

Mitigation Option T-1: Transit, Ridesharing, and Commuter Choice Programs

Mitigation Option Description

The goal of this set of activities is to have the state provide the leadership and resources necessary to help create a transit system that connects activity centers on both an intra- and an inter-regional basis. Success at meeting the overall emissions reductions goals for 2020, 2035, and 2050 will require that substantial reductions be made in emissions from personal transportation. This will require that the state develop a reliable funding system that allows for near-term success and long-term major investments with the flexibility to invest in any type of solution. The set of activities and investments represented here attempts to reflect the diversity of needs across the state: what works in dense urban areas will be different than what is effective in low-density suburban or rural areas. The transit capital, operating support, ridesharing and trip reduction strategies assembled allow for local needs to drive the process.

Mitigation Option Design

Transit

- **Capital:**
 - Park and ride capacity (new and expansion),
 - Bus rapid transit,
 - Vehicles,
 - Passenger facilities (multi modal terminals, shelters)
 - Technology improvements (real-time customer information, signal preemption, etc.)
 - Expansion of Operations and Maintenance facilities
 - Pedestrian and bus stop accessibility and safety projects

- **Operating:**
 - Providing operating support to local transit agencies,
 - Improve access within and between centers,
 - Provide new service for developing areas,
 - Increase resources available to elderly and disabled population,
 - Provide funding for advocacy of use of transportation alternatives

- **Funding:**
 - Increase Regional Mobility Grant state program from \$40 million per biennium to \$100 million per year,

Increase funding to ensure the mobility of persons with special transportation needs

Provide funding for major investments in high capacity transit to match local and regional investments.

Ridesharing

- Capital: Meet vanpool fleet expansion needs of local service providers and provide funding for service and replacement of vans
- Operating: Fund statewide promotions, including incentives to employers and individuals and assistance in ridesharing
Create statewide marketing program to promot carpooling through education and incentives.
Fund incentives including subsidized transit and vanpool fares for all State employees.
- Cost: Increase annual state funding from \$8 million per biennium to \$12 million per biennium.
- Outcomes: 500 additional vans per year = 3,500 daily SOV reduced.

Commuter Choice

- Capital: N/A
- Operating: Increase state CTR program with emphasis on direct employer support,
Implement Growth and Transportation Efficiency Centers in all designated urban centers,
Fund all counties to implement CTR-like programs to more employers,
Expand rideshare tax credit
Provide incentives to employers to allow telecommuting
Implement major initiative to reach travelers at the home end of the trip: mobility education for 600,000 households per year for 10 years. This approach is critical to creating change in low density residential and employment areas.
- Cost: \$10 million for CTR, \$10 million for GTEC, \$6 million for residential programs

Goals:

Timing:

Parties Involved: Transit Agencies, State of Washington

Implementation Mechanisms

TBD

Related Policies/Programs in Place

[Insert text here]

Types(s) of GHG Reductions

[Insert text here]

Estimated GHG Savings and Costs per MtCO₂e

[Insert text here]

Data Sources:

Quantification Methods:

Key Assumptions:

Contribution to Other Goals

[Insert text here]

Contribution to Long-term GHG Emission Goals (2035/2050):

Job Creation:

Reduced Fuel Import Expenditures:

Key Uncertainties

[Insert text here]

Additional Benefits and Costs

[Insert text here]

Feasibility Issues

[Insert text here]

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

Mitigation Option T-2: State, Regional, and Local VMT and GHG Reduction Goals and Standards

Mitigation Option Description

While new technologies and cleaner fuels are vital to reducing GHG emissions, as long as annual vehicle miles traveled (VMT) continues to grow, we'll never be able to meet the state's 2020, 2035, and 2050 goals. Reduction of vehicles miles traveled –through a partnership between the state, regional, and local level– is critical. Regional entities' and local governments' ability to achieve VMT reductions also depends a great deal upon other complementary policy tools considered in the CAT process.

In 2007 lawmakers passed legislation that committed the state to develop a plan to gradually reduce per capita VMT. Vehicle miles traveled is commonly used a primary predictor in GHG output. This option builds on that initial state action and would consist of the state establishing a schedule of targets for reducing statewide VMT and working with local governments or regional planning organizations to achieve those targets.

Mitigation Option Design

Goals:

1. Develop a statewide plan with targets to reduce annual VMT.
2. Apportion local/regional jurisdictions their responsibilities of that statewide plan.

The state should adopt a schedule of statewide VMT reduction targets, similar to the emissions reductions schedule in E.O. 07-02. For example, the state would commit to a plan to reduce per capita VMT by X thousand/million annual trips by 2020, Y thousand/million by 2035, and Z thousand/million by 2050. The state would design a plan that consists of both state actions and investments to achieve the targets, as well as an expectation from local jurisdictions.

