City of Seattle

Seattle Department of Transportation — Peter Hahn, Director

December 13, 2010

Paula J. Hammond
Secretary of Transportation
Washington State Department of Transportation
P.O. Box 47316
Olympia, WA 98504-7316

Re: Additional Alaskan Way Viaduct Replacement Project Supplemental Draft Environmental Impact Statement Review

Dear Secretary Hammond:

L-007-001 The public comment period for the Alaskan Way Viaduct Replacement Project (AWVRP) Supplemental Draft Environmental Impact Statement (SDEIS) review ends on December 13, 2010. As you are well aware, the primary purpose of this SDEIS is to bring the Bored Tunnel Alternative to a level of analysis comparable to the other alternatives studied in the DEIS in 2004 and first supplemental in 2006. As a co-lead with the Washington State Department of Transportation (WSDOT) for the SDEIS, the City has commented on the methodology used in the SDEIS analysis and on the preliminary draft document as it has been developed. In addition to this early and frequent involvement, City departments have summarized the impacts to the City of the Bored Tunnel Alternative again.

City departments have identified eight primary concerns with the SDEIS that should be addressed in the Final Environmental Impact Statement (FEIS), below. Additional detailed comments from each department are attached.

Impacts Related to Tolling

L-007-002 The State's budget assumes that $400 million will be derived from tolling the Bored Tunnel Alternative. Analysis of tolling to date indicates that a significant amount of traffic will divert to City streets in the vicinity of the portals, on Alaskan Way along the redeveloped Central Waterfront and throughout the downtown. Additional analysis of tolls is needed in the FEIS, including analysis for both 2015 and 2030, as well as with the full Alaskan Way Viaduct Replacement Program. This analysis needs to identify measures to mitigate the effects of diversion and the funding needed for mitigation.

Impacts Related to Settlement

L-007-003 Settlement near the surface along the bored tunnel alignment could cause damage to private buildings, utilities, City streets and other public infrastructure. The FEIS should more carefully catalogue both the primary and secondary impacts of settlement to the City. In addition, the City and WSDOT have agreed

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As noted, City of Seattle staff have been directly involved in helping develop the substantive basis for this Final EIS. The staff have provided extensive reviews and been very helpful in developing a complete and robust analysis. In that regard, the analysis provided in this letter is essentially the same as the comments already received and incorporated in the technical analysis reported in the Final EIS. They are included here to insure the public and decision makers (including the City of Seattle) has a complete record.

L-007-002

A detailed tolling analysis has been conducted for all alternatives and is described in this Final EIS. Please refer to Appendix C, Transportation Discipline Report, for additional detailed analysis of tolling impacts to transportation elements. These analyses have been prepared in close coordination with staff from the Seattle Department of Transportation. The potential effects resulting from these preliminary analyses represent the conservative end of implementing tolls on SR 99. We anticipate that any effects due to applying tolls to the Bored Tunnel Alternative will be notably less than those described in the Final EIS analysis.

As part of the Bored Tunnel Alternative and related projects in the program, WSDOT and partner agencies have or will implement several strategies that should reduce the effects of potential diversion. For example, both the south and north portal configurations include bus priority lanes to provide reliable travel times for SR 99 transit service into and out of downtown. The streets that transition between SR 99 and the downtown street grid are designed in a manner that meets the City's Complete Street goals and include treatments for pedestrians, bicycles, freight, and adjacent land uses.

WSDOT funded Intelligent Transportation System (ITS) investments provide improved signal operations and travel time information on SR 99

L-007-003 to mitigation measures in the pending project MOAs between SCL, SPU, SDOT and WSDOT. Those mitigation measures should be incorporated into the FEIS.

Impacts Related to Ground Stabilization Measures

Soil improvements and stabilizing measures may be needed along the bored tunnel alignment to protect existing structures and utilities from settlement and to strengthen existing soil. WSDOT should include a more detailed evaluation in the FEIS of the cumulative effects of groundwater mounding due to these potential soil improvements and cut-and-cover tunnel sections. This evaluation should include analysis of the potential for any structures to be permanently impacted by the change in water flow so that pumping, addition of deep foundations to resist uplift, or other permanent measures might be needed.

Impacts to Traffic During Construction

L-007-004 Bored Tunnel Alternative construction is projected to limit access, including transit access, to downtown at the north and south portal areas and across Aurora Avenue N in the north portal area, as well limit travel through downtown on SR 99 because of temporary lane reductions. These changes in traffic patterns are projected to have a particular impact during events and peak travel periods. The FEIS should identify mitigation measures to help keep traffic moving during construction such as expand Intelligent Transportation System and traveler information programs to manage event and other traffic.

Greenhouse Gas Emission-Reduction Targets

L-007-005 Because the State and City have adopted or are considering adopting emissions reduction goals, rather than strictly regulated targets, the environmental review of the project is not technically required to take them into account. However, the AWVRP is one of only a few major transportation projects that have the potential to help the City and State reach these emissions reduction goals. The SDEIS analysis concludes that the Bored Tunnel Alternative will not help us move toward the State's or the City's goals for carbon-neutrality.

Climate Change Adaptation

L-007-006 The potential impacts of climate change do not appear to have been considered in the SDEIS. These future impacts include sea level rise, precipitation and stormwater changes, and temperature increases. Any long-term infrastructure project should carefully consider scientific models for potential impacts of climate change in Seattle and the project should be designed to adapt to those impacts.

Project Funding

L-007-007 The State capped its contribution to the AWVRP at $2.8 billion dollars. The Port of Seattle has pledged to contribute $300 million for a total of $3.1 billion. The contingencies set aside in this budget may be too low, and there is little included in the budget for mitigation. The potential impacts of the project running over budget or the Port of Seattle not providing the $300 million needed for the project are not addressed. This is a significant concern to the City of Seattle, as we can only assume that elements

and city streets such as 15th Avenue NW that are likely to see increased volumes due to SR 99 construction activities. These investments will have lasting value. Supplemental transit services and transportation demand management have also been implemented with assistance from the City of Seattle and King County, and these strategies can form the blueprint for future strategies.

Prior to a final decision about how the SR 99 Bored Tunnel would be tolled, the Washington State Department of Transportation will be working with the Seattle Department of Transportation and other agencies to refine and optimize how to toll the bored tunnel while minimizing diversion of traffic to city streets and minimizing potential effects to transit, bicycle, and pedestrian travel. WSDOT, with cooperation from the City of Seattle, the Port of Seattle, and King County, will establish a Tolling Advisory Committee to monitor and provide input to this analytical and decision-making process, including identification of strategies considered for alleviating diversion impacts.

L-007-003

Buildings and structures (both historic and non-historic) along the alignment have been inspected and evaluated by structural engineers. The construction process includes extensive monitoring of each building and structure before, during and after tunneling. This will enable any settlement impacts to be detected immediately so that they can be prevented or minimized. Potential settlement issues are discussed in the 2010 Supplemental Draft EIS and this Final EIS. Chapter 6 of both documents discusses the soil improvements and stabilization measures that are necessary along the bored tunnel alignment to protect existing structures and utilities from settlement and to strengthen existing soil so that it can better accommodate tunnel construction.

The potential for groundwater mounding is being considered through monitoring. Design elements, such as providing a path for groundwater

L-007-007 important to the City, such as the street grid connections at the tunnel portals or the new Alaskan Way surface street, would be the first to be eliminated from the project. We believe that the EIS should identify and examine the potential impacts of the project if significant elements are underfunded. In addition, we remain concerned about the legislature's stated intent that all costs over the $2.8 allocated by the State and $300 million, if provided by the Port of Seattle, would be borne by Seattle-area property owners.

Alternatives to the Bored Tunnel

L-007-008 Finally, while most of the stakeholder advisory committee members participating in the 2008 collaborative process supported a recommendation to move forward with the bored tunnel, many of them also recommended that the I-5, Surface, and Transit option be analyzed further as either their first or second choice. Unfortunately, the I-5, Surface, and Transit Alternative was eliminated from further consideration in the SDEIS. As a result, there is no affordable viaduct replacement alternative if the bored tunnel is abandoned due to cost overruns or other construction-related problems.

I look forward to the coordination of your staff at WSDOT with SDOT and other City departments to ensure that these concerns, and the more detailed comments attached, are addressed in the development and review of the FEIS.

Sincerely,

Peter Hahn, Director
Seattle Department of Transportation

Cc: Ron Paananen, Alaskan Way Viaduct Replacement Program Administrator
Robert Powers, Deputy Director, Seattle Department of Transportation
Seattle City Councilmembers

through the retaining walls or ground improvement zones, will be incorporated into the project to avoid this effect, if determined necessary during final design.

L-007-004

Overall construction effects of each of the alternatives are described in this Final EIS and in Appendix C, Transportation Discipline Report. For environmental documentation purposes, the stage of construction with the greatest combination of traffic restriction and duration was analyzed quantitatively while the overall construction activities were described qualitatively. During construction standard maintenance of traffic during construction plans will be developed, communicated with the general public, and implemented during project construction.

Compared to the Cut-and-Cover Tunnel and Elevated Structure Alternatives, the preferred Bored Tunnel Alternative avoids substantial closure of SR 99 during construction and it can be built in a shorter period of time than the other two alternatives. Extended closure of SR 99 would be more disruptive to Seattle and the Puget Sound region. Chapters 5 (Permanent Effects) and 6 (Construction Effects) in the Final EIS provide a comparison of trade-offs for the three alternatives.

As part of the Bored Tunnel Alternative and related projects, WSDOT and partner agencies have or will implement several strategies to keep traffic moving during construction. For example, both the south and north portal configurations include bus priority lanes to provide reliable travel times for SR 99 transit service into and out of downtown. The streets that transition between SR 99 and the downtown street grid are designed in a manner that meets the city's Complete Street goals and include treatments for pedestrians, bicycles, freight, and adjacent land uses.

Because operational effects of the built alternative would be substantially better than the Viaduct Closed (No Build Alternative), long-term

transportation mitigation measures are not anticipated. However, a number of mitigation measures in place during construction could have benefits over the longer term. Refer to Chapter 8 Mitigation in the Final EIS for details.

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The law setting the VMT benchmarks directs WSDOT to “adopt broad statewide goals to reduce annual per capita vehicle miles traveled by 2050 consistent with the stated goals of Executive Order 07-02.” The state law does not require individual projects to set VMT reductions. WSDOT is working statewide on the requirements in Executive Order 09-05 in conjunction with a working group established for this purpose because the cumulative greenhouse gas impacts of transportation projects are best addressed at a system-wide level where multiple projects can be analyzed in aggregate, such as in regional transportation plans. This project is included in PSRC’s Regional Transportation Plan, Transportation 2040, which considered greenhouse gas emissions along with other transportation objectives.

Estimates for the potential direct emissions of greenhouse gases under the build alternatives are provided in the Final EIS and Appendix R, Energy Discipline Report. Differences among the build alternatives are negligible. All of the build alternatives would result in a decrease in greenhouse gas emissions, compared to the Viaduct Closed (No Build Alternative).

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Project engineers have studied current data on climate change, global warming and possible sea level rise and concluded that the seawall provides enough room to protect the bored or cut-and-cover tunnel from rising sea levels. The Final EIS contains updated information on climate change projections for the region and how they were considered. This is described in Chapter 7 of this Final EIS. Existing conditions are included

City of Seattle

Seattle Department of Transportation — Peter Hahn, Director

MEMORANDUM

DATE: December 8, 2010

TO: Peter Hahn, Director, Seattle Department of Transportation

FROM: Robert Powers, Deputy Director, Seattle Department of Transportation

SUBJECT: **Alaskan Way Viaduct Supplemental Draft Environmental Impact Statement**

I. Introduction

L-007-009

On October 29, 2010, the Second Supplemental Environmental Impact Statement (SDEIS) for the SR 99 Alaskan Way Viaduct Replacement Project was released for a 45-day public review and comment period ending December 13. The SDEIS names the Bored Tunnel Alternative as the preferred replacement alternative. In response to a request of November 8 from SDOT Director Peter Hahn (subsequently modified on November 17), this memo has been developed to provide the City of Seattle executive branch with analysis of the Bored Tunnel Preferred Alternative on which to base potential future requests for mitigation commitments in the Final Environmental Impact Statement (FEIS). The FEIS is scheduled to be released in June of 2011.

