



I-405 CORRIDOR PROGRAM

FINAL RECOMMENDATION REPORT

2002



Washington State
Department of Transportation





Individuals requiring reasonable accommodation may request written materials in alternate formats, sign language interpreters, physical accessibility accommodations, or other reasonable accommodation by contacting the event sponsor (enter name of event sponsor and phone number, usually 2 weeks before meeting's date). Persons with hearing impairments may call Washington State Telecommunications Relay Service (TTY) at 1-800-833-6388, or Tele Braille at 1-800-833-6385, or Voice at 1-800-833-6384, and ask to be connected to the event sponsor's phone number.

TITLE VI NOTICE TO PUBLIC

It is the Washington State Department of Transportation's (WSDOT) policy to assure that no person shall, on the grounds of race, color, national origin and sex as provided by Title VI of the Civil Rights Act of 1964, be excluded from participation in, be denied the benefit of, or be otherwise discriminated against under any of its federally funded programs and activities. Any person who believes his/her Title VI protection has been violated may file a complaint with WSDOT's Office of Equal Opportunity (OEO). For Title VI complaint forms and advice please contact OEO's Title VI Coordinator at (360) 705-7098.





For two years, representatives from every city and public agency in the I-405 Corridor worked overtime to reach regional agreement on a solution to the I-405 transportation crisis. It's been my privilege to work with such a dedicated group of people. Developing a transportation improvement plan for a 30-mile corridor that is the lifeblood of our communities but at immediate economic risk was a daunting and necessary task. It required the unwavering participation and cooperation of three community-based project committees and their ability to look beyond today. Our reward

came when we succeeded in achieving agreement among program representatives from each city and agency in the corridor for an inclusive and balanced plan of transportation solutions for I-405. The act of mobilizing so many diverse interests around a common goal and turning what many called "just another study" into a plan for action was an inspiring and invaluable learning experience.

The ability of program participants to agree on the I-405 Corridor Plan can be attributed in part to its pioneering multi-modal approach. We propose a package of improvements and upgrades to all modes of movement, from roadways to transit to bike and pedestrian facilities. The plan will benefit all facility users. In addition, these investments offer an exciting opportunity for major environmental enhancements that would not be possible without the program.

The I-405 Corridor is an economic engine for Washington State. Our region's prosperity and high quality of life depend on the corridor's ability to move people and goods. Our communities and businesses are suffering under the weight of intolerable traffic congestion and the situation gets worse with every passing year. We cannot afford to wait. The time is now for the I-405 Corridor Plan.

George Kargianis

Executive Committee Chairman

Contents

1 Introduction	1
The Plan	
How Did Traffic Get So Bad?	
Community Action	
I-405 Corridor Program Goals	
Additional Resources	
2 The Partners	4
Community Partnership	
3 Background	8
Study Areas	
Growth in the Corridor	
Transportation System	
Corridor Travel Conditions	
4 Decision Process	15
Identification Phase	
Evaluation Phase	
Final Recommendation Phase	
5 The Plan	24
A Plan That Works	
6 I-405 Plan: TDM Strategies	27
TDM in Washington State	
I-405 TDM Program	
7 I-405 Plan: Transit and HOV	32
HOV System	
Transit System	
Systems by Subarea	
8 I-405 Plan: Roadway Systems	39
I-405 Improvements	
Arterial Improvements	
Analysis of Managed Lanes	
9 I-405 Plan: Other Key Elements	44
Pedestrian and Bicycle Improvements	
Intelligent Transportation Systems	
Freight Enhancements	
10 I-405 Plan: Environmental Opportunities	46
Goals and Objectives	
Mitigation Strategy	

Appendix A

Appendix B

Appendix C

Appendix D

Appendix E

1. Introduction

The Puget Sound Region is stuck in traffic. Over the past twenty years Washington State has experienced tremendous growth due to its economic opportunity and distinct landscape. However, transportation investments have not kept pace with growth and economic vitality, resulting in gridlock. As an economic and residential hub of the region, the I-405 corridor has been hit especially hard. The corridor includes Bellevue, the state's fourth



largest city, and 25 percent of the region's jobs as well as globally significant companies such as Microsoft and Boeing. Congestion, lasting up to 12 hours a day in some parts of the corridor, has led to costly delays for all users and increasing frustration.

Responding to the transportation crisis, the Washington State Department of Transportation (WSDOT) gathered every city and transportation agency in the corridor to form the I-405 Corridor Program. The Program's goal was to create a comprehensive strategy to reduce congestion and improve mobility along I-405. In November 2001, following more than two years of intensive study, environmental review, and consensus building, the I-405 Program's Executive Committee selected the multi-modal I-405 Plan, establishing a 20-year vision for corridor-wide traffic relief and mobility.

The I-405 Plan is not one massive construction project, but an efficient and integrated system of investments for all transportation users—cars, transit, freight, carpools, vanpools, bicyclists, pedestrians and the environment. In fact, the Plan offers an unparalleled opportunity to improve traffic while fixing and enhancing environmental resources in the corridor.

This report presents a snapshot of the projects and strategies within the I-405 Plan, and documents the community partnership that led to an unprecedented agreement on a regional transportation solution for I-405.

The Plan

- Reduces traffic congestion
- Improves mobility for people and freight
- Fixes key choke points such as the I-405 interchanges at SR-167, I- 90 and SR-520
- Enhances environmental quality
- Improves livability for communities within the corridor
- Supports a vigorous state and regional economy by responding to travel needs
- Accommodates planned regional growth

How Did Traffic Get So Bad?



Originally built in the early 1960's as a bypass to Seattle, strong economic and population growth has transformed I-405 into the second-most-traveled corridor in the state, carrying over 600,000 people each day. In 1963, a second floating bridge across Lake Washington, State Route (SR) 520, opened up the Eastside to more commercial and residential development. As the only continuous, north-south roadway capable of moving high volumes of people and goods in the area east of Lake Washington, I-405 evolved into a key transportation facility serving the needs of the corridor's communities and businesses.

However, increased congestion and lack of mobility on I-405 is threatening the corridor's quality of life and economic future. Even with currently committed and planned transportation improvements, congestion and mobility problems for all forms of travel in the corridor are forecasted to get much worse over the next 20 years. The corridor will reach or exceed concurrency levels by 2020, limiting the region's ability to achieve its growth management objectives and increasing the pressure for urban sprawl.

Community Action



Requests for the state to provide traffic relief came from frustrated Eastside residents, businesses, developers and the Eastside Transportation Partnership (ETP), a coalition formed by corridor interests in 1986 to address traffic problems.

Top concerns in the corridor

- Severe congestion, on regional freeways and local arterials
- Traffic intrusion into neighborhoods and business districts
- Reduced automobile, pedestrian and bicycle safety
- Degradation of air quality and increased noise levels
- Access limitations to jobs, services, recreation and health care, particularly for low income, the young and the elderly
- Severe limits on the ability of transit to provide timely levels of service at reasonable costs

I-405 Corridor Program Goals

The goal of the I-405 Corridor Program was to create a comprehensive strategy to reduce traffic congestion and improve mobility, safety and the quality of life for communities in the I-405 Corridor.

More than 30 corridor cities and public agencies responsible for planning, regulating and implementing transportation improvements were gathered by WSDOT to participate in the Program's decision making.

The Program also included a programmatic Environmental Impact Statement (EIS), concentrating on broad corridor-wide issues related to travel modes and transportation system performance. The EIS enabled decisions to focus on mode choice, the general location of improvements and how combinations of improvements could work together as a comprehensive system.

Additional Resources

The I-405 Final Recommendation Report is one of five reports (see Appendix A) prepared for the EIS documenting the I-405 Corridor Program.

Plan decision process

- Background Report
- Alternatives Report
- Draft EIS
- Final EIS

2. The Partners

The goal of the I-405 Corridor Program to develop a comprehensive transportation strategy for the entire corridor presented a daunting but necessary challenge to the communities and program partners. Mobilization required the equal participation and commitment of all program decision makers to work overtime towards a common goal. After two years of broad-based public outreach and environmental review, the Program achieved agreement among program representatives from each city and agency in the corridor on an inclusive and balanced plan for transportation solutions for I-405.

Community Partnership

The I-405 Corridor Program was based on a joint decision-making process between the Program co-leads, partners and the public. The co-lead agencies were the Washington Department of Transportation (WSDOT), the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the Central Puget Sound Regional Transit Authority (Sound Transit) and the King County Department of Transportation.



The program's success rested on the staggering task of cooperation between a broad and varied collection of communities and interests from a 15-city corridor spanning over 30 miles. Corridor interests included residents, business owners and environmental agencies supporting a wide variety of philosophies on effective transportation modes ranging from HOV, transit, freight and single occupancy vehicles (SOVs). The co-leads also recognized the need to sensitively navigate the pre-program rift that had arisen between roadway supporters and transit-only proponents.

A previous effort to solve the corridor's traffic problems saw limited success due to the lack of participation by all the communities in the corridor. Program leaders encouraged and emphasized ongoing participation in the program decision-making from the general public, elected officials, and the cities and counties affected by I-405 to overcome this earlier challenge.

Project Committees

The program's three committees (see Appendix B) consisted of over 80 members providing direction, feedback and promoting regional consensus for the Program's decisions.

Citizen Committee: Citizens representing a wide range of business, environmental, freight, modal and neighborhood groups.

Steering Committee: Technical staff representing area municipalities, environmental and regulatory agencies and transportation service providers.

Executive Committee: Local, state and federal officials made the final recommendation of solutions, using input from the public and the other program committees and project management team.



Figure 2-1

The structure of the three-committee decision-making process facilitated the flow of information between committee members and the project management team as well as the facilitation of a common understanding of program issues and decisions. The committees adopted an aggressive schedule to meet program demands, meeting more than 80 times collectively over the course of two years. In addition, Program staff and committee members provided briefings to neighborhood associations, and civic and business interest groups throughout the corridor.

The program was able to make record decision-making progress compared to similar transportation improvement projects in other parts of the country. The work of the committees and the public involvement program were integrated within the required NEPA process and the EIS. Figure 2-1 shows the relationship between the three committees and the public.

Public Involvement Program

Community input was gathered through a wide-ranging public involvement program that included open houses, workshops, media outreach, online surveys and regularly distributed project information. Outreach activities were designed to encourage and foster the participation of all corridor communities and interests by working towards the following goals:

- Create accessible and responsive decision-making process by building ownership of solutions by all jurisdictions, interest groups and public
- Generate range of reasonable and feasible solutions acceptable to corridor communities
- Comply with public involvement legal requirements at each stage of environmental review process

The public involvement program goals were met by realizing the following objectives:

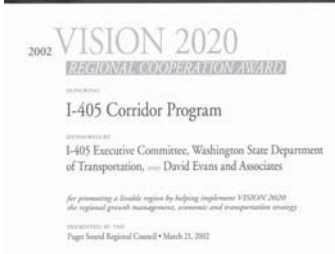
- Provide all parties with a clear understanding of transportation problems on I-405
- Instill a belief that the program can accomplish something meaningful, but with the understanding that it will require tough choices to be made
- Give interest groups opportunities for meaningful dialogue and creative problem solving

- Disseminate information to the public in a clear and timely manner
- Make program information easily accessible to anyone interested at any time
- Deliver information to target audiences in most efficient, cost-effective manner possible

With these goals and objectives in mind, a public opinion survey and interviews with neighborhood leaders were conducted to identify the participants' level of support for possible solutions. The public opinion phone survey, conducted in February 2001, included 1200 randomly selected corridor residents.

The public outreach program included nine public meetings held in multiple cities along the corridor, four special topic workshops to allow more discussion time on specific issues, and over 175 community briefings. Thousands of residents and businesses also received regularly distributed project newsletters, e-mail updates and Citizen Guides that provided up-to-date information on project progress and milestones. A detailed project website provided committee members, interest groups and the public with easy access to project information, the Community Calendar, media articles, solution descriptions and committee meeting materials.

In addition, the project team conducted interviews with community service organizations that serve "special populations," including non-English speakers, the elderly and low-income residents, to identify the appropriate languages, communication channels and activities to reach these populations. The program reached out to these "special populations" by distributing translated Program materials in the three most used non-English languages.



Media outreach was also critical to effectively reach the entire corridor population (500,000+) and increase visibility of program messages and progress. Program partners were heavily involved in the media outreach and served as credible third party spokespeople. Extensive efforts were made to brief reporters on the technical details of the program, resulting in more informed Program coverage. Media relation efforts resulted in approximately 150 print, radio and television stories, and 10 editorials and op-ed pieces over a two-year period.

Recognizing a job well done, the Program was awarded the Puget Sound Regional Council Vision 2020 Award and the Public Relations Society of America 2001 Totem Award for achieving extensive regional cooperation and practicing an outstanding community outreach program. The Program was also awarded the American Association of State Highway and Transportation Officials' Smart Moves Award: Transportation Strategies for Smart Growth, the Association for Commuter Transportation Excellence in Public Leadership for its TDM program and the National Association of Environmental Professionals Presidents Environmental Excellence Award.

A Collaborative Process

The I-405 Corridor Program was a national demonstration pilot of the “Reinventing NEPA” process that moves NEPA (National Environmental Protection Act) decision-making to the early stages of transportation projects. The process includes three “concurrence” points and nine “consensus” points at key milestones and decision points within the NEPA process to ensure increased communication and coordination between involved agencies and jurisdictions. Agencies with jurisdiction include resource, regulatory and jurisdictional agencies with permit actions or regulatory authority over the projects. These agencies have chartered responsibilities to review the status of the I-405 Corridor Program at each decision point.