After the state has committed to a schedule of per capita VMT reductions, the state will then apportion to RTPOs their responsibility in achieving that goal. Here, RTPOs would adopt a local vehicle miles reduction commitment in a low-med-high range. Local governments would adopt policies in their comprehensive plans that are consistent with those commitments, and development and infrastructure decisions would have to be consistent with the VMT reduction plan. RTPOs would review local government transportation elements for consistency with the GMA and the regional transportation plan, as currently required. In concept, agencies would provide guidance, including a

range of design treatments, approaches, and best practices to offer in order to reach the identified benchmark.

Timing:

The legislature would direct a panel to determine the state plan and targets by December 1, 2008.

Agencies would develop guidance and best practices in 2009, with phased implementation at the local and regional level in 2009 and 2010. Early adopters could receive incentive money from the state, and all jurisdictions would be given additional revenue authority for implementation.

Parties Involved:

- State Legislature
- CTED
- DOT
- Regional air quality control agencies
- Cities and Counties
- Regional Transportation Planning Organizations

Implementation Mechanisms

TBD

Related Policies/Programs in Place

[Insert text here]

Types(s) of GHG Reductions

[Insert text here]

Estimated GHG Savings and Costs per MtCO₂e

[Insert text here]

Data Sources:

Quantification Methods:

Key Assumptions:

Contribution to Other Goals

[Insert text here]

Contribution to Long-term GHG Emission Goals (2035/2050):

Job Creation:

Reduced Fuel Import Expenditures:

Key Uncertainties

[Insert text here]

Additional Benefits and Costs

[Insert text here]

Feasibility Issues

[Insert text here]

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

Mitigation Option T-3: Transportation Pricing

Mitigation Option Description

Growing traffic congestion, particularly in the urban areas of our state, leads to increased vehicle idling, reducing fuel efficiency and adding significant amounts of pollutants and greenhouse gas emissions. The way we pay for transportation also influences our decisions on when, where, and how we travel – or don't travel. A major reason for congestion is that there is little relationship between how a person travels and the cost, personal, social, and environmental of that travel. Pricing sets a direct economic relationship between the costs and benefits of when, where, and how a person travels; by doing so, pricing manages demand and increases the efficiency of the transportation system and reduce adverse environmental impacts. When variable costs of automobile travel are comparatively low, transit and ride sharing have difficulty competing.

Pricing works on the principle of supply and demand. Congestion is demand so high that the system can no-longer efficiently handle the amount of traffic. Pricing introduces or expands the use of user fees linked to existing congestion conditions to manage demand. As demand increases for a facility or service, the cost for that facility or service raises. With a cost associated with the use of a facility, travelers begin to think and react more to when, where, and how they travel. Travelers will alter their travel, reducing the demand for the facility or service and thus enable it to operate at an efficient level. For example, peak-period pricing for air travel has become one of the most significant methods to balance supply and demand by encouraging travelers to alter their travel schedules.

Applying pricing to surface transportation is a recent development, but pricing has been used successfully in other public service sectors such as water and electricity. Faced with high demand for water during peak periods water utilities introduced variable pricing strategies to promote water conservation and discourage peak period usage. Many electric utilities were faced with a similar peak demands. Through variable pricing of peak periods and conservation strategies, the utilities manage demand. In transportation, pricing can do the same thing, manage the demand on the system to reduce congestion, improve efficiency, and lessen the environmental impacts of travel.

Mitigation Option Design

Transportation pricing has many variations. Some examples include:

- HOT (High Occupancy Toll) or Express Toll Lanes. In April 2008, WSDOT will begin operations of the first HOT Lane in the state. The SR 167 corridor is heavily congested, but has excess capacity in the HOV (High Occupancy Vehicle) Lane. The HOT Lane will allow non-HOV drivers to use the lane for a fee. The fee will be variable, changing based on the travel conditions and amount of capacity available in the HOT Lane. By managing the amount of vehicle in the lane through price, the HOT Lane will maintain transit, vanpool, and carpool travel times within the corridor, increase the efficiency of the lane, and increase vehicle efficiency.

WSDOT is exploring the use of HOT or Express Toll Lanes on I-405 as well as conversion of the existing HOV system within the Puget Sound.

- Mileage based insurance. King County is beginning a research project to test the potential for mileage based insurance with Unigard Insurance. The study will explore how insurance priced on when, where, and how you drive will influence driver behavior.
- Corridor Pricing. The Lake Washington Urban Partnership proposal between WSDOT, King County, and the Puget Sound Regional Council are exploring the potential of tolling the SR 520 corridor, prior to construction, to test the use of tolling, technology, transit, and teleworking to reduce congestion within the corridor. King County, the Washington State Department of Transportation and the Puget Sound Regional Council are seeking a U.S. Department of Transportation Urban Partnership Grant that would include The Lake Washington Urban Partnership proposal. An announcement on the grant application will be made in early August.
- Mileage based pricing, greenhouse gas emissions pricing and vehicle weight charges. As vehicles using alternative fuels, such as biofuels and electricity, become increasingly available, there will be a need to replace lost gas tax revenues. Additional sources of revenue should not discourage alternative fuels. Oregon is experimenting with mileage based revenue, but other systems need to be explored.
- Parking pricing [tbd]
- Transit service and pricing [tbd]

