000 Up to \$2,000 Medium-duty (8,500-14,000) Up to \$7,000 Up to \$4,000 Heavy-duty (>14,000) Up to \$12,000 Up to \$6,000</p>
67 New Jersey	Use	<p>High Occupancy Vehicle (HOV) Lane Exemption New Jersey Turnpike Authority (NJTA) allows hybrid electric vehicles (HEVs) and alternative fuel vehicles (AFVs) to travel in the HOV lanes on the New Jersey Turnpike. Permitted AFVs must operate on electricity, methanol, ethanol, natural gas, liquefied petroleum gas, hydrogen, coal derived liquid fuels, or fuels derived from biological materials. Any other federally approved AFVs are also permitted to utilize the NJTA's HOV lanes. For a complete list of eligible HEVs, see the New Jersey Turnpike Authority Web site.</p>
68 North Dakota	None	<p>Alternative Fuel Vehicle (AFV) and Fueling Infrastructure Loans The Nebraska Energy Office administers the Dollar and Energy Saving Loan Program (Program). The Program makes low-cost loans available for a variety of alternative fuel projects, including: the replacement of conventional vehicles with AFVs; the purchase of new AFVs; the conversion of conventional vehicles to operate on alternative fuels; and the construction or purchase of a fueling station or equipment. Dedicated AFVs are eligible, and loans may go towards a portion of the cost of dual-fuel vehicles. The maximum loan amount is \$150,000 per borrower, and the interest rate is 5% or less.</p>
69 Nebraska	Purchase	
70 Nevada	None	
71 New Mexico	Manufacturing	<p>Alternative Fuel Vehicle (AFV) Manufacturing Tax Credit The Alternative Energy Product Manufacturers Tax Credit provides a credit against combined reporting taxes (gross receipts, compensating, and withholding) for manufacturing alternative energy products, which include hydrogen and fuel cell vehicle systems, and electric and hybrid electric vehicles. The credit is limited to 5% of qualifying expenditures, and manufacturers must fulfill job creation requirements to be eligible. (Reference New Mexico Statutes 7-9J)</p>
72 New Mexico	Use	<p>Alternative Fuel Vehicle (AFV) and Fueling Infrastructure Grants The Clean Energy Grants Program is administered by the Energy Conservation and Management Division of the New Mexico Energy, Minerals, and Natural Resources Department and provides grants for projects utilizing clean energy technologies (including alternative fuel vehicles and fueling infrastructure) and projects that provide clean energy education, technical assistance, and training programs. These grants are provided on a competitive basis to qualifying entities such as municipalities and county governments, state agencies, state universities, public schools, post-secondary educational institutions, and Indian nations, tribes, and pueblos. (Reference New Mexico Statutes 71-7-1 to 71-7-7)</p>
73 New York	Use	<p>Alternative Fueling Infrastructure Tax Credit A state tax credit is available for the installation of alternative fuel vehicle fueling infrastructure located in the state. The tax credit is equal to 50% of the cost of the infrastructure. This includes infrastructure for storing or dispensing an alternative fuel into the fuel tank of a motor vehicle powered by that fuel, as well as infrastructure used for recharging electric vehicles. Eligible alternative fuels include natural gas, liquefied petroleum gas, hydrogen, electricity, and any other fuel that is at least 85% ethanol or other alcohol. This credit does not apply after December 31, 2010. (Reference New York Tax Law 187-b)</p>
74 New York	Use	<p>Alternative Fuel Vehicle (AFV) and Fueling Infrastructure Funding The New York State Clean Cities Challenge, administered by the New York State Energy Research and Development Authority (NYSERDA), awards funds to members of New York's Clean Cities Coalitions that acquire AFVs or install AFV fueling or recharging infrastructure. Funds are awarded on a competitive basis, and can be used to cost-share up to 75% of the proposed project, including the incremental cost of purchasing AFVs, the cost of installing fueling and recharging equipment, and the incremental costs associated with bulk alternative fuel purchases. Consideration, in ranking order, will be given to projects that:</p> <ul style="list-style-type: none"> • Offset the greatest amount of petroleum per year; • Result in the greatest emissions reduction; • Affect Clean Air non-attainment areas or areas targeted by the Energy Policy Act (EPA) regulations; • Result in new fueling or recharging facilities; • Benefit more than one fleet; • Provide a high level of visibility and innovation; and/or • Comprise unique public/private partnerships.

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State	Type of Program	Incentive Program
75 New York	Use	<p>Alternative Fuel Vehicle (AFV) Technical Assistance The New York State Clean Cities Sharing Network (Network), which provides technical, policy, and program information about AFVs, is managed by the New York State Energy Research and Development Authority (NYSERDA). Membership is open to all organizations, businesses, and individuals interested in AFVs and members are notified about upcoming funding opportunities and events. The Network publishes information about tax incentives, fueling stations, case studies, and contact information for the Clean Cities program and other industry leaders. The Network also organizes and sponsors technical workshops.</p>
76 New York	Use	<p>Alternative Fuel Vehicle (AFV) and Fueling Infrastructure Technical Assistance The New York State Energy Research and Development Authority's (NYSERDA) Flexible Technical (Flex-Tech) Assistance Program provides assistance to fleet managers who want to evaluate the feasibility and cost of adding AFVs and fueling facilities to their operations. Low-cost training for vehicle mechanics is also available through certified institutions.</p>
77 New York	Use	<p>Alternative Fuel Product Development Funding The New York State Energy Research and Development Authority's (NYSERDA) Transportation Research Program sponsors a wide variety of product development efforts aimed at improving efficiency and increasing the use of alternative fuels. Program Opportunity Notices are issued periodically to solicit proposals for cost-share development efforts leading to the manufacture and sale of innovative products that provide energy, environmental and economic development benefits. For more information, see the NYSEERDA Transportation Projects Web site.</p>
78 New York	Use	<p>High Occupancy Vehicle (HOV) Lane Access Through the Clean Pass Program, eligible hybrid electric vehicles (HEVs) may use the Long Island Expressway HOV lanes, regardless of the number of occupants in the vehicle. Vehicles must display the Clean Pass vehicle sticker, available from the New York State Department of Motor Vehicles. For a list of eligible vehicles, see the Clean Pass Program Web site.</p>
79 New York	Purchase	<p>Alternative Fuel Bus and Infrastructure Funding The Clean Fueled Bus Program, administered by the New York State Energy Research and Development Authority (NYSERDA), provides funds to state and local transit agencies, municipalities, and schools for up to 100% of the incremental cost of purchasing new alternative fuel buses and associated infrastructure. For the purposes of this program, an alternative fuel bus is any motor vehicle with a seating capacity of 15 or more passengers used for the transportation of persons on public highways that is powered by compressed natural gas (CNG) (including dual-fuel technology with a minimum of 75% use of CNG during typical operation), propane, methanol, hydrogen, biodiesel, or ethanol, or uses electricity as a primary motive force (e.g., hybrid electric). Project selection is based on the emissions reduction potential. Eligible infrastructure projects include construction and installation of equipment to fuel or recharge alternative fuel buses including, but not limited to, battery charging stations and natural gas fueling stations and depots. To be considered for funding, the project must be necessary to introduce or expand a fleet of alternative fuel buses and include on funding for this program comes from the Clean Water/Clean Air Bond Act.</p>
80 New York	Purchase	<p>Alternative Fuel and Advanced Technology Vehicle Funding - New York City The New York City Private Fleet Alternative Fuel/Electric Vehicle Program, administered by the New York State Energy Research and Development Authority (NYSERDA) in cooperation with New York City Department of Transportation, helps private companies and non-profit organizations operating vehicles in New York City to acquire alternative fuel and advanced technology vehicles. Funds are awarded on a competitive basis for up to 50% of the incremental cost of purchasing new light-duty natural gas vehicles (NGVs) or electric vehicles (EVs), and up to 80% of the incremental cost of purchasing new or converting medium- and heavy-duty NGVs (dedicated and bi-fuel), EVs, or hybrid electric vehicles. In addition, up to 50% of the costs for alternative fueling or EV charging station equipment and installation may be eligible.</p>
81 North Carolina	Use	<p>Alternative Fuel Vehicle (AFV) and Hybrid Electric Vehicle (HEV) Grants The Clean Fuel Advanced Technology (CFAT) project focuses on reducing transportation related emissions in North Carolina's non-attainment and maintenance counties for National Ambient Air Quality Standards. Projects that are adjacent to areas may also be eligible if emissions will be reduced in the eligible counties. The project is funded by the North Carolina Department of Transportation, State Energy Office, and the Division of Air Quality, and covers three broad areas: education and outreach; project funding; and recognition of exemplary activities. Although funding is not currently available, future financial support may be available for AFVs, fueling infrastructure, idle reduction technologies, heavy-duty HEVs, heavy-duty buses, and diesel retrofits.</p>
82 North Carolina	Purchase	<p>Alternative Fuel Vehicle (AFV) Grants Grants from the North Carolina Department of Environment and Natural Resources Division of Air Quality are available for the incremental cost of purchasing Original Equipment Manufacturer AFVs, vehicle conversions, implementing idle reduction programs, and constructing or installing public alternative fueling facilities. More than \$500,000 in funding is available.</p>