The three concurrence points were: (1) purpose and need statement; (2) selection of alternatives to advance for detailed study in the Draft EIS; and (3) selection of the preferred alternative and mitigation concept in the Final EIS.

At each concurrence point, the agencies with jurisdiction had the responsibility to approve, deny or comment on the decisions. A written concurrence with the Statement of Purpose and Need for the Program was received from each participating agency during the fall of 1999. Written confirmation of concurrence with the range of alternatives to advance for detailed study in the Draft EIS was received from each participating agency with jurisdiction during the summer and fall of 2000. For the latter concurrence point, several agencies attached comments to their concurrence identifying specific areas of interest or concern, related to future analysis and review. Concurrence on the selection of a Preferred Alternative was achieved in Winter 2002.

The nine consensus points are less formal than concurrence and typically address issues that are important, but less weighty than those requiring concurrence. Consensus was defined as substantial agreement among the agencies with jurisdiction; it does not require unanimity about a decision. In all cases, agreement must be strong enough that the agencies are committed to implementing the decision. Resolution of concurrence and consensus points by the agencies with jurisdiction during the I-405 Corridor Program process is included in Appendix B. Consensus points occurred at the following milestones in the Reinventing NEPA process:

- Statement of Purpose and Need (draft and final)
- Initial screening criteria for alternatives
- Fatal flaw elimination of alternatives
- Identification of additional data needs
- Second-level screening of alternatives
- Alternatives to include in Draft EIS
- Decision to publish Draft EIS
- Preferred alternative in Final EIS
- Decision to publish Final EIS

3. Background

Study area

The I-405 Corridor encompasses about 230 square miles and extends on both sides of I-405 from its southern connection to I-5 at Tukwila, to its northern intersection with I-5 in Snohomish County, north of Lynnwood (Figure 3-1). The study area includes the cities of Tukwila, Renton, Newcastle, Bellevue, Beaux Arts, Clyde Hill, Medina, Hunts Point, Yarrow Point, Redmond, Kirkland, Woodinville, and Bothell, as well as portions of the cities of Issaquah, Kenmore, Kent, Lynnwood, and Mercer Island and unincorporated areas of King and Snohomish counties.

The unique geographic features such as lakes, steep hills and rivers, that define western Washington also present bottlenecks and barriers to an effective transportation system. The roadway network of I-405 reflects the local geography and development patterns that have occurred over the years. The sparse roadway network in the I-405 corridor has created the situation where state highways frequently serve as the principal means of transportation, even for short trips. Major local arterials have also become heavily congested as the area's population and employment has grown.

Growth in the corridor



I-405 has changed dramatically, from a Seattle bypass in the 1960s, to the roadway of choice for most north-south trips east of Lake Washington. More than two-thirds of the total trips on I-405 begin and end within the corridor itself. The remaining trips often lead to communities to the south along SR-167 and developing areas to the east in the Cascade foothills.

Study Area Population, Employment, and Households

The Puget Sound Region has experienced steady population and employment growth over the past four decades. Employment in the I-405 communities have more than tripled, while population almost doubled.

As shown in Figure 3-2, population and employment will continue to grow. Forecasts show that by 2020 an additional 144,000 people are expected to be employed within the study area, while the population is expected to reach approximately 765,000. Redmond, Bellevue, Tukwila/South Center, and Kent are expected to receive the highest employment and household growth in the corridor.

I-405 Corridor

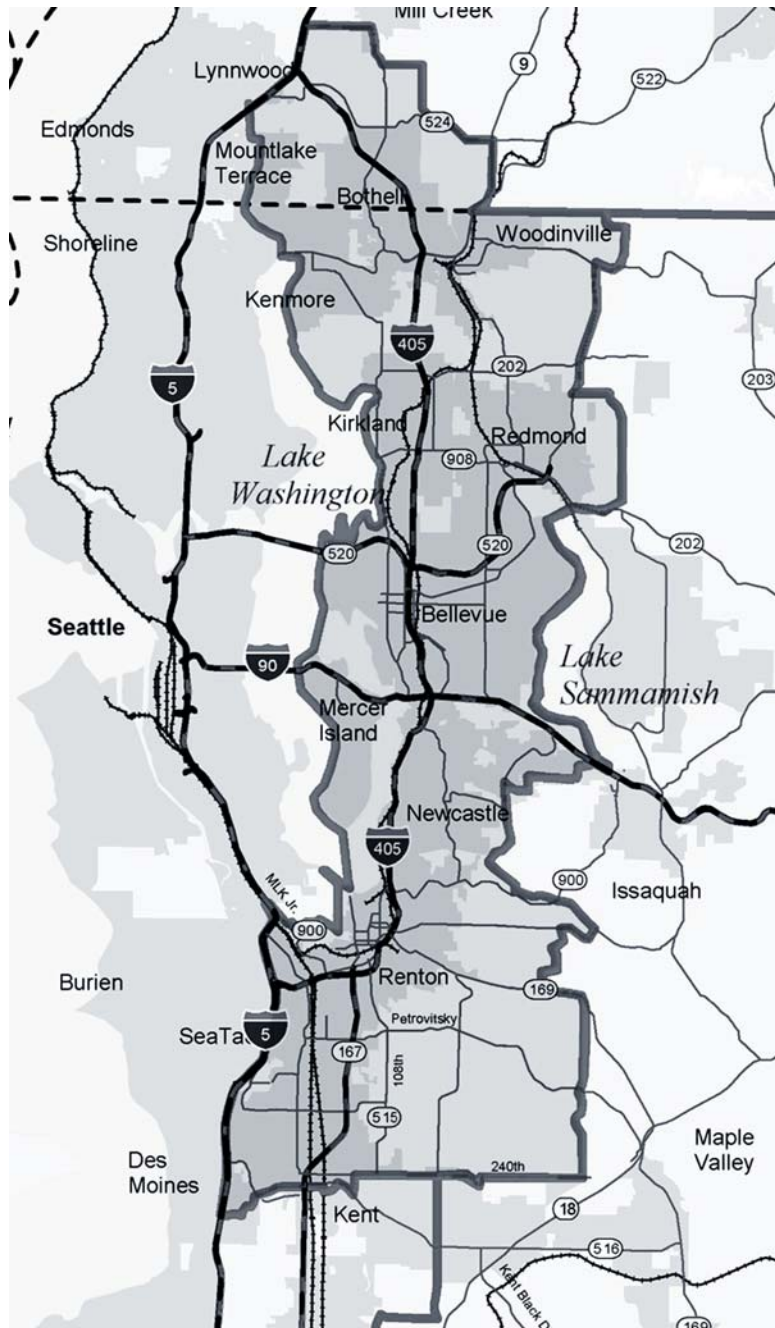


Figure 3-1

Growth Management

In 1990, the Washington State Legislature passed the Growth Management Act (RCW 36.70A) to manage growth and influence development patterns within the state. The Growth Management Act (GMA) requires coordination and consistency in local planning efforts, as well as compatibility of local, regional, and state planning. The GMA defines

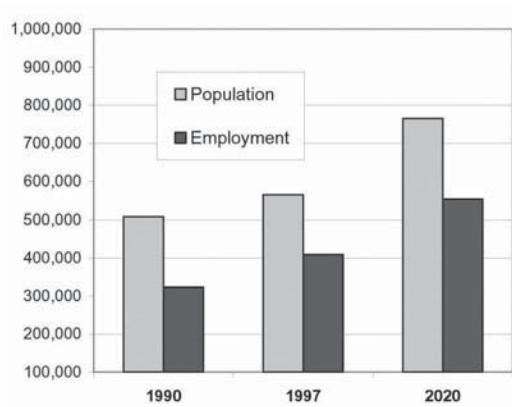


Figure 3-2: I-405 Population and Employment Growth

urban and rural growth areas (UGAs), designates urban centers, establishes density targets, and establishes minimum levels of services on key state highways. I-405 is located within the Seattle-area growth boundary.

The GMA requires local jurisdictions to adopt and enforce ordinances that ensure the maintenance of transportation service standards before approving new development projects. This provision establishes growth boundaries, allowing new developments only when roads and other infrastructure or services are available to handle the demands they create.

Most cities and counties located in the I-405 Corridor have adopted a comprehensive transportation plan and a concurrency ordinance. However, public policy and private investments are often disconnected. The area's earlier urban growth practices predate growth management planning and continue to dominate even as new development strategies are employed. The pre-GMA practices favor automobile access over new alternative travel options. As a result, Eastside cities are facing serious congestion and mobility issues.

Improvements to local and state highways are essential to maintain the appropriate growth management balance. Without transportation improvements, there will be pressure for growth in rural areas or at the urban fringe. This pattern of growth will increase demand on the transportation infrastructure, demand on public services, adverse impacts on the environment, vehicular congestion and long-term increases in the cost of providing public services.

Transportation System

The transportation system to the east of Lake Washington consists of a network of regional highways linking major activity centers, supported by local circulation systems. I-405, the major north/south facility is located in the western portion of the corridor. Increasing travel demands are straining the capacity of the existing facilities in the corridor.

I-405 Freeway

Interstate 405 begins at I-5 in Tukwila and ends in the north at I-5 outside of Lynnwood. I-405 varies from six to ten lanes along the 30-mile corridor. The section of I-405 from I-5

in Tukwila to I-90 includes two general-purpose lanes and an HOV lane in each direction. The next section from I-90 to SR-522 in Bothell has three general-purpose lanes and an HOV lane in each direction except for the northbound direction between SR-520 and NE 70th, where it has an additional climbing lane. On the section north of SR-522, I-405 has two general-purpose lanes and an HOV lane in each direction. There are a total of 27 interchanges along I-405, including the connections with Interstate 5.

Supporting Roadway Network

Much of I-405s adjacent arterial system is discontinuous because of topography and development patterns. The pattern of land development is predominantly suburban, resulting in a different type of road system compared to more traditional street patterns found in older cities. Instead of a regular grid system, arterials are curvilinear, generally spaced at long and irregular intervals. These arterials are fed by smaller streets serving residential and business developments that frequently “dead end” in a developments, rather than linking to alternate arterial routes. On the Eastside there are very few east/west through-streets that continue for any great distance. This means more traffic on fewer streets, resulting in more congestion on the key roadways.

The I-405 corridor has about 13 percent of the roadways in the Puget Sound Region, but nearly 18 percent of the population. This is typical of a growing urban area. Overall, the roadway network in the study area is relatively sparse. Major arterials, maintained by local jurisdictions, include the Woodinville-Duvall Road, Bellevue-Redmond Road, Petrovitsky Road, Richards Road, 148th Ave. NE, and the Coal Creek Parkway.

The roadway network consists of nine state highways that connect with I-405 . They include SR-167, SR-169, SR-181, SR-900 (Sunset and Park interchanges), I-90, SR-520, SR-908, SR-522 and SR-527. At the northern end of the study area, I-405 becomes SR-525 in Lynnwood, while at the southern end SR-518 extends west towards SeaTac and Burien. Two other state highways (SR-515 and SR-524) cross but do not connect with I-405. Another highway in the primary study area, SR-202, parallels I-405 between SR-520 and SR-522, along the east side of the Sammamish Valley.

Transit System and Supporting Network

Metro (King County), Sound Transit (King, Pierce, Snohomish Counties), and Community Transit (Snohomish County) currently provide transit service for the I-405 corridor. Metro provides local service between and within Eastside communities and express service between major urban centers. Community Transit provides express service between urban centers in Snohomish County and the Eastside. Sound Transit provides express service between selected urban centers. As of early 2002, 17 of 19 routes are in operation. The three major I-405 transit centers are located in Bellevue, Overlake and Kirkland. Planning is underway for new park-and-ride lots, transit centers, and direct access ramps, including large-scale improvements to several I-405 interchanges.

During the area’s initial development, there was very little public transit service. In 1972, Metro assumed responsibility for King County public transit, significantly improving service. I-405 bus service now serves multiple Eastside urban centers as well as Seattle, greatly increasing convenience and connectivity. Transit service remains focused on work trips, with more neighborhood service, and better off-peak connections.

Metro, Sound Transit and Community Transit serve 21 permanent park-and-ride lots and 34 leased lots in the corridor. Parking demand for many of the permanent lots exceeds 100 percent. However, many of the leased lots, often church parking lots, with fewer than 50 available parking spaces, are relatively small. More than 160 vanpools travel along I-405 each day. Vanpooling has grown by more than 60 percent since 1995.

Pedestrian and Bicycle Facilities

The bicycle and pedestrian facilities in the corridor include dedicated trails, sidewalks and bike lanes. To accommodate bicyclist demand, all King County buses were equipped in 1994 with bicycle racks that carry two bicycles per bus. Metro buses transport an estimated 465,000 bikes a year throughout the corridor. Metro and Community Transit also offer provide bike racks and lockers at park-and-ride lots and transit centers.

However, long non-motorized commute trips on I-405 can be hindered due to the lack of north-south arterials, topography and roadway infrastructure like highways and cul-de-sacs. Without an adequate trail system paralleling the freeway, I-405 is a major impediment to non-motorized travel, breaking the connectivity of the trail system.

Corridor Travel Conditions

Corridor congestion has drastically increased over the past decade. To measure the condition of travel on I-405, several indicators were used: growth, trip patterns, travel modes and travel times.