Goals:

Timing:

Parties Involved:

Implementation Mechanisms

TBD

Related Policies/Programs in Place

[Insert text here]

Types(s) of GHG Reductions

[Insert text here]

Estimated GHG Savings and Costs per MtCO₂e

[Insert text here]

Data Sources:

Quantification Methods:

Key Assumptions:

Contribution to Other Goals

[Insert text here]

Contribution to Long-term GHG Emission Goals (2035/2050):

Job Creation:

Reduced Fuel Import Expenditures:

Key Uncertainties

[Insert text here]

Additional Benefits and Costs

[Insert text here]

Feasibility Issues

[Insert text here]

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

Mitigation Option T-4: Promote Compact and Transit-Oriented Development

Mitigation Option Description

Ensure that growth management plans promote compact and transit-oriented development to reduce VMT and GHG emissions. Transportation is the single largest source of GHG emissions in Washington State and we will not achieve our goals without significant reduction to its share of the omissions. Washington has already taken steps to manage growth and development and has begun efforts to reduce VMT, but with large-scale growth projected across the state we must improve and build upon these efforts. Compact and transit-oriented development and VMT reduction are feasible and necessary.

Mitigation Option Design

Goal: Develop and implement growth management policies and strategies that include funding, incentives and restrictions that:

Limit urban growth area expansions while designating urban centers for employment and housing growth, increasing urban residential densities, and encouraging “brownfield” development.

Promote transit-oriented development, including requiring planning/zoning for transit-oriented development to accompany high capacity transit investments, and declaring transit-oriented development a highway purpose that reduces congestion on public roadways (similar to public transportation facilities legislation).

Promote amenities that make high density living more attractive and encourage walking and biking.

Timing: Amend the Washington State Growth Management Act in 2008.

Parties Involved:

State Legislature

CTED

Cities and Counties

Regional Transportation Planning Organizations

Transit Agencies

Developers
Environmental Organizations

Implementation Mechanisms

TBD

Related Policies/Programs in Place

[Insert text here]

Types(s) of GHG Reductions

[Insert text here]

Estimated GHG Savings and Costs per MtCO₂e

[Insert text here]

Data Sources:

Quantification Methods:

Key Assumptions:

Contribution to Other Goals

[Insert text here]

Contribution to Long-term GHG Emission Goals (2035/2050):

Job Creation:

Reduced Fuel Import Expenditures:

Key Uncertainties

[Insert text here]

Additional Benefits and Costs

[Insert text here]

Feasibility Issues

[Insert text here]

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

Mitigation Option T-5: Quantifying Greenhouse Gas Emissions from Transportation Projects

Mitigation Option Description

Transportation projects such as road expansion, land development impacting transportation systems, increasing public transit, bicycle lanes, sidewalks, other transportation modes, and infrastructure all influence the amount of greenhouse gas (GHG) pollution emitted from the transportation sector.

Current measurement tools need to be more comprehensive and accurate because the amount of GHG pollution emitted from the transportation sector and individual projects is influenced by more than just the project itself. Assumptions about how people will travel (e.g. walk, bus or in a single occupancy vehicle) will greatly influence the estimates of GHG emissions associated with transportation projects. As a result, the increased availability and quality of public transit, bicycle lanes, sidewalks, other transportation modes, and infrastructure also influence the amount of GHG pollution and need to be more accurately evaluated.

State and local agencies have influence over a number of decisions that affect these projects. Both in the transportation planning and the projects planning process, transportation agencies should be required to evaluate and provide information to decision-makers, including the public, about current and future GHG emissions associated with transportation system plans and projects. This is especially important for major transportation projects that include alternatives to capacity expansion such as HOV lanes or other options which reduce GHG emissions. Decision-makers need to be given information regarding impacts on emissions to allow for a more informed debate.

Mitigation Option Design

Calculating CO₂ emissions associated with an individual transportation project is conceptually quite simple. However, in practice, this analysis can be quite complicated when analyzing multiple projects since transportation models often do not accurately predict impacts of land use and travel behavior, particularly from induced demand from road expansions.

In order to accurately predict CO₂ emissions associated with transportation projects, transportation planning agencies will need to evaluate and improve current models. Specifically, transportation agencies need to improve model predictions by evaluating the impact of model assumptions such as:

- Changes in land use patterns and the resulting impact on citizen decisions regarding transportation modes. New research demonstrates that connecting neighborhood areas with sidewalks and other pedestrian-friendly options promotes walking over driving.¹
- Transportation agencies should consider the potential impact of induced demand associated with transportation projects.
- Assumptions about potential impacts of transportation projects on citizen decisions to use public transit, sidewalks, high-occupancy vehicle lanes, congestion pricing, etc.

In addition, transportation agencies should identify the uncertainties associated with the model assumptions and predictions, and indicate whether or not the models are likely to over-estimate or under-estimate pollution emissions. Estimates must be provided to public officials, decision-makers, and the public before selecting transportation improvement projects and options within selected projects. Finally, the long-term impact of the projects on traffic patterns, land use, and other considerations need to be incorporated into the analysis.

