Inland Pacific Hub

Transportation Investment and Project Priority Blueprint

Phase 2 Final Report
Accepted by the SRTC Policy Board
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Inland Pacific Hub Advisory Board,
Spokane Regional Transportation Council,
Kootenai Metropolitan Planning Organization,
Washington State Department of Transportation, and
Idaho Transportation Department

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1. Introduction

The Inland Pacific Hub, or IPH, is a partnership of public and private sector representatives from northern Idaho and eastern Washington working together to create a multi-modal global gateway – or hub – to foster increased domestic and international commerce. The IPH Advisory Board is working in partnership with the Spokane Regional Transportation Council (SRTC), the Kootenai Metropolitan Planning Organization (KMPO), the Washington State Department of Transportation (WSDOT) and the Idaho Transportation Department (ITD) to lead a detailed examination of the region's capacity to enhance its role as a regional hub and become more competitive regionally and globally.

1.1 IPH Project Vision and Goals

Early in the IPH Study, the IPH Advisory Board adopted the Vision[1] and Mission Statements as stated below, and identified the study area as shown in Figure 1. This vision has guided the IPH Advisory Board, the agency staff and consultant work efforts.

> ***Vision:*** *The Inland Northwest is a hub for commerce, vital to the global economy.*
>
> ***Mission:*** *Expand and integrate the regional transportation system to maximize efficiency, affordability and safety.*
>
> *The Inland Pacific Hub, a global reach for commerce, is a system that can move goods quickly to other major centers for speedy delivery. A system so interconnected that companies are compelled to move closer to it to fully utilize its capabilities. A system that capitalizes on its proximity to major developing areas of the world for the exchange of goods and information.*

Phase 1 of the study resulted in compilation of significant data on freight issues and the transportation infrastructure in the region. Phase 2 was designed to develop a strategy to help the region move in the direction of its Vision.

Figure 1: Inland Pacific Hub Study Area

[1] http://www.inlandpacifichub.org/vision_scope.html

1.2 The IPH Project

The IPH Board, in partnership with the SRTC, KMPO, WSDOT, and ITD has been leading a detailed examination of the region's capacity, opportunities, and potential investments and strategies that will help the region become more competitive, regionally and internationally. This effort, called The IPH Project, has two Phases. Phase 1 of the Project, completed in 2010, consisted of a detailed examination of the area's current economy, strengths, weakness, opportunities and threats. Phase 2 covers the development of this Transportation Investment and Project Priority Blueprint.

The Organization

IPH partnership was established by and is comprised of public and private sector representatives from Idaho and Washington. IPH partners represent a large geographic area, including eastern Washington and northern Idaho. Portions of Alberta and British Columbia are vitally connected to, if not part of, the IPH. Board and Committee members come from a wide spectrum of industries and backgrounds and represent two states; Washington and Idaho. An eighteen-member Advisory Board and six-person Executive Committee manage the IPH efforts together with representatives from SRTC, KMPO, WSDOT and ITD.

The Region

The Inland Pacific Hub region encompasses ten counties in Washington State and nine in Idaho, anchored by the cities of Spokane and Coeur d'Alene, located 30 miles to the east of Spokane, and Lewiston, about 85 miles to the south (see Figure 1). The area encompasses the eastern third of Washington and the panhandle of Idaho, covering a landmass of nearly 30,000 square miles. The region is bordered by British Columbia to the north, Montana to the east, southern Idaho and northeastern Oregon to the south, and central Washington to the west. Outside of the cities, the landscape is farmland and timberland, including nine national forests. The region has numerous lakes and rivers, the largest being the Columbia and the Snake Rivers. In eastern Washington, Pend Oreille, Stevens, Ferry, Lincoln, Spokane, Adams, Whitman, Garfield, Asotin, and Columbia counties are included. In northern Idaho, Boundary, Bonner, Kootenai, Benewah, Shoshone, Latah, Clearwater, Nez Perce, and Lewis counties are part of the IPH region.

The region was home to nearly a million people in 2008 (922,132) and is projected to have approximately 1,200,000 people by 2030.[2] Traditionally, the region's economy has been driven by agriculture, forest products, manufacturing, and mining. These have all been susceptible to varying degrees of structural changes and global economic forces, including greater off-shore competition, advances in technology, changes in market demands, and international currency fluctuations. Phase 1's analysis of the region's strengths and weakness found several regional weaknesses which hamper the region's competitiveness. These weaknesses include poor condition of some highway segments, declining population in the region's rural (non-metro) areas, a lack of diversified regional long-range planning, little broadband capacity in some of the rural counties, and a notable trade imbalance, with the region exporting more than it imports. Yet that analysis also found that the region has multiple

[2] Estimate by team member Woods & Poole Economics Inc. See Technical Memorandum 1.

strengths upon which it could build, including global reach to Asia and western Canada, strong higher education institutions, power availability at relatively low cost, and potential in tourism and outdoor recreation.

Activities

Phase 1 of the IPH Project was centered on the following six tasks:

Task 1: Analyze Existing Transportation Market

Task 2: Profile Existing Multimodal Transportation Infrastructure

Task 3: Profile Regional Economic Assets

Task 4: Profile Commercial and Technology Assets

Task 5: Identify Public Education and Stakeholder Involvement

Task 6: Compile Final Report and Phase II Recommendations

Multiple documents were produced, all of which are available on the IPH website.

This document concludes Phase 2, in which key transportation investments to support the IPH goals were identified and a strategic implementation plan was developed that addressed timing and funding issues. The list of transportation projects and strategies was strategically developed with significant stakeholder input and emphasis on regional priorities and the likely economic impact potential and net benefit of projects to the region.

The key tasks in the Phase 2 included:

- Review the Phase 1 Regional Profile to Identify Potential Implementation Strategies.
- Identification of the Region's Capacity for Development of a Globally Connected, Multimodal Transportation Gateway/Hub.
- Forecast Potential Economic Impacts from a Gateway/Hub on the Region's Economy.
- Identify and Prioritize the Region's Future Transportation Infrastructure Improvements Necessary to Drive Economic Growth.
- Strategies for Implementation.
- Preparation of this Final Report.

1.3 Organization of This Report

This report summarizes the analysis and conclusions of Phase 2 of the IPH Study. This report is structured as follows:

- The **Executive Summary** provides a brief overview of the report, focusing on the key elements of the IPH Blueprint.
- **Section 1** provides an **Introduction** to the IPH Study. It describes the Vision for the IPH Hub, and the IPH Project itself, as well as this overview of the organization of this report.
- **Section 2** discusses the **Intermodal Freight Concept and Requirements,** including lessons from other regional hubs, key dimensions of successful hubs, and freight hub needs in the IPH region.

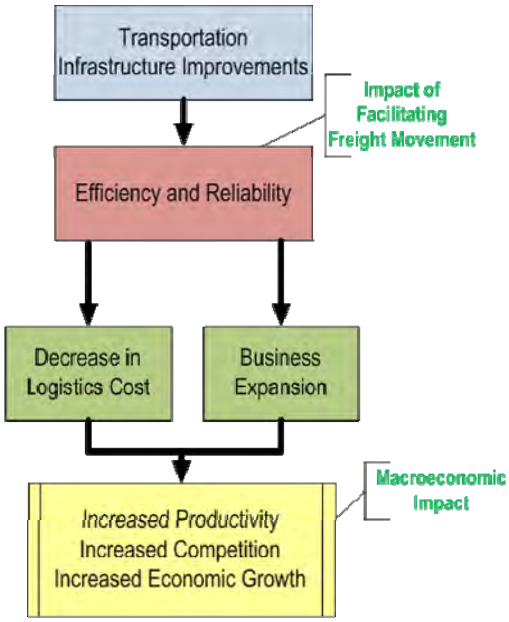
- **Section 3** presents **Key Support and Implementation Strategies**, covering legislative issues, institutional arrangements and options for the IPH, as well as public and stakeholder outreach needs.
- **Section 4** presents the **Key Infrastructure Projects** for the IPH. The section includes an overview of the selection process used as well as results from the high-level economic analysis.
- **Section 5** present results of the sequencing analysis in discussion of **Economic Benefits of the IPH Investments**, including project synergies.
- **Section 6** presents findings from review of **Financing and Funding Mechanisms.**
- **Section 7** closes with the report's **Conclusions** and discusses the IPH value proposition, success factors and next steps.