Travel Growth

The Puget Sound region has experienced dramatic growth in both the manufacturing (aerospace and aviation) and service-oriented (software, computer technologies and biotechnology) sectors. Both sectors generate high volumes of traffic on the freeway system,

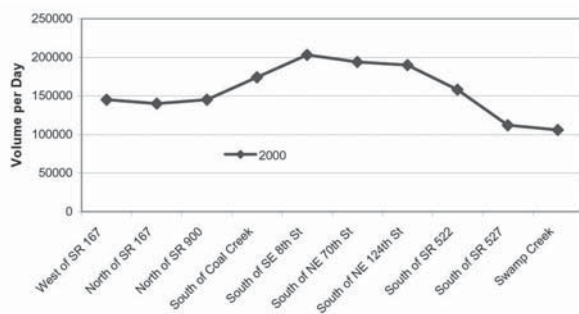


Figure 3-3: I-405 Daily Traffic Volumes

including I-405. Between 1970 and 2000, the average daily traffic on several sections of I-405 increased nearly five-fold. I-405 currently carries the heaviest traffic volume in the region and up to 60 to 70 percent of the total daily traffic volumes in the north-south direction. In the east-west direction within the corridor, arterial streets carry 30 to 40 percent.

In 2000, the highest volumes on I-405 occurred between I-90 and SR-520 in Bellevue with

nearly 205,000 vehicles per day (Figure 3-3). I-405 traffic volumes are affected by different travel demands as well as available capacity. At several locations, freeway daily traffic counts have not increased much in recent years because the roadway is nearing capacity, with little space for additional vehicles. Person trips are expected to increase more than 50 percent by 2020.

Trip Patterns

About 45 percent of the trips in this corridor begin or end outside the corridor. About 55 percent of the trips are within the corridor. Over 70 percent of all trips are less than 10 miles in length, while over 35 percent of the trips being greater than 30 miles. I-405 will likely continue to be the chosen route for longer trips, as there are no continuous, parallel north-south alternative routes in the corridor.

Travel Modes

Single-occupant vehicles (SOVs) generate the majority of the corridor travel demand. Up to 78 percent of work trips on I-405 are made in SOVs. High-occupancy vehicles (HOVs) and transit users comprise around 20 percent of I-405 work trips.

There have been significant changes over the last few decades in the types of trips taken on I-405. Work trips have decreased while non-work trips have increased as lifestyles and workstyles have changed. Almost 40 percent of I-405 trips are for shopping or recreational purposes. Trips that do not start or end at home (e.g., traveling from work to day care or shopping) comprise another 40 percent and reflect the trend in multiple-stop trips. Other trip purposes include school trips (2%) and commercial vehicles (11%).

Congestion

Across the Puget Sound region, the daily vehicle miles of travel (VMT) have doubled in the past twenty years. However, the roadway network has not expanded to accommodate travel demands, resulting in increased congestion on all roads, especially the freeway system (see Figure

3-4). The I-405 Corridor Program defines congestion as travel speeds below 45 mph.

Traffic congestion along I-405, once limited to morning and afternoon peak periods, now lasts up to 12 hours from I-5 in Tukwila to NE Park Drive in Renton. Traffic congestion on most sections of I-405 last two to seven hours a day. The spillover traffic from vehicles that cannot access I-405 ramps often cause traffic to back up onto local arterials.

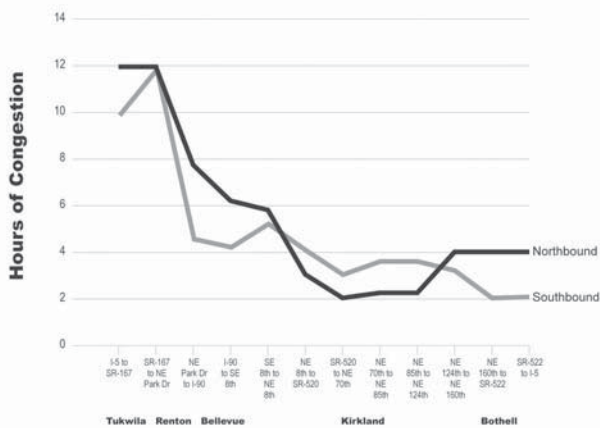


Figure 3-4: Current I-405 Congestion Levels

Travel Times

The average travel times for evening peak hour trips that originate and end in I-405 are expected

to increase 36 percent by 2020. For the solo commuter time spent in congestion will equal an additional six to eight working days a year for a 10-mile trip. For longer trips, the additional time spent in traffic will equal three to four weeks a year. HOV travel times typically operate 15-20 miles per hour faster than adjacent general-purpose lanes during congested time periods.

Travel Time Reliability

Not only do travel times vary by segment on I-405 they are unpredictable from day to day. A transportation system is effective when travelers experience little or no deviation in travel time for the same trip.

The Washington State Transportation Center (TRAC) conducted research to measure travel time reliability for general traffic along I-405. The following list summarizes the sections of I-405 that were found to have poor reliability in 1999.

- Tukwila to Bellevue during mid-day, evening and morning peak periods
- Bellevue to Tukwila throughout the day (from 6:00 a.m. to 6:30 p.m.)
- Bellevue to SR-522 during the p.m. peak period.
- SR-522 to Bellevue during the a.m. peak period

Traffic incidents along the freeway corridor are the major causes of the reliability problems. Travel in I-405 HOV lanes is considerably more reliable than in the general-purpose lanes. However, HOV reliability suffers when there is a major incident or with stop-and-go conditions, resulting in the decrease of speed and violations by non-HOVs.

Freight Mobility

Puget Sound roadways carry about 1.2 million truck trips each day, with about 70 percent of those trips occurring within King County. I-405 carries a substantial portion of those trips, moving up to 90 percent of the total truck origins and destinations in east King County. Products shipped by truck across I-90 from eastern Washington reach points north and south of Seattle via I-405. I-405 also serves local freight delivery to-and-from cities along the corridor.



The decreasing reliability of the regional transportation system, including I-405, has created a serious problem for regional freight mobility. Currently, truck traffic on the south portion of I-405 comprises up to 8,000 vehicles per day, representing around seven percent of total Renton traffic. By 2020, truck volumes are expected to increase by up to 75 percent, approaching 10 percent of total daily traffic along southern portions of I-405. Substantial delay as a result of congestion costs the region's businesses nearly \$700 million a year. The inclusion of light-duty delivery and service trucks, accounting for many of the region's freight trips, would push these figures higher.

4. Decision Process

The program's Executive Committee oversaw the program's key decisions, from project initiation to the selection of the Preferred Alternative. The decision-making approach was designed to ensure definitive review of all reasonable alternatives for the corridor, including work from previous corridor studies. The three primary decision phases were the Identification Phase, Evaluation Phase and a Recommendations Phase.

Identification Phase



This phase identified corridor issues and examined a great number of potential projects and improvements.

Initial Concepts

Over 300 separate projects and strategies were initially identified for the Program. The ideas were collected from several sources including scoping meetings, meetings with local communities, stakeholder interviews, committee members, previous studies and projects and strategies from corridor cities' transportation plans.

The options varied in complexity, ranging from minor improvements such as adding right turn lanes at intersections, to major projects such as rail or the construction of additional freeway lanes. The projects and strategies considered were grouped in seventeen major categories:

- Basic I-405 Improvement Projects
- I-405 Through-Capacity (additional general-purpose lanes, express lanes)
- Connecting Freeway Capacity
- Arterial Capacity (includes ETP and MTP projects) and Interchange Improvements
- Arterial Interchange Improvements
- Collector Distributor Lanes
- HOV Projects (additional HOV lanes, HOV interchange ramps, arterial HOV lanes)
- Freight Mobility Strategies
- Transportation Systems Management (TSM)
- High Capacity Transit (HCT)
- Transit Headways and Service
- Park-and-Ride Lots and Transit Centers
- Travel Demand Management (TDM) Strategies

- Pedestrian and Bicycle Facilities
- Congestion Pricing
- Land Use
- Other ideas - traveler information system and other intelligent transportation systems (ITS), regional TDM; supporting more telecommuting, and more.

These elements were included in the “themes” developed for the second-level screening. The broad review of potential improvements was essential towards addressing the corridor’s diverse interests. Program partners agreed that no one alternative would solve the variety of existing and future transportation needs.

Screening Process

The screening process, conducted in first and second levels, was used to narrow down the initial list of 300 projects and strategies. The screening process led to the development of the four alternatives examined in the draft environmental impact statement (DEIS).

Two sets of screening criteria were developed for the program, one for each screening level. The screening criteria determined what information was provided to the decision-makers.

The first-level screening criteria were developed to identify projects or strategies with fatal flaws, eliminating them from further consideration. The second-level screening criteria were used to evaluate packages of projects, referred to as “themes.” The second-level screening was more detailed than the first-level screening.

First Level Screening

The first-level screening was used to find fatal flaws determined by any project, idea or concept that did not meet the Program’s purpose and needs or was clearly infeasible. Program cost was not used as a criterion. The majority of initial concepts were considered reasonable. Following the first-level screening, the following modal themes remained under consideration and were later included as key elements of the four alternatives examined in the DEIS:

- **Transportation Demand Management Strategies** designed to reduce the need for road travel, particularly the number of single occupant trips during peak periods, and overall travel demand.
- **Transit/High-Occupancy Vehicle (HOV)** to increase capacity and improve service for transit/HOVs, vanpools and park-and-rides and TDM.
- **High Capacity Transit (HCT)** designed to connect urban centers in the corridor, including service to and from Seattle; improves arterial bus service to feed the HCT system.
- **Arterial** improvements to provide capacity for transit and general-purpose traffic on the arterial system.
- **General Purpose** capacity on I-405 is significantly increased.
- **Express Lanes** managed through control pricing; Transit/HOV, general-purpose traffic and freight use allowed.
- **Roadway Capacity** increased through the widening of I-405 and arterial routes, along with the addition of a parallel corridor route in east King County.

Second-Level Screening

The Program was able to compare a broad range of potential solutions for the corridor using combinations of the modal themes from the first screening level. Analyzing the effects of these themes allowed the partners to compare the modal effects on congestion and mobility in the corridor. The second-level screening criteria identified transportation, financial, social and environmental data to assess how each theme would meet the Program objectives. The criteria were not prioritized.

The second-level screening observed impacts on congestion and mobility in the study area by each modal approach (theme) and its relative costs. Environmental impacts were also identified, providing a comprehensive picture of the benefits and costs for each approach. When viewed by theme, the screening results showed a number of differences in performance. Themes that used strategies to reduce the number of vehicles on the roadway, were less expensive in terms of facility costs, but had minimal overall effects on reducing congestion. The themes that added capacity appeared to have the greatest potential to impact the environment, were quite expensive and would require extensive coordination with I-405 jurisdictions.

Evaluation Phase

The evaluation phase focused on developing and evaluating four action alternatives and a no action alternative. The evaluation phase led to the development of the alternatives analyzed in the environmental process.

Developing Alternatives

Based upon the results of the second-level screening, several projects were deleted from further consideration. The remaining projects and strategies were developed into four alternative approaches, in addition to the required “no action” alternative. Each of the four alternatives emphasized a specific type of travel—such as transit, car, truck—using a combination of some or all of the following:

- Implementing a range of transportation demand management (TDM) measures
- Expanding the capacity of the existing I-405 freeway
- Expanding the capacity and improving the continuity of the adjacent arterial network
- Expanding the capacity of the existing bus system
- Implementing new High-Capacity Transit (HCT) within corridor
- Implementing freight improvements
- Improving bicycle and pedestrian safety

The Alternatives

The four alternatives created a set of feasible approaches to improve mobility in the corridor. The four alternatives ranged from an emphasis on high capacity transit and transportation demand management to a focus on increasing general capacity on the roads in

the corridor. In July 2000 the ideas were packaged into four multi-modal alternatives, each with a set of projects and strategies, crafted to meet the purpose and need of the program.

Alternative 1. High Capacity Transit/Transportation Demand Management Emphasis

- High Capacity Transit connecting urban centers
- Transit service doubled
- Basic I-405 improvements made to reduce congestion at choke points like SR-167
- HOV lanes added to key arterials connecting with I-405
- Added park-and-ride lots and transit centers
- Expanded pedestrian and bicycle facilities
- Transportation Demand Management program to encourage carpool and vanpool use
- Basic safety improvements

Alternative 2. Mixed Mode with High Capacity Transit Emphasis

- High Capacity Transit connecting urban centers
- Transit service doubled
- One general-purpose traffic lane added each direction to fix bottlenecks
- HOV lanes added to key arterials connecting with I-405
- Arterial improvements planned by local agencies
- Added park-and-ride lots and transit centers
- Freight mobility improvements
- TDM program
- Expanded pedestrian and bicycle facilities
- Expanded Intelligent Transportation Systems
- Basic safety improvements

Alternative 3. Mixed Mode Emphasis

- Bus Rapid Transit connecting urban centers
- Transit service doubled
- Two general-purpose lanes added each direction to reduce congestion at choke points
- Arterial improvements planned by local agencies
- HOV and general traffic lanes added to key arterial corridors
- Direct HOV ramps added along I-405
- Added park-and-ride lots and transit centers
- Freight mobility improvements
- Expanded TDM program
- Expanded pedestrian and bicycle facilities
- Expanded ITS systems
- Basic safety improvements

Alternative 4. General Capacity Emphasis

- One additional general-purpose traffic lane added in each direction to reduce congestion at choke points like SR-167

- Two express lanes in each direction
- General traffic lanes added to key arterial corridors
- Bus service increased by 50 percent
- Additional HOV lanes
- Expanded TDM programs
- Expanded ITS systems
- Basic safety improvements

No Action Alternative

The required “no action” alternative included all of the existing committed and funded highway and transit improvement projects in the corridor expected to be implemented over the next six years. Additionally, a limited expansion of state highways was assumed as well as several arterial improvements implemented by local agencies.