Goals:

Timing:

Parties Involved:

Implementation Mechanisms

TBD

Related Policies/Programs in Place

[Insert text here]

Types(s) of GHG Reductions

[Insert text here]

Estimated GHG Savings and Costs per MtCO₂e

[Insert text here]

Data Sources:

Quantification Methods:

Key Assumptions:

Contribution to Other Goals

[Insert text here]

Contribution to Long-term GHG Emission Goals (2035/2050):

¹ Frank, L. *Reducing CO₂ Emissions and Improving Air Quality in the Puget Sound Region: The Built Environment Potential*. Prepared for the Puget Sound Clean Air Agency, Seattle WA. June 2007.

Job Creation:

Reduced Fuel Import Expenditures:

Key Uncertainties

[Insert text here]

Additional Benefits and Costs

[Insert text here]

Feasibility Issues

[Insert text here]

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

Mitigation Option T-6: Improvements to Freight Railroads and Intercity Passenger Railroads

Mitigation Option Description

Significant improvements to freight rail and intercity passenger rail will allow the Washington State rail network to increase volumes and reduce vehicles on the road. A shift of passengers and freight to an efficient rail system decreases overall greenhouse gas emissions by 2-4 times, as opposed to over the road traffic. Additional improvements to the rail system and equipment handling technologies can reduce direct emissions. A robust and efficient rail network is a cornerstone for sustaining a thriving economy under future carbon emission constraints and provides many social, economic, and environmental benefits.

Mitigation Option Design

In 2004, the Washington Public Ports Association released its “Rail Capacity Study” which detailed specific statewide improvements that will be necessary to meet future demands for freight and passenger rail. This report projected system needs to 2025 based on increases to freight movement and passenger transport using industry estimates and the Washington State Department of Transportation’s “Intercity Passenger Plan.” If all of these improvements are implemented, the system will be able to support both increased freight and passenger demands well within the practical capacity.

Several unique challenges face the design and implementation of these strategic improvements. Public funding would not likely be used to fund the majority of rail improvements, due to private ownership of the rail system. Rather, public funds would be used to incent private investments. This type of public private partnership would be used either to accelerate improvements or to help align improvement priorities more closely with public needs. A significant prerequisite, then, is to organize and prioritize the approximately 2 billion dollars worth of identified improvements in the Washington State rail system according to public needs, rates of growth, and system dependencies. This exercise would support the goals of this TWG priority item based on the underlying assumption that better rail service inherently leads to system-wide greenhouse gas reductions – reductions that occur when freight and passenger movement shifts to a mode that is much more efficient on a per-ton-mile basis.

Additionally, to satisfy the goals of the Governor’s Climate Initiative, improvements to the rail system or associated equipment that can have direct impacts on greenhouse gas emissions also need to be quantified. Existing technologies, such as anti-idle equipment,

newer and more efficient locomotive engines, and hybrid equipment can add significantly to capital improvement costs. These added costs may not contribute to increased return on capital and thus may only be weighed as public priorities to the extent they are assigned a specific value for their emission reduction potential. Likewise, investments in future technologies such as fully-electric equipment and electrified switch yards, require a distinct public commitment to funding emission reductions from hydrocarbon-based fuels.

Goals:

- 1) Decrease inefficiencies and limitations in existing WA rail network by reducing bottlenecks and increasing storage.
- 2) Maximize the amount of freight that is moved by rail in order to decrease reliance on truck transport as freight volumes increase
- 3) For intercity travel, shift passengers from road to rail.
- 4) Standardize the use of anti-idle equipment and strategies on all locomotives and develop the use of fully-electric locomotives and rail support systems.

Timing:

Parties Involved:

Implementation Mechanisms

TBD

Related Policies/Programs in Place

[Insert text here]

Types(s) of GHG Reductions

[Insert text here]

Estimated GHG Savings and Costs per MtCO₂e

[Insert text here]

Data Sources:

Quantification Methods:

Key Assumptions:

Contribution to Other Goals

[Insert text here]

Contribution to Long-term GHG Emission Goals (2035/2050):

Job Creation:

Reduced Fuel Import Expenditures:

Key Uncertainties

[Insert text here]

Additional Benefits and Costs

[Insert text here]

Feasibility Issues

[Insert text here]

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

Mitigation Option T-7: Diesel Engine Emission Reductions and Fuel Efficiency Improvements

Mitigation Option Description

Reducing diesel soot emissions and reducing the use of diesel fuel help reduce greenhouse gas emissions. Reducing diesel emissions also has the collateral benefit of improving air quality and reducing air toxics exposure.

Mitigation Option Design

Washington State has developed very successful emission reduction programs for public fleets with the Puget Sound Diesel Solutions program, the Washington State Clean School Bus program and a program by Washington State Ferries to reduce fuel use and emissions. In addition, the 2007 Legislature has provided additional funding for reducing diesel emissions from remaining public fleet engines. Reducing diesel fuel use through fuel efficiency and biofuel substitution directly reduces greenhouse gas emissions. Reducing diesel soot also reduces climate forcing and could decrease impacts on snow melt from deposition of darker colored soot on snowfields and glaciers according to NASA research conducted by Dr. James Hansen.

