

Washington Statewide Rail Capacity and Needs Study: Work Plan

Task 1 –Role of Rail in the State, Regional, and National Economy

Task 1.1 – Freight and Passenger Rail Systems

The objective of this task is to describe the status of Washington State’s freight- and passenger-rail systems. We will start the Statewide Rail Capacity and System Need Study by assembling a clear picture of the current freight and passenger rail systems serving Washington State and the Pacific Northwest region. Using available studies, railroad reports, and public data, we will describe and map the Class I, short-line, intercity passenger, and commuter rail lines and terminals; identify ownership and operating rights; provide an overview of current freight and passenger rail services and train volumes; and summarize the plans of the major railroads. To ensure that this task considers the latest information from rail service providers, we will interview Class I, short-line, and passenger-rail operators. We will summarize the literature on national, regional, and state railroad industry trends and issues, drawing upon concurrent work for AASHTO updating our *Freight- Rail Bottom Line Report*. We will provide brief profiles of current government investment in freight- and passenger-rail, investment and financial trends, status of public-private initiatives, recent legislation (national and state) affecting passenger and freight rail, national and regional shifts in cargo mix, changes in passenger service and demand, and role of state and regional agencies in providing rail services.

Cambridge Systematics (CS) will be responsible for this work with support from Global Insight and HDR. The major deliverable will be a technical memorandum describing the current supply of freight- and passenger-rail services.

Task 1.2 – Role of Rail in a Multimodal Transportation System

The objective of this task is to describe the roles, benefits, and costs of the freight- and passenger-rail systems for the Washington State, regional, and national economies. The role of passenger rail in addressing both intercity and commuter transportation needs will be addressed in this task. We will identify the industries that depend on freight- and passenger-rail transportation. We will provide a profile of those industries, describing their contribution to the Washington State economy in terms of their output value, employment, and potential for future growth. Using 2004 STB Carload Waybill Sample data and other sources we will describe how these industries use rail transportation and the threats or opportunities they face if freight-rail infrastructure and services deteriorate or improve. We will document the market share of transportation services by mode and industry sector, including actual volumes of traffic by tonnage and value. Finally, we will summarize the transportation, social, economic, environmental impacts of the rail system, looking broadly at which communities benefit and which communities lose from current rail services and operations. The identification of affected communities will be an important input into stakeholder outreach efforts in Task 5.

CS will be responsible for this work with support from Global Insight. The major deliverable for this task will be a technical memorandum describing the current demand for rail services, the role of rail in the state, regional, and national economy; and rail’s impact on Washington State communities.

Task 2 - Economic Growth, Freight Transportation Demand, and Supply Chains

Task 2.1 - Economic Growth and Freight Transportation Demand

The objective of this task is to describe growth trends and structural changes in the state, regional, and national economies that will determine the demand for freight transportation. We will examine recent economic and trade forecasts for Washington State and the Pacific Northwest, focusing particularly on Pacific Rim trade that will determine much of the volume of import containers and exports (grains, fertilizers, food products, wood products, etc.) moving by rail in the State. Among the forecasts to be reviewed are the Marine Cargo forecast produced in 2004 for the Washington Public Ports Association, which utilized economic and trade forecasts developed by Global Insight, as well as individual trade forecasts developed for the Port of Tacoma and the Port of Seattle. We will also review the Lower Columbia River cargo forecasts produced for the Port of Vancouver, WA, and the Port of Portland, OR, in 2002 and the Oregon State Commodity Flow forecasts done for the Oregon DOT in 2004. From these and other relevant forecasts, we will synthesize economic growth conditions and trend projections, making adjustments and extensions where appropriate, to bracket the most likely growth rates and freight forecasts for Washington State. The resulting forecasts will be annual long-term forecasts out 10 and 20 years, capturing the path of growth between 2005 and 2025, as well as the forecast endpoint level of projected economic activity and trade.

Global Insight will be responsible for this work, assisted by CS. The major deliverable for this task will be a technical memorandum describing growth trends and structural changes in the state, regional, and national economy and forecasts of the demand for freight transportation over the next 10 and 20 years.

