CHAPTER ONE
Definition of Feasibility and Evaluation Approach

INTRODUCTION

The purpose of this chapter is to provide an overall framework for the process of evaluating the feasibility of the Washington Commerce Corridor. As such, this chapter outlines the basic parameters for determining feasibility as well as the overall process to determine feasibility.

The Washington Commerce Corridor

The Washington Commerce Corridor (WCC) conceived as a North-South corridor, that might be an alternative route to Interstate-5 that facilitates the movement of freight, goods, people, and utilities. Over the years, there has been talk of the need for additional through capacity, perhaps in a separate corridor, as well as redundancy, safety and security. The corridor starts in the vicinity of Lewis County and extends northerly to the vicinity of the Canadian border and contains Interstate 5, the mainline railroads, and major intercity pipeline facilities, all of which operate on separate rights-of-way but roughly in the vicinity of Interstate 5. It runs east of the Seattle/Everett/Tacoma metropolitan area, and serves intercity, metropolitan, and local transportation demands. As congestion on these facilities has grown due to metropolitan traffic, the ability to efficiently move passengers and freight through the metropolitan areas has eroded.

The new corridor studied was situated east of Interstate-405 and west of the Cascade Mountains. The corridor could include the ability to carry long-haul freight and passenger auto travel as well as provide for freight rail, passenger rail, public utilities and other facilities which can be incorporated to maximize use of the corridor.

This Feasibility Study

This study sought to address the issue of congestion along Western Washington's major transportation corridor for the movement of intercity freight and passenger travel, as well as utilities distribution. It was conducted under the direction of the Washington State Department of Transportation (WSDOT). A consultant team, led by Wilbur Smith Associates (WSA), provided the specialty skills concerning transportation planning, engineering, trade, commerce, freight logistics, economic analysis, financial feasibility, revenue enhancement opportunities, environmental issues, community impacts, public/private initiatives and corridor issues and realities required for this study. In addition, the WSA Team worked closely with a Project Steering Committee and Project Advisory Board composed of WSDOT staff, legislators, local jurisdiction representatives and participants representing pipeline, truck, rail and other utility interests. These committees provided project overview, input on evaluation criteria, needed data and information, oversight of the screening process and coordination of document review and approval. The study was completed in January 2005.

TWO TYPES OF FEASIBILITY

In pursuing this effort at determining feasibility, this study looked at two overall types of feasibility underscored by two fundamental questions;

- Is there sufficient demand for the corridor? And;
- Can it be built?

This Chapter outlines the definition of feasibility under these two categories. Within each of these two broad questions, a variety of aspects were evaluated that relate to the core questions, and provided a framework for determining feasibility.

IS THERE SUFFICIENT DEMAND?

In evaluating the demand for the corridor, focus was on the demand for traffic along this corridor for transportation as well as for utilities. In terms of transportation demand, focus was on passenger and freight transportation, specifically traffic components that have a commercial value. In terms of utilities the main focus was on petroleum (pipeline) including natural gas, and mainline power and telecoms distribution. The purpose of evaluating the demand for transportation and utilities along this corridor was to determine whether there is sufficient value that can be captured as revenue towards funding the development of the corridor.

Categories of Traffic

Traffic is defined as goods and services that move along a dedicated right-of-way along the general I-5 corridor. These include:

- Transportation
  - Freight
  - Passengers

- Utilities
  - Petroleum/natural gas
  - Power
  - Telecommunications

These forms of traffic typically move along/within a facility constructed, operated and maintained within a dedicated right-of-way. These rights-of-way are typically compatible and often run along common alignments, or along adjacent easements or even share easements. Transportation rights-of-way and facilities are commonly publicly owned while the rights-of-way for utilities are more often privately owned.

Focus on Through Traffic Demand

The overall purpose of the WCC is to serve as a bypass and alternate to I-5, including existing pipeline, power rail and utility corridors along the overall I-5 corridor, and therefore its function would be as a through or systems corridor. The analysis of demand focused specifically on

identifying through traffic. The study identified the major centers/regions that serve as attractors and generators of through traffic, and estimated the level of traffic to/from these regions with a propensity to use this corridor.

Definition of Regions

This corridor will serve as a connection between Canada and Oregon as well as a connection to the major population and employment centers along the corridor. In evaluating demand for the corridor, the consultants focused on interregional traffic - traffic moving between major centers at either end as well as major centers along the corridor. The study did not account for intraregional traffic.

