

Section 7: External Factors that influence Metro's planning

This section provides background on factors that shape the role of public transportation. Some examples of external factors that influence Metro's planning include climate change, transportation system pricing and transit and construction mitigation. An overview of these issues will provide the task force with a perspective on additional factors that can influence King County's transit system. Also provided is a summary of state and county plans that influence Metro transit planning.

Information you'll find in this section:

- A Discussion of Emerging Issues
- Overview: State and County Plans that Influence Transit

Links to Additional Resource Materials:

- King County Healthscape:
<http://www.kingcounty.gov/transportation/HealthScape.aspx>
- King County Equity and Social Justice Initiative:
<http://www.kingcounty.gov/exec/equity.aspx>
- Washington State Climate Change Report:
 - State Climate Change Information:
<http://www.ecy.wa.gov/climatechange/index.htm>
 - Leading the Way: Implementing Practical Solutions to the Climate Change Challenge:
http://www.ecy.wa.gov/climatechange/2008CATdocs/lw_app_v2.pdf
- King County Energy Plan:
<http://your.kingcounty.gov/dnrp/measures/documents/pdf/KC-Energy-Plan-2008.pdf>
- 2007 King County Climate Plan:
<http://your.kingcounty.gov/exec/news/2007/pdf/climateplan.pdf>

A Discussion of Emerging Issues

The following paper was taken from a Metro staff report presented to the Regional Transit Committee (RTC) in February 2008. This piece was initially developed as part of the work program to update King County Metro's 2007-2016 Strategic Plan and the Comprehensive Plan for Public Transportation. The updates to Metro's plan were put on hold as a result of the budget crisis.

Report Contents

1. Climate Change and Healthy Communities
2. Transportation System Pricing
3. Transit and Construction Mitigation:
Surviving and Thriving During Highway Construction

Bibliography

1. Climate Change and Healthy Communities

The consensus among scientists that human beings are causing potentially devastating changes to the global climate presents one of the most critical challenges facing humanity today. Climate scientists at the University of Washington predict average temperatures in the northwest will increase approximately one degree Fahrenheit per decade in the 21st century. Such increases are expected to bring about significant changes to our region such as reduced snow pack and water supply, higher sea level and increased flooding and droughts. The impacts of warming across the planet will be significant, affecting people around the world, changing not just the weather, but also economies and the availability of critical resources. Action now could limit the impact and King County has committed to being an innovative leader in mitigating and adapting to climate change.

Transportation plays a key role in climate change, accounting for one-third of greenhouse gas emissions in the U.S. and more than half the emissions in Washington State. All trends point to a continued rise in transportation emissions, as population and employment increase and land use patterns continue to favor automobile travel to access jobs and other needs of daily life. To reduce emissions will require significant changes in how we live and travel, addressing not just emissions per mile, but also the number of vehicle miles traveled (VMT). To reduce VMT while improving the quality of life, we will need to be able to meet our needs with fewer, shorter auto trips. Transportation alternatives will be needed and our patterns of land development and urban form will need to be more compact. Managing overall transportation demand through market pricing will be another critical element to achieve this goal, which will be discussed further in section II of this paper.

Transit and walking will need to become the modes of choice for more of our travel needs. That means both that land uses need to become less oriented to automobiles, and transit services need to be improved and expanded to become the best alternative for a greater share of trips. The connections between walking and transit must be strengthened because transit extends the range of pedestrian travel while walking increases transit use. This also explains the link between climate change and healthy communities. Rising obesity and related health effects are directly related to our automobile dependence and inactive lifestyle. Combating climate change and reducing obesity both call for the same prescription - a more active, pedestrian-oriented lifestyle where more of our travel needs are met locally, on foot, on bicycles and by transit.

To meet the challenge of reducing the impacts of climate change and improving public health, transit will need to be improved and expanded. More investment will be needed, but with constrained resources, every dollar will need to be used most effectively. Transit will also need to examine the carbon emissions resulting from our own operations, and take steps to reduce them. The ambitious goals for climate change adopted by the county will require us to take risks and to question the constraints that limit expectations for transit today. This section will discuss transit's role and objectives in meeting climate change and public health challenges, actions that could be taken, and policy and strategy changes that may be needed to succeed.

The Climate Change Challenge

Scientists have confirmed that the earth is warming and that greenhouse gas emissions primarily due to human activity are the cause. Greenhouse gases, such as carbon dioxide, are largely a product of burning fossil fuels – in cars, power plants and other human activities such as industry. Greenhouse gases also occur naturally in the environment but their accumulation in the atmosphere can be traced to the beginning of the Industrial Revolution. Since roughly 1750, CO₂ levels have risen by approximately 30 percent. This build-up of greenhouse gases is trapping increased levels of the sun's heat near the earth's surface, thereby causing the earth's temperature to rise. If unabated, the increase in greenhouse gases could warm the climate by as much as 10 degrees by 2100 bringing about potentially significant consequences such as the melting of polar ice, the rising of sea level, increased storm intensity and reduced water supply¹.

Effects of climate change are already evident but many scientists believe that taking action now can limit the impacts. To avoid the worst effects, scientists call for reducing emissions by 60-80 percent by 2050 in order to stabilize greenhouse gas concentrations in the atmosphere.

The Public Health Challenge

Global warming is closely tied to transportation and our dependence upon automobiles but a growing body of research is also making the connection between transportation, public health and air quality. Physical inactivity, another result of our increasing dependence on the automobile and our dispersed development patterns has been closely associated with dramatic increases in obesity and associated diseases. In King County, 54 percent of the population was overweight or obese in 2004, with obesity levels more than doubling from 1987 to 2004. A 2005 study sponsored by King County showed that walkable communities – those that are compact with mixed uses and well-connected streets – are associated with higher overall rates of physical activity, lower obesity rates and lower per capita CO₂ emissions². The findings suggest that improving public health can be accomplished largely by reducing the amount people drive, by providing travel alternatives such as transit and by making activities such as walking and biking a more integral form of transportation – strategies that also help reduce greenhouse gas emissions.

King County's Aggressive Climate Change and Public Health Goals

King County is taking actions to address both climate change and public health. In terms of climate change, King County along with other governments in the region such as the City of Seattle and the State of Washington have committed to attaining the Kyoto target of reducing emissions. Achieving the Kyoto Protocol target for King County translates to a commitment to reduce greenhouse gas emissions by 7 per cent below 1990 levels by 2012. This will require

¹ PEW Center on Global Climate Change, "Climate Change 101", 2006.

² Lawrence Frank & Co., "LUTAQH: A Study of Land Use, Transportation, Air Quality and Health in King County, WA", December 2005.

some major changes considering that the current trend line points to a continued rise in emissions as population, employment, and driving continue to increase.

As an important step in accomplishing this target and the longer term goal of reducing emissions by 80 percent below current levels by 2050, King County developed the **2007 Climate Plan**.³ The plan provides an overview of how King County seeks to reduce greenhouse gas emissions in all sectors and identifies steps to anticipate and adapt to projected climate change impacts. It addresses not only how King County can change its own operations and practices but how it can use its influence as a regional leader to encourage reduced emissions on all levels of government. From a transportation perspective, the plan calls for cleaner cars and fewer cars as well as a continued commitment to encourage alternative modes of transportation, to promote and provide improved public transportation services and to promote commute trip reduction, and increased ridesharing and carpooling. The plan also calls for continued commitment to a clean fleet.

