PLUG-IN ELECTRIC VEHICLE READINESS PLAN

FOR THE STATE OF WASHINGTON

SEPTEMBER 2011

WESTERN WASHINGTON
CLEAN CITIES COALITION
&
WASHINGTON STATE PLUG-IN
ELECTRIC VEHICLE TASK FORCE

Western WA CLEAN CITIES

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SECTION 1.0: SUMMARY & PURPOSE

The Western Washington Clean Cities Coalition (the Coalition) developed this statewide Plug-In Electric Vehicle Readiness Plan to inform policy makers, state and local governments, utilities, fleets, private sector businesses, and individual consumers about the clear and actionable roadmap for the widespread adoption of plug-in electric vehicles (EVs).

While several guidebooks on electric charging station installation and model ordinances specifically written for local governments exist, there is no comprehensive resource available that provides an overview of all of the achievements in Washington to date, and guides future policy, action, and public outreach.

The Coalition developed this guide in partnership with **Washington State's Plug-In Electric Vehicle Task Force** (PEV Task Force). Formally created in 2011, the PEV Task Force serves as the statewide forum for electric vehicle policy and deployment planning.

The Coalition's service territory covers the most populated 15-county region west of the Cascade Mountains. This Readiness Plan, however, is intended to be a resource for the entire state so that policies, practices and projects develop in a cohesive and integrated manner.

1.1 Washington State – The Ideal Market for the Electric Vehicle?

The State of Washington has among the highest per capita ownership for hybrid-electric vehicles in the country and is known as a region with abundant, clean sources of electricity and a strong environmental ethic. Since hybrid-electric cars were introduced to the U.S. market, Washington has consistently ranked in the top 10 states for per capita vehicle sales.[1]

Automobile manufacturers have identified a high correlation between early adopters of hybrid-electric vehicles and plug-in electric vehicles. This has been used as one key factor to determine good locations for EV adoption. In fact, in its 2010 U.S. Cities EV-Ready-Index, TH!NK rated Seattle ninth in the nation for being ready and likely to benefit from the transition to electric vehicles.[2] In their just-released report forecasting electric vehicle penetration rates, Pike Research found that the state of Washington will be among the top five states for PEV penetration rates through 2017.[3]

In summary, market research indicates Washington is ready to adopt electric vehicles for to the following reasons:

1) High per capita percentage of hybrid-electric vehicle adoption.

2) Ideal (moderate) climate for batteries.

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[1] http://www.hybridcars.com/market-dashboard.html and http://www.hybridcars.com/hybrid-sales-dashboard/december-2009-dashboard.html

[2] http://www.thinkev.com/Press/Press-releases/THINK-releases-U.S.-EV-ready-index

[3] The top five states (excluding the District of Columbia) forecast to have the top sales figures of PEVs as a percentage of total light-duty vehicle sales by 2017 are Hawaii (6.3%); California (5.4%); Oregon (5.4%); Delaware (4.5%) and Washington state (3.9%). Pike Research, "Electric Vehicle Penetration Rates," September 23, 2011. http://www.pikeresearch.com/newsroom/electric-vehicle-penetration-rates-to-be-highest-in-smaller-states

3) Low electricity prices and clean electricity sources.

The desirability of the Seattle market for first-wave EV deployment was validated via several American Reinvestment and Recovery Act (ARRA) grants and plug-in infrastructure development initiatives beginning in 2009. These include The EV Project and the ChargePoint America program.

Through The EV Project, ECOtality offers Electric Vehicle Supply Equipment (EVSE) at no cost to individuals in the Seattle metropolitan (central/south Puget Sound) area. To be eligible for free home charging stations, individuals living within the specified areas must purchase a qualified EV or plug-in hybrid electric vehicle (PHEV). Individuals purchasing an eligible vehicle should apply to the EV Project at the dealership at the time of vehicle purchase. The EV Project incentive program will also cover most, if not all, of the costs of EVSE installation.

Coulomb Technologies' ChargePoint America program offers EVSE at no cost to individuals or entities in the Bellevue and Redmond metropolitan areas, excluding Seattle. To be eligible for a public or commercial charging system, an entity must be located within "high use" areas in Bellevue and Redmond, and provide public access to the charging system. Companies and municipalities may apply on the ChargePoint America website. To be eligible for free home charging stations, individuals living within the specified areas must purchase qualifying EVs or PHEVs. Individuals purchasing an eligible EV or plug-in hybrid electric (PHEV) should apply for the ChargePoint America program at the dealership or with the vehicle manufacturer at the time of vehicle purchase. In most cases, the EVSE owner will pay for the installation.

SECTION 2.0: PLUG-IN VEHICLE READINESS PLANNING

2.1 History of Electric Vehicle Use in Washington State (1970 to 2005)

Washington State's history with electric vehicles dates back to the 1970s, but it's only recently that EVs have transcended the interest of hobbyists and become mass-produced commercially available vehicles on the road. Electric vehicle enthusiasts became organized with the founding of the Seattle Electric Vehicle Association in 1979, a 40-member club of "people interested in electric cars." In the 1980s and 1990s, interest continued to grow, with local automobile dealers offering small production options like the Lectric Leopard (Renault LeCar), the Camuta-Car, and the Jet Electrica conversion.

In the early 2000s another wave of EV dealers expanded their offerings to include a wider range of Neighborhood Electric Vehicles (NEVs) with maximum speeds of 35 mph, as well as conversions and California imports. The State of Washington quickly recognized the increased interest and availability of NEVs and in 2003 adopted RCW 46.61.725 to incorporate NEVs into state traffic laws. Very little charging infrastructure was offered for these vehicles at that time, with most charging occurring at home and special-interest businesses for short range trips.

2.2 Current Plug-In Electric Vehicle Readiness Planning in Washington State

At the state, county and city level, government agencies throughout Washington are working proactively to become "EV-ready" - and earning national recognition for their leadership. In 2006, the Port of Chelan County led a process to establish the Plugin Center, a center for research, development, demonstrations and education on EVs. Since then, the Plugin Center lists the following among its accomplishments:

conferences on PHEVs; one of the largest-ever conversions of Priuses into PHEVs; and numerous presentations, exhibits and demonstrations throughout North Central Washington.

In April 2008, several government organizations in Washington began participating in a PHEV pilot project led by Idaho National Laboratory. The study monitored time-of-day charging, fuel use, and maintenance requirements for over 30 PHEVs (mostly Toyota Prius converted using a Hymotion battery kit) across Washington State. The study also examined the effect of driving aggressiveness on fuel economy. The project summary results from 2008 to 2011 can be found here: http://avt.inel.gov/pdf/phev/HymotionPriusV2GreenApr08-Aug11.pdf

Through its history of strong public sector interest and early participation, Washington State is leading the way in EV-ready policies and practices.

2.21 State-wide Policy & Regulations

In 2009, Washington State Legislature adopted House Bill 1481: An Act Relating to Electric Vehicles, which establishes guidelines and requirements to encourage the transition to electric vehicle use. HB 1481 includes provisions to expedite the establishment of a convenient and cost-effective EV infrastructure, which the Legislature recognizes is essential to increasing consumer acceptance. Specifically it directs the state to distribute to local governments model ordinances, model development regulations, and guidance for siting and installing electric vehicle infrastructure. Key elements of the law are summarized in Appendix A.1.

HB 1481 also: (1) designated EVs as eligible technology to meet the state mandate that 40% of public vehicles rely on renewable fuels; (2) required installation of charging stations and battery exchange stations on state properties and rest areas; (3) most significantly, created a sales tax exemption for EV infrastructure installations. For DC Fast charge stations running at about $110k per location, this is the equivalent of a $10k state contribution on infrastructure; and (4) authorized public/private partnerships to develop our alternative fuels corridor pilot project (i.e., west coast green highway EV project).

In 2010 the model ordinance was developed for local governments to follow, and has attracted national attention as well. Section 2.23 describes the model ordinance in greater detail.

HB 1481 also set timetables for municipalities to ensure local codes and zoning rules allow for electric vehicle infrastructure. As of May 2011, the model ordinance and related guidance have helped approximately 50 of 280 local governments in Washington State adopt ordinances amending zoning codes, parking lot design guidelines, and parking enforcement codes to consider electric vehicles. In many other communities, amendments to codes and comprehensive plan policies that support the use of electric vehicles are in the adoption process. Other jurisdictions have written code interpretations that allow charging infrastructure under existing codes.

2.22 Permitting Process for EVSE Installation

The permitting process for EVSE Installation in Washington is efficient and streamlined, thanks to provisions in HB 1481 that directed state agencies with oversight over building and electrical

codes to review existing regulations to ensure smooth installation of EVSE. The result is a quick, expedited permitting process for purchasers of plug-in vehicles.

The Washington State Department of Labor and Industries (DLI) administers electrical permitting and inspection for most residents and businesses throughout most of the state. The following state and national, codes laws and standards apply to the installation of EVSE:

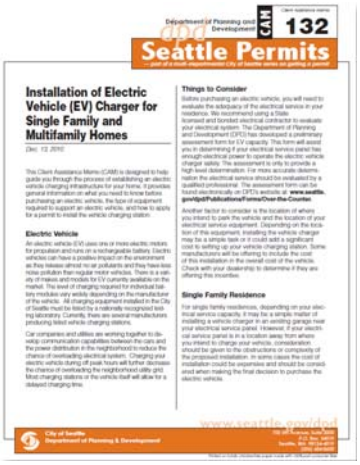
- RCW 19.28: Electricians and Electrical Installations. http://www.lni.wa.gov/Forms/pdf/F500-039-111.pdf
- WAC 296-46B: Electrical Safety Standards, Administration and Installation http://www.lni.wa.gov/forms/pdf/F500-039-222.pdf
- NFPA 70: National Electrical Code (National Fire Protection Association.

Before a charging station can be installed, a properly licensed electrical contractor or property owner performing the installation is required to obtain an electrical permit with the proper electrical inspection jurisdiction.

The charging station can be installed once an electrical permit is issued. An electrical inspection is required upon energizing and prior to covering an installation and upon completion of the installation. If all goes smoothly, the EVSE installation will be approved. Alternately, the inspector will identify any required corrections.

Most Washington cities use DLI inspectors for electrical installations. These inspectors are already familiar with charging infrastructure requirements and are prepared to perform the inspections as required. Washington State is considered a leader in responsiveness to mandatory electrical inspection requests for each installation, and prides itself on providing an inspection within 48 hours of the request. Electrical work permits can be purchased online. The process for permits, fees and inspections can be viewed on DLI's website (http://www.lni.wa.gov/TradesLicensing/Electrical/FeePermInsp/)

There are twenty-seven cities in Washington that do their own electrical inspection (see Appendix A.2 for a complete list). The majority of these cities are leaders in planning for plug-in vehicle infrastructure and they have been working with their inspectors to ensure familiarity with this infrastructure.