Task 2.2 - Industry Logistics and Supply Chains

The objective of this task is to describe how industry logistics strategies and supply chain requirements shape the demand for freight-rail transportation services. Logistics strategies are strategic business plans about where to purchase materials, where to manufacture products, and where to sell them. Supply chains are the series of linked “source,” “make,” and “sell” transactions that implement business logistics strategies. Supply chain analysis can trace transactions involving money, information, or physical goods as they move along the source-make-sell chain. For this study, we will trace the movement of physical goods – materials, commodities, parts, equipment, and finished products – that are moved into, within, and out of Washington State, focusing on those goods that use the rail system for part of their supply-chain move. We will look at how changing logistics strategies influence the need for rail, and conversely, how the quality of transportation services affects shipper supply chain decisions.

We will interview shippers (e.g., importers, exporters, and domestic movers) in industries that use a significant amount of freight rail service and are important to the economy of Washington State and the region, as well as third-party intermodal marketing companies (IMCs) and non-railroad-owning rail service providers such as Northwest Container or Pacer. We will conduct about 50 interviews with a representative cross-section of national, local, and regional shippers. We will build on prior supply chain studies and the Washington Transportation Plan to develop an up-to-date and reasonably comprehensive assessment of who uses freight rail and why. The interviews will collect information on inbound sourcing process, regional interplant moves, and outbound distribution process. Shippers will be asked how they choose their primary routes and gateways, how they select logistics service providers, and what problems they encounter. We will also ask about trends and anticipated changes in supply chains that might aggravate or mitigate transportation problems in Washington State and the region. We will include interviews with trade organizations such as the Waterfront Coalition, West Coast Corridor Coalition, Retail Industry Leaders Association, and the National Industrial Transportation League to understand the issues that their shipper members have with rail service in the Pacific Northwest. In coordination with Task 1 and Task 3 work, we also will conduct about 25 interviews with Class I railroads, short-lines, intermodal marketing companies (IMCs), and dray operators to understand the constraints they face in serving their

clients. Because these interviews will collect information about shipper, carrier, and association issues and policy positions, this work will be closely coordinated with the stakeholder outreach work in Task 5.

Monica Isbell of Starboard Alliance will be responsible for this work with support from Global Insight and CS. The major deliverable for this task will be a technical memorandum summarizing the logistics strategies and supply chains requirements and constraints of the major Washington State rail-using industries and freight-rail dependent shippers. The memorandum will include supply chain maps that illustrate schematically how elements in different industry supply chains are linked modally and geographically. This information will be useful in subsequent tasks to illustrate how specific rail bottlenecks and operational issues affect logistics decisions, costs, and the efficiency of specific industry sectors.

Task 3 – Rail Capacity Needs and Constraints

Task 3.1 – Freight-Rail Capacity Needs and Constraints; Task 3.2 – Short-Line Rail Capacity Needs and Constraints; and Task 3.3 – Passenger-Rail Capacity Needs and Constraints

The common objective of these three tasks is to identify the institutional, operational, and infrastructure constraints to the efficient movement of freight and passengers over the Washington State rail system.

We will approach these tasks in a three-step process: First, we will document current and anticipated traffic demand. We will investigate four major rail markets: national freight and import container traffic served by the Class I railroads; Washington State and regional freight traffic served by the Class I and short-line railroads; intercity passenger rail ridership; and local commuter rail ridership. We will review the freight traffic forecasts and their underlying assumptions for consistency with the findings and conclusions of Task 2 about economic growth, freight transportation demand, and supply chain operations. We will likewise review intercity and commuter rail service projections, including potential new commuter services in Skagit, Snohomish, and Thurston Counties and between western and eastern Washington. We will vet the demand estimates with key stakeholders. This will include consideration of elasticity of demand with respect to price and service characteristics of available rail services and in comparison to other competing modes. When we are satisfied that we have bracketed a reasonable and defensible set of estimates, we will convert the growth projections into additional trains by type. CS will be responsible for this work with technical support from HDR.

