



PLANNING AND ROADWAY MANAGEMENT

Consider GHG emissions in transportation planning, resource allocation and right-of-way management decisions

Enabling Strategies

City plans, including the Transportation Strategic Plan (TSP), the Comprehensive Plan, and Master Plans for each mode, clearly identify the City’s goals of shifting travel demand from driving alone to walking, cycling, transit and other shared travel modes. A shift from a focus on vehicle capacity and delay, to prioritizing accessibility and mobility for people and goods is necessary to meet the needs of a growing population within a finite geographic area.

1. ADOPT A TRANSPORTATION DECISION HIERARCHY

Adopt a decision hierarchy prioritizing (1) walking, cycling, and transit, followed by (2) freight and goods movement, (3) high occupancy vehicles, and (4) single occupancy vehicles in planning, infrastructure investment, policy and program development and right-of-way management to reduce GHG emissions and improve safety while fostering mobility and accessibility.

2. DEVELOP A BUDGET PRIORITIZATION TOOL

Develop a budget prioritization tool to ensure consideration of “Triple Bottom Line” factors, including GHG emissions reduction analysis, updates to transportation and land use plans, evaluation of budget and policy/program alternatives, and prioritization of implementation actions and strategies.

3. PLAN MULTIMODAL CORRIDORS

Develop and complete plans for multimodal transportation improvements in broad travel corridors. Such plans should be well coordinated with land use plans and focused on improving accessibility, mobility and safety. Better align roadway and utility planning to maximize transportation outcomes.

4. DEVELOP FREIGHT MASTER PLAN (FMP); FOSTER USE OF SMALL DELIVERY TRUCKS

Develop a Freight Master Plan (FMP) with goals to improve the efficiency and reduce the GHG emissions impact of goods movement; when possible revise freight access requirements in zoning/building codes to support adoption of smaller, more efficient delivery vehicles.

PILOT PROJECT

MOBILITY CORRIDOR PLAN

Identify and implement a complete land use and multimodal mobility corridor in a high priority transit / bicycle corridor for pilot project in mobility corridor planning

Photo by NelsonNygaard

Integrated planning and prioritization of walking, cycling, transit and goods movement in resource and right-of-way management – especially at the corridor level – can be transformative, reducing GHG emissions while enhancing accessibility, mobility and other city goals.

KEY OUTCOMES

- City planning, investment, resource allocation, and project/program implementation aligned with adopted GHG goals
- Low-GHG emission modes of access and mobility are prioritized in mid- to long-term planning and investment decisions

CO-BENEFITS / SYNERGIES WITH OTHER STRATEGIES

- Improves public health by improving air quality, promoting active transportation and improving safety for all users (pedestrians, bicyclists and drivers)
- Improves mobility, accessibility and connectivity
- Increases affordability by reducing the combined costs of housing and transportation
- Promotes transportation investment and management decisions that favor sustainable transportation
- Enhances positive impact of other strategies (e.g. investment in transit capital improvements and operations)
- Increases person access to downtown and key business districts
- Freight Master Plan (FMP) supports city and regional economic development and job creation
- Reforms load zone requirements in Urban Centers and Villages to allow smaller delivery vehicles, supports more efficient goods movement and removes a barrier to development of Transit Communities

OPPORTUNITIES AND BARRIERS

- Shifting to a more performance-based process for resource allocation and project/program implementation requires consideration of the needs of all communities in planning, resource allocation and service delivery to address equity issues
- Prioritizing walking, cycling and transit, and adopting a Freight Mobility Plan requires coordinated planning to maximize safety and balance the movement of people and goods in key corridors. Coordination and integration of planning (as recommended for the Mobility Corridor Planning Pilot Project) can reduce barriers to implementation of mode specific strategies.



PEDESTRIAN FACILITIES & SERVICES

Increase Completeness and Quality of Pedestrian Network

Trips that shift from driving to walking due to pedestrian enhancements will be relatively short trips, so GHG emissions reduction is expected to be modest. Nevertheless, investments in pedestrian facilities are essential components of complete communities and enable transportation and land use strategies that reduce emissions (i.e., most transit trips start and end with a walk to the stop/station). Safe and functional pedestrian facilities and amenities that make walking more interesting can encourage people to use transit more or to park once to visit multiple destinations.