The following general regional definitions were proposed:

- Canada/Alaska (CN/AK);
- Oregon/California/Mexico (OR/CA/MX);
- Northern Puget Sound (NPS);
- Central Puget Sound (CPS);
- SW Washington, and (SWW);
- Rest of Washington (ROW).

Determination of a Feasible Level of Demand

In order to make a decision on the feasibility of the corridor from a demand standpoint, a threshold for the feasible level of demand was defined for each of the modal components. The determination of a feasible level of demand was based upon three fundamental factors which must exist:

1. Future demand exceeds capacity along the existing corridor.
2. High share of through traffic (greater than 30%).
3. Volume of through traffic is greater than minimum design volume for a new major corridor.

The study used industry accepted measures within each modal component, where they exist. Where these did not exist, the study used feedback from industry leaders to define the threshold for the feasible level of demand. The determination of feasibility will be based on the degree to which the estimated demand meet the three criteria listed above.

How will the Results Help?

The results of the demand analysis provided a great deal of valuable information to support the feasibility decision process.

Modal Components – The demand analysis provided insight into which modal components should be considered as part of the study. This is important especially in helping define the

characteristics of the corridor. Defining the characteristics helps define the design standards, costs, etc. of the corridor.

Timing and Phasing - The timing for when each of the respective modal components would reach feasibility (if feasible) provided a basis for defining the development stages for each of the respective modal components.

Potential for Value/Commerce – The overall drive for this corridor is that it be largely a private or commercial corridor. In other words, the owners of the corridor, regardless of mode (rail, pipeline, utilities, highway, etc.), will likely fund it's development and operation with revenue generated from its users. The revenue potential from the corridor is largely a function of the commerce application or value of goods and services shipped along the corridor. The greater the value the greater the likely revenue potential. The results from the demand analysis will provide insight into the revenue potential from the corridor.

These factors taken as a whole provided valuable feedback into determining the feasibility of the corridor. This information provided feedback into what the corridor should look like, how it should be developed and how it should be phased.

Strategic Demand Considerations

Demand feasibility hinges on whether there is/would be a sufficient quantity of demand. However, "need" may be due to factors that could determine feasibility other than quantity demanded. For example, the "demand" for pipelines may be due to safety considerations related to the current location of pipelines within urban areas; the "demand" for transmission lines may be due to reliability and redundancy considerations in light of the recent East Coast and Midwest blackout. Determination of this type of demand was based in part on direct feedback from the respective industries.

CAN THE CORRIDOR BE BUILT?

In addition to determining whether there is sufficient demand for a through corridor it is important to ask whether or not the corridor can actually be built. In terms of defining whether it can be built, several issues must be taken into consideration including the cost, the impact on the community, environmental constraints, the permitting process, legal and institutional barriers, constructability, the Growth Management Act (GMA) and other issues. Therefore the consultants constructed the evaluation of feasibility from this perspective (can it be built?) around six key criteria;

- Will the private sector participate?
- Will it cost too much to develop?
- Is the corridor constructible?
- Are the community impacts/GMA too significant?
- Are the environmental constraints/permitting too significant?
- What are the legal/legislative barriers?

Will the private sector participate?

The genesis of this study was legislation put forth by the Washington State Legislature requiring the evaluation of the WCC in determining its feasibility based on an evaluation of the willingness and ability of the private sector to build and operate this proposed corridor. In the true spirit of this legislation, definition of feasibility hinges almost entirely on the question of whether or not the private sector is willing to participate and assume 100% of the risk of this proposed corridor. This is literally a "yes or no" question, with very little latitude in between.

However, based on early evaluation as well as feedback from the steering committee there exist today several barriers that stand in the way of feasibility based on this strictest definition of feasibility. Examples of these barriers include environmental permitting as well as environmental constraints, growth management restrictions along the corridor as well as legal and legislative barriers. The uncertainty surrounding these barriers, even if they were to be overcome in their current form, is enough to quell any significant demand from the private sector.

Therefore, the definition of feasibility under these criteria (will the private sector participate) was broadened for the purpose of this study. The study determined the level to which the private sector will participate and feasibility will depend upon the degree to which the private sector will participate. If the private sector is anticipated to participate in a dominant role then feasibility is likely to be considered as high. If the private sector's anticipated role is minor then feasibility will likely be deemed as low or minimal.