The **2007 Energy Plan**, a precursor to the Climate Plan, sets an initial roadmap for King County's future use, generation and conservation of energy. It calls for transit to emphasize energy efficiencies and clean, renewable fuel sources⁴.

King County has also committed to incorporating public health and air quality considerations into transportation and land use actions and is developing tools that local governments can use to plan communities and transportation that will promote public health and reduce greenhouse-gas emissions. The county has also adopted a resolution to promote active transportation.

Taking Action

Taking action toward these goals, King County is working to reduce fossil fuel consumption and to adapt to the inevitable changes climate change will bring:

- At the local and regional level, King County is enacting major energy and resource conservation programs and requiring **consideration of the impact of development proposals on greenhouse gas emissions** under the State Environmental Policy Act⁵.
- The County is also building a green fleet of **hybrid vehicles** and has been recognized nationally for its use of hybrid, electric and clean diesel transit vehicles.
- In collaboration with the Climate Impacts group at the University of Washington, King County has produced a **guidebook for regional governments** on how to adapt to climate change impacts.
- At the national level, King County has joined several large counterparts across the country in partnering with the Sierra Club to form the **Cool Counties Climate Stabilization Initiative**. King County Metro was the first transit agency to join the Chicago Climate Exchange

³ King County 2007 Climate Plan

⁴ King County 2007 Energy Plan

⁵ Climate Impacts Group and King County, [Preparing for Climate Change: A Guidebook for Local, Regional and State Governments](#)

(CCX), a voluntary market in which members commit to reduce greenhouse gas emissions and work actively with other government members to advocate for a United States federal cap on greenhouse gas emissions.

Metro's Contribution

As the region's largest transit provider, Metro provides a range of mobility options to help people drive less.

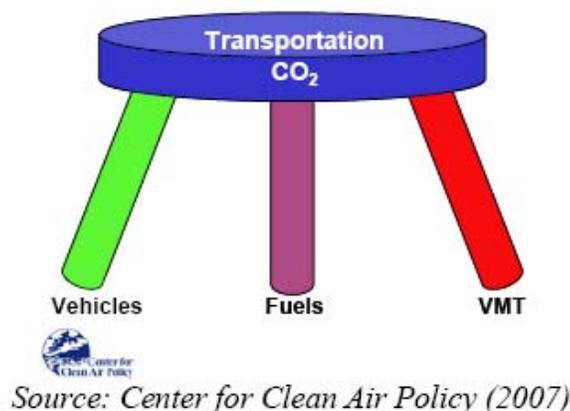
- **Metro transit carried roughly than 115 million riders** in 2007⁶ and will **expand its service by 20 percent** by 2016 through the voter- approved Transit Now program.
- Metro has **the nation's largest public van program**, with more than 2 million riders in 2007.
- Metro also offers ridematch services, marketing programs such as community-based In-Motion, service for people with disabilities and connections for cyclists with bike racks on buses and bike lockers at transit stops; Metro is also a supporting partner in the ZipCar Program (formerly FlexCar).

Reducing greenhouse gas emissions in the transportation sector

As identified above, King County Metro already offers many services and incorporates business practices that help mitigate climate change but will need to do more of it and do so more effectively to achieve King County's emissions targets, particularly in relation to transportation.

The transportation sector's CO₂ emissions are a function of vehicle fuel efficiency, fuel carbon content and vehicles miles traveled, factors often referred to as a "three-legged stool" (Figure 1). Working to reduce transportation-related greenhouse gases requires addressing all three legs.

Figure 1. Transportation CO₂ Emissions: The Three Legged Stool



⁶ Fixed-route Metro-only transit, vanpools and ACCESS

Transit's Role and Objectives for Climate Change and Health

Within the framework of the three-legged stool, the roles Metro and the public transit industry can play in reducing greenhouse gas emissions and making communities healthier are focused in three areas:

1. **Reducing the emissions from our own operations.** While Metro has worked hard to reduce emissions from its vehicles and facilities, it can do more still. Continued commitment to clean fuels and technologies can be complemented by an on-going focus on service efficiency and effectiveness.
2. **Providing alternatives to driving through improved and expanded public transportation.** Buses, vanpools, paratransit, streetcars and ridesharing all provide a means to access jobs and other daily needs without using a car.
3. **Helping make communities more compact, healthy and active.** In both urban and suburban parts of the county, people desire to be able to walk safely and to meet more of their daily needs on foot, bicycle or on transit.

The first area directly addresses the clean fuels and clean vehicle legs of the stool. The second and third areas address the third leg, reducing VMT.

1) Reducing the emissions from our own operations

Clean fuels and vehicles combined with efficient service are key to reducing operations-related emissions. Metro takes its commitment to clean air seriously. Metro's buses are required to meet the emission standards in effect when the bus is built. Heavy-duty diesel engines used in transit buses must meet more stringent EPA standards than diesel engines used in trucks. The EPA raises the emission standards every few years. Buses delivered since 1995 generally have no visible exhaust.

In terms of clean transportation technologies, King County has been recognized nationally for its use of clean vehicle technologies:

- **Clean diesel:** As an additional commitment to clean air, Metro retrofitted particulate traps to the 273 1999-2000 New Flyer articulated diesel buses and the 95 1999-2000 Gillig 30 ft diesel buses. These particulate traps or exhaust filters, along with the ultra low sulfur diesel fuel Metro is now using, will further reduce diesel particulates. The 100 New Flyer 40 ft low floor diesel buses also have particulate traps.
- **Hybrid buses:** Metro has purchased a fleet of hybrid articulated buses to replace the Breda tunnel buses. The hybrid technology, by converting energy normally wasted in braking into electricity and using it to help accelerate the bus, further reduces emissions. The hybrid buses and the 30 New Flyer low floor articulated buses also have particulate traps.

- **Electric trolleybuses:** An additional component of Metro's commitment to the environment is its fleet of zero-emission electric trolley buses. These 146 buses provide clean and quiet public transportation on some of Metro's heaviest routes.

Metro investments also help build new markets for clean technologies. To meet greenhouse gas reduction goals, Metro will need to continue demonstrating and implementing cleaner vehicle technologies for its entire fleet and meet low-emission standards for its facilities.

Metro is also on the cutting edge of fuel technologies. Using a blend of 20 percent biodiesel in all appropriate vehicles, King County is the largest single user of biodiesel in Washington State which makes its fleet cleaner and helps to stimulate in-state biodiesel production.

Reducing VMT through alternatives to driving and compact, transit-supportive communities

While much of the focus to date has been on advances in clean fuels and vehicles, there is growing recognition that the third leg of the stool - reducing VMT - is a critical part of a solution. To make a substantial difference in emission levels will require reducing the region's dependency on driving and eliminating trips altogether. For one, a complete turnover of the nation's fleet to fuel-efficient vehicles could take 20 to 30 years. But the real problem lies in the fact that people are driving more and more. Even stringent clean-air standards would not be sufficient to offset growth in VMT.

