Community Based Strategies to Reduce Greenhouse Gas Emissions

TRANSPORTATION

City of Bainbridge Island

June 2019

WESTERN WASHINGTON UNIVERSITY

Huxley School of the Environment

Authored by: Deborah Weinmann

Contents

Executive Summary

In 2008, the Washington State legislature established limits on statewide greenhouse gas (GHG) emissions. The mandate set the following three goals: by 2020, reduce overall emissions of greenhouse gases to 1990 levels, by 2035, reduce overall emissions of greenhouse gases to 25 percent below 1990 levels, and by 2050, reach global climate stabilization levels by reducing overall emissions to 50 percent below 1990 levels, or 70 percent below the state's expected emissions that year.[1] Based on the most recent 2015 GHG inventory, the transportation sector 3-year average from 2012 to 2015 accounted for 42% (Figure 1) of the total statewide greenhouse gas emissions, more than electricity consumption (19%), industrial (19%), and all other sectors (<8% each).[2] In order to reach the legislated GHG reduction goals, actions to reduce emissions from transportation activities will be necessary.

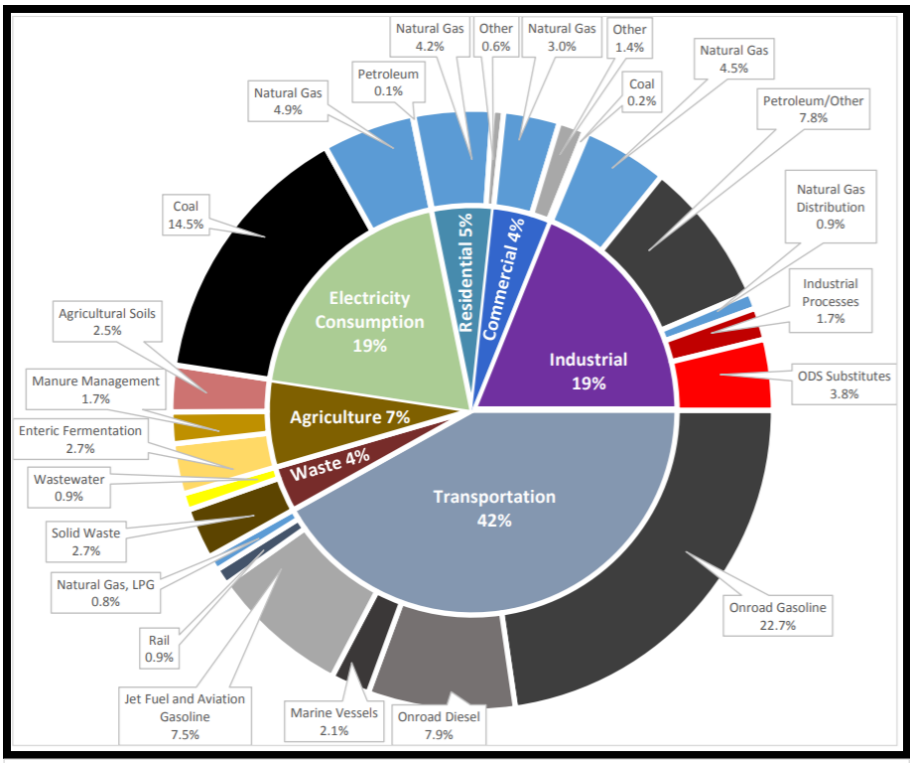


Figure 1. Washington State Greenhouse Gas Emissions, 3-year average (2012-2015). Data from Washington State Greenhouse Gas Emissions Inventory: 1990-2015, page 14. Report to the Legislature. Retrieved from: https://fortress.wa.gov/ecy/publications/summarypages/1802043.html.

State and regional governments have a major role in decarbonizing our transportation system. At the same time, the participation of local municipalities is also critical considering the magnitude of the problem and the necessity to act. Learning and improving upon strategies other localities are using will help to move the transition forward.

Bainbridge Island's Comprehensive Plan includes the following Greenhouse Gases Goal, "Reduce greenhouse gas emissions through compliance with federal, state and regional policies while developing local strategies to reduce emissions further."[3] No doubt, the island community is committed to supporting actions that will contribute to the achievement of state goals. The subsequent report highlights strategies Bainbridge Island can use to reduce local greenhouse gas emissions in the transportation sector.

[1] https://apps.leg.wa.gov/RCW/default.aspx?cite=70.235.020
[2] https://fortress.wa.gov/ecy/publications/documents/1802043.pdf , page 14
[3] https://www.bainbridgewa.gov/DocumentCenter/View/7800/5-ENVIRONMENTAL?bidId=, page 11

Increase Electric Vehicle Use

Provide education and community outreach to promote the benefits of electric vehicle ownership

- Partner with the Farmer's Market, the City of Bainbridge Island, and local car dealers and bike shops to hold an Electric Vehicle Drive Event including E-bikes
- Partner with local organizations such as the BI Climate and Energy Forum to Hold Electric Vehicle Question/Answer Forums to:
    - Share information on federal and state incentive programs
    - Provide tools for comparing electric vehicles with similar conventional cars
    - Remove misconceptions about electric vehicle ownership
    - Address environmental concerns associated with electric vehicle manufacturing, battery disposal, and charging with 'unclean' electricity

Increase Charging Infrastructure

Partner with Puget Sound Energy and the City of Bainbridge Island to pilot electric vehicle charging infrastructure incentive programs

- Provide residential and commercial customers with rebates for electric vehicle supply equipment (EVSE) installations
- Participate in utility program analysis activities to ensure future grid reliability
- Apply for a state grant through the Electric Vehicle Infrastructure Partnerships Program (EVIPP)
- Implement ordinances or building codes requiring *EV Ready* infrastructure

Encourage Mode Shifting

Partner with Kitsap Transit and community leaders to increase ridership

- Develop advertising campaign based on human choice behavior research
- Invest in basic bus stop amenities including shelters and benches
- Provide education and outreach on the use of mobility applications
- Promote e-bikes along with public transit use

Propel Non-motorized Transportation

Collaborate with community groups to advance non-motorized travel

- Work with the Multi-Modal Advisory Committee and the BI Mobility Alliance to develop an infrastructure plan
- Support community funding for non-motorized transportation projects
- Partner with schools to encourage safe walking and biking routes

Introduction

The Washington State law established in 2008 to limit greenhouse gas (GHG) emissions requires the Washington State Department of Ecology (DOE) to produce a biennial statewide Greenhouse Gas Emissions Inventory Report for the legislature. The purpose of the report is to update representatives on the state's progress in meeting the mandated goals. The latest report indicates from 2013 to 2015, on average, the transportation sector was responsible for the greatest amount (42.5%) of annual total statewide GHG emissions (DOE 2019). In 2016, when only accounting for emissions generated by the burning of fossil fuels, the transportation sector in our state produced 61.7%, by far more than any other sector, even more than the industrial sector (Figure 2).

Currently, our state transportation system is built around the use of fossil fuels for mobility. And, emissions continue to grow. From 1990 to 2016, the general trend shows Washington's emissions from fossil fuel combustion in the transportation sector rose by almost 20% (EIA 2016).

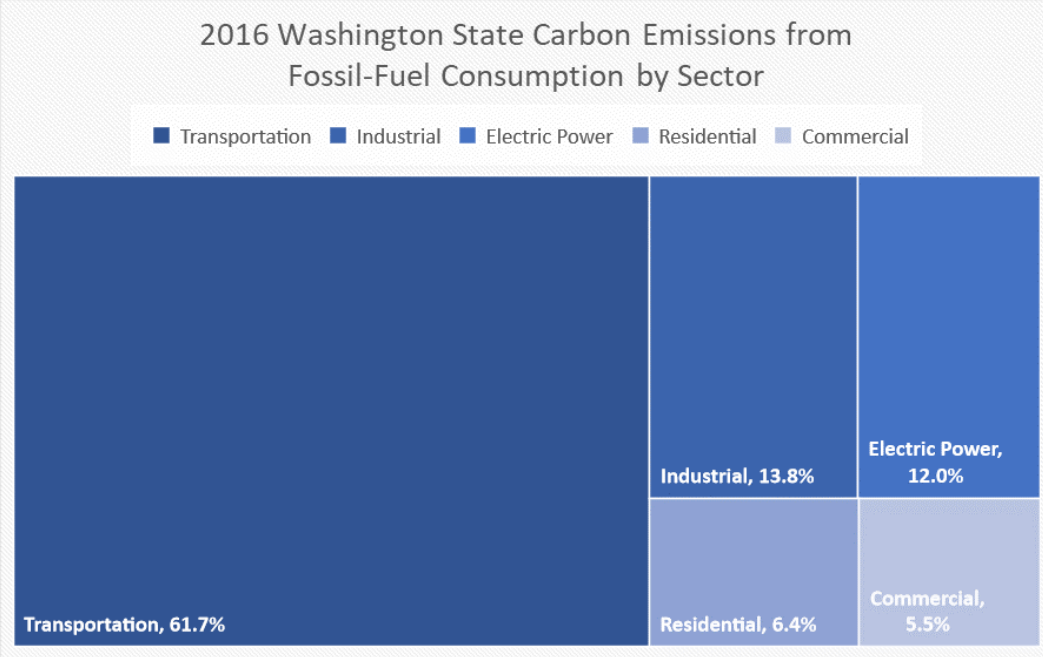


Figure 2. Washington Carbon Dioxide Emissions from Fossil Fuel Consumption (1980-2016). Data from U.S. Energy Information Administration (EIA) - Retrieved from https://www.eia.gov/environment/emissions/state/.

During the 2019 session, the state congress passed several bills containing policies aimed at propelling the electrification of our transportation system. Without a doubt, political support and openness to new ideas are critical to curtailing emissions. While policies and programs at the state level provide the foundation for change, regional, county, and city planners also play a role in shaping the future development of transportation systems in our state. Local governments along with knowledgeable community leaders, in particular, are best able to build relationships with neighbors willing to invest in their own towns.

Greenhouse Gas Inventory Baseline

Fortunately, numerous measures are being taken by cities and counties to reduce transportation related GHG emissions. While each local government is unique, identifying successful strategies implemented by other communities can accelerate change in places with similar challenges. As a starting point, municipalities have conducted GHG inventories to gather baseline data about local emissions. Likewise, Bainbridge Island is in the process of conducting an inventory. Based on preliminary data, the electric power sector had the most GHG emissions followed by transportation.

Transportation Strategies

- Fund non-motorized infrastructure
- Increase electric vehicle use
- Install charging infrastructure
- Update building codes
- Encourage Mode shifting

The Puget Sound Clean Air Council (PSCAA) recently completed a comprehensive GHG inventory covering a four-county area, which included Kitsap County. According to the PSCAA inventory Kitsap County's transportation sector accounted for 30% of emissions, second behind residential buildings (Figure 3). Within Kitsap's transportation sector, over 85% of emissions are from on-road vehicles fueled by diesel or gasoline (PSCAA 2016). Most people continue to move through communities using conventional vehicles running combustion engines. Until vehicles powered by alternative methods become widely adopted, or people choose different forms of mobility, reigning in transportation pollution poses a significant challenge for Bainbridge Island. Local leaders and concerned community members throughout the state are addressing the problem by focusing on increasing electric vehicle use, installing charging infrastructure, updating building codes, and encouraging mode shifting.