Department of Planning and Development
CAM 132
Seattle Permits
Installation of Electric Vehicle (EV) Charger for Single Family and Multifamily Homes
Dec 12, 2011
This Client Assistance Memo (CAM) is designed to help guide you through the process of establishing an electric vehicle charging infrastructure for your home. It provides general information on what you need to know before purchasing an electric vehicle, the type of equipment required to support an electric vehicle, and how to apply for a permit to install the vehicle charging station.
Electric Vehicle
An electric vehicle (EV) uses one or more electric motors for propulsion and runs on a rechargeable battery. Electric vehicles can have a positive impact on the environment as they release almost no air pollutants and they have less noise pollution than regular motor vehicles. There is a variety of makes and models for EV currently available on the market. The level of charging required for individual battery modules vary widely depending on the manufacturer of the vehicle. All charging equipment installed in the City of Seattle must be listed by a nationally recognized testing laboratory. Currently, there are several manufacturers producing listed vehicle charging stations.
Car companies and utilities are working together to develop communication capabilities between the cars and the power distribution in the neighborhood to reduce the chance of overloading electrical system. Charging your electric vehicle during off peak hours will further decrease the chance of overloading the neighborhood utility grid. Most charging stations or the vehicle itself will allow for a delayed charging time.
Things to Consider
Before purchasing an electric vehicle, you will need to evaluate the adequacy of the electrical service in your residence. We recommend using a State licensed and bonded electrical contractor to evaluate your electrical system. The Department of Planning and Development (DPD) has developed a preliminary assessment form for LV capacity. This form will assist you in determining if your electrical service panel has enough electrical power to operate the electric vehicle charger safely. The assessment is only to provide a high level determination. For more accurate determination the electrical service should be evaluated by a qualified professional. The assessment form can be found electronically on DPD's website at www.seattle.gov/dpd/Publications/Forms/Over-the-Counter
Another factor to consider is the location of where you intend to park the vehicle and the location of your electrical service equipment. Depending on the location of this equipment, installing the vehicle charger may be a simple task or it could add a significant cost to setting up your vehicle charging station. Some manufacturers will be offering to include the cost of this installation in the overall cost of the vehicle. Check with your dealership to determine if they are offering this incentive.
Single Family Residence
For single family residences, depending on your electrical service capacity, it may be a simple matter of installing a vehicle charger in an existing garage near your electrical service panel. However, if your electrical service panel is in a location away from where you intend to charge your vehicle, consideration should be given to the obstructions or complexity of the proposed installation. In some cases the cost of installation could be expensive and should be considered when making the final decision to purchase the electric vehicle.
City of Seattle Department of Planning & Development
www.seattle.gov/dpd

By way of example, the permitting process in the City of Seattle is administered by the Department of Planning and Development (DPD). Electrical permits are required for all EVSE installations. Electrical permits for level-2 infrastructure (30 amp) require no plan review and may be obtained online or over-the-counter at DPD's Applicant Service Center. Once the application is complete and payment is made, the permit can be printed or issued (over the counter). Inspections are conducted on the same day that the inspection is requested if the request is made prior to 7:00 a.m. If done after 7:00 a.m. the inspection will be done the following day. All infrastructure with

services and feeders 400 amperage or larger (e.g. permits for DC Fast Charge installations) require plan review.

Inspections conducted on federal property must be performed by the federal government and those performed on tribal lands are conducted by tribal personnel.

The Washington State Building Code Council has reviewed the existing rules in Title 51 of the Washington Administrative Code and determined that the rules provide for the regulation of charging infrastructure. With regard to building construction, current building codes and building occupancy classifications allow for the installation of battery exchange stations.

2.23 Infrastructure Guidance & Planning

In 2010, to satisfy the requirements under HB1481, the Washington State Department of Commerce provided American Recovery and Reinvestment Act (ARRA) funds from the U. S. Department of Energy to the Puget Sound Regional Council (PSRC) and together they convened a multi-stakeholder process to develop a model ordinance, model development regulations, and guidance for the installation of electric vehicle support infrastructure for the state. This process was the first of its kind ever undertaken in the United States. The resulting document provides guidance for infrastructure placement (http://www.psrc.org/transportation/ev/model-guidance/), accessibility considerations, wiring and electrical code, signage, parking enforcement, and other provisions that familiarize planners and city decision makers with EVSE, and allow for easy permitting and installation of charging infrastructure in these jurisdictions. This document addresses some aspects related to multi-family buildings, such as location in garages, directional signage, and recommendations for local governments to allow charging infrastructure in residential zones.

In 2010, PSRC also worked with regional partners to identify strategic locations for public electric-vehicle charging stations in the Puget Sound region. This analysis was based on transportation origin and destination data, and other demographic information.

Partners included the City of Seattle, City of Bellevue, King County, the Clean Cities Coalition, the State of Washington, and the EV Project. Initially the study examined the demographics of the early hand-raisers interested in purchasing Nissan LEAFs such as income, house size, family size, etc. The most remarkable and consistent correlation was with those who already owned hybrid vehicles. Therefore, for this study, current hybrid owners were used as surrogates for future EV owners. While the intention with long term planning is to serve the needs of all EV users, in the short term the team wanted to ensure early adopters would have the infrastructure they need.

PSRC examined the zip codes or transportation area zones (TAZs) where current licensed hybrid users reside, and examined their driving and parking behavior based on a 2005 Transportation Survey they conducted that followed the very detailed driving behaviors of several thousand Puget Sound residents. The general questions they answered were:

- Where are EV owners most likely to drive to?
- How long will they park there?
- How far did they drive to get there?

The general conclusions are summarized visually on maps in Appendix A.3. For work-related trips, the data showed that employee parking *outside* of the urban core in suburban cities are good locations, because drivers tend to have longer commutes to get there. Most drivers who commute into the urban core with their cars travel less than 10 miles each way and therefore do not significantly deplete their batteries. However, the high volume of urban core drivers suggests that infrastructure is still very much needed in the core in addition to suburban sites.

The study also confirmed that for non-work/non-commute trips, places where people park for multiple hours at a time - such as recreation centers, stadiums, shopping malls and airports - are excellent charging station sites.

The main study conclusions showed in general that:

- Places of employment outside urban core areas should not be neglected as sites.
- In urban core areas, most vehicles travel less than 10 miles to work.
- Outside urban core areas, vehicles travel 20 to 40 miles to work.
- Park and Rides may not be the best candidate sites for work trips, but may play a role for 'garage orphans' for parking in non-commute hours, and for a smaller percentage of park and ride commuters.
- Recreation centers, stadiums, shopping malls, and airports are good non-work destination sites.

Another initiative that has helped inform siting decisions/criteria in the region is the EV Project. As part of the ARRA-grant-funded EV Project, and with the support of regional stakeholders, ECOtality developed their EV Micro-Climate™ as an integrated turn-key program to supply areas with the needed infrastructure to support the expected travel patterns of early EV adopters. ECOtality's Long-range EV Micro-Climate Plan for the Central Puget Sound and Olympia Areas provides recommendations of density and distribution of charging stations for the Central Puget Sound Region.

Members of the PEV Task Force have participated directly or indirectly on a number of significant efforts to deploy public access and/or fleet charging infrastructure. Through the EV Project, the Puget Sound region will receive a total of 1,200 public-access level-2 EVSE and 22 public-access DC Fast Charge stations. This public network complements the charging stations installed for each of the EV owners who participate in the EV Project. Through a DOE competitive grant awarded to the Clean Cities Coalition, there will be about 50 charging stations publicly available, with an additional 100 to be located in private, restricted-access locations for use by government fleets.

The State Departments of Transportation and Commerce are in the process of implementing the first network of DC Fast Charge stations on interurban corridors in the United States. This network, also known as the Electric Highway, will deploy an estimated 7-9 DC Fast Charge stations along Interstate 5, from the border with British Columbia, Canada, to the border with the State of Oregon, and 2-3 DC Fast Charge stations along the Stevens Pass Green Byway on US-2, linking the Puget Sound Area with North-Central Washington. All of these sites are expected to host level-2 stations as well.

Seed funding of $1.32 million is provided by the U. S. Department of Energy with American Recovery and Reinvestment Act dollars administered by the Department of Commerce through the State Energy Program. This project meets State Energy Program and Recovery Act funding goals to save energy, reduce our dependence on foreign oil, invest in transportation and other infrastructure that will provide long-term economic benefits.

The Washington State Department of Transportation received approval to use the new interim alternate Electric Vehicle Charging symbol sign on roadways and in parking stalls. This approval has been extended to all local governments. For more information on this sign, see http://mutcd.fhwa.dot.gov/resources/interim_approval/ia13/index.htm

2.24 Pricing Guidance | Per-Use Charging Fees

A big unknown in the realm of electric vehicle charging is per-use pricing. To date there is little solid guidance on appropriate fees for the use of charging stations, or what the market will support. Currently, many businesses and jurisdictions offer free or minimal-cost charging at public stations. This may change over time, as they become more aware of the actual costs associated with offering public charging.

To determine an appropriate cost or rate for public electric vehicle charging, the Utilities and Transportation Commission must first allow vendors of charging stations to recover the costs associated with the electricity without being considered 're-sellers' of electricity.

House Bill 1571 (2011-2012) clarifies revenue generation for electric vehicle charging. It states that the Utilities and Transportation Commission shall not regulate the rates, services, facilities, and practices of an entity that offers battery charging facilities to the public for hire; if:

(1) that entity is not otherwise subject to commission jurisdiction as an electrical company; or

(2) that entity is otherwise subject to commission jurisdiction as an electrical company, but its battery charging facilities and services are not subsidized by any regulated service. An electrical company may offer battery charging facilities as a regulated service, subject to commission approval.[4]

This rule gives businesses or local governments offering public charging the flexibility to recover electricity costs, as well as maintenance, security and networking fees. It also gives vendors the freedom to bundle their per-use charging fees.

To ensure cost-recovery, King County developed an ordinance[5] authorizing a per-use fee, not to exceed five dollars, for vehicle charging at county-owned sites. King County will periodically review demand for charging and associated operations and maintenance costs, and adjust the per-use fee accordingly. The ordinance also allows the County to enforce exclusive parking for electric vehicles connected to the charging equipment. The County estimates that when the program is fully operational, the per-use charging fees will fully cover annual operations and maintenance costs.

The Seattle City Council recently passed Ordinance 123712 establishing fees for public use of EV charging stations in parking facilities owned or controlled by the City. The Ordinance established a range for per-session fees with $1.50 as minimum and $4.00 as maximum. City departments agreed on setting the per-session fee at $2.00[6].