~0.5 to 1.0 %

Estimated reduction in GHG by 2050 (Enables other transport and land use strategies that reduce emissions)

1. IMPLEMENT "SAFE ROUTES" PROJECTS

Implement priority Safe Routes to School (SR2S), and Safe Routes to Transit (SR2T) projects to improve pedestrian connections to schools, transit, and business districts; ensure improvements benefit vulnerable populations (i.e., enlist students and non-profits to conduct pedestrian safety audits)

2. ENHANCE SIDEWALKS, CROSSINGS AND PUBLIC SPACE IN URBAN CENTERS AND URBAN VILLAGES

Improve sidewalks and crossings in Urban Centers and Urban Villages (in conjunction with transit service and facility enhancements), in accordance with priorities in the Pedestrian Master Plan (PMP).

3. CONNECT URBAN CENTERS AND URBAN VILLAGES

Widen sidewalks and improve crossings of arterial streets to connect Urban Centers/Villages.

PILOT PROJECT

SAFE ROUTES TO TRANSIT (SR2T)

Initiate a SR2T program and implement pedestrian facility improvements based on audits of pedestrian safety risks accessing frequent transit stops.

PILOT PROJECT

TRANSFORM STREETS TO PUBLIC SPACES

Reallocate excess portions of the public rights-of-way in selected areas from general traffic uses to public/pedestrian spaces such as public plazas, "parklets," and laneways (converting alleys to active pedestrian spaces with retail frontage) to support compact, complete communities in Urban Centers and Villages, especially outside of Downtown.

Top Image from NelsonNygaard



Investments in priority **Safe Routes to School and Safe Routes to Transit projects, sidewalk and crossing enhancements**, along with critical **pedestrian connections for Urban Centers and Villages** will improve the safety and viability of walking in Seattle.

KEY OUTCOMES

- Increases sustainable travel options, improving the walk mode share in the city
- Improves access for vulnerable populations
- Provides public space essential for complete transit oriented communities

CO-BENEFITS / SYNERGIES WITH OTHER STRATEGIES

- Promotes social equity by improving access to goods, services, employment, cultural and recreational opportunities for vulnerable populations
- Promotes change in the transportation culture
- Provides public space essential for complete transit oriented communities
- Improves public health by improving air quality, pedestrian safety, and facilitating active transportation.
- Improves vitality of local retail, restaurant, and business districts

OPPORTUNITIES AND BARRIERS

- Widening sidewalks in some locations may reduce the space available for natural drainage and trees
- Real and/or perceived traffic and parking impacts of dedicating limited right-of-way space that is currently used for general purpose travel or parking to new sidewalks, crossings and other pedestrian space presents challenges in some areas
- Gaining community support to transition active street rights-of-way to public spaces/plazas can be a challenge

COST EFFECTIVENESS

Moderate

Estimated cost per metric ton of GHG emissions eliminated is \$7,700 per year (2030). Enhances cost-effectiveness of other strategies (e.g. transit, TDM, etc.)



BICYCLE FACILITIES AND SERVICES

Increase the extent, completeness, quality and priority of citywide bicycle networks, parking and supportive services to provide safe and direct bicycle access and mobility for users of all ages and abilities.

Currently, about 3.6% of commute trips made by City of Seattle residents are made by bicycle¹. This strategy includes implementation of new on- and off-street bicycle facilities and services, designed to substantially increase bicycle mode share by accommodating users of all ages and abilities.

~ 3%-5%

Est. potential reduction of GHG emissions from passenger transportation (2050)

1. CYCLE TRACKS

Develop cycle tracks (bikeways within the street right-of-way that are physically separated from motor vehicle and pedestrian traffic) within the Center City, with connections to and through Urban Villages. The cycle track network should be integrated with the citywide network of on- and off-street bicycle facilities in the Seattle Bicycle Master Plan (BMP).

2. GREENWAYS

Develop a citywide network of neighborhood greenways on traffic calmed residential streets. Greenways should be connected with off-street trails to create a citywide network of routes for low-stress bicycle travel that is fully integrated with the network of on-street and off-street facilities in the BMP.

