

TO: Seattle City Council
FROM: Transportation Sector Working Group
DATE: September 14, 2010
SUBJECT: Carbon Neutrality in Seattle – Transportation Sector

Overview

In June, 2010, the Seattle City Council asked Seattle thought leaders to develop recommendations that City staff and elected officials can implement in the next one to three years to help move Seattle toward carbon neutrality. This memo provides the City Council requested recommendations for Seattle's transportation sector. It explains the purpose behind these recommendations, the context of Seattle's history in addressing climate change, the process used to develop the recommendations, and a set of prioritized short-, medium-, and long-term carbon neutrality strategies.

Based on the findings from this process, the City should do the following to move towards carbon neutrality in the transportation sector in the next one to three years:

- Use pricing mechanisms to increase the cost of driving while further incentivizing walking, bicycling and transit;
- Integrate transportation and land use planning to achieve compact, walkable communities connected with high-capacity transit; and
- Prioritize infrastructure investments that promote walking, bicycling and transit, while avoiding the implementation of projects that promote automobile use.

Purpose

In 2010, the City Council established carbon neutrality as one of its [sixteen Council priorities](#). Recognizing the wealth of projects and initiatives happening in our community today that are enabling our city to reach its climate protections goals, the Council sought recommendations from a broad set of community thought leaders on what Seattle is and should be doing to continue on the path towards carbon neutrality.

Context

The City Council's commitment to carbon neutrality builds on Seattle's history of environmental leadership, including efforts in 2000 to create the [first carbon neutral electric utility](#), and the 2005 effort to get cities across the nation to commit to meet the Kyoto Protocol targets for greenhouse gas reduction and [Seattle's Climate Action Plan](#).

Seattle's Climate Action Plan states, "**Since motor vehicle emissions are the single largest source of climate pollution in Seattle, the City must do even more to provide climate-friendly transportation choices such as public transit, biking and walking** – and to encourage greater use of those alternatives." The plan also lists a series of strategies to reduce greenhouse gas emissions from the transportation sector (additional information on context available in *Appendix A – Context*).

In 2008, the City of Seattle Office of Sustainability and Environment (OSE) completed an inventory of the Seattle's 2008 GHG emissions. Seattle's emissions come from three main sources: transportation, buildings, and industry. The inventory found:

- **"At 62 percent, the transportation sector is the largest source of emissions**, and fully 40 percent of emissions come from cars and trucks on Seattle streets."
- **"Transportation emissions remain Seattle's biggest challenge**. Transportation is the only sector in Seattle for which GHG emissions are still increasing, now roughly seven percent above 1990 levels."

The report concludes that, "**We will also need a paradigm shift in our transportation planning. We will no longer be able to simply estimate increased demand due to population growth and then plan to meet that peak demand with increased capacity. We will have to use our road resources more efficiently. As we plan our transportation infrastructure and build a system to move people and goods, we must prioritize GHG reductions.**"

Also in 2008, the State's Climate Action Team's Transportation Implementation Working Group released a report to address the ESSHB 2815 requirements regarding "most promising" GHG reduction strategies and vehicle miles traveled (VMT) reduction strategies for transportation. The Transportation Implementation Working Group concluded that, "Washington must reexamine how investments in transportation infrastructure and services are made at all levels of government. **Washington State should make funding decisions and pursue revenue generating strategies that stimulate behaviors that support climate change solutions and that discourage behaviors that contribute to the problem.**"

While the City of Seattle has demonstrated leadership in addressing climate change and publicly recognized the need to face the challenge in the transportation sector, the City has not begun planning for the equally large challenge of peak oil. **Virtually every scientific model predicts that a peak in oil production will occur sometime between 2005 and 2020, and a disturbing majority predicts that oil production will peak in the next few years. Peak oil provides our city with another powerful reason to take immediate and bold action to reduce our dependence on fossil fuels in the transportation sector.**

"...a shortfall of oil supplies caused by world conventional oil peaking will sharply increase oil prices and oil price volatility." – US Dept. of Energy, 2006

This existing work provides a strong foundation of recommendations at both the state and city level to reduce GHG emissions in the transportation sector and supports the case for immediate and bold action.

