Deliverables:

- CRC Project Management Plan

3.0 FINANCIAL AND INSTITUTIONAL STRUCTURES

The purpose of this work element is to assist the CRC in developing and reviewing financial and institutional structures relating to CRC project funding, identify funding and financing opportunities, recommend project structures that support requirements for funding, and conduct preliminary financial analysis of alternatives as part of the screening process. The activities undertaken in this work element are intended to provide groundwork and support to the eventual development of financial plan documentation meeting FTA New Starts and FHWA Mega-Project requirements.

The Washington State Attorney General's (AG's) office will conduct portions of the scope as noted below. While the Washington State AG office will have primary responsibility for certain tasks and deliverables, those items have not been deleted from this scope of work, as support will be provided by other team members in order to maintain a seamless, coordinated effort. The Washington State AG office will also review, comment and otherwise assist on the other work described within this section.

3.1 Financial Project Management, Quality Control and Project Team Support

Primary Responsibility: PB Consult

The CONSULTANT will manage the financial and institutional structures team, organize and administer work group meetings, coordinate with CRC project managers, and collaborate with and provide support to other task managers on related work items. Work under this task includes quality control for all deliverables.

Major work elements include the following:

- Work with the DOTs to establish a bi-state mechanism for coordinating state strategies.
- Establish an ad hoc team of DOT, consultant and other key decision makers to serve in a "CRC Project Finance Working Group."
- Provide materials as necessary to support project communication.

Assumptions:

CRC and STATE staff, and other interested agencies will participate in the Financial Working Group and provide input to the development of issues and proposed policies.

For budgeting purposes, eight person-trips to support four working group meetings are planned. Some working group meetings may be organized in a workshop format.

Deliverables:

- Organization, agenda development, facilitation, and meeting notes of the Finance Working Group

3.2 Discussion/Resolution of Policy-Level Issues

This task involves reviewing previously developed materials (managed lanes study, toll feasibility study, recently passed state legislation, etc.), reviewing the non-tollway alternatives developed to date, coordinating initial and follow-up meetings, developing strategies and policies with regard to highway tolling and transit operations, and documenting the outcome of the overall approach to establishing tolling as an alternative or alternative component to be carried forward into the Phase 2/DEIS effort.

Major work elements include the following items.

3.2.1 Identification of Critical Institutional and Policy Related Issues

Primary Responsibility: Parametrix/Washington State AG's Office

- Identify "critical issues" regarding institutional structures, tolling and finance, and transit operations that may involve significant internal DOT discussion, bi-state transit agency coordination, public controversy, political risks, and/or legislative action, and establish strategies for addressing these critical issues.
- Assess local, state and federal restrictions/existing laws/opportunities involving tolling (both I-5 and I-205), innovative finance mechanisms, procurement methods, toll credits local funding share for transit, and contracting approaches, and document how CRC can best navigate these issues.

3.2.2 Assessment of Institutional Arrangements for Ownership, Delivery and Administration

Primary Responsibility: Washington State AG

- Determine institutional arrangements to own and operate the transit and highway elements of the CRC (for all cases, the right-of-way should be owned by the State or a public agency):
  - Own and operate as a bi-state agency.
  - Owned by bi-state agency but operations by one or more contracts.
  - Franchise to finance, design-build, operate and maintain.
- Assess attributes of a bi-state, multipurpose transportation authority and its relationship to CRC such as geographic scope, authorized powers, and decision making structure.
- Evaluate institutional tolling alternatives, transit operations, innovative finance mechanisms, procurement methods and contracting approaches in a bi-state environment. The following will be considered:
  - WA state tolling restrictions and legislation required for CRC as sole tolling entity and/or as bi-state tolling partner.
  - OR state tolling restrictions and legislation required for CRC as sole tolling entity and/or as bi-state tolling partner.
  - WA and OR restrictions on innovative finance mechanisms, procurement methods and/or contracting approaches, and legislation required to expand opportunities currently restricted.
- Determine who will be responsible for maintenance of the highway and transit facilities/structures, and who will pay for it.

- Determine who will be responsible for policing/enforcing operations, including toll violation and HOV enforcement on the crossing, and who will pay for it.
- Determine if additional legislation is needed to implement the plan.

3.2.3 Assessment of Project Delivery Methods

Primary Responsibility: Washington State AG's Office

- Determine financing, procurement, and contracting approaches to be used in developing the Columbia River Crossing project, including but not limited to:
  - Traditional design-bid-build, States arrange financing.
  - Design-build, States arrange financing.
  - Development agreement, contractor-arranged financing, design and build (operations and maintenance optional), States keep traffic risk.
  - Franchise (concession) to developer/contractor to finance, design, build, operate and maintain, developer takes on traffic risk.
- Assess the level of responsibility allocated between public and private sectors, procurement methodologies, contract methodologies, and scheduling considerations.

3.2.4 Assessment of Tolling Policy Requirements

Primary Responsibility: Vollmer/PB Consult

- Determine key tolling assumptions with input from the Finance Working Group and other CRC team task leaders as appropriate.
  - Determine the likely primary objective for tolling amongst the many interrelated objectives (e.g., targeted funding, demand management, and maximizing revenues), and the range of financial uses for toll revenues (bridge/highway elements only, transit elements, operations and maintenance activities, etc.)
  - Determine scope of tolling with respect to I-5 and I-205, or I-5 only.
  - Determine tolling strategy and participation – commercial vehicles, passenger cars, ETC discounts, HOV policy, etc.
  - Assess impacts of network integration, interoperability, bi-state cooperation, current and expected trends in tolling technology, barrier and barrier-free tolling.
- Identify potential modifications to policy objectives for tolls once the debt for construction has been paid off.
- Determine toll collection method.
  - Determine if manual, cash toll collection will be allowed, and if so, under what conditions.
  - Determine secondary payment methods/schemes for electronic toll collection by occasional users/users without transponders.
  - Determine policies for electronic toll collection (ETC):
    - Legislation requirements
    - Violation enforcement policy assumptions

- Tag distribution policy assumptions such as: Differences if 100% ETC vs. mixed collection; and, for 100% ETC, secondary payment system policies

Assumptions:

The work elements above will generally be completed via the following steps:

1. Kick-off meeting to brainstorm on issues, content and direction for technical memoranda.
2. Prepare and circulate initial draft technical memorandum to survey relevant national and international models and explore various options, attributes, pros and cons.
3. Internal workshop to discuss the memoranda.
4. Finalize the technical memoranda.
5. Further workshops, public input and internal vetting to narrow choices.
6. Present recommendations.

For budgeting purposes, five trips/working group meetings are planned and two team members are anticipated per meeting. Some working group meetings may be organized in a workshop format.

For the transit alternatives, the determination of transit fare structures, payment methods and operating cost recovery target rate policies will be covered under Task 7.8.5.

Deliverables:

Documentation of the findings and recommendations in a series of technical memoranda relating to the following:

- Existing laws and legislative issues within both States and at the Federal level (Primary Author: Washington State AG's Office);
- Options for multi-modal institutional public ownership and administration, including scope and powers (Primary Author: Washington State AG's Office);Project delivery methods (procurement and contracting methods) (Primary Author: Washington State AG's Office);
- Political support and internal coordination steps to support financial & institutional strategies (Primary Author: Parametrix);
- Tolling options, objectives and policies, including recommended toll collection method(s) and toll rate structures (variable by time of day, discounts, participation, etc.) (Primary Author: Vollmer/PB Consult); and
- Transit policies and integration requirements including the use of tolls for transit, and New Starts timing, eligibility and probability of realizing grants (Primary Author: PB Consult).

3.3 Toll Travel Demand and Revenue Forecasting

Primary Responsibility: Vollmer

This task involves using output from the regional travel demand model to determine traffic and revenue estimates for the build alternatives with tolls considered within the Phase 1 screening evaluation of alternatives. The "component screening" stage will rely on previously generated output from the existing Metro travel demand model, as well as data from the existing I-5 Traffic

and Tolling Analysis study, and is assumed to require only minor tolling alternative analyses. The subsequent "alternative screening" stage will use and analyze outputs from METRO's newly refined regional travel demand model, including a VISUM-based assignment toll (this scope assumes that the necessary model outputs are provided no later than August 2006). The output from the regional demand models and previous studies will be used to determine the potential range of revenue streams generated by the build alternatives that will incorporate tolling. Work can be broken down into two tasks associated with the component and alternatives screening:

3.3.1 Component Screening

- Use existing model outputs and prior work developed to perform minor tolling analyses. It is assumed that no additional model outputs will be available, so any tolling work will be performed using existing analyses.
- Efforts during this task will focus on toll policy and strategy discussions to help determine the toll rate structures to be used in subsequent tolling alternatives.