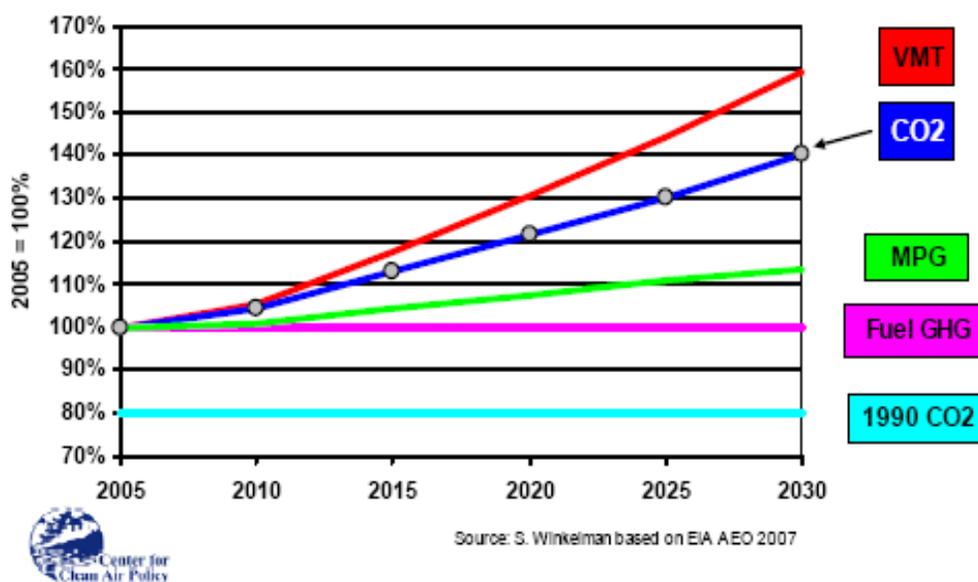
The amount that people drive, measured as vehicle miles traveled (VMT) has been steadily increasing over the past 25 years. The rise in VMT is due in large part to sprawling development patterns that require driving longer distances as well as limited transportation alternatives. Between 1980 and 1992, national urban VMT grew by 60 percent overall, with highway VMT growing by 88 percent.⁷ In King County, the vehicle miles traveled during the same time frame grew faster than the national average, increasing by 78.5 percent. This increase far outpaced the County's population growth of 28.9 percent and employment growth of 39.4 percent. Since then VMT in King County has continued to grow, but is more aligned with population growth.

Growth in VMT is expected to continue. The U.S. Department of Energy's Energy Information Administration (EIA) projects a 59 percent increase in national VMT from 2005 to 2030, outpacing projected population growth of 23 percent, as depicted in Figure 2. Over this time period, vehicle emission rates are projected to improve by 13 percent as more fuel efficient vehicles penetrate the nation's fleet. Under this scenario, CO₂ emissions would increase by about 40 percent, or 74 percent above 1990 levels⁸. Consequently, allowing VMT to grow on its projected path will not enable attainment of emission targets for climate stabilization. It is critical to reduce VMTs. Providing transportation alternatives through improved and expanded transportation along with compact, transit-friendly development can help address the problem.

⁷ EIA Residential Transportation Energy Consumption Survey 1994;

⁸ http://www.ccap.org/domestic/Domestic%20Dialogue%20July%2007%20Presentations/CCAP%20Transp%20package%20discussion%20memo%20_7%2026%2007_.pdf

Figure 2. Projected Growth in CO₂ Emissions from Cars and Light Trucks



2) Providing transportation alternatives through public transportation

As a transportation alternative to automobile use, transit helps reduce emissions by decreasing the amount people drive, providing more fuel-efficient mobility and lessening congestion. People who have competitive transit options drive less. Numerous studies have examined the relationship of eliminated auto trips to transit trips, and the results suggest that on average, approximately 4 auto trips are not taken for every trip on transit.⁹ Households that use transit drive an average of 29 miles per day compared to 45 miles per day for households that do not use transit regularly. Transit use has also been shown to reduce petroleum use by 1.4 billion gallons annually, which translates to 4 million gallons per day.¹⁰

Fewer auto trips means fewer emissions. According to an American Public Transportation Association (APTA) report, transit reduced CO₂ emissions in the United States by an estimated 6.9 million metric tonnes in 2005.¹¹ On an individual basis, a solo commuter who switches to existing public transportation services can reduce his CO₂ emissions by 20 pounds per day, or more than 4,800 pounds per year.

A number of studies suggest that transit's influence on the built environment leads to significant reductions in driving, and consequently fuel use and greenhouse gas emissions. These reductions are attributed to transit's support of higher density land uses and a more efficient built environment, which allow for fewer miles of travel, shorter commute times, reduced road maintenance and reduced need for parking.

⁹ "Transit and VMT Reduction" Travelmatters.org

¹⁰ Bailey, L, "Public Transportation and Petroleum savings in the US: Reducing Dependence on Oil" ICF International

¹¹ Davis, T and Monica Hale, "Public Transportation's Contribution to US Greenhouse Gases", SAIC Study, September 2007

A More Robust Role for Transit

The rising awareness of the threat of global warming and the health implications of an auto-centric lifestyle add urgency to transit's existing mission. The indicators suggest a more robust role for public transportation. Transit can effectively reduce vehicle miles traveled when it is a competitive travel option – the key is making it a competitive travel option for more people on more occasions. Buses, vanpools, paratransit, streetcars and ridesharing all provide a means to access jobs and other daily needs without using a car. To provide more options for more people, Metro's Transit Now program will expand service by 20 percent by 2016.

An expanding role will require new resources

Transit is already attracting more people across the United States, as demonstrated by increasing ridership. Between 1995 and 2006, transit ridership in the US grew by 30 percent, outpacing both growth of highway use at 24 percent and population at 12 percent.¹² This has certainly proven to be the case in King County with Metro's ridership rising steadily over the past few years, showing a 15 percent increase between 2005 and 2007. In contrast, Metro transit revenues grow only with increases in sales tax revenues, with much of the increase consumed by increases in the cost to operate service. Metro service is essentially on a fixed income, while demand and expectations for transit continue to grow. To some extent, Metro can work to optimize its service efficiency by promoting increased use of transit when and where it has trips, such as off-peak times but this has only a limited affect. If ridership increases continue on their current course without additional service investment, system crowding will reach a critical point in only a few years. Further discussion of expanding the system is located in Section 5.

Attention at the state and national level

A recently released state report commissioned by Governor Gregoire, *Leading the Way on Climate Change: The Challenge of Our Time*¹³, identifies transit as an integral part of the efforts to reduce greenhouse gas emissions. The plan includes strategies to promote transit, ridesharing and commuter choice programs and to develop associated funding mechanisms.

On a national level, transit is getting attention in both the U.S. and Canada, attention that may help bring higher levels of investment. In light of the role transit can play, the American Public Transit Association (APTA) is calling for Congress to incorporate public transportation into a national climate strategy that includes providing additional funding for more public transportation investment and tax credits and other incentives to promote commute trip reduction and mixed use development to reduce dependency on driving.