Process

Streets for All Seattle (SFAS) is a coalition of over 60 community, labor, business, transportation and environmental groups who believe that walking, bicycling and transit should be the easiest means of transportation in Seattle. SFAS took the lead in organizing and coordinating over 60 thought leaders from the transportation sector to participate in the process of developing recommendations to the City of Seattle. Participants came from the public, private and non-profit sectors respectively, in addition to anyone who wished to get involved by sharing information on the campaign website and Facebook page (additional information on process available in *Appendix B – Process*).

The process involved two meetings and a survey where the group brainstormed, identified and prioritized actions to move the transportation sector in Seattle towards carbon neutrality; identified the barriers to implementing the prioritized actions; and prioritized short-, medium-, and long-term strategies the City could implement to overcome the barriers, the final result of which is found in the below set of recommendations to the City of Seattle.

Transportation Sector Carbon Neutrality Strategies

Over the course of the meetings with local transportation thought leaders, the SFAS team identified three main categories of barriers the City must overcome in order to achieve carbon neutrality in the transportation sector: 1) governance/legal; 2) psychological; and 3) fiscal/financial. Within each category,

the transportation thought leaders prioritized short-, medium-, and long-term strategies the City could take to move towards carbon neutrality.

Despite the fact that air and marine transportation combined represent 22 percent of Seattle's GHG emissions, the group decided to focus on strategies to reduce GHG emissions from road transportation (40 percent of Seattle's GHG emissions) as the City has significantly more jurisdictional control over the use of our streets opposed to the use of our airspace or waterways.

Strategies to Overcome Governance/Legal Barriers:

- *Short:* Conduct planning for transportation using inter-governmental, cross-departmental, and collaborative efforts that integrate transportation and land use elements. Use the upcoming Transit Master Plan as an opportunity to implement this strategy.
- *Medium:* Codify the use of multi-criteria decision making analysis to prioritize city infrastructure projects that help achieve carbon neutrality. For example, the City could amend the Complete Streets policy to prioritize carbon neutrality as an element of decision making for right-of-way allocation; or build this priority into the Resolution for the proposed citizen's advisory committee that's part of the proposed transportation benefits district. In addition, the City should empower Seattle Department of Transportation (SDOT) management to fast track projects that score highly using this prioritization methodology.
- *Long:* Mandate that vehicles entering and operating within city limits be carbon neutral. Use taxing and/or tolling mechanisms to achieve this goal.

Strategies to Overcome Psychological Barriers:

- *Short:* Increase the price of parking using existing mechanisms (meters, Commercial Parking Tax) to help expose the true cost of driving to individuals. Use revenue from parking to fund outreach, education, and transportation demand management (TDM) strategies. Explore the option for residents to purchase a discounted all-access transit pass, similar to the ORCA Passport for businesses or the UPASS.
- *Medium:* Increase the cost of driving using new pricing mechanisms (tolling roadways, congestion pricing, increasing the price of parking) to further expose the true cost of driving.
- *Long:* Implement land use planning that provides incentives to not drive, including the creation of compact and walkable neighborhoods that are connected with high capacity transit.

Strategies to Overcome Fiscal/Financial Barriers:

- *Short:* Disincentivize automobile use by introducing new taxes/fees (gas tax, parking fees, tolling) on car travel. Use revenues to improve the transit system and the non-motorized transportation network.
- *Medium:* Upzone the existing and planned high-use transit corridors to accommodate higher density. Use station-area planning to integrate land use and transportation elements through mixed-use development that gives residents walkable access to essential services and amenities.

- *Long*: Avoid building mega projects that accommodate ease of automobile use. Instead, invest in infrastructure that promotes transit, walking, and biking.