Second, we will identify current and anticipated institutional, operational, and capacity constraints. We will begin by reviewing and summarizing constraints identified in past and current studies, including WPPA Rail Capacity Study*, Port of Tacoma Draft Rail Systems Alternative Analysis Study*, Port of Everett Master Plan, Port of Tacoma OTIS-M Study*, BNSF/UPRR Columbia River Joint Operating Study, SRTC Bridging the Valley Capacity Analysis*, WSDOT Passenger Rail Plan*, WSDOT FAR Study, WSDOT Northern Commuter Study, I-5 Columbia River Crossing Studies*, Columbia Drawdown Study, Port of Seattle Capacity Study, WSDOT East-West study; Freight Rail and the Oregon Economy Study; and relevant national studies such as the AASHTO Freight-Rail Bottom Line Study*. Members of this team led or participated in the studies marked with an asterisk. We will mine the existing studies quickly and cost-effectively. We will then identify planned and funded public and private sector improvements, such as siding extensions by the BNSF Railway along the Columbia River, and WSDOT passenger rail projects, such as the Vancouver and Point Defiance Bypass projects, that might address some of these constraints.

We will verify and update the list of institutional, operational, and capacity constraints through interviews with key stakeholders and technical experts, including Class I railroad managers with responsibility for Washington State and the Pacific Northwest; railroad terminal superintendents at Seattle, Vancouver, Pasco, and Spokane; intermodal marketing companies (IMC); port intermodal rail managers; short-line rail operators; intercity passenger rail operators; and commuter rail operators. Critical to accomplishing this task will be gaining cooperation from the Class I railroads (in particular, the BNSF), IMCs and non-railroad-owning intermodal operators to obtain data on their plans for freight rail and anticipated

operations in conjunction with passenger services. HDR will be responsible for this work with support from Tom White of Transit Safety Management, who will focus on passenger rail issues.

Third, we will analyze the impact of the anticipated increases in freight and passenger train traffic on the identified congestion points. We will pay particular attention to the impact of import traffic on short-line, short-haul, and passenger rail traffic. We will:

- Evaluate line capacity by considering the length of blocks, the travel time between places at which trains can clear for opposing or overtaking trains, speed limits, and the ability to clear main tracks when trains are stopped for station work;
- Evaluate terminal capacity by considering the length and number of receiving and departure tracks, the time required for inspection and switching, the number and length of classification tracks against classifications to build and number of cars, and the lead configuration;
- Evaluate storage capacity in terms of cars (e.g., the ability to store unused equipment by the day month or season) and trains (e.g., the ability to hold trains for several hours as part of flow control for terminals and the ports);
- Evaluate branch line capacity by considering the weight capacity of the line, the length of industrial and yard tracks, and their condition, which affects speed and therefore capacity;
- Examine track and signal configuration, speed limits, and grades using track charts and station maps, and determine terminal processing times from interview data;
- Determine running times using TPC data and other sources;
- Determine capacity by segments of similar capacity and the route and system effects of the capacity limitation of the segments; and
- Examine the capacity requirements for multiple train sizes (e.g., short intrastate freight trains sharing a line with long interstate freight trains and high-speed intercity passenger trains).

While the capacity constraints and needs on the mainlines, connections to the ports, and in the passenger rail systems are fairly well documented, it is expected that special attention will need to be paid to short-line capacity needs and issues to develop a comparable analysis.

HDR will be responsible for this work with support from Tom White of Transit Safety Management and Willard Keeney of Willard F. Keeney & Associates. The major deliverables for this task will be three technical memoranda summarizing the institutional, operational, and infrastructure constraints to the efficient movement of current and future freight-rail, short-line, and passenger rail traffic.

Task 3.4 – State Rail Investment Plans

The objective of this task is to review and update Washington State’s rail investment plans. We will examine the current infrastructure investment plan and supporting model assumptions and volume and capacity predictions for the Amtrak Cascade effort as well as other relevant studies. This information, along with the findings and conclusions of the other tasks in this study, will be used to evaluate Washington State’s rail investment plan and, as appropriate, recommend options to revise and update the plan. HDR will be responsible for this work with technical assistance from Tom White of Transit Safety Management. The major deliverable for this task will be an updated state investment plan.