2.25 Public/Private Partnership Activities

Washington State's electric power providers, clean-tech industry and governments have been collaborating and planning for the advent of electric vehicles for several years. A consortium of local governments in the four-county greater Puget Sound region, electric utility providers (including both public utility districts and investor-owned utilities), the Clean Cities Coalition, and transportation, environmental and housing agencies and advocates formed Puget Sound New Energy Solutions (PSNES), a collaborative cross-sector partnership to promote a clean-

[4] Substitute House Bill 1571 http://apps.leg.wa.gov/documents/billdocs/2011-12/Pdf/Bills/House%20Passed%20Legislature/1571-S.PL.pdf

[5] http://mkcclegisearch.kingcounty.gov/LegislationDetail.aspx?ID=851484&GUID=D550B8FC-C083-406B-BE8A-FF48842C6A60&Options=&Search=

[6] http://clerk.ci.seattle.wa.us/~scripts/nph-brs.exe?s1=electric+vehicle&s3=&s4=&s2=&s5=&Sect4=AND&l=20&Sect2=THESON&Sect3=PLURON&Sect5=CBORY&Sect6=HITOFF&d=ORDF&p=1&u=%2F%7Epublic%2Fcbory.htm&r=1&f=G

energy future in the Puget Sound region[7]. PSNES was responsible for organizing and convening the state's first Plug-in Ready conference, and has organized subsequent conferences to bring together public, private and non-profit sector organizations to develop and promote EV readiness in Washington State.

In recognition that transportation electrification is of state-wide importance for both energy and transportation policy, in 2011 Governor Christine Gregoire requested the Washington State Department of Commerce and the Washington State Department of Transportation to convene the Washington State Plug-In Electric Vehicle Task Force (PEV Task Force).

The PEV Task Force is comprised of state agencies, counties, cities, state commissions, nonprofit organizations, utilities and automobile manufacturers. Western Washington Clean Cities is also an active participant. A complete list of members, along with an organizational chart, is provided in Appendix A.4.

The mission of the PEV Task Force is to provide information and guidance to elected and appointed officials about the electrification of transport, and to serve as the statewide forum for EV policy and deployment planning. Its objectives are to:

- Develop a state electric vehicle roadmap and action plan.
- Prepare the State to compete for federal funding to support the electrification of transportation.
- Propose strategies to support the electrification of transportation in ways that create economic opportunity and protect the environment.

The PEV Task Force is predicated on the notion that collaborating, coordinating, and sharing information is the most effective approach in supporting the electrification of transportation at the local, state, and regional levels.

Task Force members are working in smaller groups to accomplish specific objectives. Working groups include Policy & Markets, Infrastructure, Education & Outreach, Economic Growth and Strategy & Coordination. The Clean Cities Coalition is strongly engaged with the Education & Outreach and Infrastructure work groups.

Finally, Washington is coordinating EV infrastructure and policy planning across national and international borders with the west coast governments of Oregon, California and British

[7] http://climatesolutions.org/programs/NES/PS_NES_Framework.pdf

Columbia. The West Coast Green Highway initiative[8] is a multi-state (and multi-national) effort to help transition the transportation sector to clean and smart fuels and technologies. Washington is actively coordinating infrastructure planning with Oregon to create the nation's first interstate electric highway[9] corridor along I-5, the most heavily-traveled north-south route in the western United States.

2.26 Education & Outreach Activities

To advance understanding and pique interest in EVs, the Western Washington Clean Cities Coalition and PEVTF partners offer information and trainings throughout the region.

Here is an overview of 2011 events pertaining to EVs:

- **Nuts n Volts of EVSEs – Spring 2011.** Geared toward municipalities and building owners, this workshop addressed the "how to's" and frequently asked questions of EVSE.
- New Energy Solutions – Spring 2011 for general /public interest
- New Energy Solutions – Fall 2011 for general/public interest
- National Plug-in day – October 2011 for general/public interest
- **First Responders Electric Vehicle Safety Training** – October 2011. This workshop will provide first responders with information they need to safely approach an electric vehicle accident scene.

In addition to trainings, the Coalition is collaborating with Washington State University Extension Energy Program on the development of an EV guidebook for the next wave of potential EV-adopters. The guidebook asserts the readiness of EVs in the region, outlines the features and benefits of EVs, and addresses typical concerns associated with public acceptance of EVs, such as range anxiety and safety. Once published, the guidebook will be promoted at local events, incorporated into trainings, and made available online for free download.

The Coalition is also creating a Quick Response (QR) Code-based marketing campaign. A QR code will be affixed to EVSEs, publications, and signage as appropriate, and will direct the consumer to web-based information about EVSE, PEVs and what is happening in Washington.

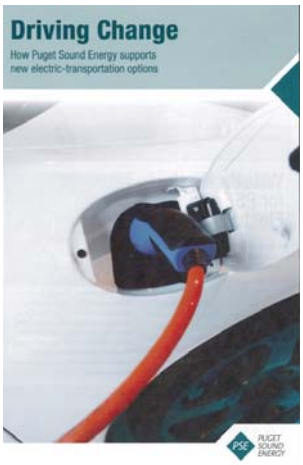
Both the guidebook and the QR Code campaign will be completed by the end of 2011.

At the state level, the State PEV Task Force has created an Education & Outreach working group, which has been coordinating activities in this area, defining a set of key messages around plug-in vehicles, identifying target audiences, and planning the development of educational materials.

[8] http://www.westcoastgreenhighway.com/education.htm

[9] http://www.westcoastgreenhighway.com/electrichighways.htm

To promote the activities of the PEV Task Force and the latest information and trends about EVs in Washington State, the Department of Commerce developed the website, electricdrive.wa.gov. In 2010 the Department of Commerce also organized a series of public webinars on a variety of subjects related to PEV, including EVSE technologies, EVSE deployment plans, PEVs and municipal codes, Nissan deployment plans, and EVSE permitting. These webinars garnered robust participation; audio files are posted on the electricdrive.wa.gov website. The Department of Commerce also collaborated with the Port of Chelan County to organize a series of Town Halls in communities along the US-2 Stevens Pass Green Byway. These events shared information on technologies, EVSE implementation plans and other issues around PEV deployment.



Also in 2010, the State Department of General Administration surveyed its fleets to gauge their interest in acquiring plug-in vehicles. The survey found very limited interest, indicating a need to further educate fleet managers about the value of plug-in vehicles to fleet operations.

To date, the education and outreach for plug-in electric vehicle implementation in the state has been conducted either via the grant-funded EV vehicle and infrastructure projects, the utilities, or the EV and EVSE manufacturers themselves.

The Washington State Department of Transportation is promoting electric vehicle travel on major roadways through public education and outreach. WSDOT maintains the West Coast Green Highway website promoting the use of alternative fuels and electric vehicles along Interstate 5, the 1,350-mile north-south highway serving 71,000-300,000 vehicles per day. WSDOT is collaborating with Oregon DOT and other west coast partners to develop signage and outreach materials to provide electric vehicle drivers with a distinctive Pacific Northwest driving experience, which also includes QR Codes. Washington received federal highway administration approval to use an alternate electric vehicle charging symbol for way-finder signs along highways and local roads. WSDOT is also developing an alliance for businesses supporting electric vehicle charging including those in its public DC fast charging network. Newly created West Coast Electric Highway branding will be used to promote the charging network to tourism, economic development and automobile associations. The state is also supporting local marketing efforts such as the US 2 Stevens Pass Greenway as the nation's first EV-friendly scenic route.

WEST COAST ELECTRIC HIGHWAY

Other website resources that the PEVTF collaborate on and promote include: http://www.evcollaborative.org/

http://www.electricdrive.org/
http://www.seattle.gov/light/electricvehicles/
http://www.pse.com/savingsandenergycenter/AlternativeFuelVehicles/Pages/Electric-Vehicles.aspx
http://www.psrc.org/transportation/ev
http://www.wwcleancities.org/electric.aspx
http://www.snopud.com/home/ev.ashx?p=1843
http://westcoastgreenhighway.com
http://www.pluginamerica.org

SECTION 3.0: CURRENT PLUG-IN VEHICLE IMPLEMENTATION

3.1 Vehicle Availability

The following list provides a complete survey of commercially available plug-in electric vehicle models (excluding neighborhood electric vehicles) available in Washington at the time of publication. A more detailed version of this list can be found in Appendix A.4, which includes links to the appropriate dealerships or ordering guidelines directly applicable to Washington consumers.

Available Now

Battery Electric Vehicles (light-duty):

2011 Ford Transit Connect Electric
2011 Mitsubishi i (formerly known as i-Miev)
2011 Nissan LEAF
2011 Smart Fortwo Electric
2011 Tesla Motors Roadster Sport 2.5
2011 TH!NK City

Battery Electric Vehicles (heavy duty):

2011 Smith Newton (truck)
Navistar eStar
Electric Vehicles International (EVI) Medium Duty Truck & Walk-In Van
Balqon
Mule M150
Nautilus XE-20 All Electric Terminal Tractor
Nautilus XE-30 All Electric Terminal Tractor

Extended Range Electric Vehicles (EREVs)

2012 Chevrolet Volt
VIA Motors Extended Range Electric Truck

Plug-in Hybrid Electric Vehicles (PHEVs)

2012 Fisker Karma S Plug-in Hybrid

Anticipated availability dates for future models:

Battery Electric Vehicles (light duty)

2011 BMW ActiveE (limited availability worldwide currently)
2011 Coda Automotive Sedan (taking orders now, limited availability in California)
2012 Ford Focus Electric (available late 2011 in Puget Sound)
2012 Tesla Motors Model S (deliveries begin in 2012, taking orders now)
2012 Audi e-tron (no release date for US)
2012 Honda Fit EV (no release date for US)
2012 Toyota FT-EV (no release date)
2012 Toyota RAV4 EV (no release date, California first)
2012 Volvo C30 Electric (no release date for US)

2013 BMW i3 Megacity (US release planned for 2013)
2013 Mercedes SLS E-Cell AMG (no release date)
2014 Volkswagen Golf Blue-e-motion (no release date)

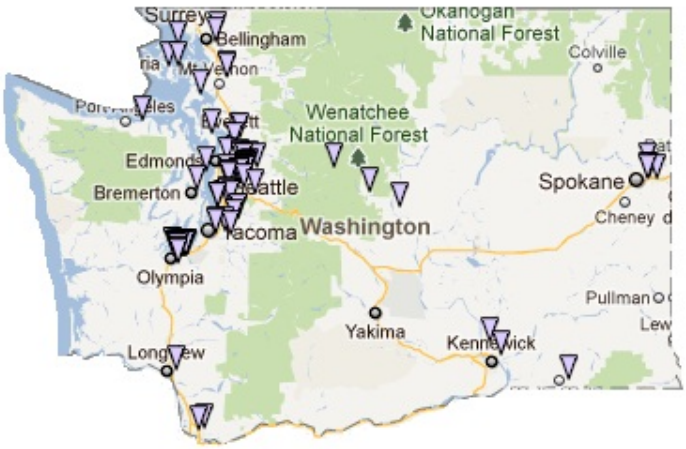
PHEVs

2012 Toyota Prius Plug-In Electric Hybrid (no release date)
2012 CY Ford CMAX Energi

3.2 Infrastructure Access & Availability

The build-out of EVSE infrastructure in Washington is happening at a rapid pace, with dozens of new stations coming on-line each week. At the time of publication, more than 300 non-residential charging stations were listed in the station locator database maintained by the Alternative Fuels & Advanced Vehicles Data Center (afdc.energy.gov). Station density is highest surrounding the urban areas around the Puget Sound region and along the north-south I-5 corridor as shown in the image below.