3.3.2 Alternatives Screening

- Early in this phase of work, Vollmer will work closely with Metro to provide input and guidelines in developing the toll modeling travel demand tools (VISUM "Tribute" model component).
- Review of the newly refined Metro travel forecast model, including socio-economic inputs.
- Review and provide input to the "alternative screening" stage travel demand forecasting of tolled traffic demand to be conducted by Metro, with the modeling outputs to be used for the toll traffic and revenue analysis.
- Conduct analysis of revenue forecast results for up to 6 tolling scenarios.
- Provide input to design team on toll collection plans, toll plaza layout, queues at toll plazas, gantry locations, variable message signs, administrative/customer service center requirements and other supporting infrastructure elements.

Assumptions:

- Component screening work will require minimal tolling analyses and will be done based on work previously completed during the I-5 Traffic and Tolling Analysis study. There will be no additional model runs performed.
- Alternative screening will be done using the updated VISUM-based model. METRO will be responsible for all model development and it is assumed that the Consultant will work with Metro to incorporate a tolling algorithm into the VISUM-based Tribute model that is currently under development. It is assumed that this regional model development is currently in progress, and should be sufficiently completed to support tolling analyses by August 2006.
- For budgeting purposes, five trips/working group meetings are planned and two team members are anticipated per meeting. Some working group meetings may be organized in a workshop format.
- The development of transit fare revenue forecasts will be completed within Work Element 7.8.5.

Deliverables:

Primary Author: Vollmer

- Workshops and meetings as required
- Documentation of process and outcomes in a Technical Report including:
  - Toll traffic demand forecasts and diversion from toll-free demand estimates
  - Gross toll revenue projections, including ramp-up effects and other adjustments
  - Outcomes from tolling I-205 in addition to I-5

3.4 Financial Feasibility Analysis

Primary Responsibility: PB Consult

The Project Financial Feasibility Analysis will look at a variety of project configurations, operations alternatives and financing/funding mechanisms to identify the financial capacity of potential revenue streams and establish a financially feasible set of project alternatives to advance to the DEIS. Potential sources of revenue and funding include all forms of tolling (variable pricing, high occupancy toll lanes, value/congestion pricing, etc. to the extent analyzed in work elements 3.2 and 3.3 above), transit fares (to the extent analyzed in Work Element 7.8.5), development impact fees, special assessment districts, and grants. Financing instruments to be examined include revenue-based bonds and/or other revenue-based credit facilities, state and federal financing such as TIFIA (Transportation Infrastructure Finance and Innovation Act) mechanisms, GARVEE bonds, and other credit options.

The objective will be to identify combinations of alternative highway and transit configurations, tolling schemes, capital costs, operating revenues and costs, and funding and financing mechanisms that show potential to create a feasible and successful project consistent with public policy objectives.

This task includes five sub-elements as described below:

3.4.1 Project Definition

Working with other members of the team, a working definition of "base case" project parameters will be established together with variations of the base case project to be evaluated. The objective is to determine a common set of financial parameters for evaluating alternatives at the "alternative screening" stages.

3.4.2 Identify and Assess Potential Funding Sources

The following tasks relate to identifying potential funding and revenue sources that are not necessarily specific to a single alternative or project delivery method. These activities would take place concurrent with the initial "component screening" of candidate alternatives, but are not intended to be a part of that initial screening stage.

- Identify and discuss the types of funding and revenue sources, order of magnitude amounts, and timing of potential relevant funding and revenue sources.
  - Identify and assess potentially applicable local, state and federal government grants or revenue sources applicable to highway and/or transit elements, including opportunities under the new federal reauthorization, SAFETEA-LU.

  - Summarize the revenue generating potential from tolls based on previous work and identify the financial capacity of this revenue stream for (i) optimum public sector tax-exempt financing, and (ii) for-profit private financing under the long term lease concession model.
  - Identify the range of revenue generation from transit fares based upon input from Work Element 7.8.5.
  - Identify and discuss opportunities and constraints for development impact fees, special assessment districts and beneficial land owner contributions.
- Identify and discuss potentially applicable financing mechanisms, credit enhancement tools, and their applicability under different project delivery methods.

3.4.3 Financial Feasibility Analysis for Alternatives Screening

The following tasks relate to the second stage, "alternatives screening" which will evaluate a no-build and four build alternatives to identify candidate alternatives for the subsequent DEIS process. Based on the project parameters from 3.4.1 and reasonable assumptions for future growth in various socioeconomic variables, a cash flow model will be developed for analyzing and evaluating the financial feasibility of the candidate alternatives. Specific activities include:

- Assemble and review CEVP highway and transit capital cost estimates and phasing plans for each alternative prepared under Work Elements 7.5.2 and 8.4.1.
- Assemble and review highway and transit operating and maintenance cost estimates for each alternative prepared under Work Elements 7.5.3 and 8.4.1.
  - Highway operating costs including roadway and structures maintenance, toll collection, toll-related customer service center and violation enforcement, and funding of appropriate maintenance reserve accounts.
  - Transit service operating and maintenance cost estimates, possibly including a range of costs reflecting the range of mode/alignment alternatives and institutional options being considered, for the opening year and horizon years, together with implementation phasing (to be provided by others).
  - Capital and O&M cost inflation and real growth assumptions.

Building on the work in 3.4.2, the advantages and disadvantages of potential funding and revenue sources, as well as financing mechanisms, will be assessed and discussed with the funding workgroup, project team and/or participating agencies for the purpose of narrowing the range of potential sources to the most reasonable set.

- Assess the ranges of amounts from the narrowed list of revenue and funding sources, tailoring them to the candidate alternatives, and identify assumptions driving inflationary and real growth trends.
- Assess potential relevant financing vehicles and credit enhancement strategies to incorporate within the financial analysis cash flow model.

The Consultant will evaluate the financial feasibility of up to five prototypical highway and transit build alternatives, based on an assumed implementation schedule and the identified array of funding sources and financing mechanisms. This financial feasibility analysis will:

- Identify the financial capacity of the identified stream of revenues and funding — in terms of how much "project" can be supported — for each alternative by modeling to minimize borrowing costs and maximize the leverage of the available net revenue streams after accounting for necessary operations, maintenance and reserve contributions.
- Assess and evaluate the financial feasibility of each alternative, identifying for each alternative the potential financial gap — in terms of project capital investment cost — that is not supported for its revenue and cost assumptions. A limited number of sensitivity tests (up to 5 per alternative examined) will be conducted, varying financial, operating and institutional assumptions (e.g., including with and without I-205 tolls or a potential concession financing arrangement) to identify possible gap closure strategies and likelihood factors.

Assumptions:

- All capital and O&M-related cost estimates and inputs to be provided within other work elements by other team members; capital costs to be provided in mid-year of construction dollars or as otherwise provided per CEVP, with base year amounts and escalation/inflation assumptions provided; annual O&M costs to be provided for multiple years according to variation for implementation schedules, service changes and real growth factors, expressed in base year dollars with appropriate inflationary and real growth assumptions.
- The schedule to deliver the financial feasibility assessments depends on the timely delivery of all inputs, especially the toll revenue forecasts and transit farebox revenue forecasts that are dependent upon the travel demand modeling activities, and the collaborative efforts by the project team to narrow the potential list of funding sources to those most reasonable/applicable for CRC.

Deliverables:

Primary Author: PB Consult

- Participation in up to ten workshops and/or on-site meetings (with two persons per trip) with key leaders within public and private sectors to identify key funding and financing opportunities, analysis inputs and relevant assumptions.
- Technical memorandum documenting the potential toll revenues and other funding/revenue sources and opportunities
- Cash flow and financing model for the "alternatives screening" stage
- Technical memorandum documenting the financial feasibility analysis of the candidate build alternatives, documenting the refined analysis of potential funding/revenue sources and opportunities, financial capacity analysis, and discussion of the potential financial gaps.