Task 3.5 - Preliminary List of Rail Capacity Improvement Projects

The objective of this task is to create a preliminary list of rail capacity improvement projects. The list will provide a starting point for assembling and organizing options for 10- and 20-year staged strategic plans for Washington State's rail system. The preliminary list of rail capacity improvement projects will be developed from existing plans (e.g., the Washington State Rail Plan), consultation with other agencies planning public private investment such as the Freight Mobility Strategic Investment Board, the ports and Washington Public Ports Association, prior studies, and consultations with other key stakeholders. The list will be evaluated and finalized by the consultant team in consultation with the Transportation Commission and the WSDOT staff. The list will be constructed so that improvements can be sorted by type, location, railroad, service (e.g., freight, passenger), jurisdiction, construction period, operational date, sponsor, potential investors, etc. CS has recently prepared improvement program lists for the Mid-Atlantic Rail Operations program (a three-phase, 20-year, 71-project, \$6.2 billion program) and for state programs for Florida, Virginia, and Texas. We will review the formats from these projects with Washington Transportation Commission staff and develop a format that meets Washington State's specific needs. The major deliverable for this task will be a preliminary list of capacity-enhancing project alternatives.

Task 4 - Rail Operations: Strategies and Improvements

The objective of this task is to identify operation strategies and improvements to increase rail system capacity. As traffic approaches capacity, operations must be increasingly structured (e.g., more detailed scheduling, more disciplined execution) or delay will increase exponentially. This task will look at the current and expected operating practices of the individual freight and passenger railroads, terminals, and ports, but will also look at the cumulative system-level effects of operating practices. To identify operations strategies and improvements to increase rail system capacity, we will:

- Review the business models of the railroads, ports, and regional authorities to help Washington State understand how the railroads, ports, and regional authorities might develop and implement operations strategies.
- Determine current operating practices using data from prior studies, field observations, and interviews (coordinated with Tasks 2 and 3) with local terminal and port management managers and railroad control centers managers (BNSF in Fort Worth and UP in Omaha), and IMCs determine the current utilization rate of the infrastructure using the capacity data generated by Task 3. This will include an examination of interchange operations efficiencies at the ports.
- Explore operations strategies that could improve the utilization rate without increasing infrastructure investment. Examples might include revising interchange practices between short-line and main-line railroads; operating only full-length 7,200-foot trains where they can be accommodated; considering joint operations between Tacoma and Auburn, Spokane and Sandpoint; changing locomotive power assignments; having the short-line railroads pre-block traffic into longer train lengths for the trunk carrier and delivering the consists directly to a major terminal, etc.
- Explore capital investments - by the railroads, ports, and the public sector - that would improve operations and the exploitation rate. Examples might include expanding port on-dock intermodal tracks to allow direct arrival and departure of trains, reducing the need for staging tracks and allowing them to turn more trains in a given 24-hour period; having short-haul operators purchase their own power to get more reliable service; adding sidings for storage in transit, using the sidings to meter out trains once they clear congested terminals and before entering the next terminal; adding and lengthening sidings along the Gorge, crown-mining Stampede Pass, etc.

HDR will be responsible for this work with support from Willard Keeney of Willard F. Keeney & Associates and Tom White of Transit Safety Management. The major deliverable for this task will be a

technical memorandum describing the operating strategies and issues of the railroads, ports, and regional authorities, and a preliminary list of operations improvements.

Task 5 – Communications and Public Involvement

The objectives of this task are to implement a stakeholder involvement and communications plan that will involve and engage key stakeholders in the project. Given the level of interest in this study and the potential impacts of different policy choices on affected stakeholder groups, it is important that stakeholders believe that the process was fair and that they had an opportunity to be heard and to contribute their perspectives to the project.

There are four components of the stakeholder outreach plan:

1. Stakeholder interviews and summaries of key findings;
2. Facilitated regional listening sessions;
3. Web posting and e-notices to stakeholders of updated web content, including an e-mail address for questions and comments; and
4. Transportation Commission Study Group workshops, with opportunities for stakeholder input. This will include the formation of a Technical Resource Panel of knowledgeable and interested stakeholders who will continue to interact with the consultant team and the Commission throughout the study.

Each of these elements is described below.

Stakeholder interviews. Berk & Associates (Berk) will identify the project stakeholders with assistance from, the Transportation Commission, WSDOT, and CS. A stakeholder contact list will be developed that includes e-mail and telephone numbers. An interview protocol will be developed with input from the Transportation Commission, WSDOT, and CS. We will then conduct 35 to 40 telephone interviews with key stakeholders. The interviews will establish communication, provide a point of contact for stakeholders with CS and Berk, help identify key issues and concerns, and inform stakeholders of outreach plan and opportunities for comment. A summary of interview findings will be prepared. The interviews will be conducted during January and February.