The current infrastructure map does not yet include the DC fast charge stations planned for the I-5 and Highway 2 corridors, but these are expected to be operational by end of 2011.



While the results of the guidance documents and mapping activities have guided the general direction of infrastructure build-out in the Puget Sound region, no state-wide "Roadmapping" process has yet occurred. It is anticipated that this will be completed in 2012. While the infrastructure installed to date has followed the guidance described in Section 2.23 of this document, a collective planning process is required to guide further build-out to 2015.

In several regions of the State, communities and small businesses have launched initiatives to install publicly accessible Level 2 charging stations to facilitate 1) local EV adoption; and 2) EV-based tourism. These are largely privately funded investments without grant subsidy, primarily located along established tourism corridors (e.g., Stevens Pass Greenway, Cascade Loop, Ellensburg/Wild Horse Windfarm). The strategic location of Level 3 (fast-charge) stations in such regions could leverage the private/local funds and significantly complement the grassroots efforts for EV promotion and integration in key areas of Washington.

3.3 Market Incentives

As outlined in Section 2.21, SSHB 1481 established sales tax exemptions for EVs and EVSE. This tax exemption results in a generous reduction (between 6.5 and 9.5%) in the retail base price that is compounded with the federal income tax benefits of up to $7,500 per vehicle.

Access to preferred parking spaces was extensively discussed as part of the PSRC-Commerce model ordinance process, with input from local EV associations. It was agreed at that time that giving EV preferential parking spaces would not be a good idea, because it involved two risks: a) that the EV spaces would be "ICEd" (i.e. occupied by internal combustion engine vehicles), and b) that perception of EV as non-mainstream would be increased.

The current market incentives, as described in the AFDC for vehicles and infrastructure in Washington are outlined below:

Vehicles
New passenger cars, light-duty trucks, and medium-duty passenger vehicles that are dedicated alternative fuel vehicles (AFVs) are exempt from the state motor vehicle sales and use taxes. Qualified vehicles must operate exclusively on natural gas, propane, hydrogen, or electricity, meet the California motor vehicle emissions standards, and comply with the rules of the Washington Department of Ecology. This exemption also applies to qualified used vehicles that are modified with a U.S. Environmental Protection Agency certified aftermarket conversion, as long as the vehicle is being sold for the first time after modification. The converted vehicle must be part of a fleet of at least five vehicles owned by the same person and have an odometer reading of less than 30,000 miles. This tax exemption expires July 1, 2015. (Reference Revised Code of Washington 82.08.809 and 82.12.809)

Infrastructure
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 used for EV infrastructure. (Reference Revised Code of Washington 82.29A.125, 82.08.816, and 82.12.816)

3.4 Early Adopters

While there are now several hundred electric vehicles owned by private citizens in Washington, the following is a list of public and private entities/fleets who have adopted, or plan to adopt plug-in electric vehicles in the near term.

Early Adopters (in alphabetical order):
City of Bellevue, City of Kirkland, City of Seattle, City of Tacoma, Enterprise Holdings, King County, Pierce County, Puget Sound Energy, Snohomish County, Seattle Children's Hospital, City of Wenatchee, Chelan County, Douglas County PUD, Port of Chelan County, Wenatchee Valley College

Plan to Adopt in the next 1 to 2 years (in alphabetical order):
City of Bellingham, Port of Seattle, Port of Tacoma, Staples, ThyssenKrupp, Vulcan, Zipcar

SECTION 4.0: PUBLIC INFORMATION & EDUCATION NEEDS

Public information needs about electric vehicles and charging infrastructure of a non-commercial nature will be addressed at the state's website: http://www.electricdrive.wa.gov. This website is under development but is regularly being updated, and is expected to address many of the needs identified in the subsequent sub-sections.

The general public needs for electric vehicle and charging infrastructure identified by the PEV Task Force are:

- EV driver experience/testimonials (video preferred, but written are also useful)
- Clearinghouse of information on state website that is not biased to one particular vehicle or EVSE manufacturer
- Opportunities for real-world experience with EVs and charging stations

4.1 Home EVSE Installation & Charging

Currently (fall 2011), most information about home EVSE installation and charging is available through utilities and EV automobile dealerships. In some cases, dealers do not allow EVs to be purchased until the customer has completed a home charging installation assessment with the help of an on-line customer service and integrated EVSE supplier. This appears to be the de facto standard for all current EV dealers, but not enough information is known about dealers' plans for future vehicle releases. Therefore, a survey of materials and/or procedures for EVSE home installation offered by automobile dealers may be appropriate. One concern for the Task Force is that this may alienate 'garage orphans' or residents of multi-unit dwellings who have made other arrangements for charging and parking in their community. Further guidance on this topic specifically needs to be addressed. Alternatively, offering guidance to EV automobile dealers to follow a standard approach or hand out consistent educational materials may be a service the members of the task force could support. All major electrical utilities in the state have web pages and pamphlets describing the process for residential and commercial charging installation (see listings at: http://www.electricdrive.wa.gov/community.htm)

The information and education needs for home EVSE installation and charging identified by the PEV Task Force include:

- Developing coordinated and consistent information resources about home installation between electricians, EVSE distributors, utilities (62 in the state), and car dealers.
- Encouraging OEMs to provide an integrated EVSE installation service (or guidance for 'garage orphans') with vehicle purchase, if it does not yet exist.
- Providing more support, case studies, and guidance for consumers who need charging for multi-unit dwellings.
- Providing maps of locations where chargers could be used at night for multi-unit dwelling residents vs. daytime for other needs (e.g. King County's park and ride stations)
- For consumers not yet committed to purchasing an electric vehicle, ensuring that educational and promotional material offers enough basic information that describes the installation process; it can be explained that in most cases, installation is as easy as calling their local electrician and getting a new appliance outlet installed.

4.2 Charging Infrastructure Access & Availability

In some cases, PEV owners are able to access charge station (i.e. infrastructure) information directly from their vehicles, computers, or smart phones. However, for those consumers that remain skeptical about EVs, the perception is that infrastructure is limited; these consumers are unaware of the infrastructure that exists or where to find the latest information. There is a need for more information that explains there is a significant investment being made to insure the proper infrastructure is and will continue to be available for the needs of EV owners. They must also be made aware that long range planning for the state and the western interstate corridor will meet the needs of the majority of drivers. In most cases, this will come in the form of way-finding signage or symbols that the EV owner doesn't require, but is mostly in place to advertise to non-owners that significant charging opportunities exist for those who may be contemplating EV ownership.

The needed information on public charging infrastructure availability and planning identified by the PEV Task Force includes:

- Providing an up-to-date map of the state's public stations on electricdrive.wa.gov (imbedded from AFDC)
- Providing EV Infrastructure Plan map to show where potential sites are recommended/planned.
- Creating an interactive mapping tool to allow consumers to select a charging "location wish list".
- Ensuring infrastructure QR codes offer a quick link to that state map.
- Offering physical maps on posters/billboards at rest stops along interstate corridors. In most cases, this is to assure non-EV owners that the infrastructure exists and to help EV owners plan their rest stops.
- In outreach materials, showing examples of interstate DC fast charging signage so that non-owners will know what they mean when they drive by them.
- Working with retail and restaurant partners at interstate exits to offer additional/different signage to indicate which have Level 2 charging.
- Communicating leasing, rental car, and car share options for vehicles so that drivers have options that don't require the same level investment as a purchase.
- Considering the use of a recognizable icon that is pervasive and enforces the knowledge that a charging locations "is here", similar to the early wave of stickers that indicated where Wi-Fi hotspots were located.

4.3 Fleet Education

Large national 'early adopter' fleets are currently doing trials with several delivery and service fleet electric vehicles (namely all-electric Ford Transit Connect and Smith Newton), as well as passenger vehicles. While fleets with light-duty passenger vehicle needs have expressed interest and are examining their PEV options, fleets requiring middle-to-heavy duty electric vehicles generally have the perception that the high up-front cost or vehicle performance is a limitation and don't explore further.

The fleet information needs identified by the PEV Task Force include:

- Return-on-investment calculators for Transit Connect, Smith, eStar and other common fleet models
- Data on the impact of topography and climate on range for fleet EVs.

- Communicating preliminary results from Staples, Frito Lay and FedEx, etc experience via fact sheets, websites, and conferences
- Fleet-specific testimonials
- Fleet consultancy integration – telematics & calculator tools to see what is the right fit
- Ensuring charging (at-base versus public) options for fleet vehicles (light duty vs medium duty) is widely available.
- Targeting rental/car share fleets who haven't adopted EVs to do so in specific locations.
- Creating pilot project with Enterprise to give northwest companies headquartered in Washington priority access to electric vehicles.
- Rental car sales – programs to promote used EVs
- Distributing and put on state website an "easy-to-use" info card for rental fleets and government fleets who have EVs for use in their fleet but might have intimidated drivers (use King County's Guide for Vanshare Nissan LEAF drivers)
- Working with state and joint power procurement entities to offer vehicles and infrastructure for pooled procurement to drive down price and make access easy.

4.4 Personal and Public Safety

Personal and public safety information is presented in the EV Guidebook published by Western Washington Clean Cities. In addition to this information, the Coalition has launched its first in a series of workshops on electric drive vehicle safety training for first responders (police, fire, ambulance) beginning in October 2011. However, misperceptions about battery fires and accidental electrocution remain as barriers, namely because there is little information about them. The automobile manufacturers have done an excellent job of showcasing their vehicles' crash test performance, but it would be of benefit to the public if all safety concerns were addressed in one place.

The safety information needs identified by the PEV Task Force include:

- Ensuring EV brochures/documents and websites address personal and public safety concerns of all types.
- Continuing to expand training for first responders and let the public know this is being done.
- Description, graphics or videos on the state website that show how EVs protect people and first responders.
- Being cautious not to create undue or increased concern by emphasizing things that are not actually considered dangerous (i.e. highlighting things they weren't worried about in the first place)
- Re-emphasizing the fact that EVSE installations must be done by professionals.
- Addressing concerns about pedestrian & bicycle safety related to lack of vehicle noise (particularly as it relates to the safety of the visually impaired).

4.5 Permitting, Construction, Electricians

The electric utilities in Washington have done an excellent job of advertising the process and timing for electrical permits and inspection to install EVSE and giving guidance to both their residential and commercial customers. Most residential customers expect to get this information from either their

utility, local electrician, or vehicle dealer, and to date these information sources have served the need well.

The Infrastructure Guidance manuals produced by the PSRC and ECOtality have been excellent resources for construction and zoning related to EVSE infrastructure, but more should be done to make that information available.

Electrician awareness and training is growing thanks to the leadership of the Electrical Industry Joint Apprenticeship & Training Committee. The following courses, including an Electric Vehicle Infrastructure Training Program (EVITP) Certification are now offered in western Washington.