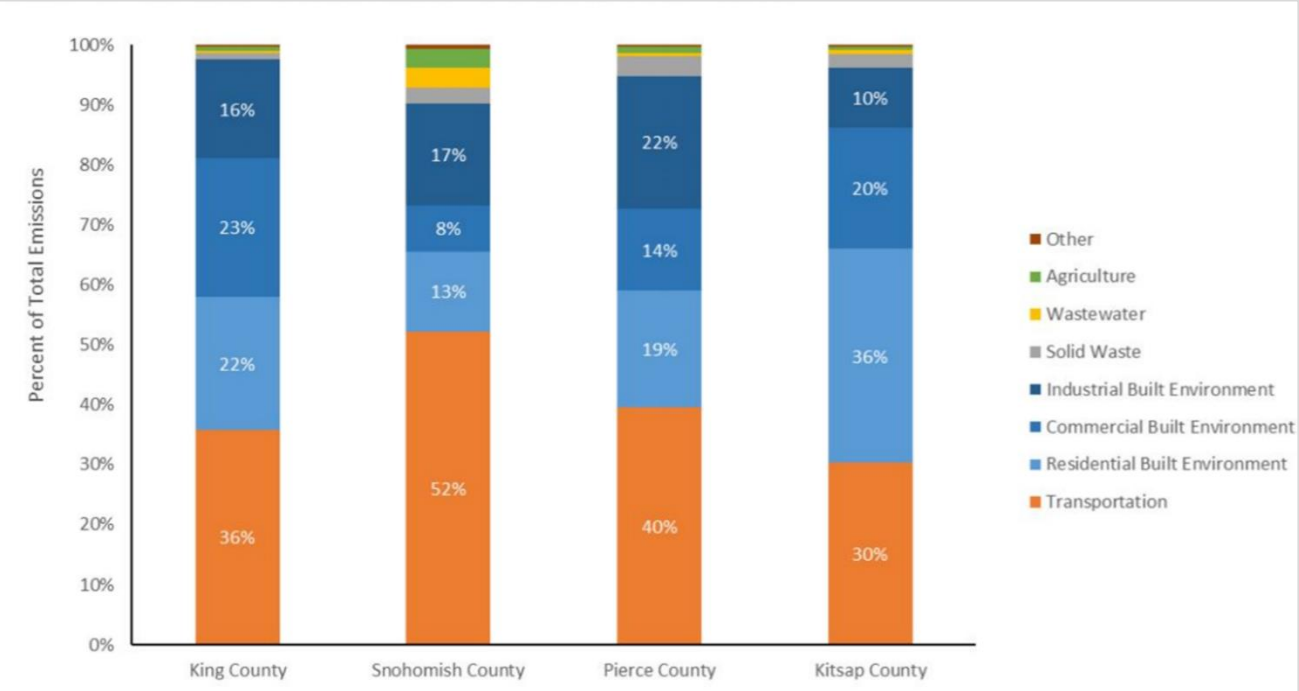


Figure 3. Puget Sound Clean Air Agency GHG Inventory. Retrieved from https://www.pscleanair.org/DocumentCenter/View/3328/PSCAA-GHG-Emissions-Inventory?bidId=

Increase Electric Vehicle Use

Background – Electric Vehicles

For years, researchers have been evaluating ways to reduce GHG emissions related to transportation. Among many ideas, increasing vehicle efficiency through the electrification of on-road vehicles ranks high as an effective strategy to decarbonize transport. Compared to other U.S. states, Washington had the third most plug-in vehicle (PEV) registrations per 1,000 people in 2017 at 4.06, behind California and Hawaii at 8.64 and 5.12 respectively.[4] Though increasing, still only a small amount of the total number of vehicles in our state are powered by electricity.

Green Transportation Bill
Re-instated tax credit on purchased or leased new and used electric vehicles.

Clean Energy Bill
Mandates the generation of clean electricity by 2045.
A clean grid means cleaner EVs.

The state sales and use tax credit for the purchase of an electric vehicle expired at the end of May last year after the total number of qualifying vehicles reached 7,500, the maximum allowed by law. During the 2019 legislative session, a Green Transportation Bill (HB2042 2019) was passed re-instating the sales and use tax credit for the purchase or lease of electric vehicles including all-electric, hybrids, hydrogen fuel cell, and now even used EVs.[5] The new vehicle price must be less than $45,000 and used vehicle price less than $30,000. The tax credit phases out, dropping every two years, over the next six years. Beginning in August of this year, $25,000 of the new vehicle price will be tax free, and for used vehicles $15,000 remains tax free for the entire six-year period. Already, there is a federal income tax credit, up to $7,500, in place for certain new electric vehicles. With multiple incentives in place, electric vehicles prices are becoming more affordable and competitive with comparable conventional cars.

Cumulatively, increases in EV adoption reduces emissions from transportation. That said, transitioning to electric vehicles (EVs) is most effective at reducing emissions when clean electricity is used to charge car batteries. Puget Sound Energy (PSE) is the electric utility serving Bainbridge Island. Unfortunately, PSE generates electricity with a fuel mix containing over 65% fossil fuels, mainly coal and natural gas.

To reduce GHG emissions from the electric power sector, the Washington State legislature passed a Clean Energy Bill mandating the generation of 100% clean energy by 2045 (SB5112 2019).[6] As the grid becomes cleaner, vehicles powered by electricity become cleaner too. Passage of the clean energy bill paves the way for a sensible transition by charging cars with electricity generated from a higher percentage of carbon free sources year by year. Still, to keep moving forward, individuals will need to choose to drive EVs.

---

[4] https://www.energy.gov/eere/vehicles/articles/fotw-1059-december-10-2018-california-had-most-plug-vehicle-registrations
[5] https://app.leg.wa.gov/billsummary?BillNumber=2042&Year=2019&Initiative=false
[6] https://app.leg.wa.gov/billsummary?BillNumber=5116&Initiative=false&Year=2019

Washington State officials realize a mass transition from combustion engines to electrically charged batteries is needed to significantly reduce GHG emissions from transport. The state's goal of 50,000 plug-in electric vehicles by 2020 was nearly achieved at the end of last year when the total number of registered plug-in vehicles reached 42,542.[7]

Many jurisdictions are setting transportation goals aimed at increasing EV use. Goals can be set and measured using annual electric vehicle registration data available through the Washington State Department of Transportation (WSDOT). For example, the City of Bellingham's Climate Action Plan sets a goal of 40% EV adoption and 30% hybrid adoption by 2030 as a way to reduce GHG emissions.[8] As another example, Olympia set a goal of 30% of all vehicles are electric by 2030.

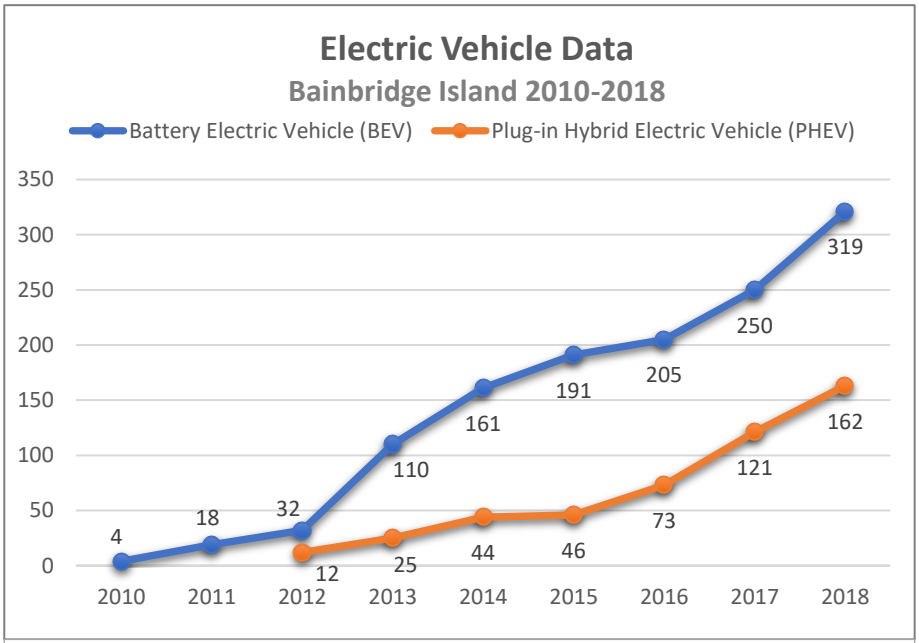


Figure 4. Bainbridge Island New and Renewal Registrations by Year (2010-2018).
Data from https://data.wa.gov/Transportation/Electric-Vehicle-Registration-Activity-by-Year/tak8-

On Bainbridge Island, over the past three years ownership of plug-in hybrid and battery electric vehicles has been accelerating, on average, at a rate of 16% annually (Figure 4).[9] Clearly, BI residents recognize the benefits of electric vehicles evidenced by the upward trend in ownership. Last year, vehicle registrations on Bainbridge Island accounted for one-third (33%) of the county-wide total of EVs, and per capita ownership was four times more than the county as a whole.[10],[11] Similar to other municipalities, Bainbridge Island's data can be used to set long and short-term EV goals.

	BEV	PHEV	Total	Per Capita*
Bainbridge Island	319	162	481	0.0151
Kitsap County	894	548	1442	0.0038

Table 1. WSDOT New and Renewal Registrations by Year (2018). *Based on 2017 population data
Data from https://data.wa.gov/Transportation/Electric-Vehicle-Registration-Activity-by-Year/tak8-xdcp.

[7] http://www.westcoastgreenhighway.com/pdfs/PEVSummaryDec2018.pdf
[8] https://www.cob.org/services/environment/climate/Pages/program.aspx
[9] https://data.wa.gov/Transportation/Electric-Vehicle-Registration-Activity-by-Year/tak8-xdcp
[10] https://data.wa.gov/Transportation/Electric-Vehicle-Registration-Activity-by-Year/tak8-xdcp
[11] http://worldpopulationreview.com/us-cities/bainbridge-island-wa-population/

Education and Public Engagement

Communities around the state are using educational campaigns as a strategy to remove misconceptions about EVs, to promote the many benefits of EVs, and to address legitimate environmental issues related to EV production. Communicating to the public is especially important considering consumers are purchasing vehicles less frequently than in the past. Compared to a decade ago, people are holding on to their vehicles longer, on average about 6.5 years for new and 5.5 years for used cars.[12] Add to that, many real and perceived barriers still exist amongst consumers in regards to electric vehicle adoption. Concerns about price, range anxiety, and lack of infrastructure are common, but other factors also play a role in car purchase decision-making including social networks, lifestyle, and even skepticism. Local leaders can address information deficits and promote electric vehicle adoption through outreach in the neighborhoods they know best.

Outreach Strategies

-Partner with the Farmer's Market, the City of Bainbridge Island, and local car dealers and bike shops to hold an Electric Vehicle Drive Event including E-bikes

-Partner with BI Climate and Energy Forum to Hold Electric Vehicle Question/Answer Forums

-Place links to electric vehicle information on the city website

For starters, community education is needed to eliminate the misconceptions known to exist in the public realm about the cost of electric vehicles. A lack of knowledge about incentive programs, and limited awareness about maintenance and fuel cost savings are known barriers to EV adoption.

Researchers Jenn, Springel and Gopal (2018) found in states where the cumulative knowledge about EV incentives was high, a significantly greater number of electric vehicles were sold. Because price is often mentioned as a barrier to purchasing an EV, consumer's perception of the final transaction price may be much higher than the true cost of an EV after accounting for incentives. The same study found, of respondents with incomes over $60,000 who planned to buy a new car in the next three years only 6.2% knew about state or local purchase incentives available to them (Jenn, Springel and Gopal 2018).

Additionally, part of the car shopping process involves comparing the financial costs and benefits among different vehicle types. Again, consumers lack the tools to effectively calculate and compare the maintenance and fuel costs of electric vehicles to similar conventional car models.

Taken altogether, inaccurate perceptions about electric vehicle prices coupled with a lack of information on incentives and savings on maintenance and fuel, translates into individuals being less likely to consider

[12] https://news.ihsmarkit.com/press-release/automotive/vehicles-getting-older-average-age-light-cars-and-trucks-us-rises-again-201

purchasing an EV. State and federal EV policies and programs frequently change. As such, consumers need to be kept abreast of these changes in order to make informed decisions when making a vehicle purchase. Regular educational campaigns in local communities can provide people with up-to-date information, tools, and valuable resources.

Direct Outreach to Diverse Audiences

Besides the considerations already mentioned, social networks, lifestyle, and self-identity influence a car purchase, especially an electric vehicle.

In a study of the interpersonal influence on pro-environmental behavior, researchers Axsen and Kurani (2012) found individuals were more likely to develop new, pro-societal views of plug-in vehicles when they had a basic understanding of the technology and pro-societal values were supported in their social network. In essence, once participants were versed in the functionality of EVs they then considered whether friends would support their car buying decision. No doubt, the car a person drives is symbolic and reflects the self-identity of the driver and impacts their feelings of acceptance within their peer group.

Other Factors Influencing Car-Buying Decisions

- Friends and family
- Self-identity
- Social Networks
- Lifestyle

Similarly, researchers Axsen, Tyree-Hageman, and Lentz (2012) found people living a pro-environmental lifestyle, with an openness to change, and friends and family with comparable practices, were the most likely to purchase plug-in vehicles. However, people lacking social connections with people holding pro-societal values were much less likely to engage in pro-environmental actions, such as purchasing an EV (Axsen, Tyree-Hageman, and Lentz 2012).

Evidenced by both of these studies, people need more experiences with electric vehicles and would benefit by making connections with people concerned about environmental issues in their community. Additionally, the research indicates lifestyle and social networks influence car purchases. Looking ahead, community outreach may be the most effective way to promote social connections that can lead to exercising pro-societal values. Equally important will be finding creative ways to connect with diverse audiences in order to reach people *open to change*, but not necessarily pegged as having pro-environmental attitudes. Providing links to EV information on the City of Bainbridge website would be a way to reach all community members.