2. Intermodal Freight Hub Concept and Requirements

2.1 The Concept of a Freight Hub

The concept of inland ports or hubs is a relatively new concept in transportation logistics. It has been propelled by the increasing containerization of freight. Inland ports can create shipping efficiencies by providing a location to help quickly consolidate and move containerized freight out of congested gateways, as well as being a centralized place that can add value to low value products and/or assemble subcomponents. Figure 2 shows a graphical representation of the macroeconomic impacts of facilitating freight movement. Freight hubs are often multi-modal and can be characterized by designated tracts of land with targeted zoning, supportive utilities and transportation connections and services.

Figure 2: Transportation Infrastructure Improvements Lead to Economic Benefits



In Phase 1, the team identified research that argued for five critical needs for successful inland ports:

A. Modal capabilities – the existence of a variety of transportation assets.
B. Existing demand – existing cargo shipments and carriers.
C. Locational advantage – close proximity to a large population to provide a ready market and supply of workers.
D. International trade facilitation – related to the flow of information needed for the international movement of goods.
E. Management plan – access to funding, marketing and public/private cooperation.[3]

The Phase 1 team[4] identified and examined six "Inland Port Models" or hubs, as identified in a feasibility study completed for the Southern California Association of Governments (SCAG, 2006):[5] The six hub models include:

1. A **Crossroads** hub capitalizes on a geographic location that intersects primary market lanes.
2. A **Satellite Marine Terminal** is based on maximizing the sorting functions on inbound cargo away from the main port location.
3. A **Trade Processing Center** is similar to a Crossroads but expands its focus from the region to the rest of the nation and beyond.

[3] Harrison, Robert, Center for Transportation Research, University of Texas at Austin*; International Trade, Transportation Corridors, and Inland Ports: Opportunities for Canada.* May 2007. Found at: http://www.gatewaycorridor.com/roundconfpapers/documents/Harrison_Robert_Winnipeg.pdf

[4] IPH Phase 1 Working Paper 3.4 Trade Opportunities, Wilbur Smith Associates, April 2010.

[5] A feasibility study completed for the Southern California Association of Governments (SCAG) in June 2006.

4. A **Logistics Airport** is one which is focused on air cargo completely, or in combination with a larger development with other modes of transportation.
5. A **Logistics Park** leverages the intersection of multiple modes of transportation together with population centers sufficient to provide opportunities for consolidation.
6. An **Economic Development Zone** is an area that focuses on attracting business and creating or keeping jobs, often with special tax or zoning incentives, subsidies or other policies.

These hub models were evaluated to assess the key requirements and potential applicability for the IPH region. After reviewing the various hub model requirements, evaluating the IPH region gaps, and incorporating stakeholder input the Phase 1 consultant suggested that the Crossroads model and/or Economic Development Zone model would have the strongest applicability to the IPH region, and should be further examined in Phase 2.

In Phase 2, after further research and discussion, and review of hub experiences in other locations it was thought that the IPH Hub will likely be made up of different attributes taken from several (or perhaps all) of the alternate Hub models.

2.2 Lessons from other Freight Hub Experiences

In recent years, collaborations between the public and private sector have yielded many innovative approaches to the successful development of regional hubs. Their experiences can provide lessons to regions seeking to emulate their efforts. Perhaps the most critical lesson is on the importance of considering the region as a large, multi-modal port. Increasingly, competing regions, especially overseas in newly-emerging trading areas such as Dubai or Shanghai, are developing their facilities *in tandem*: the marine port and the airport, for example. This trend does not mean that single ownership is ideal or that the initiatives of one mode take precedence over of another, competing mode. Rather it means that the development of seemingly unrelated infrastructure or services should be coordinated, with a focus on the overall Vision.

Several domestic regional freight hub efforts were examined during the development of this Blueprint and provided interesting operation frameworks. One of the key challenges facing the IPH is to examine and refine the nature of the IPH, or other entity, which will take the long-term lead for championing the IPH as a regional hub (see section 3.2: Institutional Arrangements for further discussion). Highlights from some other hubs are noted below, and discussed in more detail in Appendix E.

One of the earlier examples of state efforts to foster the growth of an inland freight hub is the **Virginia Inland Port (VIP)** created by the Virginia State Assembly in 1983 to facilitate intermodal transfer of freight from the Port of Norfolk which is then shipped to distribution centers. Operations are handled by a private company, Virginia International Terminals Incorporated. VIP is a Free Trade Zone and a U.S. Customs-designated port of entry with the full range of customs functions, attracting 20,000 containers annually. Since operations began in 1989, local and regional freight activity has “expanded significantly”

as 39 "major" companies have located nearby, investing more than $747 million and creating more than 8,000 jobs.[6]

Figure 3: Market Reach of the Rickenbacker Terminal

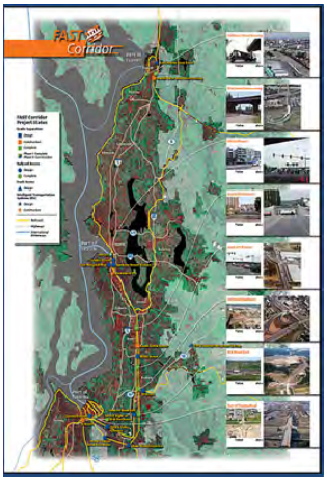
The Rickenbacker Intermodal Terminal is global multi-modal logistics hub managed by the Columbus Regional Airport Authority encompassing both the Rickenbacker International Airport and the Rickenbacker Global Logistics Park. It includes a master-planned 1,576-acre logistics intermodal facility on/adjacent to Rickenbacker airport which replaced nearby facilities at capacity. It was also awarded Foreign Trade Zone status.

Rickenbacker has a very different organizational structure than VIP. The Columbus Regional Airport Authority (CRAA), which was the "driving agency" behind terminal, manages the facility instead of a separate and/or new entity created just for the facility. CRAA was able to leverage existing resources and relationships to move the project forward quickly, coordinating with other stakeholders.

The Alameda Corridor Connecting the Ports of Los Angeles and Long Beach. The Alameda Corridor is a 20-mile, multiple-track rail connection between the Ports of Los Angeles and Long Beach. It consolidates 90 miles of existing tracks into a single, integrated system, improving access to the two largest ports (by volume) in the US. Key Project goals and benefits include:

- Improve Rail Corridor connecting Ports of Los Angeles and Long Beach to intermodal rail yards in downtown Los Angeles
- Eliminate 200 at-grade rail crossings
- Improve port competitiveness and rail operations
- Reduce highway traffic delays and improve safety
- Funded with Port funds, Federal loan, Federal grants, State funds, and user fees

Figure 4 : The FAST Corridor



The high cost of this project necessitated innovative financing. The Ports contributed substantial sums ($394 million), as did the Federal government ($394 million), but nearly half the financing came from bonds (issued by MBIA for the Alameda Corridor Transportation Authority).[7]

The Freight Action Strategy for Everett-Seattle-Tacoma (FAST) Program is a public-private partnership comprised of "26 local cities, counties, ports, federal, state and regional transportation agencies, railroads and trucking interests."[8] The FAST partnership has assembled $568 million of public and

[6] National Cooperative Freight Research Program (NCFRP) Report 13, *Background Research Material for Freight Facility Location Selection: A Guide for Public Officials*, Washington submitted May 2011;

[7] Funding detail from National Highway Cooperative Research Program Report 497, *Financing and Improving Land Access to U.S. Intermodal Cargo Hubs*, Washington, DC, 2003.