Environmental Impact Statement

The four action alternatives along with the “no action” alternative were analyzed in a programmatic environmental impact statement (EIS). The draft environmental impact statement (DEIS), issued in August 2001, focused on broad corridor-wide issues related to travel modes and transportation system performance. This analysis enabled program decisions based on mode choice, corridor selection, general location of improvements and how combinations of improvements would function together as a system to solve corridor-wide transportation problems. The Program did not focus on specific design details or precise footprints for the considered improvements. The DEIS:

- Identifies and describes potentially significant environmental actions of each alternative (both adverse and beneficial);
- Identifies actions to minimize unavoidable adverse impacts;
- Enables decision makers to identify the solution that best meets the purpose of the project; and
- Provides the public and other agencies with an opportunity to review and comment on project actions and proposed alternatives.

The DEIS invited public and agency comments and review on the content and conclusions of the environmental analysis. The comments were considered, responses developed, and corrections and revisions were made to the DEIS before it was finalized and issued as a Final EIS (FEIS) in June 2002.

Evaluation Criteria

The alternatives were compared in terms of their transportation benefits, impacts to the natural and built environment and costs. The alternatives were evaluated using the criteria below and the findings were reported in a series of Expertise Reports listed in Appendix A.

A. Improve Mobility

- Serve as much of the 2020 daily travel demand within the corridor as possible

- Increase share of commuter trips by transit, HOV, bicycle, and pedestrian modes
- Reduce travel times for all modes between major activity centers
- Improve reliability of travel times for all modes
- Provide connections to other regional systems
- Provide spare capacity to accommodate post 2020 demands
- Ensure compatibility with other regional transportation improvement projects

Specific to Roadway/Freeway

- Increase corridor’s freight and person-carrying capacity
- Improve reliability of travel time for general traffic and freight

Specific to Transit

- Increase share of commuter trips by transit
- Reduce travel times on transit within the study area
- Improve reliability of transit travel times

B. Reduce Congestion

- Reduce congestion on study area freeways and arterials
- Reduce or maintain miles traveled (per capita) within the study area and region
- Provide spare capacity to accommodate post 2020 demands

Specific to Roadway/Freeway

- Reduce congestion along I-405
- Reduce congestion on I-405 and other freeways/arterials

Specific to Transit

- Contribute to the congestion reduction within the corridor

C. Improve Livability

- Accommodate planned growth in study area
- Minimize neighborhood impacts

D. Improve Safety of All Modes

- Improve the safety of all modes

E. Environmentally Responsive

- **Air Quality.** Minimize regional emissions of nitrogen oxides (NO_x), carbon monoxide (CO) and volatile organic compounds (VOCs).
- **Land Use.** Accommodate planned land use, development patterns and infill within the study area.
- **Land Use, Transportation Plans and Policies.** Demonstrate consistency with adopted regional and local land use and transportation plans and policies.
- **Environmental Justice.** Avoid potentially high and adverse environmental and/or human health impacts that have the potential to fall disproportionately on minority and/or low-income populations.
- **Economic Effects.** Encourage desired distribution and level of economic activity in study area.

F. Solutions Can Be Implemented

- Total capital and operating costs are within a reasonable range of funding during the next twenty years
- Public support is evident

Results from the Alternative Analysis

Key differences found among the alternatives, as documented in the Transportation Expertise Report (DEA and Mirai Associates, August 2001), are shown in Figures 4-1 through 4-3.

Effects on the Environment

Each alternative includes steps for improved levels of service and reducing congestion and generally result in slight reductions in emissions of several air pollutants, which could improve regional air quality. The proposed removal of existing barriers to fish passage and implementation of storm water treatment under the alternatives could benefit aquatic habitat.

Final Recommendation Phase

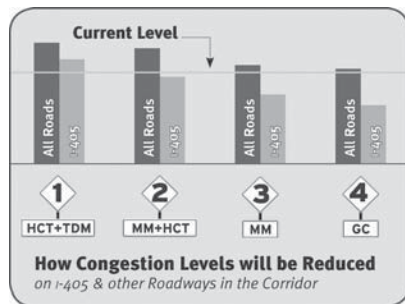


Figure 4-1: Mobility Improvement

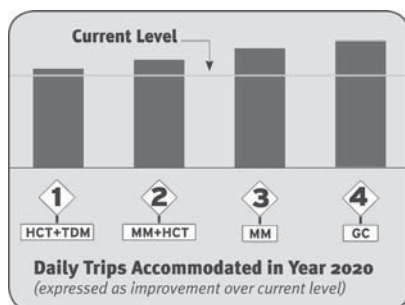


Figure 4-2: Congestion Reduction

Following the completion of the DEIS, the Program moved into the preferred alternative recommendation phase.

Development of Preferred Alternative

In January 2001, the I-405 Corridor Program Executive Committee endorsed a Preliminary Preferred Alternative (PPA) representing the direction the committee was moving towards for the Program. The PPA was a non-binding consensus point based on public input, guidance from the Steering and Citizen committees and information provided in the draft expertise reports. The DEIS was not yet complete at his time.

The PPA was based on Alternative 3, the Mixed Mode Emphasis. Using this guidance, a number of issues were evaluated during the EIS process before selecting the Preferred Alternative.

Selection of Preferred Alternative

In November 2001, the Executive Committee recommended a Preferred Alternative (PA) for analysis in the FEIS. The PA, or the I-405 Plan, consists of a set of projects and actions to meet the varied needs of corridor users - commuters, businesses, freight and Eastside residents. The I-405 Plan, was finalized based upon public hearings, comments on the DEIS, analysis of the preferred alternative in the Final EIS and recommendations from the other program committees. The performance of the PA was measured by the same criteria used to evaluate Alternatives 1 to 4. The details of the PA analysis, as well as the analysis of Alternatives 1 to 4, is included in the FEIS.

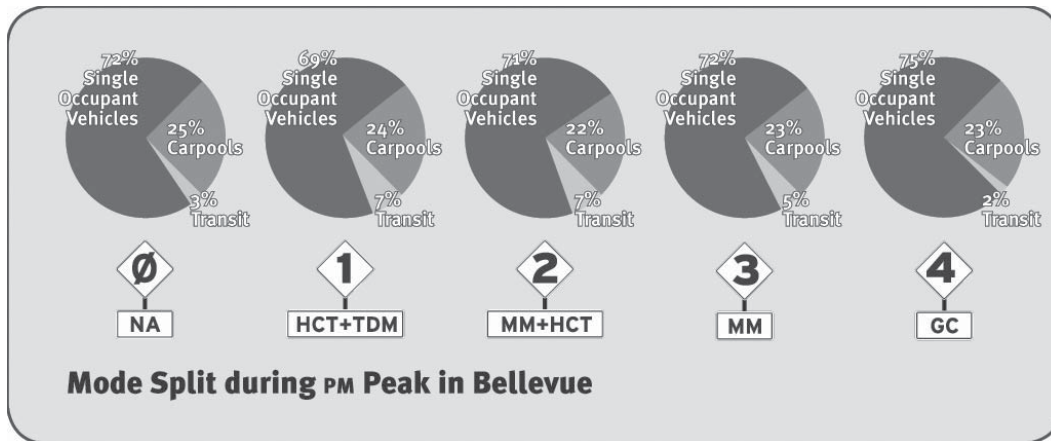


Figure 4-3: Mode Split Improvement

Highlights

The I-405 Plan includes more than 150 multi-modal projects and actions to improve mobility in the corridor. The I-405 Plan provides a three-tiered transit system to move riders efficiently throughout the day. Service will be provided via Bus Rapid Transit (BRT) on I-405, regional express buses and all day BRT on select and connecting arterials. Local bus service throughout Eastside neighborhoods will provide connections to express and BRT transit. Park-and-ride lots, BRT stations, transit centers and HOV freeway-to-freeway ramps at interchanges will be added to support the expanded services. In addition, the I-405 Plan calls for implementing one of the most comprehensive Transportation Demand Management (TDM) programs in the country to reduce the number of vehicles on the roads.



To accommodate the remaining planned growth in the area, the I-405 Plan includes up to two additional general-purpose lanes on I-405, along with new collector-distributor and hill climbing lanes to increase mobility. The I-405 Plan fixes choke-points along I-405, such as SR-167, I-90 and SR-520 interchanges. New interchanges will be designed to handle growing travel demands, while advanced technology will promote more efficient traffic flows and provide up-to-date traffic information to travelers. Pedestrian and bicycle improvements are included throughout the corridor to provide safe crossings of I-405 and to complete regional trail links.

In Step with Other Local and Regional Plans

Strategies and projects within the I-405 Plan respond to the forecasted growth under existing jurisdictional plans and are expected to be adopted into the programs. The I-405 Plan also conforms to the Puget Sound Regional Council's VISION 2020 while a number of projects and strategies have been adopted into its Destination 2030.

Costs

The Plan is projected to cost between \$9.1 to \$10.9 billion in capital costs (year of expenditure dollars). Capital cost estimates included preliminary engineering, right-of-way, construction, construction management and contingencies. In January 2002, Washington State Governor Gary Locke proposed funding for transportation projects throughout Washington, with significant funds slated for the I-405 Corridor. Key elements of the multi-billion dollar package of investments developed by the I-405 Program will face voter approval in the Fall of 2002.

5. The Plan

A Plan That Works

In November 2001, the Executive Committee recommended the Preferred Alternative (I-405 Plan), a comprehensive plan to meet the varied needs of corridor users—commuters, businesses, freight and Eastside residents. For a detailed look at the I-405 Plan, see Figure 5-1.

The I-405 Executive Committee selected the PA based on the following results from the analysis of its transportation performance and environmental effects:

- Superior transportation performance compared to the other alternatives
- Environmental impacts are believed to be avoidable or able to be mitigated and opportunities for the enhancement of existing environmental conditions can be achieved
- Most desirable benefits compared to costs
- Mix of modal investments provides a balanced system of roadway, transit and demand management strategies that are expected to provide reasonable, long-term solutions for personal and freight mobility and reducing congestion within the I-405 Corridor.

I-405 Corridor Plan

Bottom Line:

- Reduces time stuck in traffic by over 13 million hours per year
- Produces travel time savings of \$569 million annually
- Accommodates an additional 110,000 trips per day in the corridor
- Decreases traffic accidents, saving \$42 million a year
- Creates 1,700 new vanpools; a 100% increase
- Increases transit service by 50%
- Builds 5,000 new Park & Ride spaces

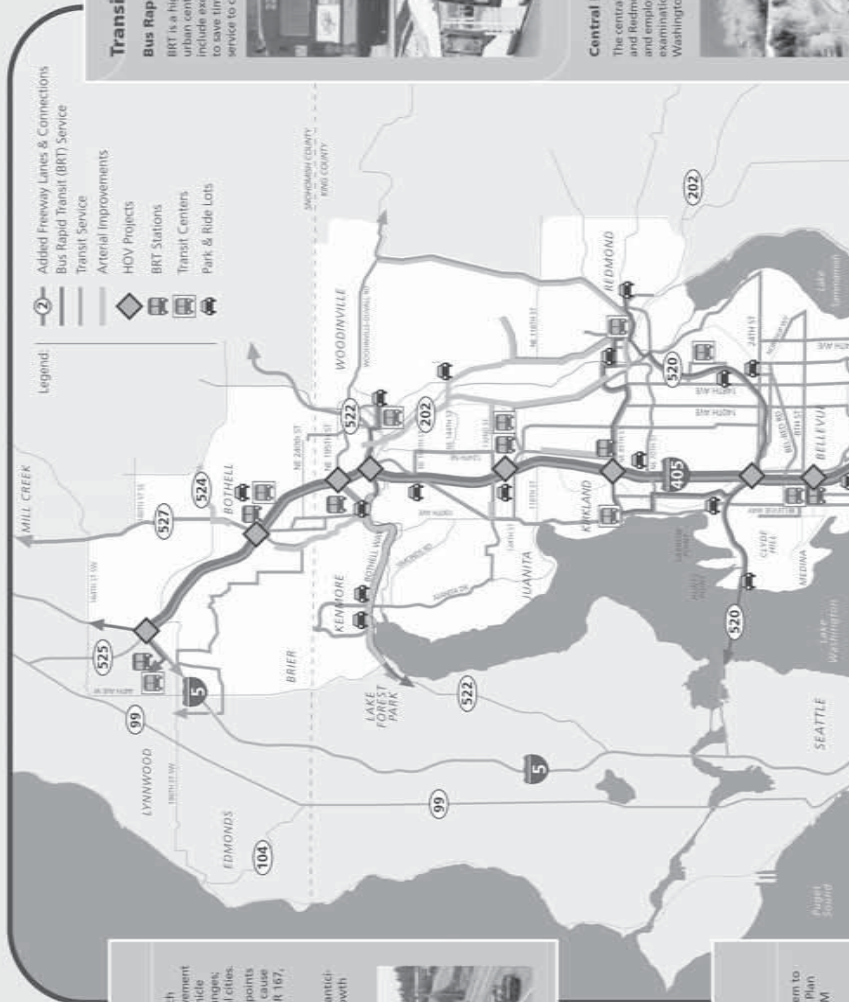




Figure 5-1: I-405 Corridor Plan

6. I-405 Plan: TDM Strategies

The I-405 Plan proposes one of the largest Transportation Demand Management (TDM) programs in the history of the United States. The TDM strategies will be used to reduce capacity demands on the corridor by offering access to travel options, incentives, public education and strategic land use to motivate people to make fewer single-occupant vehicle (SOV) trips. The TDM program will increase efficiency and mobility through transit, bus rapid transit (BRT), carpools or vanpools, telecommuting and non-motorized travel. TDM also motivates drivers to make trips outside of peak periods, or not make trips at all. Initially, the I-405 TDM program will focus on work trips, but will be broadened in scope over time to include freight mobility. About 20 percent of the TDM program will be directed towards promoting responsible land use development that provides transportation options and less travel outside urban centers.