Address Electric Vehicle Environmental Concerns

A good portion of people, even environmentally minded individuals, are reluctant to pursue alternative autos due to skepticism over the environmental impacts of batteries and electricity powered by dirty fuels for charging.

Environmentally minded individuals have concerns about electric vehicle batteries and charging powered by dirty electricity.

Some of these concerns can be alleviated by sharing knowledge from informative studies. In a recent study, the Union of Concerned Scientists (2015) found, using the average carbon intensity of electricity in the Northwest region, driving a battery electric vehicle (BEV) had the equivalent global lifecycle emissions of a similar type conventional car getting 94 miles per gallon. Stated differently, even considering the higher emissions associated with battery electric vehicle (BEV) manufacturing, global lifecycle emissions from BEVs are offset within 1.5 years of driving. In brief, the public needs a forum to ask questions and learn more about EVs.

Add to that, production processes and battery recycling efforts continue to improve. Again, outreach provides an opportunity to engage people with environmental concerns about EVs. Too, educational campaigns designed for varied audiences have the greatest potential to increase the number of electric vehicle adopters.

RESEARCH ON ELECTRIC VEHICLES

-Electric vehicles are cleaner, even when considering electric power GHG emissions associated with charging

-People lack experiences with electric vehicles and knowledge about the benefits of ownership.

-Test drives and personal recommendations are important to consumers.

Organize Electric Vehicle Drive Events

Not only do people lack accurate knowledge about electric vehicles, they also have little experience with EVs. Electric car drive events give people exposure and hands-on experience with electric vehicles. In addition, community members who own EVs can answer questions and share their first-hand experiences with others.

Several local communities have held different types of events by partnering with other organizations. Obviously, most people have never owned an EV, few people know someone else who owns an EV, and even less people have actually driven an EV. Taken altogether, inexperience poses a significant barrier to electric vehicle adoption.

In a recent study, researchers Taylor and Fujita (2018) found test drives and personal recommendations from friends and relatives were two of the most highly valued information resources when making a car purchasing decision. Simply put, people find it particularly important to ask questions and learn from other EV drivers.

Connect with National EV Events

-Drive Electric Earth Day in April

-National Drive Week in September

Cities in our state are giving people the opportunity to do just that by hosting electric drive events. Bellingham used valuable resources, provided by sponsors of the national Drive Electric Earth Day, to organize a local

event in April.[13] The city partnered with their local utility and several other businesses and community organizations to orchestrate the event. While attending, people were given the opportunity to test drive EVs, but they also celebrated the opening of a new fast charging station. National Drive Electric Week, which takes place during the third week of September, is another annual event local cities have been promoting.[14] Again, national sponsors provide local towns with a variety of resources for organizing the event. Bainbridge Island could partner with the Farmer's Market, PSE, local bike shops, and nearby car dealers to organize an event.

Partner with PSE, bike shops, and car dealerships, to hold EV Drive and E-Bike Event

Other communities have partnered with their utility provider to host electric drive events where people can test drive different vehicles, even electric bikes, and get their questions answered by experts in a casual atmosphere. For example, the City of Olympia partnered with Puget Sound Energy, Western Washington Clean Cities, Washington Department of Enterprise Services, and Forth to host a community electric drive event at the State Capital building.[15] Evidenced by the number of organizations involved in these events, multiple stakeholders are benefitting.

In the end, to reduce transportation emissions, mass people will need to *choose* to buy electric, instead of a conventional car powered by gasoline, when their next vehicle choice is made. Holding a combined EV Drive and E-bike event on Bainbridge Island would give the public more experiences with alternatively fueled vehicles. The first step in changing people's perceptions is to remove some of the barriers to EV ownership. With that in mind, it is important to realize too, other factors influence individual car choices. Along this line, educational campaigns also need to address personal aspects considered when it comes to purchasing a car.

Increase Charging Infrastructure

Background – Electric Vehicle Charging Infrastructure

The Environmental Element of Bainbridge Island's Comprehensive Plan states, "Facilitate the improvement and convenience of low carbon mass transit and increased carsharing, cycling, walking and the development of *alternative vehicle infrastructure* (e.g., charging stations) to reduce greenhouse gas emissions." No doubt, before purchasing an electric car, people first consider where they would charge their vehicle. To date, Bainbridge Island has only four, Level 2 public charging stations. Two are in the downtown Winslow area, and the other two are near the Highway 305 and High School Road intersection.

[13] https://driveelectricearthday.org/
[14] https://driveelectricweek.org/
[15] https://www.pscleanair.org/505/Olympia-Ride-Drive

Recognizing EV ownership requires nearby or easy access to charging, the Washington State Joint Transportation Committee commissioned a study back in 2015 to determine the most effective way to increase public EV charging infrastructure.

STUDY - INCREASING EV CHARGING STATIONS

-Private/public partnerships are necessary

-Electric Vehicle Infrastructure Partnerships Program offers state grant money for EV infrastructure along major highways

The final report determined private firms were unlikely to invest in public charging stations because it simply would not be profitable due to high investment costs, uncertain demand in the near-term, and commercial charging competing with home charging (WSDOT 2015). Furthermore, using a private/public business model, the study found a private sector firm with public interventions such as low interest loans and state grant funding could be sustainable in the private market after 5 years (WSDOT 2015). As a result of the study, the Washington Department of Transportation (WSDOT) developed the Electric Vehicle Infrastructure Partnerships Program (EVIPP).[16]

The EVIPP program is designed to expand fast charging along major highway corridors. After running out of money last year, the 2019 legislature approved $2 million in the transportation budget for continuation of the program.[17] Coincident with the study, a tool was developed to analyze the financial performance of electric vehicle charging projects.[18] The tool is designed to examine diverse project scenarios allowing government agencies to broaden potential funding opportunities between public and private entities.

Recently, the City of Bellingham partnered with a private EV charging firm to secure a grant for two new fast charging stations along the I-5 corridor. Currently, the identified priority corridors are outside of Kitsap County, however, Highway 305 through Bainbridge Island is an important connector route to the Olympic Peninsula and would likely be considered should funding continue.

State EV Infrastructure Incentives

-Sales tax exemption on EV batteries, infrastructure, labor and service

-Public lands leasehold excise tax exemption

To help increase the installation of charging equipment, our state continues to offer a sales and use tax exemption on electric vehicle batteries and infrastructure, labor and service on EV batteries and infrastructure, and on personal

[16] https://app.leg.wa.gov/RCW/default.aspx?cite=47.04.350
[17] https://www.wsdot.wa.gov/Funding/Partners/EVIB.htm
[18] https://atlaspolicy.com/rand/ev-charging-financial-analysis-tool/

property that will become a component of EV infrastructure. In addition, leases to tenants of public lands used for electric vehicle infrastructure are exempt from leasehold excise taxes.

In 2015, a state law was passed to allow investor-owned utilities, such as PSE, an incentive rate of return on Electric Vehicle Supply Equipment (EVSE) deployed for the benefit of utility ratepayers.

As another boost, back in 2015, a law was passed to allow investor-owned utilities an incentive rate of return on electric vehicle supply equipment (EVSE) deployed for the benefit of ratepayers. The purpose of the incentive was to signal to utilities that the legislature is providing a clear policy and financial investment intended to engage private utilities in the build out of EV infrastructure. In response, several utilities have offered pilot programs to promote the installation of residential and commercial EVSE.

Partner with Utility to Create EV Infrastructure Pilot Programs

Utility companies can provide residential and commercial customers with rebates for electric vehicle supply equipment (EVSE) installations. In turn, customers agree to participate in utility program analysis activities. In response to the utility EVSE incentive, Puget Sound Energy (PSE) offered up to 5,000 qualified residential customers a $500 rebate on the purchase of Level 2 electric-vehicle chargers.[19] Currently, the incentive is no longer available. However, PSE is using the data gathered from program participants to explore potential future incentives.

EV Infrastructure Strategies

-Partner with PSE to develop EV infrastructure rebate programs like other private utilities are doing

-Pass EV *Ready* ordinance

-Update development codes

Avista offers rebates including $1,000 on single family homes and $2,000 for a workplace or public installation.

On the eastern side of the state, Avista, an investor-owned electric and gas utility, continues to offer rebates on installation costs including $1,000 on single family homes and $2,000 for a workplace or public installation.[20] Serving central and southeastern Washington, investor-owned Pacific Power currently offers customers competitive grants covering up to 100% of the

---

19 https://app.leg.wa.gov/ReportsToTheLegislature/Home/GetPDF?fileName=EVSE%20Report%20to%20the%20Legislature%20-%20Final_a9efaf10-04d7-4c3e-b2df-f0c3da1d06ed.pdf , page 11

20 https://app.leg.wa.gov/ReportsToTheLegislature/Home/GetPDF?fileName=EVSE%20Report%20to%20the%20Legislature%20-%20Final_a9efaf10-04d7-4c3e-b2df-f0c3da1d06ed.pdf page 8-9

Pacific Power offers grant money, with preference given to government entities and non-profits.

costs for non-residential capital expenses directly associated with the installation of EV chargers, including hardware, installation and upfront software license costs.[21] The utility is giving preference to community focused organizations and city, county, and regional governments. In return, grant recipients are required to participate in program analysis activities to help the utility plan for load demands from EV infrastructure.

As described, partnering with utility companies can lower the costs associated with the installment of public charging stations and provide utilities with valuable consumption data. Local governments benefit from the expertise offered by utilities such as knowledge on the electrical grid, equipment, and locations for charging stations. In turn, utilities gain a better understanding of changes in load demand associated with the increasing use of electricity for vehicle charging.

Pass EV Ready Ordinances

The majority of electric vehicle owners charge at home. Access to charging infrastructure is a significant barrier for people living in buildings with separate parking areas without electricity. To address the problem, city governments can implement ordinances requiring *EV Ready* infrastructure. Access to a home location charger is the most important piece of infrastructure considered by potential electric vehicle adopters, followed by workplace charging and public charging infrastructure (Berkeleya, N. et al 2017).

With this mind, local jurisdictions need to focus efforts on building out charging infrastructure for people living in buildings other than a single-family home. The City of Seattle completed a study in 2014 that explored ways to increase access to EV charging infrastructure (Seattle 2014).

DEVELOPMENT TYPE	TYPE OF PARKING FACILITIES	EV READINESS REQUIREMENTS
Small-scale residential (single-family, townhouses, DADUs, etc.)	Private (individual) garage, carport, or surface parking area	1 outlet per garage, carport or surface parking area
Multifamily (townhouses, apartments, etc.)	Shared surface parking	1-6 spaces: 1 outlet per space 7-25 spaces: 6 outlets total >25 spaces: outlets for 20% of parking spaces
Multifamily (townhouses, apartments, etc.)	Shared parking garages	Outlets for 20% of parking spaces
Other residential	Any parking facilities	Outlets for 20% of parking spaces
Non-residential (retail, office, industrial, institutional, etc.)	Any parking facilities	Outlets for 10% of parking spaces

Figure 4. Reprinted from the Seattle Department of Construction and Inspection Director's Report, EV Ready Ordinance, February 2019. Retrieved from http://www.seattle.gov/Documents/Departments/SDCI/Codes/ChangesToCodes/ElectricVehicleReadiness/EVReadinessOrdinanceFeb2019.pdf

21 https://app.leg.wa.gov/ReportsToTheLegislature/Home/GetPDF?fileName=EVSE%20Report%20to%20the%20Legislature%20-%20Final_a9efaf10-04d7-4c3e-b2df-f0c3da1d06ed.pdf , page 6-7

One of the key recommendations of the study was to facilitate EV readiness in multi-family dwellings via code changes. In April, the Seattle City Council adopted an *EV Ready* ordinance aimed at increasing access to electric vehicle charging infrastructure.[22] The ordinance outlines specific requirements for different building types (Figure 4).

STUDY - EV READY ORDINANCE

-Focus on multi-family dwellings and any new or expanded parking facilities

-Outline requirements based on building types

Other cities are implementing similar measures to ensure new buildings are EV ready. For example, Coupville has an ordinance requiring, "Development of new multifamily housing projects or new or expanded parking facilities, public or private, exceeding twenty (20) parking spaces shall be required to provide electric vehicle infrastructure for ten (10) percent of the parking spaces unless waived by the council upon a request by the applicant."[23] Coupville's ordinance is very simple, however, each city is unique.