[8] See FAST brochure, located at Puget Sound Regional Council website, http://psrc.org/transportation/freight/fast.

private funding to build nine strategic infrastructure improvements.[9] The FAST partnership takes a strategic regional approach, requesting funds on behalf of the partnership, not specific projects and also seeks these funds for the entire corridor which gives it greater flexibility.

The Kansas City SmartPort is somewhat similar to FAST, as is it includes 18 counties, 50 cities, two states, several rail terminals (KCS, UP and BNSF), logistics zones and free trade zones. It was established in 2001 by the Greater Kansas City Chamber of Commerce, the Kansas City Area Development Council, and the Mid-America Regional Council as a as is a non-profit economic development organization similar to a port authority. Unlike FAST (and many other freight hub lead stakeholders), KC SmartPort does not directly manage any transportation assets; instead operates under a "**cooperative governance model"** in which the Board of Directors focuses on strategic issues and members – both private companies and institutions – operationalize those strategies.[10] This structure allows the member entities to work together towards consensus on overall strategies while still competing in daily operations.[11] Currently, KC SmartPort has started a "Supply Chain Education Group" to raise awareness and understanding about supply chain issues, is working on bringing foreign customs offices to Kansas City.

2.3 IPH and International Trade Corridors

In the past few years, there has been a significant discussion with respect to creating alternative trade corridors linking Canada, the US, and Mexico and providing relief for existing corridors that are already congested such as I-5 Corridor. Some of the potential plans that are under consideration include CANAMEX Trade Corridor which was defined under the National Highway Systems Designation Act of 1995 and included several state including Arizona, Nevada, Utah, Idaho, and Montana. One of the proposed interstates under CANAMEX is I-11, which is already under serious consideration between Phoenix and Las Vegas. In addition to highway trade corridors, there is also rail trade investments such as the Great Northern Rail Corridor which includes 3,422 miles traversing eight states from Illinois to Washington as well as three Canadian provinces.

The IPH investments may position the region as a key part of these corridors and therefore increase the likelihood that the region is included in the preferred alignment. Such a position can further enhance the region's competitiveness and solidify the region's role in international trade.

2.4 Key Dimensions of Developing a Successful Freight Hub

Investment in local infrastructure is critical to the development of any regional freight hub. Freight hubs develop because they provide lower costs and/or improved efficiency to shippers and manufactures. A strong infrastructure network for regional freight has: efficient links between multiple modes so as to maximize the cost and geographical efficiencies of each during shipments; strong connections between

[9] *Ibid.*

[10] Rodrigue, J-P *et al.* (2009) *The Geography of Transport Systems*, Hofstra University, Department of Global Studies & Geography, http://people.hofstra.edu/geotrans. See also http://people.hofstra.edu/geotrans/eng/ch4en/appl4en/kc_smartport.html.

[11] *Ibid.*

major facilities and corridors; low congestion and easy access from industrial locations and major labor centers. All these factors allow for quick, efficient and more cost-effective shipments.

Such infrastructure impacts more than just a specific economic sector. These transportation connections also increase overall connectivity for local industry and citizens. Even businesses that do not ship far out of the region will benefit from improved travel times and reliability and residents can enjoy easier/faster commuting and leisure trips. All these benefits together strengthen the economic and social connectivity of the region. In addition to facilitating the growth of existing local businesses through improved efficiencies, these improved connections also help to attract new businesses to the region.

To be successful, freight hubs must go beyond improving local infrastructure to working with local people, stakeholders, communities and institutions. They must improve coordination and cooperation across and within the public and private sectors, encourage legislative and regulatory adjustments, support regional institutions and ensure community support.[12]

A strong physical infrastructure is necessary but not sufficient to generate a vibrant freight hub with significant local economic benefits.

Growth of a freight hub can be fostered by developing a coordinated set of individual infrastructure projects combined with broader strategies that address the following four interconnected spheres of impact (see Figure 5):

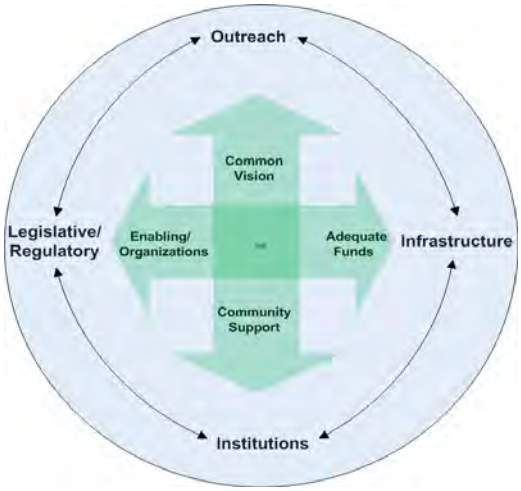
A. Physical infrastructure;
B. Public and private sector outreach and engagement;
C. Supportive institutions;
D. Legislation/regulatory matters.

Efforts in each of these arenas helps to grow a regional freight hub and obstacles in any area will hamper success.

In addition five **implementation principles** are critical to any large-scale, coordinated economic effort involving multiple stakeholders:

1. Consensus among stakeholders
2. Political support – need for a champion
3. Comprehensive assessment
4. Transparent and credible process
5. Accounting for risks

Figure 5: Dimensions for Development of a Successful Hub



[12] See discussion of the Rickenbacker Intermodal Rail Facility in Columbus, Ohio in National Cooperative Freight Research Program Report 13, *Background Research Material for Freight Facility Location Selection: A Guide for Public Officials*, Washington, May 2011; "Section 4: Strategies in Transportation Cooperative Research Program Report 14, *Institutional Barriers to Intermodal Transportation Policies and Planning*, Washington, DC 1996; National Highway Cooperative Research Program Report 497, *Financing and Improving Land Access to U.S. Intermodal Cargo Hubs*, Washington, DC, 2003, and Leigh Boske, *Innovative Strategies to Raise Efficiencies along Transportation Corridors and at Multimodal Hubs*, prepared for the Congressional Research Service, 2005 and in NCHRP Report 497.

The IPH Blueprint has been developed with both the broad strategies and implementation principles in mind, to increase the chances and speed of success.

2.5 Freight Hub Needs in the IPH Region

The development of an inland hub is dependent on existing and potential demand. The proposed freight network must strengthen existing industries and provide for growth in emerging industries. The IPH Region is geographically close to Canada and has good access to West Coast ports; however, the existing transportation infrastructure isolates the IPH area from domestic and Canadian markets.

The review of the IPH region's infrastructure highlighted its strengths and weakness, identifying issues to be addressed when developing a new regional hub. Key issues include:

A. Highways present a somewhat mixed picture, though with some notable strengths:
   - While the region's East-West corridor along I-90 is a strength, the area needs stronger North-South connections to fully take advantage of potential Canadian markets. To this end, both US-395 and US-95 are being developed for local, regional and international service.
   - Congestion is an issue in key urban areas, bypasses are needed in some places, and some heavily used roads (such as Bigelow Gulch) need to be upgraded.
   - Roadway maintenance is an issue. In particular weather hampers or even stops travel on some key routes during the winter months.

B. The region has a significant rail network. It benefits from two Class I railroads and several shortline railroads. Together, these comprise a valuable overall network that is particularly beneficial for heavy or inexpensive per pound shipments. However, two key capacity upgrades were suggested:
   - The lack of an intermodal facility that can handle double-stack cars will likely hold back some future growth as more carriers move to double-stacked cars.
   - The UP segment from Spokane to Plummer cannot carry higher weight cars, driving up average per unit shipping costs.

C. The region's air network is an underused asset:
   - Comparatively little freight is shipped to or from the Spokane International Airport. Suggestions to expand the runways and improve the roads leading to and from the airport may lead to greater use by shippers.
   - Additional research on issues such as air freight assets, underbelly cargo, and increasing passenger service would assist in the formulation of an effective plan for a new regional hub.