In evaluating whether or not the private sector will participate in a potential corridor like the WCC it was important to look at specific components of the corridor development process to determine levels of interest. For example, what is the willingness of the private sector to invest in a corridor permitting process, or right-of-way acquisition process. Is the private sector more likely to participate in the design engineering and construction of the corridor, or instead in the operation and maintenance of the corridor. Therefore in an effort to adequately answer this question (will

the private sector participate?), the consultants looked at several aspects of the project development process.

Environmental Permitting/Legal Constraints – As part of our evaluation of this aspect we will determine the level of interest by the private sector from two perspectives. First, is there the likelihood of significant private sector involvement with the current level of permitting and legal obstacles. In others words, if all other things are not of concern (cost, etc), will the private sector risk moving forward and spending millions on the initial phases of the corridor project in the context of the currently mandated sets of local, state and Federal environmental and community permitting procedures. Second, we will determine the level of private sector interest in funding this aspect of the project development process.

Experience to date suggests that the uncertainty surrounding the current permitting process (cost, duration, multiple levels of decision makers with varying interpretations, and the active environmental community in the Northwest) presents a major obstacle for private sector investment. Private money tends to flow toward a financially viable project only once the risk surrounding the environmental process is eliminated. The end result of this evaluation process was a determination of whether the current environmental process is conducive to the private sector risking their capital, as well as potential approaches that may encourage private interest in this type of corridor in advance of the permitting process.

Right-of-Way - The right-of-way acquisition process for this corridor is likely to be complex given the interest of involving a multiple range of modes (rail, pipeline, utilities, highway, etc.) into a single corridor. The complexity stems from a variety of factors including the development time frame for these different modes. Some modes may have a shorter development time frame (10-20 years) while others may have a longer term development time frame (30 to 50 years). However, in order to preserve the overall right-of-way for the corridor it would require an entity to purchase or invest in the corridor in its entirety, preserving all aspects of the corridor regardless of differing time frames. One approach was to stage the development of the corridor on a segment by segment basis, consistent with demand.

Another complexity stems from the ownership of rights-of-way; Transportation rights-of-way are commonly publicly owned while the rights-of-way for utilities are more often privately owned. Therefore, the question was whether a private sector entity or group of private sector entities would preserve a broad corridor which includes the rights-of-way for a variety of modes, including modes traditionally owned by the public sector, or rights-of-way to be used by other entities.

Engineering & Design – The design/engineering for each of the modes will likely be conducted as each segment of the respective modal component (rail, pipeline, utilities, highway, etc.) is determined to be needed and is subsequently developed. The Consultants evaluated the level of interest in the private sector to assume the design and engineering costs associated with each modal component. We found that owners/operators of some modal components historically pay for the design and engineering of their respective facilities, such as utility lines and pipelines. Therefore, the study took into consideration historical precedence in determining the level of interest of the private sector to participate in the engineering/design of their respective mode.

Cost of Construction – As part of the analysis the work evaluated the private sectors interest in participating in the cost of constructing the respective facilities. The interest in each of the modal categories was evaluated. The final determination was consistent with previous history.

Operate and Maintain – The last factor investigated was whether there was a private sector interest in operating and maintaining the corridor. The consultants focused on each modal element given the historical differences in the private sectors tendency in operating and maintaining utility corridors and transportation facilities.

Determination of Feasibility - In evaluating and judging the level of private sector interest the consultants used a rating system to quantify private sector interest in each of the development stages of the corridor. They rated private sector investment interest as high or low for each development stage and within each modal component. Moreover, given the relative cost difference for each development stage (permitting and legal costs are likely to be considerably lower than the cost to build and operate the various modal components) they weighted each based on their relative cost. In other words, determination of a high level of interest in permitting may not rate as high as a determination of high interest in building a modal component simply because of the cost difference. Various development stages were weighted by their relative costs. This method of evaluation and rating obviously placed heavier emphasis on the higher cost components of the project development process. Given that part of the drive for this particular corridor was based upon the state's fiscal constraints (therefore minimizing state's financial exposure) we think using cost as a weighting factor was a reasonable approach.

In addition, as part of determining feasibility under this overall question (Will the private sector participate?) it was determined to what degree the corridor could pay for itself. For each modal component a determination was made as to whether a level of revenue can be generated to support public/private investment approaches. What was the extent of potential revenue? Will these revenues be realized in the short-term or long-term? To what degree to the potential revenues cover development costs? To what degree to the potential revenues cover operating costs?

