

2. DESCRIPTION OF ALTERNATIVES

2.1 PROJECT TERMINI AND WHY THEY ARE LOGICAL

The proposed I-405 Corridor Program improvements include freeway widening, new high-capacity transit (HCT), added arterial capacity, and other improvements that address multimodal transportation needs throughout the length of the I-405 corridor. The southern terminus of I-405, at its intersection with I-5 in the city of Tukwila, and northern terminus of I-405, at its intersection with I-5 in Snohomish County, were identified as logical limits for the proposal because the termini encompass the entire length of the I-405 facility. This enables proposed solutions to be examined at a level that demonstrates independent utility, and ensures that solutions consider the direct relationship with I-5, which is the major north-south travel route in western Washington.

2.2 ALTERNATIVES EVALUATED IN THE DRAFT EIS

Four programmatic action alternatives and a No Action Alternative were evaluated in the Draft Environmental Impact Statement (DEIS). In addition, the Preferred Alternative, which is a multimodal solution very similar to Alternative 3 in the DEIS, is evaluated in this Final EIS. Each of the action alternatives is a combination of multi-modal transportation improvements and other mobility solutions packaged to work together as a system. Each package demonstrates a unique emphasis in response to the purpose and need for the I-405 Corridor Program. The improvements and mobility solutions that comprise each action alternative are assembled from the following elements:

- Transportation demand management (TDM)
- Regional transportation pricing
- Local transit service (bus and other technologies)
- Bus rapid transit (BRT) operating in improved-access high-occupancy vehicle lanes on I-405, I-90, and SR 520
- Fixed-guideway high-capacity transit (HCT) operating with physical separation from other transportation modes
- Arterial high-occupancy vehicle (HOV) and bus transit priority improvements
- HOV express lanes on I-405 and HOV direct access ramps
- Park-and-ride capacity expansions
- Transit center capacity improvements
- Basic I-405 safety and operational improvements
- I-405 general purpose lanes
- I-405 collector-distributor lanes
- I-405 express lanes
- SR 167 general purpose lanes

- Capacity improvements on freeways connecting to I-405
- Planned arterial improvements
- Missing segments in the arterial network
- Capacity improvements on north-south arterials
- Arterial connections to I-405
- Pedestrian and bicycle improvements
- Intelligent transportation system (ITS) improvements
- Truck freight traffic enhancements

These elements are described in greater detail in Appendix A (I-405 Corridor Program - Major Elements of Alternatives) and Appendix B (I-405 Corridor Program – EIS Alternatives Project Matrix). Typical cross-sections for the proposed I-405 lane additions are shown in Appendix E (Roadway Sections). Table 2.2-1 shows the major elements contained in each of the alternatives.

2.2.1 No Action Alternative

The No Action Alternative includes the funded highway and transit capital improvement projects of cities, counties, Sound Transit, and WSDOT. These projects are already in the pipeline for implementation within the next six years, and are assumed to occur regardless of the outcome of the I-405 Corridor Program. For this reason, they are referred to collectively as the No Action Alternative.

Under the No Action Alternative, only limited expansion of state highways would occur. No expansion of I-405 is included; however, a new southbound I-405 to southbound SR 167 ramp modification would be constructed. Approximately 15 arterial widening and interchange improvement projects would be implemented within the study area by local agencies. Short-term minor construction necessary for continued operation of the existing transportation facilities would be accomplished, and minor safety improvements would be constructed as required.

It is assumed that Phase I of Sound Transit's regional transit plan would be completed. Approximately 36 HOV direct access projects, arterial HOV improvements, park-and-ride expansions, and transit center enhancements would be implemented in the study area as part of the No Action Alternative. Bus transit service levels by the 2020 horizon year are based upon the Puget Sound Regional Council (PSRC) VISION 2020 Metropolitan Transportation Plan. Parking costs are expected to increase due to market forces. Additional urban centers and major employment centers within the study area are also assumed to implement parking charges by 2020.

These baseline transportation improvement projects are, or will be, the subject of separate and independent project-specific environmental analysis, documentation, and review. Their direct impacts are not specifically evaluated by the I-405 Corridor Program. However, the secondary and cumulative impacts of these projects are addressed as part of the analyses contained herein.

Figure 2.2-1 shows the locations of the improvements contained in the No Action Alternative. Appendix B (I-405 Corridor Program EIS Alternatives Project Matrix) identifies the specific transportation improvements and mobility solutions contained within each system element and alternative.

Table 2.2-1: Elements Contained in Each Alternative

| | <u>No Action Alternative</u> | <u>Alternative 1</u> HCT/TDM Emphasis | <u>Alternative 2</u> Mixed Mode with HCT/Transit Emphasis | <u>Alternative 3</u> Mixed Mode Emphasis | <u>Alternative 4</u> General Capacity Emphasis | <u>Preferred Alternative</u> |
|---|------------------------------|--|--|---|---|--|
| Committed and funded freeway projects | X | X | X | X | X | <u>X</u> |
| Committed and funded HOV projects | X | X | X | X | X | <u>X</u> |
| Committed and funded arterial projects | X | X | X | X | X | <u>X</u> |
| Park-and-ride expansions included in No Action | X | X | X | X | X | <u>X</u> |
| Transit center improvements included in No Action | X | X | X | X | X | <u>X</u> |
| Transportation Demand Management (TDM) | X | X | X | X | X | <u>X</u> |
| Expanded TDM regional congestion pricing strategies | | X | | | | <u>Contingent upon adopted regional pricing policy</u> |
| Expand transit service by up to 100% compared to King Co. 6-Year Plan | | X | X | X | | <u>Expansion limited to around 75% based on demand</u> |
| Expand transit service by 50% compared to King Co. 6-Year Plan | | | | | X | |
| Physically separated, fixed-guideway HCT system | | X | X | | | |
| Bus rapid transit operating in improved access HOV lanes | | | | X | | <u>X</u> |
| Arterial HOV priority for transit | | X | X | X | | <u>X</u> |
| HOV direct access ramps on I-405 | | | X | X | X | <u>X</u> |
| Additional park-and-ride capacity expansion | | X | X | X | | <u>X</u> |
| Additional transit center improvements | | X | X | X | | <u>X</u> |
| Basic I-405 safety and operational improvements | | X | X | X | X | <u>X</u> |
| I-405/SR 167 interchange ramps for all major movements | | | X | X | X | <u>X</u> |
| One added general purpose lane in each direction on I-405 | | | X | | X | |
| Two added general purpose lanes in each direction on I-405 | | | | X | | <u>X</u> |

| | <u>No Action Alternative</u> | <u>Alternative 1</u> HCT/TDM Emphasis | <u>Alternative 2</u> Mixed Mode with HCT/Transit Emphasis | <u>Alternative 3</u> Mixed Mode Emphasis | <u>Alternative 4</u> General Capacity Emphasis | <u>Preferred Alternative</u> |
|---|------------------------------|--|--|---|---|---|
| Two express lanes added in each direction on I-405 ^a | | | | | X | |
| <u>Collector - distributor and auxiliary lanes as needed</u> | | | X | X | X | X |
| Widen SR 167 by one lane each direction to study area boundary ^b | | | X | X | X | X |
| Improved capacity of freeways connecting to I-405 | | | X | X | X | X |
| Planned arterial improvements | | | X | X | X | X |
| Complete missing segments of major arterial connecting routes ^c | | | | X | X | X |
| Expand capacity on north-south arterials ^c | | | | | X | X |
| Upgrade arterial connections to I-405 ^c | | | X | X | X | X |
| Pedestrian / bicycle connections and crossings of I-405 | | X | X | X | X | X |
| Intelligent transportation system (ITS) improvements | | X | X | X | X | X |
| Truck freight traffic enhancements | | X | X | X | | X |
| Consider managed lanes on I-405 ^d | | | | | Accommodates future planning for expanded managed lanes in corridor | Accommodates future planning for expanded managed lanes in corridor |

^a Studied as general purpose lanes and as managed high-occupancy/toll (HOT) lanes.