D. The region's Ports offer an attractive option for many agricultural products, but are not a significant mode of transport for other freight.

3. Key Support and Implementation Strategies

3.1 Legislative Issues

One of the significant challenges for multi-modal freight focused infrastructure planning and investments are **institutional barriers**. The responsibility for developing and maintaining transportation infrastructure is shared among the public and private sectors, and within the public sector among different levels of government. The planning, approving and financing cycles differ significantly between the various levels of government in the public sector, and are very different from the private sector. Development of land use and transportation plans and transportation investment funding priorities by local, regional and state agencies define priorities at each agency level, but they often do not prioritize freight related infrastructure investments. Some additional barriers include:

- As noted earlier, there are and will continue to be significant funding shortfalls for building and maintaining transportation infrastructure at all levels of government.
- Insufficient information on intermodal and freight benefits for decision makers and the public.
- Increasingly complex project development requirements such as NEPA clearances and different federal and state agency requirements and regulations for different modes.
- Needed administrative layers and regulatory processes in transportation decision making institutions can also constrain the ability of public and private stakeholders to efficiently advance intermodal and freight mobility in the IPH Region. The balance between appropriate limits and oversight on the one hand, and greater flexibility and speed on the other is continually in flux, with negative consequences on either side.
- New prominence of non-traditional transportation goals and new stakeholders in the planning and decision making processes.

A key element to success of the IPH Blueprint will be the ability of the IPH Region to efficiently implement the priority projects and strategies. One of the key ingredients to funding of the priority projects is an **effective legislative strategy** to advocate for inclusion of freight focused projects in state, regional and local plans, and to advocate for funding of these projects at the local, regional, state and federal levels.

Within the IPH Region there are a number of public and private groups that define annual legislative agendas or strategies that are intended to focus attention on a variety of community priorities. These include: Greater Spokane Incorporated (GSI), Spokane Regional Transportation Council, Washington State Department of Transportation (WSDOT), Spokane Transit Authority (STA), Spokane County and the City of Spokane in Washington; Kootenai Metropolitan Planning Organization (KMPO), Idaho Transportation Department (ITD), the City of Coeur d'Alene and the Coeur d'Alene Chamber of Commerce, the City of Post Falls and the Post Falls Chamber of Commerce in Idaho. Sometimes the priorities defined by these groups include focus on transportation generally and freight specifically, but

many times they do not. Historically, freight infrastructure issues and funding have not received significant priority attention on the region's legislative agenda as defined by these groups.

In the IPH Region, Greater Spokane Inc, the joint Chambers of Commerce and others identify legislative strategies to address issues of interest at the Washington and Idaho Legislatures. For example, GSI has formed a legislative committee that defines a strategy for each legislative session and presents it to stakeholders in the region and then to legislators as the priorities for the region. The GSI priorities for 2011 include Workforce Training and Regional Transportation projects, among other priorities.

Besides funding for freight related infrastructure projects, another legislative issue for the IPH Region is the variety of trucking regulations. Many trucking regulations in Washington are different than in Idaho and both states have different trucking regulations than in Canada. The inconsistency of regulations creates unique challenges for trucking companies that serve all three areas.

3.1.1 Legislative and Regulatory Goal

The legislative and regulatory goal for the region needs to focus on the advocacy for funding and implementation of the IPH Blueprint Priority Projects at the local, regional, state and federal levels and for a friendlier regulatory environment for the trucking industries.

3.1.2 Freight Infrastructure Strategy

It is critical that the region considers infrastructure funding that facilitates freight movement with the region's federal congressional and state legislative (Boise and Olympia) delegations. To do this, the IPH Advisory Board may need to collaborate with groups such as GSI and the joint Chambers of Commerce to define and advocate for annual Federal and State priorities funding lists that include the IPH Blueprint priority projects. This may include the engagement of local public and private leaderships to support the IPH Blueprint priority projects as legislative and congressional priorities. Some of the mechanisms may include MPO plans, Statewide Transportation Improvement Programs (STIPs) and in federal transportation bills, authorizations and earmarks. In addition, the IPH Advisory Board may need to work with private sector groups such as GSI to ensure inclusion of freight-focused priorities in their Legislative agenda for each session. For each state, Washington and Idaho, the IPH Advisory Board may need to define an annual legislative priority list of projects and funding needs, and then work to engage local leaders from each state to support the respective priorities.

3.1.3 Freight Priority Strategy

There is a need to work to increase freight considerations in the prioritization of transportation projects through ensuring that freight-related criteria are considered when evaluating and ranking projects at the local, regional and state levels. This will help to ensure that adopted plans prioritize freight supportive investments when the land use and transportation plans are updated and adopted. There is also a need to support the public sector plans and priorities once they have been adopted at the state, MPO and local agency levels and include priority freight projects.

3.1.4 Freight Benefits to the Community Strategy

To build support, increasing awareness about the benefits of intermodal and freight infrastructure to the regional economic well-being of the IPH Region is critical. For example, encourage the benefit-cost assessment of projects and then share the analysis with legislators, elected officials, other decision makers and the public.

3.1.5 Trucking Regulations Strategy

One of the key success factors to meet the IPH vision is the harmonization of regulations across the states. There is, therefore, a need to raise awareness about the disparity of trucking regulations between the states and countries and its impact on freight movement.

3.2 Institutional Arrangements

The IPH Region has a wealth of existing public and private partners and institutions that have been and will continue to be instrumental in moving forward the Vision for the IPH, participating in IPH Blueprint implementation initiatives, and fostering increased economic activity. These institutions serve valuable economic roles in the IPH Region and its many public and private communities. They foster collaboration among community members and various groups, create a sense of cohesion among the community, offer places to share information, ideas and network, and discuss and formulate community goals, policies and other values.

The wide variety of political jurisdictions in the IPH Region with a variety of regulations makes success as a single IPH Region challenging. The region does not have a single public agency that crosses the full IPH Region (reaching across the 2 states, 2 MPO's, 19 counties and several cities) to do formal consolidated long range infrastructure investment planning for the whole IPH Region. Consequently, the IPH Blueprint lacks a single formal institutional framework for implementation, and therefore coordination with all the local agencies in the IPH Region will be critical to successful implementation of the Blueprint strategies and priority projects initiatives (WSDOT, ITD, SRTC, KMPO, 19 counties and multiple cities in the region).

The IPH Vision has been largely defined by the IPH Advisory Board, a group of public and private stakeholders with strong interest in promoting freight mobility and economic development. Building on the initial successes of the IPH Advisory Board and growing the IPH effort will be necessary for the future success of the IPH Vision and Blueprint.

The region also has a strong record of and commitment to developing and supporting innovation and entrepreneurship through the area's educational institutions, research laboratories and non-profit groups such as Innovate Washington.

Proximity to the US-Canada Border is both an opportunity and a barrier to trucking and businesses. Border operations at some locations have limited hours, which can restrain some commercial traffic. For example, transportation of large machinery through the region has challenged the capacity of the existing roads due to the significantly oversized loads going north.

3.2.1 Institutional Goals

The goals for the region's institutional strategies should focus on ensuring inclusiveness and broad coordination with stakeholders. Specifically:

A. The IPH Board and other key stakeholders should make sure to engage a wide variety of public agencies and private businesses and institutions in the IPH Region in support of the successful implementation of the IPH Vision and Blueprint strategies and priority projects.

B. The IPH Board should find ways to expand and build on partnerships between public and private sector interests to take maximum advantage of the potential economic development opportunities in the IPH Region.

C. The IPH Board should work with other stakeholders to create opportunities to reduce the barrier effect of the international border to increase business connections with Canadian companies.

