Statewide Rail Capacity and System Needs Study
Overview, Approach and Products

presented to
Washington State Transportation Commission

presented by
Cambridge Systematics, Inc.
Berk & Associates, Inc.
Global Insight, Inc.
HDR, Inc.
Starboard Alliance Company
Transit Safety Management
Willard F. Keeney & Associates

January 17, 2005
Presentation Agenda

- Objectives of study and key challenges
- Introduction to the team
- Overview of study approach and key elements of methodology
- Tasks, products, and schedule
- Discussion and detailed explanation of tasks (as needed)
Study Objectives

- Support the Washington State Transportation Commission in –
  - Assessing the rail freight and rail passenger infrastructure needs in this state
  - Reviewing the current powers, authorities, and interests the state has in both passenger and freight rail
  - Recommending public policies for state participation and ownership in rail infrastructure and service delivery, including but not limited to planning and governance issues
  - Developing a rail asset management plan, and
  - Reporting their findings and conclusions of this study to the transportation committees of the legislature by December 1, 2006
Challenges

- **Consensus** on policy objectives (not just B/C ratios and financing)

- Comprehensive **assessment** of benefits, costs and risks
  - Public and private
  - Freight and passenger
  - National, regional, state and local
  - Equitable treatment of communities and industry sectors

- Effective **stakeholder** engagement
  - Roles and responsibilities
  - Appropriate incentives
  - Effective mix of policy tools
Consultant Team

- Cambridge Systematics, Inc. – Lance Grenzeback, Mike Fischer
- Berk & Associates, Inc. – Bonnie Berk
- Global Insight, Inc. – Joe Bryan, Paul Bingham
- HDR, Inc. – Wayne Short
- Starboard Alliance Company – Monica Isbell
- Transit Safety Management – Tom White
- Willard F. Keeney & Associates – Willard Keeney
Approach

- What do we mean by the public benefits of state investment in rail improvements?

- How do you assess rail system improvements?

- How do you build clear, comprehensive, and practical state policies and programs?
Public Benefits

What do we mean by the public benefits of state investment in rail improvements?
Linkage Between Transportation Investment and Economic Development

Transportation System Investment

- Travel Time
- Cost
- Reliability

Productivity

- Labor and Market Access

Competitiveness

Economic Growth
Public and Private Benefits of Transportation Investment

**Private Sector Benefits**
- Carrier cost savings
- Increased business revenue

**Public Sector Benefits**
- Reduced community impact (AQ, noise…)
- Improved commuter/intercity passenger rail service
- Lower congestion, highway cost

**Transportation System Investment**
- Travel Time
- Cost
- Reliability
- Productivity
- Labor and Market Access
- Competitiveness
- Economic Growth

Increased jobs, tax revenues
Freight Tons, Value, and Ton-Miles by Mode, 2002

Source: Bureau of Transportation Statistics and U.S. Census Bureau, "2002 Economic Census, Transportation, 2002 Commodity Flow Survey," Table 1b.
Gross Regional Products of Eight U.S. Trade Blocs and Major Population Centers
Freight System Capacity

Do the highway and freight-rail systems have the capacity to handle the growing volume of freight – even if mode shares remain constant?
Railroad Industry Return on Investment
Class I Railroads’ ROI is Improving, But Is Still At or Below the Cost of Capital

Source: Surface Transportation Board
Rail Capacity and System Needs

- How do you assess rail system improvements?
Assessing Rail Capacity and System Needs

Stakeholder Involvement

Economy

Industry Supply Chains

Infrastructure, Operations, and Institutional Capacity
## Washington State Economy

**GRP and Growth Rates by Sector, 2000-2025**

<table>
<thead>
<tr>
<th>Sector</th>
<th>2004 GRP $ Billion</th>
<th>2004 Share of Economy</th>
<th>Average Annual Growth</th>
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</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>4.6</td>
<td>2.0%</td>
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<tr>
<td>Manufacturing</td>
<td>21.8</td>
<td>9.2%</td>
<td>-0.9</td>
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<tr>
<td>Mining</td>
<td>0.3</td>
<td>0.1%</td>
<td>-2.4</td>
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<tr>
<td>Construction</td>
<td>10</td>
<td>4.2%</td>
<td>-0.2</td>
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<tr>
<td>Trade, Trans., &amp; Util.</td>
<td>44.2</td>
<td>18.0%</td>
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<tr>
<td>Information</td>
<td>22.1</td>
<td>9.3%</td>
<td>2.0</td>
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<tr>
<td>Financial Activities</td>
<td>49.2</td>
<td>20.5%</td>
<td>3.5</td>
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<tr>
<td>Prof. &amp; Business Svcs.</td>
<td>26.9</td>
<td>11.1%</td>
<td>4.0</td>
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<tr>
<td>Educ &amp; Health Svcs</td>
<td>15.8</td>
<td>6.7%</td>
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<tr>
<td>Leisure &amp; Hospitality</td>
<td>7.8</td>
<td>3.2%</td>
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<tr>
<td>Other Services</td>
<td>5.3</td>
<td>2.1%</td>
<td>2.6</td>
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<tr>
<td>State &amp; Local Govt.</td>
<td>21.8</td>
<td>9.3%</td>
<td>1.6</td>
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<tr>
<td>Federal Govt.</td>
<td>6.2</td>
<td>2.6%</td>
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</table>
Role of Rail in the Economy

- **International trade**
  - Seattle/Tacoma discretionary cargo – local and national benefits
  - Columbia River ports – agricultural exports

- **Washington industries reliant on rail**
  - Agriculture and resource industries – Southeast, Columbia Basin, Coastal
  - Central Puget Sound – manufacturers with complex supply chains
  - Vancouver/Portland – national freight distribution

- **Business, commuter, and tourism travel**
  - Puget Sound and I-5 Corridor – alt to congested highways

- **Military mobility**
  - Ft. Lewis – Pacific Northwest Power Projection Platform
Western United States Origins and Destinations for Distribution and Warehouse Goods Using the Portland-Vancouver Rail Triangle

With Tonnage of Freight on Rail Lines Used to Access Triangle


Volume of Distribution and Warehousing Products on Portland-Vancouver Rail Triangle Access Routes, 1998

Source: Cambridge Systematics based on Global Insight data, 1998
System Capacity Constraints

- Stevens Pass
  Cap. 28/day

- Pt. Defiance
  Cap. 60/day

- Stampede Pass
  Cap. 20/day

- Columbia Gorge
  Cap. 40/day
Capacity Bottlenecks

Terminal Congestion

Tunnel Constraints

Siding Length, Spacing
Operational Issues

- Joint UP/BNSF operations Tacoma to Seattle
- Bi-directional running Columbia River Gorge
- Combined rail corridor Spokane to Sand Point
- Directional running Stevens/Stampede Pass
- Car supply/service reliability issues
- Increasing rates for carload shippers
Producers & Suppliers
- Growers (wheat, grain, fruit)
- Forest products (e.g. Longview Fiber, Weyerhaeuser)
- Shippers (e.g. NW Containers)
- Manufacturers
- Major Retailers

Railroads
- BNSF
- UP
- Short lines
- Sound Transit
- Amtrak

Associations
- WA Public Ports Assoc.
- American Short Line & Regional RR Assoc.
- WA Assoc. of Rail Passengers
- WA Wheat Commission
- WA Perishable Shippers Coop. Assoc.

Ports
- Westside (Seattle, Tacoma, Everett)
- Eastside (Pasco, others)
- Columbia River (Vancouver)

Cities/Communities
- Eastside
- Westside

Regional Gov’ts
- RTPOs

Military
- Fort Lewis, others

State
- Governor’s Office
- Legislature
- Transportation Comm.
- WSDOT
- Oregon DOT
- FMSIB
- WA UTC

Interest and Stake in Washington’s Rail System
Segmentation Strategy

- Private Sector Partners and Investors
- State Interests and Investors
- Customers and System Users
- Regional and Local Interests
Outreach Activities

- Stakeholder interviews and summaries of key findings
- Facilitated regional listening sessions
- Web posting and e-notices to stakeholders of updated web content, including an e-mail address for questions and comments, and
- Transportation Commission Study Group workshops, with opportunities for stakeholder input (Technical Resource Panel)
State Policies and Programs

- How do you build clear, comprehensive, and practical state policies and programs?
Benefit-Cost and Economic Analysis Elements

- Carrier travel time, cost, and reliability savings
- Shipper cost reductions and logistics improvements
- Highway user impacts (VMT, cost, safety, etc.)
- Highway agency impacts (maintenance, etc.)
- Community impacts (AQ, land use, etc.)
- Economic impacts (industry growth, jobs, tax revenues)
## Investment Analysis

**Benefit/Cost Calculator**

### Florida Department of Transportation

**Freight Rail Investment Calculator**

### Results

#### Summary:

<table>
<thead>
<tr>
<th>Category</th>
<th>Total Cost</th>
<th>Cost</th>
<th>Public Benefits</th>
<th>B/C</th>
<th>Florida Cost</th>
<th>Florida B/C</th>
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<tr>
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<td>$39,004,250</td>
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<td>$284,918,724</td>
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#### Projects:

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<tr>
<th>Name</th>
<th>Railroad</th>
<th>Total Cost</th>
<th>Public Benefits</th>
<th>B/C</th>
<th>Florida Cost</th>
<th>Florida B/C</th>
<th>Model Recommendation</th>
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<td>Panama City Port</td>
<td>The Bay Line RR</td>
<td>$7,339,000</td>
<td>$83,437,486</td>
<td>11.4</td>
<td>$5,504,250</td>
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<td>Double Track MP 20 to MP 30</td>
<td>CSXT</td>
<td>$10,000,000</td>
<td>$13,862,533</td>
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<td>Repair Bridge #14</td>
<td>CSXT</td>
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<td>$1,215,884</td>
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<td>Upgrade to 266k</td>
<td>Florida Central</td>
<td>$8,500,000</td>
<td>$27,232,905</td>
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<td>$6,375,000</td>
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<td>Rail Spur to Industrial Park</td>
<td>Florida Midland</td>
<td>$4,500,000</td>
<td>$33,786,340</td>
<td>7.5</td>
<td>$2,250,000</td>
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<td>Close 5 Grade Crossings</td>
<td>FEC</td>
<td>$15,000,000</td>
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<td>Add New Siding</td>
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<td>Track Rehab on Industrial Lead</td>
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<td>Double Track 4 Miles</td>
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Policy Packages

**Example: Mid-Atlantic Rail Operations Program Format**

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<th>Policy Packages</th>
<th>Railroads</th>
<th>States</th>
<th>Trip Time</th>
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<th>Reliability</th>
<th>Market</th>
<th>Trip Time</th>
<th>Cost</th>
<th>Reliability</th>
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<th>State Funds</th>
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<th>Port Authority</th>
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</table>
Principles for a Rail Policy

- Public investment for public benefits
  - Well defined public benefits – costs consistent with benefits
  - Private sector pays fair share
  - Positioning in national programs to pay for national benefits
  - Invest to re-order priorities and change operating strategies

- Credit enhancement as a means to leverage private investment
  - Recognizes constraints on railroads return on investment and cost of capital

- Consideration of economic impacts in addition to public benefits

- Cost-effectiveness and multi-modal tradeoffs
Study Products

- **Technical memoranda** documenting methods and findings
- **Interim reports** supporting Commission policy deliberations
  - State of System
  - Preliminary Policy Options
- **Final products** reporting recommendations
  - Asset Management Plan
  - Analytical Plan
  - Investment Plan
  - Rail Operations Forum
Statewide Rail Capacity and System Needs Study
Tasks, Schedule, and Management

presented to
Washington State Transportation Commission

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January 17, 2005
Statewide Rail Capacity Study
Project Schedule

<table>
<thead>
<tr>
<th>Task</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
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<tr>
<td>1. Review Role of Rail in State, Regional and National Economy</td>
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<tr>
<td>1.1 Freight and Passenger Rail Systems</td>
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<td>1.2 Role of Rail in a Multimodal Transportation System</td>
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<td>2. Economic Growth, Freight Transportation Demand, and Supply Chains</td>
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<td>3. Rail Capacity Needs and Constraints</td>
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<td>3.1 Freight-Rail Capacity Needs and Constraints</td>
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<td>3.3 Passenger-Rail Capacity Needs and Constraints</td>
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<td>3.4 State Rail Investment Plans</td>
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<td>3.5 Preliminary List of Rail Capacity Improvement Projects</td>
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<td>4. Rail Operations: Strategies and Improvements</td>
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<td>5. Communications and Public Involvement</td>
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Continues to Apr 2007
## Statewide Rail Capacity Study

### Project Schedule (continued)

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<th>Task</th>
<th>Jan</th>
<th>Feb</th>
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<tr>
<td>6. National Initiatives and Funding Opportunities for WS Rail Program</td>
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<td>7. Rationale for WS Investment in Private Rail</td>
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<td>8. Policy and Investment Options</td>
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<td>9. State-Owned Rail Asset Management Plan</td>
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<td>10. Summary Recommendations and Implementation Plan</td>
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<td>Interim Reports (I), Draft Report (D), and Final Report (F)</td>
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Task 1 – Role of Rail in the State, Regional, and National Economy
Task 1.1 – Freight and Passenger Rail Systems

- Describe status of Washington State’s freight- and passenger-rail systems
  - Class I, short-line, inter-city passenger, and commuter rail lines and terminals
  - Ownership and operating rights, freight and passenger rail services and train volumes, plans of major railroads
  - Current government investment, financial trends, status of public-private initiatives, recent legislation

- CS with Global Insight and HDR

- Tech memo describing supply of freight- and passenger-rail services
Task 1 – Role of Rail in the State, Regional, and National Economy

Task 1.2 – Role of Rail in a Multimodal System

- Describe roles, benefits, and costs of freight- and passenger-rail systems for the Washington State, regional, and national economies
  - Identify industries dependent on freight- and passenger-rail transportation; output value, employment, growth; market share by mode and industry sector, including volumes of traffic by tonnage and value
  - Identify transportation, social, economic, environmental impacts of rail system on communities

- CS with Global Insight

- Tech memo on demand for rail and rail’s impacts
Task 2 – Economic Growth, Freight Transportation Demand, and Supply Chains

Task 2.1 – Economic Growth and Freight Demand

- Describe growth trends and structural changes in the state, regional, and national economies that will determine future demand for freight transportation
  - Examine recent economic and trade forecasts for Washington State and Pacific Northwest
  - Bracket the most likely growth rates and freight forecasts
  - Assemble annual forecasts out 10 and 20 years, capturing the path of growth between 2005 and 2025

- Global Insight with CS

- Tech memo on demand for freight transportation to 2015 and 2025
Task 2 – Economic Growth, Freight Transportation Demand, and Supply Chains
Task 2.2 – Industry Logistics and Supply Chains

- Describe how industry logistics strategies and supply chain requirements shape the demand for freight-rail transportation services
  - Conduct ~50 interviews with shippers (e.g., importers, exporters, and domestic movers), third-party IMCs, and non-railroad-owning rail service providers
  - Conduct ~50 interviews with Class I railroads, short-lines, intermodal marketing companies (IMCs), and dray operators

- Starboard Alliance with Global Insight and CS

- Tech memo summarizing and mapping logistics strategies and supply chains requirements and constraints
Task 3 – Rail Capacity Needs and Constraints
Task 3.1 – Freight-Rail, Task 3.2 – Short-Line Rail, and Task 3.3 – Passenger-Rail

- Identify the institutional, operational, and infrastructure constraints to the efficient movement of freight and passengers over the Washington State rail system
  - Identify current and anticipated demand (CS with HDR)
  - Determine current and anticipated institutional, operational, and capacity constraints; conduct interviews to verify
  - Analyze impact of anticipated increases in freight and passenger train traffic on the identified congestion points

- HDR with Transit Safety Management and Willard Keeney

- Three tech memos summarizing institutional, operational, and infrastructure constraints
Task 3 – Rail Capacity Needs and Constraints
Task 3.4 – State Rail Investment Plans

- Review and update Washington State’s rail investment plans
  - Examine the current infrastructure investment plan and supporting model assumptions, including volume and capacity predictions for the Amtrak Cascade effort, etc.
  - Recommend options to revise and update the plan

- HDR with Transit Safety Management

- Updated state investment plan, inputs to study recommendations
Task 3 – Rail Capacity Needs and Constraints

Task 3.5 – Preliminary List of Rail Capacity Improvement Projects

Create preliminary list of rail capacity improvement projects as starting point for assembling and organizing options for 10- and 20-year staged strategic plans

- Develop from prior studies and existing plans (e.g., State Rail Plan) and consultations with other agencies planning public-private investment (e.g., FMSIB), the ports, the Washington Public Ports Association, and key stakeholders
- Sort by type, location, railroad, freight, passenger, jurisdiction, construction period, operational date, sponsor, potential investors, etc.

CS with team

Preliminary list of rail capacity improvement projects
Task 4 – Rail Operations: Strategies and Improvements

- Identify operation strategies and improvements to increase rail system capacity
  - Review the business models of the railroads, ports, and regional authorities
  - Determine current operating practices and plans
  - Explore operations strategies and capital investments

- HDR with Willard Keeney and Transit Safety Management

- Tech memo describing operating strategies and issues of the railroads, ports, and regional authorities, and preliminary list of operations improvements
Task 5 – Communications and Public Involvement

- Implement a stakeholder involvement and communications plan that will involve and engage key stakeholders
  - Stakeholder interviews and summaries of key findings
  - Facilitated regional listening sessions
  - Web posting and e-notices to stakeholders of updated web content, including an e-mail address for questions and comments, and
  - Transportation Commission Study Group workshops, with opportunities for stakeholder input (Technical Resource Panel)

Berk & Associates with CS
Task 6 – National Initiatives and Funding Opportunities for WS Rail Program

- Identify national initiatives and funding opportunities for Washington State rail improvement projects
  - Leverage ongoing work for the U.S. DOT, the U.S. Chamber of Commerce Transportation Finance Study, AASHTO Freight Bottom Line Campaign project

- CS with Global Insight and HDR

- Tech memo identifying national initiatives and funding opportunities
Task 7 – Rationale for WS Investment in Private Rail

- 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
  - Establish framework for organizing transportation and economic inputs, and assessing transportation, safety, security, health, environmental and economic impacts
  - Provide methodology and tool (e.g., the freight-rail investment calculator) for evaluating alternative policies and projects under constrained-budget scenarios

- CS with Global Insight, HDR, and Transit Safety Mgt.

- Tech memos on rationale and methodology
Task 8 – Policy and Investment Options

- Recommend policy and investment options to improve rail system capacity
  - 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
  - Identify packages of investment projects (institutional changes, new operations strategies, and infrastructure capacity improvements)
  - Analyze benefits and costs of several specific alternative investments as case studies

- CS with team

- Tech memo detailing policy options and project investment packages
Task 9 – State-Owned Rail Asset Management Plan

- Develop a rail asset management plan for rail rights-of-way, lines, and equipment owned by Washington State
  - Evaluate Washington’s existing rail passenger and freight programs, with particular attention to the short-line program
  - Compare Washington’s approach to that of other states
  - Develop a business-based asset management approach for State rail operation and investment, including vision, goals and strategies; asset management strategies; and strategies for financial sustainability

- CS and HDR

- Asset management plan
Task 10 – Summary Recommendations and Plans
Task 10.1 – Analytical Plan, Task 10.2 – Investment Plan, and Task 10.3 – Rail Operations Forum

- Report clear, comprehensive, and practical recommendations for consideration by the Transportation Commission, rail-system stakeholders, and Washington State communities
  - Analytical plan setting out a methodology for determining when public sector investment 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

CS and team
CS Team Organizational Chart

Washington State Transportation Commission
Project Manager

Stakeholders

Cambridge Systematics, Inc.
Lance Grenzeback
Principal-in-Charge

Michael Fischer, P.E.
Project Manager

Technical Advisor
Lance Neumann
President

Task 1. Role of Rail in Economy
J. Bryan* (GI)
P. Bingham (GI)
A. Aeppli (GI)
D. Hunt (CS)
H. Louch (CS)

Task 2. Supply Chain Analysis
M. Isbell* (SAC)
J. Bryan (GI)
H. Louch (CS)

Tasks 3 & 4. Status, Plans, & Needs of Passenger/Freight Rail & Rail Industry Participants Operating Practices
W. Short* (HDR)
B. Burgel (HDR)
T. White (TSM)
W. Keeney (WKA)
A. Meyers (CS)

Task 5. Communications & Public Involvement
B. Berk* (Berk)
H. Louch (CS)
D. Ahanotu (CS)

Task 6. Positioning in National/Regional Study Funding
A. Meyers* (CS)
D. Ahanotu (CS)
H. Louch (CS)

Tasks 7, 8 & 10. Rationale for State Role, Policy Development/Analysis, & Implementation Plan
L. Grenzeback* (CS)
D. Hunt (CS)
A. Meyers (CS)
H. Louch (CS)
D. Ahanotu (CS)
J. Bryan (GI)
A. Aeppli (GI)

Task 9. Rail Asset Management Plan
D. Hunt* (CS)
D. Ahanotu (CS)
M. Ford (HDR)
Statewide Rail Capacity and System Needs Study

presented to
Washington State Transportation Commission

presented by
Cambridge Systematics, Inc.
Berk & Associates, Inc.
Global Insight, Inc.
HDR, Inc.
Starboard Alliance Company
Transit Safety Management
Willard F. Keeney & Associates

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