Will it Cost too Much to Develop?

This component of the feasibility process focused on the cost of building and operating the corridor. In other words, are the costs associated with this corridor prohibitive to its feasibility. The corridor costs were evaluated based on five basic components:

- Environmental permitting
- Right-of-way acquisition
- Engineering/design
- Cost of construction
- Cost to operate and maintain

Order of Magnitude Costs – The consultants determined the order-of-magnitude costs for each of these cost categories relative to each use. The cost estimates were based upon general order of magnitude estimates typically associated with this type of planning study. For example, for the cost of right-of-way estimates were based on a per mile basis depending on the cross-sectional design characteristic, as well as the type of terrain and the land uses (urban vs. rural). For the cost of construction, per mile estimates depending on the facility type, design standards, terrain, land

use, etc. were used. These cost factors were applied to the length and modal mix of the various corridor scenarios to determine total cost.

Determination of Feasibility - Feasibility was based upon a comparison of the costs of developing a new corridor relative to development costs along the existing corridor. For example, to what degree was the cost associated with the development of a north/south rail corridor higher or lower if it were developed in the current urban corridor versus a future rural corridor. If the costs associated with the new corridor are in an order-of-magnitude significantly greater than development along an urban corridor then the new corridor would be deemed infeasible.

Using the cost of construction as one of the measures of feasibility is important not only in terms of determining reasonableness but also in terms of factoring in the "users willingness to pay". The greater the cost of the new alignment versus the cost of developing along an existing alignment, the lower the buyer's willingness to pay. The lower the cost of the new alignment versus the cost of developing along an existing alignment, the higher the buyer's willingness to pay.

Is the Corridor Constructible?

This component of the feasibility analysis specifically looked at the design and engineering aspects of the corridor. This is an important distinction from looking at the cost of construction. It is important when looking at this factor to set aside the cost questions and to focus purely on design and function. The consultants looked at two major aspects of constructability, specifically grade and terrain.

Grade – Grade has an impact on the operations of the various modal components. For example, rail can only function below a certain grade – grades of over 2-3 degrees limit the operations for rail. Some of the mitigating measures of circumvent grade are to build tunnels and/or cut major channels to level off the grade. A fatal flaw may be the need for a very long tunnel that exceeds current design convention.

Terrain (Rivers/Wetlands) – Another factor that will impact constructability of the corridor is the terrain, specifically the degree to which rivers and wetlands exist along the corridor. Again in this context the consultants were not looking at the environmental impact specifically, but rather at the design limitation in order to mitigate obstacles from terrain. They evaluated and determined any fatal flaws in terms of rivers and wetland that could not be crossed by constructing bridges, for example. In this specific category the focus was not be on cost (for example the wider a river the longer the bridge the more expensive the bridge) but rather on the constructability of the bridge and any limitations undermining the constructability of bridges.

Determination of Feasibility – This particular aspect of the feasibility process was not focused on determining the feasibility of the commerce corridor concept at its core, but rather to influence the feasibility decision across a variety of aspects including the determination of the broad alignment alternatives, design approaches, as well as the respective modal components.

Are the Community Impacts/GMA too Significant?

In determining the feasibility of the commerce corridor the consultants evaluated its impact on communities, as well as determined the impact of the GMA on the development of this type of corridor.

The impact on communities was evaluated within the following areas:

- Community benefits/cost
- Economic benefits
- Environmental justice
- Community acceptability
- Consistency with GMA
- Consistency with the regional/local plans
- Land-use compatibility

Once the overall alignment was defined, the process of evaluating community impacts focused on impacts associated with the communities represented along the overall alignment.

Community Benefits/Cost – Members of the WSA Team evaluated the benefits of such a corridor to communities along the corridor. What were the benefits/costs of increased access to the broader transportation network? Would the communities benefit from additional access to utilities services or is there a cost? What are the benefits/costs from access to interregional freight transportation services? Would the corridor contribute towards sprawl? These are the types of benefits and costs that were determined.

Economic Benefits – Economists estimated the economic benefits to the communities along the corridor, including jobs, value added and income.

Environmental Justice – An evaluation of the impact on various sectors of the population was determined. Where available, information wascollected to determine whether there would be a disproportionate impact across income, age and race. This assessment was based on published materials on the impact of similar projects in other areas.