3.2.2 IPH Public and Private Partnerships Strategy

A combined public and private effort such as the IPH Advisory Board must continue to play an important role in the implementation of the IPH Vision and Blueprint. The group must provide leadership, define goals, and continue to refine priorities and strategies. The group must also continue to provide a place to foster collaboration among businesses, civic leaders, public entities, educational intuitions and others with a stake in the region's economic success. The future success of implementation of the IPH Vision and Blueprint will be highly dependent upon continuing the commitment of both the public and private sector partners to fulfill this role. It will require a high level of effort and strong leadership within the organization that will be the champion for the Blueprint. It will include efforts such as working with businesses and business associations, marketing the Blueprint, working with DOTs and planning agencies to identify and prioritize projects, secure funding, support grant applications, develop partnerships, etc. Specific strategies include:

A. Continuation of key efforts to build bridges between key entities, including building on the IPH public and private partnership between the 2 states (Washington and Idaho), 2 MPOs (SRTC and KMPO), 19 counties, multiple cities and private sector freight and economic development interests to ensure success of the IPH Vision and Blueprint. Cases in Los Angeles Alameda Corridors and Kansas City Region provide examples where public and private partnerships led to successful intermodal investments and the creation of freight hubs.

B. The current IPH Board should consider the formation of a regular Freight Advisory Committee with a large number of representatives from shippers and carriers. The purpose of this Committee would not be to foster the IPH as a regional hub, which requires taking into account the goals and needs of a broader range of stakeholders, but to keep SRTC, KMPO, WSDOT and

ITD regularly apprised of developing issues and concerns. [13] The Committee can also become a mechanism for regular ongoing communication.

C. It is important that the IPH Advisory Board and key stakeholders assess organizational options, which may include:

- Continuing with the existing IPH Advisory Board organization and staffing format with a similar level of effort as in the past.
- Developing a Bi-State Port District which could be sponsored by an existing agency such as the Spokane International Airport.
- Continuing with the existing IPH Advisory Board organization and staffing format, but accelerate the level of effort to implement the Blueprint.
- Reconfiguring the IPH Advisory Board into a different form, such as an Inland Pacific Regional Freight and Economic Development Council.
- Reconfiguring the IPH Advisory Board to become a consortium of Chambers of Commerce to bring together the existing business organizations in the IPH Region and to reach out and cross the border to similar Canadian business organizations.
- Reconfiguring the IPH Advisory Board into a more focused Regional Freight Advisory Committee.

Maintaining some public-private entity focused on developing the IPH as a regional hub is not in question, just the form that entity takes. [14]

3.2.3 Public Agency Strategy

Public support for the IPH Vision and its Blueprint is critical to implementation. The key public agencies must stay engaged and active to direct many of the critical plans, policies, and other initiatives including direct investments in infrastructure. Some of key actions that are needed to facilitate the support include:

A. Support and participation by key public agencies including WSDOT, ITD, SRTC, KMPO, major cities in the IPH Region including Spokane and Coeur d'Alene, the 19 counties, and other local agencies.

B. Promotion and awareness among partner public agencies about the IPH Hub Vision and Blueprint priority projects and strategies. Keep the public at-large updated on progress made toward the Blueprint.

[13] Part of the Indiana Multimodal Freight and Mobility Plan (Cambridge Systematics, 2009). See also Cambridge Systematics, *Broward County Urban Freight/Intermodal Mobility Study, Final Report,* 2007/2008. Other MPO's with freight advisory groups include Atlanta, GA; Baltimore, MD; Bend, OR; Chicago, IL; Des Moines, IA; Seattle, WA; and Tucson, AZ.

[14] NCHRP Report 497 identifies the coordination between various public agencies and private companies focused on project goals as key to several successful cargo hubs, including the Alameda Corridor (CA), the FAST Corridor (Tacoma), and the PIDN for the Port of New York and New Jersey.

C. Support of the institutional arrangement that will facilitate the implementation of the IPH vision – i.e. Bi-State Port District

D. Support of programs to create new sources of funding and expand existing public funding for infrastructure that support freight movements.

3.2.4 Educational Institutions and Research Laboratories Strategy

Potential actions may include:

A. Encouraging the ongoing development of educational programs that develop training for a technical work force that would support the freight transportation industries (logistics, LTLs, etc) along with the manufacturing and industrial sectors of the local economy.

B. Continuing to build partnerships with the various universities, research laboratories, and medical community to understand their needs and in support of freight mobility and economic development.

3.2.5 Cross Border – Canada Strategy

Some strategies may include:

A. Encouraging expansion of border crossing hours at more locations in the IPH Region to be 24 hours per day, 7 days per week, such as improvements at the Frontier/Patterson crossing facility on Hwy 22 and SR 25[15].

B. Identifying opportunities to reach across the border and build partnerships with the Canadian business community and shippers. Build cross border relationships through creating and expanding business association relationships. Create a forum to develop business to business relationships and organize activities that will support cross border business to business events to build understanding of the cross border business challenges and encourage significant and lasting relationships and business opportunities.

C. Working to develop an International Trade Alliance between the IPH Region and across the border Canadian industry associations through facilitating cross border business to business contacts and stakeholder and/or association tours. Consider creating cross border sister organization relationships with similar industry groups. [16]

D. Considering and exploring opportunities related to the extensive economic activity and opportunity of the Alberta oil sands industries, and identify ways that the IPH Region can support and benefit from these activities. Support efforts to evaluate and solve issues related to oversized loads being transported through the region to the Oil Sands region of Alberta.

[15] West Kootenai-Northeast Washington: Joint Highway Corridor Study, British Columbia Ministry of Transportation and WSDOT, 2005.

[16] NCFRP Report 13 has identified many successful transportation and logistics centers that have forged trade relationships with other hubs, especially those in Canada (and Mexico). Among those are Mobile, Savannah, Memphis, and Kansas City (page 13).

3.2.6 Private and Non-Profit Groups Strategy

Some key strategies may include:

A. Continue to support the development and expansion of private and non-profit entities such as Innovate Washington (formerly SRTI), and AVISTA that add significant value to the entrepreneurial culture in the IPH Region.

B. Support of the establishment of an IPH Region-wide Chamber of Commerce or association of Chambers of Commerce to encourage building region-wide relationships and support for the Blueprint.

3.3 Public and Stakeholder Outreach Needs

Based on the IPH vision and the analysis conducted under Phases 1 and 2 of the IPH Hub Study, the next phase will involve implementation of the IPH Blueprint and therefore requires broad based buy-in and support. Engagement of a diverse collection of IPH partners will be needed to build support for the p IPH Region-wide Blueprint. Support will likely depend on developing a clear understanding of the benefits of investing in freight-supportive improvements, specifically in terms of economic development and growth in jobs in the region.

Developing public and stakeholder support for the IPH Vision, goals and Blueprint will be challenging because the IPH Region covers parts of 2 states, and 19 counties, and most of the land area is rural. Consequently traditional approaches to stakeholder engagement are likely to have limited success in generating the engagement of freight related stakeholders and other key constituents. The broad range of political jurisdictions along with the urban and rural character makes it difficult for many to see it as a single HUB and to support the IPH Regional Vision.

3.3.1 Stakeholder and Public Outreach Goal

The goal for stakeholder and public outreach is to inform freight stakeholders, elected officials, IPH Region decision makers, economic development interests and the public about the IPH Blueprint and engage them in its implementation.

3.3.2 Freight Mobility Strategy

The IPH Advisory Board will need to work to engage the freight community of Eastern Washington and Northern Idaho for the benefit of freight mobility and economic development. The IPH needs to ensure that presentations of the Blueprint are made available to community groups, local jurisdictions, agencies, on the internet, and through local and regional transportation meetings. Public and private partners and stakeholders should be encouraged to involve as many partners as possible in multiple opportunities to become informed and advocate for the IPH Blueprint. These stakeholders need to be regularly updated on progress made toward implementation of the priority projects and strategies.

3.3.3 Stakeholder Engagement Strategy

The IPH sponsor agency needs to reach out to stakeholders through multiple and convenient opportunities to engage all stakeholders interested in the freight related transportation planning. Stakeholder groups can be engaged by convening workshops and seeking inputs and comments to develop ideas how to make IPH investments effective and efficient. The outreach needs also to include rural counties and the tribes in the region.