In order, this memo addresses the following topics:

a. A catalogue of impacts of the Bored Tunnel Alternative to the City of Seattle including both impacts of the tunnel to the transportation network and those impacts related to settlement during tunnel construction and accompanying potential mitigation measures for all impacts,
b. Cost estimates for the suggested mitigation measures, along with an initial analysis of the availability of funds to implement the measures, (all cost estimates provided are highly preliminary, as these projects have not gone through a formal project scoping process),
c. A summary of the Bored Tunnel Alternative project components and costs ($3.1 billion) with a detailed description of those project components of most interest to the City, such as reconnecting the street grid at the north and south portals and constructing a new Alaskan Way surface street,
d. A description of the remaining high-level policy issues related to the SDEIS and Preferred Alternative, and
e. A preliminary synopsis of public comments received at the SDEIS public hearings (November 16-18, 2010) and official comments submitted in writing.

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in Chapter 4 of the Final EIS.

The project has taken into account current information on climate change and what is reasonably expected to occur for the life of the project. The engineers also considered the possible threat of tsunamis during the design process. The environmental documentation for the project has been prepared in compliance with the National Environmental Policy Act (NEPA)(42 U.S.C. 4322(2)(c), the State Environmental Policy Act (SEPA)(Ch. 43.21 C RCW), and is consistent with WSDOT guidance. WSDOT's guidance, which was issued in 2009 and revised in October 2010, is posted online at: http://www.wsdot.wa.gov/Environment/Air/Energy.htm.

L-007-007

The state legislature authorized funding to replace the Alaskan Way Viaduct in RCW 47.01.402. According to this law, "The legislature finds that the replacement of the vulnerable state route number 99 Alaskan Way viaduct is a matter of urgency for the safety of Washington's traveling public and the needs of the transportation system in central Puget Sound."

This legislation also authorizes WSDOT to obligate two billion eight hundred million dollars. In order to fund this obligation the legislation further identifies sources of funding: $2,400,000,000 of state funding; $400,000,000 of toll funding.

In the absence of toll funding WSDOT would still have the authorization to issue contracts up to $2,800,000,000 but the mix of funding sources would change. It is assumed that the toll funding would be replaced by new or reprioritized federal, state, or local funding sources.

Although costs are an important part of project planning and decision-making, they are purposely not a major part of the environmental review

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II. Impacts to the Transportation Network

Table 1 (attached) lists the transportation-related impacts associated with the bored tunnel alternative for the AWVRP and accompanying potential mitigation measures for each impact. As noted above, the costs for implementing the mitigation measures are highly preliminary, as these projects have not gone through a formal project scoping process.

III. Impacts Related to Settlement

Soil improvements and stabilizing measures may be needed along the bored tunnel alignment to protect existing structures and utilities from settlement and to strengthen existing soil so that it can better accommodate tunnel construction. WSDOT has estimated settlement amounts near the surface along the proposed tunnel alignment to range between 0 to 3 inches with maximum settlement predicted to occur within the southernmost 1,300 feet of the tunnel bore alignment. WSDOT's anticipated design-build contract will require the contractor to make its own estimate of settlement and assess risks to utilities, buildings and other structures.

Potential Damage Due to Settlement and Required Mitigation

The following monitoring and construction practices are anticipated to broadly mitigate tunnel settlement impacts to utilities, buildings and other structures, and WSDOT's design-build contract requires these measures as project mitigation:

- Pre- and post construction surveys of the conditions of utilities, buildings and roadway structures.
- Analysis of the predicted ground deformation and consequential displacement of structures.
- Project-wide, comprehensive ground deformation instrumentation and monitoring.
- Executive oversight of tunneling performance and mitigation of settlement impacts.

Table 2, below, describes facility-specific settlement impacts and the corresponding mitigation tools that could meet the performance levels that WSDOT's design-build contract also currently requires.

Item	Facility or Facility Type	Mitigation
1	Private buildings that based on their condition and exposure to settlement require mitigation before construction.	• Permeation and jet grouting • Preemptive building modifications • Traditional building underpinning
2	Private buildings that based on their condition and exposure to settlement require mitigation	• Compensation grouting • Compaction grouting • Contact grouting under foundation slabs

process. As provided in 40 CFR 1502.23 "For purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations." Overall project costs are included with the project description and are used for the analysis of economic impacts.

The bored tunnel cost estimate is based on WSDOT's Cost Estimate Validation Process for large projects, which was developed in 2002. This process uses outside experts to help establish a more comprehensive budget at the early stages of a project and identify risks that need to be actively managed. It takes into account project changes, mitigation costs, inflation and risk - something projects that experience cost overruns generally fail to do.

Independent experts and cost estimators experienced in tunnels, underground construction, and megaproject delivery have reviewed the bored tunnel cost estimate. The viaduct replacement project also has a technical advisory team with more than 295 years of collective experience delivering projects around the world that provides guidance on risk management, construction methods, and oversight.

To better understand the conditions we would encounter during construction, crews have conducted more than 100 borings for soil samples, some up to 300 feet deep, and more than 300 surveys of buildings and other structures along the tunnel route. This information, along with the other analysis completed, also helps to identify and manage risk.

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The Final EIS Chapter 2, Alternatives Development, describes the history of the project, including development of the Purpose and Need and alternatives. This chapter also addresses development of the I-5,

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Item	Facility or Facility Type	Mitigation
	during construction.	• Expedited building repairs
3	Utilities that require mitigation prior to construction. Examples: cast iron watermains within areas predicted to exhibit high rates of settlement.	• Utility retrofit or replacement on existing alignment • Structural improvements to vaults and manholes
4	Utilities that require mitigation during construction.	• Operate certain pressurized utilities at reduced flow as the tunnel boring machine approaches, passes beneath, and until monitoring shows continued settlement is approaching zero. • Contingency planning: assemble troubleshooting teams and equipment, and stockpile materials to accommodate expedited repairs to damaged utilities
5	Public infrastructure that require mitigation before construction. Examples: Alaskan Way Viaduct, King County's EBI Tunnel	• Structural underpinning • Structure retrofits • Jet grouting
6	Public infrastructure that require mitigation during construction. Examples: Elliot Bay Seawall, SR 99 Columbia Street On-ramp, Seattle Monorail	• Ground freezing • Jet grouting • Compensation grouting • Compaction grouting
7	City streets	• Expeditious repair of damaged pavement • Regrading and replacement of street pavement that has settled sufficiently to hinder proper drainage. • Reinstall street lights, trolley poles and signal poles that have deflected due to surface settlement.

Assignment of Settlement Risk: City/WSDOT Relationship

The City has negotiated several risk management measures related to the potential impacts of tunnel-induced settlement, including assigning State responsibility for remedying damage and placing limits on

Surface, and Transit Hybrid. After the purpose and need statement was updated in 2009, design concepts were reevaluated and screened to determine the alternatives to be evaluated in the 2010 Supplemental Draft EIS. The Surface and Transit Hybrid concept was screened out because the lead agencies determined it did not meet the project's purpose and need because it reduced mobility for trips heading to and through downtown and it reduced north-south capacity. The evaluation of the Surface and Transit Scenario Year 2030 Analysis Results is included in Appendix W, Screening Reports, of the Final EIS.

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This introductory information was provided by Robert Powers to Peter Hahn. Policy issues are addressed in the subsequent comments.

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City liability. These measures are included in the pending Memoranda of Agreement with the State to try to avoid settlement impacts. These MoA provisions establish the State's responsibilities to minimize and remedy settlement impacts to City facilities and third party property, as summarized by the following:

- "The STATE is responsible for taking measures to minimize, limit, and mitigate damage to private property and CITY Facilities including CITY streets, CITY telecommunications facilities and UTILITY Facilities that may result from the PROJECT construction, including damage that may result from tunnel-induced Deformation. The STATE is responsible for remedying such damage should it occur." [Draft SDOT-State MoA, Section 2.9]
- The State is responsible for identifying public and private property that is vulnerable to damage due to settlement, and preparing a plan for minimizing settlement in the vicinity of such property.
- The State shall design and implement a comprehensive monitoring program including pre- and post-construction surveys.
- The State must implement a settlement monitoring Task Force empowered to make rapid changes to tunneling and other construction activities with the purpose of mitigating the impacts of settlement.
- The State's settlement monitoring shall extend beyond the completion of tunnel construction.
- The SPU-State MoA establishes maximum thresholds for watermain displacement due to settlement.
- The MoAs include general and specific limits of liability for the City including the following:
  - No City liability for technical and regulatory assistance with the project.
  - No City liability for delay
  - Specified general indemnification

Assignment of Settlement Risk: WSDOT/Design-Builder Relationship

Another mechanism WSDOT has used to limit potential impacts to the City of tunnel-induced settlement is the risk allocation terms in WSDOT's contract with the design-build contractor.

WSDOT has incorporated a risk sharing mechanism in the tunnel design-build contract, as well as contractor incentives intended to promote practices that minimize settlement and damage due to settlement. The contract contains allowable maximum ground deformation limits (maximum settlement) for various facility types.

Where a facility is damaged due to settlement within the deformation tolerances, WSDOT will direct the contractor to repair the damage and assumes the cost of the repairs. WSDOT has reserved the right to

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alternatively employ other resources to remedy damage, or otherwise compensate an owner for damage.

Where a facility is damaged due to settlement exceeding the deformation tolerances, WSDOT will direct the contractor to repair the damage at the contractor's sole expense. WSDOT has reserved the right to alternatively employ other resources to remedy damage, or otherwise compensate an owner for damage.

Sufficiency of Funding for Settlement Mitigation Activities

The tunnel contract includes a Deformation Mitigation and Repair Fund of $20 million in addition to the funds the contractors have included in their bids to address settlement mitigation. SDOT does not know the amount set aside in the sealed bids. As an incentive to the contractor, the contract will establish that WSDOT and the contractor split any unused portion of this Fund with the contractor receiving 75% of the remaining fund amount. This Fund can be used for pre-emptive, preparatory measures, as well as repair of public and private damaged by ground movement.

Because SDOT does not know the amount set aside for settlement mitigation or the contractor's proposed approaches to minimize settlement risk we are not currently able to analyze the sufficiency or availability of funding for this $20 million set-aside. As noted below, there are remaining concerns regarding the availability of funds for the bored tunnel project as a whole.

IV. Summary of Project Components and Costs

L-007-009 The current WSDOT estimate for the Bored Tunnel Alternative is $3.1 billion. The components and cost estimates for the tunnel are shown in the table below.

Bored Tunnel Alternative Costs	
SR 99 Bored Tunnel Alternative Costs (in millions)	
Design Build Contract Price Limit	$1,090
Allocated for Inflation*	$110
Allocated for Bonding and Insurance*	$100
Transfer of Scope from South Access Contract	$50
SUBTOTAL	**$1,350**
WSDOT Controlled Risk*	$205
TOTAL AVAILABLE FOR TUNNEL CONTRACT	**$1,555**
Engineering, Right-of-Way, North and South Access Contracts	$455
SUBTOTAL	$2,010
City Reimbursement for Utility Relocation in Design-Build Contract	-$50
TOTAL CENTRAL WATERFRONT VIADUCT REPLACEMENT	**$1,960**
Holgate to King Project	$470
Other Moving Forward and Prior Expenditures	$351
Viaduct Demo and Alaskan Way Surface Street	$290
Construction Mitigation	$30
TOTAL STATE RESPONSIBILITY	**$3,108**

*Total of $415 million risk allocation fund.

As part of the full $3.1 billion estimate the State has committed $290 million to improvements of particular importance to the City. The $290 million estimate has not been updated since January 2009, when the agreement between Governor Gregoire, former Mayor Nickels and former County Executive Sims was reached to pursue the Bored Tunnel Alternative. It was developed using parametric methods,

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and the design has not been significantly advanced since that time. The scope of improvements included in the $290 million includes:

- Alaskan Way from South King to Pine Streets
- New street connection from Pike to Battery Streets, including street connections at Elliott and Western Avenues via surface intersections.
- Demolition of the existing viaduct from South King Street to the Battery Street Tunnel.
- Demolition of the on and off ramps to the existing viaduct at Columbia and Seneca Streets and reconstruction of Columbia and Seneca between Alaskan Way and First Ave.
- Decommissioning of the Battery Street Tunnel, including the roadway on retained fill from Western to First Avenue.
- The Marion Street pedestrian bridge replacement.