During the interview phase of this task, a relatively small (8-12) person Technical Resource Panel will be identified to work with the consultant team during the study. These will be knowledgeable stakeholders representing a wide range of interests. The consultant team will work with the Commission and DOT staff to identify potential candidates, especially those who have already given testimony at hearings on the study or who represent key user groups. The members of the Technical Resource Panel will be among those stakeholders interviewed and they will act as a resource whenever the consultant team needs to make contacts with industry or other key stakeholder groups. They will also be asked to review all reports and technical memoranda and to participate as active members in the Transportation Commission study team sessions.

Facilitated regional listening sessions. Four (4) sessions to be held, one (1) each in Puget Sound, Bellingham, Vancouver, and Central/Eastern Washington. These sessions will be “by invitation” meetings to share the study’s purpose, baseline situation assessment, and obtain perspectives. Berk will be responsible for inviting stakeholders and obtaining RSVPs; coordinating meeting locations and logistics; working with the Transportation Commission and WSDOT to prepare a press release, if appropriate; and designing and facilitating the meetings, including development of meeting materials. A meeting summary will be prepared following the sessions. These will be conducted during March and April.

Web postings and E-notices to stakeholders. Berk will work with the Transportation Commission and WSDOT to create web pages for the project and regular updates, and work with CS regarding web content and key messages. Four e-notices will be sent to stakeholders, coincident with the updated web content and materials. These e-notices will be sent at the following periods in the project:

- **February.** Announcing outreach and providing opportunities for comment;
- **April to May.** Announcing Interim Report #1 content and summarizing the outreach findings from the stakeholder interviews and the regional listening sessions, and providing notice of Commission Study Group meetings;
- **September.** Announcing Interim Report #2 content and process remaining, and providing notice of Commission Study Group meetings; and
- **October.** Announcing the Draft Plan content.

Transportation Commission Study Team sessions. These sessions will be organized into two parts: first, an opportunity for stakeholder comments, and second, a work session for review and discussion of policy issues and work-in-progress. It is expected that some sessions will be in Olympia/Puget Sound area; and others will be in other regions of the state. Members of the Technical Resource Panel will be asked to actively participate in these sessions.

Transportation Commission briefings. We will present our methodology, findings, conclusions, and preliminary recommendations to the Transportation Commission at periodic intervals during the study, particularly in October and November.

The following Commission Study Team Sessions are planned:

- **Early May.** Report on Interim Report #1 and stakeholder outreach issues;
- **July-August.** Interim Report #2 discussion issues;
- **September.** Interim Report #2 discussion issues; and
- **October.** Draft Report #2 discussion.

Legislative briefings. The scope of work asks that the consultant team be available after the summary report and recommendations are submitted in early December 2006 to brief the Legislature and answer technical questions. Since the number of briefings, their timing, and the required level of effort is not known at this time, we have assumed that up to three (3) briefings will be held and have reserved a portion of the Task 5 budget to cover this work.

Task 6 - National Initiatives and Funding Opportunities for WS Rail Program

The objective of this task is to identify national initiatives and funding opportunities for Washington State rail improvement projects. This will be accomplished through a high-level scan that takes advantage of CS's active involvement supporting the U.S. Department of Transportation, AASHTO's Freight Bottom Line Campaign, and other national initiatives. The *Freight-Rail Bottom Line Report*, which CS and Global Insight prepared for AASHTO, helped focus attention on the capacity of the nation's rail system to keep pace with the economy. The report listed a number of funding mechanisms that the public sector can use to support and leverage private sector investment in rail. SAFETEA-LU expanded the funding available for rail projects, and it is likely that the next reauthorization will consider a more aggressive public sector rail investment program. If Washington State wishes to take advantage of current and future programs and funding opportunities (as an individual state or as part of a Pacific Northwest consortium), it should proactively look for and participate in national initiatives and funding opportunities. We will look for

opportunities to do this and forward this information to the Commission so they can follow-up on these opportunities.