Key Themes

Through the process of identifying barriers to becoming carbon neutral in the transportation sector and potential strategies the City may use to overcome those barriers, a number of key recurring themes emerged. These themes form the basis of SFAS's recommendations to City Council on how to move Seattle towards carbon neutrality in the transportation sector in the next one to three years.

Streets For All Seattle and the community of transportation thought leaders recommend that the City of Seattle:

- **Planning** – Take a holistic and integrated approach to transportation and land use planning in order to achieve the long-term goal of creating compact and walkable neighborhoods that are connected with high capacity transit;
- **Pricing** – Use pricing mechanisms to increase the cost of actions that produce disproportionate amounts of carbon emissions – such as single-occupancy driving – while further incentivizing carbon neutral transportation options such as walking, biking, and taking transit; and
- **Priorities** – Prioritize infrastructure investments that promote walking, bicycling and transit, while avoiding the implementation of projects that promote automobile use.

These recommendations parallel the recommendations of the Seattle Climate Action Plan and the Transportation Implementation Working Group and provide the City Council with an additional framework for moving Seattle towards carbon neutrality in the transportation sector.

Appendix A – Context

In 2010, the City Council established carbon neutrality as one of its [sixteen Council priorities](#). This commitment builds on Seattle's history of environmental leadership, including efforts in 2000 to create the [first carbon neutral electric utility](#), and the 2005 effort to get cities across the nation to commit to meet the Kyoto Protocol targets for greenhouse gas reduction and [Seattle's Climate Action Plan](#).

The City of Seattle has demonstrated strong leadership over the past decade in addressing climate change. On February 16, 2005, the day the international Kyoto Protocol became law in 141 countries, Mayor Nickels challenged the Seattle community to meet or beat its climate pollution reduction goal. He appointed a Green Ribbon Commission on Climate Protection to develop recommendations for reducing Seattle's emissions. In addition, Mayor Nickels and nine other mayors launched the U.S. Mayors Climate Protection Agreement.

In March 2006, the Mayor's Green Ribbon Commission delivered its report, featuring 18 recommendations for meeting or beating the Kyoto target: a seven percent reduction by 2012, compared to 1990 levels. For Seattle, this meant reducing our emissions of carbon dioxide and other climate-disrupting greenhouse gases (GHG) by about 680,000 tons – equivalent to the amount of pollution generated by 147,000 cars in a year. These recommendations became the core of the [Seattle Climate Action Plan](#) and provided strategies for meeting the Kyoto target in ways that also improve public health, enhance quality of life and bolster economic vitality.

Seattle's Climate Action Plan states, "**Since motor vehicle emissions are the single largest source of climate pollution in Seattle, the City must do even more to provide climate-friendly transportation choices such as public transit, biking and walking** – and to encourage greater use of those alternatives." To achieve this goal, the plan recommends (as part of the 18 strategies listed in the plan):

- Significantly increasing the supply of frequent, reliable and convenient public transportation;
- Significantly expanding bicycle and pedestrian infrastructure;
- Leading a regional partnership to develop and implement a road pricing system;
- Implementing a new commercial parking tax;
- Expanding efforts to create compact, green urban neighborhoods;
- Improving the average fuel efficiency of Seattle's cars and trucks;
- Substantially increasing the use of biofuels; and
- Significantly reducing emissions from diesel trucks, trains and ships.

The City has implemented many of these recommendations (through the development of the bicycle and pedestrian master plans respectively, and the implementation of a commercial parking tax, as two examples), and the Seattle Climate Action Plan still provides achievable and feasible recommendations in the transportation sector for what the City of Seattle should already be doing to move towards carbon neutrality.

In 2008, the City of Seattle Office of Sustainability and Environment (OSE) completed an inventory of the Seattle's 2008 GHG emissions. Seattle's emissions come from three main sources: transportation, buildings, and industry. The inventory found:

- **"At 62 percent, the transportation sector is the largest source of emissions, and fully 40 percent of emissions come from cars and trucks on Seattle streets."**
- **"Transportation emissions remain Seattle's biggest challenge.** Transportation is the only sector in Seattle for which GHG emissions are still increasing, now roughly seven percent above 1990 levels."