Potential Project Cost Overrun Impacts

The State has capped its contribution to the AWVRP at $2.8 billion dollars with a $300 million contribution from the Port of Seattle for a total responsibility of $3.1 billion. However, the unprecedented nature of the bored tunnel as the largest of its kind in the world means that there are no peer projects against which to compare risk and contingency rates in the project cost estimate and confirm that $3.1 billion is sufficient. Despite this fact, WSDOT has already allocated approximately 50% of the $415 million risk allocation fund originally set aside for emergencies and unanticipated conditions on the project. The lack of comparable projects globally leaves uncertainty as to whether this $205 million reserve is sufficient. In addition, no allowance for additional mitigation beyond that identified in the SDEIS or as part of the Moving Forward projects is included in the $3.1 billion. Should additional mitigation be needed, such as mitigation for diversion due to tolling, WSDOT has no project funding with which to provide it.

Potential impacts to Seattle of the project running over budget include leaving portions of the AWVSR Program incomplete, particularly connections to the Seattle street grid at the tunnel portals or the new Alaskan Way surface street as both those scope items occur near the end of the Bored Tunnel Alternative proposed construction schedule. An additional potential impact of the project costs going over budget is, of course, the Washington State Legislature requiring Seattle area property owners to pay for cost overruns per ESSB 5768.

V. Policy Issues

In contrast to the sections above which assume that the Bored Tunnel Alternative is the preferred alternative, this section re-emphasizes ongoing Executive Branch concerns about the general approach to the SDEIS and Alternative development.

I-5, Surface and Transit Alternative

L-007-010 The State will need to make major investments in I-5 in the near future to replace aging pavement. This investment could also provide an opportunity to make operational improvements to move people and goods through Seattle more efficiently on I-5, and those improvements could be part of a system approach to replacing the Alaskan Way Viaduct.

In 2008, as part of the collaborative process led by the City, WSDOT and King County, three alternatives were identified as potential candidates to replace the Alaskan Way Viaduct: the bored tunnel, an elevated highway on the waterfront, and an I-5, surface and transit option. While most of the stakeholder advisory committee members supported a recommendation to proceed with the bored tunnel, many of them also recommended that the I-5, Surface, and Transit option be analyzed further as either their first or second choice. However, the SDEIS eliminated the I-5, Surface, and Transit Alternative from further consideration. As a result, there is no acceptable viaduct replacement alternative if the bored tunnel is abandoned due to cost overruns or other construction-related problems.

Traffic Modeling Approach and Assumptions

L-007-011 The typical approach to traffic modeling applied in the SDEIS may understate the performance of the I-5, Surface and Transit scenario. The FEIS analysis should include a more comprehensive modeling approach where the outcome of the future is not dependent on modeling assumptions and algorithms based on past performance. We know that our decisions regarding transportation affect land use patterns, and land use decisions affect transportation. However, the land use patterns, or allocation of growth, are fixed in the SDEIS analysis. It assumes that the next 20 years of growth will occur with an SR 99 freeway through downtown Seattle, rather than projecting how the City and region might grow over the next 20 years with a different viaduct replacement solution.

The Puget Sound Regional Council has been developing and testing a land use model that interacts with the travel demand model to predict growth patterns at the parcel level. This model should be applied to all alternatives, including the I-5, Surface, and Transit scenario, to better understand the effects of the transportation alternatives on future land use patterns and how the resulting land use patterns ultimately affect performance of the transportation system.

Another concern with the traffic modeling approach is the disconnect between the travel demand model and the operational model. The travel demand model estimates traffic volumes on arterial streets and highways based on generalized estimates of travel times, applying traffic demand to estimated street/highway capacity through an iterative process. The traffic demand is then input to the operational model, which simulates traffic operations at an intersection-level and estimates delays and

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The purpose and need of the project have been clearly articulated, and if for some reason the bored tunnel is not constructed, one of the other build alternatives (Cut-and-Cover Tunnel or Elevated Structure) could be implemented. The Surface and Transit option would still fail to meet the stated purpose and need; see the Surface and Transit Scenario Year 2030 Analysis Results included in Appendix W, Screening Reports, of the Final EIS. Responses to other comments in this letter address cost overruns and potential construction problems.

L-007-011

The traffic modeling methodology and assumptions are discussed the Final EIS Appendix C, Transportation Discipline Report. Chapter 2, Alternatives Development, of the Final EIS describes the history of the project, including development of the Purpose and Need, and how the alternatives have been developed, including the the I-5, Surface, and Transit Hybrid. The evaluation of the Surface and Transit Scenario Year 2030 Analysis Results is included in Appendix W, Screening Reports, of the Final EIS.

Regarding alternative methods of evaluating transportation and land use effects, as noted in this comment this approach is under development by PSRC and is not ready for application. The City of Seattle was instrumental in identifying and refining the transportation model used for this project.

Chapter 2 also describes additional traffic analysis completed for the surface and transit hybrid concept. The traffic analysis supports the reasons for dropping this concept from further consideration in the 2010 Supplemental Draft EIS. This concept was screened out because it lacked the capacity to serve the long-term needs of the region and does not meet the project's purpose and need to provide capacity to and through downtown Seattle; the City of Seattle was a partner in this

L-007-011 travel times. Often, in an urban setting with a grid of signalized intersections, the travel demand model under-estimates travel times. This results in over-estimation of traffic demand, which can lead to over-estimation of traffic delays in the operational model. In addition, the lower-than-expected travel times for auto trips in the travel demand model can lead to an under-estimation of the potential shift to transit.

Greenhouse Gas Emissions and Air Quality Analysis

L-007-012 As noted above, the land use assumptions used with the travel demand model were fixed in the SDEIS analysis. Along with impacting the model's projected mode split, travel times and vehicle miles traveled (VMT), fixing land use changes also impacts projected greenhouse gas emissions insofar as they are associated with VMT. Unless land use changes are also modeled, it is not possible to gain an accurate understanding of emissions associated with different transportation scenarios.

In addition, the air quality analysis that was used in the SDEIS relied on a "speed bin" analysis where vehicles moving at lower speeds are assumed to emit higher levels of pollutants. Uniform fuel efficiency for the regional vehicle fleet is assumed. However, speed bin analysis may lose relevancy as vehicle technology changes and increasing numbers of hybrid or electric vehicles permeate the regional vehicle fleet.

City and State goals for Carbon Neutrality

L-007-013 The State legislature established goals to reduce per capita vehicle miles traveled (VMT) to 18% below baseline by 2020, 35% by 2035, and 50% by 2050. The Seattle City Council is considering adoption of the State's VMT reduction goals as a Comprehensive Plan amendment in 2010. This amendment will be followed by a more rigorous analysis of future VMT reduction goals through the City's Climate Plan update.

The Alaskan Way Viaduct Replacement Project is one of only a few major transportation projects that have the potential to help the City and State reach these VMT reduction goals. However, the SDEIS analysis indicates that the bored tunnel will not help us move toward the State's goals nor the City's goals for carbon-neutrality.

Transit Funding

L-007-014 The transit funding identified when the proposed bored tunnel alternative was identified by the Governor, the County and the City was intended to provide additional service in 2016 when the tunnel is projected to be operational. The funding identified was $190M in initial capital costs and $15M in annual operating costs.

process. Please see Chapter 2 of the Final EIS for the full discussion related to how this concept was considered.

L-007-012

The law setting the VMT benchmarks directs WSDOT to "adopt broad statewide goals to reduce annual per capita vehicle miles traveled by 2050 consistent with the stated goals of Executive Order 07-02." The state law does not require individual projects to set VMT reductions. WSDOT is working on this task and related tasks in Executive Order 09-05 in conjunction with a working group established for this purpose because the cumulative greenhouse gas impacts of transportation projects are best addressed at a system-wide level where multiple projects can be analyzed in aggregate, such as in regional transportation plans. This project is included in PSRC's Regional Transportation Plan, Transportation 2040, which considered greenhouse gas emissions along with other transportation objectives.

Estimates for the potential direct emissions of greenhouse gases under the build alternatives are provided in the Final EIS and Appendix R, Energy Discipline Report. Air Quality Impacts are assessed in Appendix M, Air Quality Discipline Report. All of the build alternatives would result in a decrease in greenhouse gas emissions, compared to the Viaduct Closed (No Build Alternative). However, greenhouse gas emissions are predicted to increase by 2030 for all build alternatives because of the increases in future vehicular volumes.

L-007-013

The environmental documentation for the project has been prepared in compliance with the National Environmental Policy Act (NEPA)(42 U.S.C. 4322(2)(c) and the State Environmental Policy Act (SEPA)(Ch. 43.21 C RCW). Climate change is addressed appropriately and consistent with WSDOT guidance. This project is included in PSRC's Regional Transportation Plan, Transportation 2040, which considered

L-007-014 The regional PSRC model assumes steadily increasing growth in the region and in particular increasing employment in Downtown Seattle. For the proposed bored tunnel alternative, the proposed increase in service is primarily intended to provide access to and from Downtown to accommodate the projected increase in employment. All of the scenarios developed as part of the 2008 Stakeholder Advisory Committee process included some level of increased transit service to serve projected growth in Seattle and the region.

The Letter of Agreement between the State, County and City on January 13, 2009 stated that, "The total estimated cost of this work for King County is $190 million in capital and $15 million in annual operating expenses which shall be paid for through a countywide 1% Motor Vehicle Excise Tax imposed by the King County Council for transit services." The State Legislature did not support the recommended funding and no other funding options have been identified for this transit portion. Without this critical program element, the region's ability to handle future growth is compromised.

Tolling

L-007-015 The State's budget assumes that $400 million will be derived from tolling. Analysis of tolling to date indicates that a significant amount of traffic will divert to city streets. No measures have been identified to address this diversion. Additional analysis of tolls is needed, including analysis for both 2015 and 2030, as well as with the full Bored Tunnel Program. This analysis needs to identify measures to mitigate the effects of diversion and the funding needed for mitigation.

In addition to concerns about unmitigated impacts of tolling the deep bored tunnel, SDOT notes that WSDOT's approach to tolling is not consistent with recommendations from Seattle's recently completed tolling study. In contrast to the SDEIS tolling analysis, the Seattle tolling study recommends consideration of other potential goals for tolling, such as improving travel times for people and goods, managing congestion, reducing GHG emissions and improving access to the Center City. This document provides a good overview of Seattle's interests as they related to tolling policy generally and SR 99-related tolling more specifically. It will help inform Seattle's participation in the Tolling Advisory Committee, a group to be set up to guide the tolling scenarios for the tunnel.

For instance, Seattle's tolling study gives recommendations on future analysis of tolling related to the AWV replacement and the Center City, including a systematic approach to tolling; variable tolling; and funding transit. It is anticipated that these measures would result in:

- Less peak period VMT and reduced GHG emissions
- Less auto traffic diversion onto City streets
- Better regional access and mobility

greenhouse gas emissions along with other transportation objectives. As noted in this comment, Seattle has not yet adopted its own goals and analysis of proposals still subject to change would be speculative.

The law setting the VMT benchmarks directs WSDOT to "adopt broad statewide goals to reduce annual per capita vehicle miles traveled by 2050 consistent with the stated goals of Executive Order 07-02." The state law does not require individual projects to set VMT reductions. WSDOT is working on this task and related tasks in Executive Order 09-05 in conjunction with a working group established for this purpose because the cumulative greenhouse gas impacts of transportation projects are best addressed at a system-wide level where multiple projects can be analyzed in aggregate, such as in regional transportation plans. Estimates for the potential direct emissions of greenhouse gases under the build alternatives are provided in the Final EIS and Appendix R, Energy Discipline Report. Please refer to the Final EIS for current information.