CS and Global Insight are well positioned to do this. We support the Mid-Atlantic, Northeast, and Southeast Rail Operations programs under the auspices of the I-95 Corridor Coalition. We are advising the City of Chicago on the CREATE program. We are providing analytical support to the Ports of Long Beach and Los Angeles evaluating public benefits of inland port options that will be supported by the new SAFETEA-LU intermodal pilot program. And we will be updating the *Freight-Rail Bottom Line Report* for AASHTO and supporting AASHTO's emerging "Freight Bottom Line Campaign." Much of this work will focus on making innovative use of current and emerging institutional and finance mechanisms. We will track and advise the Transportation Commission and WSDOT about opportunities for the State to make use of financing mechanisms such as grants from surface transportation programs, loan and credit enhancement programs, tax-expenditure financing programs, etc.

CS will be responsible for this work. The major deliverable for this task will be a brief technical memorandum identifying national initiatives and funding opportunities for Washington State rail improvement projects.

Task 7 - Rationale for WS Investment in Private Rail

The objectives of this task are to define the rationale for public participation in rail improvements and develop a methodology for estimating the benefits, costs, risks, and appropriate level of investment and public participation.

Public sector funding has been used throughout the history of the United States to develop and ensure a reliable and efficient transportation network. The canals and rail system were justified by the desire to open the interior and western U.S. to development, while the highways and aviation systems were primarily justified by national defense and the postal system. Public investments in the transportation system today are often used as a stimulus for economic growth, congestion mitigation, and other quality of life improvements. For freight rail specifically, many of the public motivations are centered on capacity: whether an investment can relieve the highway system, slow the growth in highway demand, or prevent traditional rail traffic from changing modes. The latter has become especially important recently and points up the capacity question in rail as well as highway: as Class I carriers have begun to allocate capacity by shedding some traffic for better paying freight, it is the traditional, heavy loading, hard-on-pavement carload business that is most at risk of being shifted from rail to highway.

The policy issue is not just whether some rail projects are deserving of public support, but whether the public should and can change carrier preferences by expanding the pool of capital available to the rail industry. And, while mobility benefits from any one rail project may not be decisive, a sustained *program* of rail projects might accumulate mobility gains that will matter for highway capacity. Thus, one strategy is to base railroad investments on benefits over and above highway relief, but still produce that relief by steady accretion. The scope of non-mobility benefits is extensive and takes in subjects that will be meaningful to Washington State residents: the competitiveness of ports and trade-dependent industry, fuel efficiency, environmental friendliness, safety, and more.

To ensure clarity and generate sound courses of action from among these considerations, this task will establish a framework for justifying the public value of investment in the rail system. An example framework could include the following:

¹²*Return on Investment on Freight Rail Capacity Improvement*, prepared by Cambridge Systematics for the Transportation Research Board under NCHRP Project 08-36, Task 43, April 2005.

- **Transportation and Economic Inputs.** Investments in transportation infrastructure are expected to generate system improvements and spur economic development. Estimates of these impacts become the inputs into the benefits calculations. This may include evaluation of existing public investments in competing non-rail freight modes.
- **Transportation Impacts.** Determines the transportation-related benefits from the proposed improvements. These include reduced highway maintenance costs and reduced shipper costs.
- **External Impacts.** Includes non-transportation benefits attributable to transportation improvements. These include safety, security, health, and environmental impacts.
- **Economic Impacts.** Converts the various impact measures into direct and indirect economic benefits. These include job creation, income taxes, and reductions in passenger delays.
- **Decision Support.** Combines the above benefits and generates output used to evaluate and help determine the best allocation of public investments.