The report concludes that, "**We will also need a paradigm shift in our transportation planning.** We will no longer be able to simply estimate increased demand due to population growth and then plan to meet that peak demand with increased capacity. We will have to use our road resources more efficiently. **As we plan our transportation infrastructure and build a system to move people and goods, we must prioritize GHG reductions.** And for the vehicle trips that need to take place, we will have to shift our fuel source away from fossil fuels to non-food-based biofuels and green Seattle City Light electricity. The electrification of our transportation system in Seattle is perhaps the greatest opportunity for carbon reduction over the next decade."

Also in 2008, the State's Climate Action Team's Transportation Implementation Working Group released a report to address the ESSHB 2815 requirements regarding "most promising" GHG reduction strategies and vehicle miles traveled (VMT) reduction strategies for transportation. To reduce VMT, with the ultimate goal of reducing GHG emissions, the Transportation Implementation Working Group recommended a package of strategies that fall into three broad categories, but which are synergistically more beneficial when integrated and implemented in conjunction with each other:

- Transit, Ridesharing, and Commuter Choice Programs, including recommendations to **expand and enhance current programs to increase viable transportation options** available to Washington residents to conduct the activities, trips, and travel needed and desired for daily life.
- Compact and Transit Oriented Development and Bicycle and Pedestrian Accessibility that **supports the development of compact walking, bicycling, and public transportation-friendly communities and to increase the travel choices available.**
- Transportation Funding and Pricing Strategies that **identify and create potential pricing mechanisms to support and incentivize GHG and VMT reductions**, and stress key considerations for revenue use to support transportation infrastructure maintenance and operations.

To achieve these strategies, the Transportation Implementation Working Group concludes that, "Washington must reexamine how investments in transportation infrastructure and services are made at all levels of government. **Washington State should make funding decisions and pursue revenue generating strategies that stimulate behaviors that support climate change solutions and that discourage behaviors that contribute to the problem.**"

While the City of Seattle has demonstrated leadership in addressing climate change and publicly recognized the need to face the challenge in the transportation sector, **the City has not begun planning for the equally large challenge of peak oil.** Peak oil and climate change are two enormous challenges threatening our society, and possibly the two greatest challenges humanity has ever faced. Climate change will wreak havoc on the environment; peak oil has already begun wreaking havoc on the economy. They also both require immediate and bold action to reduce our dependence on oil. **Virtually every scientific model predicts that a peak in oil production will occur sometime between 2005 and 2020, and a disturbing majority predicts that oil production will peak in the next few years.** In addition, a long series of international reports recommend that governments take action decades in advance of a world-wide peak in oil production in order to prepare for the price shocks and supply cuts that will inevitably occur (see 2008 as an example of what happens when the economy has not prepared for a dramatic rise in the price of oil and the resulting economic impacts). **Peak oil provides our city with another powerful reason to take immediate and bold action to reduce our dependence on fossil fuels in the transportation sector.**

“The days of inexpensive, convenient, abundant energy are quickly drawing to a close.” – US Army, 2005

“...a shortfall of oil supplies caused by world conventional oil peaking will sharply increase oil prices and oil price volatility.” – US Dept. of Energy, 2006