22 http://www.seattle.gov/Documents/Departments/SDCI/Codes/ChangesToCodes/ElectricVehicleReadiness/EVReadinessOrdinanceFeb2019.pdf

23 https://library.municode.com/wa/coupeville/codes/code_of_ordinances?nodeId=TIT16DERE_CH16.12DEST_16.12.075ELVECHST

Develop EV Ready Building Codes

Back in 2011, the U.S. Department of Energy issued grant money to the Clean Cities Coalition in Michigan to create an Electric Vehicle Readiness Plan that could act as a blueprint for others. Michigan's plan is very detailed covering all aspects of building EV infrastructure.

The section on zoning has samples of language for every element pertaining to EV infrastructure a city may want to use in an ordinance or development code (see Appendix A).

Of particular interest, the sample language illustrates three different levels of stringency including accepting, encouraging, and assertive, leaving a city to decide the appropriate wording, as shown in the example (Figure 5).[24] Several other cities also received federal grants for implementing an electric vehicle infrastructure plan. Of these cities, many have passed ordinances to govern the use of property by land use and occupancy type. Others have gone through the process of changing building codes. Apparently, there are many ways to employ change. As such, a city will need to grapple with the extent of each requirement, such as deciding over the words *capable*, *ready*, or *installed*.

Figure 5. Electric Vehicle Readiness Plan. Clean Cities Coalition – Michigan. 2011. Retrieved from http://cec-mi.org/wp-content/uploads/2011/11/Plug-In-Ready-Michigan.pdf

[24] http://cec-mi.org/wp-content/uploads/2011/11/Plug-In-Ready-Michigan.pdf , page 101-110.

Though of secondary importance, updating commercial building codes to require EV Ready infrastructure would be a way to increase work place charging. Work place charging is especially effective at increasing the number of electric miles driven by plug-in hybrid vehicles (PHEV). The range of PHEVs is generally shorter than full battery electric vehicles (BEV). Work place charging offers PHEVs a convenient option for extending battery powered travel.

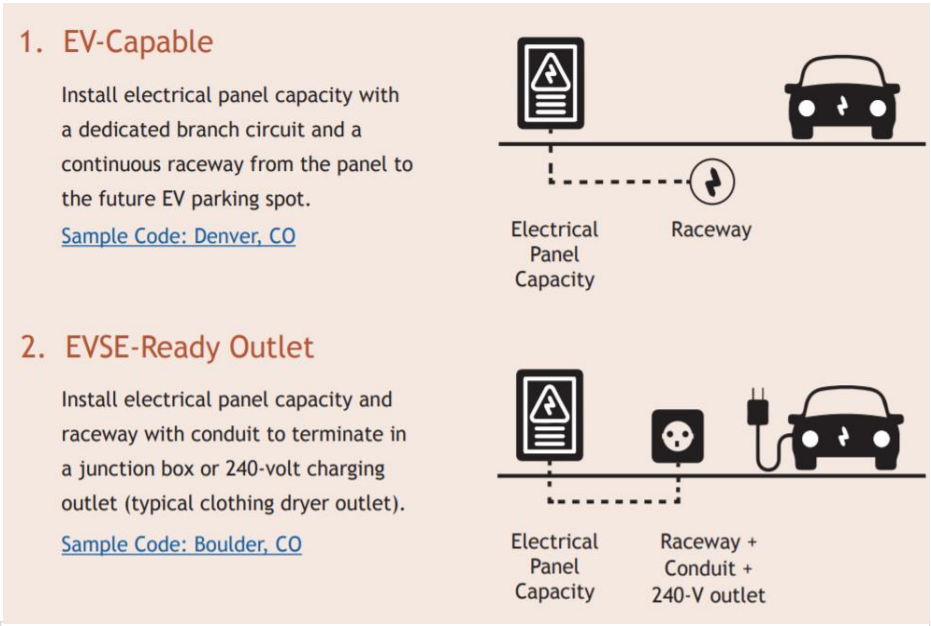


Figure 6. Residential Building Code Options. Image by Southwest Energy Efficiency Project (SWEEP). Retrieved from http://www.swenergy.org/cracking-the-code-on-ev-ready-building-codes.

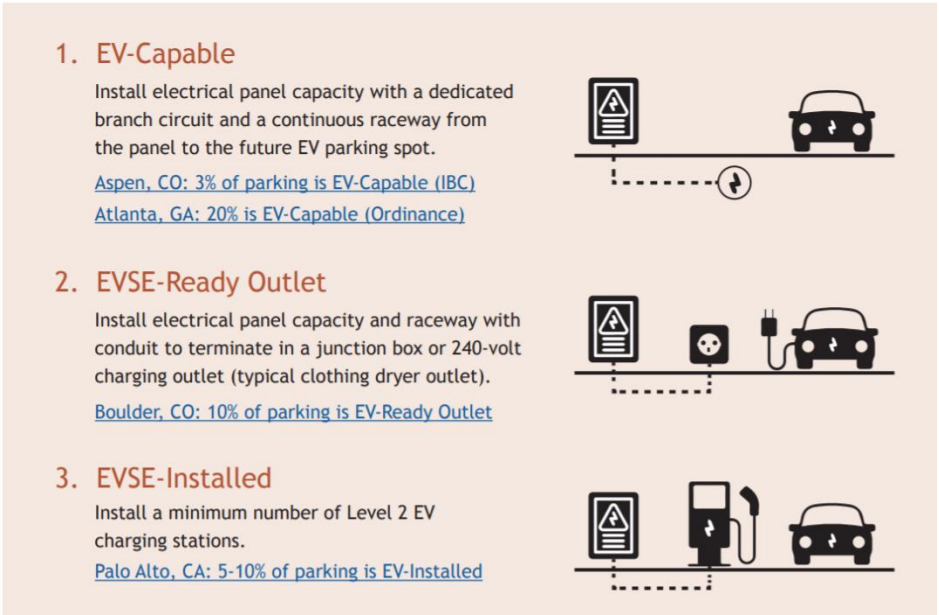


Figure 7. Commercial Building Code Options. Image by Southwest Energy Efficiency Project (SWEEP). Retrieved from http://www.swenergy.org/cracking-the-code-on-ev-ready-building-codes.

The availability of workplace charging could also influence a consumer's decision to purchase a PHEV or BEV by reducing range anxiety.

A city may choose to implement a variety of regulations depending on the building type and the needs of specific environments. The Southwest Energy Efficiency Project has developed visual guidelines for determining residential (Figure 6) and commercial (Figure 7) coding options.

Buildings have a long lifespan. With this in mind, it is more cost effective to place EV infrastructure in a new building rather than try and retrofit or make changes later to accommodate EVs.

Workplace charging increases electric miles driven, especially for plug-in hybrid vehicles.

Our state continues to implement policies to propel electrifying the transportation system because we have a giant problem with emissions in this sector.

To be ready for the future, cities need to plan accordingly. Overcoming the infrastructure barrier is important for a significant number of people living in buildings where parking areas lack infrastructure for charging. It makes sense for the problem to be addressed by updating residential and commercial building codes to address the problem.

Reduce Traffic Impact Fees for Mobility Enhancing Development

Residential and commercial development can have a significant influence on transportation decision-making. The easier it is to access transit, a bike path, or pedestrian walkway, the more likely people are to make sustainable travel choices. Developers must pay, through traffic impact fees (TIF), a proportionate share of the cost of increasing capacity in the transportation system associated with new growth and development.

In 2015, Bainbridge Island conducted a study to determine the level of traffic impact fees the city would require. [25] As a result of the study, Bainbridge Island adopted traffic impact fees in-line with other municipalities.[26] Bainbridge Island could introduce incentives to developers to promote mode shifting in exchange for lower TIFs. For instance, the City of Bellingham has implemented an incentive program to reduce developer traffic impact fees. Developers can take actions *known* to increase mode shifting, in return, they receive reductions in TIFs as outlined by the city's Urban Village Vehicle Trip Reduction Credit guidelines (see Appendix C).[27]

STUDY – TRAFFIC IMPACT FEES

-Bainbridge recently adopted new traffic impact fees in-line with other cities

-Create developer TIF incentives for actions known to increases mode shifting

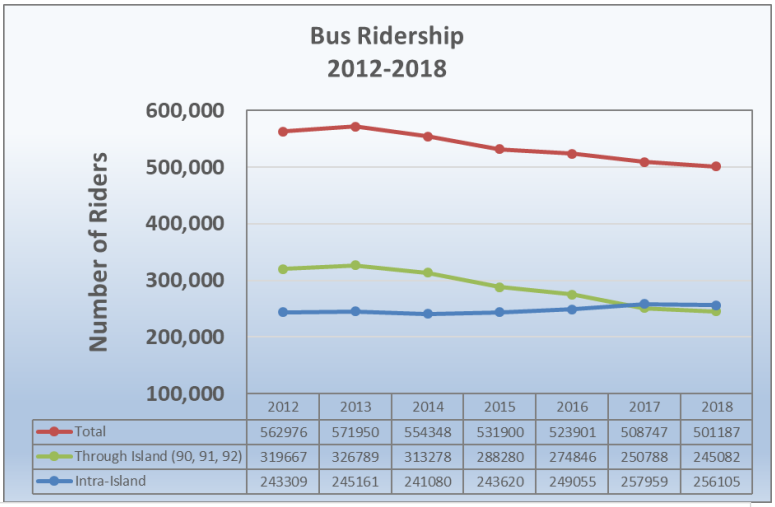
As an example, proximity to or frontage on a county transit line reduces TIFs from 10%-2% depending on the distance. In most cities, arterial roads were put in place a long time ago. Therefore, placing buildings near public transportation routes close to main corridors makes it convenient for people to mode switch. Not only can cities incentivize access to public transit, but they can also consider mode shifting in land use planning.

[25] http://mrsc.org/getmedia/37b0efaa-9364-4d2e-b720-48152685bfd2/b29transimpct.pdf.aspx
[26] http://mrsc.org/getmedia/7b937ea4-f666-4b86-b21d-fd21f43115e3/b45impactFeeCompare.pdf.aspx
[27] https://www.cob.org/documents/planning/applications-forms/misc-department-forms/tif-faq-uv-reduction.pdf

Mode Shifting

Background – Public Transit Ridership

Bainbridge Island's Comprehensive Plan states, "Support the development of a public education program which informs all citizens on the methods and progress for meeting the Island's greenhouse gas emission goals and ways citizens can assist in reaching the reduction goals."[28] However, public transit ridership through Bainbridge Island (BI) has been decreasing along with falling ridership counts system-wide in Kitsap County. At $2 per trip or less, depending on whether a person is eligible for a reduced fare, the cost to ride the bus has been kept at a minimum. Nonetheless, bus routes carrying riders through the island have been losing customers over the past six years (Figure 9).



	2012	2013	2014	2015	2016	2017	2018
Total	562976	571950	554348	531900	523901	508747	501187
Through Island (90, 91, 92)	319667	326789	313278	288280	274846	250788	245082
Intra-Island	243309	245161	241080	243620	249055	257959	256105

Figure 9. Bainbridge Island Kitsap Transit (2012-2018).
Data provided directly from Kitsap Transit. Appendix A.

The main corridor connecting the Kitsap Peninsula to the BI ferry terminal regularly becomes congested during peak travel times. Multiple factors may be contributing to the problem. Population figures for Bainbridge Island and the greater Kitsap County region are trending upward. No doubt, with more people living in these areas ferry ridership has increased. From 2013 to 2017, the Bainbridge Island/Seattle ferry route experienced an 8.8% increase in foot traffic (267,322 passengers), though a 1.7% decrease in vehicles.[29]

During the same period, public transit ridership through the island along Highway 305 declined by 23% (76,001 riders), which might indicate people headed for the ferry are using a vehicle to get there (Figure 9). With more people living in Kitsap County and fewer people using public transit, it is not surprising that during peak commuting hours, cars are clogging the roadway.

Unfortunately, with continuous population growth projected for the region, unless some mode shifting occurs, it is likely traffic and the related pollution from tailpipe emissions will continue to have a negative impact on the Bainbridge Island community.

Traffic congestion on the island, particularly along the north-south State Highway 305 corridor presents a barrier to efficient travel. The Washington State Department of Transportation (WSDOT) is currently

[28] https://www.bainbridgewa.gov/DocumentCenter/View/7800/5-ENVIRONMENTAL?bidId= , page 12
[29] https://www.wsdot.wa.gov/ferries/traffic_stats/

engineering several roundabouts and other intersection enhancements to improve the flow of vehicles. Even so, the Washington State Ferries 2040 Long Range Plan indicates the largest increase in the number of walk-on passengers is expected on the Bainbridge Island/Seattle route.