Canada is also calling on transit to play a significant role in its national campaign to address climate change by strongly marketing transit and the Canadian Urban Transit Association (CUTA). The Canadian transit industry is also exploring ways to promote the reduction of greenhouse gases through operational strategies and advanced fuel and vehicle technologies.

¹² APTA presentation: "Public Transportation's Role in a Greenhouse Gas Reduction Strategy"

¹³ Washington Climate Advisory Team, "Leading the Way on Climate Change", January 2008.

3) Helping make communities more compact, healthy and active

Transit's success as a travel alternative is largely dependent upon land use and development patterns. The dispersed land use which has given rise to increased vehicle miles traveled is also closely linked to the diminishing effectiveness of transit, reduced walking and exercise in daily life, and growth in greenhouse gas emissions.

In contrast, compact development – which features a mix of land uses, strong population and employment centers, interconnection of streets and structures at a human scale – reduces the need for auto ownership, reduces driving, supports effective transit service and increases ridership.¹⁴ On a per capita basis, residents of the most compact areas of the region generate 28 percent fewer miles of travel than their suburban counterparts.¹⁵

Residential density, along with a greater mix of land use and closer intersection spacing, has also been associated with lower greenhouse gas production on a per capita basis – greenhouse gases decline steadily as density increases. Consequently, focusing growth in compact urban communities reduces greenhouse gas emissions and increases transit effectiveness while using land more efficiently.

Transit not only benefits from higher density development but can also promote it. Numerous studies have suggested that availability of transit enables more efficient development. Concentrations of transit service can bring larger numbers of pedestrians to a center or business district, so pedestrian-oriented retail uses and building designs are more likely to be attracted. Availability of transit service can also improve the market for higher-density housing development.

More compact communities also foster a healthier lifestyle. Research conducted in support of King County's Healthscape program has shown that in communities that support walking and biking, people are more active and benefit from cleaner air.

Local jurisdiction actions and policies can make transit more competitive

Transit can help reduce greenhouse gas emissions and make our communities healthier but its effectiveness depends largely on the conditions in which it operates. Making transit a feasible and desirable mobility option is easier to do in conjunction with policy and planning measures that promote transit. Transit-supportive land use as mentioned enables transit to be more effective. There are other valuable measures to support transit such as providing workplace incentives for employees, designing transit stations that are accessible by foot and bike, as well as by car and reducing the amount of parking available at major destinations.¹⁶

¹⁴ Ewing, R et al. "Growing Cooler: The Evidence on Urban Development and Climate Change"

¹⁵ Lawrence Frank & Co; LUTAQH Brochure at http://www.metrokc.gov/healthscape/publications/LUTAQH_brochure.pdf

¹⁶ "Transit and VMT Reduction", Travelmatters.org

Metro and other transit agencies are dependent to some extent on other agencies and jurisdictions to create transit-supportive environments. In terms of land use, efforts have been underway in the state and the region to address sprawl and inefficient development of land. In 1990, the State passed the Growth Management Act to focus growth in urban areas. Regional policy set by the Countywide Planning policies encourages growth in centers. King County incorporates smart growth strategies that integrate land use, transportation, public health, environmental management and economic development into all its business.

On a local level, Metro relies on jurisdictions to help create land use patterns, policies and operating conditions that make transit a more competitive option. Existing Metro strategies emphasize the mutual need of transit agencies and jurisdictions to create an environment where transit can succeed, and proposes that new service should be prioritized to reward these policies and actions. This strategy has proven challenging to implement. Metro has followed suit by focusing service delivery in the urban area and placing priority in service supporting centers.

2. Transportation System Pricing

Transportation system pricing is a strategy to improve the efficiency of the transportation system and help reduce greenhouse gas emissions by charging vehicles for using the system. Pricing can be a powerful mechanism for balancing and managing supply and demand. Free use of highways today results in overuse of limited roadway space and overconsumption of auto use, experienced as congestion. Pricing can help manage congestion and raise revenue that in turn can be re-invested in transportation improvements. It can also encourage the shift to other modes such as ridesharing and transit, both by increasing the relative cost savings of those modes and by generating revenue which can potentially be invested in them.¹⁷

Road pricing would be accomplished through tolls, which can be varied by time of day and traffic conditions for different users in order to manage demand on a dynamic basis. Some of the approaches to tolling that have been applied elsewhere include¹⁸:

- **High occupancy toll (HOT) lanes** where single-occupant vehicles can pay to use HOV lanes when there is available capacity
- **Corridor tolling** such as traditional tolls on individual facilities
- **Cordon tolling** where all drivers are charged a toll when entering a designated area, such as a downtown district
- **System-wide congestion pricing** where fees are charged on all freeways and arterials based on actual system use

¹⁷ Evans, John E et al. "Road Value Pricing: Traveler Response to Transportation System Changes" *Transit Cooperative Research Program Report 95, Chapter 14*. Transportation Research Board .2003.

¹⁸An overall pricing strategy can also include parking fees and taxes but that is not addressed in this paper.

Pricing Examples From Around the World

System pricing is being successfully implemented in different forms around the world, with the primary objectives to manage congestion, raise revenue and preserve air quality. In many cases, an increase in use of transit and other public transportation services has also accompanied transportation pricing. The following examples demonstrate several of the approaches cited above, where increased transit use was also noted.

- **London:** In London, a £5 (\$8 US) cordon toll has been imposed for driving private vehicles in an eight square mile central area during weekdays as a way to reduce traffic congestion and raise revenues for transport improvements. An automated system checks vehicles entering the charging zone against a database of motorists who have paid the fee. Vehicle traffic speeds have increased and bus transit service has improved, while accidents and air pollution have declined in the city center. Public acceptance has grown and there is now support to expand the program to other parts of London.¹⁹
- **New York/New Jersey:** In the Tri-State area, the Port Authority of New York & New Jersey changed from fixed to variable priced tolls in 2001. The Port Authority analysis found that 7 percent fewer drivers used the agency's bridges and tunnels during the morning peak hour period and that 4% fewer were traveling the crossings during the afternoon peak hours. The shift of traffic out of the peak hours was accompanied by an increase in off-peak travel, as well as by increased car-pooling and transit use.
- **Stockholm, Sweden:** The city of Stockholm, Sweden, established a charge in 2006 for vehicles entering the inner city area on weekdays between 6:30 a.m. and 6:30 p.m. The charges range from the equivalent of US \$1.27 to \$2.54 per trip, with a maximum daily charge of \$8.00. The program reduced traffic volumes by about 25 percent, removing 100,000 vehicles from the roads during peak business hours and increasing public transit ridership by 40,000 users per day. About 350,000 vehicles per day pay the fee, generating roughly \$500,000 to \$2.7 million in daily revenue, not counting revenue from the \$77 fee charged to those who forget to pay the tax. Retail sales in central Stockholm shops increased compared with the same month in 2005, including significant increases in grocery sales in central neighborhoods, which probably reflects increased purchases by area residents who are more likely to shop locally rather than drive to shop.
- **San Diego's I-15 "FasTrak" Express Lanes:** The I-15 project is making better use of the existing capacity while maintaining free-flow traffic conditions on the HOV lanes through pricing and the use of dynamic pricing. It also generates \$1.2 million in annual revenues, about one-half of which is used to support transit service in the corridor.²⁰