The approach will be accompanied by a systematic procedure for project assessment. A nine-step procedure for evaluating public participation in rail projects has been developed by Global Insight for the NCHRP 8-42 study, and will be adapted for application in Washington State. To suit a wide range of size and complexity in projects, the steps are organized in three phases of increasing detail and scope, with intermediate decision points where initiatives can be adopted, analyzed further, modified, or dropped. Preliminary assessments may be sufficient for some initiatives, and can be used to winnow multiple proposals when they compete for limited funds. The second phase deals with the question of credible modal diversion, and incorporates calculations for a variety of public and private benefits (because both are pertinent in public-private partnerships). When appropriate, the procedure culminates in multi-criteria evaluation, balancing quantitative information with less precise and qualitative factors. Political consequences and institutional practicalities can be highly relevant in the public arena, and considerations like citizen perceptions of safety can be subjective and nevertheless material. Included in this step would be consideration of unintended consequences of specific policies; for example, a policy to encourage passenger rail that effectively forced out freight rail (through lack of capacity or decreased levels of service) and, thereby, increased congestion due to higher levels of truck activity. This step recognizes the multiple factors that drive real decisions and handles them explicitly. The weighing of conflicting interests also belongs with this phase, based on findings from earlier steps about the parties who gain or lose by a prospective project.

The decision to invest or not invest public money in rail infrastructure and operations will eventually turn on whether public benefits are commensurate with the public investment. CS has been at the forefront of work to determine the benefits of public investment in rail.² For Washington State, we can adapt the freight-rail investment calculator that we developed for Florida DOT. The calculator quantifies the public benefits accruing from: transportation impacts (e.g., avoided highway maintenance costs, shipper logistics costs, and highway delay at rail-highway grade crossings); economic impacts (e.g., new or retained jobs, and tax increases from industrial development); and external impacts: (e.g., highway safety improvements, and environmental quality improvements). A benefit-cost ratio is established for each project, and the projects are evaluated using a capital budget model. The model maximizes the public benefits resulting from every dollar invested in the rail system.

CS is currently developing a new framework for analyzing the economic impacts of investments in large-scale freight projects. This work is sponsored by the U.S. Department of Transportation to provide the Department with a consistent and sound approach to comparing the impacts of different public investment alternatives; determine the specific economic sectors who benefit and the appropriate allocation of costs and benefits among public and private sectors; and determine the appropriate allocation of costs and benefits between local and national beneficiaries. An early conclusion of this work is that current economic impact methodologies underestimate the national impacts of large-scale freight projects because they focus on local congestion impacts and travel time savings without consideration of cascading regional and national effects in large networks. CS is developing new methods to examine longer-term adjustments in supply chains and logistics practices that create greater productivity improvements than simple short-term

time savings alone. In this task, we will enhance the Florida methodology with the results of this new research to the maximum extent feasible.

To evaluate passenger rail, we can make use of the RailDec benefit/cost model developed by the HLB group of HDR for the U.S. Federal Railroad Administration.

CS will be responsible for this work with support from Global Insight, HDR, and Tom White. The major deliverables for this task will be a technical memorandum summarizing the rationale for Washington State investment in freight and passenger rail and technical memorandum describing a methodology and tool (e.g., the freight-rail investment calculator) for evaluating alternative policies and projects under constrained-budget scenarios.

Task 8 - Policy and Investment Options

The objectives of this task are to recommend policy and investment options to improve rail system capacity and define, their benefits, costs, and risks.

Washington State will have two broad policy choices for dealing with the freight- and passenger-rail systems that support the state and regional economy. It can opt for market-driven evolution of the freight rail system or it can push for policy-driven expansion of capacity (or a third option, a combination of the these two). Opting for a market-driven evolution of the freight-rail system means minimizing state involvement, betting that the rail industry will continue to be stable, productive, and competitive, with enough business and profit to operate. It means that the railroads may not replenish their infrastructure as quickly or grow as rapidly as the demand for freight, but it also means lower state investment and financial risk at a time when the State's budget is tight and the highway/truck-freight system requires constant investment for preservation, management, and operation. It also means, however, accepting a somewhat higher risk that the freight-rail system may not have the capacity to support state economic development goals.

Opting for a policy-driven expansion of the freight-rail system means building a new public-private partnership with the railroads. It means increasing state involvement and investment to achieve a rail system that provides the cost-effective transport needed to serve national and global markets, helps relieve truck pressure on highways, and supports Washington State's economic development. This approach also carries risk. The public sector can facilitate or invest in rail improvements, but it cannot provide effective and cost-competitive services that will attract and retain services. The railroads must deliver these services and do so in a very difficult business environment. There is always the possibility that market will not respond to the public sectors or the railroads' vision of the State's freight transportation needs.