3.5 Implementation Strategies for Funding and Financing

Primary Responsibility: PB Consult/Washington State AG's Office

The purpose of this task is to detail the steps, procedures and timetables to implement selected scenarios. Elements of the strategy for each will include:

- Prioritize "critical issues" that may involve significant internal DOTs discussion, public controversy, political risks, and/or legislative action; establish strategies for addressing these critical issues.
  a. Institutional requirements (if any) to own and operate the project.
  b. Public-private cooperative strategies and legislative/policy requirements.
  c. Procurement strategies, contracting approaches, and legislative/policy requirements.
  d. Institutional requirements for tolling, transit operations, local improvement district funding and identification of any enabling legislation required in both WA and OR.
  e. Credit parameters and associated collateral requirements.
- Develop illustrative "Term Sheets" setting out the major provisions of agreements that may be necessary between public parties and between public and private parties.
- Develop timetables for various steps in the implementation process.
- Identify "Work-around" or back up strategies where appropriate.
- Develop provisions for risk sharing and risk management.

Assumptions:

For budgeting purposes, four trips/working group meetings are anticipated. Some working group meetings may be organized in a workshop format.

Deliverables:

Primary Authors: PB Consult/Parametrix/Washington State AG's Office

- Funding, Financing and Institutional Strategies Recommendations Report
  - Provide guidance on legislative packages needed at federal, state and local levels
  - Provide tolling recommendations, including whether to toll I-205
- Legislative Packages for Federal, Washington, Oregon, and Local Jurisdictions
  - Information packages with executive summary explanation of need for legislation, legislation elements required and consequences of not obtaining legislative clearance

Note: All supporting deliverables and work must be completed by fall 2006 to support the January 2007 start of the legislative session if any legislative actions are required at that time.

4.0 COMMUNICATIONS

Purpose

Provide timely and accurate information to stakeholders and the general public in Oregon and Washington to engage their interest, enhance their understanding, and gain their support for the project development process. Provide opportunities for meaningful involvement of stakeholders in accordance with the principles of Context Sensitive Solutions.

at key milestones. Offer CBO's membership opportunities to participate in the outreach to their communities. Create partnerships that utilize the CBO's influence to relay information to their constituencies and encourage participation from others. Community members, including EJWG members, will be contracted to disseminate appropriate information, host community meetings, translate materials, and offer interpretation services.

Assumptions:

- Host up to 8 small community meetings tailored specifically for EJ communities, such as Spanish-speaking, Russian, Vietnamese, and applicable social services for low-income.
- Coordinate with a maximum of 12 connected community members/organizations to disseminate information through approaches such as surveying, distributing flyers at community events, contacting community in local retail and service business locations, and phone banking to advertise meetings.
- Tailor outreach methods to enable EJ audiences to be included and feel welcome to participate, for example:
  - Utilize bilingual and bicultural staff and volunteers, preferably who live in the project area, for targeted outreach efforts
  - Work with media of color (print, radio, and local cable), including LEP media
  - Locate meetings in important community sites at accessible times and address reasonable barriers to participation (childcare, interpretation, etc.)
  - Provide contact numbers for translations of public information
  - Provide refreshments/light meals at public gatherings
  - Translate materials and have interpreters available at meetings

Deliverables:

- Invitations, agendas, supplies, presentations, and materials for a maximum of 8 community meetings
- 8 meeting summaries
- Targeted community survey efforts to coincide with 2 rounds of outreach activities
- Summaries of survey results
- Project information fact sheets translated into Spanish, Vietnamese, and Russian
- 8 flyers for various events in Spanish, Vietnamese, and Russian

5.0 TRANSPORTATION PLANNING

The purpose of this task is to advance the Columbia River Crossing transportation alternatives through Phase 1 and into the DEIS. Major elements of this task are the development of study parameters, data collection, component and alternatives screening, transportation analysis of baseline and build alternatives, and support for other tasks, including environmental and design.

To accomplish these elements, the transportation planning task is broken down into 17 subtasks, which are listed below. Significant assumptions and deliverables are listed under each subtask.

5.1 Transportation Project Management and Quality Control

The CONSULTANT will manage all individual work elements related to transportation planning, participate and collaborate with other task managers on related work items, and oversee progress reporting.

5.1.1 Transportation Planning/Traffic Operations Team Management

- Manage daily activities of the transportation planning/traffic operations team.
- Prepare for and facilitate weekly team meetings. Prepare meeting summaries.
- Coordinate and provide staff support to the Modeling Working Group.
- Coordinate and provide staff support to the Transit Working Group.
- Coordinate and provide staff support to the Freight Working Group.
- Manage transportation-related data and information.
- Develop deliverables outlines and styles.

5.1.2 Task Management and Progress Reporting

- Participate in bi-weekly PDT meetings (Transportation Task Leader and Deputy) and collaborate with other working groups.
- Prepare monthly progress reports and maintain project log.

5.1.3 Quality Control

The CONSULTANT will provide quality control for all deliverables submitted under Task 5. The quality control will include review of all submittals and processes. The Transportation Team leader will designate an independent quality control reviewer for each major deliverable.

Deliverables:

- Preparation of Transportation Planning/Traffic Operations Team meeting summaries
- Development of deliverables outlines and styles
- Preparation of monthly progress reports

5.2 Agency and Public Outreach Support

The CONSULTANT will provide support to public agencies and for the project's public outreach elements.

5.2.1 Agency Support

Meetings and coordination with public agencies, including WSDOT, ODOT, RTC, Metro, Clark County, City of Vancouver, and City of Portland.

5.2.2 Public Outreach Support

Preparation for public outreach events, including open houses.

Assumptions:

- Attendance at public outreach events included in Task 4.0.

- Maximum of 180 person-hours for Task 5.2.2.

Deliverables:

- Preparation of meeting summaries

5.3 Develop Study Parameters

The CONSULTANT will coordinate with the Transportation Planning/Traffic Operations team, the Modeling Working Group, the Transit Working Group, and the Freight Working Group to develop or refine travel demand and traffic operations methodologies, develop measures of effectiveness, and support refinement of the Problem Definition and Purpose and Need. Some of these elements were initiated in Task AB, as noted below.

5.3.1 Develop Travel Demand and Traffic Operations Methodologies

- Define project study area for modeling analysis (Task AB).
- Determine study area roadways.
- Determine existing and future study years and obtain approval from FHWA and FTA (Task AB).
- Determine study periods (e.g., weekday daily and/or peak periods, weekend daily and/or peak periods).
- Develop list of future year background projects (Task AB).
- Gain consensus on land use allocations to support travel demand modeling.
- Establish travel demand and traffic operations methodologies.
- Establish operational evaluation standards.
- Prepare methodology report.

5.3.2 Develop Screening Criteria and Measures of Effectiveness

- Facilitate development of preliminary component and alternatives screening criteria/measures of effectiveness with Transportation Planning/Traffic Operations team, Modeling Working Group, Transit Working Group, and the Freight Working Group.
- Document component and alternatives screening criteria.

5.3.3 Support Refinement of Problem Definition and Purpose and Need

- Support refinement of the Problem Statement and Purpose and Need. This was initiated in Task AB but will be refined during Task AC.

Assumptions:

- 2 peak periods (each period not exceeding three continuous hours) and one daily period to be analyzed.
- Background project list provided by WSDOT, ODOT, RTC and Metro consistent with Metro's RTP and RTC's MTP (assumes consistency with regional and local plans).
- Land use allocation is static and consistent for all build scenarios and for all tolling scenarios.

Deliverables:

- Preparation of methodology report
- Documentation of screening criteria and measures of effectiveness
- Refined Problem Definition and Purpose and Need

5.4 Transportation Data Collection Plan

Initial transportation data was collected in Task AB. This data was collected to commence calibration of Metro's travel demand model. Additional transportation data will need to be collected to establish baseline transportation conditions for traffic operational analysis, for supplemental input to the travel demand model, to assist in managed lanes analysis, and to support freight analysis needs. The CONSULTANT will develop a transportation data collection plan and collect transportation data.

5.4.1 Determine Data Needs and Data Collection Approach

- Determine data needs (traffic and freight counts, queuing, travel times, origin-destination, occupancy, etc.).
- Prepare data needs summary memorandum.

5.4.2 Collect and Compile Data

- Develop transportation data collection approach and identify resources.
- Collect and compile transportation data. Data collection, excluding freight data, is assumed to cost $35,000 for subcontractor fees.
- Data related to freight will be collected. The budget assumes collecting and compiling freight data for up to 10 locations along the corridor or at affected interchanges. This could include daily truck classification counts, hourly truck classification counts, merge speeds for trucks, travel time by time of day, commodity information and other key freight parameters.
- Prepare interactive transportation data summary report.