¹⁹ Victoria Transport Policy Institute TDM Encyclopedia, "Road Pricing" at <http://www.vtpi.org/tdm/tdm35.htm>

²⁰ Evans, John E et al. "Road Value Pricing: Traveler Response to Transportation System Changes" *Transit Cooperative Research Program Report 95, Chapter 14*. Transportation Research Board, 2003, p. 21

Similarities between tolling approaches

In all of these systems, when faced with a fee, drivers may choose not to travel, or select an alternative time, route or mode of travel if they are unwilling to pay. Drivers who pay are able to drive, when they choose to with reduced congestion. If even a small portion of drivers either choose not to drive or switch modes, it can make a difference – it's been demonstrated that a relatively small shift in the proportion of peak-period trips can lead to substantial reductions in overall congestion.²¹

Short-term trip-making adjustments made by travelers in response to pricing include changes in route choice, time of travel, mode choice, trip frequency and selection of activity and destination. Route choice adjustments predominate when free highway alternatives are available. Long-term effects are less certain; road value pricing may influence not only further decisions about trip-making, but potentially also automobile ownership and location choice for residences, employers, and activities.

Tolling in Washington State

Washington State has applied tolling primarily for large bridge projects, with tolls used to finance construction and borrowing costs. More widespread use of roadway pricing as a congestion management tool has gained wide recognition among local, regional and state leaders in Washington State. King County has been an advocate of tolling as a tool to optimize the efficiency and effective capacity of the transportation system and to help limit greenhouse gas emissions.

Northwest Examples

- **SR 16 Narrows Bridge:** This past year tolls were established on the Tacoma Narrows bridge to finance construction of a second span and addition of HOV lanes. Electronic tolling has been used, and is widely considered successful.
- **SR 167 HOT(High Occupancy Toll) Lanes:** A pilot HOT lanes project is scheduled for implementation in April 2008 on SR 167. The project will convert 9 miles of High Occupancy Vehicle (HOV) lane to HOT lanes between Renton and Auburn. The HOT lanes will provide

Urban Partnership Program Status

On August 13, 2007, the USDOT selected the SR 520 Bridge Replacement and HOV Project as a priority project to receive grant funding and additional federal support under the Urban Partnership Program to implement advanced transit, technology, telecommuting, and tolling projects designed to reduce traffic congestion.

Under the Urban Partnership Agreement, the Urban Partner – comprising WSDOT, PSRC, and King County – agrees that all projects outlined in the agreement will be in operation by September 30, 2009. In exchange for these commitments, USDOT intends to allocate \$128 million in Federal grant funding according to the terms of a grant agreement to be negotiated by the Department and the Urban Partner.

²¹ Ibid

express trips for transit, vanpools and carpools while allowing solo drivers the option to pay a toll to use the lanes. Toll rates for single-occupant vehicles will vary depending on roadway usage in order to manage traffic and maintain a speed of 45 mph or better. This project will be the first application of HOT lanes in the region and is expected to optimize the balance between traffic flow and HOV speed and reliability. The project should also provide experience in safe and efficient HOT lane design and operation which can be applied to other corridors if system pricing is applied.

- **Urban Partnership Program for SR-520:** Corridor pricing could also be implemented on the SR-520 bridge under the Urban Partnership program, a new federal program that partners the U.S. Department of Transportation (USDOT) with metropolitan areas that commit to the pursuit of aggressive strategies to reduce traffic congestion. Under the Urban Partnership program, the region will apply congestion pricing in the form of tolls, and undertake aggressive transit service improvements, demand management programs, and technological applications in an effort to improve the efficiency of the transportation system.

Jointly with WSDOT and the Puget Sound Regional Council, King County has submitted a proposal to the United States Department of Transportation to establish congestion pricing on the SR 520 floating bridge as early as 2009. King County Metro Transit and WSDOT anticipate that transit demand will grow significantly in the corridor, as much as 35 percent, if tolls are established. This increased demand will require additional transit trips across the bridge during the peak and off-peak hours. Service improvements identified in *Transit Now* and by Sound Transit will accommodate off-peak demand. New trips not identified in *Transit Now* will be required during the peak. Additionally, enhancements to passenger waiting areas were included in the proposal, including shelter upgrades at the paired bus zones on either end of the bridge, and real time information at bus stops along SR 520.

Increased transit service to accommodate growth is key to the urban partnership proposal. Congestion pricing increases the price of auto travel, inducing some motorists to seek out alternative modes of transportation. Transit has been identified as a key strategy in reducing congestion under this tolling strategy. Without the proposed new service and passenger amenities, the opportunity to convert motorists into transit riders is compromised and the effectiveness of congestion pricing will be reduced.

Legislative status

Washington State legislators have taken up tolling policy in the 2008 session. Specific legislation is required to authorize tolling on any bridge or highway in Washington State. Two recent statutes address tolling, adopted in 2005 and 2002 respectively:

- **RCW 47.031 Approval of Tolls:** No toll may be imposed on new or existing highways or bridges without specific legislative authorization or upon a majority vote of the people within boundaries of the unit of government empowered to impose tolls. This section applies to chapter 47.56 RCW and to any tolls authorized under chapter 47.29 RCW, the transportation innovative partnership act of 2005.

- **RCW 47.56.075 Toll roads, facilities – Legislative authorization or regional or local sponsorship required:** The department shall approve for construction only such toll roads as the legislature specifically authorizes or such toll facilities as are specifically sponsored by a regional transportation investment district, city, town, or county.

Tolling to Achieve Multiple Objectives

Some of the most difficult challenges to implementing tolls are related to system equity and consistency issues that must be addressed for tolling to be acceptable by policymakers and voters. A decade ago the legislature unanimously passed legislation to foster public-private initiatives that would allow private entities to design, construct and operate transportation facilities and collect tolls for compensation. Of six projects selected by the state, only the SR 16 Narrows Bridge project survived. All of the others were defeated primarily because concerns about consistency and equity were not addressed – it was not readily apparent why travelers in one area would need to pay for using roads that are provided for free in other places.

Consistency is an important principle in transportation system design, as can be seen in the consistent use of signs, pavement markings and traffic controls throughout the country that allow travelers to use the road system safely wherever they go. Consistency has also been important in public acceptance of HOV lane policies. The need for consistency presents a challenge to the flexible use of tolling, both for managing demand and financing construction costs. Different roadway improvement projects will have dramatically different costs, and tolls set based on project costs will vary greatly between corridors. From the driver's point of view however, a trip that traverses more than one highway corridor is still a single trip. Balancing system objectives with needs for individual roadways is a key challenge to designing a successful toll program.

Some key principles in implementing a successful pricing program to achieve transportation demand objectives include²²:

- Choosing pricing methods that are cost effective to implement, convenient to users, and accurately reflect the costs imposed by each trip.
- Using time-variable tolls, with higher rates during peak periods and lower rates during off-peak periods, to reduce congestion.
- Applying pricing on existing roads, not just new facilities.
- Encouraging development of travel alternatives, including flextime, ridesharing, transit improvements and bicycle facilities.
- Integrating pricing with other TDM strategies that increase traveler choice and provide additional incentives to use alternative modes in the same area.
- Insuring that road pricing decisions are transparent, built on public participation and trust.