3.3.4 Private Sector Strategy

Special efforts to involve private sector partners will ensure that the business community understands the importance of the blueprint's priority investments to efficient distribution services, and the attraction of new businesses to the area.

3.3.5 IPH Region Wide Association of Chambers Strategy

It is important to encourage establishment of an IPH Region wide association of Chambers of Commerce to build relationships between businesses in the whole region. The IPH Board should work with existing Chambers to determine if there is the desire and willingness to create an association. This effort could begin with outreach to businesses throughout the Region to inquire about their needs and how the investments in infrastructure would help them flourish and therefore promote job growth and economic development.

4. Key Infrastructure Projects

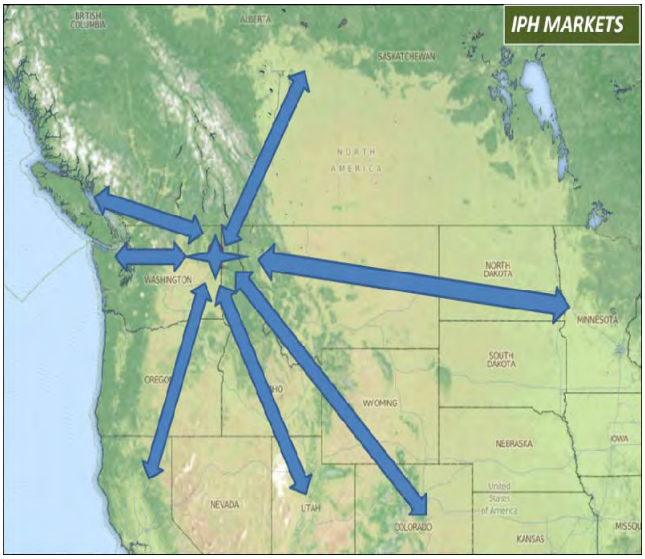
Success in reaching the IPH vision requires a thorough understanding of the region's transportation assets as well as the gaps and weakness in its network. While the IPH region has multiple assets upon which to build, it also has some challenges (or gaps) in local infrastructure that must be overcome. To become a truly regional hub, the region needs:

- Increased connectivity between the modes,
- More direct and efficient north-south highway and rail routes, and
- Greater reliability and efficiency overall.

Given the objective of Phase 2 to develop a "Blueprint" for realizing the vision of the Inland Pacific Hub, it is critical that the projects put forward to address infrastructure needs meet the following goals:

- Consensus among stakeholders
- Political support
- Funding potential
- Public benefits based on transparent and credible process
- Accounting for risks

Figure 6: Potential IPH Markets



As noted earlier, Phase 1 examined the IPH region in detail, and prepared a regional profile and assessment of needs and gaps. The data compiled in Phase 1 documented that the area is geographically well situated to serve as a freight hub for goods traveling to and from Canada, from the southwestern US and for goods traveling east-west from the Pacific Coast to/from Chicago. The region is crossed by multiple routes and multiple modes, has two airports (one international) and a fairly strong trucking sector already in place. Specific assets include:

- The existence of two Class I railroads and the fact that they provide service to the Spokane Business and Industrial Park.
- The existence of I-90, a major east-west highway and freight route.
- Less Than Truckload (LTL) services and competition among trucking companies serving the regional hub of Spokane.
- The ability to use trucks at the 105,500 lb. weight limit, since weights in many other regions is restricted to 80,000 lbs.
- Numerous higher education institutions and research facilities.
- Traditional industries: agriculture, timber, mining.
- A strong tourism and outdoor recreation sector.
- Power availability at relatively low costs.
- Global Reach to Western Canada and Asia.

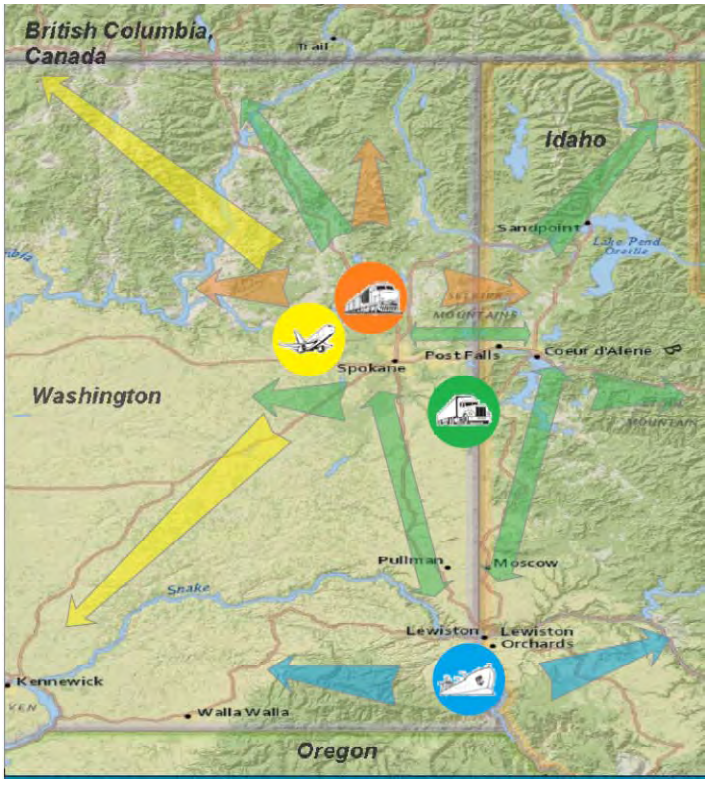
Yet Phase 2 found that IPH stakeholders as well as state and local policymakers are grappling with several challenges related to the region's infrastructure:

- Significant freight-through traffic on the highways generates wear and tear on the road network while bringing in little local revenue or other benefit.
- Severe winter weather causes safety and reliability issues for freight delivery.
- Railroad grade crossings impact general traffic safety and cause concern for businesses and the public.
- There is limited or no broadband capacity in some of the rural counties.
- There is limited rail access (e.g. eastbound intermodal services) and to a lesser extent some rail infrastructure limitations (e.g. Plummer to Spokane) in the region.
- There is currently no Port District in either Spokane or Kootenai Counties, the main urban centers in the IPH Region. Port Districts can serve as a key driver for economic development.
- The limited available funding for new infrastructure investments due to the constrained public revenue environment means that some important projects may not be undertaken, and others will compete for the limited available funding.

The "blueprint strategy" defined in Phase 2 builds on the region's existing resources and strengths, while at the same time taking a long-term view towards expanding freight capacity in the region in a manner that efficiently overcomes these challenges. This effort requires balancing between key local goals and the needs of the region as a whole, while assessing potential strategies and specific transportation infrastructure projects for inclusion in the Blueprint.

Potential infrastructure investment projects were identified and underwent a two-step evaluation process which included both a qualitative assessment and economic analysis. This process identified which projects were most important to the region and its stakeholders, and then reviewed the critical ones to ensure that they were all economically worthwhile investments (i.e. benefits would exceed costs).

Figure 7: IPH Key Multi-Modal Project Connections



An initial list of over 30 strategies and projects were identified and reviewed in an iterative process with IPH stakeholders (see Table 1). Workshop participants, IPH Board members, state and local officials, and regional experts worked with the IPH team to refine individual projects and winnow out those already

underway, outside the region, or not a good fit with the IPH goals. The revised set of projects, representing the top regional priorities for the region, were evaluated against qualitative and quantitative criteria to determine which should undergo a high-level economic analysis as part of the larger effort to develop the Blueprint. Thirteen high priority infrastructure projects (two of which had two options) were selected for further analysis through that process. These projects were then evaluated through a high-level Benefit-Cost Analysis and an Economic Impact Analysis, to ensure that benefits outweighed costs for each project.