3. BIKE PARKING

Expand quality on-street bike racks (e.g. racks that have multiple points of contact), and facilitate provision of secure off-street bike parking, including several full-service bike stations (with attended parking) in the Center City, Urban Centers/Villages and transit stations/stops (Develop a complementary “Bike ‘n Ride” outreach program)

4. INTERSECTION PRIORITY AND SAFETY IMPROVEMENTS

Implement signal timing, bike boxes, ‘No Right Turn on Red’ restrictions and other intersection safety and priority treatments for bicycles in primary bicycle corridors citywide

PILOT PROJECTS

CENTER CITY CYCLE TRACKS

Implement a cycle track on at least one corridor through Center City

BIKE SHARING

Implement a bike sharing program with pods in the Center City and adjacent neighborhoods.

¹ 2010 American Community Survey

BICYCLE FACILITIES AND SERVICES

Citywide networks of **cycle tracks**, and **greenways**, with expanded **bike parking**, and with appropriate **intersection improvements** can make cycling a first-choice for more people and more types of trips.

KEY OUTCOMES

- Improves access and mobility
- Reduces barriers to cycling for trips to and within Center City and Urban Villages
- Provides safe and comfortable facilities for people of all ages and abilities, including the “willing but wary” who do not ride frequently

Cost Effectiveness:

High

Estimated cost of \$5,000-\$15,000 per metric ton of GHG emissions reduced (Note: enables other highly cost-effective projects/services)

CO-BENEFITS / SYNERGIES WITH OTHER STRATEGIES

- Improves health by increasing active transportation, reducing pollution and improving safety for cyclists, drivers and pedestrians
- Reduces local air and water pollution
- Improves access to and economic vitality of local retail districts
- Improves access to transit
- Facilitates development of dense, transit oriented communities (TOC) by reducing demand for on-street and off-street parking
- Complements TDM and pricing strategies by providing a cost-effective, low-impact alternative to driving
- Development of bicycle facilities generates jobs at a higher rate per dollar of investment than highway/road construction projects.

OPPORTUNITIES AND BARRIERS

- There is significant latent demand for bicycle facilities on low-traffic residential streets, and growing community support for bicycling
- Bicycle facilities and services compete for funding with roads and transit, which dominate travel mode-shares in most parts of the state
- Bicycle facilities are highly cost-effective compared to other capital projects
- Greenway system enjoys significant community support and low barriers to system implementation
- Development of on-street bike facilities requires tradeoffs in the use of limited street rights-of-way for other purposes
- Providing and managing secure off-street parking facilities may require partnerships with private property owners in some areas



TRANSIT FACILITIES & SERVICES

Invest in transit facilities and new service to improve frequency, reliability, and user experience

Investments in a comprehensive citywide network of frequent transit lines, including high capacity transit facilities, and capital improvements in priority bus corridors, can improve transit speed, frequency and reliability. In turn, these improvements reduce GHG emissions by attracting a higher share of trips to transit (particularly non-commute trips), and by enabling the development of compact communities, where transit is a first option and many common destinations are within walking distance.

~2-5%

Estimated direct reduction of GHG emissions from passenger transport by 2050 (Note: Enables substantial GHG emissions reduction from TDM and land use-related strategies)

1. HIGH CAPACITY TRANSIT

Implement four HCT Corridors in the Seattle Transit Master Plan (TMP) by 2030, including Ballard-Downtown, U-District-Downtown, Central Area-Downtown, and Westlake-International District. Build out HCT in all TMP priority corridors by 2050.

2. TRANSIT SERVICE AND INFORMATION

Add transit service to high demand routes and upgrade service on other routes to expand the Frequent Service Network (reduction estimate assumes 100% increase in service within the City of Seattle by 2030, and a 200% increase in service by 2050). Support development and operation of real-time transit information and wayfinding applications.

3. BUS PRIORITY CORRIDORS

Implement capital improvements to Priority Bus Corridors identified in the Seattle TMP (including dedicated bus lanes, bulb-outs, stop/shelter improvements, and intersection priority treatments) by 2030. Expand bus priority treatments to all frequent bus corridors by 2050.

PILOT PROJECT

MOBILE MULTIMODAL INFO / WAYFINDING APP

Support development and operation of mobile information application(s) for real-time multimodal access, mobility and wayfinding information. Consider open source competition to spur innovative applications.