In 2017, walk-on ridership was 3.25 million, however, by 2040, a 41% increase to 4.59 million pedestrians is projected along with more than a million additional vehicles (WSDOT 2019). Already, the Agate Pass bridge creates a substantial bottleneck for northbound drivers. Taken altogether, the decline in public transit riders coupled with a projected annual increase in ferry ridership amounts to a difficult transportation scenario going forward.

In response to county-wide pressures on the transportation system, Kitsap Transit conducted a Comprehensive Route Analysis last year. The purpose of the route analysis was to determine how to better serve community members by utilizing new software to enhance routing efficiencies.

Kitsap Transit Highlights

-Increasing frequency of I-90 route from Poulsbo to every 30 minutes in June

-Adjusted commuter routes on island to provide more efficient service

-Invested in second electric bus through a federal grant

-Using cleaner biodiesel fuel when possible

-switch from diesel to propane fuel for smaller buses

-Partnering with city on *BI Ride* campaign

According to Jeff Clausen, Kitsap Transit's Executive Director, several routes within Bainbridge Island were adjusted to enhance commuter transport to and from the ferry terminal (J. Clausen, interview, May 3, 2019). Adding to those efforts, the Bainbridge Island city council recently approved a $10 increase in the vehicle tab fee to provide funding for marketing the *BI Ride* service. Director Clausen indicated Kitsap Transit would be partnering with the city to market *BI Ride,* a proposed action strategy outlined in the agency's 2018-2023 Long Range plan (J. Clausen, interview, May 3, 2019).[30]

Promoting the environmental benefits of public transit may be a way to motivate people to ride the bus. In Canada, scientists conducted a study in 2011 to better understand the perceptions and attitudes of people choosing to use public transit. Researchers found *environmental reason* as the prime motive for utilizing public transit over other modes of travel. The result of the survey indicates sustainable travel is highly valued, specifically by current riders. In light of the study, environmental messaging may resonate with many community members living on the island, specifically people with pro-societal values.

Finally, to help alleviate gridlock during peak commuting times, transit service through the island will be stepped up soon. Director Clausen stated bus service from Poulsbo to the ferry terminal is set to increase in

[30] http://www.kitsaptransit.com/uploads/pdf/2018-2023tdp.pdf , page 15.

frequency from every 50 to 30 minutes beginning in June (J. Clausen, interview, May 3, 2019). Once in place, advertising the elevated service level inside and outside the island should help to attract new riders.

Increasing Public Transit Ridership

Invest in Basic Bus Stop Amenities

Removing small obstacles makes it easier for community members to give up the speed and flexibility of driving an automobile.

Predictably, reliability and convenience also ranked high in importance to bus riders based on the study conducted by Canadian researchers Nurul, Kattan, and Islam (2011). Not surprisingly, people are impatient and their perceptions of wait times do not always match reality.

A variety of circumstances make wait times feel longer than they actually are including poor weather, when people are in a hurry during peak commuting hours, behind schedule transit vehicles, and a lack of amenities at bus stops (Fan, Guthrie, and Levinson 2016; Ji et al. 2017). Installing benches and providing shelter at bus stops are two simple ways to mitigate negative perceptions concerning wait times.

Increase Ridership Strategies

-Invest in basic bus stop amenities

-Target *BI Ride* campaign on choice architecture research

-Educate the public on the use of mobility apps

RESEARCH ON BUS RIDERSHIP

-Environmental reasons primary motivation for current riders

-Reliability and convenience also important

-Invest in basic bus stop amenities, such as benches and shelters, weather protection matters

-Use choice architecture to advance change in social norms, people are influenced by behavior of neighbors and peers

-Mobility apps make bus option easier to navigate and offers positive feedback

Specific to our region, researchers Stover and McCormack (2012) studied the impact of weather on bus ridership in Pierce County and found adverse weather such as high winds, rain, above or below normal temperatures, and snow had a negative effect on bus ridership across most seasons.

Given the long rainy season in our region, adding basic amenities, such as shelters and benches, improves the experience of riding public transit by making the wait period at the bus stop more tolerable. Certainly, removing small obstacles means community members are more likely to choose to ride.

Target Campaigns Based on Human Behavior

Understanding human behavior may be the most important element in developing strategies to propel mode shifting. Simply stated, people need to know what others are doing to expand their own possibilities. In this regard, educational campaigns about what is happening can be effective in facilitating a sought-after behavior (Thaler and Sunstein 2009).

For example, ferry survey information such as, "25% of weekday ferry riders telecommute at least one day a week", could be shared as part of educational outreach.[31] Furthermore, drawing attention to people using public transit could increase the adoption of the desirable behavior by others. Conducting interviews with local commuters and other community members who regularly use public transit would be an excellent way to promote ridership.

Authors Thaler and Sunstein (2009) point out people are influenced by what their neighbors are doing. In other words, experiences shared by community members can have a positive influence on the actions of others by way of providing examples of sustainable practices people are already using to get around. As an example, sharing knowledge about the use of mobility applications can make public transit easier to navigate.

Educate Using Mobility Tools

Technology definitely plays a role in making it more convenient for people to choose environmentally sustainable mobility options. For instance, most people have used Google Maps for directions, but it is also very useful for estimating times for different modes of travel.
Readily available, and up-to-date travel information helps people to at least compare across modes when planning a trip or while in route. Applications specifically designed to persuade sustainable travel are available too, such as *Move It*. Similar to smart-phone apps designed to help people develop better eating or exercise habits, mobility applications inform the user of environmentally-friendly transportation options and track a user's progress by calculating emissions saved. No doubt, humans are prone to habitually move around town in familiar ways.

A sustainable travel app, such as *Move It*, assists users by supplying potentially new route choices using different modes and eventually aims to instill a habit of at least considering alternatives. Apps also incorporate positive feedback mechanisms to reinforce environmentally-friendly decisions. Over time, the idea is to persuade users to be more thoughtful and intentional by guiding the user to opt for sustainable transport. The community as a whole would benefit from knowing about these tools.

Outreach to share information about using technology to explore mobility choices is another strategy for educating and informing the public. For example, setting up a collaborative project with local schools would be an opportunity to expose young audiences to sustainable transport.

---

[31] http://www.bainbridgewa.gov/DocumentCenter/View/5632/Chapter3_?bidId=, page 3-11

The State of Washington requires Integrated Environmental and Sustainable Standards be taught within the core curriculum. The experience of using smart-phone technology to inform sustainable travel would be a creative way to get students engaged while at the same time meeting the *Standard for Sustainability and Civic Responsibility* which requires, "Students develop and apply the knowledge, perspective, vision, skills, and habits of mind necessary to make personal and collective decisions and take actions that promote sustainability."[32]

Public schools must teach about sustainability and civic responsibility. Partnering with the high school on a mobility app project would engage young people.

Young people in particular are generally receptive to using new tools to simplify tasks. Recently, researchers Sunio and Schmöcker (2017) analyzed several mobility apps and concluded they were similar to health-related applications in that they provide useful decision-making information. The study also suggested applications currently available could be improved by fully utilizing known methodologies for changing behavior. Still, the future potential for using apps to persuade mode shifting appears promising. Minimally, these types of apps would make it easier to access public transit and simplify planning for sustainable travel.

Taken altogether, community outreach to inform the public about the current state of the transportation situation would be an important first step in getting people on board to embrace systematic change. Because the feedback loop is not immediate between travel decision-making and negative environmental impacts, most people do not observe the connection or choose to ignore it when making their everyday choices.

Enough data has been collected through governmental reports and studies to indicate the traffic problem on Bainbridge Island is likely to accelerate. Indeed, population growth is expected in the region as well as a projected rise in ferry ridership, both increasing motorized traffic on the island. With this in mind, community outreach, within and outside the island, to improve attitudes and perceptions about using public transportation are needed. Already, the city council has approved funding to partner with Kitsap Transit to market *BI Ride*. Additionally, experiences using public transit would be improved by providing basic amenities such as benches and shelter at bus stops, especially considering perceived wait times are exaggerated in poor weather.

Environmental reasons may be enough to motivate some people to use 'cleaner' transportation options, still others may need more nudging and positive experiences trying out alternative modes of getting around before adopting new habits. Giving people information on how to utilize smart-phone applications as a quick and easy tool to plan sustainable travel may be a good way to encourage mode switching since it is known people value convenience. In time, societal norms are apt to change as sustainable mobility increases.

[32] http://www.k12.wa.us/EnvironmentSustainability/Standards/default.aspx

Promote Electric Bikes

Electric bicycles hold significant potential for reducing carbon emissions and traffic congestion on roadways. Riding an e-bike appeals to a broader audience of users because many barriers associated with traditional bikes are lessened or even eliminated with electric assist.

RESEARCH – E-BIKES

-Habitual association with car use reduced after given e-bike only option for two weeks

-E-bikes remove barriers associated with traditional bikes such as topography, trip distance, and electric assist for staying sweat-free on commute

-Older adults or others with physical limitations can use E-bikes

-E-bike riders cycle more often

In 2017, a survey by the National Institute for Transportation and Communities (NITC), found multiple factors are keeping people off of traditional bikes including steep topography, trip distance, time constraints, and even not wanting to arrive sweaty to a destination. The study found trips made by younger people are replacing motor vehicle trips and commuters, in particular, find less exertion is needed to propel an e-bike allowing them to arrive at the office less sweaty and ready to (NITC 2017). E-bikes allow older adults and others with physical limitations to enjoy more recreational opportunities. Still, cost is a drawback.

Generally, e-bike prices are higher than similar models of conventional bicycles. However, if cycling miles are reducing motorized miles, eventually fuel savings can make up the difference in cost. As with most transportation alternatives, the challenge is to engage the public and provide experiences using electric bikes.

Even though electric bike ownership has been increasing, most people have not had an opportunity to experience electric assisted travel.

In Switzerland, researchers Moser, Blumer, and Hille (2018) forced a disruption in habit by asking people to give up motorized travel for two weeks, instead, they were asked to use an e-bike. The experiment was successful. One year later participants habitual association with car use had been significantly reduced, even for people who chose not to purchase an e-bike (Moser, Blumer, and Hille (2018).

In light of the study, it appears the extended experience of riding an e-bike led participants to at least change their mindset and broaden their view of alternative modes of travel. With this in mind, cities need to promote and give community members opportunities to experience different modes.

A simple approach would be to include electric bikes in events aimed at increasing awareness of electric vehicles and outreach for public transit. Considering our region in particular has hilly topography, e-bikes remove this significant barrier while at the same time provide additional benefits to a diverse group of riders. Finally, electric bicycles increase sustainable travel, reduce carbon emissions, and lessen congestion on already crowded roadways.

Non-Motorized Transportation Collaboration

The Bainbridge Island Comprehensive Plan is choke-full of references to the desire for city-wide multi-modal options. From the detailed transportation plan, "Separated non-motorized facilities that provide a non-motorized transportation option for a wide range of people walking, riding bikes, riding horses, or using wheelchairs. This pathway network is envisioned to connect to the City's sidewalk and bike lane infrastructure and connect to main destinations like the ferry terminal, Agate Pass Bridge, Winslow, designated centers, schools, parks, shoreline road ends, equestrian facilities, and other amenities."[33] Clearly, the Island community sees the necessity for and expressly values investments in non-motorized facilities.

Non-Motorized Strategies
- Develop an infrastructure plan with the Multi-Modal Advisory Committee and the BI Mobility Alliance
-Support community funding for non-motorized projects
-Partner with schools to encourage safe walking and biking routes

Committed community members have joined together to take action on improving infrastructure for all ages and all abilities to move around the island. Specifically, the Bainbridge Mobility Alliance is dedicated to improving mobility options for everyone. After a failed bike levy, the group members have listened to community, and are currently developing an infrastructure plan. The city of Bainbridge Island needs alternative forms of transport. Realize too, paved shoulders on busy highways only provide non-motorized facilities for a very small number of people. Unfortunately, multi-modal infrastructure to serve the rest of the community, including all ages and all abilities, has been lacking.

With this in mind, it will take a detailed plan to gain the trust and support of the public. However, the information already outlined in both the Comprehensive and Transportation Plan will provide a thorough framework to design infrastructure in line with the Island's goals.

[33] https://www.bainbridgewa.gov/708/Island-wide-Transportation-Plan-IWTP-Upd

The support of city officials for funding and partnerships with community groups is essential to propelling the vision forward.