TDM in Washington State



Washington State is considered a national leader in TDM. Traditionally, the state's TDM programs focus on work-related efforts to decrease the impacts of employee travel. An example of a Washington TDM program is The Commute Trip Reduction Program (CTR), established in 1991 with the goals of reducing traffic congestion, air pollution and petroleum consumption in the state's nine most populous counties. The program has resulted in a nine percent drop in commuters driving alone to work.

Washington is also a leader in vanpooling. In the 1970s, the Seattle/King County Commuter Pool Program started the first public vanpool service in the nation. With about 1500 vanpools in operation, the state far surpasses the level of vanpool service in other states. Since 1995, vanpooling has grown by more than 60 percent. The six providers in the region operate 40 percent of the public vanpools in the nation. The success rate of the state's vanpool programs was a determining factor in its inclusion in the I-405 Plan.

I-405 TDM Program

Implementing the TDM strategies for the I-405 Plan primarily involves expanding existing state, regional or local TDM programs, rather than creating new ones. TDM will also be an important resource for decreasing the inconveniences to travellers during project construction.

Core TDM Assumptions

The I-405 TDM Program is based on the following core assumptions:

- Continued existing TDM programs
- Existing public TDM programs will be expanded to meet new demand
- TDM will be supported by local jurisdictions and service providers
- Ongoing oversight provided by a staff-level committee comprised of local agency representatives. This group will report annually to I-405 elected officials and agency heads.
- Strategies are flexible, monitored and adjusted per trends, as needed
- Funding provided for demonstration projects and new TDM strategies

TDM Strategies

The I-405 TDM Program is composed of the following strategies:

- Transit
- Vanpooling
- Public information, education and promotion
- Employer-based programs
- Land use

Transit

Transit is a necessary component of any successful TDM program. The increased service proposed by the I-405 Plan, including the new Bus Rapid Transit, will provide a 70 percent increase in transit along the corridor. Additional express bus service will facilitate additional ridership for a broader array of trips. Both transit and ridesharing (carpools and vanpools) will be supported by additional park-and-rides spaces.



Vanpooling

Vanpooling is defined as 7 to 15 people who regularly ride together to work at least 10 miles one way. Under the I-405 Plan, vanpooling will be maximized in the corridor with the addition of up to 1,700 new vanpools. The program will be supported by an intensive marketing program including start-up subsidies for new vanpools and riders and promotion for owner-operated vanpools. The I-405 Plan will also offer a revolving no-interest loan fund for private and public purchase of vans and “value-added” incentives such as earning airline frequent flyer miles for vanpooling. In addition to the new park-and-ride lots, sufficient infrastructure including small leased park-and-ride lots will be provided.

Public Information, Education and Promotion Programs

TDM strategies are most successful when the public is well informed about their transportation alternatives. The I-405 TDM program will establish an ongoing public education and awareness program focusing on issues and transportation alternatives specific to the I-405 Corridor. The existing traveler information system will expand to include interactive ridematch, transit information and personalized trip planning assistance.

Employer Based Programs

Using TDM strategies, employers are able to encourage their employees to reduce the number of times they drive alone to work. All Washington employers located in the nine largest counties in the state, with more than 100 employees arriving between 6:00 and 9:00 a.m., are required to establish a commute trip reduction program under the CTR Program.

The I-405 TDM Program will increase the support of grants, tax credits and staff assistance to employers to help them attain their CTR goals. A “parking cash-out program” will be implemented to buy back the parking subsidy for employees that receive free parking. In addition, a CTR-like program aimed at smaller employers and larger companies not currently under the CTR law, will be developed. It is anticipated the additional CTR programs implemented by the I-405 Plan will increase the number of participants by about three and a half times.



The development and operation of two new transportation management associations (TMA) will be supported by The I-405 TDM program. TMAs are usually independent and formalized private/public partnerships, that include area employers, established to work together on transportation issues and opportunities. In the I-405 area, TMAs currently exist in Bothell, Redmond and downtown Bellevue.

Land Use as TDM

Although land use may be the ultimate TDM strategy for I-405, it may also take the longest time to implement and measure for effectiveness. The I-405 TDM Program will integrate land use into transportation planning through design standards and regulation. Land use as TDM focuses on reducing demand on the transportation system through compact developments, mixed land uses and design features and regulations that support non-motorized travel such as walking, transit and bicycling. This type of development/redevelopment has been recognized as maximizing the efficiency of a transportation system by shifting SOV travel to transit and non-motorized modes. However, the level of transit service, regional travel habits, employment and housing patterns and demographics all affect how and where people travel. The effectiveness of land use strategies significantly increase when implemented as an integrated TDM package.

It is recognized that a successful land use program will require public education and monitoring and adjusting to help ensure effective implementation. The TDM land use program will assist jurisdictions in determining where and what type of land use plan, code

and process changes are needed. Assistance will be provided for the implementation of additional incentives by individual cities. The success of this element will depend on a highly collaborative and coordinated process supported by all local cities and agencies.



The major land use as TDM strategies included in the I-405 Plan are transit oriented development, design standards and developer/business incentives.

Transit Oriented Development

Transit Oriented Development (TOD) focuses on increasing transit ridership through compact, mixed-use and non-motorized-and-transit-friendly development in the vicinity (usually 1/4-mile radius) of a transit station or center. TOD reduces the use of SOVs by increasing the number of times people choose to use non-motorized travelling alternatives.

Design Standards

Land use as TDM advocates for changes to land use plans, codes, regulations, zoning, design standards, development review requirements and permitting processes that support TODs and increased use of alternative modes and/or elimination of trips. Land use plans and codes that support TOD include:

- Increasing employment center and residential densities
- Minimum and maximum density ranges
- Smaller lot sizes, units, and shared walls
- Multi-family development
- Increased floor area ratios
- Mixed-use development
- Design standards that support density, affordable housing and non-motorized and transit facilities
- Narrower streets
- Outward building orientation
- Managed parking

Developer/Business Incentives

The I-405 TDM Program will help jurisdictions determine if and what type of developer/business incentives they may want to use to support land use plans, codes and process. The following are examples of incentives that may be offered:

- Tax exemption, deferral and abatement programs
- Floor area ratio (FAR) bonuses
- Density bonuses
- Transfer of development rights
- Business and occupation (B&O) tax reductions
- Provision of upgraded infrastructure
- Reduction of impact fees
- Accelerated/streamlined permitting and review processes

New Parking Management Programs

Local jurisdictions can provide incentives for workers to leave their cars at home by increasing the supply and location of non-SOV parking. Parking accessibility can be influenced by:

- Reducing or eliminating minimum parking requirements
- Setting maximum parking standards
- Allowing shared parking
- Providing joint use spaces for park-and-ride lots
- Allowing flexible requirements
- Adjusting off-street parking requirements
- Allowing on-street parking
- Encouraging HOV preferential parking
- Placement of parking lots complementary with transit and non-motorized facilities
- Preventing spill-over to adjacent areas with parking permit zones or parking meters

Local Connectivity Retrofitting Projects

The I-405 Plan will improve access/connectivity between developments and neighborhoods by removing barriers that prevent pedestrian, bicycle and vehicular movement. Up to ten connectivity retrofit projects a year are funded within the I-405 Plan.

Other TDM Programs

The I-405 Plan includes several innovative TDM strategies that do not fit into the core categories. One potential program, based on successful applications in other communities, is an area-wide “Smart Card” (FlexPass) program for Eastgate, downtown Bellevue, north Renton industrial area, Bothell business parks, Redmond, downtown Kirkland and Tukwila. These additional incentives could make up lost revenue for local and state tax credit programs or assistance towards developer incentives.

Congestion Pricing

Although examined in the FEIS, the Executive Committee and program co-leads agreed congestion pricing should be considered as part of a regional strategy and not implemented on a corridor level.

7. I-405 Plan: Transit and HOV

Improving the I-405 Transit/HOV System is integral to increasing mobility within the corridor. A Bus Rapid Transit system (BRT), running the entire length of I-405, is the backbone of the I-405 Plan transit recommendation. BRT combines many qualities of rail transit with the flexibility and cost-effectiveness of buses. It will operate along I-405 in the HOV lanes with connections to other transit routes.

Local and regional buses, vanpools and carpools will also play major roles in reducing the number of vehicles on I-405. Currently 20 percent of the people in the HOV lane are in buses while carpools and vanpools carry 80 percent of the people. The I-405 Plan proposes to increase transit service by up to 70 percent and vanpools nearly fivefold.

HOV System



In 1991, WSDOT established a system of freeway HOV lanes for the Puget Sound region. The HOV system encourages the use of high occupancy modes of travel by improving speed and reliability for transit and ridesharers. Currently, the system includes 276 lane miles, stretching from Lakewood north to Everett, and from Seattle east to Issaquah, including I-405 and parts of I-5, SR-520 and I-90. The I-405 Plan builds on the existing HOV system by connecting HOV lanes to arterial streets through exclusive ramps and by increasing park-and-ride capacity and the development of inline BRT stations. The system will be supported through TDM including commute trip reduction programs and HOV-use incentives. A number of transit priority improvements will be made to selected arterials to move transit using dedicated lanes, transit signal priority and queue jumps. The focus of the I-405 HOV system is to move people, rather than vehicles.

An HOV system is necessary for BRT and transit effectiveness with all components working together as a comprehensive facility. Direct access to the HOV lanes is required to shorten BRT and transit travel times and improve service reliability.

Transit System

I-405 Corridor Service	2007 Annual Hours*	Additional Hours 2007 to 2020*	2020 Annual Hours
I-405	0	65,000	65,000
Other Freeway and Arterial BRT	248,000	298,000	546,000
Local Transit and Commuter Express	1,206,000	641,000	1,847,000
Total	1,454,000	1,004,000	2,458,000

Table 7-1: I-405 Transit Service Hours

Service Structure

The I-405 Plan provides approximately 2.5 million revenue service hours annually. Transit service levels in the I-405 Plan are forecasted to increase up to 70 percent. Local bus routes will provide service from neighborhoods to activity centers and BRT stations. Service will be supported by new and improved transit centers and park-and-ride lots. Commuter express routes operating from neighborhoods and park-and-ride lots will directly connect to major employment centers. The approximate breakdown of local and regional transit service is shown in Table 7-1.

BRT service along the length of I-405 will serve longer-distance trips between major activity centers along the freeway. Arterial BRT or express routes will provide fast, reliable service between activity centers in some corridors not connected by freeways.

I-405 BRT Service

The I-405 Plan utilizes BRT to provide all-day, high-speed travel that can be used without a schedule with buses coming every 10 minutes. Dedicated HOV lanes, direct access ramps, BRT right-of-way and stations designed to accommodate BRT buses will allow BRT to directly access HOV lanes without weaving in-and-out of general traffic. BRT fares are collected off-vehicle, similar to commuter rail.



I-405 BRT will generally follow the I-405 spine, operating on arterials when necessary to access major activity centers and/or park-and-ride lots, and will connect to similar BRT or regional express operations along major connecting freeways.

Other Freeway BRT Services

BRT services to connect I-405 to other major freeways will be provided. These routes include:

- Issaquah to Northgate via I-90, I-405 and SR-520
- Woodinville to Bellevue to Downtown Seattle via SR-522, I-405 and I-90
- Everett Mall to Bellevue Transit Center via I-5 and I-405

- Federal Way to Auburn to Renton via SR-167
- Eastmont to Bellevue via SR-527 and I-405

Arterial BRT Services

The BRT concept will be applied to selected arterials in the corridor. Arterial BRT routes will also be faster, more reliable and will offer facility enhancements not available as part of the conventional bus system. Arterial BRT will rely on consolidating stops, transit signal priority and limited arterial transit/HOV lanes.

An example of arterial BRT is the proposed Bellevue-Overlake-Redmond corridor, connected by NE 8th Street and 156th Avenue NE. BRT on this corridor will serve fewer stops than local bus service but more stops per mile than freeway BRT. It will use transit signal priority and transit queue jumps to get through traffic faster. It will not serve BRT stations in the same sense as freeway BRT, but will be supported by bus stops enhanced with better shelter, lighting and passenger information.

Commuter Express Services

Commuter express services that connect neighborhoods or park-and-ride lots to major employment centers during peak periods will continue to expand to serve growing demand. Many of these regional express routes will use portions of the I-405 HOV system utilized by BRT.

Local Transit Services

The Plan significantly increases local transit within the corridor. Services will be improved to connect with I-405 and other freeway and arterial BRT services. These revisions could include more center-to-center movements, neighborhoods-to-centers connections and a ‘grid’ transit system that supports multi-destination travel.