Photo by Oran Viriyancy



Creating **high capacity transit corridors** and expanding the **Frequent Transit Network** in Seattle improves mobility and access; supports development of compact Transit Communities.

KEY OUTCOMES

- Improves transit frequency, capacity, speed, reliability, comfort, and convenience
- Expands transportation transportation choices
- Improves person mobility within the City
- Allows transit to attract and accommodate more non-work trips
- Reduces VMT and GHG emissions

COST EFFECTIVENESS

Moderate

Stand-alone capital improvements to the transit network are expensive, but combined with added service, support development of walkable Transit Communities

CO-BENEFITS / SYNERGIES WITH OTHER STRATEGIES

- Improves citywide mobility and access to neighborhood business districts
- Reduces household transportation costs
- Improves socialequity by reducing costs and expanding travel choices for very low-income, transit-dependent households
- Transit improvements, particularly HCT and priority bus corridors are essential to accommodate growth in compact Transit Communities that reduce GHG emissions by encouraging walking, cycling and use of transit
- Fosters growth and economic vitality
- Improves public health by reducing local and regional air pollution (improving air quality) and encouraging active transportation (walk and bike access to transit)

OPPORTUNITIES AND BARRIERS

- Near-term funding opportunities include a potential renewal of the “Bridging the Gap” levy (funding would need to be prioritized for investments in pedestrian, bicycle and transit infrastructure and services).
- With legislative authorization, regional road pricing may be a sustainable long-term funding source for both transit capital and operations improvements.
- King County Metro and Sound Transit currently lack funding to maintain service levels. Sate legislation improving funding options for transit districts has the potential to allow service increases. The City can help shape how additional funding would be directed.
- Implementation of HCT and bus priority requires exclusive transit lanes in selected segments.



TRANSPORTATION DEMAND MANAGEMENT

Use pricing, policies, outreach, and incentives to shift trips to walking, cycling, transit, and other shared transport modes

Proposed Transportation Demand Management (TDM) actions will reach new markets and reinforce current efforts. Among the opportunities are expanding effective education and incentive programs, supporting innovation and the efficient use of existing resources, and implementing new financial incentives that have been demonstrated to reduce driving. TDM actions leverage the capital investments made in walking, bicycling, and transit to maximize the effectiveness of those investments.

~15-20%

Est. reduction in GHG emissions from passenger transportation, resulting from shifting trips to walking, cycling, and transit (2050)

1. EXPAND AND IMPLEMENT “SAFE ROUTES” EDUCATION PROGRAMS

Expand education and outreach elements of the Safe Routes to School (SR2S) Program, and implement a Safe Routes to Transit (SR2T) Program as recommended in the Seattle Transit Master Plan (TMP).

2. EXPAND THE ORCA PASSPORT PROGRAM; ADD NEIGHBORHOOD ORCA PASSPORT PROGRAM FOR RESIDENTS OF MULTI-UNIT BUILDINGS IN TRANSIT COMMUNITIES

Work with TMAs and community groups to develop, market, and negotiate bulk purchase of a universal transit pass (similar to an ORCA Business Passport; good for travel on all regional services) for all residents of new multi-unit residential buildings in each participating Transit Community.

3. ENCOURAGE SHARED TRANSPORT: VANPOOLS, RIDESHARE, CARSHARE, FLEETSHARE

Encourage and support vehicle sharing and ridesharing, including (1) an instant ridesharing pilot project, (2) implementing a fleet share pilot project (making City motor pool vehicles available for shared use), (3) expanding King County Metro Vanpooling, and (4) supporting implementation of peer-to-peer carsharing.

4. PARKING CASHOUT

Require provision of cash or other transportation benefits in lieu of parking subsidies (free or below market rate parking) for all establishments with 100 or more employees that offer such subsidies.

5. EXPAND CUSTOMIZED TRAVEL OPTIONS TOOLS AND OUTREACH PROGRAMS

Provide customized trip planning info directly to individuals and through employers, property managers, etc.

TRANSPORTATION DEMAND MANAGEMENT

PILOT PROJECTS

FLEET SHARING PILOT PROJECT

Support a major institutional/corporate fleet sharing pilot project (sharing fleet vehicles outside of business hours, or contracting with a carsharing service for business mobility)

VOLUNTARY GHG REDUCTION PROGRAM

Pilot a voluntary Transportation GHG Emissions Reduction Program for employers or neighborhood organizations.