^b Preferred Alternative widens SR 167 by up to two lanes in each direction south to S 180th Street, but includes no widening beyond S 180th.

^c With jurisdictional approval.

^d Strategies and approaches for managing lanes could include intelligent transportation system (ITS) technologies, lane access restrictions, lane occupancy restrictions such as HOV or high-occupancy/toll (HOT) lanes, facility tolls, and regional congestion pricing, among others.

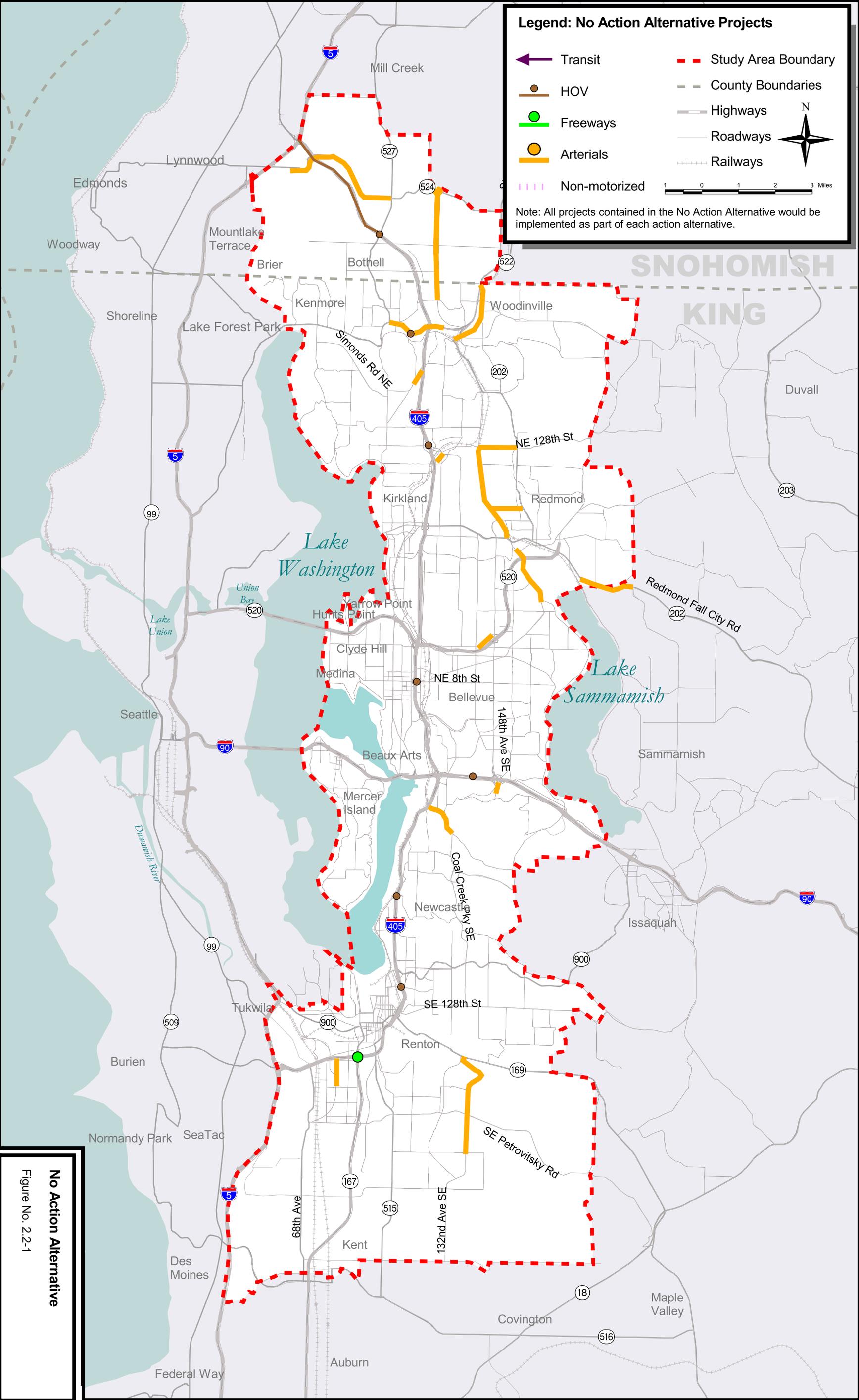
Legend: No Action Alternative Projects

-  Transit
-  HOV
-  Freeways
-  Arterials
-  Non-motorized
-  Study Area Boundary
-  County Boundaries
-  Highways
-  Roadways
-  Railways



1 0 1 2 3 Miles

Note: All projects contained in the No Action Alternative would be implemented as part of each action alternative.



No Action Alternative

Figure No. 2.2-1

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2.2.2 Alternative 1: High-Capacity Transit/TDM Emphasis

This alternative attempts to minimize addition of new impervious surface from general purpose transportation improvements and to encourage transit use within the study area. To do this, Alternative 1 emphasizes reliance on a new physically separated fixed-guideway HCT system, substantial expansion of local bus transit service, non-construction mobility solutions such as regional transportation pricing, and transportation demand management (TDM) strategies. It does not include any increase in roadway capacity beyond the No Action Alternative. All improvements contained in the No Action Alternative are included in Alternative 1, as well as in the other action alternatives. Table 2.2-1 shows the elements contained in each of the alternatives.

Alternative 1 includes a physically separated, fixed-guideway HCT system, potentially using some form of rail technology and potentially operating within portions of the existing Burlington Northern Santa Fe Railroad (BNSF) right-of-way. The HCT system would serve the major activity centers within the study area, and would include connections to Redmond and Issaquah and west across Lake Washington to Seattle. The connection across Lake Washington is being evaluated as part of the ongoing Trans-Lake Washington Project EIS. Overall transit service would be increased by about 100 percent compared to King County's Fall 2001 proposed 6-year transit development plan. In addition, this alternative would add a new bus maintenance and operations facility in the Green River Valley. Arterial HOV priority for transit, additional park-and-ride capacity for 4,500 vehicles, and 26 transit center improvements also would be provided.

A package of basic improvements to I-405 would be implemented, including climbing lanes, auxiliary lanes, I-90/Coal Creek Parkway interchange improvements, and I-405/SR 167 interchange improvements, among others. No additional general purpose lanes on I-405 would be provided.

Limited arterial HOV/transit improvements would be provided to facilitate access to I-405 and the fixed-guideway HCT system, along with non-construction treatments such as providing priority for transit at signals and intersections. Regional pricing strategies similar to those currently being studied by the Puget Sound Regional Council (PSRC) would be implemented along with a package of core TDM strategies that are common to all the action alternatives.

Figure 2.2-2 shows the location of improvements contained in Alternative 1. Appendix A (I-405 Corridor Program - Major Elements of Alternatives) describes the elements that are the building blocks for the alternatives. Appendix B (I-405 Corridor Program EIS Alternatives Project Matrix) identifies the specific transportation improvements and mobility solutions contained within each element and alternative.

2.2.3 Alternative 2: Mixed Mode with High-Capacity Transit/Transit Emphasis

This alternative attempts to improve mobility options in the study area relative to Alternative 1 by providing the same substantial commitment to transit, combined with the minimum increase in roadway capacity for HOV and general purpose traffic. To do this, Alternative 2 would implement a new physically separated, fixed-guideway HCT system, substantial expansion of local bus transit service, one added lane in each direction on I-405, and improvements to connecting arterials. All improvements contained in the No Action Alternative are included in Alternative 2, as well as in the other action alternatives. Table 2.2-1 shows the elements contained in each of the alternatives.