***Introduction to Electric Vehicles** 4 hours CEU, no text. This course will introduce Electric Vehicle Supply Equipment (EVSE) and its installation to the Electrician. Course reviews EVSE types & product lines as well as NEC, NFPA 70E, and OSHA code & standards for proper installation. *This course is a prerequisite to the EVITP Certification course.*

***Electric Vehicle Infrastructure Training Program (EVITP) Certification Prerequisite: Introduction to Electric Vehicles,** 20 hour class, 12 hours CEU, no text. EVITP was established to provide the Electric Vehicle Industry with a certification to ensure the highest level of verifiable knowledge and technical understanding to support the sound, safe and successful growth of the EV market. With completion of the course and passing of a written exam students will receive EVITP Certification (must be Electrical Journeyman or Administrator). The course will cover a broad scope of material from Electric Vehicle installation methods, codes and standards to customer relations.

The permitting, construction, and electrician education needs were identified by the PEVTF to be:

- Expanding electrician training across state
- Providing understanding to the public that EVSE installation is not dramatically different from what electricians typically face.
- Targeting green building (e.g. LEED, GBC) organizations/developers who will have questions about EVSE installations and may have heard about charging requirements for buildings in neighboring (Vancouver, BC) jurisdictions.
- Working with planning and building organizations to provide EVSE awareness and training for the design community.

SECTION 5.0: BARRIER ANALYSIS

While no specific market studies have been conducted in Washington, the PEV Task Force assesses that the greatest barriers to greater market adoption of plug-in electric vehicles in Washington are lack of public/fleet awareness, range anxiety, and point-of-sale vehicle purchase price. This is consistent with the barriers identified by the US Department of Energy (http://www1.eere.energy.gov/vehiclesandfuels/pdfs/1_million_electric_vehicles_rpt.pdf).

In 2012, the PEV Task Force will identify more specific barriers falling within these seven categories: (1) consumer barriers; (2) technology barriers; (3) infrastructure barriers; (4) grid barriers; (5) government or policy barriers; (6) cost or funding barriers; and (7) collaboration barriers.

5.1 Survey of Potential Vehicle & Infrastructure Incentive Programs

Due to Washington's lack of income tax and low residential electricity rates, the most effective incentive programs will need to reduce point-of-sale cost of vehicles and infrastructure via rebates.

The most common electric vehicle and infrastructure incentives were evaluated for Washington State and are prioritized and summarized in Table 1 as: viable/excellent (green light); possible, but the political appetite or size of the incentive is not sufficient to eliminate the barrier (yellow light); or not possible/not useful (red light).

Table 1: Summary of electric vehicle and infrastructure incentive feasibility in Washington

Priority	Type of Incentive	Feasibility	Explanation
1	**Financial Rebates for Vehicles and Infrastructure**		Point-of-sale rebates for vehicle and infrastructure costs are considered the most motivating incentive to consumers.
2	**State Sales Tax Credit for Vehicles and Infrastructure**		Currently in place to reduce up-front vehicle and EVSE costs. Vehicles are exempt from the 6.8% motor vehicle & use tax, and EVSE are exempt from the 6.5% sales tax).
3	**Preferred Lanes (free HOV/HOT lane access) for Vehicles**		Previously explored by the state; many barriers encountered but considered a strong consumer incentive due to high congestion in urban areas.
4	**Lower Insurance Rates for Vehicles**		Reduces operational costs of vehicle ownership. In other states, 10% insurance discounts are typical, and are considered a moderate incentive.
5	**Preferred Parking for Vehicles**		Already established in many jurisdictions, but only considered a 'benefit of convenience' and not a strong incentive.
6	**Economic Development Incentives for Vehicles and Infrastructure**		Considered a strong motivator for businesses, though not a strong consumer incentive. May be difficult to implement in current legislative environment.

7	**Preferred Utility Rates for Vehicle Charging**		Not considered a strong incentive for consumers as there is an insufficient price gap between peak and non-peak rates
8	**State Income Tax Credit for Vehicles and Infrastructure**		While this would eliminate up-front vehicle and infrastructure costs, it is not feasible in Washington because there is no state income tax.

To follow is a discussion and summary of incentives provided in other jurisdictions that may be attractive for adoption (in part or whole) in Washington.

Financial Rebates for Vehicles and Infrastructure

The most popular type of market incentive found in a survey across all states was financial rebates. California, Oregon, Hawaii, Illinois, Michigan, New York, North Carolina, Tennessee, and Texas all have some form of vehicle and/or infrastructure rebates. Many states and cities offer rebates to owners of EVs, and some even offer specific and often higher incentives targeted to fleets (Oregon, California) or car-sharing programs (Illinois). Rebates for vehicles range from $500 to $5000 to for light duty vehicles, and from up to $20,000 for heavy duty electric vehicles (this is specific to California). Most of these programs have a limited source of funds and are effective for about 5 years or until funding is used. They are typically offered by state or city government programs.

Rebates for EVSE installation range from $500 to $2500 and are offered in Hawaii, California, Michigan, Texas, and North Carolina. Some of these specify the requirement for a separate meter, which the utilities in Washington deem unnecessary due to the low cost of electricity. Most are offered for a period of 3 years or until funds are depleted. Many are offered by the utility rather than the state or regional government. This type of incentive program has the additional advantage of ensuring proper procedures and installations for EVSE are followed.

Preferred Parking

Some jurisdictions such as Arizona have enforceable parking regulations that either allow only EVs to park in designated EV parking spaces (subject to a financial penalty), or allow EVs to park in areas that are otherwise designated for carpools or other preferred access spaces. The main barrier to implementation of parking rules is enforcement. In general, parking enforcement in Washington is regulated by municipal governments or private commercial operators. While EV parking enforcement can be integrated into the duties of conventional parking officers, regulatory changes (often in the form of municipal ordinances) are an additional barrier. This incentive is considered an additional benefit of ownership for drivers, but is not considered to be a key incentive to push the market forward.

Preferred Lanes (HOV/HOT access)

Access for electric vehicles on High Occupancy Vehicle or High Occupancy Toll lanes without having to pay additional fees or meet high occupancy requirements is considered a very attractive incentives in congested urban areas. In California, vehicles use color-coded stickers to qualify. In Hawaii, the state issues EV specific license plates so that cameras and other monitoring devices can recognize the cars as exempt from fees. In areas with significant traffic congestion like Southern California, monetization of the value of this access is considered very high and very valuable. Recent auto industry reports estimate the value of HOV lane access at $2,500, based on the higher price consumers were willing to pay for a used Toyota Prius that had a valid HOV lane access sticker compared to similar models with no stickers[10]. However, perceptions that only wealthy people who are able to afford new EVs can now buy their way onto these lanes exist.

Lower Insurance Rates

Currently, Farmers Insurance provides a discount of up to 10% on all major insurance coverage for electric vehicle owners in some states. This is considered an added benefit of ownership, but is not significant enough to push the market forward. In Florida, a statue was passed that forbids insurance companies from imposing surcharges on EVs based on factors such as new technology, passenger payload, weight-to-horsepower ratio, and the types of material used to manufacture the vehicle, unless the Florida Office of Insurance Regulation receives actuarial data that determines the surcharges are justified.

Economic Development Incentives

While economic development incentives are considered an excellent incentive to develop the local economy and increase Washington's exposure and identity, a challenge for Washington is the lack of income tax and the ability to leverage it for businesses. As well, the Business and Occupation tax could be offset by investment incentives, as has been done for other key industries in the state. However, given the current state budget, we don't expect this to happen in the near term. The state of Michigan offers a tax credit from the Michigan Economic Growth Authority for battery pack manufacturers as well as vehicle engineering to support battery integration, prototyping and launching. Taxpayers can also claim a credit equal to 50% of the capital investment expenses for the construction of manufacturing facilities if they create a certain number of new jobs in the state.

The PEV Task Force via the Department of Commerce will work to determine to what degree other incentives for economic development may be helpful to bring EV manufacturing to the state.

Preferred Utility Rates for Vehicle Charging

Due to the relatively small difference between peak and off-peak power prices in the state[11], most if not all utilities do not currently offer time-of-day rates. A time-of-day pilot conducted by Puget Sound Energy in 2002 demonstrated that such rates made little impact on customer behavior because the price

[10] See WardsAuto.com, August 10, 2011. http://wardsauto.com/ar/toyota_evs_prius_110810/

[11] http://pse.com/aboutpse/Rates/Documents/summ_elec_prices_2011_05_01.pdf

differences were small. Implementation of slightly discounted PEV-specific rates for off-peak charging is unlikely to be a strong motivator for potential PEV owners, and the cost and complexity to implement them are substantial. The PEV Task Force, therefore, does not consider such rates to be an important incentive for EV customers in the near-term. The state's utilities might use them as an energy and peak-load management tool in the future as PEV penetrations increase.

5.2 Steps to Barrier Elimination

Based on the analysis provided in Section 4.0 and Section 5.1, the PEV Task Force will take the following steps to eliminate education/information barriers and create further incentives to purchase EVs and supporting infrastructure:

1) Develop PEV Task Force work plan
2) Examine if the Task Force has the appropriate representatives to complete the work plan tasks, and if not, recruit the necessary personnel
3) Assign roles and leads for the Outreach work identified in Section 4.0 and the Incentives Development work identified in Section 5.0
4) Develop stronger partnerships with other states and regions showing early leadership in research and barrier elimination.
5) Work with OEMs on projected production capacity and ensure they have an accurate understanding of demand, particularly if pooled procurement methods are implemented.
6) Develop incentive program descriptions/mechanisms:
    a. Electric Vehicles
        i. Develop general consumer rebate program models
        ii. Develop fleet-specific incentive programs models for different vehicle classes
    b. EVSE Infrastructure
        i. Develop specific programs for owners/developers of multi-unit dwellings to install plus metering
7) Examine best methods to implement outreach and incentive programs (legislative partners, utilities, grant proposals, etc.)

SECTION 6.0: ROLE OF CLEAN CITIES COALITION IN IMPLEMENTATION

To follow up on the needs and work identified in this assessment, the Western Washington Clean Cities Coalition will integrate the following work into the operations plan of the Coalition. The Coalition will primarily focus on partnership work to build EVSE infrastructure, specific outreach to fleets on electric vehicles, and continued marketing and outreach to specific audiences.

6.1 Next Steps

1) Develop rebate/incentive programs and pursue funding options for these programs
2) Continue to participate and play active role on PEVTF and its subcommittees

3) Help with infrastructure planning process
4) Help build out infrastructure and work with EVSE manufacturers/distributers
5) Help push policies and incentive programs where applicable
6) Liaise with fleets primarily (general public outreach will happen within TF, but not specific to Coalition)
7) Be a long-term information resource for vehicle and infrastructure use (particularly output of INL and US DOE pilot programs)
8) Build up membership/target to EV sector
9) Attend national/regional conferences/meetings to learn from what other coalitions are doing
10) Promote WA as leader among coalitions and other states

6.2 Resource Needs

In order for the Western Washington Clean Cities Coalition to pursue its next steps, we have identified the following resource needs:

- Market surveys – professionally designed/conducted surveys of consumers and fleets
- Funding to conduct professional market surveys
- Data from electric vehicle fleet trials
- Data summaries from infrastructure usage (INL study data), and access to data thereafter (or summaries).
- Funding to execute EV rebate programs, with specific incentives for fleets
- Funding to execute EVSE rebate programs, with specific incentives for multi-unit dwellings.