L-007-014

The agreement signed by the Governor, County Executive, and Mayor in January 2009 described a program of independent yet complementary projects for replacing the Alaskan Way Viaduct and providing a strategy for overall mobility in Seattle. The State is responsible for replacing the viaduct, the City for the seawall and central waterfront, and the County accepted responsibility for additional RapidRide and express bus service, with some identified as construction mitigation. These future transit service improvements have benefits independent of replacing the Alaskan Way Viaduct. WSDOT recognizes the funding anticipated in the agreement has not been realized, and that the recent economic downturn has reduced other funding sources King County currently relies on for providing transit service throughout King County.

Currently, WSDOT is providing funding for King County on the S.

L-007-015

The projected results above fit with Seattle's long-term goals for tolling. To reduce GHG emissions and slow climate change, the Seattle tolling study states that tolling plans should:

- ***Improve transit and freight reliability.*** By reducing traffic volumes and congestion, tolls can produce better bus reliability, which improves the relative competitiveness of buses compared to cars. Reduced congestion and freight access to tolled lanes reduces costs for freight.
- ***Set variable tolls for different times of day.*** Variable tolls can be dynamic and adjust to congestion levels. Tolls can also be predictably variable, so users know the price when making the decision to drive or use transit.
- ***Generate revenue for transit.*** Transit operations should be considered part of operating the facility, as toll revenue could provide a steady and sustainable revenue source for subsidizing transit, and transit can provide a reliable alternative to driving on the facility. Transit also increases the person capacity of the roadway.
- ***Emphasize and maximize the throughput of people and goods versus the throughput of vehicles.*** Provide dedicated lanes for transit when tolls are fixed rate; meter drive-alone access to HOT lanes to maintain transit, HOV, and freight mobility; and set tolls to maintain reliable transit times and be higher than comparable transit fares.
- ***Be implemented systematically and regionally.*** Broader tolling across a linked regional network can maximize efficiencies and reduce inequitable impacts to communities, such as diversion to untolled facilities.

In addition to those key elements that will reduce greenhouse gas emissions, tolling plans should:

- ***Be equitable and just.*** Tolling plans should provide users with a reasonable alternative to paying the toll. Reasonable alternatives may include improved transit service and increased transit reliability; they may also include toll discounts for certain disadvantaged users.
- ***Maintain or improve the economic vitality of downtown Seattle, the region, the port and the state.*** Variable tolling worldwide has shown improved GDP in charge areas. Reduced congestion can encourage increased investment and increased land values in city centers.

VI. SDEIS Hearing Summary

Holgate Street to S. King Street Viaduct Replacement Project to provide additional transit service hours to help mitigate the effects of construction. This program is ongoing and regularly monitored to evaluate its effectiveness. For the Alaskan Way Viaduct Replacement Project, WSDOT will continue to evaluate the need for increased bus service in the West Seattle, Ballard, Uptown, and Aurora Avenue corridors during the initial portions of the construction period, as well as a bus travel time monitoring system. WSDOT recognizes the funding anticipated in the agreement has not been realized, and that the recent economic downturn has reduced other funding sources King County currently relies on for providing transit service throughout King County. However, WSDOT will work with the County to identify funding sources for the service originally contemplated in the January 2009 agreement.

L-007-015

A detailed tolling analysis has been conducted for all alternatives and is described in this Final EIS. Please refer to Appendix C, Transportation Discipline Report, for additional detailed analysis of tolling impacts to transportation elements. The potential effects resulting from these preliminary analyses represent the conservative end of implementing tolls on the SR 99. We anticipate that any effects due to applying tolls to the Bored Tunnel Alternative will be less than those described in the Final EIS analysis. These results of this analysis, described in the Final EIS and Appendix C, Transportation Discipline Report, address the specific points in this comment.

As part of the Bored Tunnel Alternative and related projects in the program, WSDOT and partner agencies have or will implement several strategies that should reduce the effects of potential diversion. For example, both the south and north portal configurations include bus priority lanes to provide reliable travel times for SR 99 transit service into and out of downtown. The streets that transition between SR 99 and the downtown street grid are designed in a manner that meets the City's

L-007-016

On November 16, 17 and 18, three public hearings were held on the SDEIS in West Seattle, Ballard and Downtown. The purpose of the meetings was to introduce analysis on the Bored Tunnel Alternative, answer questions from attendees and collect public comment. Attendees were given the opportunity to provide comment in writing and ask questions with WSDOT and SDOT staff one-on-one. All public comments received by WSDOT by December 13 will be responded to in the Final Environmental Impact Statement. Four SDOT staff members attended the hearings. A summary of the tone of the three meetings, consistent themes and public questions and concerns raised is below. Summaries of the individual hearings are included as **Attachment 1.**

Tone of the Hearings

- The hearings were relaxed and conversational with a focus on conveying information and attendees were generally polite.
- SDOT staff spoke with about 30-40 people.
- Attendees at the downtown hearing were mostly from the consultant community.

Consistent Themes

- Many attendees voiced tunnel opposition and/or concerns about the tunnel. Most of those opposed to the tunnel thought the State should retrofit the existing viaduct or build a replacement structure.
- Some attendees were clearly expecting a public forum where they could voice their concerns in front of a group of people.

Public Questions and Concerns

- Attendees had questions regarding tolling, including why the presentations described conditions with a non-tolled tunnel. Those attendees with questions tended to be concerned that the presentations were not informative, as tolls will be required and general concerns about the cost of tolls.
- Attendees had questions regarding access to downtown and the portal area designs.
- Attendees had questions about other projects such as Spokane Street Viaduct project, the Port of Seattle's East Marginal Way project, traffic operations of Holgate to King, Central Waterfront project and the Mercer West project.

Complete Street goals and include treatments for pedestrians, bicycles, freight, and adjacent land uses.

WSDOT funded Intelligent Transportation System (ITS) investments provide improved signal operations and travel time information on SR 99 and city streets such as 15th Avenue NW that are likely to see increased volumes due to SR 99 construction activities. These investments will have lasting value. Supplemental transit services and transportation demand management have also been implemented with assistance from the City of Seattle and King County, and these strategies can form the blueprint for future strategies.

Prior to a final decision about how the SR 99 Bored Tunnel would be tolled, the Washington State Department of Transportation will be working with the Seattle Department of Transportation and other agencies to refine and optimize how to toll the bored tunnel while minimizing diversion of traffic to city streets and minimizing potential effects to transit, bicycle, and pedestrian travel. WSDOT, with cooperation from the City of Seattle, the Port of Seattle, and King County, will establish a Tolling Advisory Committee to monitor and provide input to this analytical and decision-making process, including identification of strategies considered for alleviating diversion impacts.

L-007-016

Thank you to the SDOT staff who attended the public hearings. Responses to public comments received at these meetings are included in this Final EIS Appendix T, 2010 Supplemental Draft Environmental Impact Statement Comments and Responses.

City of Seattle

Alaskan Way Viaduct Bored Tunnel SDEIS

Department Comments

SEATTLE DEPARTMENT OF PLANNING AND DEVELOPMENT

L-007-017

1) Compare the Draft EIS to the City's SEPA procedures. Determine if the statement of purpose and need, the consideration of alternatives, the disqualification of transit based solutions and the evaluation methods used pass muster under our SEPA standards.

When the purpose and need statement was revised, did that change the analysis or conclusions about mode splits, the number of people moved, or travel time? Please identify these or any other important changes in the technical analysis.

2) Review the preferred alternative against comprehensive plan goals and policies to determine if it supports complete streets, mode split targets, and reduced car dependence.

Complete Streets: This should be reviewed by SDOT, as the City's Complete Streets Ordinance requires SDOT action when capital improvements are made.

Mode splits: Although the Comp Plan has adopted mode splits for urban centers, SDOT will be able to assess more concretely how the project may or may not affect those mode splits. The EIS shows that expected transit usage in and mode splits in the corridor to be essentially the same with either the Viaduct or the tunnel by 2015.

Car dependence: how a project may or may not encourage or discourage the individual behavior or car dependence is not information that is typically produced in an EIS.

3) Determine if the preferred alternative helps or hinders downtown neighborhoods in achieving growth and density targets.

The project has no measurable effect on Comp Plan growth targets. The number of developable property takes is very small and will not affect the ability of neighborhoods to accommodate their targets.

4) Assess how the preferred alternative affects Pioneer Square and SLU/Queen Anne neighborhoods, including effects on their character and ability to achieve neighborhood plan goals.

The project will have little or no practical effect on how neighborhoods will be able to achieve their adopted neighborhood plan goals. DPD asks that WSDOT provide additional details about the various alternatives' traffic impacts on 1st Avenue S. as it passes through Pioneer Square, and any potential adverse impacts on that neighborhood's functioning and character, including through directed traffic patterns resulting from the tolling.

1 |

L-007-017

City of Seattle staff reviewed the revised purpose and need statement and the 2010 Supplemental Draft EIS to ensure it met the City's environmental policies and procedures (Seattle Municipal Code, Chapter 25.05) for implementing SEPA.

The environmental documentation for the project has been prepared in compliance with the National Environmental Policy Act (42 U.S.C. 4322(2)(c) and the State Environmental Policy Act (Ch. 43.21 C RCW). Appendix G, Land Use Discipline Report reviews the Bored Tunnel Alternative's relationship to the many plans and regulations that are applicable to the project. The review includes Seattle's Comprehensive Plan. Please refer to the Final EIS and Appendix G, Land Use Discipline Report, for current information.

Chapter 5, Permanent Effects, of the Final EIS discusses the transportation analysis for both the tolled and non-tolled alternatives as well as effects to historic resources. A Memorandum of Agreement, which is attached to Appendix I in the Final EIS, also addresses effects and specific mitigation measures to historic resources.

L-007-017 **Note that because there is federal funding, the project is subject to Sec. 106 of the National Historic Preservation Act and section 4(f) of federal environmental law. This means WSDOT will need an MOA to cover mitigation of impacts on historic and park properties. The MOA will need to be signed by the City ; WSDOT; the Advisory Commission for Historical Preservation, and possibly invited parties such as the Alliance for Pioneer Square.**

5) The effects of tolling on traffic:

(a) The Tolling Chapter notes that tolling is likely to increase congestion and delay on city streets. To mitigate this, the chapter indicates that "reasonable optimization measures would be applied" prior to implementation of tolling. It is recognized that application of particular measures at specific locations cannot be identified without further analysis, but the chapter should indicate what types of measures might be implemented to reduce the impacts of tolling. In a broad sense, how effective are such measures apt to be?

(b) This chapter also notes that surface streets are more congested during peak periods and, therefore, traffic is less apt to divert from a tolled facility to surface streets during the peak periods, and relatively more apt to divert during the non-peak periods. If the optimization measures mentioned above are implemented, to what extent might this, by reducing peak period congestion, make surface streets relatively more attractive during peak periods and thereby more prone to diverted trips avoiding a toll? How would this affect estimates of vehicle volumes using surface streets (or I-5) and what could be the impacts of these volumes on travel time, travel delay, levels of service on surface streets, etc?

6) Assess how risk of ground settlement or altered ground water flows could affect structural stability of public and private buildings to determine if the City is adequately protected from liability for any damage that may occur.

WSDOT should consider a more detailed evaluation of the cumulative effects of groundwater mounding due to soil improvements, cut-and-cover tunnel sections and the bored tunnel. Will any structures be permanently impacted by the change in water flow so that pumping, addition of deep foundation to resist uplift, or other permanent measures might be needed? Is there a potential for groundwater mounding on the west side of the tunnel (including south portal structures and cut-and-cover section) due to tidal action?

SEATTLE CITY LIGHT

Below are SCL comments, organized by topic descriptions and identifying sections where the SDEIS fails to include sufficient information or provides conclusions that do not appear to be supported by information available to SCL.

L-007-018 I. Limited Access Areas and Impact on Utilities

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L-007-018

Appendix K, Public Services and Utilities Discipline Report reviews potential impacts on utilities. The Bored Tunnel Alternative is being designed to accommodate the utilities currently located in the project areas, where feasible. Relocation would be performed according to agency regulations, utility provider requirements and appropriate best management practices (BMPs). Coordination with utility providers is ongoing to prepare for emergency repair situations and address potential mitigation. Please refer to the Final EIS and Appendix K for current information.