KEY OUTCOMES

- Improved transportation choices.
- High impact (e.g., Parking cashout can reduce commute-related VMT and emissions at selected employment sites by 10-12%; ORCA passports may reduce VMT by up to 10-11%).
- Fleet sharing eliminates GHG emissions by reducing private vehicle ownership and VMT; and by replacement of older, higher-emitting vehicles with new, fuel efficient models.

COST EFFECTIVENESS

HIGH

Strategies leverage investments made in walking, bicycling and transit.

CO-BENEFITS/SYNERGIES WITH OTHER STRATEGIES

- All initiatives improve public health by reducing air pollution and encouraging active transportation.
- All initiatives promote social equity by reducing subsidies for vehicle owners and increasing incentives for travelers using non-auto modes (including transit-dependent populations).
- Transportation Management Associations (TMAs) enable other high impact strategies (e.g. adoption of ORCA Passports and shared parking) and can catalyze local TDM planning and cultural change.
- Fleet sharing can reduce the space required for vehicle storage.

OPPORTUNITIES AND BARRIERS

- Leverages the investments made in pedestrian, bicycling and transit facilities and services.
- Need to increase facilities and services to accommodate increased modes to meet the increased demand.
- Contracting out for shared fleet vehicles may raise labor and contracting issues for some institutions/employers.
- A voluntary GHG emission reduction program would likely be widely supported; key to success is to inspire widespread adoption of GHG emissions reduction goals by individuals.
- Expanding the ORCA Passport Program requires collaboration with King County Metro and Sound Transit.



CONGESTION PRICING & MANAGEMENT

Advocate for regional authority to implement variable congestion pricing and other road user fees with a portion of revenue dedicated to multimodal transportation

Variable pricing of all limited-access highways and major arterials in the region is the highest impact and most cost-effective strategy for reducing GHG emissions in the transportation sector. Tolling is in effect on SR-520, SR-167, and the Tacoma Narrows Bridge (and will apply to the SR-99 tunnel). Construction and maintenance of other roads is subsidized through other taxes and fees. Regionwide congestion pricing can reduce traffic (including diversion) and GHG emissions, and may generate substantial revenue to fund other strategies.

~10-15%
Est. reduction in GHG emissions from shifting trips to walking, cycling, and transit (2050)

\$1.9 to 6.1 billion
Generated per year in regional funding for transportation

1. ADVOCATE FOR REGIONAL CONGESTION PRICING

Advocate for legislative authorization and regional implementation of variable congestion pricing on all limited access highways and potentially also on major arterials. Legislation should provide regional authority to set toll rates and objectives, and to dedicate revenues to multimodal transportation, including transit, bicycle, and pedestrian projects.

2. ADVOCATE FOR AND IMPLEMENT OTHER ROAD USER FEES

Further evaluate and advocate for legislative authorization of pricing mechanisms that also provide revenue to sustainable transportation options (impact fees, higher license fees for 2nd and 3rd vehicles, street utility fees, vehicle pollution taxes, etc).

3. EDUCATE ON THE BENEFITS OF PRICING

Host City- sponsored forums that address need for pricing strategies to meet city economic, social and environmental goals.

LEGISLATIVE ACTION

ADVOCATE FOR STATE LEGISLATIVE REFORM

Legislative changes are needed to enable tolling of existing general-purpose lanes on state and federal highways, to provide a regional entity with authority to set and adjust toll rates and establish tolling objectives, and to permit the expenditure of toll revenues on multimodal transportation improvements and TDM programs region-wide. To fund other GHG emissions reduction actions and strategies in this plan, revenues would need to be distributed to local jurisdictions.