Supporting Transit and HOV Facilities



A number of transit centers and park-and-ride lots will be expanded to accommodate increased transit service. New BRT stations, HOV direct access ramps and freeway-to-freeway HOV ramps will be built to support the I-405 BRT operating on the existing freeway HOV lanes. Arterial transit speed and reliability improvements will be made to support arterial BRT and local bus services.

For example, a new transit center is being designed by Sound Transit on the east side of I-405 near the Evergreen Healthcare campus and the Totem Lake Mall. The transit center will serve as a hub for local transit service. It will operate with new HOV direct access ramps at NE 128th Street to provide a convenient transit transfer point for commuters. The access ramps will include a new BRT station over I-405 and pedestrian features to maximize safety, weather protection and comfort.

Transit Centers/Park-and-Ride Lots

A number of transit centers and park-and-ride lots will be expanded to support the increased transit services. Up to 5,000 additional park-and-ride spaces at existing and new lots will be built within the corridor. Parking needs at existing or new lots will also be determined.

BRT Stations

The I-405 Plan calls for the construction of nine BRT Stations to provide safe pedestrian access and a comfortable waiting areas. Features would include weather protection, seating and/or leaning rails, distinctive signage that may include real-time information (i.e. “next bus” display) and route information (maps and schedules). Other potential features include security cameras, emergency telephones, landscaping and art.

Potential locations for new BRT stations are at the Lynnwood Transit Center, Canyon Park, NE 195th Street, NE 160th St., Totem Lake, Central Kirkland (NE 85th and/or NE 70th), Bellevue Transit Center, Factoria, Newport Hills, N 44th Street, N 8th Street, Renton Transit Center, Tukwila Commuter Rail Station, Southcenter, S 154th Street and/or Sea-Tac Airport.

HOV Lanes

Currently, HOV lanes exist on I-405 from Tukwila to Lynnwood. BRT depends on HOV lanes and their smooth operation to keep service fast and reliable. The HOV lanes will be directly connected to major transit facilities using transit/HOV direct access ramps and inline stations. HOV priority treatments for selected arterials that connect to I-405 are also included in the I-405 Plan.

The HOV express lanes will be joint-use facilities serving transit, vanpools and carpools. However, traffic forecasts show that in 10 to 15 years, the HOV lanes will slow to a crawl during peak travel periods if 2-person carpools are still allowed. Therefore, by the year 2020, HOV lanes will need to be restricted to 3+ vehicles, at least during peak periods, to maintain capacity and mobility.

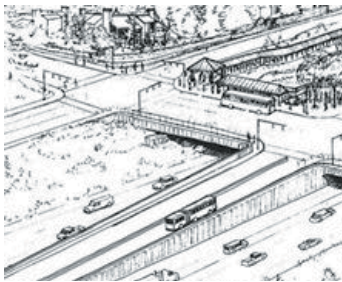


Figure 7-1

HOV Direct Access Ramps

HOV direct access ramps connect freeway HOV lanes to the arterial system, avoiding the need for transit, carpools and vanpools to weave across traffic. For example, at Totem Lake, the I-405 at NE 128th Street/HOV Direct Access Improvement project will construct new HOV direct access ramps connecting I-405 to a new overcrossing at NE 128th Street, just south of the Kingsgate Park-and-Ride lot (see Figure 7-1).

The I-405 corridor has limited room for additional lane construction and in many cases, the freeway will need to be realigned, overpasses constructed and existing ramps moved to fit the new direct access ramps.

Freeway-to-Freeway HOV Connections

Drivers often use more than one freeway to travel from one place to another. To avoid forcing drivers out of HOV lanes when travelling through multiple regions, HOV lanes will be connected freeway-to-freeway. However, this kind of ramp can be very expensive and available right-of-way difficult to secure.

Arterial HOV and Transit Priority Projects

Arterials are essential to a regional transportation network and towards transit and HOV mobility. The I-405 Program improvements will respond to the characteristics of the corridor's suburban arterial environment. These improvements will provide HOV and transit priority over SOV traffic, allowing it to bypass arterial congestion. Arterial improvements include the following types of projects:

Transit Signal Priority allows traffic light priority to buses and HOVs, providing more time to travel through the intersection.

HOV Lanes allow access only to transit, carpools and vanpools.

BAT lanes are restricted lanes on the roadway curbside for exclusive use by buses and right-turning vehicles. BAT lanes reduce bus delay by allowing them to avoid long lines in general-purpose lanes.

Queue jumps provide an exclusive lane at an intersection, for use by buses, HOVs and right-turning vehicles. A special green signal is provided to vehicles in the queue and a merge lane is provided on the other side of the intersection.

Turn Restrictions allow only HOVs to make turns at intersections, providing time savings during peak periods.

Systems by Subarea

North Subarea

BRT service in the North Subarea will run along the main spine of I-405. Other all-day BRT service will travel along SR-522 connecting to the HOV system at the Woodinville/I-405 interchange and continuing on Bothell Way NE to Lake Forest Park. Commuter express bus service will operate on SR-527 from Mill Creek and SR-522. Additional express service will operate on the Woodinville-Duvall Road, the Woodinville-Juanita Road and other select arterials. Transit priority improvements would be made to these arterials. New local transit service would be added throughout the area providing seamless BRT connections.

Access to the HOV system will improve with several new direct HOV access facilities. In the north, HOV improvements are envisioned at five locations — the I-405 interchange with I-5 at Swamp Creek, at SR-527 at Canyon Park, near NE 195th Street in Bothell, the interchange with SR-522 and at Totem Lake.

The BRT system initially will use the existing and planned park-and-ride lots and transit centers along the I-405 corridor. The Lynnwood transit center may be expanded and a

new one built in Woodinville. It is likely that BRT stations would be located at Lynnwood, Canyon Park, NE 195th, and Totem Lake, but final sites have not been identified.

Existing park-and-ride lots would be expanded and new ones built to add spaces for SE Snohomish County (800 spaces) and for Bothell, Kenmore and Woodinville (300 spaces).

Central Subarea

New BRT service in the Central Subarea of I-405 would work with other all-day BRT service on SR-520, NE 85th Street and I-90. Commuter express buses would operate on SR-520 and I-90 and on segments of 156th Ave NE, 164th Ave NE, Coal Creek Parkway, NE 70th Street, NE 85th Street, Avondale Road NE, Bellevue Way, Island Crest Way and other arterials. Transit priority improvements would be made to those arterials. Local transit service will also be added throughout the area with all-day service.

The BRT system initially would use the existing and committed park-and-ride lots and transit centers. Access would improve with the completion of a planned direct HOV access facility in downtown Bellevue. HOV improvements would also be built at the I-90, NE 85th Street and SR-520 interchanges with I-405. BRT stations in central Kirkland and Newcastle would connect riders with downtown Bellevue.

The Eastgate Direct Access project is an example of a project identified for the Central Subarea. The Eastgate Park-and-Ride lot is one of the more heavily used facilities in the region. However, HOVs currently do not have direct access to/from I-90 and struggle to reach the park-and-ride lot, slowing down the commute for everyone. This project will remove HOVs from general traffic and reduce congestion in the area. Metro is also building a five-story park-and-ride garage at the same location.

Existing park-and-ride lots in the area will be expanded and new lots identified. The needs are estimated as follows: Kirkland (300 spaces), Redmond (500 spaces), Mercer Island (300 spaces), and Bellevue (1200 spaces).



While the EIS analyses showed that a fixed-guideway transit system is not necessary for the entire corridor, to meet the 2020 transit ridership projections, the central segment of the corridor encompassing Bellevue, Redmond and Kirkland requires further consideration of other transit technologies. These opportunities include a cross-lake

segment on I-90 or SR-520 and the central portion of the study area.

The central eastside area is the most densely developed section of the corridor, encompassing several regional urban centers and interchanges with I-90 and SR-520, two primary east-west transportation facilities. A sizeable HCT transit market already exists in this area and there is potential for substantial future growth in ridership before 2020.

South Subarea

The BRT service would run along I-405 to the Sea-Tac Airport, although service will likely deviate onto arterial facilities through Renton and Tukwila. Other all-day BRT service would run on SR-167 connecting to the HOV system at the SR-167/I-405 interchange in Renton. Commuter express buses would operate on SR-167 from Kent, on South 208th Street, SR-515, SR-181, SR-900, the Maple Valley Highway (SR-169), and selected arterials in Renton. Transit priority improvements would be made to these arterials and state routes. New local service would be added throughout the area.

Similar to the rest of the corridor, the BRT system would initially use the existing and committed park-and-ride lots and transit centers along the I-405. Buses would use the HOV lanes in the existing HOV system. Access would improve as HOV direct access improvements are built at the I-405 intersection with I-5 at Tukwila, near SR-181, the SR-167 interchange and at NE 44th Street. Transit centers would be expanded in downtown Renton and the Tukwila Commuter Rail Station.

Existing park-and-ride lots would be expanded or new ones built to add additional capacity for Tukwila (700 spaces), Kent (700 spaces) and Renton (200 spaces).

Use of Burlington Northern Santa Fe Railroad (BNSF)

The existing BNSF railroad line in the corridor was examined as an alternative alignment for High Capacity Transit or as a bike and pedestrian trail. Recognizing the future potential of the BNSF right-of-way, a letter was sent to BNSF railroad and other interested I-405 agencies advising interest in using the line for future transportation purposes.

Opportunities to preserve the BNSF right-of-way, depending on what segments can be developed to serve transit demand, are uncertain at this time. HCT investment concepts in the I-405 corridor fall within the scope of Sound Transit's future planning. Any proposed HCT in the corridor will require voter approval.

8. I-405 Plan: Roadway System

The I-405 Plan includes approximately 150 roadway improvements focused on moving traffic safely and providing congestion relief on local arterials, at intersections and on state roads throughout the I-405 corridor.

I-405 Improvements

The roadway improvements proposed by the I-405 Plan include:

- Two additional lanes each direction the entire length of I-405
- Collector-distributor and auxiliary lanes
- Interchange improvements on I-405
- Connecting freeway capacity to I-405
- Connecting arterial capacity to I-405
- Expanding capacity and improving connections on north-south arterials

The new capacity on the roadways will be assisted by Intelligent Transportation Systems (ITS), an innovative technology used to improve roadway efficiency and safety.



Additional Lanes

The I-405 Plan includes addition of up to two general-purpose (GP) lanes in each direction for most sections of I-405. Collector-distributor lanes and auxiliary lanes will augment the new GP lanes.

Collector-distributor (C-D) and auxiliary lanes are used to reduce bottlenecks and congestion at specific locations and to improve traffic operations and safety. C-D lanes provide more time for traffic to safely enter or exit from the roadway by providing lanes removed from general traffic. These lanes are being considered as a design option along I-405 in certain sections. Auxiliary lanes provide additional freeway capacity for safe merging between interchanges. Some auxiliary lanes are in the form of “hill-climbing” lanes to accommodate slow-moving vehicles up steep grades.

North Section Roadway Improvements

General Purpose Traffic Lanes

- Up to two lanes each direction would be added to I-405.
- Collector-distributor and auxiliary lanes at NE 160th St through NE 195th St (Bothell); from SR-522 through NE 160th St; NE 116th St through NE 132nd St (Kirkland)

These C-D/auxiliary lanes could be in addition to the through traffic lanes, or could substitute for through lanes in certain locations. Specific decisions will be made during the project-level design phase.

Interchanges

The widening of I-405 is likely to require full or partial redesign and reconstruction of the following interchanges in the north section:

- I-5 Swamp Creek (added ramp capacity; HOV ramps)
- SR-527 (full reconstruction; HOV connections)
- NE 195th St (full or partial reconstruction; possible HOV connections)
- SR-522 (added ramp capacity and separated through lanes on I-405; HOV ramps)
- NE 160th St (partial redesign)
- NE 128th St HOV Interchange (under design by Sound Transit; minimal changes)
- NE 124th St (full reconstruction)
- NE 116th St (partial reconstruction)

The north section includes two locations for consideration of new I-405 freeway interchanges:

- Between NE 195th St and County Line (Bothell): Locations could include Monte Villa Parkway or the vicinity of NE 240th Street. The interchange would serve commercial development to/from the east only, with no connections to residential neighborhoods in Bothell to the west. A full or half interchange design will be considered, with C-D connections to the NE 195th and possibly SR-527 interchanges.
- NE 132nd St (Kirkland): A half interchange, to-and-from the north only, is envisioned at NE 132nd Street. This interchange would be the companion to the south-oriented half diamond at NE 116th Street. The interchange would be connected via C-D to the NE 124th St ramps.

Central Section Roadway Improvements

General Purpose Traffic Lanes

The I-405 Plan includes the addition of two lanes in each direction to most of the central section of I-405. However, it may be possible to only add one lane in each direction in the section of I-405 between SR-520 and NE 70th Street.

Collector-Distributor and Auxiliary Lanes

Collector-distributor (C-D) and auxiliary traffic lanes are anticipated in the following segments:

- NE 85th St through NE 70th St in Kirkland (C-D lanes)
- SR-520 through I-90 interchange in Bellevue (combination of auxiliary and C-D lanes through downtown to tie to existing and new interchanges)
- I-90 through Coal Creek Parkway in Bellevue (C-D lanes and braided ramps, ties to possible auxiliary lanes on I-405 to the south)

These C-D/auxiliary lanes could be in addition to added through-traffic lanes, or could substitute for through-lanes in certain locations.