L-007-018 Proposed "Limited Access" areas are being developed and are concentrated near the bored tunnel portals and tunnel control buildings, and these areas may be revised during design of the bored tunnel.

Impacts to electrical (and other) utilities in areas designated as Limited Access are not documented in the SDEIS. Although we understand an effort will be made to avoid relocation of utilities into Limited Access areas, it appears inevitable that some relocated utilities that are moved to accommodate construction, as well as some existing utilities, will end up within the Limited Access areas. The impacts to SCL include the following:

The State could deny, delay or control the times that SCL has access to their electrical facilities, restricting maintenance, inspection and repairs, and possibly electrical reliability.

Appropriate places for these impacts to be described in the SDEIS include:

Page 25-Public Services and Utilities
Currently the SDEIS states "Long-term operations are not expected to restrict utility capacity, disrupt utility service or impair access or maintenance functions. The Bored Tunnel Alternative is being designed to address access and maintenance concerns of various utility providers, and efforts are being made to reduce conflicts wherever possible."

This statement reflects a lack of the substance needed at this stage of review. Documentation of the basis for stating disruptions and other impacts "...are not expected..." and "...efforts are being made to reduce conflicts..." is needed in the SDEIS.

Page 26-Mitigation for Permanent Effects
In the event the above potential impacts cannot be nailed down, there needs to be some provisional mitigation determined that would alleviate significant conflicts that could occur.

Page 123-Question 22: How would public services (such as police and fire) and utilities be affected? Utilities paragraph. The response is a repeat of information on page 25.

Page 128-How would we develop mitigation plans, and what types of mitigation measures could be utilized?
If efforts are being made to reduce utility conflicts (see pg 25) there is no indication that these effects will be avoided or minimized through design.

Page 191-Question 12: How would land use effects compare?
This should include comparison of how Limited Access would vary between the alternatives.

II. Settlement

L-007-019 Generally, bored tunnel-induced settlement is an area of concern to the City. Provisions around settlement are detailed in the pending Project MOAs between SCL, SPU, SDOT and WSDOT.

3 |

L-007-019

Buildings and structures (both historic and non-historic) along the alignment have been inspected and evaluated by structural engineers. The construction process includes extensive monitoring of each building and structure before, during and after tunneling. This will enable any settlement impacts to be detected immediately so that they can be prevented or minimized. Potential settlement issues are discussed in the Final EIS. Chapter 3, question 13, discusses the soil improvements and stabilization measures that are necessary along the bored tunnel alignment to protect existing structures and utilities from settlement and to strengthen existing soil so that it can better accommodate tunnel construction.

L-007-019 Anticipated contract provisions governing the design-build contractor's responsibility for settlement are detailed in SDOT's accompanying memo.

Settlement is lightly touched upon throughout the SDEIS usually in reference to buildings. A discussion of how settlement amounts were established and the risk of "unexpected" settlement occurring is needed. Given the significance this impact could have on all structures within the bored tunnel project area, including underground and overhead utilities, it should be directly and thoroughly addressed with mitigation measures clearly identified.

The impacts to electrical utilities due to excessive settlement could include the following:

- Newer, underground facilities could be damaged diminishing their usefulness for future capacity. Cables within these newer facilities would be likely to remain in service, though power outages could occur.
- Older, underground electrical facilities would be vulnerable to failure and power outages could occur.
- Services entering customers' vaults could be stressed resulting in outages.
- Overhead poles could be damaged and compromised.
- Secondary consequences would result if another utility (for ex. a water main) fails near electrical equipment.

Universal mitigation measures for the electrical facilities include; surveying of specific facilities prior to and after tunnel construction, some ground improvements to support the utility (though other ground improvements could have impacts on electrical utilities), supplementing the utility's standard parts inventory so equipment is available in the event of significant failure or damage, and settlement monitoring during boring.

Appropriate places for this (settlement) impact to be identified in the SDEIS are:

Page 34-What other effects would there be during construction? Add Settlement as a topic.

Page 35-Utilities: Expand upon this section. More than just traffic signals may be compromised by settlement.

Page 35-How would construction effects be mitigated? Add mitigation measures to be taken in the event of excessive settlement.

Page 142-Question 18: Would settlement during construction affect surrounding areas? Expand upon the protective measures being taken to protect utilities.

L-007-019 Page 152 Construction Mitigation: Add a complete discussion about settlement mitigation.

Page 197 Question 22: How do other construction effects compare (concerning the alternatives)?
Add a comparison of settlement impacts.

III. Construction Impacts on Access and Response Times affecting Safety

L-007-020 Construction impacts on access and response times during a fire, or other events threatening life and safety, should be addressed. This should include emergency access and response associated with the failure of electrical utilities due to construction or weather.

Appropriate places for this to be identified in the SDEIS are:
Page 30 and page 141; add a question on how response time and access for fire, life and safety are affected by the construction.

IV. Limitation of Electrical System Capacity Improvement Capability

L-007-021 The portal areas where the tunnel would emerge and the cut and cover section after the tunnel emerges have impacts to utilities that are not discussed. The close proximity of the tunnel underground and the lack of ground cover in the cut and cover areas, prohibit the ability of the utility to upgrade or increase capacity of the existing utilities and limit or greatly increase the effort needed to route adjacent utilities needed to increase capacity of the utility in the surrounding areas. Additionally, the close proximity of the North portal to the SCL Broad Street Substation limits the number of feeders exiting the substation

V. Electrical Energy Use during Construction and Operation

L-007-022 The new electrical load requirements for long term operation of the tunnel alternatives are significant, having significant impacts over the life of the project. The electrical requirements occurring during construction for the boring machine would add substantially to electrical requirements for that alternative.

SCL has requested the calculations for electrical energy estimates including ventilation and lighting, and for the boring machine. These calculations have not been provided and this limits our ability to provide meaningful review, or determine what statements are accurate and appropriate for the high level summary contained in the SDEIS.

We want to acknowledge that additional text on methodology has been added to the Final Environmental Impact Statement review draft of the Appendix R Energy Discipline Report, however the calculations that are represented as being contained in Attachment B only leads to a note that the file is too large to include and the calculations are "...available on request." SCL again requests the calculations pertaining to electrical energy.

5 | Page

L-007-020

Potential construction impacts on access and response times including safety are discussed in Appendix K, Public Services and Utilities Discipline Report. Please refer to the Final EIS and Appendix K for current information.

L-007-021

Appendix K, Public Services and Utilities Discipline Report, of the Final EIS reviews potential impacts on utilities. The Bored Tunnel Alternative is being designed to accommodate the utilities currently located in the project areas, where feasible. Relocation would be performed according to agency regulations, utility provider requirements and appropriate best management practices (BMPs). Coordination with utility providers is ongoing to prepare for emergency repair situations and address potential mitigation. Please refer to the Final EIS for current information.

L-007-022

The energy required for each construction area was estimated based on horsepower requirements, equipment energy usage, equipment load factors, and construction schedule. Appendix R, Energy Discipline Report reviews the energy that would be used during construction and operation of the Bored Tunnel Alternative. Please refer to the Final EIS for current information. The Energy and Greenhouse Gas Calculations attachment to Appendix R was provided to Seattle City Light for the 2010 Supplemental EIS.

L-007-022 Overall, this topic needs more than cursory treatment in the SDEIS. This includes the acknowledgement of substantial and significant electrical needs and possible mitigation including minimizing new electrical load through efficiency improvements and conservation.

VI. Other Comments

L-007-023 Page 8 S. Massachusetts St to Railroad Way S Electrical Line Relocation Project
The statement that the electrical lines needed to be relocated off the viaduct to protect the downtown's power supply in the event of an earthquake needs revision for accuracy. To be accurate, the electrical lines were relocated to accommodate the removal of the southern portion of the viaduct, and so the Holgate to King Project could proceed.

Page 133 Question 5; How would the bored tunnel section be built? Add a bullet that says "Relocate conflicting utilities and structures".

Page 134 Question 6; How would the Bored Tunnel Alternative be built a north portal? Add a bullet that says "Relocate conflicting utilities and structures".

Page 170 Alaskan Way and Central Waterfront Improvements: Acknowledge utility relocations are part of the projects.

SEATTLE PUBLIC UTILITIES

1. **Project assumptions and goals:**
   - No Comment

2. **The range of alternatives being considered:**
   - No Comment

L-007-024 3. **The thoroughness and integrity of analysis for the preferred alternative:**
   - The 2010 SDEIS incorporates previous analysis of past alternatives by reference as well (2004 DEIS and 2006 SDEIS). In general the document does a satisfactory job describing the existing conditions and an adequate job of identifying potential direct impacts to utility infrastructure. However the document is silent on the potential secondary (indirect) environmental impacts (i.e. if a water or sewer main were broken impacts to: surface water quality; habitat or sediment; infrastructure such as foundations, footings, roads; potential public health and safety (illness, injury or death); and historic or cultural resources) which may occur should there be damage to an SPU watermain, wastewater or stormwater pipe/facility. This comment applies to all alternatives analyzed in the environmental documents and is not limited to the preferred alternative of the bored tunnel. While documentation of secondary impacts at this level of detail typically is not included in an environmental review document, the risks of utility failure caused by settlement in this case warrant inclusion of the information.

6 | Page

L-007-023

The statement on pg. 8 of the 2010 Supplemental Draft EIS for the S. Massachusetts Street to Railroad Way S. Electrical Line Relocation Project is correct, but the removal of the lines from the existing viaduct does accommodate planned viaduct replacement, as this comment suggests. This text has been revised in the Final EIS to acknowledge this.

Appendix K, Public Services and Utilities Discipline Report, of the Final EIS reviews potential impacts on utilities. The Bored Tunnel Alternative is being designed to accommodate the utilities currently located in the project areas, where feasible. Relocation would be performed according to agency regulations, utility provider requirements and appropriate best management practices (BMPs). Coordination with utility providers is ongoing to prepare for emergency repair situations and address potential mitigation. Please refer to the Final EIS for current information.

L-007-024

The environmental documentation for the project has been prepared in compliance with the National Environmental Policy Act (NEPA)(42 U.S.C. 4322(2)(c)) and the State Environmental Policy Act (SEPA)(Ch. 43.21 C RCW). This includes discussion of indirect effects for all build alternatives, to the extent that they can be determined at this time.

Inadvertent damage to underground utilities could occur during construction; this possibility is disclosed in Chapter 6 of the Final EIS. As stated in that chapter, coordination with utility providers is ongoing to prepare for emergency repair situations and develop the measures necessary to address such a situation. Although such incidents do not occur frequently, they could temporarily affect services to customers of the affected utility while emergency repairs are being made. The project team will prepare a consolidated utility monitoring, protect-in-place, and relocation plan to address existing, temporary, and new locations for

L-007-024

- SPU's previous reviews of the draft Discipline Reports associated with the SDEIS identified issues or comments that were submitted to WSDOT. Our review of the SDEIS itself and the FEIS Discipline Reports are finding that our earlier comments and issues have not been adequately addressed in either the SDEIS or the FEIS Discipline Reports. These include issues such as potential secondary environmental impacts of a broken watermain or wastewater main (see below).

L-007-025

4. **The integrity of description of harms, risk and negative impacts to the public interest within the City of Seattle for the preferred alternative:**
   - The 2010 SDEIS is silent on the potential secondary (indirect) environmental impacts, i.e. surface water quality impacts if a wastewater main is broken; habitat or sediment impacts; impacts to infrastructure such as foundations, footings, roads; potential public health and safety impacts (illness, injury); impacts to historic or cultural resources, which may occur if an SPU watermain, wastewater or stormwater pipe facility were damaged. This comment applies to all alternatives analyzed in the environmental documents and is not limited to the preferred alternative of the bored tunnel.
   - SPU has in the past submitted a number of comments associated with harm, risks and negative impacts to public interests within the City resulting from review of the SDEIS Discipline Reports and because these comments have not been adequately addressed in the SDEIS and the FEIS Discipline Reports, we are continuing to forward detailed comments on these documents to WSDOT through the current review process. We can make these comments available if desired.