KEY OUTCOMES

The *Seattle Variable Tolling Study*, commissioned by SDOT, upon the recommendation of the Green Ribbon Commission states the following City interests in tolling¹:

- Reduce Greenhouse Gas Emissions
- Generate revenue to fund transit and other transportation choices (up to \$6.1 billion region-wide)
- Improve the throughput of people and goods on roadway
- Provide reliable travel times, especially for transit and freight

COST EFFECTIVENESS

VERY HIGH

Reduces GHG emissions while generating revenue to fund implementation of other reduction actions/ strategies

CO-BENEFITS / SYNERGIES WITH OTHER STRATEGIES

- Reduces peak hour traffic congestion and associated delay in the movement of people and goods
- Reduces local air and water pollution
- Improves public health by improving air quality, encouraging a shift to active modes of transportation (cycling and walking)

OPPORTUNITIES AND BARRIERS

- Tolls will have disproportional cost impact on low-income travelers unless toll rates are adjusted by income, and/or revenues are dedicated to transit and non-motorized transportation projects and services
- Requires state level actions and legislative authorization
- Tolling of major arterial roadways (in addition to limited-access highways) may reduce diversionary impacts

¹ SDOT, *Seattle Variable Tolling Study* (2009), p. 3.



PARKING MANAGEMENT

Manage parking to maximize access and reduce unnecessary travel

The most important use of on-street and public off-street parking in downtown and commercial districts is for short-term customer access to businesses and services. Poorly managed parking can incent employees and other long-term parkers to make auto trips and use parking that could be better used for short-term access to businesses. When parking is scarce, drivers burn more fuel searching for parking – up to 30% of traffic in some major downtowns is due to drivers searching for a parking stall. Strategies that use basic market pricing to manage parking can enhance access to neighborhoods and businesses, while reducing GHG emissions – a true win - win strategy.

~5-10%
Est. reduction in GHG emissions (in 2050), by shifting trips to walking, cycling, and transit

1. EXPAND USE OF ON-STREET PARKING PRICING WHERE DEMAND IS HIGH

Price on-street parking (expanding meter and/or permit zones) in areas where free on-street parking is typically congested to improve access and encourage use of non-auto modes. Adjust rates as necessary to maintain parking availability and dedicate revenue to access and streetscape improvements within newly established Parking Benefit Districts (see Pilot Project).

2. REFORM OFF-STREET PARKING REQUIREMENTS IN TRANSIT COMMUNITIES

Eliminate parking minimums and establish maximums in Transit Communities while protecting adjacent areas from spillover impacts.

3. DEVELOP A NON-RESIDENTIAL PARKING SPACE TAX

Advocate for authority to levy a per space tax on off-street parking which can be tiered to account for climate impacts based on factors such as the transit accessibility and density of the area.

4. REQUIRE OR INCENT PARKING “UNBUNDLING”

Adopt requirement or incentives for developers that parking be separated from commercial space and residential units in lease and sale agreements.

5. IMPROVE CUSTOMER PARKING INFORMATION

Expand the E-Park program in the Center City and enhance web and mobile/smart phone user interfaces. Develop parking signage regulations that require consistent communication of parking rate information.

PILOT PROJECT

DEVELOP A PARKING BENEFIT DISTRICT (PBD)
Implement a PBD in a Transit Community business district with demand for on-street parking pricing



PARKING MANAGEMENT

KEY OUTCOMES

- Reduces driving to and within the Center City and Seattle's busiest neighborhoods
- Increases developable, productive space in Transit Communities
- Reduces demand for road space keeping transit moving and making room for cyclists
- Improves access to and economic vitality of local retail districts

COST EFFECTIVENESS

HIGH

Reduces GHG emissions while generating revenue to fund implementation of other GHG reduction actions/ strategies

CO-BENEFITS / SYNERGIES WITH OTHER STRATEGIES

- Decreases potential conflict between pedestrians, bicyclists and automobiles
- Provides opportunity for new citywide and local neighborhood revenue sources
- Facilitates development of dense, transit oriented communities (TOC) by reducing demand for valuable real estate that can be used for development
- Complements TDM and pricing strategies by providing a cost-effective, low-impact alternative to driving for trips under 5 miles

OPPORTUNITIES & BARRIERS

- Highly cost-effective compared to capital project strategies
- Increase turn-over of auto-oriented retail parking (parking space tax)
- Market benefits of performance-based management in terms of customer convenience and increased access to businesses to defray the perception that parking pricing is a revenue strategy
- Pricing strategies are politically controversial
- Perceived negative impacts to local retail businesses
- Need to frame parking regulatory and pricing changes in terms of community benefits
- In developing and implementing parking management plans in local business districts, maintain access and curb priority for load/unload zones and commercial deliveries.