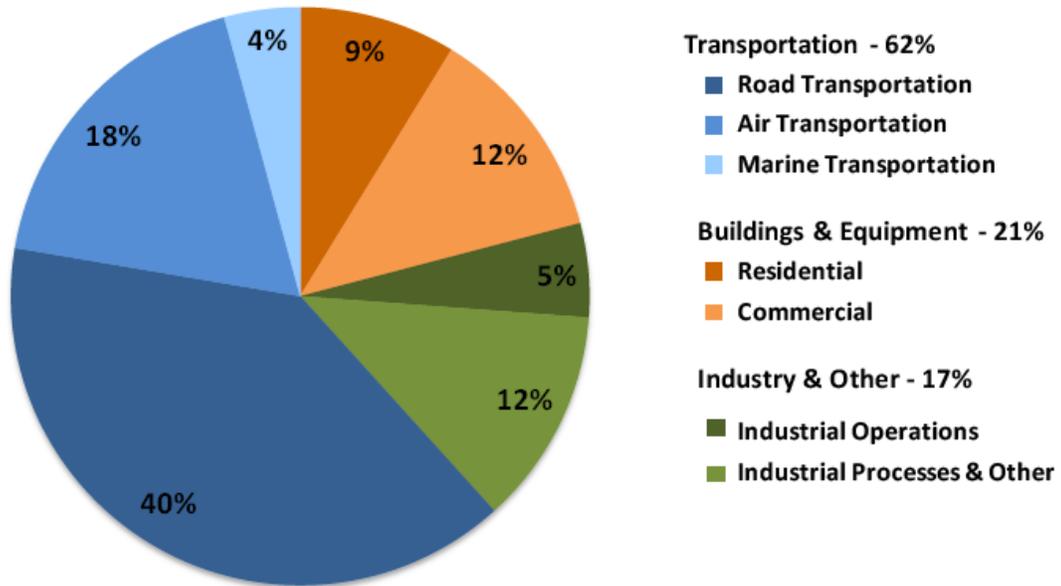
This existing work provides a strong foundation of recommendations at both the state and city level to reduce GHG emissions in the transportation sector and supports the case for immediate and bold action. Building on this work, the Streets For All Seattle coalition convened a process to provide the City Council with recommendations in the transportation sector for what the City of Seattle should be doing in the next one to three years to move the city beyond simply reducing GHG emissions and towards carbon neutrality.

Climate Change Background Data

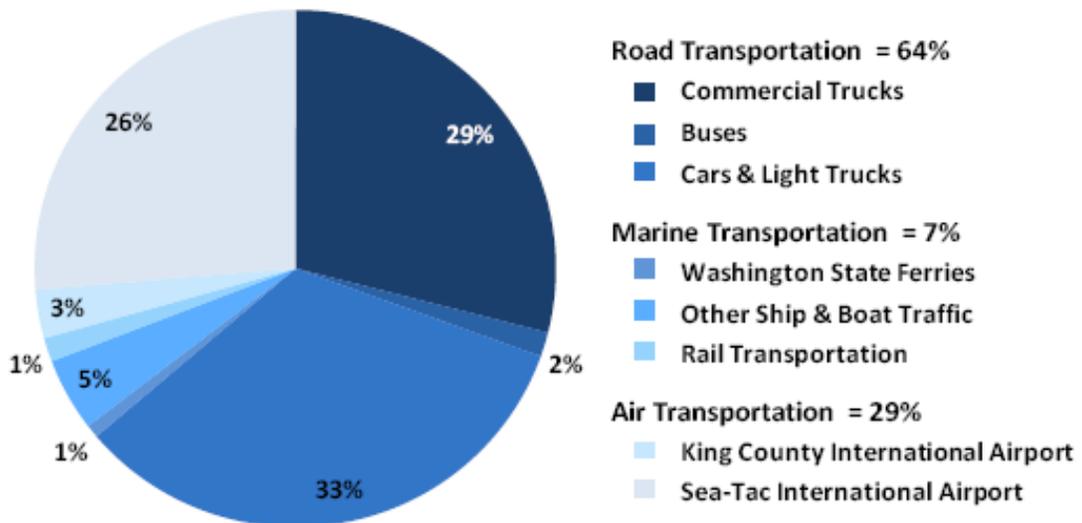
Key Links

- [Seattle Climate Protection Initiative Homepage](#)
- [State Climate Action Team Transportation Implementation Working Group](#)
- [King County Climate Change Homepage](#)