Appendix A.1

REGULATIONS: OVERVIEW OF HB 1481

House Bill 1481: An Act Relating to Electric Vehicles (2009)
The purpose of the law is to encourage the transition to electric vehicle use and to expedite the establishment of a convenient and cost-effective electric vehicle infrastructure that such a transition necessitates.

HB 1481 can be reviewed in its entirety here: http://apps.leg.wa.gov/documents/billdocs/2009-10/Pdf/Bills/House%20Passed%20Legislature/1481-S2.PL.pdf

If you want to link the law in your Appendix, here it is:
http://apps.leg.wa.gov/documents/billdocs/2009-10/Pdf/Bills/Session%20Law%202009/1481-S2.SL.pdf

RCW 43.31.970
Requires the Washington State Department of Commerce to distribute to local governments model ordinances, model development regulations, and guidance for local governments for siting and installing electric vehicle infrastructure, in particular battery charging stations, and for appropriate handling, recycling, and storage of electric vehicle batteries and equipment.

RCW 35A.63.107
Requires that development regulations of any jurisdiction allow electric vehicle infrastructure as a use in all zones except those zoned for residential, resource, or critical areas. The requirements apply to local jurisdictions as follows:

- *By July 1, 2010, municipalities **greater than 20,000 in population** in King County that are adjacent to Interstate 5, Interstate 90, Interstate 405, or State Route 520, and all municipalities adjacent to I-5 in Pierce, Snohomish and Thurston Counties, must allow electric vehicle infrastructure.*
- *By July 1, 2011, municipalities **less than 20,000 in population** in King County that are adjacent to these freeways, and all municipalities statewide adjacent to I-5 and I-90 statewide, are required to allow electric vehicle infrastructure.*
- *The remaining municipalities across the state are required to allow battery charging stations by July 1, 2011.*
- *For unincorporated county lands, the law imposes similar 2010 and 2011 deadlines for electric vehicle infrastructure, but only within a 1-mile buffer around these freeways. For battery charging stations, the entire area of the county is affected — except those zoned for residential, resource, or critical areas — by 2011.*
- *For both cities and counties, the law allows jurisdictions to adopt incentives programs as well as other development regulations that do not have the effect of precluding the siting of electric vehicle infrastructure in areas where that use is allowed.*

For the jurisdictions required to allow electric vehicle infrastructure, the definition includes Battery Charging Stations (referred to as Level 1, Level 2, and Rapid Charging), Rapid Charging

Stations (referred to as Level 3 or DC Fast charging), and Battery Exchange Stations. For the jurisdictions required to allow Battery Charging Stations, the definition does not include Battery Exchange Stations.

RCW 79.13.100

Authorizes state and local governments to lease land for installing, maintaining, and operating EV charging stations or battery exchange stations for up to 50 years.

RCW 43.21C.410

Exempts the installation of battery charging and exchange stations from the Washington Environmental Policy Act)

RCW 43.19.648

By June 2015, requires local governments and state agencies to satisfy 100 percent of their fuel usage for operating publicly owned vessels, vehicles, and construction equipment from electricity or biofuel, to the extent determined practicable. An interim requirement of 40 percent is set for state agencies by June 2013. Commerce has not yet initiated this rulemaking; however, Commerce is considering strategies to implement Section 7 as part of the State Energy Strategy (SES) update currently underway.

RCW 47.80.090

Requires that the Puget Sound Regional Council, in collaboration with representatives from the Department of Ecology, the Department of Commerce, local governments, and the Office of Regulatory Assistance, seek federal or private funding for the planning for, deployment of, or regulations concerning electric vehicle infrastructure.

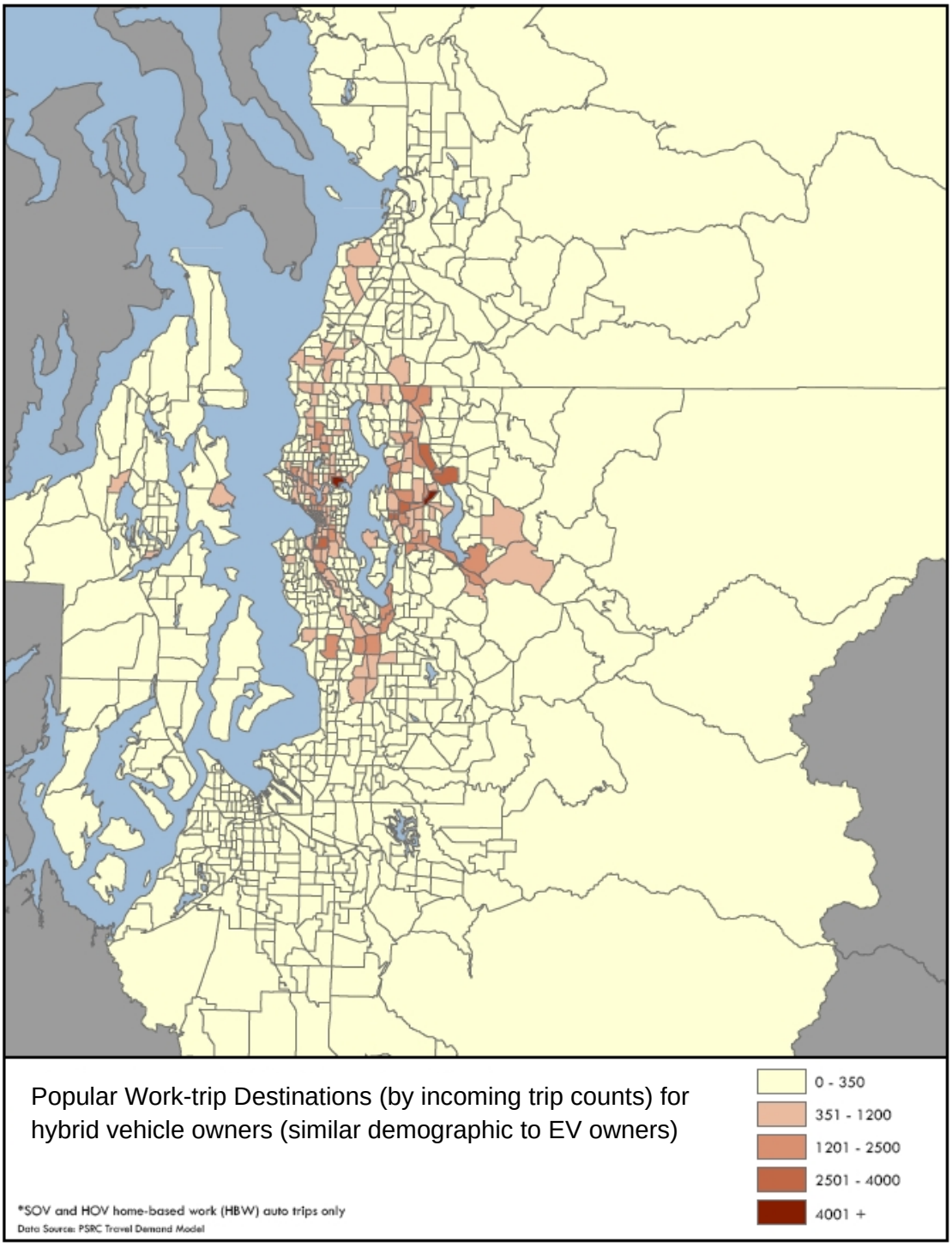
Appendix A.2 - **Washington Cities that Conduct Their Own Electrical Permitting & Inspections**

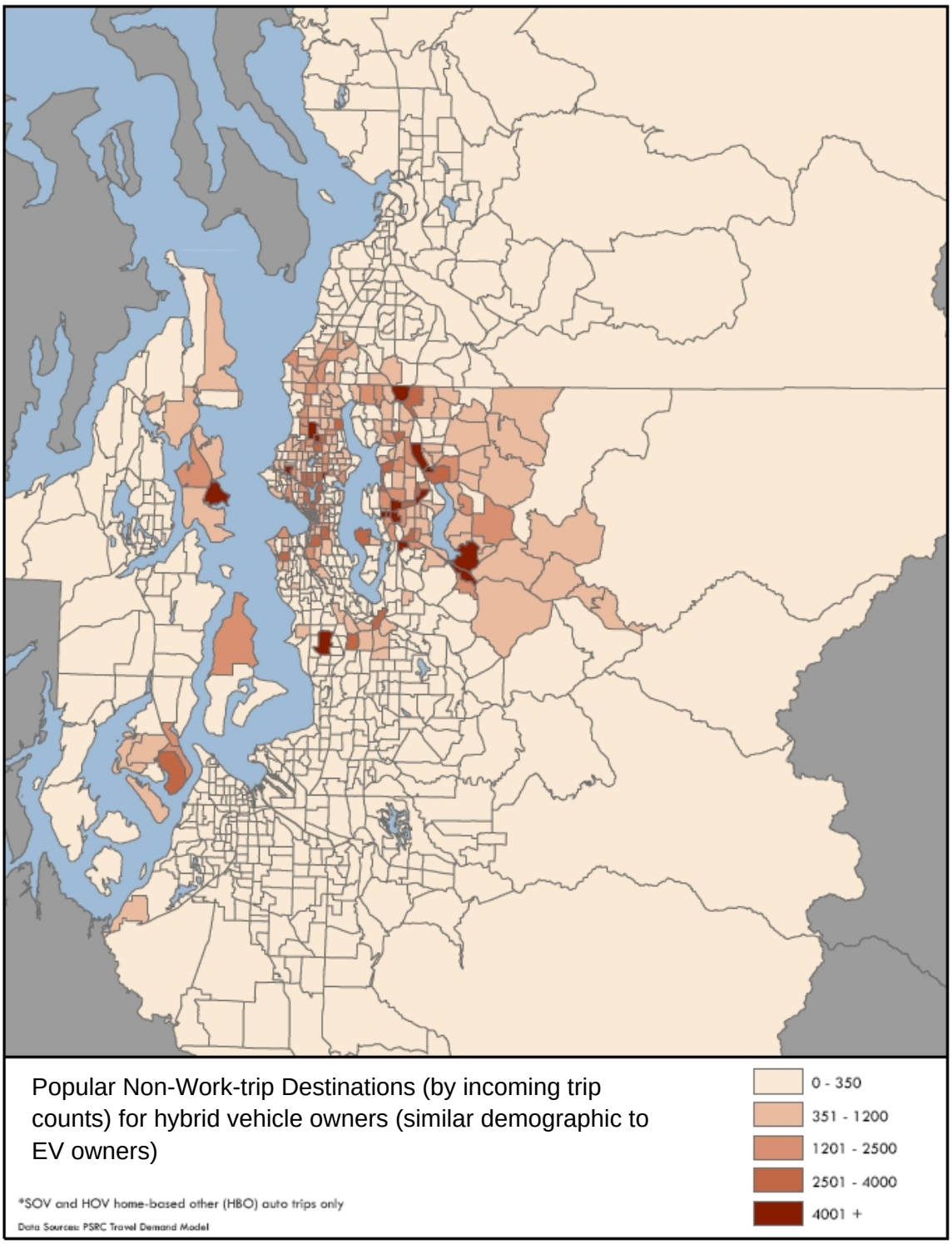
Links to permitting sites for each city are indicated. Cities indicated in bold have specific EVSE permitting guidance available for residents and businesses.