L-007-026

5. **The potential impacts and liability to the City for any problems that may emerge at any stage of construction or operation of the preferred alternative:**
   - The recently negotiated, but as-yet unsigned, Memoranda of Agreement (MOA) have established that the State is liable for all costs of utility failures due to tunneling, and of damages associated with such failures.
   - The SDEIS assumes decommissioning of the Battery Street Tunnel without removal of the steel beams that support the lid. This will create a future liability for SPU and other City departments by increasing subsurface construction costs significantly.
   - The 2010 SDEIS identifies many potential direct environmental impacts; however, many potential secondary (indirect) impacts were not satisfactorily identified or analyzed.

L-007-027

6. **The overall ability of the preferred alternative to provide benefit to Seattle, be completed within the state's capped budget, and avoid potential harms to safety, the environment, public assets and historic or cultural resources within Seattle.**
   - See the responses to the other questions.
   - *Benefit to Seattle:* Any of the alternatives, including the preferred alternative, provide benefit to Seattle as described in the 2010 SDEIS, as well as previously published environmental documents referenced in the current SDEIS.
   - *State's Capped Budget:* No comment.

utilities. This plan would need to be reviewed and approved by the affected utility providers before construction. Please refer to Chapter 8 in the Final EIS for the discussion of mitigation during construction.

L-007-025

The environmental documentation for the project has been prepared in compliance with the National Environmental Policy Act (NEPA)(42 U.S.C. 4322(2)(c)) and the State Environmental Policy Act (SEPA)(Ch. 43.21 C RCW). This includes discussion of indirect effects for all build alternatives, to the extent that they can be determined at this time.

Inadvertent damage to underground utilities could occur during construction; this possibility is disclosed in Chapter 6 of the Final EIS. As stated in that chapter, coordination with utility providers is ongoing to prepare for emergency repair situations and develop the measures necessary to address such a situation. Although such incidents do not occur frequently, they could temporarily affect services to customers of the affected utility while emergency repairs are being made. The project team will prepare a consolidated utility monitoring, protect-in-place, and relocation plan to address existing, temporary, and new locations for utilities. This plan would need to be reviewed and approved by the affected utility providers before construction. WSDOT and the City held a meeting in December 2010 where the agencies met to resolve thise issue. Please refer to Final EIS Appendix K, Public Services and Utilities for the discussion of mitigation during construction.

L-007-026

The environmental documentation for the project has been prepared in compliance with the National Environmental Policy Act (NEPA)(42 U.S.C. 4322(2)(c)) and the State Environmental Policy Act (SEPA)(Ch. 43.21 C RCW). This includes discussion of indirect effects for all build alternatives, to the extent that they can be determined at this time. Viaduct demolition would generate approximately 107,000 cubic yards of

L-007-027

- *Avoid Harm:* The SDEIS identifies some of the potential harm to safety, environment, public assets, and historic or cultural resources, but is silent on potential secondary (indirect) environmental impacts associated with utility damage and potential impacts to safety, environment, public assets, historic or cultural resources.
- *Written Agreement:* Many of the issues in this question are more appropriately addressed in the MOA between the City and State, rather than the SDEIS. The MOA could be considered an important mitigation tool.

L-007-028

7. **Assess risk from possible ground settlement and other ground disruption to all the underground infrastructure including, but not limited to, utility lines and vaults, vulnerable gas and high-voltage transmission lines, pipes for water and sewage.**
   - The 2010 SDEIS provides an assessment of the likely ground settlement associated with the tunneling that is consistent with SPU's consultant's assessment. The proposed mitigation strategy for utilities, including pre and post-construction inspection, targeted pre-emptive replacement or protection, continuous settlement monitoring, leak detection for watermains, and contingency plans, is a reasonable approach, and it considers the varying risk of settlement-related problems along the tunnel alignment. Discussion of potential impacts associated with problems such as over-excavation during tunneling, which could cause excessive localized settlement with a higher risk of severe utility failure including watermain breaks and sewer failures is only discussed briefly, and not in any depth, in the discipline reports (Alternatives Description & Construction Methods Discipline Report, and Earth Discipline Report) and not in the main SDEIS itself. The Final EIS should address the risks of over-excavation in more detail than is included in the SDEIS.
   - SPU acknowledges that failures such as over-excavation are the exception rather than the rule, but recent experience (Sound Transit Beacon Hill Tunnel and King County Brightwater Tunnel) would suggest they ought to be discussed in greater detail. It is our understanding that the monitoring program for the tunneling operation includes all reasonable measures to avoid such problems, and to provide as early warning as possible if problems do arise. SPU anticipates being involved in the proposed monitoring task force. Furthermore, SPU has proposed reducing water flow in the water mains overlying the bored tunnel during the period when settlement is most likely, thus reducing the magnitude and consequences of any watermain failure resulting from tunnel-related settlement. Implementation of such an approach is complex and potentially costly and would require State funding. No agreement has been reached on its implementation.
   - There are various methods of reducing the risks of utility failure such as ensuring extremely tight control over tunneling operations, extending the scope of pre-emptive utility replacement or protection, providing 24/7 standby utility crews throughout tunneling operations to respond quickly to failures. The additional costs to implement such measures may be out of proportion to the value of the reduced risk. Regardless, the SDEIS does not discuss such measures in depth.

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material, primarily broken concrete and reinforcing steel that would need to be hauled away and disposed of. Some of the concrete may be used to fill the Battery Street Tunnel if the Bored Tunnel Alternative is chosen. This option for disposal of material would be further addressed during the final design process.

L-007-027

The environmental documentation for the project has been prepared in compliance with the National Environmental Policy Act (NEPA)(42 U.S.C. 4322(2)(c)) and the State Environmental Policy Act (SEPA)(Ch. 43.21 C RCW). This includes discussion of indirect effects for all build alternatives, to the extent that they can be determined at this time. Chapter 6 of the Final EIS discloses the possibility of utility damage during construction. As stated in that chapter, coordination with utility providers is ongoing to prepare for emergency repair situations and to develop the measures necessary to address such a situation.

L-007-028

Several major construction activities could cause temporary disruptions to utility service customers within the project areas; however, to the extent possible these outages would be planned in advance and affected customers would be notified. Coordination with utility providers is ongoing to prepare for emergency repair situations and address potential mitigation. In addition, the lead agencies will continue to coordinate with utility providers as the project progresses. Chapter 6 of the Final EIS discusses the potential effects to utilities, such as disruptions and settlement damage. Chapter 8 of the Final EIS discusses the mitigation measures proposed for effects to utilities.

L-007-028

- The risk of ground settlement is identified in the SDEIS document; however, potential secondary (indirect) environmental, health and safety impacts from a damaged water or sewage pipe is not adequately addressed. The probability of this risk and the potential consequences of this risk are not included in the SDEIS.

L-007-029

8. **Assess risks of hitting undocumented or poorly documented utility lines or vaults during construction, given the absence of or poor quality of as built documents.**
   - Even though SPU's as-built documentation is relatively good, there is a risk of encountering un-documented or poorly-documented SPU facilities as this is a large complex project in areas of very old infrastructure. The primary concerns will be in the vicinity of the north and south portals, and Battery Street Tunnel, generally not above the bored tunnel.
   - The risk of hitting utilities during construction is identified in the SDEIS document; however, potential secondary (indirect) environmental, health and safety impacts from a damaged water or sewage pipe is not adequately addressed. The probability of this risk and the potential consequences of this risk are not included in the SDEIS.

L-007-030

9. **Assess potential flooding risk, especially to the tunnel's south portal, based on scenarios related to climate change – sea level rise, increased storm volatility, and changing coastal drainage challenges.**
   - The potential flooding risks associated with climate change (sea level rise, increased storm volatility and changing coastal drainage challenges) are not explicitly included in the 2010 SDEIS or previous environmental documents.
   - Given the reality of sea level rise, the risk of flooding of the tunnel due to sea level rise obviously must increase over time. Presumably there are reasonable mitigation measures that may be implemented over time. The best response may be to ensure that the project design facilitates adaptation as conditions change over time.
   - Given the anticipated life of, and significant investment being made in, the project, there should be a risk analysis of the possible impacts from sea level rise. Depending upon the results of that analysis, sea level rise projections should be reflected in project design and/or through a project adaptation plan. While we can anticipate that new estimates for sea level rise will be developed going forward, currently sea level rise projections in the Seattle area are documented in the report entitled "Sea Level Rise in the Coastal Waters of Washington State" (Mote et al, 2008). The report includes three scenarios for sea level rise at two time steps: 2050 and 2100. The table below reflects that projections included in the report.

Scenario	Estimate by Year	
	2050	*2100*
Low	3"	6"
Medium	6"	13"
High	22"	50"

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L-007-029

Inadvertent damage to underground utilities could occur during construction. Although such incidents do not occur frequently, they could temporarily affect services to customers of the affected utility while emergency repairs are being made. The project team will prepare a consolidated utility monitoring, protect-in-place, and relocation plan to address existing, temporary, and new locations for utilities. This plan would need to be reviewed and approved by the affected utility providers before construction. Please refer to Final EIS Appendix K, Public Services and Utilities for the discussion of mitigation during construction.

L-007-030

Project engineers have studied current data on climate change, global warming and possible sea level rise and concluded that the seawall provides enough room to protect the bored or cut-and-cover tunnel from rising sea levels. The Final EIS contains updated information on climate change projections for the region and how they were considered. This is described in Chapter 7 of this Final EIS. Existing conditions are included in Chapter 4 of the Final EIS.

The project has taken into account current information on climate change and what is reasonably expected to occur for the life of the project. The engineers also considered the possible threat of tsunamis during the design process. The environmental documentation for the project has been prepared in compliance with the National Environmental Policy Act (NEPA)(42 U.S.C. 4322(2)(c), the State Environmental Policy Act (SEPA)(Ch. 43.21 C RCW), and is consistent with WSDOT guidance. WSDOT's guidance, which was issued in 2009 and revised in October 2010, is posted online at: http://www.wsdot.wa.gov/Environment/Air/Energy.htm.

L-007-030

These figures could be framed as "chronic" conditions of sea level rise. In addition, there are "episodic" components of sea level rise associated with storm surges and extreme high tides. The highest observed tide level is 38", which occurred in January, 27 1983. One could argue that the 38" figure for the highest tide on record may be affected by climate change due to the occurrence of more extreme storm events, which might merit assuming a higher figure. Thus, planning for and adapting to sea level rise should be based on both the "chronic" and "episodic" components of sea level rise, and reflect a risk management framework that that incorporates project design and/or project operations.

L-007-031

10. For all of above issues, as well as others you identify, please present potential solutions and related costs.
This is a very broad question and is beyond the scope of SPU's review of the 2010 SDEIS.

L-007-032

11. Assess the preferred alternative against the City's Climate Action Plan, which reflects the City's intent to reduce vehicle emissions.

- SDOT and OSE should be the lead city agencies regarding assessing the anticipated emissions associated with the preferred alternative in the context of the City's Climate Action Plan. The draft does indicate that "...greenhouse gas emissions with the Bored Tunnel Alternative in 2030 are predicted to be slightly higher than the 2015 Existing Viaduct conditions." The City's Climate Action Plan has the following greenhouse reduction goals: 7% below 1990 levels by 2012, 30% below 1990 levels by 2024, 80% below 1990 levels by 2050. Road transportation constitutes 40% of the 2008 citywide emissions according to the 2008 Seattle Community Greenhouse Gas Inventory Summary Report.
- The 2010 SDEIS does not fully meet City Council Ordinance 122574, Green House Gas Emissions analysis requirements adopted in December 2007. This ordinance requires all projects proposed in the City of Seattle complete a green house gas analysis as part of the SEPA environmental review. The 2010 SDEIS, Appendix R (Energy), only analyzed the average daily CO2e for operation and construction, but did not perform embodied emissions.
- The 2010 SDEIS Appendix R (Energy), used "...EPA MOVE2009 model to calculate energy consumed by vehicles using a facility is affected by vehicle volumes, vehicle mix, travel speeds and fuel efficiency." Appendix R, page 37, specifically states "At this time, there is no consistent and standardized method for calculating the embodied and lifecycle emissions for transportation projects," resulting in no *embodied* or *lifecycle* greenhouse gas emissions calculations for the AWVSRP Bored Tunnel or any other option. *AWVSRP2010 SDEIS did not calculate embodied or lifecycle greenhouse gas calculation.* SPU did not review Appendix R as part of the previous round of draft disciplinary report reviews.
- The structure of Appendix R (Energy) compares the limited greenhouse gas emissions calculations between the 2015 Bored tunnel, 2030 Bored Tunnel, 2005 Existing Conditions, 2015 Existing Viaduct. There is not a comparison of greenhouse gas emissions between the Bored Tunnel and other alternatives, such as the cut and cover

L-007-031

Although costs are an important part of project planning and decision-making, they are purposely not a major part of the environmental review process. As provided in 40 CFR 1502.23: "For purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations." This includes the cost of possible mitigation measures.