Alternative 2 includes a physically separated, fixed-guideway HCT system, potentially using some form of rail technology. The HCT system would serve the major activity centers within the study area, and would include connections to Redmond and Issaquah and west across Lake Washington to Seattle. The connection across Lake Washington is being evaluated as part of the ongoing Trans-Lake Washington Project EIS. Overall transit service would be increased by 100 percent compared to King County's Fall 2001 proposed 6-year transit development plan. This is a 50 percent increase in service compared to the current King County, Sound Transit, and Community Transit 6-year plans. In addition, Alternative 2 would add a new bus maintenance and operations facility in the Green River Valley. Arterial HOV priority for transit, additional park-and-ride capacity for 4,500 vehicles, and 26 transit center improvements are included, as well as completion of the HOV freeway-to-freeway ramps along I-405.

To increase general purpose capacity, I-405 would be widened by one lane in each direction. One lane also would be added in each direction on SR 167 to the study area boundary. The package of basic improvements to I-405 would be implemented, along with the core TDM strategies that are common to all action alternatives. New capacity improvements on connecting arterials and freeways would be provided along with planned arterial improvements of local jurisdictions.

Figure 2.2-3 shows the location of improvements contained in Alternative 2. Appendix A (I-405 Corridor Program - Major Elements of Alternatives) describes the elements for the alternatives. Appendix B (I-405 Corridor Program EIS Alternatives Project Matrix) identifies the specific transportation improvements and mobility solutions contained within each element and alternative.

2.2.4 Alternative 3: Mixed Mode Emphasis

This alternative attempts to substantially improve mobility options for all travel modes and to provide a HCT system throughout the study area at a lower cost than the physically separated, fixed-guideway system proposed in Alternatives 1 and 2. To do this, Alternative 3 would implement a new bus rapid transit (BRT) system, provide substantial expansion of local bus transit service, add two lanes in each direction on I-405, and improve arterials within the study area. All improvements contained in the No Action Alternative are included in Alternative 3, as well as in the other action alternatives. Table 2.2-1 shows the elements contained in each of the alternatives.

Alternative 3 includes a BRT system operating in improved-access HOV lanes on I-405, I-90, and SR 520. The proposed BRT system includes several features that distinguish it from regular bus service, including clearly identifiable priority lanes (using the existing HOV lane system in most locations), frequent and predictable schedules, uniquely identifiable vehicles, accessible transit stations, and convenient fare-collection procedures. Along I-405, the BRT system would operate with stops every 2 to 3 miles and would use the HOV direct access ramps and in-line transit stations to maximize speed and reliability. Other BRT operations would operate along connecting corridors (such as SR 522, SR 520, I-90, and SR 167) and would use portions of the I-405 BRT facility. The BRT system would serve the major activity centers within the study area, and would include connections to Redmond and Issaquah and west across Lake Washington to Seattle. The connection across Lake Washington is being evaluated as part of the ongoing Trans-Lake Washington Project EIS. Bus transit service would be increased by about 100 percent compared to King County's Fall 2001 proposed 6-year transit development plan. This is a 50 percent increase in service compared to the current King County, Sound Transit, and Community Transit 6-year plans. In addition, this alternative would add a new bus maintenance and operations facility in the Green River Valley. Improved arterial HOV priority for transit, additional park-and-ride capacity for 4,500 vehicles, 11 BRT stations, transit center and capacity improvements, and 9 freeway HOV direct access projects are included, as well as completion of the HOV freeway-to-freeway ramps along I-405.

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This alternative would substantially increase capacity for general purpose traffic on I-405 by adding two lanes in each direction and improving major interchanges. These added general purpose lanes replace many of the auxiliary and climbing lanes contained in the basic improvements to I-405 that are common to the other action alternatives. One lane would be added in each direction on SR 167 to the study area boundary. The core TDM strategies would be implemented. New capacity improvements on connecting arterials and freeways would be provided. Selected arterial missing links would be completed together with planned arterial improvements of local jurisdictions.

Figure 2.2-4 shows the location of improvements contained in Alternative 3. Appendix A (I-405 Corridor Program - Major Elements of Alternatives) describes the elements for all alternatives. Appendix B (I-405 Corridor Program EIS Alternatives Project Matrix) identifies the specific transportation improvements and mobility solutions contained within each element and alternative. Appendix E (Roadway Sections) shows typical cross-sections for the proposed I-405 lane additions.

2.2.5 Alternative 4: General Capacity Emphasis

This alternative places the greatest emphasis on increasing general purpose and HOV roadway capacity, with substantially less reliance on new transit facilities or added local bus service than any of the other action alternatives. To do this, Alternative 4 would provide one additional lane in each direction on I-405, a new four-lane I-405 express roadway, and the other general purpose and HOV roadway improvements on I-405 and connecting freeways contained in Alternative 3. The expansion of local bus transit service would be minimal compared to that proposed under the other action alternatives. However, this alternative would add a new bus maintenance and operations facility in the Green River Valley. All improvements contained in the No Action Alternative are included in Alternative 4, as well as in the other action alternatives. Table 2.2-1 shows the elements contained in each of the alternatives.

Alternative 4 would expand freeway capacity by adding one additional general purpose lane in each direction on I-405 in most segments, improving major interchanges, and constructing a new four-lane I-405 express roadway consisting of two lanes in each direction with limited access points. One lane would be added in each direction on SR 167 to the study area boundary. Completion of the HOV freeway-to-freeway ramps along I-405 and the package of basic improvements to I-405 would be implemented.

Arterial improvements would include additional expansion of major arterial routes and connections to I-405 in conjunction with the planned arterial improvements of local jurisdictions. Transit in this alternative is assumed to be a continuation of the existing local and express bus transit system with a 50 percent increase in service compared to the current King County, Sound Transit, and Community Transit 6-year plans. Additional park-and-ride capacity for 4,500 vehicles would be provided along with the core TDM strategies that are common to all action alternatives.

Figure 2.2-5 shows the location of improvements contained in Alternative 4. Appendix A (I-405 Corridor Program - Major Elements of Alternatives) describes the elements for the alternatives. Appendix B (I-405 Corridor Program EIS Alternatives Project Matrix) identifies the specific transportation improvements and mobility solutions contained within each element and alternative. Appendix E (Roadway Sections) shows typical cross-sections for the proposed I-405 lane addition and express roadway.

2.2.6 Preferred Alternative

The Preferred Alternative is a multi-modal solution to the transportation needs in the I-405 corridor that is very similar to Alternative 3. It was identified after thorough analysis of its transportation performance and environmental effects in meeting the Purpose and Need for the I-405 Corridor Program. Based upon this analysis, the project proponent, WSDOT, and the I-405 Corridor Program Citizen, Steering, and Executive committees reached consensus on the Preferred Alternative for recommendation to the co-lead agencies for the following primary reasons:

- Transportation performance of the Preferred Alternative was superior to the other alternatives in relation to the committees' adopted evaluation criteria;
- Environmental impacts of the Preferred Alternative within the corridor are believed to be avoidable or effectively mitigatable, and opportunities for enhancement of existing environmental conditions can be achieved through sound design practices and the proposed "basin approach" to considering key environmental features;
- Comparison of program benefits to costs for the Preferred Alternative was more desirable than for the other alternatives; and
- The mix of modal investments in the Preferred Alternative provides a balanced system of roadway, transit, and demand management strategies that are expected to provide a reasonable long-term solution to the needs for personal and freight mobility and congestion reduction within the I-405 Corridor Program study area.