Aberdeen - http://aberdeeninfo.com/building/forms/fee_electrical.pdf
Bellevue - http://www.bellevuewa.gov/pdf/Development%20Services/B-4_EVchargestation.pdf
Bellingham - http://www.cob.org/services/permits/index.aspx
Burien - http://www.burienwa.gov/index.aspx?nid=145
Des Moines - http://www.dmgov.org/Pages/default.aspx
Eatonville - http://www.eatonville-wa.gov/files/u2/electrical_permit_app.pdf
Everett - http://www.ci.everett.wa.us/default.aspx?ID=864
Federal Way - http://epermits.cityoffederalway.com/AMANDA5/eNtraprise/FederalWay/common/index.jsp
Kirkland - http://www.kirklandpermits.net/tm_web/
Lacey - http://www.ci.lacey.wa.us/city-government/city-departments/community-development/building/permit-fees
Longview - http://www.mylongview.com/
Lynnwood - http://www.ci.lynnwood.wa.us/Docs/CD-ElectricalPermitApp.pdf
Marysville - http://marysvillewa.gov/index.aspx?NID=97
Mercer Island - http://www.mercergov.org/files/Electric%20Vehicle%20Charging%20Handout.pdf
Milton - http://www.cityofmilton.net/
Mountlake Terrace - http://www.cityofmlt.com/
Normandy Park - http://www.ci.normandy-park.wa.us/
Olympia - http://olympiawa.gov/
Port Angeles - http://www.cityofpa.us/permitsElectrical.htm
Redmond - http://www.redmond.gov/BusinessDevelopment/DeveloperServicesCenter/OnlinePermitServices/
Renton - http://rentonwa.gov/uploadedFiles/Business/EDNSP/DEVSERV/ElectApp.pdf
SeaTac - http://www.ci.seatac.wa.us/Modules/ShowDocument.aspx?documentid=376
Seattle - http://www.seattle.gov/DPD/Publications/CAM/cam132.pdf
Spokane - http://www.spokanecity.org/
Tacoma - http://www.mytpu.org/tacomapower/permitting/electrical-inspection-permits/Default.htm
Tukwila - http://www.tukwilawa.gov/
Vancouver - http://www.cityofvancouver.us/page.asp?menuid=10463

Appendix A.3

PSRC Study Data

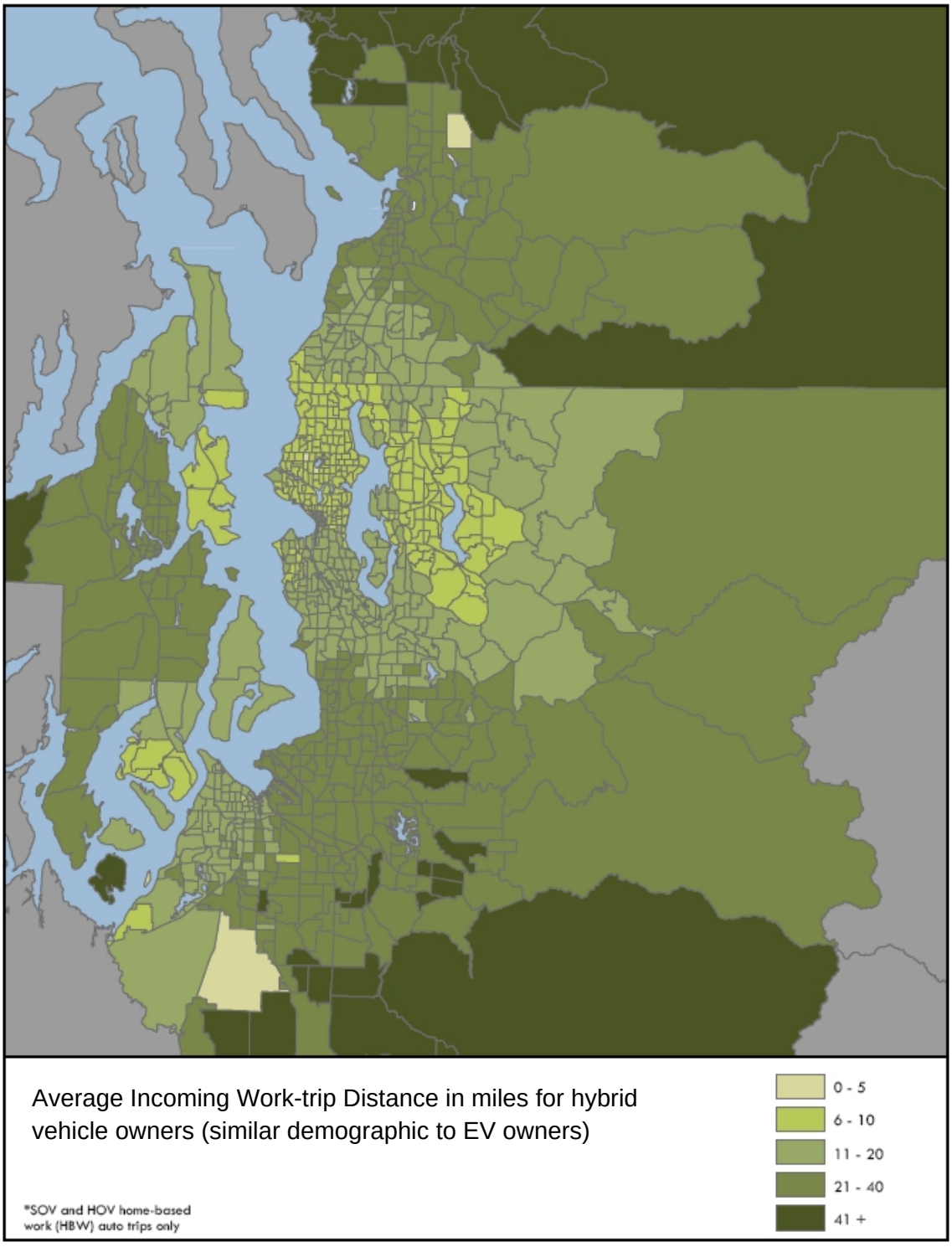




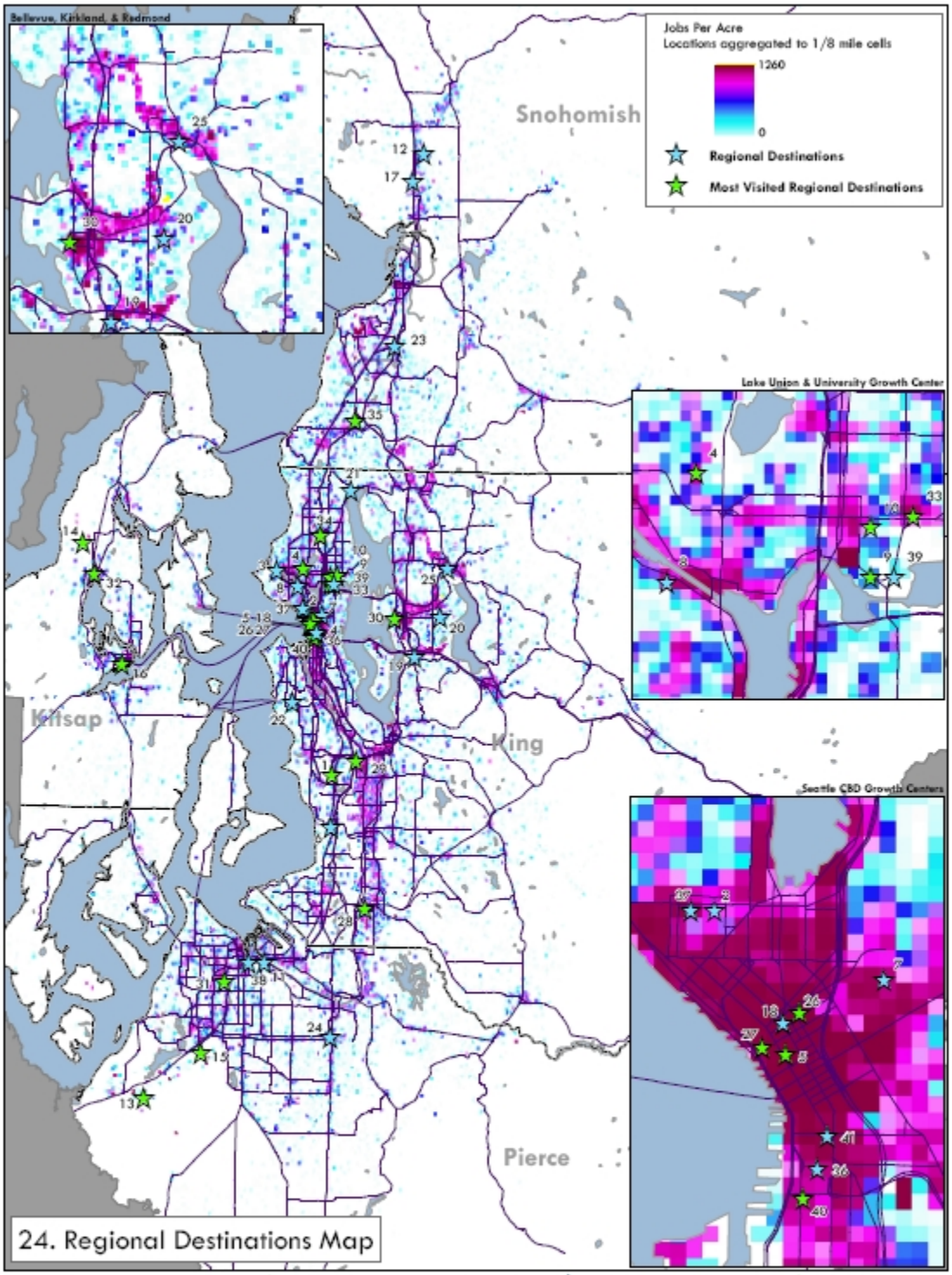
Popular Non-Work-trip Destinations (by incoming trip counts) for hybrid vehicle owners (similar demographic to EV owners)