We will define a range of policy options from limited intervention in a market-driven rail system to extensive intervention in a policy-driven rail system program. For each policy option, we will identify an appropriate package of investment projects covering institutional changes, new operations strategies, and infrastructure capacity improvements for the freight railroads, passenger rail operations, and the ports. We will consider both long-haul and short-haul rail operations and the interactions and tradeoffs between freight-rail and passenger-rail improvements.

The policy options and project packages will be tied explicitly to Washington State economic goals and the needs of the industries and businesses that support the Washington State, regional, and national economies. We will assess the policy options and project packages for their transportation, social, and environmental impacts, considering their effects on Washington State communities at rail and port terminals and along rail corridors. We will analyze the benefits and costs of several specific alternative investments as case studies.

CS will be responsible for this work. The major deliverable for this task will be a technical memorandum detailing policy options and project investment packages. Several policy options and projects will be detailed to provide examples of the application of the study methodology.

Task 9 – State-Owned Rail Asset Management Plan

The objective of this task is to develop a rail asset management plan for rail rights-of-way, lines, and equipment owned by Washington State. Washington State is actively involved in the preservation and development of both rail freight and passenger services through its branch line assistance program, its grain car purchase program, the Amtrak Cascades rail passenger services, and active involvement in rail planning. The purpose of this task is to identify a strategic approach, based on solid principles of asset management, to cost effectively manage and sustain these programs.

To develop an approach appropriate for Washington State, we will:

- Evaluate Washington’s existing rail passenger and freight programs within an asset management and business case context, with particular attention to the short-line program. Each program and investment will be classified by market and business purpose so that budget and investment decisions can be interpreted in a business context;
- Compare Washington’s approach to that of other states. Using available reports and papers, we will conduct a brief scan of other states, looking at models for managing state rail assets and making public investment decisions;
- Identify strategies for management of rail assets and investment in rail infrastructure that may be appropriate in the Washington context. It is likely that there will be alternative approaches that should be considered; if so, the alternatives will be discussed as well;
- Based on strategic alternatives and direction of the Commission, develop a specific strategic direction for the short-line program, including vision, mission, and goals; and
- For the Washington State rail program, provide a business-based approach to financial sustainability and monitoring that could be applied to the short-line program.

CS and HDR will share joint responsibility for this work. The major deliverables for this task will be an asset management plan, including a description of the status of asset management in Washington State rail programs, and recommending strategic approaches to state rail asset management. The plan will provide a business-based asset management approach for Washington State rail operation and investment, including vision, goals and strategies; asset management strategies; and strategies for financial sustainability.

Task 10 – Summary Recommendations and Implementation Plans

Task 10.1 – Analytical Plan; Task 10.2 – Investment Plan; and Task 10.3 – Rail Operations Forum

The objective this task is to organize the findings and conclusions of the study into a set of clear, comprehensive, and practical recommendations for consideration by the Transportation Commission, rail-system stakeholders, and Washington State communities. We will develop three products under this task:

- Analytical plan setting out a methodology for determining when public sector investment in the rail system is appropriate and defensible;
- Public sector investment plan spelling out programs and projects – along with their benefits, costs, and risks – to improve freight-rail and passenger-rail capacity; and
- Recommendations for a rail operations forum to convene a continuing public-private dialogue to improve rail system operations and address future rail system needs and issues.

In developing the reports, we will strive to balance a bottoms-up approach of carefully considered projects against freight- and passenger-rail providers’ capabilities against Washington State’s economic and com-

munity development goals. We do not expect to address and solve all freight- and passenger-rail needs and constraints in the plans; however, we do expect to clearly identify the issues and opportunities, set up procedures so that the Transportation Commission can make informed judgments about the public benefits of investment in rail improvements, and define an initial set of cost-effective projects for implementation.

The problems facing the transportation sector, especially the freight-rail industry, and the consequences of not addressing them are clearer today than they were a few years ago, and they will sharpen in the coming years. The public sector, business, railroads, and the ports will benefit from closer attention to the capacity of the freight- and passenger-rail systems and their contribution to the Washington State economy. The products of this task will be designed to make as positive a contribution to this process as possible.

CS will be responsible for this work. The major deliverables for this task will be an analytical plan, an investment plan, and technical memorandum detailing a plan for continuing public and private sector stakeholder interaction.