2009 State-by-State Electric/Hybrid Vehicles Tax Credits/Incentives Summary

State	Type of Program	Incentive Program
83 North Carolina	Purchase	<p>Alternative Fuel and Alternative Fuel Vehicle (AFV) Fund</p> <p>The North Carolina State Energy Office administers an energy credit banking program which enables the state to generate funds from the sale of Energy Policy Act of 1992 (EPAct) credits. The monies generated by the sale of EPAct credits are deposited into the Alternative Fuel Revolving Fund (Fund), which enables state agencies to offset the incremental costs of purchasing alternative fuel, developing AFVs, and purchasing AFVs. Funds are distributed to state departments, institutions, and agencies in proportion to the number of EPAct credits generated by each. For the purposes of this program, the definition of alternative fuel includes biodiesel (minimum of 20% biodiesel or B20), ethanol (minimum of 85% ethanol or E85), compressed natural gas, propane, and electricity, and includes hybrid electric vehicles. The Fund also covers additional projects approved by the Energy Policy Council. (Reference North Carolina General Statutes 143-58.4, 143-58.5, 143-341(8)i, and 136-28.13)</p>
85 Ohio	Purchase	<p>Alternative Fuel and Fueling Infrastructure Grants</p> <p>The Alternative Fuel Transportation Grant Program provides funding for the purchase and installation of E85 and biodiesel fueling and blending facilities. The maximum grant per retail facility for new construction is \$40,000 per fuel type at each location, \$10,000 for fueling facility conversions, and \$5,000 for marketing existing and new facilities. Clean Fuels Ohio is available to assist retailers in evaluating their suitability for these grants, preparing applications, and helping with direct postcard educational mailings. This program will expire in June 2009. Funds are also available for the purchase and use of alternative fuel by businesses, nonprofit organizations, public school systems, and local governments. (Reference Ohio Revised Code 122.075)</p>
86 Oklahoma	Purchase/Use	<p>Alternative Fuel Vehicle (AFV) Tax Credit</p> <p>For tax years beginning before January 1, 2015, Oklahoma provides a one-time income tax credit for 50% of the cost of converting a vehicle to operate on an alternative fuel, or for 50% of the incremental cost of purchasing a new Original Equipment Manufacturer AFV. The state also provides a tax credit for 10% of the total vehicle cost, up to \$1,500, if the incremental cost of a new AFV cannot be determined or when an AFV is resold, as long as a tax credit has not been previously taken on the vehicle. Equipment used for conversions must be new and must not have been previously used to modify or retrofit any vehicle. The alternative fuels eligible for the credit are compressed natural gas, liquefied natural gas, liquefied petroleum gas, hydrogen fuel cell, and electricity. For qualified electric vehicles propelled by electricity only, the credit is based on the full purchase price of the vehicle. For vehicles equipped with an internal combustion engine, such as a hybrid electric vehicle, the credit is based on the portion of the motor vehicle which is attributable to the propulsion of the vehicle by electricity. For more information, see Oklahoma Income Tax Form 511CR (PDF 219 KB). (Reference House Bill</p>
87 Oregon	Use	<p>Alternative Fuel Production and Infrastructure Tax Credit</p> <p>Business owners and others who invest in alternative fuel production and fueling infrastructure projects in Oregon may be eligible for a tax credit of up to 50% of eligible project costs through the Business Energy Tax Credit. Some projects (e.g., propane, compressed natural gas, liquefied natural gas) may only qualify for a tax credit of 35% of eligible costs. The tax credit is filed over five years. For projects with eligible costs of \$20,000 or less, the tax credit may be taken in one year. Unused credits can be carried forward up to eight years.</p> <p>An eligible applicant (a project owner) must meet the following requirements:</p> <ol style="list-style-type: none"> 1) Be a trade, business, or rental property owner with a business site in Oregon or be an Oregon non-profit organization, tribe, or public entity that partners with an Oregon business or resident; 2) Own or be the contract buyer of the project; and 3) Use the equipment or lease it to another person or business in Oregon. <p>Non-profit organizations, schools, and other public entities that do not have an Oregon tax liability may receive the credit for an eligible project but must "pass-through" or transfer their project eligibility to a pass-through partner in exchange for a lump-sum cash payment. The Oregon Department of Energy determines the rate that is used to calculate the credit. (Reference Oregon Revised Statutes 316.116, 317.115, 469.160-469.180, and 469.185-469.225)</p>
88 Oregon	Use	<p>Alternative Fuel Vehicle (AFV) and Hybrid Electric Vehicle (HEV) Tax Credit</p> <p>The Oregon Department of Energy offers two income tax credits for AFVs and HEVs, one for residents and one for business owners. Oregon residents are eligible for a Residential Energy Tax Credit, which provides credits of up to \$1,500 toward the purchase of qualified AFVs and HEVs; currently, flexible fuel vehicles are not eligible. A credit of up to \$750 is also available for the cost of converting vehicles to operate on an alternative fuel.</p> <p>Oregon business owners who invest in new HEVs for business use are eligible for a Business Energy Tax Credit of up to 35% of the incremental cost of the HEV. Business owners without an Oregon tax liability, non-profit organizations, and public entities may choose to "pass-through" or transfer their tax credit eligibility to a business or individual with an Oregon tax liability in exchange for a cash payment equal to the pass-through rate at the time of application. Business owners with a tax liability may also choose to transfer their tax credit.</p> <p>(Reference Oregon Revised Statutes 316.116, 469.160-469.180, and 801.375)</p>
89 Oregon	Use	<p>Alternative Fuel Loans</p> <p>The Oregon Department of Energy offers a loan program for energy efficiency, renewable resource, and alternative fuel projects. Eligible alternative fuel projects include fuel production facilities, dedicated feedstock production, fueling stations, and fleet vehicles. The program issues Oregon general obligation bonds to provide funds for the loans. Loan recipients must complete a loan application and pay a loan application fee. (Reference Oregon Revised Statutes 470.050)</p>