Assumptions:

- Agencies (e.g., WSDOT, ODOT, RTC, Metro, City of Vancouver, City of Portland) will provide requested existing traffic data (within three years old).
- WSDOT will prepare a report and summarize truck data as a part of their ongoing truck data study.
- Portland Freight Study data will be provided to the CONSULTANT.
- Transportation data, excluding freight data needs, will be collected by subcontractor. Subcontractor costs will not exceed $35,000.

Deliverables:

- Preparation of data needs summary memorandum
- Preparation of interactive transportation data summary report

5.5 Baseline Transportation Analyses

The CONSULTANT will conduct transportation analyses of existing conditions and for one future year No Build condition.

5.5.1 Develop Functional Description Report of Existing and Future No Build Conditions

- Develop consensus on one future year No Build alternative.
- Document future year No Build alternative description.
- Develop functional description report documenting highway and transit networks to be modeled. Report will consider both existing conditions and future no build conditions.

5.5.2 Travel Demand Forecasting

- Develop roadway and transit networks. Code networks on hardcopy network plots provided by Metro networks for import into VISUM.
- Define model output measures of effectiveness.
- Coordinate with Modeling Working Group, Transit Working Group and Metro/RTC in traffic and transit forecasting.
- Provide VISUM coordination and feedback of modeling results.
- Participate in VISUM training session (four staff for three days each).

5.5.3 Model Post-Processing

- Conduct post-processing of VISUM output for existing conditions and one future year No Build alternative.
- Gain consensus on post-processing methods and document results.

5.5.4 Traffic Operations Analysis

- Conduct freeway analyses using VISSIM for I-5 corridor operations, including ramps junctions.
- Account for managed lane operations and ramp metering, as appropriate.
- Conduct ramp terminal and local intersection analyses using Synchro/SimTraffic.
- Perform transportation analyses using appropriate measures of effectiveness and/or by comparing traffic volume changes for study area highways.
- Prepare draft traffic operations report.

Assumptions:

- The future year No Build alternative will be a single alternative, i.e., no more than one No Build alternative will be analyzed. Metro will re-calibrate the travel demand model based on recent traffic counts and origin-destination information. In particular, all I-5 segments and ramps between 219th and I-84 will be recalibrated for all peak periods.
- Metro/RTC will conduct all travel demand modeling work; the CONSULTANT will code hardcopy network plots for use by Metro/RTC.
- VISSIM analysis will be limited to I-5 between 219th and north of the Marquam Bridge.

- Synchro/SimTraffic analysis will be limited to the assessment of 70 intersections and two two-hour time periods per intersection, unless intersections are estimated to operate at saturated conditions.
- Safety analysis will not be undertaken as an element of this task.
- Final traffic operations technical report will be prepared during Phase II.

Deliverables:

- Documentation of future year No Build alternative description
- Development of functional description for No Build alternative
- Conducting of post-processing of VISUM output for existing conditions and one future year No Build alternative
- Development of Transportation Discipline Report

5.6 Develop Range of Modal Components and Perform Component Screening

The CONSULTANT will support the development of the initial range of modal components (each component is a single mode) to be used in the NEPA scoping process. The CONSULTANT will provide support at public meetings and will prepare descriptions of components focused on transportation-related aspects. Using up to 10 transportation-related evaluation criteria developed as part of Task 5.3, the CONSULTANT will assist in the screening the components such that a maximum of five multi-modal Build alternatives (consisting of improvements for multiple modes) that will undergo detailed transportation analyses and design refinement as part of separate subtasks.

Assumptions:

- Up to 10 components will be developed and documented.
- The component screening will be conducted using available transportation performance data, e.g., from the I-5 Partnership study. The screening will be "threshold level" screening, i.e., "fatal flaw" assessments.
- Graphical support will be provided by others.

Deliverables:

- Development of descriptions for up to 10 components
- Development of draft screening report

5.7 Transportation Analyses of Build Alternatives

The CONSULTANT will conduct transportation analyses for up to 4 future Build alternatives resulting from Task 5.6. One of these alternatives will be the Transportation Demand Management (TDM) Baseline alternative.

5.7.1 Develop Functional Description Report of Future Build Alternatives

- Document alternative descriptions for up to 4 Build alternatives.
- Develop functional description report documenting highway and transit networks to be modeled for the Build alternatives.

5.7.2 Travel Demand Forecasting

- Develop roadway and transit networks. Code networks on hardcopy network plots provided by Metro for import into VISUM.
- Confirm model output measures of effectiveness.
- Coordinate with Modeling Working Group, Transit Working Group and Metro/RTC in traffic and transit forecasting.
- Provide VISUM coordination and feedback of modeling results.

5.7.3 Model Post-Processing

- Conduct post-processing of VISUM output for the Build alternatives.
- Document post-processing results.

5.7.4 Traffic Operations Analysis

- Each Build alternative will be distinct and will not represent a range of options.
- Conduct freeway analyses using VISSIM for I-5 corridor operations, including ramps junctions.
- Account for managed lane operations and ramp metering, as appropriate.
- Conduct ramp terminal and local intersection analyses using Synchro/SimTraffic.
- Perform transportation analyses using appropriate measures of effectiveness and/or by comparing traffic volume changes for study area highways.
- Analyze the I-5 toll diversion impacts, including route, mode, time of day and destination shift forms of toll diversion and their effects on the rest of the network, including I-205.
- Prepare draft traffic operations report.

Assumptions:

- Up to 4 future Build alternatives will be analyzed for one future year. Up to 1 of these may be a tolling alternative.
- Metro/RTC will conduct all travel demand modeling work; the CONSULTANT will code hardcopy network plots for use by Metro/RTC.
- VISSIM analysis will be limited to I-5 between 219th and north of Marquam Bridge.
- Synchro/SimTraffic analysis will be limited to the assessment of 70 intersections and 2 two-hour time periods per intersection, unless intersections are estimated to operate at saturated conditions.
- It is not assumed that toll plaza operations will be modeled. A new work order would be developed to model toll plaza operations.
- Final traffic operations technical report for Build Alternatives will be prepared during Phase II.

Deliverables:

- Documentation of future year Build alternative descriptions (up to 4 alternatives)
- Development of functional description

- Conducting of post-processing of VISUM output for future Build alternative
- Development draft traffic operations technical report

5.8 Alternatives Screening

Using the results of Task 5.7, the CONSULTANT will apply transportation-related screening criteria to the Build alternatives to assist in narrowing the number of alternatives that are to be carried into the DEIS. The CONSULTANT will document the screening process.

Assumptions:

- The screening will be conducted using available transportation data, including data developed in Task 5.7.
- Screening criteria will be limited to that developed in Task 5.3.2.
- No new travel demand modeling, traffic operations modeling, or other analysis will need to be conducted (other than that performed in Task 5.7) to support this task.

Deliverables:

- Development of draft screening report

5.9 Freight Analysis

The freight analysis will support design decisions associated with developing and narrowing the alternatives to be evaluated. The freight analysis will complete a truck freight operations analysis that focuses on the freight needs at up to 10 existing interchanges along I-5 and I-205 north of Columbia Blvd. and south of SR 500, and one future interchange on I-205 in Washington State between Mill Plain Blvd and SR 500. This information will be advanced through the Existing, Future No Build and five Future Build scenarios.

The Freight Working Group will review and comment on the work completed by the Freight Analysis team. The Freight Working Group will identify issues and questions related to freight that would need to be addressed. The chair of the Freight Working Group will conduct interest group discussions to identify issues and questions to be addressed during later phases of the study.

5.9.1 Develop Freight Analysis Parameters

The freight analysis team will work in a collaborative manner with the technical staff completing analyses of: travel demand modeling, traffic operations, air and noise quality, fuel consumption, safety analysis, tolling, and economic impacts.

The CONSULTANT will establish coordination on technical matters (variables/methodologies, etc.) between freight mobility and travel demand forecasting team:

- Establish freight analysis parameters for travel demand and traffic operations methodologies.
- Compare and resolve use of findings of truck movements in corridor from Metro/RTC forecast with Commodity Flow Forecast.

- Determine how new intermodal terminals and/or freight logistics changes – Reynolds site, Columbia Gateway, BNSF/UP terminals—should be integrated into the travel demand forecasting model.
- Identify truck operating cost impacts.
- Review model assignment of trucks based on future land use scenarios.

The CONSULTANT will establish coordination on technical matters (variables/methodologies, etc.) between freight mobility and traffic operations team:

- Review truck performance and operating parameters in the traffic operations models (e.g., VISSIM and Synchro/SimTraffic).
- Review traffic simulations with respect to truck operations to make sure current operation reflect actual observations.
- Review future traffic simulations of alternatives.