Table 1: Initial list of Projects and Strategies Considered for the IPH

Project/ Initiative
Increase Airport Industrial Parks
Expand Foreign Trade Zones
Upgrade Airport Access Infrastructure
Coordinate Shipments
Promote Airport as an International Destination
Expand Airport to Absorb Additional Passenger Flights
Build New Telecommunications Infrastructure
US-95 Improvements from/to Snake River Ports
Expand Access to the North-South Rail Link
Develop an Intermodal Facility with Capability for Double-Stack Cars
Bridging the Valley
Improve Low-Capacity Track
Provide a Rail Transload Facility (perhaps near Geiger Spur)
Improve Truck Routes
Highway Congestion Reduction Measures
Complete Widening of I-90 through Metropolitan areas of Spokane and Kootenai Counties
Continuation/Completion of US-395 North Spokane Corridor and Continued Expansion of US-95 North towards Canada *(later split into two projects)*
Huetter Corridor (Coeur d'Alene Bypass)
Improve Bridges on Important Truck Routes
Prioritize Cooperative Border Crossing Improvements
Implement Pre-Screening Membership Programs
Provide Customs Clearance Capabilities at Coeur d'Alene Airport
Increase Mobile Communications Availability
Truck Regulation Harmonization
Spokane Traffic Signal Upgrades and Relief Road Improvements
Improve Intersection Design throughout the Region
Elimination of Safety Hazards from Roads
Increase Level of Maintenance and Repair Work

Note: Details of this initial list of projects are shown in more detail in Appendix A.

Table 2: Refined List of Priority Projects

Project/ Initiative	Description
Highway/Roadway Projects	
Continued Expansion of US-95 North towards Canada (from Bonners Ferry)	Segment 2 of the US-95, Junction SH 1 project, expanding highway to four lanes; approximately 9 miles.
Continuation/Completion of US-395 North Spokane Corridor: • Full Completion – Francis Interchange (to Spokane River then) to I-90 • Francis to Spokane River Segment	• Full Completion of the NSC: Francis Interchange to Spokane River segment plus the Spokane River to I-90 segment including collector/ distributor on I-90. • Completing just the Francis Interchange to Spokane River Segment (approximately 3.5 miles) is first of two phases
US-195 Improvements between Lewiston and Spokane	Addition of passing lanes, over 37 miles of corridor
Huetter Corridor (Coeur d'Alene Bypass)	Corridor/bypass of 7.8 miles NW of Coeur d'Alene
US-95 Improvements from/to Snake River Ports	Widen US-95 to four lanes for 7 miles
Widen I-90 through Spokane and Kootenai Counties	Continue existing expansion program to widen I-90 from current construction to Washington/Idaho border and to Coeur d'Alene.
Improve Truck Routes Serving Geiger Spur Realignment *(developed from project regarding transload facility)*	Generic/unspecified 5 mile roadway expansion from 2 to 4 lanes for trucks shipping to/from Geiger Spur (From 2 lane rural roadway to rural arterial standard)
Upgrade Airport Access Infrastructure	Generic/unspecified 5 mile roadway expansion leading to Spokane Airport facilitating air freight
Improve Bridges on Important Truck Routes (first one: Sullivan Road Bridge near I-90)	Increase capacity of Sullivan Road Bridge near I-90; (proxy for future bridge upgrades, such as Greene St Bridge and others in the future)
Increase Level of Maintenance and Repair Work	Improve quality and frequency of road maintenance to improve the reliability of the road network
Elimination of Safety Hazards from Roads	Reduce frequency of accidents due to roadway quality (i.e. upgrade Bigelow Gulch)
Rail Projects	
Expand/Improve Access to North-South Rail Link to Canada	Congestion, logistics and accident benefits from freight diverting from truck to rail due to network expansion, increased intermodal capabilities.
Bridging The Valley: • Grade Crossing Improvement (BNSF route) and Realignment of UP mainline between Spokane and Athol • Grade Crossing Improvement only (BNSF route)	• The full project includes two parts: 1) grade-separation of 19 at-grade rail crossings (BNSF); and 2) realignment of UP mainline between Spokane and Athol alongside BNSF (along with the upgrade of another 40 at-grade crossings). • The grade-separation of 56 at-grade rail crossings.
Note: Additional Details of these Projects can be found in Appendix B	

A few notes on these projects should be considered continuing to the economic analysis. Several other projects or concerns that came out of Phase 1 were not in the final list of priority projects to undergo additional economic analysis including upgrading Bigelow Gulch (and addressing its safety issues) which was a critical concern voiced by many shippers. The Eliminating Safety Hazards from Roads project is a catch-all category and can accommodate specific safety projects as well general safety improvement efforts. Additionally, during Phase 2, stakeholders acknowledged the importance of U.S. Route 2 (US-2) as a connector, especially as some of the priority projects are undertaken and result in increases in freight traffic. Should the IPH stakeholders reassess their priorities after some time, US-2 may well move towards the front of the list. And finally, the economic analysis results for the project relating to Improve Bridges on Important Truck Routes and the project relating to Improve Truck Routes Serving Geiger Spur Realignment can both be used as templates for high-level order of magnitude costs for additional similar improvements in the area, even though they were each prepared for a specific route or bridge, respectively.

4.1 Screening Process

Overview

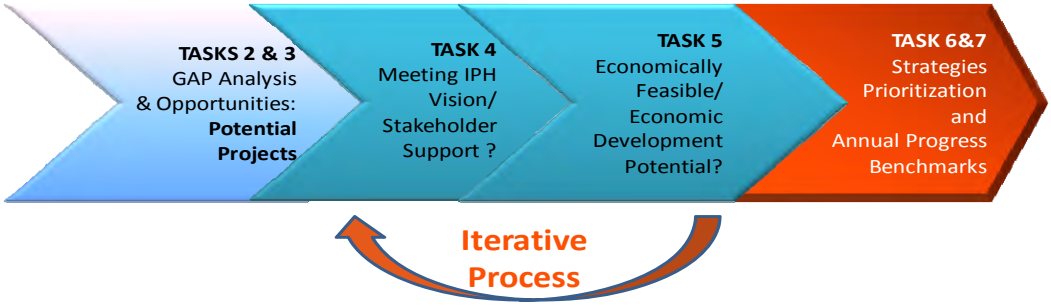
A multi-step process was used to identify, select and then refine a list of infrastructure projects to undergo economic analysis to assess if they should be included in the Blueprint (illustrated conceptually in Figure 8). The three key steps included:

1. **List of Candidate Projects:** An initial 'long list' of projects and strategies (as listed in Table 1 above) was developed based on potential value to the region and alignment with the directions identified at the beginning of Phase 2.
2. **Qualitative Evaluation (Screen 1):** The initial list of candidate projects (Table 1) were examined and ranked during a June 17, 2011 Workshop with key stakeholders, and then further evaluated by a team of transportation and planning professionals. This evaluation was conducted with stakeholders to ensure that the projects passing through screen 1 were those which best fit the IPH mission and goals as well as the region's priorities. The list of projects was then narrowed down for the purpose of developing a number of example projects to undergo the economic evaluation. The list was then refined and prioritized to include those projects that were the most applicable to the IPH purpose and needs, as well as the most economically worthwhile (Table 2). Note that those projects which did not proceed to screen 2 are still regional priorities for consideration by communities and policy-makers.
3. **Economic Evaluation (Screen 2):** The second screening and evaluation included a more detailed economic evaluation of the refined list of projects. For each of the projects on the smaller list, a high-level Benefit-Cost Analysis (BCA) and Economic Impact Analysis (EIA) were conducted. This traditional economic analysis was then supplemented with a sequencing analysis to illustrate project synergies and help stakeholders plan for the timing of project investments.

During the final workshop consensus was reached regarding the projects which passed through the screening processes, the fact that they were priorities based on the qualitative criteria, and that each

one was net beneficial to the region. In addition, the participants and stakeholders agreed that it would counterproductive to development of the IPH across its multiple boundaries to conclude with ranking and prioritization of the final list of projects. It was agree that such ranking might result in projects, and potentially stakeholders, in competition with each other instead of fostering the IPH's competitiveness against other regional hubs.