The Preferred Alternative, like Alternative 3, focuses on substantial improvement of mobility options for all travel modes and provision of an effective HCT system throughout the study area at a lower cost than the physically separated, fixed-guideway system proposed in Alternatives 1 and 2. To achieve this, the Preferred Alternative proposes a new bus rapid transit (BRT) system, substantial expansion of local bus transit service, up to two added lanes in each direction on I-405, improvements to arterial capacity and connectivity within the study area, and the other general purpose and HOV roadway improvements contained in Alternative 3. All improvements contained in the No Action Alternative are included in the Preferred Alternative. Table 2.2-1 identifies the elements contained in the Preferred Alternative and each of the other alternatives.

The Preferred Alternative includes a BRT system operating in improved-access HOV lanes on I-405, I-90, and SR 520 as described for Alternative 3. The proposed BRT system includes several features that distinguish it from regular bus service, including clearly identifiable priority lanes (using the existing HOV lane system in most locations), frequent and predictable schedules, uniquely identifiable vehicles, accessible transit stations, and convenient fare-collection procedures. Along I-405, the BRT system would operate with stops every 2 to 3 miles and would use the HOV direct access ramps and in-line transit stations to maximize speed and reliability. Other BRT operations would operate along connecting corridors (such as SR 522, SR 520, I-90, and SR 167) and would use portions of the I-405 BRT facility. It would serve the major activity centers within the study area, and would include connections east to Redmond and Issaquah and west across Lake Washington to Seattle. The connections across Lake Washington are being evaluated as part of the ongoing Trans-Lake Washington Project EIS.

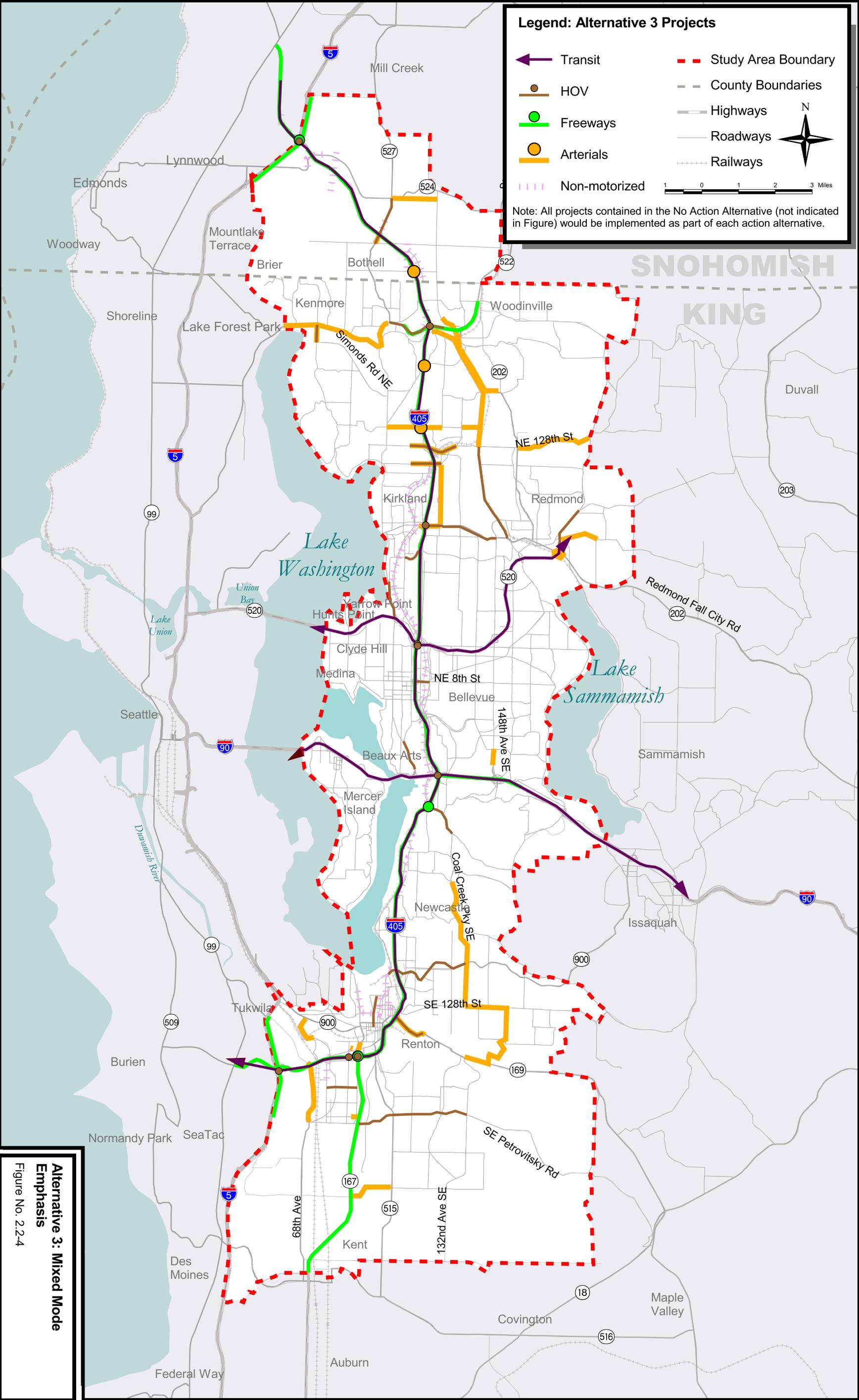
Legend: Alternative 3 Projects

-  Transit
-  HOV
-  Freeways
-  Arterials
-  Non-motorized
-  Study Area Boundary
-  County Boundaries
-  Highways
-  Roadways
-  Railways



1 0 1 2 3 Miles

Note: All projects contained in the No Action Alternative (not indicated in Figure) would be implemented as part of each action alternative.



Alternative 3: Mixed Mode Emphasis
Figure No. 2.2-4

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Overall transit service within the study areas would be increased, based on demand, by up to 75 percent compared to the current King County, Sound Transit, and Community Transit 6-year plans. The Preferred Alternative does not include a new bus maintenance and operations facility as is proposed in the other four action alternatives. Improved arterial HOV priority for transit, additional park-and-ride capacity for 5,000 vehicles, 11 BRT stations, transit center and capacity improvements, 9 freeway HOV direct access projects, and completion of the HOV freeway-to-freeway ramps along I-405 are included, as well as a variety of pedestrian and bicycle connections.

The Preferred Alternative, similar to Alternative 3, would substantially increase capacity for general purpose traffic on I-405 by adding up to two lanes in each direction, along with providing collector-distributor lanes along I-405 at locations where they are warranted. These added general purpose lanes replace many of the auxiliary and climbing lanes contained in the basic I-405 improvements that are common to the other action alternatives. In addition, this alternative includes improvements for major interchanges and added capacity on arterials and freeways connecting to I-405.

The freeway design includes a buffer separating the general purpose lanes and the HOV lane. This buffer, envisioned as a 4-foot painted barrier in most sections, would allow for safer and more reliable HOV and transit operations within the I-405 corridor. Access to and from the HOV lane would likely be limited to the HOV direct access ramps, freeway-to-freeway connections, and clearly identifiable locations along the mainline freeway where the buffer would be open for merging traffic. The buffer design allows for future consideration of expanded managed lane operations along I-405, which could include managing up to two lanes each direction. Strategies and approaches for managing lanes could include intelligent transportation system (ITS) technologies, lane access restrictions, lane occupancy restrictions such as HOV or high-occupancy/toll (HOT) lanes, facility tolls, and regional congestion pricing, among others. Expansion of managed lane operations beyond the single HOV lane proposed in the Preferred Alternative would be subject to further analysis outside of the I-405 Corridor Program EIS process.