The CONSULTANT will establish coordination on technical matters (variables/methodologies, etc.) between freight mobility and environmental resource teams (Safety, Air and Noise Quality, Economics):

- Identify truck operating cost impacts to CRC economic impacts analysts.
- Support effort to identify economic impacts to carriers, shippers, consumers, etc., based on travel delay to CRC economic impacts analysts.
- Support effort to identify economic impacts to carriers, shippers, consumers, etc., based on travel delay to CRC toll analysts.
- Support effort to determine best database for use in accident analyses, and safety provisions for truck movements with Safety team.
- Identify air and noise emissions of different truck types with air and noise quality team(s).
- Identify fuel consumption of different truck types for both economics and air quality teams.

As needed, the CONSULTANT will provide expertise/resources to various members of the team regarding truck equipment types, dimensions, etc., and regulations that govern truck drivers and truck movements (e.g., hours of service regulations, oversized-load regulations, horizontal/vertical clearances, load rating, etc.) that may be critical to understanding before developing operations findings and establishing future alternatives.

Assumptions:

- The coordination and information provided under this subtask is assumed to occur as part of the subtask items described elsewhere in Task 5.

Deliverables:

- Technical memorandum with appropriate citations describing the technical analysis needed for the Freight Analysis and how it needs to be coordinated with the travel demand analysis, traffic operations, air and noise quality, fuel consumption, safety, tolling and economic analysis teams.

5.9.2 Freight Transportation Analyses

The Freight Analysis team will conduct transportation analyses for existing conditions, one future No Build, and for 4 future Build alternatives. Related tasks will include, but not be limited, to the following:

- Develop functional description report documenting changes that would affect truck movements.
- Prepare graphic and tabular summaries of existing truck volumes at key locations.
- Extract pertinent future freight information from the travel demand forecasting model (to be prepared by Metro).
- Document future truck volumes at key locations and compare to existing volumes.
- Review traffic operations (to be prepared under Task 5.7) and extract results pertinent to the freight analysis including I-5 corridor operations, travel times, and operations at key freight ramps.
- Compare Existing Conditions findings with Future Baseline findings and determine the contribution by trucks to congested locations.
- Evaluate up to 10 origins/destinations to, from and along I-5 by truck type (medium and heavy) for Existing and Future No Build conditions.
- Identify infrastructure, traffic control, etc., impediments to truck travel.
- Evaluate the effects of various logistics and contingency plans utilized to overcome congestion.

Assumptions:

- The future year No Build alternative will be a single alternative, i.e., no more than one No Build alternative will be analyzed in conjunction with Build Alternatives
- All travel demand modeling work will be performed by Metro/RTC and analyzed under Tasks 5.5 and 5.7

Deliverables:

- Technical memorandum on Existing Truck Conditions, including truck volumes, origin and destination patterns, corridor travel times, and truck accident data
- Technical memorandum on Future No Build and Future Build Truck Conditions in same format as above
- Information regarding truck operations cost impacts that can be used by analysts preparing air and noise quality, fuel consumption, safety, tolling and economics analyses

5.10 Marine and Aviation Analysis

The marine and aviation assessment aims to reveal the restricting features of the marine traffic on the Columbia River and the aviation traffic from Pearson Airpark and Portland International Airport. Most of the information used in this subtask will be based on existing reports completed as part of the I-5 Trade Partnership.

5.10.1 Assess Marine and Aviation Issues

The CONSULTANT will compile marine and aviation documents from previous Trade Partnership work:

- Technical Memorandum #B.3.4 "Boat Survey" prepared by Parsons Brinckerhoff on November 15, 2004
- Working Paper 2.8 "I-5 Bridge/Highway Alternatives" prepared by DEA and Parisi Associates on September 13, 2004

The CONSULTANT will review existing planning documents for the Ports of Vancouver and Portland, U.S. Army Corps of Engineers (USACOE), and Pearson Airpark for compliance with project Build alternatives. The CONSULTANT will search for applicable planning documents to enable the project Build alternatives to be in compliance with these documents.

The CONSULTANT will review collision reports and crash history of marine and aviation near the Interstate Bridge for the last five years. The CONSULTANT will:

- Request new five-year crash data for the Columbia River between river miles 104.5 and 107.5 from the U.S. Coast Guard, USACOE, or Multnomah/Clark County Sheriff departments
- Request new five-year crash data for the Pearson Airpark and airspace over the Interstate Bridges from the Federal Aviation Administration
- Review the five-year crash data to establish existing systemic safety trends that may exist. Crash characteristics to be reviewed consist of time of day, weather, location, cause, crash severity, and occurrence of crashes involving commercial and recreational aircraft/vessels.

The CONSULTANT will develop graphics and narrative to summarize crash issues, if deemed pertinent to the project's Build alternatives. The CONSULTANT will prepare an aviation and marine traffic memorandum.

The CONSULTANT will review bridge-related concepts and evaluate such concepts based upon marine and aviation needs as a part of the screening process.

- Prepare draft and final marine and aviation traffic memoranda
- Present final memorandum to the Project Management Team

Assumptions:

- The future year No Build alternative will be a single alternative, i.e., no more than one No Build alternative will be analyzed in conjunction with Build Alternatives

Deliverables:

- Existing Conditions Aviation and Marine Traffic Memorandum

5.11 Managed Lane Analysis

The Columbia River Crossing Study and DEIS will consider implementing managed lanes as part of or as stand-alone alternatives. The managed lane analysis will support and provide information to the highway operations analysis as well as the transit alternatives analysis. This

assessment will also support and provide input to potential tolling or pricing considerations, such as High Occupancy/Toll lane(s).

The assessment will support the screening of initial transportation components leading toward a formal range of alternatives to be forwarded into the DEIS. Further managed lane assessment during the DEIS will be addressed in a statement of work to be developed at a later date.

The analysis will begin by identifying the various forms of managed lanes in use today. The discussion will be exclusively focused on roadway lanes used by rubber-tire vehicles. The assessment will address the characteristics that are supportive of a successful facility as they relate to the I-5 corridor. Where deemed initially feasible, managed lane concepts will be developed for integration with emerging corridor concepts. Feasibility used herein refers to operations, conceptual design, and access; and not to financial feasibility. Managed lane concepts will be functionally described to a level of detail needed to support regional travel demand modeling, conceptual design, and operations analysis during study of alternative packages.

5.11.1 Identify the Policy Context and Orientation Related to Managed Lanes

This task involves a review of relevant State, regional, and local statutes and policies related to implementation and operation of managed lanes in Washington and Oregon. It will also include a summary of existing data, such as counts, projections, etc. relevant to the discussion of managed lanes. The CONSULTANT will:

- Review federal, state, regional, and local statutes, policies, and goals as they relate to managed lanes in the I-5 corridor.
- Summarize the long-range planning context for managed lanes in the I-5 corridor.
- Summarize lessons learned in the I-5 corridor related to managed lanes and previous studies.
- Summarize into a memorandum for committee review.

In addition, the CONSULTANT will provide the public and technical staff with an overview of managed lane concepts and the facility design and operational characteristics generally needed for safe and successful implementation. This overview is likely to occur as a segment of project scoping. The intent is to educate and increase awareness of managed lane concepts to support emergence of quality ideas during scoping.

Assumptions:

- Managed lanes will not be reviewed in the context of tolling during this phase.

Deliverables:

- Prepare summary memorandum of policy context for managed lanes
- Prepare managed lane supporting materials and attendance at up to 4 scoping meetings
- The managed lane sub-team will provide peer review functions specific to managed lanes as needed throughout the DEIS process

5.11.2 Establish Existing Condition Travel Patterns Specific to Managed Lane Assessment

The CONSULTANT will collect and compile AM and PM peak period counts of multi-occupant vehicles, hybrid vehicles, trucks, and single-occupant vehicles where existing data is not available (up to 3 counts for each peak period). Please note that this effort is included and budgeted through the highway data collection plan (Task 5.4).

Data will be used to establish prevailing origin and destination travel patterns and levels of potential user groups (e.g., HOVs, hybrids, commercial vehicles) in the I-5 study corridor. An understanding of travel patterns will ultimately help guide the refinement of design concepts focusing for example on where direct access should be provided to a managed lane.