Community Acceptability – Communities as a whole typically convey their attitude towards certain types of development through their policies, plans, and media communications/public relations. Some communities are known as wanting to be livable; others posture as growth communities, etc. The consultants interpreted general community attitude towards this type of corridor and determined whether the level of community acceptability would have an impact on the feasibility of the corridor.

Consistency with GMA – The development of the commerce corridor would likely be impacted by the GMA. The study evaluated to what degree the GMA would impact its feasibility.

Consistency with the Regional/Local Plans – Jurisdictions situated along the corridor are likely to have varying degrees of development plans that specify the development of their respective communities. Again, once the overall corridor alignment was defined, the analysis was able to

make a determination as to which communities have development plans that may impact the feasibility of the corridor.

Land-use Compatibility – As in the previous case, land uses are likely to vary along the corridor alignment, and some may have an impact on the feasibility of the corridor. The impact of land uses on the feasibility of the corridor (e.g., compatibility with farming, timber production, etc.) was determined.

Determination of Feasibility – In determining feasibility the study evaluated the impact from the aforementioned categories from two perspectives; first from a fatal flaw perspective and second from a qualitative perspective.

1. Fatal Flaw - Using a fatal flaw perspective the consultants determined if any of these categories presented an insurmountable challenge toward developing the corridor. Again, this particular aspect of the feasibility process was not focused on determining the feasibility of the commerce corridor concept at its core, but rather to influence the feasibility decision across a variety of aspects including the determination of the broad alignment alternatives, design approaches, as well as the respective modal components.

2. A qualitative approach was then used to determine the:

    a. **Extent** to which these issues impact the corridor;
    b. **Magnitude** of the impact;
    c. **Duration** of the impact; and,
    d. **Probability** that any of these issues may exist.

Using this qualitative approach the analysis was able to make an assessment of the degree to which community impacts and the GMA have an impact on feasibility, beyond fatal flaw. A finding that the extent was low, the magnitude was not significant, the duration was short and the probability was low it is likely that the respective community impact will not have a significant impact on feasibility. On the other hand, if a particular impact was manifest at a great extent, with significant magnitude, over a long duration, and was likely (highly probable) to occur, the development of the corridor presents a significant challenge from a community and GMA standpoint.

Are the Environmental Constraints/Permitting too Significant?

In evaluating the environmental constraints toward the development of the corridor, the consultants rated the feasibility based on five overall categories;

- Critical Areas
- Streams and Water Resources
- Threatened and Endangered Species
- Wildlife Migration Routes
- Permitting

The first four impact areas listed above focus on the impact of the corridor on the environment. The fifth impact area, permitting, focuses on the impact of the permitting process (NEPA) on the development of the corridor.

Determination of Feasibility – As in the community impacts the study evaluated feasibility from two perspectives, from a fatal flaw perspective and from a qualitative perspective. As in the community impact analysis the qualitative assessment the consultants rated the environmental constraints based on the **extent**, the **magnitude**, the **duration** and the **probability** of these five areas of environmental concern.

What are the Legal/Legislative Barriers?

This portion of the feasibility study focused on determining whether there were currently any major barriers in the laws governing the State of Washington, relevant to this project, that stood in the way of private sector involvement. This included:

- A discussion of the terms and conditions of agreements necessary to implement the proposal with a private company; and
- Agreement provisions that may be required in order for the private companies to finance, construct, and operate the corridor.

Some of the critical issues and challenges in the legal area included; adoption of new procurement methods, involvement of private partners early in the process, early cost and schedule certainty, encouraging flexibility and innovation, promoting competition, leveraging public participation and financing, compliant but streamlined environmental processes, and the eligibility of innovative financing techniques.

Determination of Feasibility – This particular aspect of the feasibility process was not focused on determining the feasibility of the commerce corridor concept at its core, but rather to determine ways in which the current legislative/legal environment can be improved to enhance the feasibility of the development of a commerce corridor.

CONCLUSION

This chapter outlined the overall framework for determining the feasibility of the commerce corridor.

At the end of the feasibility process the consultants determined:

1. Whether there existed sufficient demand for the corridor, particularly through demand.
2. Whether the corridor could be built.
3. If it is deemed feasible:
    a. What components are feasible.
    b. How the corridor would look.
    c. Its general overall alignment.
    d. What it's overall costs were.
    e. The likely participants in the development of the corridor.
    f. The degree to which public sector participation is needed.
    g. The development time frame of the corridor.