A number of opportunities exist in the public and private sector to further reduce diesel soot emissions and reduce diesel fuel use. Some of the fuel use reduction opportunities include broader use of anti-idling technologies currently available but not widely used for locomotives, trucks and other diesel engines; engine rebuilds, repowers and replacements with more fuel efficient engines or add-on technologies; augmenting or replacing fossil fuel use with biodiesel, biogas, natural gas or other low carbon fuels; and replacement of freight handling equipment with battery electric, hybrid or plug-in electric hybrid equipment.

Washington State Ferries has identified a number of possible additional fuel use reduction projects which could be implemented with appropriate funding. Washington ports are poised to continue to grow rapidly and as new equipment is acquired or old equipment is replaced the ports plan to explore advanced technologies to reduce diesel emissions and diesel fuel use as outlined in the recently released Draft Northwest Ports Clean Air Strategy. The draft plan also includes provisions related to reducing emissions from ships.

Reduction in private fleet diesel emissions and diesel fuel use can also be accomplished through programs similar to California's Carl Moyer grant program or the Texas Emission Reduction Program and through programs such as the Puget Sound Diesel

Solutions program, EPA’s National Clean Diesel Campaign and the West Coast Collaborative, which targets diesel emission reductions and fuel savings in West Coast states.

Other options may include placing diesel emission reduction equipment and fuel use requirements into state and local government public construction contracts to leverage private fleet conversion or creating regulatory requirements to switch fuels and retrofit existing engines and equipment in various fleet sectors.

Goals: Establish targets and timetables for fuel use reduction and installation of diesel retrofit equipment in the sectors identified above. Provide funding for grant and incentive programs to augment the current funding provided by the Legislature in the upcoming legislative session.

Timing:

Parties Involved:

Implementation Mechanisms

TBD

Related Policies/Programs in Place

[Insert text here]

Types(s) of GHG Reductions

[Insert text here]

Estimated GHG Savings and Costs per MtCO₂e

[Insert text here]

Data Sources:

Quantification Methods:

Key Assumptions:

Contribution to Other Goals

[Insert text here]

Contribution to Long-term GHG Emission Goals (2035/2050):

Job Creation:

Reduced Fuel Import Expenditures:

Key Uncertainties

[Insert text here]

Additional Benefits and Costs

[Insert text here]

Feasibility Issues

[Insert text here]

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

Mitigation Option T-8:

Local Transportation Financing Tools and Bicycle and Pedestrian Infrastructure Improvements

Mitigation Option Description

To succeed, policy initiatives to reduce automobile use and promote compact communities must be accompanied by policies and funding to make it easier to walk, bike and use transit. There is a growing body of research demonstrating that communities with traditional neighborhood design, connected pedestrian and bicycle networks, available transit and a rich mix of uses are strongly correlated with decreased automobile use.²

One obstacle to success is that prior planning for local streets has often prioritized the movement and storage of cars over transit, walking and biking. Another obstacle is that local governments do not have sufficient funding resources to maintain basic street infrastructure and invest in transit, biking and walking.

This option proposes that the state explicitly prioritize funding for transportation facilities that support transit, biking and walking, as well as provide significant new taxing authority for local government to support these priorities. This would be accompanied by policies at the state and local level to require that projects are designed to encourage transit, biking and walking needs (e.g., “Complete Streets” policies and context sensitive design).³

Mitigation Option Design

The following policy and funding initiatives are recommended:

1. The state adopt a “Complete Streets” policy for its spending supported by context sensitive design standards. Complete Street policies require that new streets, or streets undergoing major maintenance, be designed to accommodate all users.
2. The state requires local governments to adopt Complete Street policies for their spending, or provides substantial incentives to localities to do so, e.g, making

² See LUTAQH Study (find cite). FrankL, Pivo G. Impacts of Mixed Use and Density on Utilization of Three Modes of Travel: Single Occupant vehicle, Transit, and Walking. TRB 1995; 1466: 44-52. – Key study supports Healthscape or LUTAQH

³ Cite to Seattle Resolution, and www.completestreets.org – WSDOT’s Context Sensitive Design Executive Order : <http://www.wsdot.wa.gov/ta/operations/localplanning/pdf/1028.pdf>