Interchanges

Widening I-405 would require full or partial redesign and construction of the following:

- NE 85th St (full reconstruction; possibly with HOV ramps)
- NE 70th St (full reconstruction)
- SR-520 (major reconstruction; HOV ramps; ties to SR-520 improvements)
- NE 8th St (under design Bellevue Access Project; minimal changes)
- NE 4th St (under design Bellevue Access Project; minimal changes)
- SE 8th St (under design Bellevue Access Project; minimal changes)
- I-90 (added ramp capacity; HOV ramps)
- Coal Creek Pkwy (partial reconstruction)

The central section also includes two locations in downtown Bellevue for consideration of new I-405 freeway interchanges:

- NE 10th St (half interchange to/from the north only; connections to downtown Bellevue C-D roads and connections to SR-520)
- NE 2nd St (half interchange to/from the south only; connections to downtown Bellevue C-D roads)

South Section Roadway Improvements

General Purpose Traffic Lanes

Two lanes each direction would be added to this section of I-405.

Collector-Distributor and Auxiliary Lanes

Collector-distributor (C-D) and auxiliary traffic lanes are anticipated in the following segments:

- Coal Creek Parkway in Bellevue to Park Drive/SR-900 in Renton (auxiliary lanes between interchanges and/or hill-climbing lanes along the Kennydale Hill segments from NE 44th St to Park Drive)
- SR-169 through SR-167 in Renton (C-D and auxiliary lanes tied to the SR-167 interchange redesign)

These C-D/auxiliary lanes could be in addition to the through traffic lanes, or could substitute for through lanes in certain locations.

Interchanges

Widening of I-405 would require full or partial redesign and construction of the following interchanges in the south section:

- SE 112th Ave (partial reconstruction)
- NE 44th St (full reconstruction)
- NE 30th St (partial reconstruction)
- Park Drive (partial reconstruction)
- N 8th St HOV interchange (under design by Sound Transit)
- SR-169 (partial reconstruction)
- SR-167 (full reconstruction; HOV connections)
- SR-181 (partial reconstruction)
- I-5 (added ramp capacity; HOV connections)

Widen SR-167



SR-167 would be widened by up to two lanes in each direction from the expanded I-405/SR-167 interchange south to the interchange at S 180th St in Renton. Ramp merges and weaves will require the equivalent of two additional lanes along SR-167 for a section extending about one mile south of I-405. The final design at the S 180th interchange and transition of the added lanes back to SR-167 to the south will be determined during the

next phase of project evaluation. A separate SR-167 corridor study will examine the transportation facility and service needs along the freeway from I-405 south to Puyallup.

Improve Capacity of Connecting Freeways

To avoid bottlenecks at I-405 connections, the capacity of connecting freeways and ramps will be increased. Much of this capacity will be in the form of expanded ramp lanes and queuing areas on I-5, I-90, SR-520 and SR-522. Some limited lane capacity would be added to I-405 at SR-518 and SR-525 to transition from I-405 to these smaller facilities.

Arterial Improvements

I-405 arterial improvements will complement the Program's capacity enhancements. The arterial improvements categories include:

- I-405 Arterial Connection Projects, primarily east-west arterial capacity expansions intended to improve operation and connection to I-405 at new or existing interchanges. The improvements range from adding lanes approaching the interchanges to making intersection improvements. Some arterial improvements also include recommendations for HOV priority treatments.
- North-South Arterial Projects complete some of the "missing links" along north-south arterials and provide needed capacity improvements. Arterial improvements will help

balance the localized north-south demand on I-405.

- Several other arterial projects are located throughout the corridor to improve traffic circulation and capacity.

Several of these projects are already called for in local agency plans and the Eastside Transportation Partnership (ETP).

North Section Arterial Improvements

The north arterial improvements impact the cities of Bothell and Woodinville and include new interchanges and additional lanes.

An example of a north arterial improvement is the addition of two new connections to SR-202 on the west side of the Sammamish Valley. A new overcrossing of SR-522 will allow traffic to bypass downtown Woodinville. Willows Road will be extended from NE 124th Street to NE 145th to connect with SR-202. The resulting facility will provide a new parallel arterial to I-405 in the Sammamish Valley.

Central Section Arterial Improvements

The arterial improvements in the central section (Bellevue, Redmond, Kirkland) are targeted at improving traffic flow. Improvements include limited arterial widening in Kirkland and Bellevue to improve connections to I-405 and general arterial widening in Redmond to connect to SR-202 and SR-520.

South Section Arterial Improvements

The arterial projects in the southern part of the corridor improve several routes in Newcastle, Renton and Tukwila and King County. Example projects include the Coal Creek Parkway widening from SE 72nd Street in Newcastle to Renton. Pedestrian and bicycle facilities will be included and traffic signals will be installed to control traffic flow.

The arterial projects also include improvements to SR-181 (West Valley Highway/ Interurban Ave) to SR-169 (Maple Valley Highway), providing smooth connections to I-405.

Traffic circulation improvements in downtown Renton and the Southcenter area of Tukwila will facilitate local trips on arterial streets rather than I-405.

Analysis of Managed Lanes

The I-405 Corridor Program considered managing the access or utilizing high-occupancy/tolls (HOT) on one or more lanes on I-405. The potential effects of creating a managed lane facility, including pricing effects, revenues, equity, access and operation were not studied. The Program committees recommended further consideration of managed lanes after more detailed study and policy considerations have been accomplished. The committees consider pricing a regional issue.

9. I-405 Plan: Other Key Elements

The multi-modal strategy of the I-405 Plan includes improvements beyond commuter-focused accommodations. Additional key elements include non-motorized projects, the use of Intelligent Transportation Strategies (ITS) and freight mobility enhancements. These elements complement the transit, HOV, roadway and TDM components of the program.

Pedestrian and Bicycle Improvements



The I-405 Plan provides pedestrian and bicycle improvements throughout the corridor to provide safe crossings of I-405 and neighborhood connections by filling in regional trail links. These include five improved crossings in the Bothell and Snohomish County, one in Bellevue and two in Renton. Completing ten missing connections between existing trails will help to create regional pedestrian/bicycle routes. These trail connections will complete non-motorized systems in Renton and Tukwila, implement use of railroad right-of-way in Kirkland, and provide key trail linkages in Bothell.

Intelligent Transportation Systems

The I-405 Program will use ITS to increase corridor efficiency by providing timely traveler information to all I-405 users. The I-405 Plan includes the following ITS strategies:

- Camera coverage along freeway and arterials
- Increased incident response
- Arterial and signal ramp controls
- Traveler information systems at key locations
- Support of in-vehicle traffic information

Freight Enhancements

Freight mobility is critical to a functioning transportation system. Nearly two times the amount of goods (in tons) flow along I-405 than are shipped through the Port of Seattle. The I-405 Plan proposes the following enhancements to freight movement:

- Redesigned interchanges to handle heavy truck flows
 - Advanced technology to provide real-time travel information to truckers
 - Remote parking areas to reduce truck flows during peak traffic hours.
- Freight improvements will also help to maintain a safe environment for all freeway users.

10. I-405 Plan: Environmental Opportunities

As one of the largest transportation projects in Washington State history, the I-405 Corridor Program offers an unprecedented opportunity to improve transportation while also addressing the corridor's existing environment. The Corridor Environmental Program (CEP), issued in March 2002, presents the goals and objectives of the environmental program and outlines strategies for improving the corridor's natural and built environments.



The CEP reflects the program's Purpose and Need statement to maintain, protect or enhance both the community livability within the corridor and the integrity of the region's natural environment. Strategies for addressing environmental impacts include early action measures.

The CEP provides guidance for the development of environmental agreements among the implementing and regulatory agencies.

Goals and Objectives

The CEP established the following goals and objectives to guide the development of future I-405 Program project level environmental programs:

- Integrate transportation and environmental investments in a way that improves critical natural resources and supporting habitat
- Use a watershed-based approach to mitigation to ensure transportation related environmental funds are spent on the greatest environmental benefit
- Implement the I-405 Program in a manner that supports Growth Management Act goals

The goals and objectives for enhancing the I-405 Corridor environment were grouped according to Natural or Built Environment. The objectives will form the foundation of project decisions and permits as the corridor program is implemented.

Natural Environment Objectives



- Avoid and minimize impacts to fish and wildlife habitat, and compensate for unavoidable impacts
- Maintain, protect, and enhance the functions of fish and wildlife habitat, wetlands and other waters of the state and seek a net gain in those functions through preservation, restoration, creation and enhancement
- Manage mitigation sites; design, implement, monitor, evaluate and adjust mitigation sites to ensure standards
- Establish an innovative mitigation strategy and schedule to protect environmental resources while ensuring transportation project delivery; integrate strategy and schedule into an agreement among project proponents and local, state and federal regulatory agencies
- Maintain, protect and improve air quality in the corridor and the region during construction and operation through:
 - > Innovative Project Design
 - > Mitigation of construction related emissions
 - > Measures such as congestion reduction, transportation demand management and fuel and technology improvements that reduce transportation related emissions of ozone precursors, particulate matter (PM10 & PM2.5), toxic air pollutants, and carbon monoxide
- Provide treatment for water quality and quantity for new impervious areas. Appropriately retrofit existing storm water outfalls, and participate in watershed-based storm water mitigation projects that would result in net improvements in the water quality and hydrology baselines in the affected watersheds.
- Protect sole source aquifers and minimize impacts to ground water quality and quantity
- Result in no net loss of wetland area and function or floodway area and function
- Design and implement appropriate mitigation projects in advance of transportation project construction activities

Built Environment Objectives

- Avoid or minimize right-of-way and noise impacts to residences and businesses by incorporating appropriate design/technologies
- Use advance mitigation to reduce impacts of construction on mobility and communities
- Use adaptive management techniques to monitor/adjust transportation improvements and schedules to achieve maximum benefits at lowest environmental and social costs
- Locate and design transportation facilities to promote compact development and provide flexibility to serve future inter-modal needs
- Develop a project implementation program that will include the following early actions:
 - > Transportation Demand Management
 - > Transit investments provide alternative means and routes for travel in impacted areas
 - > Environmental mitigation
 - > Targeted arterial investments

Mitigation Strategy

Early Action

Based upon the CEP goals and objectives the program will identify early actions that can be implemented to address project impacts to both the Natural and Built Environments. These early action strategies will be developed and completed prior to permits being issued for construction.

Natural Environment Early Actions

Under the CEP, implementing and regulatory agencies will jointly make decisions on early action mitigation for impacts to water resources, wetlands, floodplains, protected aquatic and upland species and habitat. The process involves two general phases:

- Prior to transportation project permitting, an early-action mitigation program will be developed and implemented to compensate for environmental functions that are likely to be impacted by the program
- During transportation project permitting and construction, identify avoidance, minimization, on-site/in-kind, and off site compensatory mitigation measures best suited to address project-level impacts.

The off-site mitigation opportunities will rely heavily, but not exclusively, on information provided in the Water Resource Inventory Area (WRIA) 8 and 9 programs and approved habitat conservation plans (HCP). Those agencies with jurisdiction/authority over the impacted resource will help define the best compensation opportunities.



The area in the vicinity of the I-405 and SR 167 interchange may be used as an example project of this approach. Should this strategy prove successful it could become a template for the entire I-405 corridor and other future urban projects.

Built Environment Early Actions

The Program's impacts to the built environment affect the corridor's right-of-way, noise levels, mobility (during construction) and social environment. An implementation program to address avoidance and mitigation is being developed and will include early TDM, transit and alternative means and routes for travel in the impacted areas. The Program is also looking at creative ways to reduce noise in corridor communities.

Project Level Environmental Opportunities

The level of detail necessary to determine project level environmental impact decisions was not provided in the programmatic EIS. However, the CEP will guide project level mitigation decisions.

Want to speak a little “Transportation?”

Arterial. A major street that primarily serves through-traffic and provides access to bordering properties.

Bus, Feeder. A bus service that picks up and delivers passengers to a bus rapid transit station, park-and-ride or express bus stop.

Bus rapid transit. BRT uses priority lanes, enhanced bus stations, and new vehicle technology to give buses the same features of rail but at a substantially lower cost. Dedicated bus lanes, traffic signal priority systems, special access ramps on existing roads and freeways allow BRT vehicles to speed past traffic congestion to provide reliable travel times.

Bus transit center. Major bus stop or station at the meeting point of several routes. Designed to facilitate passenger transfers (e.g. passenger waiting areas) and accommodate numerous buses.

Capacity. Maximum sustained traffic flow of a transportation facility, expressed in passenger cars per hour per lane, under prevailing traffic and roadway conditions in a specified direction.

Capacity-related projects. Projects that increase the number of vehicles or people that can be served by a transportation facility.

Centers. Compact, well-defined areas to which a mix of higher-density growth or intensive land uses will be directed, connected and served by an efficient, transit-oriented, multi-modal transportation system.

Collector-distributor lanes. Freeway lanes serving single or multiple interchanges that are physically separated from general freeway lanes. The purpose of collector-distributor lanes is to separate the through traffic from the traffic entering and exiting the freeway.

Commuter. A person who travels regularly between home and work or school.

Commuter Trip Reduction Program (1991). A program to reduce traffic congestion, air pollution and petroleum consumption through employer-based programs that decrease the number of SOV trips. The law affects employers in nine counties who have 100 or more full-time employees at a single worksite who begin work between 6 to 9 a.m.

Compact development. Relative density or intensity of development in a given area.

Comprehensive Plan. Generalized, coordinated land use policy statement of the City Council adopted under the Growth Management Act (GMA) to guide future city decision making.

Concurrence points. Key milestones within the “Reinventing NEPA” process for which formal written concurrence must be received from participating agencies.