2009 State-by-State Electric/Hybrid Vehicles Tax Credits/Incentives Summary

State	Type of Program	Incentive Program
90 Oregon	Use	<p>Alternative Fuel Vehicle (AFV) and Hybrid Electric Vehicle (HEV) Tax Credit The Oregon Department of Energy offers two income tax credits for AFVs and HEVs, one for residents and one for business owners. Oregon residents are eligible for a Residential Energy Tax Credit, which provides credits of up to \$1,500 toward the purchase of qualified AFVs and HEVs; currently, flexible fuel vehicles are not eligible. A credit of up to \$750 is also available for the cost of converting vehicles to operate on an alternative fuel.</p> <p>Oregon business owners who invest in new HEVs for business use are eligible for a Business Energy Tax Credit of up to 35% of the incremental cost of the HEV. Business owners without an Oregon tax liability, non-profit organizations, and public entities may choose to "pass-through" or transfer their tax credit eligibility to a business or individual with an Oregon tax liability in exchange for a cash payment equal to the pass-through rate at the time of application. Business owners with a tax liability may also choose to transfer their tax credit. (Reference Oregon Revised Statutes 316.116, 469.160-469.180, and 801.375)</p>
91 Pennsylvania	Use	<p>Renewable Energy Grants Pennsylvania Energy Development Authority (PEDA) provides grants and loan guarantees for alternative energy projects and related research referring to deployment projects, manufacturing, or research. PEDA funding is available for projects involving clean, alternative fuels for transportation, biomass, and fuel cells. Another grant program, the Pennsylvania Energy Harvest Grant, seeks to deploy cleaner energy sources by providing funding for renewable energy technologies, such as biomass energy projects. For more information, see the Department of Environmental Protection Grant and Loan Programs Web site.</p>
92 Pennsylvania	Purchase	<p>Alternative Fuel Vehicle (AFV), Hybrid Electric Vehicle (HEV), and Fueling Infrastructure Funding The Alternative Fuels Incentive Grant (AFIG) program is administered by the Pennsylvania Department of Environmental Protection and provides financial assistance and information on alternative fuels, AFVs, HEVs, plug-in hybrid electric vehicles, anti-idling technologies that use alternatives to diesel fuel for heavy-duty trucks, and advanced vehicle technology research, development, and demonstration. The AFIG program provides grant funding to school and vocational school districts, municipal authorities, counties, cities, boroughs, incorporated towns, county institution districts, nonprofit entities, corporations, limited liability companies, or partnerships incorporated or registered in the Commonwealth of Pennsylvania. Projects that result in product commercialization and the expansion of Pennsylvania companies will be favored in the selection process. (Reference Pennsylvania General Acts 178, 2004, and Special Session Senate Bill 22, 2008)</p>
93 Rhode Island	Use	<p>Alternative Fuel Vehicle (AFV) Tax Exemption - Warren The town of Warren may allow excise tax exemptions of up to \$100 for qualified AFVs registered in Warren. Qualified vehicles must be primarily fueled by one of the following: an electric motor drawing current from rechargeable batteries or fuel cells; gas produced from biomass, where biomass is defined as any organic material other than oil, natural gas, and coal; liquid, gaseous or solid synthetic fuels produced from coal, or coke or coke gas. (Reference Rhode Island Code 44-34-14)</p>
94 South Carolina	Use	<p>Alternative Fuel and Advanced Vehicle Tax Credit A state income tax credit equal to 20% of the federal fuel cell, advanced lean burn, hybrid electric vehicle, and alternative fuel vehicle credits is available to South Carolina resident taxpayers who are eligible for, and claim, the federal credits. If the amount of the credit exceeds the taxpayer's liability for the applicable tax year, any unused portion of the credit may be carried forward and claimed for up to five years. The state tax credit is calculated without regard to the phase out period limits of Internal Revenue Code Section 30(B)(f). (Reference South Carolina Code of Laws 12-6-3377)</p>
95 South Dakota	None	
96 Texas	Use	<p>Clean Vehicle and Equipment Grants The Texas Emissions Reduction Plan (TERP) provides grants for various types of clean air projects in 41 counties to improve air quality in the state's non-attainment areas. Grants are available to purchase, convert, or repower on- and off-road vehicles and equipment. For complete information on the types of projects and expenses that may be eligible for a grant, refer to the TERP Web site. (Reference Texas Statutes, Health and Safety Code 386)</p>
97 Texas	Use	<p>Texas Clean Fleet Program Beginning in 2010, the Texas Commission on Environmental Quality (TCEQ) will administer the Texas Clean Fleet Program (Program), which encourages owners of fleets containing diesel vehicles to permanently remove the vehicles from the road and replace them with alternative fuel or hybrid electric vehicles. Grants will be available to fleets to offset the incremental cost of such replacement projects. An entity that operates a fleet of at least 100 vehicles and places 25 or more qualifying vehicles in service for use entirely in Texas during a given calendar year is eligible to participate in the Program. Qualifying alternative fuel or hybrid electric vehicle replacements must result in a reduction of emissions of nitrogen oxides or other pollutants, as established by the TCEQ, by at least 25% as compared to baseline levels; meet established minimum fuel economy guidelines; and meet other requirements as established by TCEQ. Neighborhood electric vehicles do not qualify under this Program. This Program expires August 31, 2017. (Reference Senate Bill 1759, 2009, and Texas Statutes, Health and Safety Code 391)</p>
98 Texas	Use	<p>Alternative Fuel Grants The Texas Emissions Reduction Plan (TERP) provides grants for alternative fuel and advanced technology demonstration and infrastructure projects under the New Technology Research and Development (NTRD) Program, which provides incentives to encourage and support research, development, and commercialization of technologies that reduce pollution. For more information, see the NTRD Program Web site. The NTRD Program is administered by the Texas Environmental Research Consortium, with support from the Houston Advanced Research Center from 2006 to 2009. The Texas Commission on Environmental Quality will assume administration in 2010. (Reference Texas Statutes, Health and Safety Code 386)</p>