The I-405/SR 167 interchange would be expanded to include ramps for all major movements, and SR 167 would be widened by up to two lanes in each direction south from I-405 to S 180th Street in Kent, with no widening beyond that limit. The same expanded list of capacity enhancements on north-south arterials and continuity improvements to complete missing segments of major arterial connecting routes as included under Alternative 4 would be completed, together with other arterial improvements already planned by the local jurisdictions. Truck freight traffic improvements, intelligent transportation system improvements, and an expanded package of more aggressive TDM measures similar to Alternative 1 also would be implemented. This could include expanded options for managing lanes on I-405 such as regional congestion pricing or other management approaches, contingent upon adoption of a regional pricing policy by the PSRC.

Figure 2.2-6 shows the location of improvements contained in the Preferred Alternative. Appendix A (I-405 Corridor Program - Major Elements of Alternatives) describes the elements for the alternatives. Appendix B (I-405 Corridor Program EIS Alternatives Project Matrix) identifies the specific transportation improvements and mobility solutions contained within each element and alternative. Appendix E (Roadway Sections) shows typical cross-sections for the proposed I-405 lane additions.

2.2.7 General Cost Estimates and Schedule of the Action Alternatives

2.2.7.1 Cost Estimates

Over 300 transportation improvements were identified as potential solutions to meet the intent of the Purpose and Need for the I-405 Corridor Program. Recommendations included a wide range of strategies in various modes and locations.

An estimate of cost was prepared for each of these improvements that reflects the initial public cost of providing the improvement. For capital projects such as roadway construction, the estimate included preliminary engineering, right-of-way, construction, construction management, and contingencies. Program costs were estimated for elements such as travel demand management. Annual maintenance and operation costs were not included. All costs were estimated in year 2002 dollars.

High-capacity transit costs include guideways, stations, maintenance and storage facilities, and vehicles. Bus rapid transit costs for Alternative 3 and the Preferred Alternative are included in the costs for freeway HOV, transit services, and park-and-rides.

The TDM program cost estimate includes the 20-year capital costs for vanpooling, “land use as TDM” (as defined in Appendix A), and miscellaneous programs. Revenues for pricing programs would cover costs. Annual spending costs are not included in the TDM preliminary alternative cost estimates.

Action alternatives were developed by combining individual transportation improvements that best fit the emphasis of the alternative. Table 2.2-2 presents the preliminary alternative costs summarized by mode.

Maintenance and operation costs were not included in the preliminary alternative costs because the intent was to capture only the initial public cost of providing the improvement. Annual roadway maintenance and operation costs are typically funded from jurisdictions through their ongoing programs.

Table 2.2-2: Preliminary Alternative Costs Summarized by Mode

| Element | Cost in Millions - Year 2000 ^a | | | | | |
|------------------------------------|---|---|---|--|---|--|
| | <u>No Action Alternative</u> | <u>Alternative 1</u> HCT/TDM Emphasis | <u>Alternative 2</u> Mixed Mode with HCT/Transit Emphasis | <u>Alternative 3</u> Mixed Mode Emphasis | <u>Alternative 4</u> General Capacity Emphasis | <u>Preferred Alternative</u> Mixed Mode Emphasis |
| Transportation Demand Management | == | \$72.8 | \$72.8 | \$72.8 | \$72.8 | <u>\$72.8</u> |
| Freeway General Purpose | \$7.0 | \$768.6 | \$2,846.0 | \$4,482.9 | \$9,397.6 | <u>\$4,614.5</u> |
| Freeway HOV ^b | \$463.6 | == | \$800.9 | \$996.6 | \$886.8 | <u>\$1,048.0</u> |
| Arterial General Purpose | \$185.6 | == | \$463.6 | \$663.3 | \$849.3 | <u>\$765.9</u> |
| Arterial HOV | == | \$217.2 | \$194.6 | \$194.6 | == | <u>\$185.5</u> |
| High-Capacity Transit | == | \$4,018.4 | \$4,018.6 | == | == | == |
| Transit Services and Park-and-Ride | \$20.4 | \$172.2 | \$168.7 | \$319.6 | \$83.2 | <u>\$825.1</u> |
| Pedestrian and Bicycle | == | \$67.4 | \$67.4 | \$67.4 | \$42.8 | <u>\$67.4</u> |
| Total Cost | \$676.6 | \$5,316.6 | \$8,632.6 | \$6,797.2 | \$11,332.5 | <u>\$7,579.2</u> |

^a Totals do not include maintenance and operations costs.

^b Freeway HOV costs include bus rapid transit and direct access connections.

Note: No Action Alternative costs are not included in the estimates for the action alternatives.

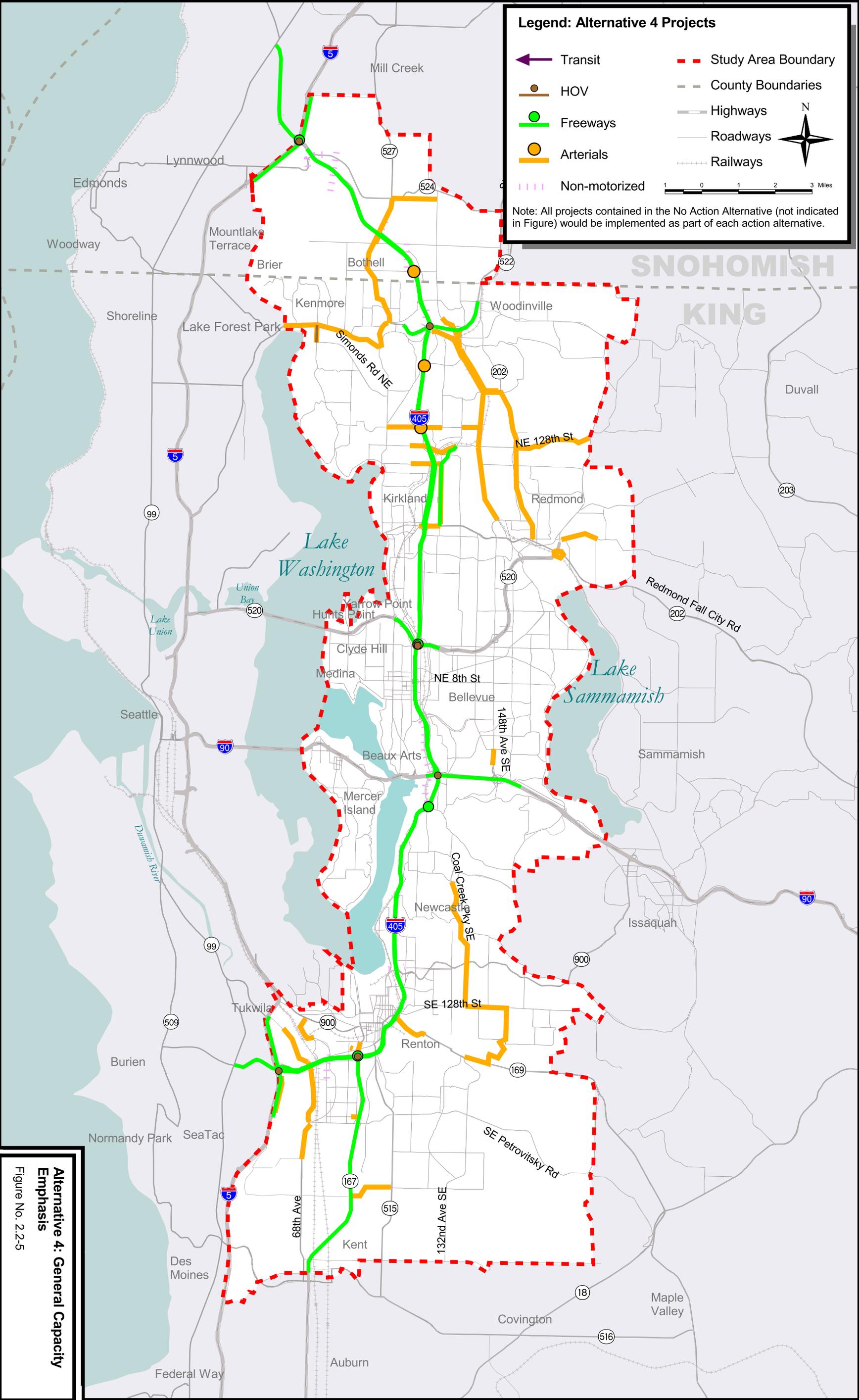
Legend: Alternative 4 Projects

-  Transit
-  HOV
-  Freeways
-  Arterials
-  Non-motorized
-  Study Area Boundary
-  County Boundaries
-  Highways
-  Roadways
-  Railways