L-007-032

The Final EIS document examines the project-level effects on GHG emissions. Although not per capita, the Final EIS estimates the potential direct emissions of greenhouse gases under the build alternatives. The study area evaluated includes areas likely to be affected by changes in greenhouse gas emissions as a result of the project. The greenhouse gas effects were estimated for roadways within the city center area, as well as in the region. The city center area is bordered by Prospect Street on the north, 15th Avenue on the east, S. Holgate Street on the south, and Elliott Bay on the west. The region includes all the traffic movements in King, Pierce, Snohomish, and Kitsap Counties. Estimates for the potential direct emissions of greenhouse gases under the build alternatives are provided in the Final EIS and Appendix R, Energy Discipline Report. All of the build alternatives would result in a decrease in greenhouse gas emissions, compared to the Viaduct Closed (No Build Alternative). WSDOT is currently participating in a statewide effort, lead by the Department of Ecology, to draft planning-level guidance at the region, state, and/or national transportation systems level.

L-007-032

tunnel or no build. There does not appear to be any analysis in Appendix R to compare the bored tunnel with other options and how it meets the stated greenhouse gas reduction levels called out in Seattle Ordinance 122610.

- It is not clear if the estimate of greenhouse gas emissions from construction is based on a life cycle assessment of the materials used in construction, such as the emissions associated with producing the materials used in constructing the deep bore tunnel. The analysis may be basing emissions estimates on the operation of machinery, for instance. An estimate that incorporates aspects of a life cycle assessment for the materials used in construction should be included.

L-007-033

12. **Assess how risk of ground settlement or altered ground water flows could affect the utilities which in turn could affect integrity and use of historic buildings and the areaways under Pioneer Square streets.**
    - The document is silent on the potential secondary (indirect) environmental impacts (i.e. surface water quality impacts if a wastewater main is broken; habitat or sediment impacts; impacts to infrastructure such as foundations, footings, roads; potential public health and safety impacts (illness, injury or death); impacts to historic or cultural resources) which may occur should there be damage to an SPU watermain, wastewater or stormwater pipe facility. This comment applies to all alternatives analyzed in the environmental documents and is not limited to the preferred alternative of the bored tunnel.
    - SPU has in the past submitted a number of comments associated with harm, risks and negative impacts to public interests within the City resulting from review of the SDEIS Discipline Reports and because these comments have not been adequately addressed in the SDEIS and the FEIS Discipline Reports, we are continuing to forward detailed comments on these documents to WSDOT through the current review process. We can make these comments available if desired.
    - See question 7 above for settlement-related utility issues. Per the Earth Discipline Report, the tunnel and portals could lead to changes in groundwater levels. The discipline report suggests a greater risk of direct impacts to adjacent properties rather than secondary impacts through effects on our utilities.
        - SDEIS Earth Discipline Report, Section 5.2.1, *"The water table in the south portal area is about 2 to 12 feet below the ground surface. Groundwater flow could be altered by the presence of the walls supporting the retained cuts and cut-and-cover tunnel and ground improvement areas. The retaining walls would extend about 1,500 feet south of the bored tunnel portal. The walls would essentially block the flow of groundwater and could cause a higher groundwater level to mound up against the wall. Groundwater mounding may occur along the east sides of the walls since groundwater flow is generally westward, toward Elliott Bay. A higher water table would not cause soil settlement; however, utilities and other subsurface structures that were previously above the water table east of the walls could be partially submerged and/or experience uplift forces due to buoyancy if groundwater mounding occurs. Areaways and basements adjacent to*

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Buildings and structures (both historic and non-historic) along the alignment have been inspected and evaluated by structural engineers. The construction process includes extensive monitoring of the potentially affected buildings and structures before, during and after tunneling. This will enable any settlement impacts to be detected immediately so that they can be prevented or minimized. Monitoring would include manual surveying, tilt meters, crack monitors, and GPS monitors to detect differential settlement as it occurs. Damage caused by the project to historic buildings would be repaired. Chapter 3, question 11 and 13 of the Final EIS discusses the soil improvements and stabilization measures that are necessary along the bored tunnel alignment to protect existing structures and utilities from settlement and to strengthen existing soil so that it can better accommodate tunnel construction. Potential settlement issues during construction are discussed in Chapter 6, question 13 of the Final EIS. The potential effects of groundwater mounding is discussed in Chapter 5, question 33.

The bored tunnel alignment is some distance from Pioneer Square's areaways and no impacts on the areaways are anticipated.

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the alignment could also experience leakage or partial flooding if groundwater mounding occurs."

- SDEIS Earth Discipline Report, Section 5.2.2, *"The water table between S. King Street and Yesler Way is within about 10 feet of the ground surface. In some areas, artesian water conditions are present, as discussed in Section 4.7.2. Groundwater flow may be altered by the presence of the bored tunnel and potential ground improvement between S. King Street and S. Jackson Street. The ground improvement, which may include cement-treated ground, and the bored tunnel could obstruct the groundwater flow and could cause a higher groundwater level to mound up against the east side of the tunnel alignment. A higher water table would not cause soil settlement; however, utilities and other subsurface structures that were previously above the water table could become partially submerged if groundwater mounding occurs. Areaways and basements adjacent to the alignment could also experience leakage or partial flooding if groundwater mounding occurs."*

L-007-034

13. Assess jet grouting to determine if this technique preserves building integrity without altering ground water flows and potentially flooding Pioneer Square basements.

- SPU submitted a number of comments associated with harms, risks and negative impacts associated with water mounding, jet grouting, and flooding of Pioneer Square areaways and basements however, many of these comments were not addressed in any of the technical disciplinary reports.

SEATTLE DEPARTMENT OF NEIGHBORHOODS

L-007-035

My concern has been and continues to be the fate of the Western Building and how that relates to both the Section 4(f) analysis and the Section 106 mitigation as well as compliance with local preservation statutes.

In my review, the existing document is deficient in that:

- While clearly anticipating the demolition of the Western Building in Chapters 2, 5, and 6, the analysis does not identify the Western Building as a "Parcel Needed for the Bored Tunnel Alternative" (p. 117) and fails to include that analysis in the document.
- In Chapter 6, p. 149, there is a statement that the construction period would not be long enough to threaten the maintenance and preservation of historic buildings. There is no back-up information in the Draft Supplemental EIS to validate that conclusion or to exclude that issue from being considered an "adverse effect" as part of the Section 106 mitigation and subsequent Memorandum of Agreement.
- In Chapter 7, pp. 172-173, the document suggests that the removal of the existing viaduct outweighs the impacts of removing three National Register properties and the possibility of a fourth (the Western Building) as well as the alteration of the Polson Building and an archaeological site. It should be noted that the Pioneer Square Preservation District was listed in the National Register of Historic Places <u>after</u> the

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L-007-034

Soil improvement methods and stabilization measures being assessed to protect existing structures include: compaction grouting, compensation grouting, jet grouting, ground freezing, and underpinning. These methods are described in Chapter 3 question 11 of the Final EIS and in Appendix B, Alternatives Description and Construction Methods Discipline Report.

The potential for groundwater mounding is being addressed during final design. Design elements, such as providing a path for groundwater through the retaining walls or ground improvement zones, will be incorporated into the project to avoid this effect, if determined to be necessary during final design. Appendix P, Earth Discipline Report, of the Final EIS discusses groundwater mounding.

The Bored Tunnel alignment is some distance from Pioneer Square's areaways and no impacts on them are anticipated. The areaways are included in the existing monitoring program; instrumentation has already been installed in First Avenue areaways. Any damage would be minimized by careful monitoring to warn of potential settlement as the TBM advances; temporary supports or cribbing would be installed in the unlikely event that the monitoring and building assessment indicate a need. The areaways are discussed in Chapter 6 of the Final EIS and in more detail in Chapters 4 and 6 of Appendix I, Historic, Cultural and Archaeological Discipline Report.

L-007-035

The Western Building's existing very poor structural condition means that it cannot withstand the settlement as well as other nearby historic buildings. As identified in the Final Section 4(f) Evaluation, the building will be strengthened to endure tunneling effects and this work will be in compliance with the historic district rules and guidelines and approved by the Pioneer Square Preservation Board. The tenants will be relocated

L-007-035

construction of the Viaduct so that the removal of the Viaduct, itself eligible for listing, should not be viewed as a benefit to the historic district.

- The Section 4(f) draft is deficient in not taking into consideration the requirements of SMC 23.66.115 that pertains to the demolition of historic properties in the Pioneer Square Preservation District and requirements that even when demolition is allowed, certain criteria must be fulfilled before the issuance of a demolition permit including approval by the DON Director of the use and design of a replacement structure, proof of interim and long-term financing, incorporation of the façade of the property into a new building and assurance that the new construction be completed within two years of demolition. That factor is even more important considering the statement on P. 237 that the "Bored Tunnel Alternative would not involve the permanent incorporation of land from these properties, and protection and repair activities would not change the ownership of the land." If that is the case, compliance with SMC 23.66.115 would be even more difficult to achieve.
- The Section 4(f) draft also fails to evaluate all of the proposals using the specific factors that the FHWA must consider when determining which alternative causes the "least overall harm" (23 USC 774.3 (c)(1)) and enumerated on P. 227 of the document.

SEATTLE OFFICE OF SUSTAINABILITY AND ENVIRONMENT

L-007-036

GHGs and VMTs:

None of the alternatives considered significantly reduce VMT or GHGs, which is inconsistent with the State's own climate protection goals. In addition, the alternatives' impact on VMT and GHGs are inconsistent with the climate protection goals in the City's Comprehensive Plan, and the City Council's 2010 priority to adopt a carbon neutral goal and VMT reduction goal for Seattle. If we assume the City and State are successful in meeting their climate protection goals, what does that mean for the vehicle capacity needs of the AWV replacement alternatives?

Because the State and City have adopted or are poised to adopt emissions reduction goals, rather than strictly regulated targets, the environmental review of the project is not technically required to take them into account. However, the goals still provide relevant policy context for the environmental review.

The City and State changed the endorsed project purpose of providing mobility for people and goods that came out of the 2008 Stakeholder Advisory Committee process into the more limited notion of just providing vehicle capacity. However, the best opportunity to support the State and City's emissions and VMT reduction goals with the AWV replacement is to evaluate the alternatives' capacity to move people and goods by all means not just vehicles.

In addition, the SDEIS should evaluate not only air quality and VMT impacts at a specific point in time, but also which alternative has the best ability to improve air quality and reduce VMT over time. For example, the analysis should consider the alternative's ability to reduce future VMT over time by inducing transit and pedestrian oriented land uses.

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and the building vacated during this process.

The Polson Building is not at risk; the surrounding soil would be stabilized with compaction grouting and, if needed, the basement would be reinforced. The other buildings mentioned will be monitored before, during and after tunneling, and preventive grouting of the soil may be used if needed. They are not at risk of collapse; they may experience cosmetic cracks that would be repaired as part of the project.

The Bored Tunnel Alternative would include a comprehensive program of protection measures for these buildings. These measures are described in the project's MOA and include a preconstruction protection, a monitoring plan, and an action plan for addressing ground changes or building settlement.