*SOV and HOV home-based other (HBO) auto trips only

Data Sources: PSRC Travel Demand Model



Average Incoming Work-trip Distance in miles for hybrid vehicle owners (similar demographic to EV owners)



Index of Major Regional Destinations

Airport
1. SEA-TAC AIRPORT

Civic
2. MCCAW HALL
3. BALLARD LOCKS
4. WOODLAND PARK ZOO
5. BENAROYA HALL

College
6. HIGHLINE COMMUNITY COLLEGE
7. SEATTLE CENTRAL COMMUNITY COLLEGE
8. SEATTLE PACIFIC UNIVERSITY
9. UNIVERSITY OF WASHINGTON MEDICAL CENTER
10. UNIVERSITY OF WASHINGTON

Entertainment
11. EMERALD QUEEN CASINO

Military
12. NAVY COMMISSARY
13. FORT LEWIS MILITARY BASE
14. NAVAL BASE KITSAP/BANGOR SUBMARINE BASE
15. MCCHORD AFB
16. PUGET SOUND NAVAL SHIPYARD

Shopping
17. SEATTLE PREMIUM OUTLET MALL
18. WESTLAKE CENTER
19. FACTORIA MALL
20. CROSSROADS MALL
21. LAKE FOREST PARK TOWN CENTER
22. WESTWOOD VILLAGE
23. EVERETT MALL
24. SOUTH HILL MALL
25. REDMOND TOWN CENTER
26. PACIFIC PLACE
27. PIKE PLACE MARKET
28. AUBURN SUPERMALL
29. SOUTHCENTER MALL
30. BELLEVUE SQUARE
31. TACOMA MALL
32. KITSAP MALL
33. UNIVERSITY VILLAGE
34. NORTHGATE MALL
35. ALDERWOOD MALL

Stadium
36. QWEST FIELD
37. KEY ARENA
38. TACOMA DOME
39. HUSKY STADIUM
40. SAFECO FIELD

Transportation
41. KING STREET STATION

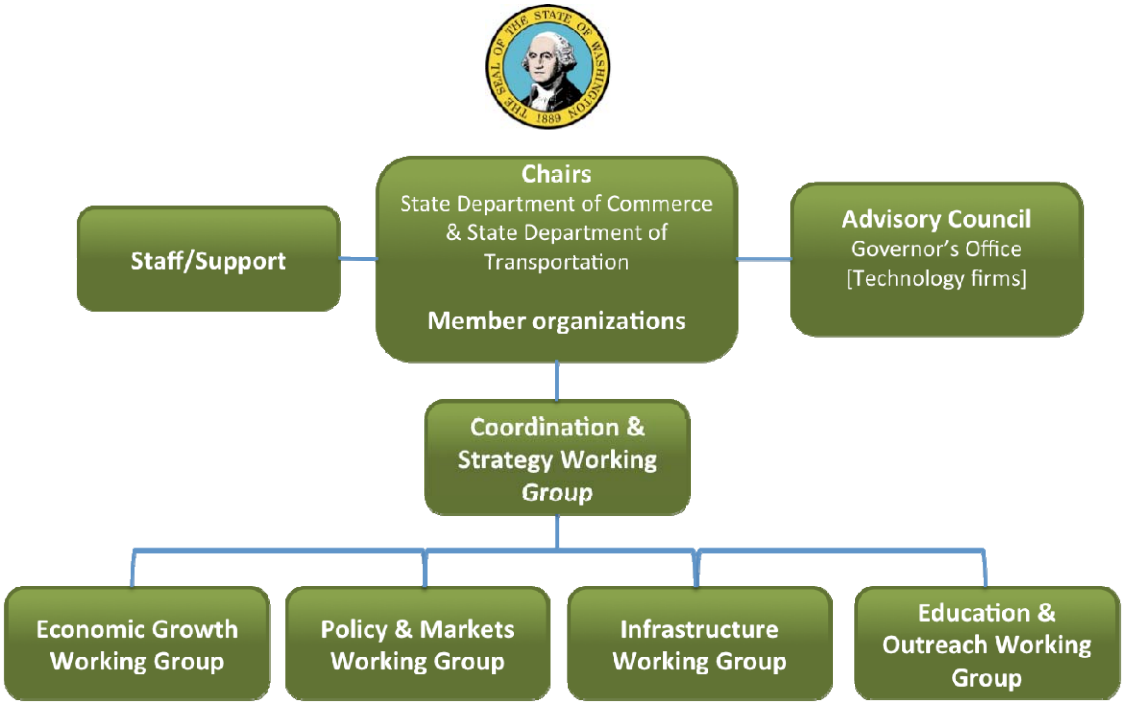
Average Trip Duration and Average Trip Distance for Non-Work Auto Trips by Destination Type

Destination Type	Average Duration (minutes	Average Distance (miles)
AIRPORT TOTAL	103	17.4
ARTS TOTAL	72	4.2
BOWLING TOTAL	126	6.2
CIVIC TOTAL	112	6.6
COLLEGE TOTAL	92	6.9
ENTERTAINMENT TOTAL	191	11.7
FITNESS TOTAL	76	4.8
GOLF TOTAL	190	8.2
MARINA TOTAL	136	7.0
MILITARY TOTAL	64	7.4
MOVIE THEATER TOTAL	129	5.4
MUSEUM TOTAL	120	11.1
PARK & RIDE TOTAL	420	7.7
RECREATION TOTAL	77	4.8
SHOPPING TOTAL	74	6.5
STADIUM TOTAL	174	9.4
TRANSPORTATION TOTAL	96	5.5
ALL DESTINATIONS TOTAL	**90**	**6.2**

Appendix A.4 - **Washington State Plug-in Electric Vechicle Task Force Members**

State Agencies	Washington State Department of Commerce Washington State Department of Transportation Washington State Department of General Administration Washington State Department of Labor and Industries Washington State Department of Ecology
State Commissions	Washington State PEV Task Force Utilities and Transportation Commission Washington State Building Code Council Washington State Transportation Commission
Counties	King County Snohomish County Port of Chelan County
Cities	City of Seattle City of Bellevue
Research Institutions	Pacific Northwest National Laboratory
Non-profit Organizations	Puget Sound Clean Cities Coalition Central Washington Renewable Energy Collaborative New Energy Solutions
Regional Agencies	Puget Sound Regional Council Puget Sound Clean Air Agency
Electric Utilities	Seattle City Light Puget Sound Energy Avista Tacoma Power
Automobile Manufacturers	Nissan North America Ford Motor Company BMW North America

WASHINGTON STATE PEV TASK FORCE ORGANIZATIONAL STRUCTURE



Appendix A.5

Battery Electric Vehicles (light-duty):

2011 Ford Transit Connect Electric
http://azdtec.com/dealer/index.php?state_province=WA

2011 Mitsubishi i (formerly known as i-Miev)
http://www.mitsubishicars.com/MMNA/jsp/company/fleet-corporate.do

2011 Nissan LEAF
http://www.nissanusa.com/leaf-electric-car/findDealer/index#/leaf-electric-car/findDealer/index

2011 Smart Fortwo Electric
http://www.smartusa.com/models/electric-drive/technology.aspx

2011 Tesla Motors Roadster Sport 2.5
http://www.teslamotors.com/seattle

2011 TH!NK City
http://www.thinkev-usa.com/buy-think-city/

Battery Electric Vehicles (heavy duty)

2011 Smith Newton (truck)
http://www.smithelectric.com/contactus.aspx

Navistar eStar
http://www.estar-ev.com/

Electric Vehicles International (EVI) Medium Duty Truck & Walk-In Van
http://www.evi-usa.com/

Balqon (please contact California dealers for Washington purchases)
http://www.balqon.com/
Mule M150
Nautilus XE-20 All Electric Terminal Tractor
Nautilus XE-30 All Electric Terminal Tractor

Extended Range Electric Vehicles (EREVs)

2012 Chevrolet Volt
http://www.chevrolet.com/volt/

VIA Motors Extended Range Electric Truck
http://www.viamotors.com/preorder/

Plug-in Hybrid Electric Vehicles (PHEVs)

2012 Fisker Karma S Plug-in Hybrid
http://www.fiskerofseattle.com/

Appendix A.6 Contact Information for PEV Partners

Avista	David Holmes	dave.holmes@avistacorp.com		
BMW	Andreas Klugescheid	andreas.klugescheid@bmwna.com		
Central Washington Resource Energy Collabora(ve	Anthony Aronica	tony@cwrec.org		
City of Bellevue	Sheida Sahandy	ssahandy@bellevuewa.gov		
City of Seattle	Sandra Pinto de Bader	sandra.pintodebader@sea@le.gov		
Department of Commerce	Gustavo Collantes	gustavo.collantes@commerce.wa.gov	Anne Fritzel	Anne.Fritzel@commerce.wa.gov
Department of Commerce Business Development	Mary Trimarco	mary.trimarco@commerce.wa.gov	James Palmer	james.palmer@commerce.wa.gov
Department of Ecology	Bre@ Rude	brud461@ecy.wa.gov		
Department of General Administration	David Boyle	david.boyle@ga.wa.gov		
Department of Labor and Industries	Doug Griffith	grii235@lni.wa.gov	Ron Fuller	electricalprogram@Lni.wa.gov
Department of Transportation	Jeff Doyle	DoyleJ@wsdot.wa.gov	Tonia Buell	BuellT@wsdot.wa.gov
Ford Motor Company	Mike Tinskey	mSnskey@ford.com		
King County	Ron Posthuma	ron.posthuma@kingcounty.gov	Jared Jonson	jared.jonson@kingcounty.gov
Nissan North America	Russell Vare	russell.vare@nmm.nissan-usa.com	Tracy Woodard	tracy.woodard@nissan-usa.com
Office of Congressman Inslee	Sharmila Swenson	sharmila.swenson@mail.house.gov	Maura Li@le	maura.li@le@mail.house.gov
Office of Senator Cantwell	Nate Caminos	nate_caminos@cantwell.senate.gov		
Pacific Northwest National Laboratory	Michael Kintner-Meyer	michael.kintner-meyer@pnl.gov	Krishnan Gowri	krishnan.gowri@pnl.gov
Port of Chelan County	Ron Johnston-Rodriguez	ron@ccpd.com	Nick Chambers	rjr@applecapital.net
Western Washington Clean Cities	Stephanie Meyn	StephanieM@pscleanair.org		
Puget Sound Energy	Will Einstein	will.einstein@pse.com		
Puget Sound New Energy Solu(ons	Michael Grady	michaelgrady21@hotmail.com		
Puget Sound Regional Council	Ivan Miller	imiller@psrc.org		
Seattle City Light	Daniel Langdon	dan.langdon@sea@le.gov	Michael Pesin	michael.pesin@sea@le.gov
Snohomish County	Allen Mitchell	allen.mitchell@snoco.org	Steve Torrence	steve.torrence@snoco.org
State Building Code Council	Ray Allshouse	rallshouse@shorelinewa.gov		