²² Victoria Transport Policy Institute TDM Encyclopedia; "Road Pricing" at <http://www.vtpi.org/tdm/tdm35.htm>

- Addressing equity concerns by insuring that all groups receive benefits, either through rebates or improved travel choices.
- Making prices as predictable as possible.

Transit Implications

The Urban Partnership program has begun to illustrate the opportunities and challenges tolling will pose for transit. Depending on many factors, including the toll rate, tolling on SR 520 is projected to increase transit ridership considerably. To accommodate the growth in demand, the Urban Partnership program calls for additional transit service in the SR 520 corridor, expanding key park-and-ride lots and integrating with Metro RapidRide Service.

However, the grants associated with the Urban Partnership are anticipated to fund fleet expansion and capital improvements only, such as park-and-ride lot expansions, improvement of key bus stops, and installation of real-time information signs. Additional funding needed for service increases will need to come from toll revenues or other new sources. Metro estimates that new Sound Transit and Metro service will cost approximately \$4 million annually. There is no funding available within the existing revenue streams of either agency for this increase.

Legislation will be needed to clarify how tolls will be used, and whether they can be applied to accommodate increases in transit demand that will result from the tolling program. Tolling is expected to result in an additional 1.2 million transit trips over SR 520 each year. Some of the increased transit demand can be accommodated by existing and already planned service expansions and route consolidations but additional capacity will be needed.

Strategies to accommodate increased transit demand on SR 520 due to tolling include improving all-day and peak-period frequency of core routes, implementing new and expanded reverse peak service to better serve dense residential areas on the west side of the lake, and adding midday service. An exact service plan will be developed through a public process, but the preliminary service concept proposes to add approximately 60 additional one-way peak-period trips on Metro and Sound Transit service on four core routes (Route 255, 271, 540, and 545). Additionally, Metro expects to provide nearly 30 additional one-way peak-period trips on existing and new peak-period only routes made possible through the proposed fleet expansion.

Other elements of the Urban Partnership program would fund and implement active traffic management and tolling infrastructure on both SR 520 and I-90 to ensure that the proposed congestion pricing can be implemented within the shortest timeline following the legislative approval. The active traffic management components that will be implemented to support pricing on SR 520 (as well as I-90) include speed harmonization, lane control, queue warning, and junction control. These techniques will be implemented using a series of variable message signs over each lane that can display numerical speed limits and lane control directions (such as green arrows and red Xs). These may be accompanied by additional lane channelization at the freeway junctions to ensure traffic move smoothly from and to the SR 520 corridor.

Tolls on I-90

To increase the effectiveness of system pricing on SR-520 and generate more revenue, tolling I-90 is also being considered. As a segment of the interstate highway system, implementation of tolls on I-90 would require federal approval as well as approval from the Washington State legislature and the State Transportation Commission. It is possible also that central Puget Sound voters would be asked to weigh in. The Washington State Legislature could provide the tolling authority as early as March 2008. As noted in the Washington State Treasurer's report, tolling I-90 may be needed to raise adequate revenue to fund the SR 520 bridge replacement and to operate the overall translake corridor efficiently. In that report, the Treasurer recommended tolling both facilities no later than July 2011.

By tolling both I-90 and SR 520, WSDOT would increase the feasibility of financing SR 520 improvements, while avoiding the negative impact that SR 520 tolls would otherwise have on I-90 traffic due to diversion. Tolling both bridges would also increase the opportunity and challenge to transit by increasing the diversion of cross-lake trips to transit, and increasing the level of transit service needed to accommodate them.

3. Transit and Construction Mitigation: Surviving and Thriving During Highway Construction

While the Regional Transportation Investment District (RTID) ballot measure failed in 2007, the campaign underscored the magnitude of work that may be needed to replace and upgrade aging freeways, including replacing the Alaskan Way viaduct and the SR 520 floating bridge, expanding I-405 and preserving I-5 through Seattle. Freeway construction projects themselves could present one of the most challenging mobility issues over the next two decades. Under the right circumstances, transit could play a role in mitigating major construction impacts, while drawing new riders that would continue to use transit when construction is complete.

This section describes strategies to mitigate construction traffic impacts with transit service and vanpools within the Central Puget Sound region, as well as conditions needed for transit mitigation to be effective. It discusses the costs, constraints, program sizing considerations, and suggests some generalized strategies that could be applied to mitigate major proposed regional corridor construction project impacts.

Conditions Needed for a Successful Transit Mitigation Program

The success of any transit mitigation effort will depend on meeting these five conditions:

1. **Transit will provide faster and more reliable travel times than driving.** This means that HOV lanes must remain available and be managed to meet the state's HOV speed and reliability standards, or an alternative route must be available that will provide a fast and reliable pathway for transit vehicles

2. **Rider incentives will be provided for using transit.** These include subsidized passes to make transit less expensive, parking management and tolling that makes driving more costly
3. **Transit fleet and operating base capacity will be sufficient** and the rate of planned service growth needs to be achievable
4. **Funding is provided for service and fleet expansion.** This needs to include service hours and vehicles that are needed to compensate for increased costs to operate existing transit services if construction results in longer trip times
5. **Comprehensive strategic and tactical marketing of transit alternatives is provided.** People should be aware of the full range of travel alternatives available to them, including vanpools, carpool formation support and traditional transit.

If these conditions are met, there will be a significant increase in transit demand during the construction period. In many cases this will mean that additional services and fleet will be required to accommodate that additional demand. If construction is not managed to provide a fast and reliable path for transit, existing transit service will be more costly and ridership will suffer. Added mitigation service would be less effective, and the cost of funding mitigation services would increase.

How much mitigation service is appropriate?

There are many different ways to determine the appropriate size of a transit mitigation program. Ideally a transit mitigation program should be sized to meet anticipated demand, assuming an aggressive effort to make transit an attractive alternative to private autos. As noted previously, this can be accomplished by combining priority treatments that give transit an edge in traffic with incentives that give it an edge in price. Individual services should be sized to stay within cost-effectiveness guidelines, and the total program should not exceed transit capacity limits.

The best approach would size service based on an estimate of the likely increase in transit demand, based on the following factors:

- **Severity and frequency of construction-related congestion.** This is different from lost capacity, since the congestion impact of lost capacity is far greater as demand approaches or exceeds capacity. If closures will be frequent or unpredictable, the perceived impact to freeway users will be greater than slow but predictable delays.
- **Strength of the underlying transit market.** The success of a mitigation program will be proportionate to the underlying fit and attractiveness of transit in the corridor.
- **Change in the relative travel time between transit and driving.** Incremental transit ridership will be driven by the combined effect of increased traffic conditions and the travel time transit will be able to achieve in HOV lanes or due to other transit priority measures.