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State	Type of Program	Incentive Program
99 Texas	Purchase	Alternative Fuel Vehicle (AFV) Grants - Houston-Galveston Congestion Mitigation and Air Quality (CMAQ) Program Grants are available through the Houston-Galveston Area Council, via the Greater Houston Clean Cities Coalition, for up to 75% of the incremental cost of purchasing new original equipment manufactured clean fuel vehicles, clean fuel vehicle conversions/repowers, or establishing publicly accessible alternative fueling infrastructure. This grant is for government and private entities in the eight-county Houston-Galveston non-attainment area.
100 Tennessee	Use	Infrastructure Development Program FastTrack Infrastructure Development Program funds may be used for alternative fueling infrastructure improvements. Funds may be used by private sector businesses to locate or expand fueling infrastructure in the state and to create or retain jobs for Tennesseans. Other restrictions may apply.
101 Tennessee	Use	Biofuels Strategy and Outreach Campaign The Governor's Interagency Alternative Fuels Working Group, supported administratively by the Tennessee Department of Environment and Conservation, was established to develop a comprehensive state alternative fuels strategy to make Tennessee a leader in the production, distribution, and use of biofuels. The Working Group developed BioTENN, a comprehensive, statewide public education and outreach campaign to increase public awareness and understanding of alternative fuels, particularly biofuels. (Reference Executive Order 33, 2006)
102 Utah	Use	High Occupancy Vehicle (HOV) Lane Exemption Vehicles with clean fuel license plates are authorized to travel in HOV lanes regardless of the number of occupants, to the extent authorized or permitted by federal law or federal regulation. The clean fuel plate must be purchased from a Utah Motor Vehicles office for a fee of \$15. Vehicle owners must first obtain a C Plate permit from the Utah Department of Transportation. To be eligible for a clean fuel license plate, a vehicle must meet the definition of a clean fuel vehicle as defined in Utah Code 59-13-102. This incentive expires December 31, 2010. (Reference Utah Code 41-1a-418, 41-1a-1211, 41-6a-702 and 59-13-102)
103 Utah	Use	Alternative Fuel Vehicle (AFV) Parking Incentive - Salt Lake City Salt Lake City has a free metered parking program for Green Vehicles, which are vehicles that qualify for a Utah Clean Fuel license plate by meeting the definition of a clean fuel vehicle as defined by Utah Code 19-1-402, or that qualify for a Salt Lake City Green Vehicle parking permit by being a top performer in regards to city fuel economy or emissions. To park free at meters, vehicles must display a Utah Clean Fuel license plate, or Green Vehicle parking permit. Green Vehicle parking permits are available from the Salt Lake City Transportation Division for vehicles meeting at least one of the following criteria: 1) achieve a city fuel economy of at least 41 miles per gallon as determined by the U.S. Environmental Protection Agency (EPA), or 2) achieve an EPA Green Vehicle Guide pollution score of at least eight for Utah. (Reference Salt Lake City Code 12.56.205)
104 Utah	Use/Purchase	Incentive for Airport Alternative Fuels Use The Salt Lake City Department of Airports provides incentives to commercial ground transportation providers who purchase and operate clean fuel vehicles that exclusively operate on approved clean fuels (as designated by Utah Code 59-13-102). Eligible vehicles are those that operate on compressed natural gas, propane, hydrogen, electricity, or hybrid electric vehicles. The incentives are in the form of a credit against ground transportation fees. Incentive credit amounts are \$2,500 for each Original Equipment Manufacturer vehicle or certified vehicle converted to operate on an alternative fuel. (Reference Salt Lake City Department of Airports Clean Fuel Policy Number 10.07.100)
105 Utah	Use/Purchase	Alternative Fuel Vehicle (AFV) and Fueling Infrastructure Grants and Loans The Utah Clean Fuels and Vehicle Technology Fund, funded through the Clean Fuels and Vehicle Technology Fund, provides grants and loans to assist businesses and government entities in covering: 1) the cost of converting a vehicle to operate on clean fuels; 2) the incremental cost of purchasing an Original Equipment Manufacturer (OEM) clean fuel vehicles; and 3) the cost of retrofitting diesel vehicles with U.S. Environmental Protection Agency verified closed crankcase filtration devices, diesel oxidation catalysts, and/or diesel particulate filters. The Clean-Fuels Grant and Loan Program also provides loans for the cost of converting a vehicle to operate on a clean fuel, for the purchase of OEM clean fuel vehicle, and for the purchase of fueling equipment for public/private sector business and government vehicles. Finally, the program can provide grants and loans to serve as matching funds for federal and non-federal grants for the purpose of vehicles to operate on a clean fuel, purchasing OEM clean fuel vehicles, or retrofitting diesel vehicles. The program does not support E85 or biodiesel projects. (Reference Utah Code 19-1-401 through 19-1-405)
106 Utah	Purchase	Clean Fuel Vehicle Tax Credit The state provides an income tax credit for 50% of the incremental cost (up to \$3,000 maximum) of a clean fuel vehicle built by an Original Equipment Manufacturer (OEM) and/or an income tax credit for 50% of the cost (up to \$2,500 maximum) of converting the vehicle to operate on an alternative fuel for vehicles purchased between January 1, 2001 and January 1, 2009, and registered in Utah. If not previously used, the tax credit may be claimed on used vehicles. Tax credits are available for businesses and individuals, may be carried forward up to five years, and are not available for hybrid electric vehicles. Documentation must be provided as described in the Utah state tax form TC-40V. For vehicles purchased after January 1, 2009, the credit amount for OEM compressed natural gas vehicles registered in Utah is 35% of the vehicle purchase price or \$2,500, whichever is less; other new clean fuel vehicles may be eligible for a credit of up to \$750. The credit for conversions remains the same as for pre-2009 purchases. Furthermore, hybrid-electric vehicles that meet required air quality and fuel economy standards are eligible. This incentive expires December 31, 2013. (Reference Utah Code 3

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State	Type of Program	Incentive Program
107 Vermont	Use	<p>Alternative Fuel and Advanced Vehicle Research and Development Tax Credit Vermont businesses that qualify as a high-tech business involved exclusively in the design, development, and manufacture of alternative fuel vehicles, hybrid electric vehicles, and electric vehicles or energy technology involving fuel sources other than fossil fuels are eligible for up to three of the following tax credits: 1) payroll income tax credit; 2) qualified research and development income tax credit; 3) export tax incentive; 4) small business investment tax credit; and 5) high-tech growth tax credit. Certain limits and restrictions apply. (Reference Vermont Statutes Title 32, Chapter 151, Section 5930a, c, f, g, and k)</p>
108 Virginia	Use/Manufacturing	<p>High Occupancy Vehicle (HOV) Lane Exemption Alternative fuel vehicles (AFVs) displaying the Virginia Clean Special Fuels license plate may use Virginia HOV lanes, regardless of the number of occupants, until July 1, 2010. For HOV lanes serving the I-95/395 corridor, only registered vehicles displaying Clean Special Fuels license plates issued prior to July 1, 2006, will be exempt from HOV lane requirements. Dedicated AFVs and some hybrid electric vehicles may qualify for the license plate and HOV exemption; see the Virginia Department of Motor Vehicles Web site for a complete list of qualifying vehicles. The annual fee for Clean Special Fuels license plates is \$25 in addition to the prescribed fee for commonwealth license plates. (Reference Virginia Code 33.1-46.2 and 46.2-749.3)</p>
109 Virginia	Use/Manufacturing	<p>Alternative Fuel Job Creation Tax Credit Businesses involved with the manufacture of components for alternative fuel vehicles (AFVs), AFV conversions, or the production, storage, or dispensing of hydrogen as a vehicle fuel are eligible for a job creation tax credit for up to \$700 per full-time employee. The credit is allowed in the taxable year in which the job is created and in each of the two succeeding years in which the job is continued. Qualifying businesses include AFV component manufacturers and vehicle conversion companies. Qualified AFVs include vehicles that operate using natural gas, hydrogen, or electricity. This credit is effective for taxable years through December 31, 2011. (Reference Virginia Code 58.1-439.1)</p>
110 West Virginia	Use	<p>Alternative Fuel School Bus Incentive Any county that uses an acceptable alternative fuel, including compressed natural gas, for the operation of all or any portion of its school bus system is eligible for a reimbursement from the West Virginia Department of Education of up to 95%, depending on county density, of the county's transportation cost for maintenance, operation, and related costs incurred from using the alternatively fueled school buses. All counties are also eligible for an additional 10% reimbursement. A county qualifying for this allowance for alternative fuel use must submit a plan which includes the future use of the alternatively fueled school buses to the Department of Education. (Reference West Virginia Code 18-9A-7)</p>
111 Wisconsin	Use	<p>Alternative Fuel Tax Refund for Taxis A person using alternative fuel to operate a taxi used to transport passengers may be reimbursed for the amount of Wisconsin fuel tax paid. Refund claims must be filed within one year of the date the fuel is purchased and must be for a minimum 100 gallons of alternative fuel. (Reference Wisconsin Statutes 78.75(1m) (a)1)</p>
112 Wisconsin	Manufacturing	<p>Vehicle Battery and Engine Research Tax Credits For taxable years beginning after June 30, 2007, any corporation involved in qualified research is allowed a tax credit equal to 10% of the corporation's qualified research expenses incurred in this state for the taxable year. Qualified research only includes the design and manufacturing of energy efficient lighting systems, building automation and control systems, and automotive batteries for use in hybrid-electric vehicles that reduce the demand for natural gas or electricity or improve the efficiency of its use. Qualified research also includes research related to designing internal combustion engines (including substitute products such as fuel cell, electric, and hybrid drives) for vehicles, including expenses related to designing vehicles that are powered by such engines and improving production processes for such engines and vehicles. Corporations may also claim tax credits equal to 5% of the amount paid or incurred by that corporation during the taxable year to construct and equip new facilities or expand existing facilities used in Wisconsin for qualified research. (Reference Wisconsin Statutes 71.28(4)(ab 2), 71.28 (ad 2 and 3), and 71.28(5)(ad))</p>
113 Wyoming	None	
114 Washington	Purchase	<p>Alternative Fuel Vehicle (AFV) and Hybrid Electric Vehicle (HEV) Tax Exemption New passenger cars, light-duty trucks, and medium-duty passenger vehicles that are dedicated AFVs are exempt from the state sales tax. Qualified vehicles must operate exclusively on natural gas, propane, hydrogen, or electricity, meet the California motor vehicle emissions standards effective January 1, 2005, and comply with the rules of the Washington Department of Ecology. In addition, all new passenger cars, light-duty trucks, and medium-duty passenger vehicles that utilize hybrid electric technology and have a U.S. Environmental Protection Agency estimated highway fuel economy of at least 40 miles per gallon are exempt from the 0.30% motor vehicle sales tax. These tax exemptions expire on January 1, 2011. (Reference House Bill 6170, 2009, and Revised Code of Washington 82.08.020 and 82.08.809)</p>
115 Washington	Purchase	<p>Electric and Plug-in Hybrid Electric Vehicle Demonstration Grants The Vehicle Electrification Demonstration Grant Program is administered by the Washington Department of Community, Trade, and Economic Development. Eligible applicants are state agencies, public school districts, public utility districts, or political subdivisions of the state. Grants may be awarded to projects involving the purchase or conversion of existing vehicles to plug-in hybrid electric vehicles or battery electric vehicles for use in an applicant's fleet or operations; additional eligibility requirements apply. (Reference Revised Code of Washington 43.325.110)</p>