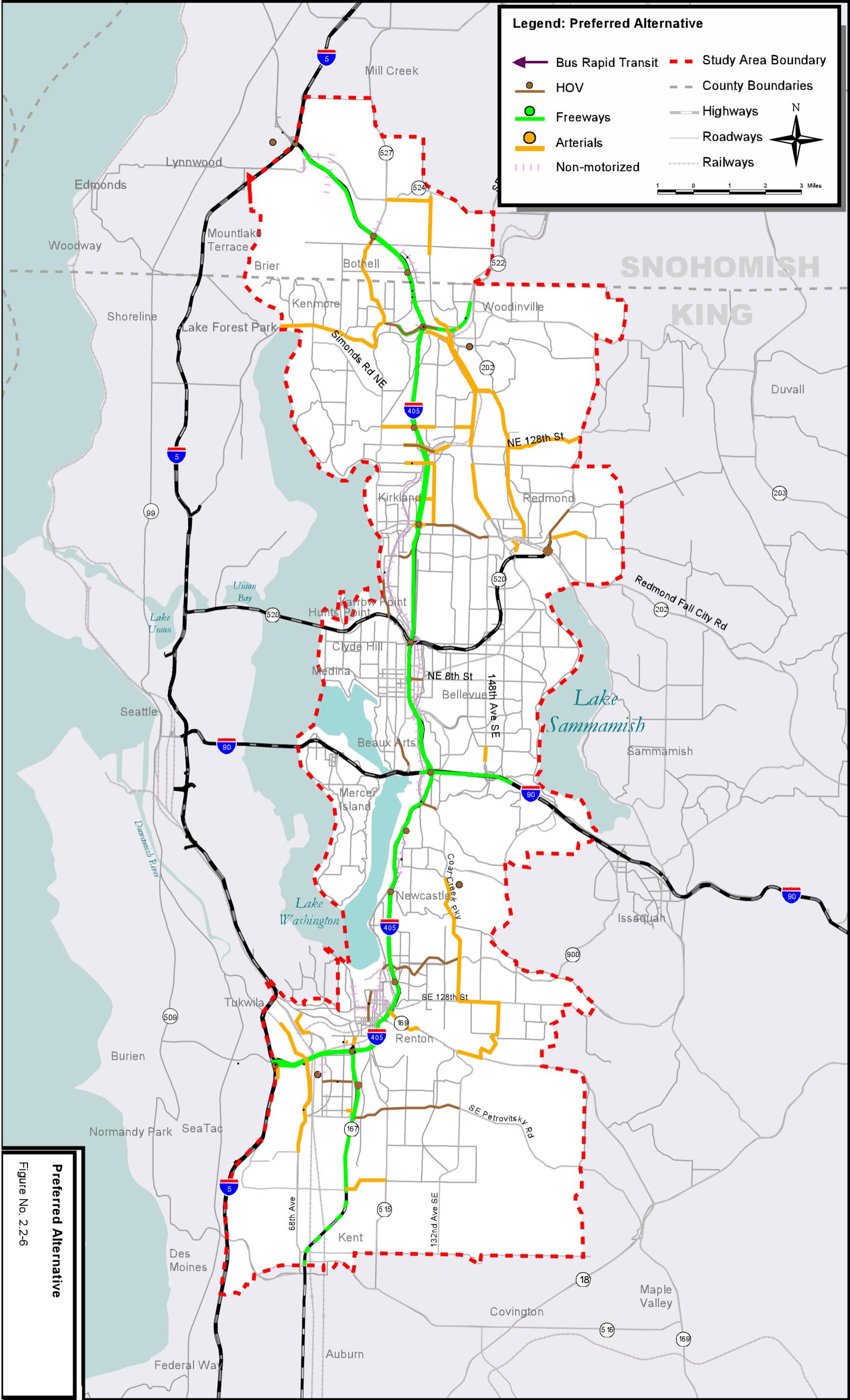
1 0 1 2 3 Miles

Note: All projects contained in the No Action Alternative (not indicated in Figure) would be implemented as part of each action alternative.



Alternative 4: General Capacity Emphasis
Figure No. 2.2-5

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Legend: Preferred Alternative

| | | | |
|---|-------------------|---|---------------------|
|  | Bus Rapid Transit |  | Study Area Boundary |
|  | HOV |  | County Boundaries |
|  | Freeways |  | Highways |
|  | Arterials |  | Roadways |
|  | Non-motorized |  | Railways |

Scale: 0 1 2 3 Miles

North Arrow

Preferred Alternative
 Figure No. 2.2-6

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2.2.7.2 Funding, Schedule, and Implementation

Approximately 150 projects or actions were identified in the Preferred Alternative, a 20-year vision for the corridor, that will be the responsibility of WSDOT, Sound Transit, King and Snohomish counties, and the local agencies within the study area. For planning purposes, the capital cost of the Preferred Alternative was estimated at approximately \$7.8 billion dollars in year 2002 dollars. WSDOT will be the lead for implementing the freeway portion of the project estimated at about \$6.3 billion in year 2002 dollars. The project costs are currently under review and will likely be changed. Sound Transit and King County will be lead agencies for implementing most of the transit improvements, and local governments will lead the arterial improvements.

Availability of funding to implement the projects listed in the Preferred Alternative is uncertain. Currently, the Puget Sound region is spending a total of just under \$2 billion annually in public funds on roadways, transit, and ferries. In 2001, approximately 43 percent went to ferries, roads, and highways, 5 percent to the State Patrol, and the remaining 52 percent to public transit including Sound Transit. The population within the primary study area represents about 18 percent of the Puget Sound region. Assuming an equitable distribution of future revenues under current law and given enough time, a limited number of high-priority projects will eventually be implemented through each agency's continuing capital improvement programs.

The bulk of the funding needed to implement the Preferred Alternative will require new revenue sources. The Washington State Legislature, in the 2002 session, provided for 10-year statewide and regional transportation funding packages that included revenues for the I-405 Corridor Program. Both revenue proposals will require a public vote. The statewide ballot measure, Referendum 51, will be voted on by the public in November 2002, and includes \$1.77 billion for I-405 subject to certain conditions and limitations. The legislation, Engrossed Substitute Senate Bill 6347, did not stipulate the projects that would be funded within the \$1.77 billion.

Engrossed Second Substitute Senate Bill 6140 provides for creation of a regional transportation investment district for the purpose of developing, constructing, and financing transportation projects and services. A regional package of projects is in the process of development and may be presented for public vote in the future. This referendum may include use of high-capacity transit tax authority available currently to Sound Transit. Revenues from the regional package will most likely include significant funding for roads and transit projects within the I-405 Corridor Program. Though specific projects and levels of funding have not been developed, this and the statewide ballot measure could provide approximately \$3.5 billion dollars for I-405 investments in the next 10 years if the regional referendum includes a high-capacity transit tax component.