- **Likely effectiveness of freeway tolls, and of other marketing and incentive programs.** Data exists from other transit mitigation programs that can provide a basis to estimate the effectiveness of these programs.
- **Capacity constraints.** There is a limit to the amount of transit that can be added to the existing system within a set time period that the total mitigation program cannot exceed.

A great deal needs to be known about the detailed construction program in a corridor to make this assessment, and if multiple corridors will be under construction at the same time, the information and interagency coordination needed increases. Judgment will be required to determine a reasonable level of transit mitigation to minimize negative economic impacts and maintain mitigation service that is well-used and cost-effective.

Transit needs a fast and reliable path during construction to be an effective mitigation strategy.

A foundation for effective transit mitigation service is the availability of a right-of-way for transit to operate in that is faster and more reliable than conditions faced by general traffic. Transit must provide a tangible travel time and/or reliability benefit over driving, or else drivers will have no reason to use it. For bus service, this means that HOV lanes must be open through the construction period, and they must be managed more effectively than they are today to avoid overuse and congestion. If HOV lanes can't be provided, maintained, and managed, then transit needs to have an alternative route that isn't also clogged with traffic.

If transit is to play an effective role in mitigation, coordination with the roadway agency must begin at an early stage of project development, if not earlier. The ability to maintain transit reliability needs to be a project objective from the outset, since changes to accommodate transit become more difficult as design is further along.

Changes to operating practices may also be needed. Often HOV lanes are the first lanes to be closed when lane reductions are needed or when incidents occur, probably because they have the lowest vehicle volumes. This is especially true during off-peak periods. For transit to play a meaningful mitigation role, these practices will need to be changed so that the HOV lane is not always the first lane closed or blocked.

While the best approach to keep transit moving may vary by corridor, some of the generic methods may include these:

- **Contract requirements and incentives.** Since the construction contractor makes decisions about traffic management through construction sites, WSDOT may have the greatest impact on transit priority through carefully-written contract language that sets expectations for maintaining use of HOV lanes or penalties for closure periods.
- **High occupancy toll (HOT) lanes or 2-person HOV permits.** HOV lane volumes are exceeding capacity in several corridors today, and will not provide the speed and reliability advantages they were designed for during construction without other measures to control

their volume. Consideration should be given to changing the peak period HOV definition to 3 persons or more, and allowing a limited number of 2-person carpools to buy a permit to use the lanes during peak periods during the construction period. In the longer run, a HOT lane system may be needed allowing other vehicles to use HOV lanes for a price that is set dynamically, based on congestion.

- **Use of shoulders.** If HOV lanes must be closed, or do not exist, consideration should be given to allowing buses to use freeway shoulders or other construction reroutes that are not available to general traffic. Shoulders may need to be upgraded to provide a 12' lane and full-depth pavement, but this will also be useful for other traffic shifts needed during construction. Shoulder use by buses can also help when buses must make freeway-to-freeway movements at congested interchanges where direct ramps are not available.
- **Incident management procedures.** To manage incidents and clear up incident-related congestion, HOV lanes are often opened to other traffic, or accidents are cleared to the HOV lane to allow other traffic to get by. The unfortunate side effect is that transit is also affected by the incident, and the HOV lane fails when it is needed most. Especially during major construction, it is worth reconsidering incident management practices to find ways to keep HOV lanes operating as a first priority.

Public awareness and rider incentives are needed to make sure people will take maximum advantage of mitigation service.

Another foundation for a successful transit construction mitigation program is a program to market transit service and to provide incentives to maximize transit use. If several construction projects will be underway at once, these measures will be more effective if they are applied consistently rather than as separate programs designed and implemented for each corridor.

Early-onset regional marketing will be essential to the program's success. Region-wide joint marketing will help establish a media environment where specific construction mitigation efforts can be marketed by directly targeting people most impacted by a project, given a general public awareness that alternatives are available throughout the region. Aggressive marketing, combined with service design that is easy to understand, will cause ridership to grow more rapidly, and maximize use of the service provided.

Ridership incentives are also important to promoting use of mitigation services, as well as baseline transit services that already exist in each of the impacted corridors. Based on decades of experience providing commute trip reduction programs and ridesharing services, some demand management measures have emerged that have the greatest impact. These include:

- **Pass distribution and subsidy programs.** Examples include the UPass program offered by the University of Washington and others, and FlexPass programs provided through employers throughout the region. Passes can be used on multiple transit systems, as well as for vanpools. These programs consistently result in significant increases in transit use.

- **Marketing and awareness programs.** Added transit service must be advertised in order to be well-used. A robust public information program will be needed to advise travelers of travel conditions, reroutes and travel alternatives, and this program should include information about transit options and incentive programs. Specific programs should be developed to encourage alternative work hours and telecommuting.
- **Individualized travel assistance.** Programs that provide hands-on personal assistance to identify travel options can be very effective in influencing travel behavior.
- **Ridesharing programs.** Expansion of the ridematch database and other efforts to promote carpool and vanpool formation can provide HOV alternatives for commuters for whom transit service is not as effective.
- **Commute trip reduction outreach.** Increased marketing and outreach to employers affected by the commute trip reduction law would increase employer and employee participation and decrease single-occupant commuting.

Transit Mitigation Service Strategies

Transit service should be designed to meet common-sense principles. Some of the principles that should guide mitigation service design include:

- **Enhancing existing services will be more effective and will have longer lasting benefits.** It takes time to build ridership on any transit route, and to build awareness of the service among potential customers. It is also faster to implement an increase in existing service than initiate a new service, since customer information and driver training materials are already available, facilities are in place, and there are existing customers who can spread the word to others most effectively. Customers gained on these services during the mitigation period are more likely to continue riding transit once the construction period is over than customers of an interim service that is cancelled once freeway construction is ended.
- **Mitigation provides an opportunity to increase the use of existing capacity.** The region has spent considerable sums to develop HOV lanes and high capacity transit, including commuter rail and the light rail system that will open in 2009. If projects can be phased so that construction begins after high-capacity service is in place, transit will be in a better position to play a significant mitigation role. To be successful, feeder bus routes and park-and-ride access must be in place and sufficient to allow potential riders to access the system. Where capacity also exists on the local and express bus system, it can be used more effectively if targeted marketing and incentive programs are implemented.
- **Simple is best.** If interim services are needed, they should be as simple to understand as possible. For example, a frequent service to a centrally-located park and ride lot will be easier to describe in a flyer or 10-second radio segment than a more complicated and customized service.

The cost to provide transit is related primarily to the running time of a transit route, and its productivity is affected by underlying demand, whether the service carries passengers in both directions and whether seats are used more than once during a trip due to passenger turnover along the route. Longer trips with service in one direction only will require more hours and coaches to serve the same number of riders than shorter services that operate in both directions, since for longer trips much of the bus travel time is often spent repositioning rather than carrying passengers. Express services that collect riders along local streets are more expensive to operate than those that originate at a park-and-ride lot due to their longer travel time.

Vanpools are effective for more dispersed origins and destinations

Vanpooling provides one of the most cost-effective and flexible strategies for mitigating the impacts of construction projects. As a rule, vanpool vehicles can be purchased faster than buses and they can be moved from one project to another as demand levels change. Several strategies may increase the demand for vanpooling along construction corridors.