2009 State-by-State Electric/Hybrid Vehicles Tax Credits/Incentives Summary

State	Type of Program	Incentive Program
116 Washington	Use	<p>Alternative Fuel Vehicle (AFV) and Hybrid Electric Vehicle (HEV) Emission Inspection Exemption Electric, compressed natural gas, and liquefied petroleum gas vehicles are exempt from emission control inspections. HEVs that obtain a U.S. Environmental Protection Agency fuel economy rating of at least 50 miles per gallon of gasoline during city driving are also exempt from these inspections. (Reference Revised Code of Washington 46.16.015)</p>
117 Washington	Use	<p>Electric Vehicle (EV) Battery and Infrastructure Tax Exemptions Public lands used for installing, maintaining, and operating EV infrastructure are exempt from leasehold excise taxes until January 1, 2020. Additionally, the state sales and use taxes do not apply to EV batteries; labor and services for installing, repairing, altering, or improving EV batteries and EV infrastructure; and the sale of property on land used for EV infrastructure. (Reference House Bill 1481, 2009, and Revised Code of Washington 82.29A, 82.08, and 82.12)</p>
118 Washington	Use	<p>Alternative Fuel Loans and Grants The Energy Freedom Program (Program) is administered by the Washington Department of Commerce in consultation with other state agencies. The Program includes the Energy Freedom Account, which provides financial and technical assistance for bioenergy production, research, and market development, primarily in the form of loans used to convert farm products, organic wastes, cellulose and biogas into electricity, biofuel, and related coproducts. The Program also includes the Green Energy Incentive Account, which provides financial assistance for alternative fueling infrastructure along Interstate corridors. Funds have yet to be appropriated for these accounts, which are set to expire June 30, 2016. (Reference House Bill 2289, 2009, and Revised Code of Washington 43.325)</p>



M. JODI RELL
GOVERNOR

STATE OF CONNECTICUT
EXECUTIVE CHAMBERS

February 9, 2010

Chairman Barry Rickert, Deputy State Fire Marshall
Codes and Standards Committee
1111 Country Club Road
Middletown, CT 06457

Dear Chairman and Committee Members:

Let me first thank you for your hard work and focus upon developing and maintaining the building code for our State. Through your meticulous behind-the-scenes efforts, we are all benefited by safer and warmer structures.

Several months ago, I executed Executive Order # 34 which created the Electric Vehicle Infrastructure Council and set forth a number of goals that would prepare the way for the arrival of electric vehicles (EVs). I noted that it is imperative that the State, in collaboration with stakeholders, develop a comprehensive and visionary framework for the infrastructure and integration of EVs in Connecticut. To that end, I asked that the Council to do the following.

- a. Strategize on preparing the State for the rapid and seamless integration of EVs into the market;
- b. Coordinate interagency decision-making on critical issues;
- c. Establish performance measures for meeting infrastructure, funding, environmental, and regulatory goals, and
- d. Align State goals with what is occurring on the national level for EVs.

The Council has undertaken its work in earnest and has submitted its Preliminary Report on February 1st. The Council recognized potential issues regarding the home charging installation process and the need for streamlining permitting requirements. Several members of the Council have since met with the Lisa Humble, the State Building Inspector, and Robert Nuzzi, the State Electrical Inspector, and also invited them to attend future Council meetings.

Consequently, the need for attention to new building construction, which is addressed by the State Building Code and State Fire Safety Code, to accommodate the infrastructure needs of this new technology and prepare for its impending arrival has been brought to my attention. In an effort to provide the infrastructure to support the electrical requirements of EVs in new building construction, I ask that you please incorporate in the next code cycle EV infrastructure support requirements. I ask that these requirements be included for new building construction and that these base system requirements be incorporated in new residential construction, as well as new industrial, new office, and new municipal facilities. The required electrical infrastructure support should be a mandated code requirement in the next code adoption cycle.

As for streamlining the permitting requirements, I understand that this falls under municipal control and that there is a spectrum of differences among the 169 municipalities. However, I ask that you please provide educational support training to help implement minimum new Building Code electrical infrastructure requirements and also new Fire Safety Code infrastructure requirements for uniform code implementation and enforcement. In addition, I ask that you provide technical support to municipalities desiring assistance to forge avenues to safely streamline their construction permitting requirements.

Thank you for your assistance with this effort.

Sincerely,

A handwritten signature in black ink that reads "M. Jodi Rell". The signature is fluid and cursive, with the first letters of "M.", "Jodi", and "Rell" being capitalized and prominent.

M. Jodi Rell
Governor

cc: Co-Chairs, Electric Vehicle Infrastructure Council
Commissioner Kevin DelGobbo, DPUC
Commissioner Joan McDonald, DECD



For Release: Noon Central Daylight Time

July 1, 2010

CHEVROLET VOLT ADDS FOUR STATES TO LAUNCH

- *Texas, New York, New Jersey, and Connecticut join California, Michigan, and Washington, D.C.*
- *Chevrolet Volt can handle a full range of climates and driving conditions*

AUSTIN – Chevrolet is adding Texas, New York, New Jersey, and Connecticut to the launch markets for the Volt, Ed Whitacre, General Motors chairman and CEO, announced today. Whitacre said the company is expanding the initial launch of the groundbreaking electric vehicle in response to intense interest in the Volt from customers across the country.