Another potential revenue source for the high-capacity transit (HCT) capital and service elements contained in the Preferred Alternative's BRT system development proposal are tax revenues collected within the Central Puget Sound Regional Transit Authority district and administered by Sound Transit. In 1996, the three county urbanized area voted to adopt a 10-year regional plan, "Sound Move", and approved a 4.0 percent increase in total sales tax and a 0.3 percent increase in the motor vehicle excise tax (MVET). Sub-regional "firewalls" were established to assure tax revenues generated within each of the five identified sub-areas of the district would be programmed to HCT improvements benefiting those sub-areas. Some of the projects being advanced on the preferred alternative's project list are already being funded in the

East King County sub-area under the Sound Move Phase I program through 2006. Sound Transit estimates that East King County could tap as much as \$300 million of their unused Phase I bonding authority and \$60 million of unanticipated (excess) sub-area revenues to fund new HCT projects substantially begun or completed by 2006. New HCT projects in the East King County sub-area begun after 2006 could not be funded, however, without a Phase II regional vote. East King County's total projected Phase II investment capacity, assuming current RTA tax rates are maintained past 2006, is just over \$1 Billion for the 2007-2016 period.

Based on state and regional funding sources, approximately \$3.5 to 4.0 Billion could be available for the first 10 years of the I-405 Corridor Program. The Corridor program is currently developing a phasing program for the state and regional ballot measures. This phasing program will be developed by agencies involved in the Corridor Program. The phasing proposal will then be forwarded to the Department of Transportation (state ballot measure) and the King and Snohomish County Councils (regional ballot measure). The County Councils will determine when the regional measure will go to the voters, the amount of funding and the project list. The current process indicates that a public hearing(s) will be held on the projects proposed to be listed on the regional ballot measure. The state ballot measure will go to the voters in November of 2002. The regional ballot measure could be as early as November 2002, but can be delayed till 2003 or later.

The unfunded portion of the program will be requested from federal and future state, regional, and local funding sources. Additional revenue may also be available from more aggressive congestion pricing. To receive Federal Funding the program must be included the Puget Sound Regional Council's (PSRC) Metropolitan Transportation Plan (MTP). The projects in the I-405 Corridor Program Preferred Alternative are currently shown in the MTP as "candidate projects". When a funding program is identified for some or all of the projects a request will be made to the PSRC to move funded project(s) from candidate to approved status. As part of normal operating procedures, the co-lead agencies and local governments are continually looking for opportunities to secure federal funding for transportation program development.

Since funding is uncertain, preliminary construction schedules were prepared for implementation based on high, medium, and low funding availability. High and medium funding availability assumes the entire program is funded, with all funds being available within 10 years for the high scenario and 18 years for the medium scenario. High funding availability allows for work to be accomplished concurrently throughout the corridor with construction beginning in 2004 and completed in 10 years. Medium funding availability requires sequential development and an 18-year construction time frame. Limited funding under the low scenario assumes only the hot spots would be funded over a 30-year period. Different implementation schedules are possible, which could vary construction duration, construction impacts, and completion date.

Project improvements contained within the Preferred Alternative will be re-examined individually and in combination for phased implementation based on a number of considerations, including: revised cost estimates; availability of funding; contribution to improved transportation system operation, congestion relief, mobility, and safety; equity of improvements within the corridor; relationship to other planned and potential improvements within the region and study area; logical construction sequencing and minimization of construction impacts; beneficial and adverse environmental impacts; opportunities for early-action mitigation; demonstration of projects' independent utility and logical termini; anticipated requirements for NEPA/SEPA environmental analysis, documentation, and review; and ability to achieve rapid results, among others.

The Preferred Alternative project improvements are expected to be examined next within four logical corridor sections:

1. I-5 in Tukwila to N 3rd Street in Renton, including improvements to SR 167;
2. N 3rd Street in Renton to SE 8th Street in Bellevue;
3. SE 8th Street in Bellevue to NE 132nd Street in Kirkland; and
4. NE 132nd Street in Kirkland to I-5 in Lynnwood.

The projects, or combinations of projects, that could be advanced for initial implementation is not known at this time. For this reason, the level of NEPA/SEPA environmental analysis, documentation, and review that will be required also cannot be known until more specific proposals for project improvements and phasing are advanced. It is anticipated that improvements to the I-405/SR 167 interchange will be among the hot spots identified for early implementation. It also is likely that environmental review for the I-405 corridor improvements could include the full range of NEPA and/or SEPA environmental analysis, documentation, and review, as appropriate. This would include a combination of categorical exclusions, categorical exemptions, environmental assessments, checklists, EISs, and supplemental EISs.

Projects in the No Action Alternative are currently being developed by the jurisdictions with responsibility. It is anticipated the No Action projects will be completed within the next six years.

Alternatives 1 and 2 focus on physically separated fixed-guideway high-capacity transit, with a substantial increase in bus transit service. Sound Transit would most likely be the lead agency for designing and implementing the fixed-guideway high-capacity transit. Sound Transit Regional Express, King County, and Community Transit would be responsible for implementing increased bus transit service. For Alternative 2, WSDOT would be the lead agency for adding lanes to I-405. Jurisdiction projects would be the responsibility of the local agencies.

The Preferred Alternative, similar to Alternative 3, provides a mix of solutions that place an emphasis on roadway capacity and bus rapid transit operating in improved-access HOV lanes on I-405, I-90, and SR 520. WSDOT, Sound Transit, King County, Community Transit, and local agencies would be responsible for leading implementation of the project elements within each of their jurisdictions. The Preferred Alternative and Alternative 3 propose a lower-cost bus rapid transit system that uses the HOV lanes and HOV direct access system.

Alternative 4 is the most costly and primarily focuses on freeway expansion. WSDOT would be the lead agency responsible for implementing the improvements on I-405 and other state highways.

Mitigation for any specific project impacts is integral to that project and is the prime responsibility of the respective project lead agency. It is expected that agencies will work together as a part of this corridor program to make sure that appropriate and coordinated mitigation measures are implemented.

2.2.8 Alternatives Considered but Not Advanced for Detailed Study

Seven preliminary corridor alternatives (referred to here as themes) were identified and considered by the I-405 Corridor Program Citizens, Steering, and Executive committees. All themes were subjected to a screening analysis based on five categories of criteria:

- Transportation performance
- Financial performance and cost-effectiveness
- Land use plans and policies
- Social impacts
- Environmental impacts

Each category of criteria included key indicators, which were the measures used to estimate the transportation benefits and environmental effects of each theme. In all, more than 25 different key indicators were evaluated, covering a wide range of natural and built environment concerns.

The range of themes being considered and the results of the screening analyses were presented for public review and feedback through a public open house held April 18, 2000, as well as through jurisdictional workshops and numerous community presentations conducted throughout the study area. The Citizens and Steering committees also conducted a series of meetings to receive and assess the screening results and public feedback.

The results of the screening analyses and feedback from the public and study committees revealed several cases where a transportation improvement being considered within one theme might be moved to a different theme to improve performance and ability to satisfy the Purpose and Need for the I-405 Corridor Program. In other cases, the screening results and feedback from local jurisdictions demonstrated that several transportation improvements and mobility strategies were not reasonably effective in meeting the Purpose and Need, and/or they were likely to result in unreasonable and unacceptable environmental consequences.

The results of public feedback and recommendations of the Citizens and Steering committees were advanced to the Executive Committee, which reconfigured the seven themes into four action alternatives. These four alternatives, along with the No Action Alternative, were then approved by the Executive Committee to be advanced for detailed study in the Draft EIS. Concurrence with the Executive Committee's decision was provided by the agencies with jurisdiction as part of the Reinventing NEPA process. A more detailed discussion of the alternatives development and screening process is included in *I-405 Corridor Program: Alternatives Report (Draft)* (DEA and Mirai, 2000).