Assumptions:

- Data and analysis will focus along I-5. Data along I-205 will be limited to the I-205 crossing of the Columbia River.
- Assessment will be based on information currently available or anticipated by spring 2006. This will likely not include any new regional travel demand modeling or new traffic operations modeling.
- The CONSULTANT will coordinate results and findings with the Modeling Working Group.

Deliverables:

- Prepare summary memorandum of prevailing traffic conditions and their affect on managed lane outcomes

5.11.3 Identify Forms and Characteristics of Managed Lanes

The CONSULTANT will identify common ways to create physical space for managed lanes in a corridor and key issues to be considered, including:

- Add new lane(s) dedicated for managed lane use (cost, right-of-way needs, impacts, etc.)
- Convert existing lane(s) for managed lane use (impact on adjacent lane operations)
- Combination of new lanes and conversion of existing lanes

Variations in managed lane strategies generally revolve around the identified user groups that are allowed access to the lane. The most common examples include:

- High occupancy vehicle (HOV) lanes
- High occupancy toll (HOT) lanes
- Truck only lanes
- Bus only lanes
- Other favored user groups (hybrid vehicles are gaining status around the U.S.)

In the case of truck only lanes, establish the characteristics that are typically required to deem a truck only facility feasible such as corridor truck percentage. Other physical facility and operational characteristics that must be addressed when considering managed lanes include:

- Degree of access to lane (direct connection, ramp bypasses, reversible lanes, etc.)
- Time management of lane (all day, peak periods only, other)

- Special technology needed to operate and enforce the lane
- Physical facility characteristics (presence and width of shoulders, areas for enforcement and incident response, maintenance, etc.)
- Tolling or pricing strategy(ies)

Assumptions:

- Only those managed lane concepts reasonably compatible with recommendations for the I-5 corridor emerging from the I-5 Partnership Strategic Plan will be covered.
- Managed lane travel demand modeling and analysis will not be completed under this subtask.

Deliverables:

- Prepare summary memorandum depicting and describing potential managed lane concepts suited to the I-5 corridor

5.11.4 Narrow Range of Initial Managed Lane Concepts

Building upon the information gathered in the previous subtasks, the CONSULTANT will coordinate with the Modeling Working Group to review managed lane ideas that emerge from project scoping. This effort will aim to identify project objectives with regard to managed lanes and apply screening criteria universally to all components as well as those specific to managed lanes. The CONSULTANT will screen managed lane concepts and document reasons for recommending advancement of concepts.

To the extent possible, the universe of managed lane concepts will be narrowed based on information currently available or anticipated by spring 2006. This will likely include minimal new regional travel demand modeling or new traffic operations modeling and will attempt to draw on, where possible, already-completed model runs or analysis.

The CONSULTANT will relate the factors that support successful managed lane implementation to conditions present or planned in the I-5 corridor based on the most recent work completed during the I-5 Transportation and Trade Partnership for the purpose of assessing initial feasibility of managed lane ideas and for new alternatives identified through the DEIS scoping process. Again, feasibility used here refers to operations, conceptual design, and access and not to financial feasibility. For example, if current and forecast truck movement within and through the I-5 corridor is below established target feasibility thresholds, a truck-only managed lane concept may be recommended to be dropped from further consideration.

For managed lane concepts recommended to advance for further evaluation, the CONSULTANT will recommend specific facility design, access, and operational characteristics to support effective managed lane results as the CRC concepts alternatives are packaged.

Assumptions:

- Managed lanes will not be reviewed in the context of tolling during this phase.
- A member of the managed lane sub-team will need to work within the design, transit, and traffic operations teams as needed.

Deliverables:

- Summary memorandum reviewing managed lane ideas emerging from the scoping process and recommendations to either drop ideas or conduct design/operations refinement for those deemed feasible to advance

5.11.5 Study Managed Lanes as Part of Alternative Packages

Managed lane ideas advanced beyond initial screening may be packaged with other transportation components to form one or more alternative packages for detailed study during Phase I. To support this study, managed lane concepts will be functionally described to a level of detail needed to support regional travel demand modeling, conceptual design, and operations analysis.

Assumptions:

- Provide consistency with traffic operations analysis described in Task 5.7.
- Evaluate managed lane ideas only insofar as they relate to one of the 5 future Build alternatives to be analyzed under future conditions.
- Utilize VISSIM analysis to evaluate managed lane effects limited to I-5 between 219th and north of Marquam Bridge.
- It is not assumed that toll plaza operations will be modeled. A new work order would be developed to model toll plaza operations.

5.11.6 Prepare Managed Lane Memorandum

The CONSULTANT will:

- Prepare draft and final managed lane memorandum.
- Present final memorandum to the PDT.

Assumptions:

- Assessment will be based on information currently available or anticipated by spring 2006. This will likely not include any new regional travel demand modeling or new traffic operations modeling.
- Minimal new modeling or operational analysis will be conducted during this Phase 1 scope that leads up to initiation of the alternatives evaluation.

Deliverables:

- Draft and final managed lane memorandum

5.12 Pedestrian and Bicycle Analysis

The CONSULTANT will conduct a review of the existing pedestrian and bicycle network within an area bounded by SR 500 to the north and Columbia Boulevard to the south, and within ½-mile east and west of I-5. The review will focus on available pedestrian and bicycle routes and their connectivity along and across the I-5 corridor. The CONSULTANT will conduct a detailed field review focusing on accessibility (including ADA-compliance) to and across the existing

Interstate Bridges between downtown Vancouver and Marine Drive. In addition, the CONSULTANT will review relevant pedestrian, bicycle and Americans with Disabilities plans.

Based on the above review, the CONSULTANT will prepare a technical memorandum, with illustrations, identifying existing pedestrian and bicycle deficiencies.

The CONSULTANT will assist in the screening of components (Task 5.6) and in the screening of alternatives (Task 5.8) for factors related to pedestrian, bicycle and disabled persons circulation.

Assumptions:

- None.

Deliverables:

- Existing conditions pedestrian and bicycle circulation technical memorandum
- Input to draft screening reports for pedestrian and bicycle-related criteria

5.13 Access Management

The CONSULTANT will initiate development of access control measures that are relevant to the various build alternatives that will be analyzed. Development of access control will be accomplished in coordination with the NEPA process and will extend beyond this scope of work.

In Oregon, the CONSULTANT will initiate development of an Interchange Access Management Plan (IAMP) in accordance with ODOT guidelines. Interchanges between Columbia Blvd. and the Columbia River will be included in one management plan. Work under this phase will include:

- Development of the IAMP definition, background, and authority. Work includes a problem statement that relates to access management, description of the interchange function, goals and objectives for preserving access, and description of the management area to be included in the management area boundaries.
- Development of existing conditions inventory and data analysis. Work includes data gathering, processing and preparation of background technical memoranda, regulatory framework, existing land use, transportation facilities and traffic operations, and natural and cultural resources. Development of this work will be in coordination with the NEPA process.
- Development of future conditions analysis. Work includes analysis of future conditions to identify issues and problems, land use, and forecast traffic operations.

In Washington, the CONSULTANT will initiate data collection in accordance with WSDOT guidelines for an Access Point Decision Report (APDR) that will be prepared in the next project phase.

Assumptions:

- Work under this phase will evaluate a wide range of components and alternative packages that will be narrowed to those carried forward into the DEIS. The intent of initiating the IAMP and APDR process is to help guide development of access management strategies that will be further evaluated in the DEIS.

- Development of the IAMP and APDR will be coordinated with the NEPA process. Public outreach required for preparation of the IAMP will be integrated with other planned outreach events.

Deliverables:

- Up to 5 meetings with ODOT staff to coordinate initiation of IAMP process
- Memorandum that documents IAMP process through development of definition, background, authority, and existing and future conditions analysis
- Data collection required for development of the APDR under the next phase of work

5.14 Traffic Support for Design Engineering

The CONSULTANT will support the highway design team by conducting traffic analyses to support design efforts.

Assumptions:

- Traffic support will consist of traffic capacity and operations studies using the most recent and available information.

Deliverables:

- Technical memorandums documenting traffic operations and design parameters

5.15 Traffic Support for Financial Structures Tasks

The CONSULTANT will support the financial structures team by coordinating with the transportation planning/traffic operations team and the Modeling Working Group and assisting in the development of tolling scenarios, post-processing methods, and analysis of preliminary travel forecasts for toll crossing, parallel highways, and local arterial networks.

Assumptions:

- Toll revenue forecasting will be developed under Task 3.0.
- Task 5.14 will be undertaken during the second screening analysis (Task 5.8).
- Up to 1 tolling scenario will be evaluated in Task 5.14.