- state transportation grants to localities contingent on project consistency with Complete Street policies.
3. The state should rewrite its Highway Design Manual to require all new engineering and construction facilitate the safe, convenient movement of bicycles and pedestrians along and across all non-limited access corridors unless exceptional circumstances exist.
 4. In addition to making required ADA improvements, the state and local agencies should incorporate low cost safety solutions that improve conditions for bicycling and walking in maintenance projects like paving projects.
 5. The state should increase funding available for bicycle and pedestrian projects and programs to \$150 million in the near term (as recommended in Washington's Transportation Plan) and more in the long term, and expand the existing State Bicycle and Pedestrian Safety Program to include projects and programs that support safety and mobility.
 6. The state should also provide local governments with new taxing authority and more flexibility with cities share of gas tax to finance local improvements. If these taxes were based on vehicle usage (e.g., miles traveled or fuel used) or vehicle type (weight, EPA mpg), it could provide further incentives for users to choose more efficient vehicles, or shift their trips to less polluting modes. The goal would be provide sufficient funding for localities to build out their pedestrian and bicycle networks, invest in inviting streetscapes to accompany new development, and retrofit existing streets to prioritize transit, biking and walking. Similarly, local transit agencies should be granted additional voter-approved revenue sources
 7. The state should provide grants to localities to develop plans and policies to encourage transit, biking and walking, including public education, safety, engineering, and revisions to local land use policies. Land use changes could include requiring shower and bike storage facilities in new buildings, design requirements to promote a good walking environment, and designing new buildings to incorporate transit stops.
 8. The State should provide grants to local governments to identify and study the gaps in their bicycle and pedestrian infrastructure and determine how these gaps can be best filled by street-related improvements as well as those associated with other public right-of-ways (e.g., parks, inter-street links, specialized structures).

A number of local agencies, WSDOT, FHWA have established the goal of increasing bicycling and walking to at least 15 percent of all trips, and simultaneously reducing the number of bicyclists and pedestrians killed or injured in traffic crashes by at least 10 percent. Currently, bicycling and walking account for 5 percent of all trips statewide and over 6 percent of work trips in urban areas.

The state and local agencies should work together to ensure progress on these goals is being made and evaluate additional goals, more aggressive goals for urban areas as most bicycling and walking trips are made inside cities.

Goals:**Timing:****Parties Involved:****Implementation Mechanisms**

TBD

Related Policies/Programs in Place

[Insert text here]

Types(s) of GHG Reductions

[Insert text here]

Estimated GHG Savings and Costs per MtCO_{2e}

[Insert text here]

Data Sources:**Quantification Methods:****Key Assumptions:****Contribution to Other Goals**

[Insert text here]

Contribution to Long-term GHG Emission Goals (2035/2050):**Job Creation:****Reduced Fuel Import Expenditures:****Key Uncertainties**

[Insert text here]

Additional Benefits and Costs

[Insert text here]

Feasibility Issues

[Insert text here]

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

Mitigation Option T-9: Transportation System Management

Mitigation Option Description

Transportation System Management is an interactive approach that allows transportation agencies to actively manage the transportation system to increase the efficient operations of the system and gives users better options in choosing paths that best work for them. This approach incorporates increased system performance, reliability, and safety which will reduce congestion delay and the negative environmental impacts of congestion. This option also aims to reduce inefficient of stop-and-go traffic and vehicle idling, creating smoother flows and more efficient fuel consumption for users of our roadway networks.

In addition, Transportation System Management needs the development of specific benchmarks and goals that establish definite improvements to better move people and goods throughout the state, with associated funding packages and programs to accomplish them. The greater the efficiency in the movement of people and goods, the greater the greenhouse gas benefit and connection within our economic systems.

Mitigation Option Design

A successful Transportation System Management package will include funding and implementation of a broad array of driver communication, accident response systems, and approaches that will reduce blocking of our existing network, in addition to expanding and connecting important pieces of the network to function better as a whole. We recommend the following strategies and connecting system pieces include implementation of:

- **Active Traffic Management (ATM).** The real-time variable control of speed, lane movement, and traveler information within a corridor and can improve traffic flow in the corridors where it is applied, including:

Speed Harmonization/Queue Warning/Lane Control - the ability to smooth traffic flows and speeds as vehicles approach congested areas and reduce the speed of vehicles as they approach queues. In Europe, this strategy has been shown to reduce both primary and secondary accidents, reducing non-recurrent congestion. It has also been found to reduce congestion, queuing, and improve throughput. Speed control allows the highway to continue operating nearer to its highest throughput capacity as volumes increase.

Traveler Information and Dynamic Re-Routing - providing Traveler Information opportunities including travel times and the availability of alternative routes around incidents and congested areas; dynamic re-routing allows WSDOT to affect the driver decisions of those unfamiliar (and familiar) with the area by modifying destination guide-signs.

- **Traffic Management Center(s) (TMC).** Provides centralized data collection, analysis, and real-time management of the transportation system. System management decisions are based on in-road detectors, video monitoring, trend analysis, and incident detection.
- **Traffic Signal Synchronization.** The timing and operations of the traffic signal operations are synchronized to provide an efficient flow or prioritization of traffic, increasing the efficient operations of the corridor and reducing unwarranted idling at intersections. The system can also provide priority for transit and emergency vehicles.
- **Managed Lanes** are lane(s) which have special operational characteristics and restrictions that are intended to manage the operations of the lane(s). Management of the facility is typically a combination of physical design which limits access and regulation, and may include pricing. Examples are:

High Occupancy Vehicle (HOV) lanes – are lane(s) exclusively used by transit, vanpools, and vehicles with a minimum number of occupants (typically a minimum of two or three). Full funding for the completion of the system is needed. In addition, periodic re-examination of the system will allow for improved use by deciding which areas should be maintained at 2+ vehicle capacity vs other locations that would be better served with 3+ vehicle capacity requirements where demand is high and where further extensions of HOV facilities would best serve the traveling public.