Transportation improvements and mobility strategies that were not advanced for further consideration in the EIS are described below.

Development of a new east King County freeway corridor would include the new freeway identified through the Corridor Needs Study for East King County (Washington State Department of Transportation, 2000). The freeway assumed a new four-lane, 60 mile-per-hour freeway using the current SR 18 alignment to I-90, then north to US Highway 2, and connecting to I-5. Interchanges would be provided only within Urban Growth Areas.

Preliminary analysis indicated that this strategy could provide substantial congestion reduction to the region and the I-405 corridor. However, this proposal was not advanced because it falls entirely outside the corridor that is the focus of the Purpose and Need for the I-405 Corridor Program. In addition, the proposal would likely fail to meet at least two important objectives of the Purpose and Need related to planned regional growth and environmental protection. First, the facility would be outside the Urban Growth Boundary for King and Snohomish counties, and may not be consistent with land use plans and policies that direct urban facilities to urban areas

and attempt to avoid changes in rural character. Second, preliminary studies indicated that the freeway would result in substantial impacts to the natural environment, especially with regard to wetlands, water quality, and fish-bearing streams.

Development of new east King County arterials would include the new arterial/parkways identified through the Corridor Needs Study for East King County. The arterial scenario assumed capacity equivalent to the east King County freeway described previously, using new and existing right-of-way over three alignments.

Similar to the east King County freeway, preliminary analysis indicated that these arterial improvements would provide substantial congestion reduction to the region and the I-405 corridor. However, like the freeway, this proposal also would likely violate the objectives of the I-405 Corridor Program Purpose and Need related to planned regional growth and environmental protection because of its effects outside the Urban Growth Boundary and because of the substantial impacts to the natural environment. For these reasons, the proposal was not advanced for detailed study in the EIS.

Addition of capacity on several north-south arterials was not advanced because the proposed improvements were not reasonably effective in meeting the I-405 Corridor Program Purpose and Need; they were likely to result in unreasonable and unacceptable environmental consequences; and/or they were determined to be not consistent with the land use and transportation plans of the local jurisdictions whose approval is required to advance the specific improvements. Despite the elimination of several projects, substantial improvements in overall north-south capacity on arterials are included in the No Action Alternative and other alternatives that are evaluated in the EIS.

Implementation of free-flow right turns on arterials was not advanced as an individual strategy; however, the concept is included in the broader category of proposed arterial improvements that are evaluated in the EIS.

Implementation of two reversible express lanes on I-405 from I-5 in Snohomish County south to SR 520 was not advanced because the directional split of traffic on I-405 is not sufficient to justify reversible lanes.

Addition of barrier-separated freight lanes would result in constructing freight lanes that were physically separated from other transportation modes. Study results indicated that the volume of trucks projected to use the lanes would not be sufficient to warrant this treatment. For these reasons, the proposal was not believed to be reasonable or effective in meeting the I-405 Corridor Program Purpose and Need relative to its cost.

Addition of one HOV lane in each direction on I-405 would result in two HOV lanes in each direction, with the assumption that 2+ person carpools would continue to use the HOV lanes along with transit. This proposal was not advanced because it does not meet the I-405 Corridor Program Purpose and Need. Modeling results showed that the HOV lane utilization would not be sufficient to reasonably reduce congestion or improve mobility relative to its cost.

Converting existing general purpose lanes on I-405 to HOV lanes would reduce the number of general purpose lanes. Sections of I-405 that currently have only two general purpose lanes would be reduced to one general purpose lane in each direction, thereby eliminating the option for general purpose traffic to pass other vehicles. This strategy was not advanced because it does

not meet the I-405 Corridor Program Purpose and Need, and it does not meet the transportation objectives relating to improved mobility and reducing congestion.

Opening existing HOV lanes to general purpose traffic would allow any vehicle to use any lane. This would eliminate the function of the HOV lanes, which are essential to Sound Transit's Regional Express program. This strategy was not advanced because it does not meet the I-405 Corridor Program Purpose and Need, and it does not meet the transportation objectives relating to improved mobility.

Elimination of one travel lane in each direction on I-405 would result in the conversion of an existing general purpose lane on I-405 to alternative uses. The rationale behind this suggestion was to reduce the amount of impervious surface within the corridor and to provide a strong incentive for transit use. This proposal was not advanced because it does not meet the I-405 Corridor Program Purpose and Need. It failed to reduce or maintain congestion levels compared to the No Action conditions under any reasonable scenario of increased transit service based upon modeling results. Study results indicated that study area and regional vehicle hours of travel would increase substantially, while adverse impacts due to spillover traffic on arterials and local streets parallel to I-405 would be likely within adjacent neighborhoods. The proposal also would not be reasonably feasible to implement. Sections of I-405 that currently have only two general purpose lanes would be reduced to one general purpose and one HOV lane in each direction, thereby eliminating the option for traffic to pass other vehicles.

Reducing the number of interchanges on I-405 would likely result in reduced access and mobility for many study area residents, employees, and businesses. For these reasons, the proposal was not believed to be reasonable or effective in meeting the I-405 Corridor Program Purpose and Need.

Addition of barrier-separated bike arterials was not advanced as an individual proposal because it was not specific enough to assess; however, the concept is compatible with the broader category of proposed non-motorized and pedestrian trail improvements that are evaluated in the EIS.

Addition of bike lanes on the NE 70th overpass arterials was not advanced as an individual proposal; however, the idea is considered in the broader context of non-motorized grade crossings of I-405 that are evaluated in the EIS.

Addition of more pedestrian signals was not advanced as an individual proposal because it was not a corridor-level solution and was not specific enough to assess; however, the concept is compatible with the broader category of proposed non-motorized and pedestrian improvements that are evaluated in the EIS.

Provision of special event buses in the I-405 corridor was not advanced as an individual strategy because it is not related to typical trips in the study area, and the proposal is not one that could be effectively implemented as a corridor solution to meet the I-405 Corridor Program Purpose and Need. However, the concept is compatible with the broader category of proposed transportation demand management measures that are evaluated in the EIS.

Reduction of transit fares by 50 percent was not advanced because changes in transit fares are regional policy, and the proposal was not one that could be effectively implemented as a corridor solution. In addition, the proposal does not meet the I-405 Corridor Program Purpose and Need. Study results indicated that this policy would not result in a reasonable modal shift or

improvement in mobility relative to its cost. Elimination of transit fares also was dropped from further consideration for the same reasons.

Implementation of corridor congestion pricing applied only within the I-405 corridor was not advanced because it is a state or regional policy that could not be effectively implemented as a corridor solution. The effects of a regionally-applied congestion pricing policy remained as an element of the broader transportation demand management measures that are evaluated in the EIS. The Preferred Alternative includes an additional four-foot buffer in each direction along I-405. This would accommodate expanded managed lane options in the corridor if future regional plans deem them desirable.

Increasing the gasoline tax was not advanced because it is a state or regional policy that could not be effectively implemented as a corridor solution in response to the I-405 Corridor Program Purpose and Need.

Subsidizing relocation of workers to residential areas nearer their place of employment was not advanced because it is a regional policy that could not be effectively implemented as a corridor solution; however, the concept may be compatible with the broader category of proposed transportation demand management measures that are evaluated in the EIS.

Removing unlicensed drivers from the roadway system was not advanced because it is a state policy that could not be effectively implemented as a corridor solution in response to the I-405 Corridor Program Purpose and Need.

Removing existing sound walls along I-405 was not advanced because it does not meet the I-405 Corridor Program Purpose and Need. The sound walls are needed to provide important environmental mitigation for the existing facility.

Improving the Evergreen Point transit station was not advanced as a proposal because it is outside the scope of the I-405 Corridor Program; however, the proposal was advanced to the Trans-Lake Washington Project EIS for consideration.

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