Concurrency. A provision of the Washington State Growth Management Act (GMA) that requires local jurisdictions to adopt and enforce ordinances precluding approval of a proposed development if that development would cause the level-of-service of a transportation facility to fall below the jurisdiction’s adopted standard, unless transportation improvements or strategies to accommodate the impacts of the development are made within six years (concurrent with) the development.

Congestion. Unstable traffic flows that prohibit movement on a transportation facility at optimal legal speeds. Recurring congestion is caused by constant excess volume compared with capacity.

Consensus points. Decision points within the “Reinventing NEPA” process where substantial agreement (not necessarily unanimity) must be reached with the participating agencies.

Cumulative effect. Effects on the environment that result from incremental consequences of an action when added to other past, present, and reasonably foreseeable future actions.

Density/Intensity. A term often used interchangeably. Density refers to the number of housing units or square feet of commercial space per unit of land, usually per acre. Intensity refers to the level or concentration of activity occurring on a site or in an area.

Environment. The sum of all external conditions affecting the life, development and survival of an organism.

Environmental Assessment (EA). A preliminary written environmental analysis required by NEPA to determine whether a federal activity would significantly affect the environment; may require preparation of a more detailed environmental impact statement.

Environmental Impact Statement (EIS). A document that identifies and analyzes, in detail, environmental impacts of a proposed action. As a tool for decision-making, the EIS describes positive and negative effects and lists alternatives for an undertaking.

Environmental mitigation measures. Measures taken to reduce adverse effects on the environment, which are usually implemented under State Environmental Policy Act (SEPA) or National Environmental Policy Act (NEPA).

Express lane. Separate freeway lanes with limited interchanges, typically no more than one every 3-4 miles.

General purpose (GP) lane. A freeway or arterial lane available for use by all traffic.

Growth Management Act (GMA). Washington State legislation passed in 1990 that requires long-range comprehensive plans prepared by cities and counties to be balanced with supporting transportation infrastructure (RCW 36.70A).

High-Capacity Transit (HCT). Transit systems operating, in whole or part, on a fixed-guideway dedicated right-of-way or freeway/express facility, designed to carry a large number of riders at higher speeds than conventional transit. Examples include express bus on HOV lanes, passenger ferry service and light and heavy rail systems.

High-Occupancy Vehicle (HOV). A vehicle carrying two or more people. The minimum number of vehicle occupants required to qualify for HOV lane use may vary depending on the congestion levels and capacity of the HOV lane and the surrounding road system.

High-Occupancy/Toll lane (HOT lane). Signifies a lane (typically on a freeway) that is managed to restrict use by different modes through the use of time-of-day tolls.

Intermodal. Accommodation or interconnection of various transportation modes both for the movement of people and goods.

Intelligent Transportation Systems (ITS). The application of advanced technology to current transportation problems, including incident detection, signal coordination, real-time information and other technology.

Jurisdiction. A municipal government agency such as a city or county. As appropriate, the term "jurisdiction" also includes federal and state agencies and federally recognized tribes.

Metropolitan Transportation Plan (MTP). A detailed long-range plan for future investments in the central Puget Sound region's regional transportation system, including roads, transit, marine (state ferries), freight and goods, non-motorized transportation and aviation. For state planning purposes, the MTP is the region's Regional Transportation Plan.

Mitigation measures. Actions taken to reduce adverse effects on the environment, usually implemented under the State Environmental Policy Act (SEPA) and/or the National Environmental Policy Act (NEPA).

Mixed-use development. Complementary land uses located within a single structure or in close proximity to one another and connected by safe, direct walkways.

Mode. A particular form of travel. Typically transportation modes include driving alone (SOV), carpooling (HOV), non-motorized (walking, jogging, biking), or riding transit (light rail or commuter rail).

Mode split. The percentage of persons using different travel modes typically described for autos, transit and non-motorized modes.

Modeling. Use of mathematical equations to simulate and predict real events and processes.

Monitoring. Periodic or continuous surveillance or testing to determine the level of compliance with statutory requirements and/or pollutant levels.

Multi-modal. Concerning or involving more than one transportation mode.

Non-motorized. Referring to bicycle, pedestrian and other modes of transportation not involving a motor vehicle.

Off-Peak Period. Non-rush periods of the day when travel is lower and less transit service is scheduled.

Parking management. Action taken to alter parking supply, operation and/or demand.

Peak period. Period of the day during which the maximum amount of travel occurs. It may be specified as morning (a.m.), afternoon or evening (p.m.) peak.

Principal arterial. A street that serves primarily long trips, connecting to freeways and important activity centers. Free-flow speeds typically range between 35 and 45 mph.

Puget Sound Regional Council (PSRC). The Metropolitan Planning Organization (MPO) and Regional Transportation Planning Organization (RTPO) for the central Puget Sound region. The MPO/RTPO is the legally mandated forum for cooperative transportation decision-making in a metropolitan planning area.

Record of Decision (ROD). A document prepared by a federal agency presenting the basis for the decision reached after completion of the Final EIS, summarizing any mitigation measures that will be incorporated into the project, and documenting any required Section 4(f) approval.

Screenline. An imaginary line crossing roadways and other transportation facilities, and used as a reference point for measuring or reporting travel volumes.

State Environmental Policy Act (SEPA). State legislation passed in 1974, which establishes an environmental review process for all development projects and major planning studies, prior to taking any action on these projects. SEPA permits early coordination to identify and mitigate any significant issues or impacts which may result from a project or study.

Single-occupant vehicle (SOV). A vehicle with only one occupant (i.e., the driver).

Transit-Oriented Development (TOD). A land use pattern that emphasizes clustered transit-intensive land uses with higher densities of development. It typically is focused along high-capacity transit routes, and is designed to encourage modes of travel other than the private automobile by locating residential, commercial and employment development in close proximity to each other.

Transit station community. Diverse mix of activities focused around a transit station and where people live and work.

Transportation Demand Management (TDM). Institutional and operational methods to reduce travel demand on the transportation system. TDM strategies are usually implemented to support the use of HOVs, and typically include carpool, vanpool and public transit programs.

Transportation System Management (TSM). The application of construction, operational and regulatory or legislative actions to provide the most cost-effective use of existing transportation facilities.

Vanpool. An arrangement in which a group of passengers share the use and cost of a van in traveling to and from pre-arranged destinations together, generally work related.

Vehicle Miles Traveled (VMT). Measure of the extent of motor vehicle operation; total number of vehicle miles traveled within a specific geographic area over a given period of time.

VISION 2020. The Puget Sound region's strategic growth management and transportation plan prepared by the Puget Sound Regional Council.

Volume/Capacity (V/C). The ratio of vehicle volumes to roadway capacity typically used as an indicator of roadway level of service.

Appendix A

I-405 Expertise Reports

Following is a list of expertise reports developed for the I-405 Corridor Program. All reports are available from Washington State Department of Transportation (WSDOT) by contacting Christina Martinez, WSDOT, at 401 2nd Ave. S., Suite 500, Seattle WA 98104-2887, (206) 389-3256

Final Recommendation Report

A general overview of The I-405 Corridor Program, including the decision-making process, community involvement program and policy and project recommendations are documented in the Final Recommendation Report. The report describes the key elements of the I-405 Plan and how its multi-modal approach meets the transportation needs of the Eastside.

Draft and Final Environmental Impact Statement

The I-405 Corridor Program FEIS is the result of three-years of technical work and consensus building, producing the most comprehensive transportation analysis in the state's history. The environmental review process provides the public and decision-makers with all relevant information related to the impacts of proposed I-405 improvements. Public comments received during the Draft EIS public review period are also addressed in the FEIS.

Draft Expertise Reports

Expertise reports were completed on 25 environmental, social and technical subjects. The findings are included in the FEIS.

Draft Alternatives Report

Detailed descriptions of the transportation alternatives evaluated for the I-405 Corridor are included in the Draft Alternatives Report. The report includes a summary of the evaluation criteria and process used to measure the alternatives' performance and the results of the alternatives evaluation.

Draft Background Report

Provides a summary of program objectives and goals, local growth trends, local transportation trends and analysis of current and future travel demand in the I-405 Corridor.

Appendix B

Regional Leaders Support I-405 Improvements

Three committees provided direction, feedback and promoted regional consensus for the I-405 Plan:

Executive Committee Members

Chair: George Kargianis, Washington State Transportation Commission (Alt. Aubrey Davis)

Vice-chair: Rob McKenna, Transportation Improvement Board

Randy Corman, Councilmember, City of Renton

Dave Gossett, Councilmember, Snohomish County

Bob Edwards, Board President, Puget Sound Regional Council

Jim Horn, Senator, Washington State Senate

Christopher Hurst, Representative, WA State House of Representatives

Rosemarie Ives, Mayor, City of Redmond

Connie Marshall, Councilmember, City of Bellevue (Alt. Grant Degginger)

Daniel Mathis, Federal Highway Administration

Joan McBride, Councilmember, City of Kirkland (Alt. Sants Contreras)

Steve Mullet, Mayor, City of Tukwila (Alt. Pam Carter)

John Okamoto, NW Regional Administrator, WSDOT (Alt. David Dye)

Dick Paylor, Councilmember, City of Bothell

Cheryl Pflug, Representative, WA State House of Representatives

Margarita Prentice, Senator, Washington State Senate (Alt. Julia Patterson)

Sonny Putter, Councilmember, City of Newcastle

Ron Sims, King County Executive (Alt. Harold Taniguchi)

Dave Somers, Councilmember, Snohomish County

Barbara Cothorn, Councilmember, Snohomish County

Chuck Mosher, Sound Transit and Councilmember, City of Bellevue

Steering Committee Members

Nick Afzali, City of Renton
Jim Arndt, City of Kirkland
Bill Barlow, Community Transit
Peter Beaulieu, Puget Sound Regional Council
Kim Becklund, City of Bellevue
Nancy Brennan-Dubbs, U.S. Fish and Wildlife Service
Allyson Brooks, State Dept. of Community, Trade and Economic Development
Paul Carr, PSCAA
Deborah Cornett, Washington Fish and Wildlife
Phil Fordyce, WSDOT/NW Region
Jonathan Freedman, U.S. EPA
Ann Garrett, NMFS
Barbara Gilliland, Sound Transit
Sharon Griffin, City of Hunts Point
Jack Kennedy, U.S. Army Corp
Johannes Kurz, Snohomish County
Jim Leonard, FHWA
Eddie Low, City of Bothell
Terry Marpert, City of Redmond
Ann Martin, King County
Sandra Meyer, City of Renton
Mick Monken, City of Woodinville
Jim Morrow, City of Tukwila
Leonard Newstrum, Town of Yarrow Point
Brian O'Sullivan, Sound Transit
Seyed Safavian, City of Bothell
Bob Sokol, City of Kenmore
Therese Swanson, WA Department of Ecology
Debra Symmonds, City of Mercer Island
Fritz Timm, City of Newcastle
Bernard Van deKamp, City of Bellevue
Bill Vlcek, City of Lynnwood
Mitch Wasserman, City of Clyde Hill
Don Wickstrom, City of Kent
John Witmer, FTA

Citizen Committee Members

Doug Baker, United Parcel Service
Sue Baugh, City of Bellevue
Bob Blayden, City of Renton
Kim Browne, Kennydale Neighborhood Association
Mary Alyce Burleigh, Kirkland Planning Commission
Emilio Cantu, Bellevue Network South
Craig Chang, Factoria Mall
Steve Coleman, Bridle Trails C.C.
Suzette Cooke, Renton Chamber of Commerce
Paul Cowles, City of Bothell
Norma Cugini, City of Renton
Jim Cusick, People for Modern Transit
Patrick Ewing, City of Bothell
Kemper Freeman, Kemper Development
Tom Gilchrist, Sterling Realty Organization
Corrine Hensley, Little Bear Creek Protective Association
Jim Hill, Microsoft
Linda Holman, City of Kirkland
Peter Hurley, Transportation Choices
Mike Hurst, City of Newcastle
John Jackson, City of Bellevue
Jay Lawley, WA Trucking Association
Bill Linton, City of Bellevue
John McGarvey, City of Bellevue
K.C. McNeil, City of Bothell
Phil Miller, City of Redmond
Bill Moritz, Cascade Bicycle Club
Nina Odell, Puget Sound Energy
Dale Potter, City of Redmond
Norm Proctor, PACCAR
Janet Ray, AAA
John Resha, City of Redmond
Dennis Robertson, City of Tukwila
Thomas Tochtermann, City of Bellevue
Kevin Wallace, Bellevue Transportation Commission
Liz Warmen, Boeing
Roland White, City of Kirkland
Ken Williams, Snohomish County Tomorrow

Appendix C

Project Team

Michael Cummings – Washington State Department of Transportation

Christina Martinez – Washington State Department of Transportation

John Shadoff - Washington State Department of Transportation

Bruce Smith - Washington State Department of Transportation

Jim Leonard – Federal Highway Administration

John Witmer – Federal Transit Administration

Ann Martin – King County

Brian O’Sullivan – Sound Transit

Ron Anderson – David Evans and Associates

Don Samdahl – Mirai Associates

Keith McGowan – McGowan Environmental

Rita Brogan – PRR

Paul Bergman – PRR

Craig Stone – Washington State Department of Transportation

Phil Fordyce – Washington State Department of Transportation

Melanie Coon – Washington State Department of Transportation

Kimberly Farley – Washington State Department of Transportation

Appendix D

Appendix E