Conclusion

Federal and State governments are the primary provider of electric vehicle incentive programs aimed at increasing electric vehicle purchases. However, local governments play an important role in educating and engaging the public considering significant information deficits exist about electric vehicle ownership. To propel the adoption of alternative vehicles cities can organize community outreach directed at diverse audiences. Through public engagement and the sharing of information, leaders need to address environmental concerns about electric vehicle production and 'unclean' electricity used to charge electric vehicles. Realizing most people have limited or no experiences with electric vehicles, Bainbridge Island can partner with other community organizations to host electric drive events that give the public more direct experiences with EVs.

To accelerate EV adoption cities can take actions to increase EV charging infrastructure. Bainbridge Island would benefit from partnering with PSE to create incentive programs which would benefit both sides. Passing ordinances and developing building codes that require EV *Ready* infrastructure is less costly than making changes in the future. Furthermore, providing developers with incentives in the way of reduced traffic impact fees, makes mode shifting more convenient for people and increases efficiency for transit agencies.

People with pro-environmental values use the bus because it fits their lifestyle. However, other community members may need some nudging and positive experiences with alternative modes of travel before changing their habits. As such, with a modest investment, Bainbridge island could provide basic amenities at bus stops, and educate people about mobility applications that make planning sustainable travel convenient. Sharing the experiences of other community members in the ridership campaign being created by the City of Bainbridge Island and Kitsap Transit, would influence changes in attitudes and behaviors. People need and want more non-motorized infrastructure on the island. Collaborative efforts between city officials and community groups need to be accelerated in order for multi-modal goals to be realized. Over time, societal norms reflect the priorities and values of the community. By making investments now in EV infrastructure and sustainable mobility, the Island community will be doing their fair share to reduce our state's emissions while at the same time improving the quality of life for everyone.

Prioritization of Strategies

Mitigation	**By 2023, reduce GHG emissions by 25% compared to 2014 levels.**
Community Engagement	**Inspire action across the community and partner with local and regional organizations to take meaningful climate change mitigation and adaptation actions.**

	FACTORS		
STRATEGIES	**Timeliness**	**Permanence**	**Priority**
Provide education and community outreach to promote the benefits of electric vehicle ownership.	*		1
Partner with the Farmer's Market to hold an electric vehicle drive event including E-bikes.	*		1
Partner with local organizations such as the BI Climate and Energy Forum to hold EV Question/Answer Forums.	*		1
Partner with PSE and the COBI to pilot electric vehicle charging infrastructure incentive programs.	*		2
Apply for a state grant through the Electric Vehicle Infrastructure Partnerships Program (EVIPP)		*	3
Implement ordinances or building codes requiring *EV Ready* infrastructure	*	*	1
Develop public transit advertising campaign based on human choice behavior research.	*		2
Invest in basic bus stop amenities including shelters and benches.		*	2
Provide education and outreach on the use of mobility applications.			3
Partner with the Multi-Modal Committee and BI Mobility Alliance to develop non-motorized infrastructure.	*	*	1

References

Axsen, John, and Kenneth S Kurani. 2012. "Interpersonal Influence within Car Buyers' Social Networks: Applying Five Perspectives to Plug-in Hybrid Vehicle Drivers." *Environment and Planning A: Economy and Space* 44(5): 1047–65.

Axsen, John, Jennifer TyreeHageman, and Andy Lentz. 2012. "Lifestyle Practices and Pro-Environmental Technology." *Ecological Economics* 82: 64–74.

Berkeleya, N., Bailey, D., Jones, A., Jarvisa, D. 2017. "Assessing the transition towards Battery Electric Vehicles: A Multi-Level Perspective on drivers of, and barriers to, take up." *Transportation research. Part A, Policy and practice* 12: 320-332.

"Clean Energy Coalition: Bridging Needs. Advancing Change. Plug-In Ready Michigan." http://cec-mi.org/mobility/programs/pluginreadymichigan/.

"Cracking the Code on EV-Ready Building Codes." *SWEEP*. http://www.swenergy.org/cracking-the-code-on-ev-ready-building-codes.

Department of Ecology (DOE). 2019. "Washington State Greenhouse Gas Emissions Inventory: 1990-2015." https://fortress.wa.gov/ecy/publications/summarypages/1802043.html.

"Environment - U.S. Energy Information Administration (EIA)." 2016. https://www.eia.gov/environment/emissions/state/.

Fan, Yingling, Andrew Guthrie, and David Levinson. 2016. "Waiting Time Perceptions at Transit Stops and Stations: Effects of Basic Amenities, Gender, and Security." *Transportation Research Part A: Policy and Practice* 88: 251–64.

Habib, Khandker M. Nurul, Lina Kattan, and Md Tazul Islam. 2011. "Model of Personal Attitudes towards Transit Service Quality." *Journal of Advanced Transportation* 45(4): 271–85.

Jenn, Alan, Katalin Springel, and Anand R. Gopal. 2018. "Effectiveness of Electric Vehicle Incentives in the United States." *Energy Policy* 119: 349–56.

Kitsap Transit. 2018. "Kitsap Transit Development Plan 2018-2023." http://www.kitsaptransit.com/uploads/pdf/2018-2023tdp.pdf

Moser, Corinne, Yann Blumer, and Stefanie Lena Hille. 2018. "E-Bike Trials' Potential to Promote Sustained Changes in Car Owners Mobility Habits." *Environmental Research Letters* 13(4): 044025.

"National Electric Bike Owner Survey | National Institute for Transportation and Communities." https://nitc.trec.pdx.edu/research/project/1041/National_Electric_Bike_Owner_Survey_.

Office of Superintendent of Public Instruction (OSPI). State of Washington. 2014. "K-12 Integrated Environmental and Sustainable Education Learning Standards." http://www.k12.wa.us/EnvironmentSustainability/pubdocs/ESEStandards.pdf

Puget Sound Clean Air Agency (PSCAA). 2018. “Puget Sound Clean Air Agency Greenhouse Gas Emissions Inventory”. https://www.pscleanair.org/DocumentCenter/View/3328/PSCAA-GHG-EmissionsInventory?bidId=.

SB5116. 2019. Washington State Legislature. “An act relating to supporting Washington's clean energy economy and transitioning to a clean, affordable, and reliable energy future.” http://lawfilesext.leg.wa.gov/biennium/2019-20/Pdf/Bills/Senate%20Bills/5116-S.pdf.

HB2042. 2019. Washington State Legislature. “An Act relating to advancing green transportation adoption.” http://lawfilesext.leg.wa.gov/biennium/2019-20/Pdf/Bills/Session%20Laws/House/2042-S2.SL.pdf

Seattle Office of Sustainability and Environment. 2014. “Removing Barriers to Electric Vehicle Adoption by Increasing Access to Charging Infrastructure”.

Stover, Victor, and Edward McCormack. 2012. “The Impact of Weather on Bus Ridership in Pierce County, Washington.” *Journal of Public Transportation* 15(1). https://scholarcommons.usf.edu/jpt/vol15/iss1/6.

Sunio, Varsolo, and Schm€ocker, Jan-Dirk. 2017. “Can we promote sustainable travel behavior through mobile apps? Evaluation and review of evidence.” International Journal of Sustainable Transportation 11(8): 553-566. http://dx.doi.org/10.1080/15568318.2017.1300716

Taylor, M., and K. Fujita. 2018. “Consumer Behavior and the Plug-In Electric Vehicle Purchase Decision Process: A Research Synthesis,” January. https://escholarship.org/uc/item/4hj203w3

Thaler, Richard H., and Sunstein, Cass R. 2009. *Nudge: Improving decisions about health, wealth, and happiness.* New York: Penguin Group.

Union of Concerned Scientists. 2015. “Cleaner Cars from Cradle to Grave.” https://www.ucsusa.org/clean-vehicles/electric-vehicles/life-cycle-ev-emissions.

Washington State Department of Transportation (WSDOT). 2018. Map of Washington EV Registration by County. http://www.westcoastgreenhighway.com/pdfs/Map_WAEVRegistrationByCounty.pdf.

“Washington State Ferry Traffic Statistics.” 2019. http://www.wsdot.wa.gov/ferries/traffic_stats/

Washington State Department of Transportation (WSDOT). 2019. “Washington State Ferries 2040 Long Range Plan.” https://www.wsdot.wa.gov/ferries/planning/long-range-plan/the-plan.

Washington State Department of Transportation (WSDOT). 2015. “Study of Business Models to Sustain Electric Vehicle Charging Station Networks. “ http://leg.wa.gov/JTC/Pages/CompletedStudies.aspx

Photo references https://creativecommons.org/licenses/by-sa/4.0/ https://commons.wikimedia.org/wiki/File:Winslow_Way_Bainbridge_Island__panoramio.jpg

Appendix A - Sample Zoning Language

SECTION #####.01 Purpose

Electric vehicles are becoming more commonplace on the roads and are available to consumers across the country. As the home state of the automobile industry, the (municipal name) recognizes the importance of supporting this emerging innovation in the industry.

Automakers have clearly identified that to support the mass production of EVs, municipalities will need to enable and promote the necessary charging infrastructure demanded by potential customers. Thus, it is critical to support the early adoption of EVs and allow for and accommodate private sector investment.

EVs need a much different type of fueling network than gasoline engine vehicles. This new fueling system will be based on a clustering of strategically placed charging stations at homes, workplaces, and retail stores. These charging stations will be in addition to and complement traditional gas stations.

We anticipate that higher gas prices, advancements in battery storage, lower vehicle costs, and significant public/private investment in technology and infrastructure will greatly influence the EV market over time.

The ordinance below will encourage and simplify the establishment of a network of public and private EV charging stations throughout the community.

SECTION #####.02 Intent

2. Intent. The intent of this section is to create standards that will make (municipal name) a leader in expediting and promoting the development of a safe, convenient, and cost-effective electric vehicle infrastructure to support the use of electric vehicles.

SECTION #####.03 Definitions

For the purposes of this section, the following definitions shall apply.

3.1. Accessible electric vehicle charging station means an electric vehicle charging station where the battery charging station is located within accessible reach of a barrier-free access aisle and the electric vehicle.

3.2. Battery charging station means an electrical component assembly or cluster of component assemblies designed specifically to charge batteries within electric vehicles.

3.3. Battery electric vehicle means any vehicle that operates exclusively on electrical energy from an off-board source that is stored in the vehicle's batteries and produces zero tailpipe emissions or pollution when stationary or operating.

3.4. Charging levels means the standardized indicators of electrical force, or voltage, at which an electric vehicle's battery is recharged. The terms AC Level 1, AC Level 2, and DC fast charging are the most common charging levels and include the following specifications:

3.4.1. AC Level 1 is considered slow charging. Voltage including the range from 0 through 120.

3.4.2. AC Level 2 is considered medium charging. Voltage is greater than 120 and includes 240.

3.4.3. DC fast charging. Voltage is greater than 240.

3.5. Electric vehicle means any vehicle that is licensed and registered for operation on public and private highways, roads, and streets; and is powered either partially or exclusively on electrical energy from the grid, or an off-board source, that is stored on-board via a battery for motive purpose. "Electric vehicle" includes: (1) a battery electric vehicle; and (2) a plug-in hybrid electric vehicle.

1. Allow for AC Level 1 and 2 electric vehicle infrastructure as a permitted use in the zoning code, either as an ancillary use or a principal use in all zones.

2. Require that developers install charging stations or electrical conduits with new developments or significant renovations.

3. Require owners of multi-family residential units to provide charging stations as part of their parking facilities requirements.

4. Require a portion of electric vehicle infrastructure installations to meet the needs of people with disabilities.

5. Install electric vehicle charging stations at public institutions, such as the city/township hall, and municipal parking lots.

6. Install public electric vehicle charging stations at major activity centers.

7. Establish an ongoing working group of developers, utility companies, residents, businesses owners, electric car owners, and others key stakeholders to develop and review local policies that relate to electric vehicle infrastructure as electric vehicle technology progresses and needs change.

8. Promote the community as an electric vehicle friendly place.

3.6. Electric vehicle charging station means a public or private parking space that is served by battery charging station equipment that has as its primary purpose the transfer of electric energy (by conductive or inductive means) to a battery or other energy storage device in an electric vehicle. An electric vehicle charging station equipped with AC Level 1 or AC Level 2 charging equipment is permitted outright as an accessory use to any principal use.

3.7. Electric vehicle charging station – private restricted use means an electric vehicle charging station that is (1) privately owned and restricted access (e.g., single-family home, executive parking, designated employee parking) or (2) publicly owned and restricted (e.g., fleet parking with no access to the general public).

3.8. Electric vehicle charging station – public use means an electric vehicle charging station that is (1) publicly owned and publicly available (e.g., carpool parking lot, public library parking lot, on-

street parking) or (2) privately owned and available to visitors of the use (e.g., shopping center parking).