Today's announcement brings the initial Volt retail markets to seven, including California, Michigan, and Washington, D.C. The retail launch in Texas and New York will begin with Austin and New York City in late 2010. The balance of Texas and New York, as well as New Jersey and Connecticut, are scheduled to begin receiving Volts in early 2011.

"We can add markets as diverse as Texas and New York because the Chevrolet Volt can handle both urban commuting and longer trips, in Austin summers and Manhattan winters," Whitacre said. "The Volt can be your primary vehicle, giving you the freedom to drive gas-free without the stress of planning every trip around the battery's charge level."

The Volt is the only electric vehicle that can operate under a full range of climates and driving conditions without limitations or driver concern of being stranded by a depleted battery.

"Chevrolet is extending the Volt launch to additional states because of strong customer interest and our confidence in all aspects of the vehicle and battery," said Tony DiSalle, Chevrolet Volt marketing director.

The Chevrolet Volt is capable of about 340 miles total driving range, with electricity driving the car at all times. For trips as long as 40 miles, the Volt gets its power solely from electricity stored in its 16-kWh lithium-ion battery. When the Volt's battery runs low, an engine-generator seamlessly engages to extend the driving range to about 300 miles on a full tank of gas.

According to a U.S. Department of Transportation survey, the average driver in America commutes less than 40 miles per day, meaning Chevrolet Volt owners may never use gasoline or produce tailpipe emissions in everyday driving.

A portable 120-volt vehicle charge cord that can recharge the Volt using a standard residential outlet comes standard with every car. Volt's intelligent charging technology enables the Volt to be charged from a standard 120-volt outlet in about nine to 10 hours, or from a standard 240-volt outlet in about three to four hours. The first buyers of the Volt also may be eligible for one of 4,400 free 240-volt home charging stations from ECOtality, Inc. or Coulomb Technologies, under a program administered by the U.S. Department of Energy and funded by the American Recovery and Reinvestment Act.

Whitacre also announced that Chevrolet will add five Texas electric utilities and five Northeast utilities to a Department of Energy development and demonstration program that provides Volts and charging stations to key utilities. The program allows the utilities to study charging station installation process, vehicle charging, and customer feedback. The Texas utilities include: Austin Energy, CenterPoint Energy, CPS Energy, Oncor, and American Electric Power. In the Northeast, Chevrolet is partnering with Con Edison, New York Power Authority, Northeast Utilities, National Grid, and Public Service Electric and Gas.

Volt production begins late this year at GM's Detroit-Hamtramck facility. Pricing has not been announced.

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About Chevrolet: Chevrolet is a global automotive brand, with annual sales of about 3.5 million vehicles in more than 130 countries. Chevrolet provides consumers with fuel-efficient, safe and reliable vehicles that deliver high quality, expressive design, spirited performance and value. In the U.S., the Chevrolet portfolio includes: iconic performance cars, such as Corvette and Camaro; dependable, long lasting pickups and SUVs, such as Silverado and Suburban; and award-winning passenger cars and crossovers, such as Malibu, Equinox and Traverse. Chevrolet also offers "gas-friendly to gas-free" solutions including the Cruze Eco and Volt, both arriving in late 2010. Cruze Eco will offer up to 40 mpg highway, while the Chevrolet Volt will offer up to 40 miles of electric, gas-free driving and an additional 300 miles of extended range (based on GM testing; official EPA estimates not yet available). Most new Chevrolet models offer OnStar safety, security, and convenience technologies including OnStar Hands-Free Calling, Automatic Crash Response, and Stolen Vehicle Slowdown. More information regarding Chevrolet models, fuel solutions, and OnStar availability can be found at www.chevrolet.com or join the conversation at www.chevroletvoltage.com.

About General Motors: General Motors, one of the world's largest automakers, traces its roots back to 1908. With its global headquarters in Detroit, GM employs 205,000 people in every major region of the world and does business in some 157 countries. GM and its strategic partners produce cars and trucks in 31 countries, and sell and service these vehicles through the following brands: Buick, Cadillac, Chevrolet, FAW, GMC, Daewoo, Holden, Jiefang, Opel, Vauxhall and Wuling. GM's largest national market is the United States, followed by China, Brazil, Germany, the United Kingdom, Canada, and Italy. GM's OnStar subsidiary is the industry leader in vehicle safety, security and information services. General Motors acquired operations from General Motors Corporation on July 10, 2009, and references to prior periods in this and other press materials refer to operations of the old General Motors Corporation. More information on the new General Motors can be found at www.gm.com.

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APPENDIX F – Press Coverage: Electric Vehicle Forum, May 21, 2010

The following articles are representative of statewide news coverage prior to and the day of the event.

Waterbury (Conn.) Republican-American

05/22/2010

Page A01

BETTER DRIVING, ELECTRICALLY

Forum looks at road ahead for automobile

BY RICK HARRISON
REPUBLICAN-AMERICAN

HARTFORD — Some day in the future, car owners will use their phones to talk to their cars as they quietly charge in the garage.

People will call ahead to set the thermostat to 75 degrees on a freezing day. The car will send a text message if someone forgot to plug it in. It will move, silent, as the driver shifts gears without a mechanical gearshift in an interior made from recycled water bottles.

The future is now.

Well, soon, anyway. In December, Nissan will begin delivering its fully electric LEAF, starting at \$25,280 (including tax savings) and offering the possibility of those features. Chevrolet, Ford and other au-

See **CARS**, Page **4A**



DARLENE DOUTY REPUBLICAN-AMERICAN

People look at a BMW MINI E Hybrid Plug In, which is 100 percent electrical, at the first Electric Vehicles Forum at the Legislative Office Building in Hartford on Friday. The event was open to the public and included a display of new EVs from major automakers.

CARS: Hartford forum touts electric vehicles

Continued from Page One

makers plan to roll out electric vehicles this year, with still others following in the next two to three years.

"Electric cars are coming if we're ready or not," said Al Lara, a spokesman for Northeast Utilities, a member of a group of utility companies called the Regional Electric Vehicle Initiative seeking to prepare the market and infrastructure for the transition. "It's all part of creating a sustainable solution for ourselves."

REVI and the Governor's Electric Vehicles Infrastructure Council hosted a forum at the Legislative Office Building Friday to discuss the arrival of the new vehicles in the state, what people can expect and what might need to be done to support them.

"It's the future," said Gov. M. Jodi Rell after test driving a Toyota plug-in hybrid. "If you plan for the future, you'll already be there."

Speakers at the forum stressed that much of the infrastructure already exists. According to Megan Pomeroy of United Illuminating, about 80 percent of electric vehicle owners will charge them at home overnight, more than 60 percent of home garages have a 120-volt plug within 25 feet, and about 85 percent of homes have some 240-volt service because of central air conditioning or an electric clothes dryer.

Vehicles using 120-volt outlets can fully charge a lithium ion battery in about eight hours. A 240-volt outlet can cut charging time to six or three hours. The Nissan LEAF will offer both options, plus a way to charge with a direct current outlet reaching 80 percent of a battery's capacity in about 26 minutes.

The Chevrolet Volt, an electric car launching in November with a range-extending gas engine, can travel 40 miles on its battery under ideal conditions. The LEAF and the BMW ActiveE, due next year, can cruise 100 miles on a full charge.

Hugo VanGeem, a salesman showcasing a BMW-modified electric Mini on the Capitol building stairs Friday, explained that drivers of the 450 test Minis in the United States tend to top off their batteries overnight instead of running it completely down every day.

"You have to plan more," VanGeem said of the lack of publicly available charge sites. "It's a comfort level, called range anxiety for some people. But after they got real-world experience, it disappeared."

Robert Babik, director of environment, energy and safety policy for General Motors, said

78 percent of customers commute 40 miles or less a day. The Nissan representative said 95 percent of the population drives less than 100 miles each day.