2008 Citywide Emissions by Sector

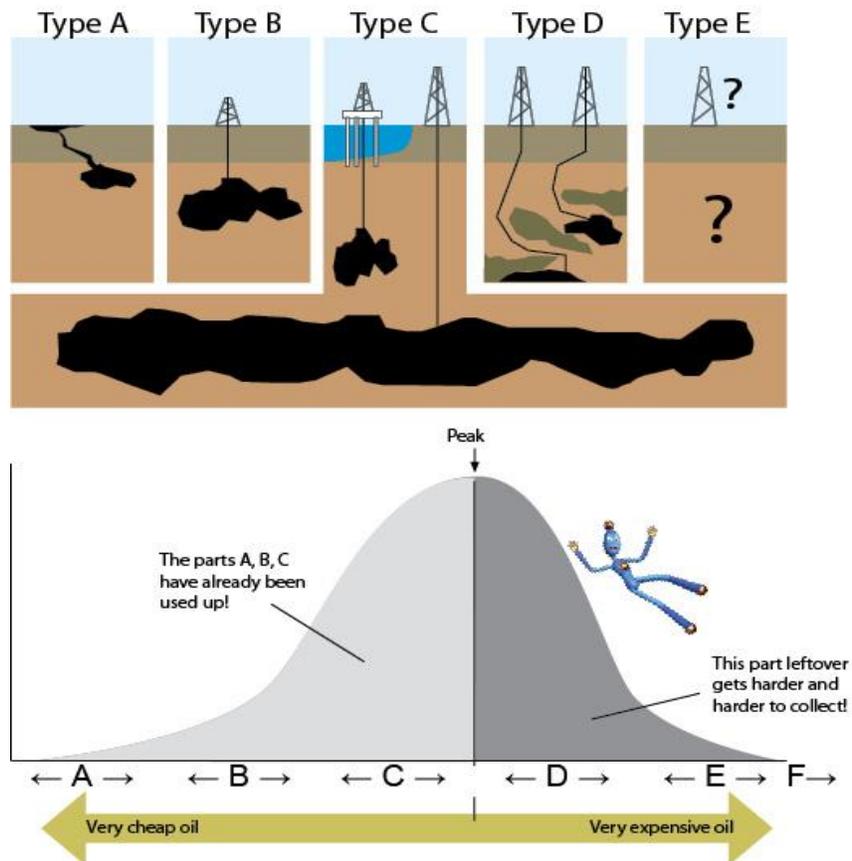


2008 Transportation Emissions

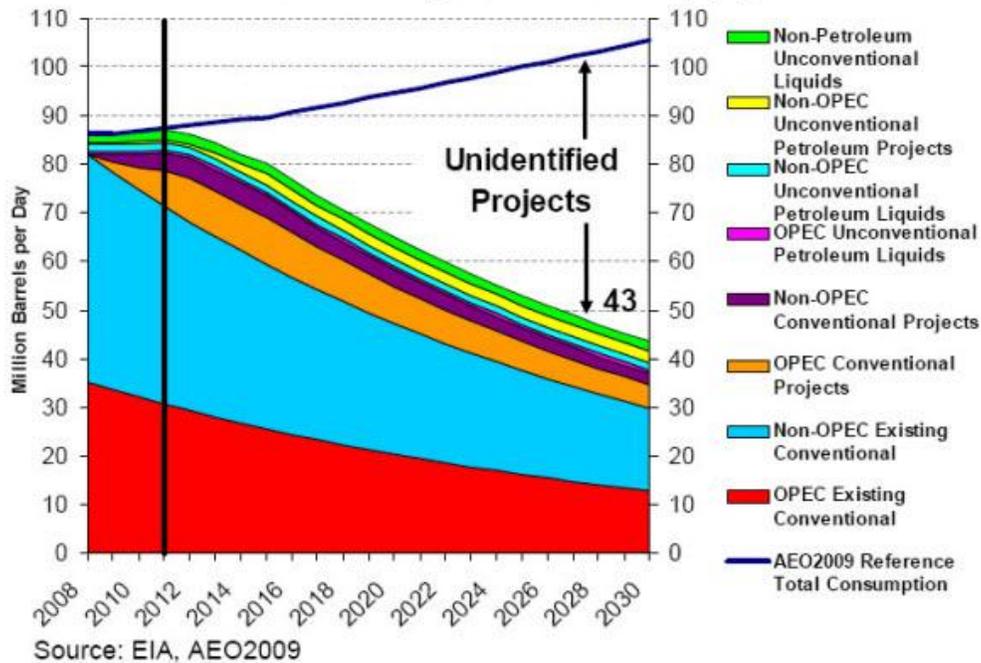


Key Links

- [Post Carbon Institute](#)
- [Peak Oil on Wikipedia](#)
- Hirsh, et. al (2005) "[Peaking of World Oil Production: Impacts, Mitigation, and Risk Management.](#)"
- UK Energy Research Center (2009) "[Global Oil Assessment: An assessment of the evidence of a near-term peak in global oil production.](#)"
- Hamilton (2009) "[Causes and Consequences of the oil shock of 2007-2008.](#)"



World's Liquid Fuels Supply



Links and Resources

Climate Plans

- [Seattle Climate Protection Initiative Homepage](#)
- [State Climate Action Team Transportation Implementation Working Group](#)
- [King County Climate Change Homepage](#)

City of Seattle Carbon Neutrality-Related Links

- [Seattle Climate Action Now](#)
- [Carbon Neutral Seattle](#)

Background Data and Other Resources

- [Post Carbon Institute](#)
- [Peak Oil on Wikipedia](#)
- Hirsh, et. al (2005) "[Peaking of World Oil Production: Impacts, Mitigation, and Risk Management.](#)"
- UK Energy Research Center (2009) "[Global Oil Assessment: An assessment of the evidence of a near-term peak in global oil production.](#)"
- Hamilton (2009) "[Causes and Consequences of the oil shock of 2007-2008.](#)"
- [Seattle Climate Actions Now May 2010 White Paper](#)

Streets For All Seattle

- [Coalition website](#)
- [Facebook page](#)

Appendix B – Process

Streets for All Seattle (SFAS) is a coalition of over 60 community, labor, business, transportation and environmental groups who believe that walking, bicycling and transit should be the easiest means of transportation in Seattle. At the City Council's request, SFAS took the lead in organizing and coordinating a process of working with the transportation community to develop recommendations for what the City of Seattle should be doing in the next one to three years to move the city's transportation sector towards carbon neutrality. SFAS invited over 60 thought leaders from the transportation sector to participate in the process (from the public, private and non-profit sectors respectively), in addition to opening it up to anyone who wished to get involved by sharing information about how to plug in on the campaign website and Facebook page.