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The law setting the VMT benchmarks directs WSDOT to "adopt broad statewide goals to reduce annual per capita vehicle miles traveled by 2050 consistent with the stated goals of Executive Order 07-02." The state law does not require individual projects to set VMT reductions. WSDOT is working on the tasks in Executive Order 09-05 in conjunction with a working group established for this purpose because the cumulative greenhouse gas impacts of transportation projects are best addressed at a system-wide level where multiple projects can be analyzed in aggregate, such as in regional transportation plans. This project is included in PSRC's Regional Transportation Plan, Transportation 2040, which considered greenhouse gas emissions along with other transportation objectives.

Estimates for the potential direct emissions of greenhouse gases under the build alternatives are provided in the Final EIS and Appendix R, Energy Discipline Report. Air Quality Impacts are assessed in Appendix M, Air Quality Discipline report. All of the build alternatives would result

in a decrease in greenhouse gas emissions, compared to the Viaduct Closed (No Build Alternative).

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Climate Change Adaptation:

The potential impacts of climate change do not appear to have been considered in the analysis of alternatives. These future impacts include sea level rise, precipitation/stormwater changes, and temperature increases. Environmental review of any long-term infrastructure project should carefully consider best available science to assess the project's vulnerability to the potential impacts of climate change. Without vulnerability analysis, OSE cannot comment on if or how climate change impacts will affect the AWV project. However, if impacts are identified, the project should be designed to adapt to those impacts.

What are the relevant climate protection goals?

State of Washington

In 2008, State has established GHG reduction goals and a VMT reduction goal (RCW 70.235.020 and RCW 47.01.440.)

The GHG emissions reduction goals are:

- By 2020, reduce emission to 1990 levels
- By 2035 reduce emissions to 25% below 1990 levels
- By 2050, reduce emissions to 50% below 1990 levels

The VMT goal is to reduce per capita VMTs below baseline by:

- 18% by 2020
- 30% by 2035
- 50% by 2050

City of Seattle

Comprehensive Plan GHG Emissions Reduction Goal:

- 7% below 1990 by 2012
- 30% below 1990 by 2024
- 80% below 1990 by 2050

Seattle Comprehensive Plan VMT goal:

Earlier this year, City Council expressed its intention to adopt a VMT reduction goal in this year's Comprehensive Plan Update. DPD is proposing an amendment that would adopt the state's VMT reduction goal. Council is expected to adopt the amendment in early 2011.

City Council Carbon Neutral Priority:

In 2010, the City Council announced its intention to adopt the goal of becoming carbon neutral by 2050.

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SEATTLE CENTER

We appreciate your interest and request for comments on whether WSDOT's SDEIS for the Alaskan Way Viaduct replacement project adequately addresses potential impacts and liabilities to Seattle Center and the nearby Bill and Melinda Gates Foundation campus. Specifically, you asked us to: "Review the north tunnel portal entrances, exits and connecting streets for access to Seattle Center, especially in terms of cumulative impacts associated with the opening of the new Gates Foundation buildings."

We believe our best response rests on our planning analysis of the project to date and an overview of the process we have pursued in working in coordination with SDOT and WSDOT these past several years.

Seattle Center completed its Century 21 Master Plan in August 2008. We continue to use this document to frame our future plans and development activities for the next 20 years and beyond. We also completed an Environmental Impact Statement (EIS) for the Century 21 Master Plan in June 2008 that included a thorough traffic analysis of all nearby intersections and roadways to and from our campus. Our EIS built on the Gates Foundation Campus Master Plan and EIS, but focused on the Seattle Center campus master plan, scoping all potential impacts with the development activities outlined therein. We shared this document with both SDOT and WSDOT in late 2008 as they began to scope issues to be addressed in the SDEIS for the Viaduct replacement. Attached also is a letter we sent to WSDOT in July 2009 summarizing our key concerns for their scoping analysis.

Since then, I have actively participated on the North Portal Group and commented at all meetings on the need to mitigate traffic and design impacts from the tunnel portal project that will affect the eastern edge of our campus and all related projects, including the Mercer West underpass widening and overall Mercer corridor improvements and 2-way conversion. Seattle Center staff has also participated in reviews of several Discipline Reports of relevance to Seattle Center that are included in the appendices of the SDEIS. These include: Historical and Cultural Resources, Social Resources, Visual Impacts, Noise, and Transportation. To ensure smooth campus operations during construction, Seattle Center staff has been providing WSDOT and SDOT with campus-wide major event anticipated attendance data since 2009 and has been providing more granular cumulative threshold event data for the campus since 2010.

Additionally, Seattle Center and Seattle Monorail Services staff met with the State's prime engineering consultant, Parsons Brinckerhoff, twice during the last year to analyze potential impacts to the monorail from the construction of the deep bored tunnel. We provided preliminary oral and written comments to WSDOT's consultants on their draft ***Proposed SR 99 Bored Tunnel -- Assessment of Settlement Impacts on Seattle Monorail***, which was issued in April 2010. Analysis of the proposed tunnel as it passes under the Monorail (Columns 25 to 34 between Vine Street and Bell Street along Fifth Avenue) suggests that neither the columns nor the guideways above will be critically impacted because the tunnel is more than 100 feet below the Monorail. To ensure no adverse impacts are incurred to the Monorail, WSDOT has agreed

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Traffic and access

For event traffic, improved access to and from SR 99 near the north portal and added network redundancy across SR 99 would result in reduced congestion before and after Seattle Center events. These roadway changes would likely improve circulation and reduce overall congestion levels at critical intersections near the Seattle Center during large events by providing more direct access to regional facilities such as SR 99 and I-5. A detailed traffic analysis has been conducted for all alternatives and is described in Chapters 5 and 6 in the Final EIS. Please refer to Appendix C, Transportation Discipline Report, for additional detailed analysis of impacts to transportation elements, including event traffic.

With the preferred Bored Tunnel Alternative, a new roadway would be built to extend Sixth Avenue N. in a curved formation between Harrison and Mercer Streets to avoid the Gates Foundation campus.

Construction impacts and mitigation

Overall construction effects of each of the alternatives are described in Chapter 6 of the Final EIS and in Final EIS Appendix C, Transportation Discipline Report. For environmental documentation purposes, the stage of construction with the greatest combination of restriction and duration for traffic was analyzed quantitatively while the overall construction activities were described qualitatively. Demolition of the existing Alaskan Way Viaduct would occur as part of the viaduct replacement project. As part of that project, standard maintenance of traffic during construction plans will be developed, communicated with the general public, and implemented during project construction.

L-007-037 to monitor ground movement and settlement during construction at several piers prior to construction of the bored tunnel and for 2 years after the tunnel opens to traffic.

In our review of the SDEIS, we would offer the following directly responsive comments:

- Bored Tunnel Alternative (Chapter 3) – addresses Seattle Center as a key neighbor and puts forward the curved alignment for 6th Avenue North which would curve around the Gates campus as the preferred alternative for the North Portal area. We polled our Seattle Center Resident Directors Group in late July 2010 and they and we support that as the preferred alternative. The North portal itself is now positioned one block closer to Seattle Center than originally anticipated in the SDEIS scoping documents, but we believe the entrances, exits and connecting streets will provide improved access to Seattle Center. The North Portal has been well designed to respect the access needs of the Gates Foundation campus, as well. Both the Seattle Center and Gates campus development projects are acknowledged in the Cumulative Effects analysis (Chapter 7) of the SDEIS.

We also remain concerned about a few key issues and offer our added input on the SDEIS:

- General Impacts to Seattle Center - are acknowledged in the appendices with several specific references to Seattle Center, but only sparely in the main document. Our 74 acre urban park is a major economic engine for the Uptown/SLU area and a regional attraction for the City of Seattle.

- Traffic and Access – Access to Seattle Center, as well as from Seattle Center to the regional transportation system, will be affected by the Mercer West Project and North Portal of the Proposed Tunnel. While the North Portal and Mercer West designs will greatly enhance the connection across Aurora Ave N along with access to and from SR 99, delays at some intersections will increase due to the two-way operation on Mercer Street. The SDEIS includes a summary of travel times on Mercer Street and intersection delays in the vicinity of Seattle Center during the a.m. and p.m. peak periods, but it does not include a quantitative analysis of traffic conditions for the periods during which traffic is headed toward Seattle Center prior to evening events or conditions after evening events. With more than 30 resident organizations on our campus, we must ensure that the perception and real experience of visitors to our campus is one of ease of access for cars, trucks, buses, transit users, and pedestrians.

- Construction – The number of lanes across Aurora will be reduced during construction of the Mercer Underpass and North Portal area, increasing delays for Seattle Center patrons from throughout the region. This impact is acknowledged, but not quantified in the SDEIS.

- Mitigation: Seattle Center is referenced as a key resource and a planned project considered in the Cumulative Effects analysis (Chapter 7, pages 170-171), but we need to see a stronger commitment to minimizing long-term and construction period traffic impacts. These include:

  - Pro-active public information campaign throughout construction
  - Safe pedestrian access during construction

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As part of the Bored Tunnel Alternative and related projects, WSDOT and partner agencies have or will implement several strategies to keep traffic moving during construction. For example, both the south and north portal configurations include bus priority lanes to provide reliable travel times for SR 99 transit service into and out of downtown. The streets that transition between SR 99 and the downtown street grid are designed in a manner that meets the city's Complete Street goals and include treatments for pedestrians, bicycles, freight, and adjacent land uses.

WSDOT will prepare a traffic management plan, which will contain localized traffic mitigation measures. These measures will be developed as construction details are refined. Please see the Final EIS, Appendix C, Chapter 6 of the Transportation Discipline Report as well as the Final EIS Chapter 8, Mitigation.

Because operational effects of the built alternative would be substantially better than the Viaduct Closed (No Build Alternative), long-term transportation mitigation measures are not anticipated. However, a number of mitigation measures in place during construction could have benefits over the longer term. Refer to Chapter 8 Mitigation in the Final EIS for details.

Seattle Monorail

Buildings and structures (both historic and non-historic) along the alignment have been inspected and evaluated by structural engineers. The construction process includes extensive monitoring of each building and structure before, during and after tunneling. This will enable any settlement impacts to be detected immediately so that they can be prevented or minimized. Potential settlement issues are discussed in the 2010 Supplemental Draft EIS. Chapter 6, page 131, discusses the soil improvements and stabilization measures that are

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- Police details to manage traffic during construction
- New and improved signage and wayfinding (during construction and long-term)
- Traffic monitoring and real-time travel information for the public
- Pedestrian-friendly street design in the North Portal area

• Seattle Monorail - In spite of our collaborative efforts in 2010, Seattle Center Monorail is not adequately addressed in the SDEIS document. It is rarely mentioned in the main document and is missing altogether from the following sections: Project Area description (Chapter 4), Bored Tunnel Alternative discussion (Chapter 5), Construction of the Tunnel and North Portal (Chapter 6 – pp. 133-134) and DRAFT Section 4(f) Evaluation, including Exhibit 4(f) – 4 List of Resources on p. 239. In Appendix J – Historical Resources, Seattle Alweg Monorail is acknowledged as eligible for the national register of historic places (NRHP). The attached Historic Resource Report for the Seattle Monorail was filed with the WA State Historic Preservation Office by WSDOT's historic resources consultant, Mimi Sheridan, in September, 2009. It acknowledges the Monorail's historic significance. This needs to be consistently acknowledged throughout the report, not just noted in the appendices. Curiously, the Monorail is not acknowledged in Exhibit 4-17 Historic District Boundaries and Buildings in Chapter 4 – and it seems like it should be.

Mitigation for potential impacts to the monorail should include a monitoring program of monorail columns in the vicinity of the bored tunnel prior to, during and after construction. In addition, include a specific plan to mitigate impacts to monorail operation and safety caused by settlement or other construction activities.

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necessary along the bored tunnel alignment to protect existing structures and utilities from settlement and to strengthen existing soil so that it can better accommodate tunnel construction.The project team met with Seattle Center and Seattle Monorail staff twice during the last year to analyze potential impacts to the monorail from construction of the deep bored tunnel. Subsequently, the assessment of potential settlement impacts determined that that the Monorail guideway and columns would not be affected by the tunnel because it would be approximately 100 feet below the Monorail.