For Lara and the utility companies, many of the lingering questions involve practical usage and finding compromises among manufacturers and suppliers to reach a shared standard for equipment and payment.

How do you pay for a charge at a supermarket parking lot or public street? Swipe a card like a gas station? Pay like a parking meter? Can companies or government offer incentives to consumers to buy electric cars and stagger their charging hours so as not to overburden the power grid? And who will pay the cost of home charging ports? Consumers? The electric utility companies? The car manufacturer or dealer?

Forum participants expressed confidence the grid will evolve to handle the new demand on electricity, while the nation attempts to move away from oil and toward domestic and renewable energy sources.

"It's vital there are no hiccups along the way," Lara said. "Consumers have to embrace it."

The rest of the questions will need to be worked out in the quickly approaching future.

Visit www.rep-am.com to comment on this story.

POWER DRIVE: CAPITOL FORUM TO HIGHLIGHT ELECTRIC VEHICLE

BY DAVID KRECHEVSKY
REPUBLICAN-AMERICAN

If you've been wondering what all the buzz over electric vehicles is about, you can see for yourself Friday in Hartford. The state's first Electric Vehicles Forum will be held at the State Capitol and the adjacent Legislative Office Building beginning at noon. The free, public event will feature a display of electric vehicles — including the BMW Mini E, the Mitsubishi i-MiEV, and the Toyota Prius PHV — on the Capitol's north side, the side facing Bushnell Park.

At 12:30 p.m., the forum will shift to Room 2C of the LOB for a program called "Preparing for the Arrival of EVs in Connecticut in 2011 and Beyond," presented by program experts and six major automakers.

The forum is co-hosted by the Electric Vehicles Infrastructure Council, which was formed by Gov. M. Jodi Rell last year, and the Regional Electric Vehicle Initiative, or REVI, which consists of officials from Connecticut Light & Power Co., United Illuminating, the Connecticut Municipal Electric Energy Cooperative, and other New England electric providers.

"This is the first event we've opened to the public and solicited people to come and join us and hear about what the plans are," said Watson Collins, manager of business development for Northeast Utilities, parent of CL&P.

"The real fun part of seeing the electric vehicles will not just be the cars, but all the different ways you can interact with them — such as cell phone apps — that will be out there. It will be exciting for consumers."

Collins said that while none of the Big 3 American automakers will have cars on display, they will participate in the forum discussion in the LOB.

"The automakers have reached out to the utilities, and we've been collaborating for more than two years now with GM, Ford and Nissan, among others. They're learning about our industry and we're learning about their industry, figuring out how we can work together to move forward."

The governor created the Electric Vehicles Infrastructure Council by executive order in December to develop a strategy for quickly and seamlessly integrating electric vehicles into the state, and to coordinate decision-making among the state agencies.

Al Lara, spokesman for CL&P, said REVI was formed to enable utilities in Connecticut and Massachusetts to collaborate and develop a better understanding of electric vehicles and their needs.

<http://www.rep-am.com/articles/2010/05/19/business/483982.txt>



General Assembly

Substitute Bill No. 5440

February Session, 2010 * _____ HB05440CE_PS_031710 _____ *

AN ACT CONCERNING AN ELECTRIC VEHICLE INFRASTRUCTURE.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 1. (NEW) (Effective July 1, 2010) Not later than July 1, 2011, the State Building Inspector and the Codes and Standards Committee shall revise the State Building Code adopted pursuant to section 29-252 of the general statutes to (1) provide for an electric vehicle infrastructure to support any make, model or type of electric vehicle, including a plug-in electric vehicle or an electric vehicle capable of being charged by a forty-ampere, two hundred forty-volt electrical charging circuit, (2) provide for bidirectional charging without significant upgrading, provided electrical distribution companies have achieved the capability to draw electricity from electric vehicles connected to the utility grid, and (3) require all new residential and some commercial construction to have the capacity to support such infrastructure.

Sec. 2. (NEW) (Effective July 1, 2010) Any hybrid or alternative fuel vehicle may be driven on any state limited access highway lane designated for use by high occupancy vehicles regardless of the number of occupants of such hybrid or alternative fuel vehicle. For purposes of this section, "hybrid or alternative fuel vehicle" means a passenger car that (1) is hydrogen fuel-cell powered, or (2) draws acceleration energy from two onboard sources of stored energy that consists of either an internal combustion or heat engine which uses combustible fuel and a rechargeable energy storage system.

Sec. 3. (NEW) (Effective July 1, 2010) There is established an account to be known as the "electric vehicle infrastructure support account" which shall be a separate, nonlapsing account within the General Fund. The account shall contain any moneys required by law to be deposited in the account. Moneys in the account shall be expended by the Department of Economic and Community Development for the purposes of providing grants to businesses seeking to upgrade infrastructure to support the use of electric and hydrogen fuel-cell powered vehicles statewide.

Sec. 4. Subdivision (110) of section 12-412 of the 2010 supplement to the general statutes is repealed and the following is substituted in lieu thereof (Effective July 1, 2010, and applicable to sales on and after July 1, 2010):

(110) On and after January 1, 2008, and prior to July 1, [2010] 2012, the sale of any hydrogen fuel cell or electric passenger motor vehicle, as defined in section 14-1, [,] that has a United States Environmental Protection Agency estimated city or highway gasoline mileage rating of at least forty miles per gallon.]

Sec. 5. Subdivision (16) of section 38a-816 of the general statutes is repealed and the following is substituted in lieu thereof (Effective July 1, 2010):

(16) Failure to pay, as part of any claim for a damaged motor vehicle under any automobile insurance policy where the vehicle has been declared to be a constructive total loss, an amount equal to the sum of (A) the settlement amount on such vehicle plus, whenever the insurer takes title to such vehicle, (B) an amount determined by multiplying such settlement amount by a percentage equivalent to the current sales tax rate established in section 12-408, provided the insured paid sales tax on such vehicle. For purposes of this subdivision, "constructive total loss" means the cost to

repair or salvage damaged property, or the cost to both repair and salvage such property, equals or exceeds the total value of the property at the time of the loss.

This act shall take effect as follows and shall amend the following sections:		
Section 1	<i>July 1, 2010</i>	New section
Sec. 2	<i>July 1, 2010</i>	New section
Sec. 3	<i>July 1, 2010</i>	New section
Sec. 4	<i>July 1, 2010, and applicable to sales on and after July 1, 2010</i>	12-412(110)
Sec. 5	<i>July 1, 2010</i>	38a-816(16)

CE

Joint Favorable Subst. C/R

PS



General Assembly

Amendment

February Session, 2010

LCO No. 5451

HB0546505451HDO

Offered by:

REP. BERGER, 73rd Dist.

REP. ZALASKI, 81st Dist.

SEN. CRISCO, 17th Dist.

REP. ALBERTS, 50th Dist.

SEN. FRANTZ, 36th Dist.

To: Subst. House Bill No. 5465

File No. 455

Cal. No. 261

"AN ACT CONCERNING THE DEVELOPMENT OF GREEN JOBS. "

After the last section, add the following and renumber sections and internal references accordingly:

"Sec. 501. (NEW) (*Effective July 1, 2010*) Not later than July 1, 2011, the State Building Inspector and the Codes and Standards Committee shall revise the State Building Code adopted pursuant to section 29-252 of the general statutes to (1) provide for an electric vehicle infrastructure to support any make, model or type of electric vehicle, including a plug-in electric vehicle or an electric vehicle capable of being charged by not more than a two-hundred-forty-volt electrical circuit, (2) provide for bidirectional charging without significant upgrading, provided electrical distribution companies have achieved the capability to draw electricity from electric vehicles connected to the utility grid, and (3) require all new residential and some commercial construction to have the capacity to support such infrastructure.