On July 21st, 2010, SFAS hosted a discussion on how Seattle can achieve carbon neutrality in the transportation sector. The group heard from Councilmember O'Brien on the Council's Carbon Neutrality Initiative, Councilmember Rasmussen on his vision of transportation in Seattle and how it can move towards carbon neutrality, and from Derek Andreoli of Energy Transitions NW on the significant

problem of Peak Oil and how it relates to carbon neutrality. The group then brainstormed actions to move the transportation sector in Seattle towards carbon neutrality, along with identifying each idea as a short-term, mid-term, or long-term strategy and prioritizing the top three ideas with the best combined carbon reduction value and realistic potential for implementation. The group also identified the barriers to implementing the three prioritized actions.

Building on that meeting, the SFAS team distributed a survey to the participants in the process (along with sharing it publicly through the SFAS website and Facebook page) to help identify additional actions to move Seattle towards carbon neutrality in the transportation sector, prioritize these actions, understand the barriers to accomplishing these actions, and find solutions to these barriers. The SFAS team then synthesized the information collected at the first meeting and through the survey, and presented it back to the group at a second meeting on August 25th, 2010.

At the second meeting, the group broke into three teams and prioritized short-, medium-, and long-term strategies the City could implement to overcome the barriers presented in the three categories, resulting in a set of recommendations in the transportation sector for what the City of Seattle should be doing in the next one to three years to move the city towards carbon neutrality.