Reversible Express Lanes – Lane(s) that change directions during peak periods to manage peak demand periods.

Direct Access Ramps – Highway ramps which provide direct access to a managed lane. An example is a direct access ramp that links a HOV lane to a park & ride facility.

Ramp Bypass Lane – A lane that provides priority bypass of ramp meters for vehicles.

Truck Only Lanes – a lane(s) exclusively used for trucks.

Transit Only Lane or Bus Ways – a lane(s) exclusively used for transit.

Green Lanes – a lane(s) exclusively used for vehicles which meet specified environmental impact levels.

Limited Access Highways – are highways with limited access points.

High Occupancy Toll (HOT) or Tolled Express Lane – Lane(s) that charges tolls as a means of regulating access to or the use of the facility, to maintain travel speed and reliability. This type of facility will need additional evaluation to assure a balance between social justice in the use of the lanes. Social justice may be achievable

through use of the collected fees to go back into the system to improve transit service for low income areas, improvements areas with high traffic demand, and the overall transportation corridor that the HOT lane(s) serves.

[Note: We included this pricing section because it is part of overall Transportation System Management goals and assumptions for smoother flowing traffic and managed lanes – it may also have a home in the T-3 Priority Policy Draft]

- **Pricing.** The use of direct user fees (tolls) to manage demand on the transportation system. We recommend that strategies include a mix of the following options.
 - Fixed* – the toll is fixed and may vary by vehicle class or other set distinguishers.
 - Time of Day Schedule* – the toll varies by time of day, rising during set peak periods and lowering during non-peak periods.
 - Dynamic or Variable* – the toll changes to maintain a set operation performance based on real time traffic conditions. As congestion builds, the toll increases to reduce demand. The toll will rise to the point where it begins to influence drivers decisions to use the facility at that time. Additionally, trend analysis can be used to augment real time data to anticipate congestion and proactively adjust tolls.
 - Electronic Tolling* – Tolls are collected electronically at travel speed, no toll booths or delays. Tolls can be collected through electronic transponders installed in the car or by video license plate recognition.
- **Increase Incident Response opportunities** – detection, assistance, and clearing of incidents on the highway so as to assist travelers, increase safety, and reduce non-reoccurring delay caused by incidences. This strategy is best served on limited access roadways where it is hard for drivers to find an alternative route to their destinations. However, perhaps expand incidence response activities to high volume and accident prone local streets and major arterials if appropriate.
- **Provide Additional Traveler Information** - providing real time and projection of travel conditions and transit information to the public to aid in their decision about how, when, and where to travel.
- **Increase number of multi-modal connection points.** Co-location of bus, ferry vessel and light-rail terminals would encourage more walk-on passengers. Improved system of coordinating the different regional bus transit systems so that the transfer from one system to the other is seamless (this is an issue of scheduling and location of stops).

For Washington State Ferries: Optimize efficiency in operations, scheduling and/ or varying vessel size based on demand at different times of the day on a route, as currently seen in bus system management. This includes identifying and implementing feasible changes in vehicle loading/ unloading procedures, traffic lane configuration, off terminal

signal management, sailing frequency and crossing time, and, **vessel speed control/optimization** to reduce GHG emissions.

To effectively apply these strategies, we need comprehensive planning, funding, and long-term direction. However, there are key areas where many of the strategies can focus. For example:

Question: Over how many miles of roadway should we apply these strategies?

Answer: Elements of these strategies are applicable throughout the state. The “full technology corridor” is applicable to urban areas.

Question: Are these strategies only applicable for urban areas?

Answer: It is applicable where ever there might be congestion, extra need for traveler information, or special conditions such as major construction or seasonal traffic issues.

Question: What about rural sections of major roadways like I-5 from Tumwater to Vancouver? I-90 from Issaquah to Spokane?

Answer: There is the potential (i.e., Snoqualmie Pass) or were seasonal congestion occurs.

Question: How does adding roadway capacity fit into this?

Answer: This is intended to improve operation, it does not eliminate the need for specific capacity improvements but can alter the timing and scope of needed improvements.

Question: What type of effect might we see with these strategies to help reduce VMT? **Answer:** These strategies can reduce the environmental impacts of each mile driven.

Goals: Reduce greenhouse gas emissions (typically carbon dioxide) through development of a smoother flowing roadway system on which vehicles can travel in their more fuel efficient speeds and driving cycles.

Possible compatible goal (efficient use of existing facility/system): Through appropriate pricing of high demand roadways during peak travel periods, use cost as a method to encourage driver use of the facility during less congested periods of the day at lower cost.