Sec. 502. (NEW) (*Effective July 1, 2010*) The Commissioners of Transportation and Motor Vehicles shall develop a process to allow for low emission and energy-efficient vehicles or alternative fuel vehicles, as defined in 23 USC 166 and in any subsequent regulations promulgated by the Environmental Protection Agency pertaining to the certification of eligible vehicles, to be driven on any state limited access highway lane designated for use by high-occupancy

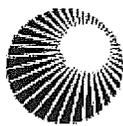
vehicles regardless of the number of occupants of such hybrid or alternative fuel vehicle. On or before July 1, 2012, the commissioners shall submit recommendations for implementing the process developed pursuant to this section and cost estimates for such implementation to the Governor and the joint standing committees of the General Assembly having cognizance of matters relating to commerce, transportation and appropriations, in accordance with the provisions of section 11-4a of the general statutes.

Sec. 503. (NEW) (*Effective July 1, 2010*) (a) Each electric distribution company shall develop a plan to support the use of plug-in electric drive vehicles and submit the plan for review and approval by the Department of Public Utility Control. Each plan shall provide for the construction of charging infrastructure or other infrastructure necessary to adequately support the use of plug-in electric drive vehicles, and be capable of operating with products of all vehicle manufacturers to the extent possible. The plan shall provide an outline for adoption of minimum requirements for construction of electrical charging infrastructure and other appropriate requirements necessary to support the use of plug-in electric drive vehicles.

(b) Not later than sixty days after the electric distribution company's submission of the plan, the department shall initiate a proceeding, to approve, reject or modify an application for approval of the electric distribution company's plug-in electric drive vehicles plan.

(c) The electric distribution company shall be entitled to recover its reasonable costs of complying with its approved plug-in electric drive vehicles plan through a reconciling component of electric rates, as determined by the department.

(d) On or before September 1, 2014, the department shall initiate a proceeding to review the effectiveness of each plan and perform a ratepayer cost-benefit analysis. Based upon the department's review and analysis in the proceeding, the department may modify or discontinue any plan established pursuant to this section. "



**Connecticut
Light & Power**

The Northeast Utilities System

Clearing Desk
Connecticut Light & Power
107 Selden Street
Berlin, CT 06037
1-888-544-4826

CL&P's Fall 2010 Trade Ally Seminars

Every two years, CL&P hosts informational meetings for Connecticut's licensed electrical contractors, electrical inspectors, building officials and trade associates. Sessions are scheduled for this fall, as listed below.

This year's agenda includes a brief presentation on new plug-in electric vehicles (EVs), including how Connecticut is preparing for the arrival of EVs in the coming months.

Date	Day	Time	Town	Facility
Oct. 5	Tuesday	7:00 AM	Enfield	Crowne Plaza
Oct. 7	Thursday	7:00 AM	Torrington	Cornucopia
Oct. 12	Tuesday	5:30 PM	Stamford	Knights of Columbus
Oct. 15	Friday	7:00 AM	Ledyard	MGM Foxwoods Casino
Oct. 19	Tuesday	7:00 AM	Westbrook	Water's Edge
Oct. 21	Tuesday	7:00 AM	Canterbury	Wright's Mill Farm
Oct. 26	Tuesday	7:00 AM	Southbury	Crowne Plaza
Oct. 28	Thursday	7:00 AM	Rocky Hill	Rocky Hill Marriott
Nov. 2	Tuesday	5:30 PM	Danbury	Amber Room Colonnade
Nov. 4	Thursday	5:30:PM	Farmington	Farmington Marriott

Each session provides up-to-date information on National Electrical Code changes, electric service requirements, industry safety and other topics of interest. Important information on State Building Codes, amendments and new requirements will be presented by Connecticut's State Building Inspector.

For more information, please contact the CL&P New Service Clearing Desk by emailing clpsvc@nu.com or by calling 1-888-544-4826.

August 2010

ELECTRIC Working Group

EV Licensing, Electricians, Chargers, Training, Responders & Installation Committee

Name	Affiliation
Carey, John F. (Jack)	DOT-Traffic
Carroll, James	NFPA-fire academy trainer
Crowley, Ken	The Crowley Auto Group
Emery, Jason	Waterbury Fire Dept/Emergency Training Solutions
Felton-Reid, Hilary	Robinson & Cole (IBEW lobbyist)
Fleming, Jim	MFG Alliance
Gara, Betsy	Gara & Markowski LLC
Getsie, John	DMV
Grannis, Lee	New Haven Clean Cities Initiative
Humble, Lisa	State Bdg Inspector
Huriburt, Richard	DCP - Director of Professional Licensing
Hutner, Lisa	Independent Electrical Contractors of New England
Johnson, Frank	Exec Dir, Manufacturing
Labanara, Bob	CCM
Martone, Mike	Murtha Cullina/ lobbyist for towing/recovery
Merola, Andy	CCM
Miano, Joe	Towing & Recovery Professionals of CT
Morrisette, Jeff	State Fire Administrator
Murphy, Jane	General Motors-Rep/Lobbyist
Nuzzi, Bob	State Electrical Inspector/DCP/DPS
Oros, Joe	DECD
Rickert, Barry	State Fire Marshal
Rodriguez, Marcel	Marcel's Automotive
Russell, Bart	COST
Schneider, Ed	CL&P, Project Manager
Shanahan, Dan	Charging Stations/Control Modules
Shea, Tim	Brown Rudnick/Alliance of Automobile Manufacturers
Smachetti, Daniel	DOT-Properties & Facilities
Tenure, Ken	EV Operations Manager/Nissan (90's Cal EV exp)
Young, Jamie	Governor's Office

APPENDIX J – GLOSSARY of TERMS

AFVs	Alternative Fuel Vehicles
ARRA	American Recovery and Reinvestment Act
CBIA	Connecticut Business and Industry Association
CDA	Connecticut Development Authority
CMEEC	Connecticut Municipal Electrical Energy Cooperative
Council	Connecticut Electric Vehicle Infrastructure Council
DAS	Connecticut Department of Administrative Services
DECD	Connecticut Department of Economic Development
DEP	Connecticut Department of Environmental Protection
DMV	Connecticut Department of Motor Vehicles
DOE	U.S. Department of Energy
DOT	Connecticut Department of Transportation
DPUC	Connecticut Department of Public Utility Control
EDCs	Electric Distribution Companies
EIA	U.S. Energy Information Administration
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
EV	Pure Battery Electric Vehicle (<i>may include conventional vehicles converted to plug-ins</i>)
EVIC	Connecticut Electric Vehicle Infrastructure Council
EVSE	Electric Vehicle Supply Equipment
FHWA	Federal Highway Administration
GHG	Greenhouse Gas
GWSA	An Act Concerning Connecticut Global Warming Solutions
HOV	High Occupancy Vehicles
ICE	Conventional Gasoline-Powered Internal Combustion Engine Vehicle
IRP	Connecticut Integrated Resource Plan
ISO	Independent System Operator
LEV	Low Emission Vehicle
LI-ION	Lithium-Ion battery packs
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standard
OEM	Original Equipment Manufacturer
OLR	Connecticut's Office of Legislative Research
PHEV	Plug-In Hybrid Electric Vehicle
REVI	Regional Electric Vehicle Initiative
RGGI	Regional Greenhouse Gas Initiative
TCI	Transportation and Climate Initiative
TOU	Time of Use Rates
V2G	Vehicle-to-Grid technology
ZEV	Zero Emission Vehicle