Deliverables:

- Technical memorandums documenting post-processing and travel forecasts

5.16 Traffic Support for Environmental Tasks

The CONSULTANT will support the environmental screening of Build alternatives by providing transportation-related data for neighborhood traffic diversion (if appropriate), air quality and noise assessments.

Assumptions:

- Transportation data will be provided for alternatives screening only.

Deliverables:

- Technical memorandum summarizing data for environmental screening

5.17 Traffic Support for Other Tasks

The CONSULTANT will support other task managers and groups to develop joint CRC project deliverables, as needed. For example, the CONSULTANT may produce animated traffic simulations for use with the Communications Team.

In addition, the CONSULTANT will provide support, as needed, to the Transit and Implementation Teams.

Assumptions:

- The level of traffic support for other tasks will be based upon a not-to-exceed level of effort, as shown in the budget.

Deliverables:

- Meeting attendance, technical memorandums, as appropriate

6.0 ENVIRONMENTAL

The purpose of this task is to provide environmental data, analysis and strategy as well as agency coordination and public involvement support that will allow the CRC project to advance through NEPA scoping, alternatives development and screening, and to be prepared to initiate the DEIS on a short range of reasonable alternatives. Primary work to be completed under Task AC includes:

- Resource Agency Coordination and Regulatory Compliance Strategy
- Public Involvement Support
- NEPA and SEPA Scoping
- Methods and Data Report (MDR)
- Support for Alternatives Screening and Development
- Framework for the DEIS

Major Assumptions:

- Portions of the tasks related to NEPA/SEPA scoping and MDRs have been budgeted under Work Order AB.

Definitions:

Agency Sponsors

Agency Sponsors include key project contacts from ODOT, WSDOT, FTA and FHWA, Metro, TriMet, C-TRAN and RTC.

Environmental Board

The Environmental Board consists of the CONSULTANT Environmental Team Manager and key managers at CONSULTANT who will be responsible for ensuring that the company's resources are fully available to the CRC team, and will provide periodic strategic input.

Deliverables:

- Potential draft and final refinement to the historic resources section of the MDR, should coordination requirements extend beyond other MDR delivery schedules.
- Additional documentation as determined appropriate in the MDR to support alternative development and alternative screening activities and to facilitate later NEPA EIS document preparation.

6.15.2 Section 4(f)/Section 6(f) Supplemental Environmental Analysis

CONSULTANT will coordinate with WSDOT/ODOT to refine Section 4(f)/Section 6(f) data requirements and the data collection and analysis process.

Data refinement activities may include, but are not necessarily limited to: additional document and field research regarding previously identified resources or resources that might lie outside earlier study areas, additional consultations with officials having jurisdiction, or refined facility mapping activities.

Deliverables:

- Potential draft and final refinement to the Section 4(f)/Section 6(f) section of the MDR, should coordination requirements extend beyond other MDR delivery schedules.
- Additional documentation as determined appropriate in the MDR to support alternative development and alternative screening activities and to facilitate later NEPA EIS document preparation.

7.0 TRANSIT PLANNING & ENGINEERING

The purpose of this task is to advance the Columbia River Crossing multi-modal transit alternatives through Phase 1 and narrow the range of transit alternatives to be presented in the Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS). Major elements of the task are 1) satisfy the Alternatives Analysis requirements of the FTA, 2) develop and screen transit alternatives (as part of multi-modal packages) down to as few as possible to advance into the DEIS, and 3) provide collaborative technical support to other tasks. The timeframe for these services is approximately 14 months.

To accomplish these elements, the transit planning and engineering task is broken down into 11 subtasks, which are listed below. Significant assumptions and deliverables are listed under each subtask.

7.1 Transit Team Project Management

Manage all individual work elements related to transit planning and engineering, participate and collaborate with other task managers on related work items, and oversee progress reporting.

7.1.1 Transit Team Oversight and Coordination

Manage daily activities of the transit team.

7.1.2 Project Development Team and Progress Reporting

- Participate in PDT meetings and collaborate with other working groups, up to 30 meetings.
- Attend meetings with Federal, City, County, FHWA, FTA, and other officials or consultants as directed by the STATE, up to 24 meetings.
- Prepare Task 7.0 monthly progress reports and provide input into master consultant team progress reports.

7.2 FTA New Starts Requirements

The CONSULTANT, with assistance from C-TRAN, TriMet, METRO, and RTC, will prepare and submit to the project team technical memorandums to satisfy the initial phases of the AA/DEIS process.

7.2.1 FTA New Starts Reports & Technical Memoranda

Work efforts would be centered on the following submittals, some of which are further described in tasks below:

- Start-Up Package
- Detailed Definition of Alternatives

7.2.2 FTA & FHWA Coordination

- FTA/FHWA/ODOT/WSDOT Stewardship Agreement (support)
- Monitor changes in FTA New Start and NEPA rules and procedures, assess impact on this project, and offer strategic advice to consultant team and client.

Assumptions:

- The CONSULTANT will prepare the draft FTA submittals for review and comment. Official submission of the documents to the FTA and FHWA will be made by the DOT(s) or their designate.

7.3 Develop Initial Set of Transit Components

The CONSULTANT, in collaboration with the Transit Working Group and the Design Engineering Working Group, will develop the project's transit component parts, based on the work completed in the I-5 Transportation and Trade Partnership, to be used in the NEPA scoping process.

7.3.1 Data Collection

The CONSULTANT will review available data to determine what, if any, transit data is missing and will propose a data collection plan as appropriate. Execution of the data collection plan is not covered in this scope of work.

7.3.2 Purpose and Need

The CONSULTANT will review previous studies and existing data to define travel markets in the study area. Travel markets and performance deficiencies that lend themselves to a transit solution will be identified.

7.3.3 Transit Component Identification

Considering the results of 7.3.2, the consultant will identify an initial set of transit components which will be put forward for the NEPA scoping process. The set of components will be described in general terms consistent with other components to be screened.

- Develop 2030 No Build Alternative
- Develop 2030 TDM/TSM Alternative
- Develop Project Components, possibly including:
  - HOV/Express Bus
  - Local Bus
  - BRT
  - LRT

Deliverables:

- Technical memorandum on Travel Markets
- Technical memorandum on Purpose and Need
- Technical memorandum containing the descriptions of transit components and maps to go into the NEPA Scoping process.

7.4 Transit Service Planning and Analysis

The CONSULTANT, in collaboration with the Transit Working Group, will assist local transit agencies in developing the service plans and technical information to support the Build and No-Build alternatives.

7.4.1 Transit Operations Analysis for 2005 Existing Conditions and 2030 No Build Alternative

The CONSULTANT, working collaboratively with the Transit Working Group, will analyze 2005 existing transit conditions and 2030 no build alternative transit operations using the Transit Level of Service (LOS) guidance from the *Transit Capacity and Quality of Service Manual* (TCQSM), Second Edition. The analysis will focus on Headways, Hours of Service, Service Coverage, Passenger Loads, Reliability, and Transit/Auto Travel Time Difference.

7.4.2 Service Planning

The CONSULTANT will support service plan development for the alternatives as developed by C-TRAN and TriMet to support travel demand and other analyses for the component and alternative screening. Service plans will include routes, termini, and initial headway assumptions. The operating plans for each alternative surviving the component screening will be described, assembled into multi-modal packages, and defined in a detailed definition of alternatives report meeting FTA guidelines.

7.4.3 Travel Demand Forecasting Support

The CONSULTANT will submit the detailed definition of alternatives report to METRO, who will then code the transit networks and build alternatives for import into VISUM to determine transit and traffic impacts and integration issues. METRO will be responsible for meeting its pre-approved modeling schedule, and is responsible for ensuring the capacity and capability to meet all applicable FTA standards for modeling.

7.4.4 Demand Forecasting Results

When needed, the CONSULTANT will assist METRO in reviewing and documenting results of travel demand forecasting, including SUMMIT results, when appropriate.

7.4.5 Baseline Alternative

A baseline alternative will be selected based on the results of the travel demand forecasting task.