Actions and Barriers Identified to Move Seattle toward Carbon Neutrality (outcome of 1st meeting)

Short-term:

Change from automobile level of service measurement	More shared work/co-working spaces
Increase collaboration and cooperation within region	Flexible work week
Advance “cores and corridors” concept	Car free weekend every weekend
Fare free transit	No right turns on red
Increase ease of paying fares	Prime lights and crossing signals for bikes and peds
Require/incentivize transit passes over parking (work with employers)	Update Seattle Transit Master Plan
Address the risks associated with a car-free model (work on policy; consider development requirements; work in target areas first)	Modify contacting language to create incentives for public and private fleets to shift towards sustainability
Experiment with battery switching rather than charging (faster)	Incorporate land use and transportation connections in planning
Work w/ local production to minimize cargo trips	Include all transit routes in planning, both in-city and out of city
Think long-term in planning	Preserve and expand the electric trolley buses
Incentivize car-free on one-car lifestyles	Change 40-40-20 funding to new formula
Limited access highways	Include in-city light rail
Limiting parking	Include trams/streetcar
Parking stall tax	Dedicate \$30 million to sustainable transportation improvements
Update the grid system	Develop new revenue sources (taxes, etc.)
Implement carpool website where users can easily find each other	Utilize TDM / outreach programs (commute and non-commute trips)
Mandating non-carbon transportation at Metro	Utilize Marketing for transit (frame positively, highlight livability and quality of life, highlight health benefits)

Utilize a phased approach to change transportation network and behavior	Prioritize mobility on residential streets
Sell right-of-way used for parking to citizens/organizations	Highlight and use examples of what's been done right
Promote carshare programs	Reduce number and length of trips
Promote neighborhood CBD development	Price parking (Geographic revenue sharing; Revenues to a safety fund)
"Active transportation" infrastructure	Disincentivize auto use
Improve transportation financing options at the federal level	Shift priorities within existing projects

Medium-term:

Congestion pricing	Prevent dismantle of electric trolley wire
Higher costs for parking	Increase advertising for transit
De-link gas tax from road construction	Build streetcar routes / network
Carbon tax	Plan for in-city LRT
Tolling of major arterials and downtown travel	Use 3 rd Ave downtown as a test case for bicycle/pedestrian boulevard
Bike-sharing	More bike boulevards throughout the city/close some streets to cars
Limiting military consumption of petroleum	

Long-term:

Reorganize ferry system	Build in-city LRT
Don't build the 520 bridge or the Alaskan Way tunnel	Assume funding and operation of in-city transit
Turn I-5 into a multi-use path and reroute cars through Bellevue via I-405	Phase out diesel rolling stock
Podcars	Invest / support regional HSR
Investments in zoning	Invest / support electrification of freight movement

Governance/Legal Barriers

40-40-20 funding	Lack of access to information/resources
Transportation tax structure	Rules/requirements forcing improvement of roads that mainly serve cars
Politically charged policies and projects	Density is currently in (or is being put in) undesirable locations (ex. Aurora)
Lack of regional coordination and governance	Lack of alternatives / jurisdiction to carbon emitters (Sea-Tac; Port)
Lack of land use and design skills to create good density	Auto-oriented measurement tools (level of service)

Psychological Barriers

Misplaced belief that there is a market solution to the problem	Lack of political will
Fear of lost freedoms	Lack of understanding of what's actually happening (peak oil)
Fear of land use changes (intensifying development)	Conditions aren't bad enough/scary enough yet

Pre-conceived notions of what is/is not possible	Uncertainty surrounding reliable/attractive transit
Acceptance of energy alternatives (nuclear, expansion of hydro)	

Fiscal/Financial Barriers

Family transportation challenges	Misplaced belief that there is a market solution to the problem
40-40-20 funding	Hidden cost of auto, housing locations, and commutes
Transportation tax structure	