3.9. Electric vehicle infrastructure means conduit/wiring, structures, machinery, and equipment necessary and integral to support an electric vehicle, including battery charging stations and fast charging stations.

3.10. Electric vehicle parking space means any marked parking space that identifies the use to be exclusively for the parking of an electric vehicle.

3.11. Non-electric vehicle means any motor vehicle that does not meet the definition of electric vehicle.

3.12.Plug-in hybrid electric vehicle means an electric vehicle that (1) contains an internal combustion engine and also allows power to be delivered to drive wheels by an electric motor; (2) charges its battery primarily by connecting to the grid or other off-board electrical source; (3) may additionally be able to sustain battery charge using an onboard internal-combustion-driven generator; and (4) has the ability to travel powered by electricity.

4.2. DC fast charging electric vehicle charging stations are permitted in the (public/civic), (office), (commercial), and (industrial) districts when accessory to the primary permitted use. Installation shall be subject to permit approval as administered by the (municipal name).

4.3. If the primary use of the parcel is the retail electric charging of vehicles, then the use shall be considered a gasoline service station for zoning purposes. Installation shall be subject to all zoning standards that apply to gasoline service stations.

5.1. Residential - In order to proactively plan for and accommodate the anticipated future growth in market demand for electric vehicles, it is strongly encouraged, but not required, that all new single-family and multiple-family homes with or without garages be constructed to provide a 220-240-volt / 40 amp outlet on a dedicated circuit and in close proximity to designated vehicle parking to accommodate the potential future hardwire installation of a AC Level 2 electric vehicle charging station.

Commentary: Industry experts have advised that the majority of electric vehicle charging will occur at the owner's home in the evening. Retrofitting a home for electric vehicle charging is considerably more expensive than the cost of including the capacity at the time of construction. To minimize the unnecessary cost to retrofit a home, the (municipal name) considers electric vehicle readiness in new home construction necessary.

5.2. Non-Residential - In order to proactively plan for and accommodate the anticipated future growth in market demand for electric vehicles, it is required that all new and expanded non-residential development parking areas provide the electrical capacity necessary to accommodate the future hardwire installation of AC Level 2 electric vehicle charging stations. It is recommended that a typical parking lot (e.g., 1,000 or less parking spaces) have a minimum ratio of 8 percent of the total parking spaces be prepared for such stations. A minimum of one parking space for every development should also include one AC Level 2 charging station. It is noted and understood that large-sized parking areas (e.g., corporate headquarters, shopping malls, sporting venues, universities, etc.) may require less electric vehicle charging stations than recommended above to accommodate the anticipated market demand.

Commentary: If the property owner decides not to install more than one battery charging stations at the time of initial construction, this approach allows for the stations to be installed in the future without costly or cost-prohibitive retrofits. The intent of this subsection is to require sites to be "roughed-in" with the installation of electrical stubs at planned electric vehicle charging station locations and conduit run from the power source to the station location to support future installation.

6.1. Accessible Parking - It is required that a minimum of one accessible electric vehicle charging station be provided. Accessible electric vehicle charging stations should be located in close proximity to the building or facility entrance and connected to a barrier free accessible route of travel. It is not necessary to designate the accessible electric vehicle charging station exclusively for the use of disabled persons.

6.2. Lighting

6.2.1. Site lighting shall be provided where an electric vehicle charging station is installed, unless charging is for daytime purposes only.

6.3. Equipment Standards and Protection

6.3.1. Battery charging station outlets and connector devices shall be no less than 36 inches and no higher than 48 inches from the surface where mounted. Equipment mounted on pedestals, lighting posts, bollards, or other devices shall be designed and located as to not impede pedestrian travel or create trip hazards on sidewalks.

6.3.2. Adequate battery charging station protection, such as concrete-filled steel bollards, shall be used. Curbing may be used in lieu of bollards, if the battery charging station is setback a minimum of 24 inches from the face of the curb.

6.4. Usage Fees

6.4.1. The property owner is not restricted from collecting a service fee for the use of an electric vehicle charging station made available to visitors of the property.

6.5. Signage

6.5.1. Information shall be posted identifying voltage and amperage levels and any time of use, fees, or safety information related to the electric vehicle charging station.

6.5.2. Each electric vehicle charging station space shall be posted with signage indicating the space is only for electric vehicle charging purposes. For purposes of this subsection, "charging" means that an electric vehicle is parked at an electric vehicle charging station and is connected to the battery charging station equipment. Restrictions shall be included on the signage, if removal provisions are to be enforced by the property owner

pursuant to Chapter ##. (Insert name of chapter and city code here).

6.6. Maintenance

6.6.1. Electric vehicle charging stations shall be maintained in all respects, including the functioning of the equipment. A phone number or other contact information shall be provided on the equipment for reporting when it is not functioning or other problems are encountered.

6.7. Enforcement

See SECTION ##### Vehicle removed by police

(Clean Energy Coalition 2011)
http://cec-mi.org/wp-content/uploads/2011/11/Plug-In-Ready-Michigan.pdf

(Insert date and ordinance number)

1. When a sign provides notice that a parking space is a publicly designated electric vehicle charging station, no person shall park or stand any non-electric vehicle in a designated electric vehicle charging station space. Further, no person shall park or stand an electric vehicle in a publicly designated electric vehicle charging station space when not electrically charging or parked beyond the days and hours designated on the regulatory signs posted. For purposes of this subsection, “charging,” means an electric vehicle is parked at an electric vehicle charging station and is connected to the charging station equipment.

Appendix B - Kitsap Transit Ridership Data 2008-2018

ROUTE NO.	ROUTE	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Dec-07	* DIFF. DEC-08 & DEC-07	CURRENT MONTHLY % DIFF	** YTD 12/2008 TOTAL	YTD 12/2007 TOTAL	YTD % DIFF.
	BAINBRIDGE ISLAND																		
90	POULSBO/BAINBRIDGE	24,364	22,965	23,048	25,203	24,327	24,669	26,598	24,973	24,657	27,191	22,057	22,175	19,585	2,590	13.2%	292,227	270,216	8%
91	KINGSTON/BAINBRIDGE	9,223	8,640	8,787	9,229	8,938	9,482	9,456	8,651	8,947	9,721	7,592	7,005	7,259	-254	-3.5%	105,671	102,585	3%
92	PO/KING/SUQ	1,812	1,813	1,814	2,073	2,203	2,320	2,442	2,270	2,355	2,625	2,098	1,994	1,451	543	37.4%	25,819	17,511	47%
93	MANZANITA COMMUTER	3,414	3,090	2,966	3,236	3,044	3,285	3,133	2,648	3,206	3,796	2,963	2,568	2,379	189	7.9%	37,349	35,625	5%
94	AGATE POINT COMMUTER	3,263	2,675	2,902	3,106	2,796	2,704	2,824	2,699	2,756	3,118	2,342	2,200	2,261	-61	-2.7%	33,387	33,360	0%
95	BATTLE POINT COMMUTER	3,200	2,825	2,853	2,875	2,794	2,865	2,806	2,647	2,883	3,251	2,525	2,284	2,670	-386	-14.5%	33,808	37,246	-9%
96	SUNRISE COMMUTER	2,579	2,380	2,470	2,712	2,499	2,415	2,640	2,337	2,534	2,856	2,212	2,173	2,066	107	5.2%	29,807	31,621	-6%
97	CRYSTAL SPRINGS COMMUTER	3,644	3,514	3,521	3,786	3,134	3,535	3,383	3,356	3,521	3,909	3,130	3,052	2,960	92	3.1%	41,485	40,902	1%
98	FORT WARD COMMUTER	3,477	3,275	3,143	3,264	2,879	2,981	2,939	2,571	2,983	3,602	2,915	2,810	2,567	243	9.5%	36,839	33,773	9%
99	BILL POINT COMMUTER	3,113	2,959	2,701	2,566	2,470	2,755	2,892	2,558	2,637	2,853	2,412	2,154	2,041	113	5.5%	32,070	29,801	8%
100	WINSLOW SHUTTLE	5,556	5,352	5,270	5,253	4,660	5,249	5,378	5,295	4,566	4,842	3,936	3,552	4,187	-635	-15.2%	58,911	50,953	16%
106	FLETCHER BAY COMMUTER	2,070	1,861	2,124	2,540	1,947	1,715	1,829	1,730	2,387	2,709	2,258	2,112	1,574	538	34.2%	25,282	23,643	7%
	TOTAL BAINBRIDGE ISLAND	65,715	61,349	61,595	65,843	61,693	63,975	66,320	61,735	63,432	70,473	56,442	54,079	51,000	3,079	6.0%	752,655	707,236	6%

ROUTE NO.	ROUTE	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Dec-08	* DIFF. DEC-09 & DEC-08	CURRENT MONTHLY % DIFF	** YTD 12/2009 TOTAL	YTD 12/2008 TOTAL	YTD % DIFF.
	BAINBRIDGE ISLAND																		
90	POULSBO/BAINBRIDGE	23,418	21,436	22,840	21,710	19,112	20,165	20,854	19,820	19,527	20,467	17,201	18,271	22,175	-3,904	-17.6%	244,821	292,227	-16%
91	KINGSTON/BAINBRIDGE	8,185	7,897	9,036	8,645	7,970	8,332	7,846	7,953	7,904	8,194	6,786	7,419	7,005	414	5.9%	96,367	105,671	-9%
92	PO/KING/SUQ	2,318	2,265	2,341	2,394	2,134	2,020	1,870	1,913	2,111	2,387	1,883	1,780	1,994	-214	-10.7%	25,416	25,819	-2%
93	MANZANITA COMMUTER	3,035	2,686	3,263	3,090	2,925	3,015	2,806	2,752	2,713	2,843	2,395	2,528	2,568	-40	-1.6%	34,051	37,349	-9%
94	AGATE POINT COMMUTER	2,707	2,251	2,334	2,105	1,992	2,090	2,817	2,216	1,939	2,321	1,889	1,884	2,200	-316	-14.4%	26,545	33,387	-20%
95	BATTLE POINT COMMUTER	2,783	2,561	2,963	2,863	2,454	2,740	2,327	2,337	2,715	3,077	2,294	3,274	2,284	990	43.3%	32,408	33,808	-4%
96	SUNRISE COMMUTER	2,474	2,113	2,594	2,468	2,237	2,450	2,232	2,142	2,629	2,790	2,415	2,494	2,173	321	14.8%	29,038	29,807	-3%
97	CRYSTAL SPRINGS COMMUTER	3,555	3,415	3,762	3,470	2,944	3,271	3,294	2,747	3,120	3,409	2,864	3,300	3,052	248	8.1%	39,151	41,485	-6%
98	FORT WARD COMMUTER	3,364	2,652	2,542	2,630	2,159	2,215	2,073	2,041	2,197	2,617	2,055	2,247	2,810	-563	-20.0%	28,792	36,839	-22%
99	BILL POINT COMMUTER	2,826	2,646	2,686	2,588	2,318	2,426	2,101	1,948	2,279	2,563	2,096	2,291	2,154	137	6.4%	28,768	32,070	-10%
100	WINSLOW SHUTTLE	4,445	3,921	4,223	3,880	3,655	3,778	3,759	3,354	3,164	3,492	2,807	3,656	3,552	-1,896	-53.4%	42,134	58,911	-28%
106	FLETCHER BAY COMMUTER	2,429	2,192	2,175	2,071	1,696	1,715	1,576	1,600	1,813	1,890	1,652	1,696	2,112	-414	-19.6%	22,509	25,282	-11%
	TOTAL BAINBRIDGE ISLAND	61,539	56,035	60,779	58,114	51,598	54,217	53,555	50,823	52,111	56,050	46,337	48,842	54,079	-5,237	-9.7%	650,000	752,655	-14%