- **Priority:** Vanpools should enjoy the same priority measures that allow speedy travel through construction zones as buses.
- **Fleet Availability:** Anticipating that the demand for vanpools will increase once these major construction projects get underway, additional vanpool vans should be available to meet these demands.
- **Marketing:** People traveling through construction zones should be aware of the full range of travel alternatives available to them, including vanpools.

If the region's providers continue to recover a substantial portion of operating costs from fares, the additional public funding required to expand the region's vanpool programs would be limited to the public operating subsidy and capital costs associated with expanding the program.

Recent Experience Mitigating I-405 and I-5 Construction Impacts

Over the past two years King County Metro has collaborated with WSDOT to mitigate the congestion impacts due to construction in the I-405 corridor. By agreement between the agencies, WSDOT funded additional transit service, which was designed and implemented by Metro. One new route was added between Kenmore and Overlake, and additional service was added to another existing route to provide more capacity and more attractive service as an alternative to driving through the construction area.

To support these services and other public transportation options in the corridor, several marketing and incentive programs were also funded, including among others:

- Vanpool relocation program for up to 18 vanpools
- Bellevue Employer Outreach Program to 1225 employers
- South King County Employer Outreach Program
- 2 Residential Outreach neighborhood incentive programs

- Employee Outreach Program to approximately 2000 service employees
- Vanshare Promotion to form six new vanpool groups
- Bicycle Promotion and installation of 8 bike lockers
- Carpool Promotion campaign

This agreement set a new precedent for use of WSDOT funds for transit service, predicated on its success mitigating the effects of WSDOT's construction activities.

These efforts illustrate both the potential and limitations to using transit as a mitigation measure for roadway construction. The program has drawn new riders to transit, but now that the construction period is coming to an end, either new sustainable revenues need to be identified to make these mitigation services permanent or riders will need to find another travel option. The program was also implemented for a project that had relatively minor traffic impacts, and did not provide a fast alternative path for transit.

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Overview: State and county plans that influence transit

There are several state and county plans that influence transit planning. Below are summaries of plans that affect Metro's planning and operations.

King County Healthscape

Program Website: <http://www.kingcounty.gov/transportation/HealthScape.aspx>

HealthScape is King County's effort to promote public health by improving how communities are built. The results of a past study in King County clearly showed that changes in land use patterns and approaches to transportation investment can help the county achieve its goals related to smart growth, land use, transit efficiency, and improved air quality and public health. Communities with compact neighborhoods, well-connected street networks, mixed use, and orientation to transit deliver benefits to their residents in the form of less automobile dependency, more opportunities to be physically active and healthier, and better air quality at the regional scale. The current focus of the Healthscape program is to develop and implement tools for Development Impact Assessment and assessing benefits of non-motorized transportation investments. Many of the elements studied by Healthscapes that support healthy outcomes also make transit service more efficient and effective, including mixed land uses, well-connected streets, and infrastructure to support walking and bicycling. The Transit Division identified community health as an emerging issue in its Strategic Plan for Public Transportation and is planning to include supporting healthy communities in its Comprehensive Plan and Strategic Plan updates in 2010.

King County Equity and Social Justice Initiative

Initiative website: <http://www.kingcounty.gov/exec/equity.aspx>

The King County Equity and Social Justice Initiative began in 2008 with the goal of eliminating long-standing and persistent inequities and social injustices. To reach the goal of the initiative, all communities must be equipped with the means to provide individuals with access to livable wage, affordable housing, quality education, quality health care, and safe and vibrant neighborhoods. King County is applying the principles of the equity and social justice through steps like intentionally including consideration of equity in policy and decision-making, improving internal education and communication about equity issues, facilitating community partnerships, and improving delivery of county services to take specific actions to support equity and social justice. The Transit Division's Strategic Plan for Public Transportation include strategies to provide federally-required ADA paratransit service through the Access program, provide taxi scrip to low-income residents of King County, provide bus travel training, and implement the Community Access Program (CAP) for seniors and those with disabilities.

Washington State Climate Change Report

State Climate Change Information: <http://www.ecy.wa.gov/climatechange/index.htm>

Leading the Way: Implementing Practical Solutions to the Climate Change Challenge:
http://www.ecy.wa.gov/climatechange/2008CATdocs/ltw_app_v2.pdf

The State of Washington recognizes the opportunities and challenges presented by climate change. *Leading the Way* report lists "most promising" strategies to address climate change for numerous areas including transportation. For transportation, expanding transit and ridesharing, and transportation system pricing (e.g. tolling) are listed as recommended strategies. Specific recommended actions include implementing transit priority measures and increasing HOV capacity, prioritizing transit

investment in energy grant programs and using toll revenues for transit. The Transit Division has goals and strategies that tie in closely with the state recommendations. The Transit Division Comprehensive Plan includes a goal related to environmental quality and the Strategic Plan for Public Transportation has strategies aimed at making transit more competitive with the automobile, improve transit access, and reduce SOV travel.

King County Energy Plan

Plan: <http://your.kingcounty.gov/dnpr/measures/documents/pdf/KC-Energy-Plan-2008.pdf>

The purpose of the King County Energy Plan is to guide King County's planning for future use, generation and conservation of energy and the achievement of the following mandates, as set forth in the 2006 Renewable Energy Order:

- 50 percent of King County's non-transit energy use come from renewable sources by 2012,
- 35 percent of King County's transit energy use come from efficiencies and renewable sources by 2015, and
- 50 percent of King County's transit energy use comes from efficiencies and renewable sources by 2020.

The Energy Plan refers to several actions to be undertaken by Metro Transit in pursuit of these goals, including expanded hybrid electric bus use, hybrid electric support vehicles, synthetic oils, synthetic lubricants, biodiesel when cost effective, ethanol and extended oil drain intervals with conventional oils. In addition, the plan set energy reduction goals for each King County division. The overall energy reduction goal established for Transit Division rolling stock is approximately 327 BTU per ride per year or a total division reduction of 36,161 MMBTU per year for the 5 years through 2012.

2007 King County Climate Plan

Plan: <http://your.kingcounty.gov/exec/news/2007/pdf/climateplan.pdf>

The 2007 King County Climate Plan provides an overview of how King County seeks to reduce greenhouse gas emissions. It works to anticipate and adapt to projected climate change impacts, based on best available science, and builds on over 15 years of efforts across King County departments to stop the causes of climate change and to prepare for regional climate change impacts. The plan set in motion a process to incorporate climate change mitigation and adaptation as critical factors in the cost-benefit evaluations of all decisions made by King County. It is a companion plan to the 2007 King County Energy Plan, summarized above.

The transportation sector is identified at the region's largest source of greenhouse gas emissions and the second largest category of greenhouse gas emissions generated by King County government operations. Accordingly, the plan identifies several goals and actions targeted at reducing emissions from transportation sources. Of note is the goal for King County to *expand and encourage use of alternative modes of transportation such as public transit, carpooling, car-sharing, bicycle and pedestrian trails, sidewalks and non-motorized travel*. The plan indicates that *King County will provide and promote the use of increased and improved public transit service* as an action to pursue this goal.