Assumptions:

- There will be a single 2030 No Build alternative.
- Metro/RTC will conduct all travel demand modeling work; the consultant will code hardcopy network plots for use by Metro/RTC.
- Travel demand forecasting will be required for the development of the Travel Markets and Purpose and Need technical memoranda, and will consist of an analysis of the No Build alternative.
- Modeling will be required for the second screening of alternatives.
- METRO will run the VISUM model and SUMMIT, reporting results within 2 weeks of completing the coded networks.
- As necessary, METRO will coordinate with C-TRAN to develop an integrated model that meets the requirements of this study. METRO will coordinate with FTA to confirm the validity of its travel demand model for use in this corridor. METRO or other agencies will carry out any new data collection (such as on-board surveys) that may be required and will correct any issues raised by the FTA in the evaluation of their model and its algorithms.

Deliverables:

- Technical Memorandum on 2005 Existing Conditions and 2030 No Build Alternative Transit Operations
- Service plans for the alternative modeling and screening
- SUMMIT Reports and Post-Processing

7.5 Transit Conceptual Engineering

The CONSULTANT will develop the physical aspects of each alternative in sufficient detail for screening and modeling purposes. All engineering work will be at the conceptual level and will be plan view alignments and profiles, with typical sections detailing specific aspects of the design where appropriate. This subtask will be coordinated closely with the co-located engineering staff of Task 8, Design Engineering. Some specialty engineering elements such as

storm water design, utilities and utility relocations, geotechnical investigations, and seismic design criteria are accounted for in Task 8 and are not duplicated below.

7.5.1 Transit Conceptual Engineering

The CONSULTANT will identify physical features of each alternative including general alignments, termini, general locations for stations, and required capital facilities. Up to 5 interdisciplinary design workshops will be held to assist in defining the alternatives, including those dedicated to a specific mode or alignment.

- Preliminary quantities for major elements of the project will be determined and an opinion of cost will be developed, based on the Standard Item Table, Bid Tabulations, R.S. Means cost and productions rate standards, WSDOT bridge square-yard costs, and other representative data as appropriate.
- Transit conceptual engineering will include such attributes as major structures, transit travel times (including inputs from the Transit Agencies' Operations – such as operating speed, number of stations, park and ride lots) and constructability & staging.

7.5.2 Capital Cost Estimates

Capital cost estimates will be developed based on plan and profile drawings, typical sections and quantity takeoffs. Alignments will be divided into segments with like conditions, and costs additive on segment by segment basis. Cost estimates will be developed using FTA's standardized system of accounts.

7.5.3 Operating and Maintenance Cost Estimates

An operating and maintenance cost model, a synthesis of both C-TRAN and TriMet existing cost allocation models, will be developed based on direct inputs from C-TRAN and TriMet. As operating and maintenance costs will vary depending on the owner/operator of the service, the O&M cost model will flow from decisions made on institutional matters.

7.5.4 CVEP Participation

Upon direction of the STATE, the CONSULTANT will participate in one Cost Estimate Validation Process (CEVP) session to be held in the CRC Project Office. Conceptual Cost Estimates, Risk Registers and Schedule Flow Charts (up to 15 copies each) will be prepared for the Build Alternatives in a format acceptable to the STATE. A final CEVP Report will be prepared by the STATE and reviewed by the consultant prior to issuance.

Deliverables:

- Plan and profile drawings for components considered in the initial set of transit components and those included in the alternative screening
- Capital, operating, and maintenance cost estimates for each alternative
- Participation in one CVEP workshop
- Detailed Definition of Alternatives Report. The CONSULTANT will prepare a Detailed Definition of Alternatives Report describing the alternatives to be evaluated. The report will describe the operating plans and physical features of each alternative as prescribed by FTA

- Technical Methods Memorandum. The consultant will develop a memorandum describing the technical methods to be applied. The memo will cover such topics as engineering and capital costing.

7.6 Component Screening

Using the evaluation methodology developed as part of Task 7.3.2, the consultant, in collaboration with the Transit Working Group, will screen the initial set of transit project components down to approximately five multi-modal Build alternatives for further refinement. Up to three interdisciplinary design workshops may be held to conduct the screening exercise.

Deliverables:

- Draft screening memorandum covering evaluation criteria, descriptions of components considered, evaluation of components, description of components eliminated from further consideration, and components advanced into the next level of screening.

7.7 Alternative Screening

The CONSULTANT, in collaboration with the Transit Working Group, will screen the refined set of five multi-modal alternatives down to approximately one to three transit mode and alignment alternatives to advance into the DEIS.

Deliverables:

- Two chapters of a reader-friendly Alternatives Analysis report summarizing evaluation criteria, descriptions of alternatives considered, evaluation of alternatives, description of alternatives eliminated from further consideration, and alternatives advanced into the DEIS.

7.8 Project Team Support

The CONSULTANT will support other task managers and groups to develop joint CRC project deliverables. The consultant will also provide technical and meeting support to the Communications Team and the Financial Structures Team to assist at major project milestones.

7.8.1 Technical Support

The CONSULTANT will provide technical, graphical, environmental, and transportation planning support to other task managers and groups. Up to 24 interdisciplinary team meetings will be supported.

- Engineering Support
- Environmental Support
- Transportation Planning Support

7.8.2 Communications Team Support

The CONSULTANT will provide technical, engineering and graphical support to the Communications Team. Up to four public events will be supported.

7.8.3 Transit Working Group Oversight and Coordination

Coordinate and provide staff support to the Transit Working Group, up to 28 meetings.

7.8.4 Modeling Working Group Support

Coordinate and provide staff support to the Modeling Working Group, up to 24 meetings.

7.8.5 Financial and Institutional Working Group Support

Coordinate and provide staff support to the Financial and Institutional Working Group, up to eight meetings.

- Determine conceptual transit operating responsibility/agency.
- Support a policy and legislative determination for the development and operations of CRC transit elements.
- Determine transit fare structure, payment methods, and operating cost recovery target rate policies.
- Forecast annualized project fare revenues to the year 2030 from model results.

7.9 Special Technical Studies

The CONSULTANT will undertake special technical studies to better define and refine transit alternatives. The special technical studies will support the transit engineering subtask as listed above.

7.9.1 Station Area Planning

The CONSULTANT will undertake two (2) station area planning studies, which will be coordinated with C-TRAN, TriMet, RTC, METRO, the Cities of Vancouver and Portland and the PDT, to document existing and planned land uses and transportation opportunities and impacts within ¼ mile of potential station locations. Three (3) concept drawings or renderings may be made at two (2) potential station locations.

7.9.2 Capital Facilities Planning

The CONSULTANT will undertake capital facilities planning and/or engineering studies to support 2 alternatives, including high capacity transit alternatives. Such capital facilities may include park-and-rides, maintenance facilities, and other non-corridor infrastructure as appropriate and will be developed to a conceptual level.

- Capital Facilities and Rolling Stock
- General Facility Locations
- Major Structures

7.9.3 Institutional Relationships Support

The CONSULTANT will offer support to local transit agencies to help them consider options for ownership and operation of any new transit services in the study area. This may include administrative support to a task force of local operators, meeting facilitation, development of

case studies of other multi-state arrangements for transit, and preparation of agreements and statutory language.

Deliverables:

- Technical memorandums (if required) covering the above topics

7.10 Quality Control

The CONSULTANT will develop a QA/QC procedure for both document and plan review that will be followed to provide quality control for all deliverables submitted under Task 7.

- Implementation Strategy Team Reviews
- Capital and Operating Cost Reviews
- FTA Submittal Reviews

Deliverables:

- QA/QC Procedures

7.11 Graphics

The CONSULTANT will develop graphics to detail potential transit alternatives.

- Maps, Plan View (20)
- Renderings of Potential Station Areas (6)

8.0 HIGHWAY PLANNING AND ENGINEERING

The purpose of this work element is to complete the highway planning/engineering tasks through Phase 1 as described in the Project Background under this SOW. Highway work elements will satisfy the requirements of the FHWA, FTA, and WSDOT/ODOT design guidelines or recognize when deviations/exceptions are required.

Specific tasks for completion of the highway planning /engineering are detailed below:

8.1 Design Team Management/Coordination

The CONSULTANT will manage all individual work elements related to highway planning and engineering, participate and collaborate/coordinate with other task managers on related work items, and oversee technical, schedule and progress reporting.

8.1.1 Highway Team Project Management

The CONSULTANT will manage the daily activities of the Highway team and provide oversight of all activities related to Task 8.0. This will include all coordination with the other Task Managers and other Working Groups. Also, all necessary project activity, budgetary and schedule assessment and reporting will be accomplished.

8.1.2 Design Team Meetings

Project Team Coordination meetings will be held weekly at the CRC Project Office for approximately one hour each. Upcoming project activities, review of the technical activities