ROUTE NO.	ROUTE	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Dec-09	* DIFF. DEC-10 & DEC-09	CURRENT MONTHLY % DIFF	** YTD 12/2010 TOTAL	YTD 12/2009 TOTAL	YTD % DIFF.
	BAINBRIDGE ISLAND																		
90	POULSBO/BAINBRIDGE	17,871	17,388	19,858	18,666	17,458	17,954	17,030	17,599	17,469	18,053	15,844	16,406	18,271	-1,865	-10.2%	211,596	244,821	-14%
91	KINGSTON/BAINBRIDGE	7,180	7,062	8,305	8,188	7,595	8,083	7,355	7,846	7,638	7,263	6,150	6,360	7,419	-1,059	-14.3%	89,025	96,367	-8%
92	PO/KING/SUQ	1,603	1,532	1,892	1,757	1,636	1,639	1,590	1,633	1,648	1,636	1,379	1,569	1,780	-211	-11.9%	19,514	25,416	-23%
93	MANZANITA COMMUTER	2,763	2,525	2,881	2,947	2,760	2,812	2,568	2,661	2,946	2,844	2,311	2,466	2,528	-62	-2.5%	32,484	34,051	-5%
94	AGATE POINT COMMUTER	1,905	1,828	2,137	1,911	1,832	1,938	1,816	1,835	1,943	1,933	1,647	1,755	1,884	-129	-6.8%	22,480	26,545	-15%
95	BATTLE POINT COMMUTER	3,905	3,854	4,314	3,925	3,615	3,649	3,580	3,548	3,360	3,587	3,144	3,355	3,274	81	2.5%	43,836	32,408	35%
96	SUNRISE COMMUTER	2,107	2,135	2,690	1,987	1,893	2,079	1,981	2,140	2,156	2,266	1,961	2,273	2,494	-221	-8.9%	25,668	29,038	-12%
97	CRYSTAL SPRINGS COMMUTER	3,151	2,569	2,725	2,610	2,282	3,077	2,685	2,918	2,951	2,975	2,589	2,562	3,300	-738	-22.4%	33,094	39,151	-15%
98	FORT WARD COMMUTER	2,322	2,103	2,293	2,100	1,946	2,262	2,067	2,118	2,255	2,265	1,811	2,077	2,247	-170	-7.6%	25,619	28,792	-11%
99	BILL POINT COMMUTER	2,467	2,324	2,476	2,355	2,112	2,014	2,125	2,175	2,162	2,274	1,977	2,079	2,291	-212	-9.3%	26,540	28,768	-8%
106	FLETCHER BAY COMMUTER	1,664	1,604	1,885	1,624	1,551	1,670	1,414	1,391	1,504	1,365	1,143	1,197	1,698	-501	-29.5%	18,012	22,509	-20%
	TOTAL BAINBRIDGE ISLAND	46,938	44,924	51,456	48,070	44,680	47,177	44,211	45,864	46,032	46,461	39,956	42,099	47,186	-5,087	-10.8%	547,868	607,866	-10%

ROUTE NO.	ROUTE	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Dec-10	* DIFF. DEC-11 & DEC-10	CURRENT MONTHLY % DIFF	YTD 12/2011 TOTAL	** YTD 12/2010 TOTAL	YTD % DIFF.
	BAINBRIDGE ISLAND																		
90	POULSBO/BAINBRIDGE	17,679	16,973	19,752	18,961	18,811	18,048	16,057	18,009	17,893	18,298	17,309	16,357	16,406	-49	-0.3%	214,147	211,596	1%
91	KINGSTON/BAINBRIDGE	7,391	6,710	7,936	7,379	7,272	7,256	6,140	8,072	7,248	7,030	6,926	6,475	6,360	115	1.8%	85,835	89,025	-4%
92	PO/KING/SUQ	1,524	1,505	1,696	1,631	1,653	1,891	1,687	1,863	1,968	1,696	1,516	1,529	1,569	-40	-2.5%	20,159	19,514	3%
93	MANZANITA COMMUTER	2,912	2,658	3,044	2,908	2,843	2,931	2,312	2,718	2,714	2,748	2,569	2,384	2,466	-82	-3.3%	32,741	32,484	1%
94	AGATE POINT COMMUTER	1,954	1,806	2,240	2,064	2,024	2,016	1,841	1,915	1,936	2,016	1,835	1,635	1,755	-120	-6.8%	23,082	22,480	3%
95	BATTLE POINT COMMUTER	3,813	3,668	4,251	3,713	3,643	3,585	2,891	3,429	3,549	3,786	3,700	3,395	3,355	40	1.2%	43,423	43,836	-1%
96	SUNRISE COMMUTER	2,378	2,111	2,516	2,383	2,257	2,221	1,995	2,315	2,241	2,338	2,250	2,045	2,273	-228	-10.0%	27,028	25,668	5%
97	CRYSTAL SPRINGS COMMUTER	3,172	3,085	3,401	3,237	3,166	3,153	2,668	3,105	2,935	3,030	2,836	2,614	2,562	52	2.0%	36,602	33,094	11%
98	FORT WARD COMMUTER	2,321	2,251	2,495	2,360	2,216	2,228	1,973	2,258	2,155	2,399	2,060	2,148	2,077	71	3.4%	26,864	25,619	5%
99	BILL POINT COMMUTER	2,297	2,061	2,354	2,176	2,137	2,074	1,985	2,142	2,095	2,079	1,945	1,777	2,079	-302	-14.5%	25,122	26,540	-5%
106	FLETCHER BAY COMMUTER	1,315	1,353	1,521	1,495	1,442	1,538	1,254	1,419	1,508	1,600	1,497	1,431	1,197	234	19.5%	17,373	18,012	-4%
	TOTAL BAINBRIDGE ISLAND	46,756	44,181	51,206	48,287	47,464	46,941	40,803	47,245	46,242	47,018	44,443	41,790	42,099	-309	-0.7%	552,376	547,868	1%

ROUTE NO.	ROUTE	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Dec-11	* DIFF. DEC-12 & DEC-11	CURRENT MONTHLY % DIFF	YTD 12/2012 TOTAL	** YTD 12/2011 TOTAL	YTD % DIFF.
	BAINBRIDGE ISLAND																		
90	POULSBO/BAINBRIDGE	15,807	18,037	18,997	18,266	19,602	18,421	18,020	19,321	16,373	20,089	17,150	15,077	16,357	-1,280	-7.8%	215,160	214,147	0%
91	KINGSTON/BAINBRIDGE	6,339	7,204	7,460	7,179	7,571	6,966	6,676	7,269	6,135	8,415	6,981	6,389	6,475	-86	-1.3%	84,584	85,835	-1%
92	PO/KING/SUQ	1,425	1,629	1,705	1,917	1,793	1,700	1,612	1,689	1,600	1,821	1,644	1,388	1,529	-141	-9.2%	19,923	20,159	-1%
93	MANZANITA COMMUTER	2,608	2,919	3,258	2,929	3,243	2,923	2,692	2,914	2,467	3,143	2,589	2,226	2,384	-158	-6.6%	33,911	32,741	4%
94	AGATE POINT COMMUTER	1,732	1,919	2,255	1,966	2,196	1,985	1,889	2,238	1,928	2,306	2,023	1,604	1,635	-31	-1.9%	24,061	23,082	4%
95	BATTLE POINT COMMUTER	3,482	4,032	4,221	4,025	4,151	3,927	3,432	3,783	3,391	4,448	3,740	3,228	3,395	-167	-4.9%	45,860	43,423	6%
96	SUNRISE COMMUTER	2,236	2,473	2,663	2,484	2,588	2,234	2,102	2,274	2,262	2,647	2,154	2,038	2,045	-7	-0.3%	28,155	27,028	4%
97	CRYSTAL SPRINGS COMMUTER	2,743	3,037	3,262	2,923	3,319	2,894	2,813	2,954	2,697	3,562	2,826	2,386	2,614	-228	-8.7%	35,416	36,602	-3%
98	FORT WARD COMMUTER	2,203	2,396	2,532	2,335	2,537	2,211	2,193	2,377	2,244	2,789	2,322	2,004	2,148	-144	-6.7%	28,143	26,864	5%
99	BILL POINT COMMUTER	2,123	2,422	2,520	2,323	2,428	2,194	2,196	2,354	2,015	2,555	2,152	1,906	1,777	129	7.3%	27,190	25,122	8%
106	FLETCHER BAY COMMUTER	1,503	1,755	1,879	1,699	1,750	1,771	1,525	1,879	1,676	2,050	1,690	1,396	1,431	-35	-2.4%	20,573	17,373	18%
	TOTAL BAINBRIDGE ISLAND	42,201	47,823	50,752	48,066	51,178	47,226	45,152	49,052	42,788	53,825	45,271	39,642	41,790	-2,148	-5.1%	562,976	552,376	2%

ROUTE NO.	ROUTE	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Dec-12	* DIFF. DEC-13 & DEC-12	CURRENT MONTHLY % DIFF	YTD 12/2013 TOTAL	** YTD 12/2012 TOTAL	YTD % DIFF.
	BAINBRIDGE ISLAND																		
90	POULSBO/BAINBRIDGE	19,458	17,324	18,194	18,820	19,604	17,432	18,256	17,758	16,551	19,459	16,076	15,880	15,077	803	5.3%	214,812	215,160	-0.2%
91	KINGSTON/BAINBRIDGE	8,163	7,612	7,787	8,401	8,294	7,355	8,020	7,770	7,116	8,465	6,620	6,468	6,389	79	1.2%	92,071	84,584	8.9%
92	PO/KING/SUQ	1,702	1,564	1,692	1,785	1,733	1,559	1,653	1,742	1,505	2,040	1,469	1,462	1,388	74	5.3%	19,906	19,923	-0.1%
93	MANZANITA COMMUTER	3,072	2,662	3,067	3,056	3,101	2,585	2,845	2,679	2,442	3,249	2,491	2,504	2,226	278	12.5%	33,753	33,911	-0.5%
94	AGATE POINT COMMUTER	2,217	1,814	1,874	1,989	2,070	1,852	1,830	1,669	1,663	1,793	1,651	1,617	1,604	13	0.8%	22,039	24,061	-8.4%
95	BATTLE POINT COMMUTER	4,157	3,655	3,754	3,948	4,001	3,540	3,501	3,377	3,318	4,308	3,346	3,262	3,228	34	1.1%	44,167	45,860	-3.7%
96	SUNRISE COMMUTER	2,775	2,434	2,669	2,611	2,780	2,432	2,450	2,584	2,417	3,032	2,270	2,301	2,038	263	12.9%	30,755	28,155	9.2%
97	CRYSTAL SPRINGS COMMUTER	3,447	2,985	2,994	3,205	3,171	2,890	2,974	2,860	2,733	3,377	2,932	2,696	2,386	310	13.0%	36,264	35,416	2.4%
98	FORT WARD COMMUTER	2,665	2,150	2,462	2,535	2,400	2,201	2,306	2,284	2,204	2,897	2,228	2,287	2,004	283	14.1%	28,619	28,143	1.7%
99	BILL POINT COMMUTER	2,592	2,234	2,223	2,363	2,469	2,089	2,136	2,163	2,102	2,609	2,073	2,087	1,906	181	9.5%	27,122	27,190	-0.3%
106	FLETCHER BAY COMMUTER	1,969	1,655	1,912	1,919	1,915	1,890	1,980	1,800	1,721	2,044	1,815	1,622	1,396	226	16.2%	22,442	20,573	9.1%
	TOTAL BAINBRIDGE ISLAND	52,217	46,289	48,628	50,632	51,538	45,805	47,953	46,686	43,772	53,273	42,971	42,186	39,642	2,544	6.4%	571,950	562,976	1.6%

Appendix C - City of Bellingham Mode Shifting Incentives

Urban Village Vehicle Trip Reduction Credits

TABLE 2 – URBAN VILLAGE VEHICLE TRIP REDUCTION CREDITS	CREDIT
Menu of Location Factors and Performance Measures to Reduce Vehicle Trips	
Note: Reductions below are additive and may not exceed a total of 50%	
1.) MIXED USE URBAN VILLAGE LOCATION	**15%**
(Based on ITE Internal Trip Capture - Mixed Use Urban Environment)	
2.) WTA TRANSIT PROXIMITY (Only one transit proximity reduction below may be used)	
Development fronts on a high-frequency WTA GO Line	**10%**
Development within 1/4-mile of WTA GO Line	**7%**
Development fronts on standard WTA Route (30 - 60 min)	**5%**
Development within 1/4-mile5 of standard WTA Route (30 - 60 min)	**2%**
3.) EMPLOYER MANDATORY COMMITMENT TO COMMUTE TRIP REDUCTION (CTR)	
CTR/TDM commitment combining economic incentives with transportation services	**10%**
4.) VOLUNTARY ANNUAL WTA TRANSIT PASS PROVISION (Non-CTR)	
2-year transit pass provided for residential units = 1% per unit pass	**1%**
2-year transit pass provided for employees = 1% per employee pass	**1%**
5.) VOLUNTARY CAR SHARE PARTICIPATION OR PROVISION (Non-CTR)	
Car Share Vehicle(s) Parked On Residential or Employment Site = 2% per vehicle	**2%**
Car Share membership fee provided for residential units = 2% per unit	**2%**
Car Share membership fee provided for employees = 2% per employee	**2%**