VEHICLE FUELS & TECHNOLOGIES

Transition to Clean Vehicle Fuels and Technologies; Emissions-Free Electric Power

Seattle can be a leader in technology and efficiency for public transit, the private vehicle fleet and goods movement. The Seattle Transit Master Plan (TMP) calls for taking advantage of the City's hydroelectric power by expanding the emissions-free Electric Trolley Bus network. Although the state and federal governments regulate vehicle fuels and fuel economy, the City may play an important role by advocating for appropriate standards that support climate protection, and by encouraging the efficient use of vehicles through fleet sharing/carsharing, and local adoption of more efficient fuels and vehicles, including Electric Vehicles (EV's) and hybrids.

~50%

Estimated reduction in GHG emission by 2050; (Notes: assumes next generation biofuels are market ready by 2030)

1. CONVERT TRANSIT ROUTES TO ELECTRIC POWER

Take advantage of Seattle's emissions-free hydroelectric power by substantially increasing the number of bus route miles planned for conversion to Electric Trolley Bus (ETB) service by 2020 (converting all in-city routes to ETB, or other emissions-free power by 2050).

2. ADVOCATE FOR FUEL CARBON STANDARD

Advocate for a State Low-Carbon Fuel Standard (as an alternative to renewable fuel standards) that reduces carbon content of fuels over time, with a clear tie to GHG emissions reduction goals

3. SUPPORT PLUG-IN-READY PROJECT

Provide necessary public support (infrastructure, policy, planning, etc.) for private electric vehicle adoption. GHG emission reduction estimate assumes 5% adoption by 2020, 20% adoption by 2030, and 80% adoption by 2050.

4. SUPPORT DEVELOPMENT AND ADOPTION OF NEXT GEN. BIOFUELS

Support development and local adoption of biofuels, including aggressive near-term adoption of the best first-generation biofuels (sugar ethanol and equivalents), and development of second-generation bio fuels such as cellulosic ethanol (which may have life-cycle GHG emissions that are 70% lower than petroleum).

LEGISLATIVE ACTION

Advocate for adoption of a State Low-Carbon Fuel Standard

Photo by Flickr-user Alan Cordova, Creative Commons License



Seattle and Washington as a whole will benefit from reduced carbon emissions with a **fuel carbon standard**, expansion of the **Electric Trolley Bus** network, and increased use of **electric vehicles** and **next-generation biofuels**

KEY OUTCOMES

- GHG emissions reduced by conversion of diesel bus routes to Electric Trolley Buses (ETB)
- GHG emissions reduced in the mid- to long-term as a result of bio-fuel and EV adoption in accordance with low-carbon fuel standards

CO-BENEFITS / SYNERGIES WITH OTHER STRATEGIES

- All strategies benefit public health through improved air quality
- Electric trolley buses provide faster/more reliable service on hills and quiet operations in neighborhoods

OPPORTUNITIES AND BARRIERS

- Unlike many other strategies evaluated, shifting to alternative fuels would not have significant co-benefits in terms of reduced congestion, connectivity or improved transportation choices or social justice and shared prosperity outcomes
- The timing of the availability of market ready sustainable next generation biofuels is uncertain
- EV and bio-fuel marketing and development are best led by the private sector; limited role for the public sector may include City of Seattle support for research, development and implementation
- Increased electric vehicle use could reduce revenues from fuel taxes for roadway maintenance and investments in non-auto modes
- Significant investment in charging stations and other infrastructure and services is required to bring electric vehicles “to scale” in Seattle and the Central Puget Sound region.
- Increased utilization of electric vehicles will require investments in electric power conservation and generation, and may reduce fuel tax receipts
- Trolley bus conversion requires substantial up-front capital expenditure that may be difficult to fund without complementary capacity improvements and/or service enhancements

COST EFFECTIVENESS

High

Conversion to electric trolley buses requires substantial up-front investment, but provides long-term returns; Support for adoption of electric vehicles (including transit), and low-carbon fuels may be low-cost – high-impact strategies.