Timing: Perhaps by 2015 or 2020. Procuring funding, development projects and implementing them takes time to accomplish.

Parties Involved: Application to freeways, US roadways, and State Roads (highways) involves a mixture of oversight by the Federal Highway Administration and others within US Department of Transportation like Federal Transit Administration, Washington State Legislature, and Washington State Department of Transportation

Roadway networks within unlimited access locations (for example city streets, county roads) are under the jurisdiction of City Councils, Mayors, Public Works Departments, County Councils, and County executives.

Ferry options involve Washington State Ferries/Washington State Department of Transportation and the Washington State Legislature, and appropriate labor unions.

Multi-modal options include rail operators, Washington State Ferries/Department of Transportation, transit agencies, city and county governments.

Implementation Mechanisms

Possible mechanism includes the federal funding in Urban Partnership Grants.
http://ops.fhwa.dot.gov/tolling_pricing/value_pricing/resources/documents/upa.htm

Related Policies/Programs in Place

Washington Transportation Plan policies for preservation and for environmental quality and health : http://www.wsdot.wa.gov/NR/rdonlyres/083D185B-7B1F-49F5-B865-C0A21D0DCE32/0/FinalWTP111406_nomaps.pdf

System efficiency and tolling studies <http://www.wstc.wa.gov/Tolling/default.htm>

Types(s) of GHG Reductions

[Insert text here]

Estimated GHG Savings and Costs per MtCO₂e

[Insert text here]

Data Sources:

Quantification Methods:

Key Assumptions:

Contribution to Other Goals

[Insert text here]

Contribution to Long-term GHG Emission Goals (2035/2050):

Job Creation:

Reduced Fuel Import Expenditures:

Key Uncertainties

[Insert text here]

Additional Benefits and Costs

[Insert text here]

Feasibility Issues

[Insert text here]

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

**Mitigation Option T-10:
Incentives to Promote Low-GHG Vehicle Technologies**

Mitigation Option Description

Mitigation Option Design

Goals:

Timing:

Parties Involved:

Implementation Mechanisms

TBD

Related Policies/Programs in Place

[Insert text here]

Types(s) of GHG Reductions

[Insert text here]

Estimated GHG Savings and Costs per MtCO₂e

[Insert text here]

Data Sources:

Quantification Methods:

Key Assumptions:

Contribution to Other Goals

[Insert text here]

Contribution to Long-term GHG Emission Goals (2035/2050):

Job Creation:

Reduced Fuel Import Expenditures:

Key Uncertainties

[Insert text here]

Additional Benefits and Costs

[Insert text here]

Feasibility Issues

[Insert text here]

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

Mitigation Option T-11: Low Carbon Fuel Standard

Mitigation Option Description

This option seeks to reduce GHG emissions by decreasing the carbon intensity of all passenger vehicle fuels sold in Washington. The Low Carbon Fuel Standard (LCFS) would require all fuel providers in Washington to ensure the mix of fuel they sell into the Washington market meet, on average, a declining standard for GHG emissions measured in CO₂ equivalent gram per unit of fuel energy sold. The State should regulate quality standards for low carbon fuels. Low carbon fuels include, but are not limited to, biodiesel, cellulosic ethanol, hydrogen, compressed natural gas, liquefied petroleum gas, electricity, and low carbon blends such as E10 or E85. The standard would be measured on a lifecycle basis in order to include all emissions from fuel production to consumption.

Fuel providers (defined as refiners, importers, and blenders of passenger vehicle fuels) will need to demonstrate on an annual basis that their fuel mixtures provided to the market met the low carbon standard. Options for compliance may include: blending or selling increasing amounts of lower carbon fuels, using previously banked credits, and purchasing credits from fuel providers who earned credits by exceeding the standard. Penalties for noncompliance will be determined during the implementation process.

Mitigation Option Design

Goal levels: Create a Low Carbon Fuel Standard for transportation fuels sold in Washington that would reduce carbon intensity of Washington's passenger vehicle fuels by at least 10 percent by 2020. In addition the reduction standard and program timing, the following issues should be addressed in creating the program:

- Credit Generation and Trading
- Lifecycle Model and Boundary Conditions

Timing: Following design period, program would be implemented prior to 2020. Fuel providers would be required to meet 10% reduction standard no later than 2020.

Parties Involved: Fuel providers, State Department of Ecology, State Department of Community, Trade and Economic Development, State Department of Agriculture

Implementation Mechanisms

TBD

Related Policies/Programs in Place

[Insert text here]

Types(s) of GHG Reductions

[Insert text here]

Estimated GHG Savings and Costs per MtCO_{2e}

[Insert text here]

Data Sources:

Quantification Methods:

Key Assumptions:

Contribution to Other Goals

[Insert text here]

Contribution to Long-term GHG Emission Goals (2035/2050):

Job Creation:

Reduced Fuel Import Expenditures:

Key Uncertainties

[Insert text here]

Additional Benefits and Costs

[Insert text here]

Feasibility Issues

[Insert text here]

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD