



# Strategic Freight Transportation Analysis

## SFTA Full Scope of Work

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### Research Report # 1

December 2002

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## **SFTA Research Reports: Background and Purpose**

This is the first of a series of reports prepared from the Strategic Freight Transportation Analysis (SFTA) study. SFTA is a six year comprehensive research and implementation analysis that will provide information (data and direction) for local, state and national investments and decisions designed to achieve the goal of seamless transportation.

The overall SFTA scope includes the following goals and objectives:

- Improving knowledge about freight corridors.
- Assessing the operations of roadways, rail systems, ports and barges – freight choke points.
- Analyze modal cost structures and competitive mode shares.
- Assess potential economic development opportunities.
- Conduct case studies of public/private transportation costs.
- Evaluate the opportunity for public/private partnerships.

The five specific work tasks identified for SFTA are:

- Work Task 1 - Scoping of Full Project
- Work Task 2 - Statewide Origin and Destination Truck Survey
- Work Task 3 - Shortline Railroad Economic Analysis
- Work Task 4 - Strategic Resources Access Road Network (Critical State and Local Integrated Network)
- Work Task 5 - Adaptive Research Management

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## **DISCLAIMER**

The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Washington State Department of Transportation. This report does not constitute a standard, specification or regulation.

# SFTA Full Scope of Work

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# **SFTA Full Scope of Work**

## **PROBLEM STATEMENT**

A multimodal freight transportation system has been developing in the United States for the last century. In Washington this multimodal system currently consists of rail, barge, air, truck, and intermodal combinations.

Each of these modes contributes to moving products from origin to destination in response to either a competitive or economic advantage or where sufficient public/private incentives exist. The system developed initially out of economic need where there was a perceived private benefit for one or more of the modes. Subsequently, this system was augmented due to economic or social need where there was a perceived public benefit or responsibility.

The modes continue to contribute to the efficient movement of freight and support the economic vitality of the State of Washington. This efficiency and support is patently clear in Washington's pursuit of international trade and economic development activities. A substantive partner in these international efforts is a well-developed port system, which is strategically placed not only in Puget Sound and the coastal areas of the State of Washington, but along the Columbia/Snake River system and some off-river ports. Moreover, around the major urbanized areas throughout the state, the multimodal transportation system moves not only freight, but also people to and from these urban areas for work and leisure. It should be noted that the rural areas in Washington have their own unique needs for the movement of freight and people for economic reasons, and medical, recreational, and other social needs.

The efficiency of this multimodal system depends upon characteristics of each mode and the corresponding public/private support to maximize the total efficiency and benefits while ensuring that this system remains in place. There are several internal and external factors that are affecting the ability of the multimodal system to serve the economic and social needs of the region. Railroads are continuing their abandonment of rail lines and/or are engaged in the sale or lease of marginally profitable lines to newly formed regional short line railroads. The advent of the 286,000-pound rail car has dramatic implications for light density rural rail lines. The trucking industry is much more efficient now than it has been in the last three decades, but the road infrastructure is not adequate in many areas to support the increased axle weights and year-round use of the road. Further, the geometry of some roadways does not provide the appropriate widths and turning radii for trucks to safely operate.

In industrial/urban areas, near ports and within the larger urbanized areas of Washington, system deficiencies are creating problems of congestion, road deterioration, increased travel time, safety and energy concerns, air quality reductions, and perceived general degradation of the quality of life. Rural areas are becoming isolated due to their lack of access to urban areas because of rail abandonment, road deterioration, and seasonal road restrictions. Additionally, a current and continuing major factor that may impact this system is the Endangered Species Act and the Northwest Power Planning Act that could cause a drawdown of the Snake/Columbia River system, thereby affecting barge service. This situation can have the consequences of either requiring a shift to other more costly and congested surface transportation modes or a loss of

market opportunities for producers. The above prospective includes additional truck traffic moving on roads not adequate for such weights and volumes, and attendant safety and congestion increases when trucks mix with automobiles and commuter/school busses to an extent that has not been experienced before.

An important aspect of a balanced modal system is the competitive environment and the combination of private/public support of continuing operations of the various modes. This competition (and complementarities in some cases) has resulted in transport rates being constrained close to costs of operation, improved efficiencies and innovation.

Availability of an adequate multimodal transportation system and the corresponding infrastructure allows the collection, marketing, and distribution of domestic products to national or international points of destination, as well as the domestic movement of consumer items and people.

In sum, the multimodal transportation system is fundamentally necessary to allow and support Washington's import/export endeavors. This is accomplished in a manner that links transportation revenues obtained from the operations to the costs of maintaining the infrastructure for public/private operations. There is also general social agreement that people should have reasonably unrestricted access to medical, social, etc., services. Access to these services is considered a social responsibility.

Recent changes in intermodal technologies include rail reload facilities, double stack trains; RoadRailers; intermodal terminals; rail-barge movements, grain trains, truck-barge movements; and a significant part of the system that allows transshipping of producer products to vessels bound for export. Energy prices, air quality concerns and efforts to preserve endangered species are causing changes in not only the competitive advantages among modes, but the ability to continue current operating practices that are often complementary among the modes.

An overwhelming need exists to accurately determine how these impacts will affect the multimodal transportation system, the infrastructure, and the state's desired rural economic development. In the state's drive for "one Washington," questions need to be answered. What are the specific commodity flow characteristics in the corridors? What are the specific constraints to movements in connective corridors? What strengths, shortfalls, economic impacts, and economic development opportunities are in place or lacking due to these desired movements? What is the true cost of transport on both public and private support systems for what is currently occurring? What can be expected into the future? How can the potential benefits of this integrated multimodal transportation system be maximized for the future demands that will be placed upon the system? These questions must be answered now so that Washington can formulate plans to provide for the efficient movement of people and goods into the future.

Much of the productivity of the transportation system serving the national economy in moving freight has come about because of competition among the modes and government policies. However, future productivity may rely upon developing, utilizing and managing the complementary relationships between and among these modes. This is particularly true in

Washington. A review of the transportation system is necessary to ensure provision of the critical needs for the citizens that are both habitants of the State and the eventual shippers/receivers of the commodities in both the national and international markets.

It is well known that each of the modes has different cost functions and different combinations of public and private funding. This oftentimes changes the comparative advantages for some modes and for alternative movement characteristics. It is clear that the transportation system should be addressed in a holistic, complementary, and coordinated relationship to work well in a competitive environment.

## **BACKGROUND**

Washington has long been recognized as a region that has significant freight movement requirements due to agricultural and resource related activities, increased port activities on the Snake/Columbia River system, and the growing congestion concerns on both sides of the Cascade mountain range. The multimodal transportation system serving Washington and, in general, the United States has generated many benefits for the citizens of the country. But, railroads continue to abandon light density lines. Infrastructure to support truck movements continues to deteriorate or to be inadequate in the face of new and increased traffic flows and corresponding congestion impacts. New choke points arise as new freight flows intermingle with increasing passenger car traffic levels, causing increases in travel times and cost for both the freight carrier and the passenger car.

Successful earlier research projects are now also reason for concern. Databases do become outdated and decisions based on them could become, at the best, misdirected, at the worst, wrong. An earlier statewide origin and destination study<sup>1</sup>, the first of its type done in the nation, is in continual use by planners and policy makers, but the system underlying the traffic flows is undergoing significant and dramatic changes. Many arising issues (changing NAFTA flows, increased border crossings and associated congestion, larger rail cars, e-commerce, changing Canadian transportation investments, economic development needs, etc.) require updated data, new analysis, and most likely will redirect the focus of US and Washington investments to achieve desired results. New and increased NAFTA freight flows and inter-country flows are arising and coming through border ports in increasing volumes. However, accurate, current data on these flows are unavailable. The existing data need badly to be updated and new trend analyses undertaken in a full, new freight analysis.

Increased congestion in major transportation corridors are causing delays and traffic shifts. New maritime ship sizes cause instantaneous congestion at our ports and the highways serving those ports. Ports are using long-term leases to tie carriers to ports. New larger rail cars put stress and a competitive disadvantage on the short line railroads that have served much of agriculture and forest products industries in the State for years. The support for economic development in all

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<sup>1</sup> The Eastern Washington Intermodal Transportation Study (EWITS) was a six year study funded jointly by Washington State and the Federal Intermodal Surface Transportation Efficiency Act of 1991 which generated several important databases, analyses and twenty-six published transportation reports.

parts of the State, not just the urban areas, means new investments are needed and information to guide such investments is essential.

The rail transportation system is highly utilized on the main line corridors that principally extend through the Tri-Cities to Spokane or Portland and Spokane to Seattle. However, some branch feeder lines in Eastern Washington are continuing to be abandoned. When a branch line moves towards abandonment, the choice is to shift transport activities to trucks that will haul to either reload facilities on the rail main lines, to the ports on the Snake/Columbia River system, or to the major utilization centers (primarily the Tri-Cities and Spokane). Studies have shown that the rationalization of one mode of transportation oftentimes can have deleterious impacts on other modes. For example, rail abandonment require commodities to move by truck, which often results in heavily loaded trucks on both State and local roadways that were not built to accommodate such weights and/or create congestion and volume concerns, especially on our National Highway System.

Multimodal planning policy analyses are now significantly influenced by changes in the nature, and intensity of the transport efficiency and competition among modes. Past studies identified in the literature document the basis of historical efficiencies and resultant benefits of a multimodal integrated transportation system. This research effort will build on rather than duplicate that information, incorporating new technologies and infrastructure needs, as appropriate, as well as provide a forecast of the future demands that will be placed upon the transportation system, and the resultant investment needs. The original studies provided a wealth of information, but the system is dynamic. Only minimal current information that identifies traffic corridors, the adequacy of the overall infrastructure, and the capabilities of various modes to transport the people and commodities in those corridors are relevant.

There are several important considerations in a multimodal research investigation of this type, dealing with the linkages between components. During the initial investigation, the inventory of research will employ such past information as the earlier EWITS reports, Washington State Public Ports Studies, the Washington State Freight Rail Plan Updates, the Transportation Analyses Group's Study of Cost Responsibility (incorporates haul road analyses, etc.), Columbia/Snake River Drawdown analyses, International Mobility Transportation Corridor (IMTC), etc.

There may be advantages in examining potential new routes if they are economically superior, enhance people and goods movements, do not cause adverse or unmitigatable impacts to the environment (e.g. wetlands), and are affordable. Information such as truck density, types, volumes, and commodity types need to be obtained with accuracy. This may be accomplished through various surveys and interviews. It is imperative that commodity flows along several corridors be accurately documented. There are also burgeoning questions relative to transportation of import/export materials by mode and route. With the location of new or proposed energy facilities, the data driven results from these analyses are critical.

Environmental considerations will affect the existing and future transportation system. Related issues include safety, constraints that may affect economic development, economic competition, the locations of existing and potential reload facilities, incubator facilities, industrial parks, the

impacts on rural communities due to transportation improvements and connectivity or lack thereof, etc.

Technology advances and improvements such as Longer Combination Vehicles (LCVs), centralized rail track control, double-stack trains, just-in-time transport, 286,000-pound rail cars, and energy efficiency will also impact the ability of modes as they compete and connect to each other.

One of the important issues is to identify true costs for both the public and private alternatives. This will allow the fiscal reality of proposed improvements to be put in perspective by reviewing what exists and what in the future needs to be done.

## **OBJECTIVES**

The overall purpose of the Strategic Freight Transportation Analysis (SFTA) is to strategically maximize the efficiencies and benefits available from the multimodal transportation system in Washington in moving freight.

The objectives are to:

1. Identify freight corridors by vehicle volume, type and commodity: past, present and prospective.
2. Assess the operation of selected portions of ports, roadways, rail systems, and barges of the current multimodal transportation system, evaluating infrastructure adequacy, and identifying deficiencies and investment needs.
3. Conduct discrete analyses of mode cost structure and competitive mode shares as ownership and government policies are changed.
4. Assess the potential for economic development opportunities as it pertains to supporting the overall multimodal transportation system.
5. Examine case studies of private and public costs of transportation by individual modes to identify true costs and establish the baseline of private and public contributions.
6. Research current public/private investments and the opportunities for public/private partnership investments in the infrastructure requirements of the various modes to stimulate and support the rural economic development throughout the State.

## **BENEFITS**

The overall benefit of this research is that decision makers in formulating policy for the multimodal transportation system will use the analyses, recommendations and data collected. This allows strategic, coordinated investment decisions, enhanced by mutual governmental agency/private understanding of the needs, choices and relationships required for an economically sustainable freight mobility sector.

The research will identify benefits to the State, identify current and future needs, and suggest recommended improvements to the multimodal transportation system to provide enhanced commodity movement. A major outcome will be information for investment decisions for both private and public entities. The transportation processes of the Regional Transportation Planning

Organizations, Metropolitan Planning Organizations, legislators, cities, counties, State and federal agencies will benefit from the information obtained in this study. Private firms will benefit from the information and will be able to improve their marketing capabilities and potentially enhanced access to international markets. Decision makers will be provided the information to make or frame better policies for investments and in assessing regulatory issues. Economic Development Councils and Districts will find the information obtained useful in pursuing enhanced economic development activities and opportunities. The benefits from previous research findings will be enhanced and multiplied by these updates.

Benefits will flow from the results of the research and the implementation of recommendations. The information on freight movements, benefits, and needs, will allow decision makers to understand these functions and their relationships with the overall transportation system and identify the inherent investments that are needed. The data on potential corridor traffic patterns will also guide road, railroad, and barge investment decisions so as to minimize capital costs while maximizing the relative benefits from each mode. The research results will determine service characteristics, economic feasibility, technological possibilities, important elements of intermodal locations, and required improvements; benefits generated and the markets where those benefits arise. The benefit to economic development, especially in rural areas, can be direct and significant.

These findings will incorporate appropriate suggestions from firms, marketers, and public entities as to how best to utilize technology and make improvements, and will offer decision makers and government officials the framework for formulating policy and identifying infrastructure support necessary to maximize the returns from these recommended investments. Issues scoped for this project are couched as an interdependent series of research inquiries. This deliberate scoping will allow the analyses, the new and updated databases and the expertise of the new SFTA research team to respond to, and investigate, emerging issues raised by policymakers and implementers.

Some of the potential results include: Answering the question of improvement needs for highway facilities that connect Canadian freight movements to and through the urban centers within Washington. It will answer questions about the improvement needs of existing and potential new highway routes that may be necessary to serve freight movements between eastern and western Washington as economically as possible. The research will further explore the question of rail preservation for the public good by reviewing selected lines and analyzing rail business possibilities and necessary financial investments. An overall assessment will yield costs and economic development opportunities or constraints for both urban and rural communities, impacts on corresponding infrastructure and operational costs, safety, future right of way/corridor needs, preservation, and other issues relevant to economic vitality.

Overall, this comprehensive research analysis should generate a wealth of new information for policy analyses dealing with traffic diversion from one mode to another, diversion affected by government policies and private investments, and diversions affected by new environmental or policy requirements. It will develop an accurate commodity flow database that will allow tracking of both trucking activities and specific commodities utilizing the transportation

corridors identified. This information will aid policymakers in the State of Washington, as well as allow comparisons of the individual modes as they compete in this changing market.

## **IMPLEMENTATION**

Findings from this research will be summarized in a final report. The report will provide discrete information on infrastructural investment needs of the various modes considered, the public/private investment needs, cost sensitivities, different market conditions, and the potential future shape and service of the transportation system. Original databases will be used and updated to the extent practical to develop trend analyses. The information will be developed using an Advisory Committee consisting of regional transportation planning authorities and economic development agencies in the area, metropolitan planning organizations, port members, city and county officials, Freight Mobility Strategic Investment Board (FMSIB), Office of Trade and Economic Development (OTED), Canadian Ministry of Transportation (MOTH), IMTC, private sector and members of the Washington Department of Transportation. The many contacts made, and individual users of previous research findings, will serve as a network to continue implementation. Agencies in Washington such as RTPOs, MPOs, cities, counties, ports, and WSDOT will work with the Principal Investigator. Implementation will occur as planners and state and local organizations assess and implement investment decisions and use the information developed in this research; some of these very planners and organizations will be part of the advisory committee. The results will provide input into future transportation system update plans. Seminars, workshops, reports/manuals, and scholarly publications will also aid in implementing the research results.

## **WORK PLAN**

The overall Strategic Freight Transportation Analysis is designed for a total of 72 months (see the appendix to this proposal for individual initiatives and budget estimates). The first phase, developed under this proposal, deals with the initial 24 months of that six-year period. The various components of the research in this Phase I will be treated as sub-projects that will be integrated and systematically combined into final conclusions and recommendations. It is necessary and useful that some subtasks be done concurrently. The task sequencing and conceptual outline detail will reflect an existing base of data series and findings, augmented by the current background and conceptual needs of the different segments of the research, followed by renewed field accumulated data, accompanied by analysis and reporting of results.

The research structure of Phase I will focus on three major inquiries and data exposition, as detailed below. A Steering Committee, comprised of representatives of FMSIB, Ports, counties, cities, WSDOT and OTED, will advise and monitor the Principal Investigator and the research team on a monthly or as needed basis. A broad based Advisory Committee comprised of selected members and new, emerging stakeholders will provide field-testing of research results, direction and suggest emerging issues. Adaptive research management (allowing the research effort to explore exigent issues), innovative in earlier research efforts, will be continued in SFTA and will utilize some of the funding to respond to those emerging issue areas, based on advice and direction received from the Steering and Advisory Committees.

The initial task will be a full scoping of the work effort. Task sequencing in subsequent work activities, and a tentative time frame are as follows. Tasks to be accomplished under current funding are indicated by the shading. Those not shaded require additional funding.

#### Work Task 1 – Scoping of Full Project for the next 72 months

- This will be initiated when this proposal has been submitted and accepted, September 1, 2001.
- The draft-scoping document is to be sent out for review January 15, 2002.
- The Steering and Advisory Committees will meet and review the scoping document from January to February 2002.

#### Work Task 2 – Statewide Origin and Destination-Truck Survey

- The major data effort will be another origin and destination-truck survey, stopping and interviewing truckers at around 30 locations in the state. Original design is to include such surveys to be held on a 24-hour basis, or as locations allow, four separate times during the year: Winter, Spring, Summer and Fall. Collection points to reflect local and regional movements will be sought as locations.
- 2.1 Undertake and determine research design, establish contacts, conduct traffic counts, create sample frame, solicit interviewers and train all necessary staff. This will occur in January to March 2002.
  - 2.2 The Spring survey of trucks would take place April 2002, taking about three weeks to complete. Data input would be initiated upon completion of the first survey.
  - 2.3 The Summer survey of trucks would take place July 2002, taking about three weeks to complete. Data input would continue.
  - 2.4 The Fall survey would be initiated October 2002. The same characteristics and sample design as previous surveys would hold.
  - 2.5 The Winter survey would be undertaken January 2003. These data would then be added to the other three data series so an annual analysis could be undertaken.
  - 2.6 An updated and restructured transportation model for commodities and statewide predictions will be developed. Connection points where projects and investments could affect flow will be identified. The combination and trend analyses of earlier compiled data series and the new SAFTA data series will be combined into multiple policy analyses, as useful and desired as part of adaptive research management. This will be conducted under Phase II, years three and four, of the six-year project, subject to availability of funds.

#### Work Task 3 – Short Line Railroad Economic Analysis

- This work will focus on two and six year capital and operating analyses for short line railroads in western and eastern Washington. The overall product will consist of capital and operational investment needs correlated with commodities and carloads (revenues), such as forest products and containers on the west side and grain car capacity on the east side of the state. Further attention in the analysis will be paid to augmentation of carloads and revenue, quality of service to e.g. Kent Valley manufacturers, dispatchers, businesses, etc., impact on or savings to highways, additional intermodal facilities, private/public ownership, etc, e.g. the proposed 100-car unit train facility at Ritzville. Safety issues amenable to public and/or private

partnerships will be identified. The role chosen by the Class I and Short Line railroads (pulling function versus car ownership) will also be examined. This research effort, using several case studies of selected line segments, would be started January 2002 and completed in September 2002. Additional short line research to accomplish this total task will be dependent upon future funds.

#### Work Task 4 – Strategic Resources Access Road Network

- 4.1 This road access network, chosen to reflect weight restriction impacts and origin/destination of resource commodities, will be developed sequentially, comprising a full Geographical Information System (GIS) format in its final multi-layered display.
  - The initial subtask will be surveys of the grain and forest products movements throughout the state. These surveys will develop current data on volumes, seasonality, specific road routes, weight restrictions and timing, modal choice, rates, etc. They will serve both to identify the road access network, on statewide County and State highways, critical to these resource commodities and they will provide the basis for very useful trends analyses. The grain survey will commence January 2002 and finish June 2002. The survey of forest mills and manufacturing plants will be initiated March 2002, also finishing December 2002.
- 4.2 The other statewide resource access network commodities of interest are the mining industry, minerals and rock and also agricultural processing products such as wine. The mining survey will be initiated March 2002, being completed in year three of this six-year full project as funding becomes available. The fourth survey will be multifaceted, covering fruit, wine/grapes, vegetable, hay and livestock products (beef and dairy) throughout the state. This subtask will be initiated in June 2003, again being completed in the early part of year three of the six-year project, pending funding. Subsequent traffic flow analyses could deal with retail, wholesale, manufacturing, and technology based industries, with increased funding.
- 4.3 The creation of the full GIS analysis of the multi-commodity Strategic Resource Access Road Network will be an ongoing process. As each commodity and product survey and analysis is completed, the resultant databases and product characteristics will be merged into the GIS macro model. The results will identify principal county freight corridors. This full analysis will be completed in year three, pending availability of funding.

The above work tasks will be conducted by the use of research associates, graduate students, and subcontractors/consultants who have specific skills and knowledge in the respective areas. The numerical output will be two massive databases, developed from a series of eight independent, but interrelated surveys of firms and personnel in the state. The three initial areas of origin and destination, strategic resource access road networks and short line railroad, economic, capital and operating analysis will allow multiple policy issues to be examined. In each case earlier work will be used to enrich and inform the current analyses.

In sum, the initial work task will be a complete scoping of Phase I of the project, and filling in the outline of Phases II and III, while working with relevant authorities, agencies and practitioners. This could entail special case studies to be used to focus on specific elements within the overall freight corridor analysis. These tasks will serve as the building blocks to the final report(s). The adaptive research management component will allow responses to urban

circulation issues and firm changes, e.g. Boeing, Costco, grocery chains, warehousing, etc. These analyses will be local process based rather than a state level analytical piece.

**STAFFING PLAN**

Dr. Ken L. Casavant, professor of Agricultural Economics, will lead and accomplish this work as Principal Investigator. He has broad experience in transportation economics, marketing, and survey techniques, all elements critical to this research. He was the Principal Investigator and Project Director on several previous research efforts aimed at gathering information similar to that being derived in this research. He has worked closely and productively on previous WSDOT contracts, with WSDOT personnel, and will do so on this study, as detailed in the Work Plan. Dr. Eric Jessup, assistant research professor of Agricultural Economics, has been recruited and hired as Project Director after spending four years with International Risk Management at American Express. Five graduate students will be used on several of the sub-projects. They will be supplemented as needed by temporary employees. A secretary/clerical person will serve as administrative assistant.

Subcontracts will be issued as necessary to public and private agencies or individuals currently working in the assigned area to achieve the project goals. In particular, the origin and destination study is expected to utilize 250-300 temporary employees as interviewers.

**LEVEL OF EFFORT**

The expected percentage of effort by section is presented in Table 1 for Dr. Casavant, the Research Associate, the Subcontracts and students.

**Table 1. Level of Effort (Percentages) over the two years**

Staff	Work Task				Total
	I	II	III	IV	
Ken Casavant	20	25	25	30	100
Eric Jessup	10	30	20	40	100
Graduate Students	0	40	10	50	100
Subcontracts	0	30	60	20	100

**FACILITIES AVAILABLE**

The offices and facilities of the Department of Agricultural Economics at Washington State University will be available for the on-campus phase of this study. The normal support facilities of Washington State University, such as telephone, FAX, purchasing, central stores, motor pool, trade shops, agricultural research stations, etc., will be available for this project. Offices and working areas will be provided for Eric Jessup and all graduate students assigned to the project. These general facilities have proven more than adequate in previous contracts between WSU and WSDOT and will be supplemented as needed for this project. Mainframe computers are available in the department, if needed, to supplement personal computers purchased for data compilation, analysis and report writing.

**WORK TIME SCHEDULE**

**Figure 1. Work Time Schedule**

	YEAR I (2002-2003) QUARTER				YEAR II (2003-2004) QUARTER				Phase II (2004-2006) <sup>2</sup>	Phase III (2006-2009)	
	1	2	3	4	1	2	3	4			
Work Task											
1	■										
2											
2.1	■										
2.2		■									
2.3			■								
2.4				■							
2.5					■						
2.6									■	■	
3	■	■	■								
4											
4.1	■	■	■	■							
4.2						■	■	■	■		
4.3							■	■	■	■	■

<sup>2</sup> For a full description of Phase II and III initiative and budget estimates, see appendix

## **APPENDIX**

### **Study Initiatives and Budget Estimates Over the Six-Year Project**

#### **1. Trade and Traffic Flows**

A major concern is accurate projections of the trade and traffic patterns in the State. What do the current changes in volume mean for future investment needs? What corridor improvements to handle new NAFTA freight movements will allow system wide improvements and not just move the choke points to another section of the transportation system? This initiative (task) will include a new statewide truck origin and destination study, allowing a comparison of the original 1994 O & D results; the partially updated 1997 O & D results, and identify trends and changes. Other major elements will be grain flow and forest product studies, in conjunction with the Washington Wheat Commission and Forest Products Association; border crossing and changes in Canadian traffic patterns, in conjunction with the Ministry of Transportation and Highways, British Columbia; a broad inventory of new development sites in the State that may generate new traffic levels; and investment strategies to be proactive to such existing or future changes.

#### **2. Freight Corridor Identification**

There are several efforts on many fronts that are attempting to identify and designate freight corridors. The efforts of the County Road Administration Board (CRAB), the Washington State Department of Transportation (WSDOT), the Freight and Goods Transportation System (FGTS), etc. are all directed towards this mission. Issues of connectivity, jurisdictional responsibility, gaps, capacity, choke points, needs, utilization, etc. must be determined on a statewide basis. In sum, there must be a single repository for this information to avoid duplication, and to ensure that the freight transportation system is designated for the overall economic good of the state.

### **3. Strategic Resource Access Road Network**

Washington State has a varied climate. In many areas the freeze-thaw cycle caused by the temperature differential between seasons will cause a softening of the sub-surface conditions under many of the area roadways, thereby reducing their capability to accommodate a legally loaded truck, and causing changes in truck movements. When this condition occurs the responsible jurisdiction weight restricts the roadway for a period of time. Unfortunately, the weight-restricted roadways are often located in the areas where agricultural and forest products producers are attempting to ship their respective commodities to market. This task would delineate potential freight routes (road and rail) with the existing railroads in-place and with some prospective rail abandonments. The effort would also take into account the seasonality of movements of the commodities, investment requirements, contribution to the overall regional and state economic support, and identify potential partnership efforts among the federal, state, county, city, and private entities.

### **4. Update and Verify Existing and New Databases**

This is a critical issue. The previous research models were developed and used beginning in 1994. The data within the model must be reviewed and appropriately modified with current information. This model utilizing a Generalized Algebraic Modeling System coupled with a Geographic Information System was indispensable in allowing a complete analysis of mode shifts, routes, volumes, etc. The data is continuing to be used, but due to its age may not be accurately reflecting what is now occurring in terms of freight movement. In addition, new data and systems will be produced with this updated SFTA that also must be managed.

### **5. Short line Railroad Issues**

Washington State has lost over 35 percent of its active miles of rail line since 1970. A majority of this loss has occurred in the agricultural and forest products production areas of the state, leaving these industries with the choice of switching to an alternate mode or going out of business. We must determine the preservation needs, balanced with the business economic viability of these rail locations, through a benefit cost analysis, including a competitive climate analysis across modes. This effort must analyze the potential for increased road damage with the abandonment of existing rail service, alternatives for shipping the product, and the magnitude of the investment (public/private) required to allow the specific facility to continue business operations.

### **6. Adaptive Research Management**

The technique of Adaptive Research Management was implemented in earlier work. This technique will again give SFTA the ability to react in a timely fashion to emerging political and economic issues in our changing freight mobility environment. The following reflects some selected potential issue areas that could be substituted or inserted into the SFTA as the need arises. These issues were developed in the surveys and interviews of this scoping. The additional budget proposed below would allow that adaptive, responsive work.

- A. Relationship to telecommunications (rural vs. urban)
- B. Transportation system statewide; national and international connectivity
- C. Freight Rail – existing use or loss of short line railroads
- D. Truck weight harmonization required under NAFTA
- E. Water transportation – impacts to firms if there is a drawdown and strategies for investments
- F. Port access and capacity – landside transportation needs – through put capacity
- G. Potato movements from well irrigation areas – the Creston potato haul
- H. Air freight transportation, performance and needs
- I. Compressed hay bale movements by container
- J. Fruit, vegetable and wine movements and emerging corn movements
- K. Cominco-American mine re-activated in Metaline Falls
- L. Increasing British Columbia interest in 24 hour border crossings and investments

This effort may involve workshops and newsletters to provide the opportunities for business to bring in their freight issues and concerns and discuss them.