TRANSPORTATION/TDM FUNDING OPTIONS

FUNDING OPTION	ESTIMATED ANNUAL REVENUE POTENTIAL (MILLIONS (M) \$, 2012)	DIRECT VMT REDUCTION POTENTIAL	REQUIRES LEG. CHANGES	NOTES
Regional Road Pricing	\$1,900 m - \$6,100 m ⁱ (regionwide)	Very High	✓	To fund recommended City-led actions in this plan, funding should be returned to local jurisdictions and eligible for expenditure on walking, cycling, and transit facilities and services (including TDM). Prices should be set and adjusted to maximize GHG reductions.
Motor Vehicle Excise Tax	\$20-\$30 m ⁱⁱ	Low	✓	Near-term funding option; Legislative approval would be required to vary MVET rate based on the estimated life-cycle GHG emissions of each vehicle.
Bridging the Gap Levy Renewal	\$30-\$40 m ⁱⁱⁱ	None		Funding from property taxes and other local sources. Current levy expires in 2015. Offers best revenue potential for high priority actions. For GHG reduction purposes, prioritize allocation of revenue to pedestrian, bicycle, and transit investments.
Transit Communities Development Authority	\$150-\$250 m ^{iv}	None	Leg. changes req. to use Tax Incr. Finance(TIF)	City may establish an entity responsible for implementation of planned improvements in transit-served Urban Centers/Villages (Transit Communities). Supports land use strategies. May be eligible for multiple funding sources.
Expanded Public Parking Pricing	\$10-100 m ^v	Moderate		Includes expanding areas subject to on-street meter & permit parking pricing, where demand warrants, and expanded pricing of publicly-owned off-street parking facilities.
Off-Street Parking Space Tax	\$40-\$265 m ^{vi}	Moderate	✓	Legislative authority would be needed to levy a per-space tax on all public and private off-street parking (May substitute for commercial parking tax; may be limited to non-residential parking)
Vehicle License Fee	\$25-\$30 m ^{vii}	Low	Leg. changes req. to allow variable fees.	Seattle TBD authorized to levy an additional \$80 per year VLF with voter approval. With legislative changes, fee may vary based on vehicle fuel efficiency; estimated life-cycle GHG emissions.
Vehicle Miles Traveled (VMT) Fee	\$180 m (at \$0.05/mile) to \$380 m (at \$0.10/mile)	High	✓	Implementation challenge is to regularly monitor/check VMT. Revenues should be eligible for expenditure on walking, cycling, and transit facilities and services (including TDM).
Vehicle Trip Generation (VTG) Fee	TBD based on nexus study	High	✓	Assess a multimodal transportation impact fee on new development based on estimated Vehicle Trip Generation (VTG), as an alternative to environmental review of infill development /TOD projects (Fee revenue to be invested in multimodal transportation improvements that fully mitigate environmental/traffic impacts of estimated VTG).



ⁱ Tolling of all limited access highways in the Central Puget Sound Region projected to generate \$1.9 billion/year. Comprehensive regional tolling of all limited access highways and major arterials projected to generate \$6.1 billion/year, regionwide (PSRC).

ⁱⁱ Assumes the MVET is levied citywide at the same rate and schedule collected by the Seattle Monorail Authority from 2002-2006, generating approximately \$25 m/year (Note: this revenue stream was approximately 30% less than projected by the Elevated Transportation Company, resulting in the dissolution of the SMA in January 2008).

ⁱⁱⁱ Current BTG levy was initially projected to raise \$365 m over 9 years.

^{iv} For Reference, the Portland Development Commission had revenue of \$188 m in 2010.

^v Top revenue generation estimate based on PSRC estimate of potential revenue generation from "Area parking pricing," as cited in: Final Seattle Tolling Study Report, Table 3-1, "Destination 2030 Tolling Concepts Modeling Summary Results."

^{vi} Low-end of revenue generation estimate based on Litman, T., and D. Carlson (2010), Evaluating Seattle Parking Tax Options, Victoria: Victoria Transportation Policy Institute (rate of approx. \$47/stall per year). High-end estimate based on current rates in Sydney Australia, which levies an annual tax of \$800 AU (\$850 USD) per stall for non-residential parking in the Central Business District, and \$400 AU (\$425 USD) per stall for non-residential parking in neighborhood business districts. Applying the lower of the two rates to Litman's mid-point estimate of the total number of non-residential off-street stalls in Seattle, we estimate a high-end revenue generation potential of \$265 m/year.

^{vii} The STBD has state authority to levy up to \$80 VLF (which would generate approximately \$27m/year). The City or STBD may seek additional authority to raise fees above \$80/year.