Figure 8: Screening Process for Projects in Phase 2



The initial list of potential projects and strategies was collected from past studies and reports, consultation with local stakeholders and agencies, and the region's needs as identified in Phase 1. Projects were identified as "eligible" projects for the economic evaluation based on overall eligibility as an applicable freight improvement project and seven organizing principles presented in *Memorandum #1: Summary of Phase 1 Findings and Conclusions.* Projects that were outside of the IPH study geographic area or area of influence were removed. Also, duplicate projects and strategies as well as projects and strategies that have been negated or modified by new studies or reports, or were no longer applicable because of the development of new projects or strategies were removed from the list. Projects and strategies that have been constructed, are under construction, or are fully funded and are expected to be constructed in the near-term were also removed.

The refined list of projects and strategies was presented and reviewed in the first workshop which was held on June 17, 2011 (Workshop 1: Review of Conceptual Framework and Regional Development Opportunities). After the workshop, the list of "eligible" projects was finalized for further evaluation.

Through the series of three workshops, additional consultation with outside experts, discussions with WSDOT and ITD and IPH Advisory Board members, the characterizations of the processes were refined over time. For instance, expansion of the North-South Corridor began as one project with two components (one from Spokane northwards and the other northwards from Coeur d'Alene) and evolved to two individual projects which were continuously refined in terms of costs and benefits.

The entire process and assessments can be viewed as a template for reviewing and evaluating transportation investments and strategies for the IPH to champion. Over time, as economic and political circumstances change and various projects are undertaken, the IPH will need to revisit and re-evaluate its priorities. This Blueprint provides a template for doing so.

4.1.1 Meeting the Regional Goals

Throughout the screening process, evaluation of transportation projects and strategies was structured to ensure that selected projects would support the development of new or emerging industries as well as the region's traditional strengths in existing natural resource extraction. A review of the work conducted during Phase 1, additional stakeholder interviews, discussions with policymakers and IPH Advisory Board members and IPH team expertise led to the proposal of seven organizing principles, to identify the projects, ensure consistency with the IPH Vision and with other existing plans. These are:

1. Transportation investments should support value-added development of existing industries, especially in rural areas.
2. Transportation investments should support the development of new or emerging industries that will benefit from the ability to ship goods in a cost-efficient manner.
3. Transportation investments should support growth in established industries.
4. The concept of an intermodal hub, which is about facilitating the exchange of goods and services, must account for external influences as well as local opportunities.
5. Transportation solutions should build upon existing infrastructure and plans.
6. Freight-friendly land use is important.
7. Consider the region as a large, multi-modal port.

4.1.2 Stakeholder Participation

Three workshops with IPH stakeholders were held during Phase 2, allowing for direct discussion of projects and economic analysis frameworks and assumptions. Workshop participants included members of the IPH Advisory Board, SRTC and KMPO staff, and other stakeholders including local officials, representatives of the Washington and Idaho Departments of Transportation and private shippers. All participants were asked to comment on the economic analysis framework, discuss key assumptions for the economic analysis, and consider strategies/next steps in the development of the IPH Blueprint.

- **Qualitative Assessment** - During the first workshop, participants reviewed and commented on the list of 'eligible' projects and strategies, scoring each one relative to how well it aligned with the IPH vision and how well it would foster growth in regional freight transportation and local industry.
- **Economic Analysis** – During the second and third workshops, participants reviewed and commented on economic analysis assumptions and inputs, reviewed preliminary results, commented on bundling scenarios, and worked with the project team to help refine project characterizations, timing and synergies.

Stakeholder input during the three workshops and their review of working papers and technical memorandums allowed for IPH stakeholders to:

- Participate in initial and revised qualitative scoring of projects and strategies;
- Revise key inputs into the economic analysis so that they better reflected local conditions;
- Refine what was best to be assessed in the economic analysis for each project, be it a component or phases of a larger project, particular lengths of roadway segments, etc.;
- Suggest bundles (or groupings) of projects to be assessed and sequenced; and

- Come to consensus on the need to present the projects as a collection of interrelated projects which are all critical to achieving the IPH vision of a regional freight hub.

4.2 Qualitative Assessment

Each project and strategy that remained on the list of "eligible" projects after Workshop 1 was screened using qualitative criteria based on long-range transportation planning and economic priorities. Projects were qualitatively assessed using a set of screening criteria developed by HDR, based on a thorough review of freight project evaluation criteria that have been used successfully by other organizations in North America.[17]

The qualitative assessment was intended to be very high level and based on information that could be reasonably obtained for all candidate projects. The projects and strategies were assigned a score of Low (L), Low-Medium (LM), Medium (M), Medium-High (MH), and High (H) for each of the following criteria:

1. **Support of Regional Plans**: Is the project compatible and/or consistent with plans and strategies outlined in Regional transportation and economic development plans? High – project is included in plans and is not counter to other planned initiatives; low – the project contradicts most or all regional transportation and economic development plans. It is important to note that the intent was not to preclude new initiatives that are not currently included in regional plans; rather, the object is to promote consistency with, and avoid conflict with existing plans.
2. **Productivity**: Is the project expected to decrease travel times, improve throughput, or otherwise increase the efficiency of the transportation network? High – large improvement in network efficiency; low – no improvement to efficiency.
3. **Connectivity**: Would the project close a gap in the network and / or provide increased intermodal connectivity? Does it provide important redundancy in case of inclement weather, collisions, or other factors? High – significant improvement to connectivity; low – little improvement and/or negative impacts on connectivity by another mode.
4. **Economic Benefits**: Is there a reasonable expectation that the project will yield economic benefits? Does it maximize the economic potential of existing industries? Does it provide an essential or desirable service for emerging industries? High – spurs or supports economic growth; low – not expected to spur or support economic growth.
5. **Environmental Sustainability**: Would the project have positive environmental impacts (e.g. reduction in emissions)? Does the project have fewer negative environmental impacts than other projects that may accomplish the same goals (e.g. fewer land use requirements, less noise)? High – reduces harm to the natural and built environment; low – causes new, unmitigated harm to the natural and built environments.
6. **Community Impacts**: Would the project contribute positively to the community (e.g. job creation, safety improvements)? If negative impacts are expected, can they be effectively

[17] For details on the reports reviewed and the case studies used to define the screening criteria for use in the IPH study, refer to *Memorandum #2: Hub Alternatives Evaluation and Ranking Methodology*.

mitigated? High – project creates community benefits and negative impacts can be effectively mitigated; low – negative impacts are not mitigated.

7. **Land Use Availability and Impacts**: Is the project consistent with local and regional land use plans? Is land available (or can it be made available) to effectively complete the project? Do complementary land uses exist and / or can they be planned? High – land is available for the project, it is supported by land use plans, and there are complementary uses; low – land is not available and is difficult to obtain / zone, adjoining land uses are not complimentary.
8. **Funding Opportunities**: Are there public funding sources that could be utilized for this project? Is the private sector expected (and willing) to contribute? High – multiple sources are likely to be willing to provide funding; low – funding will be difficult to obtain.
9. **Support of Other Projects**: Is this project an integral part of a package of projects? High – the project is necessary to support other, high-ranking projects; low – the project is stand-alone and not required to support other projects or initiatives.

Based on feedback from the IPH Board and preliminary results from the sequencing analysis, the IPH Team added an additional qualitative assessment category to be incorporated during the project and strategies review. This 10th category, **Geographic Equity**, was proposed as a mechanism to ensure that the IPH Team and Workshop Participants incorporated geographic equity issues so as to ensure that:

- Selected projects have notable positive impacts for both rural and urban communities within the IPH region; and
- The final decisions on top projects to champion have short, medium and long-term impacts for the IPH region as a whole and would not disproportionally benefit only one community.

4.3 Economic Analysis

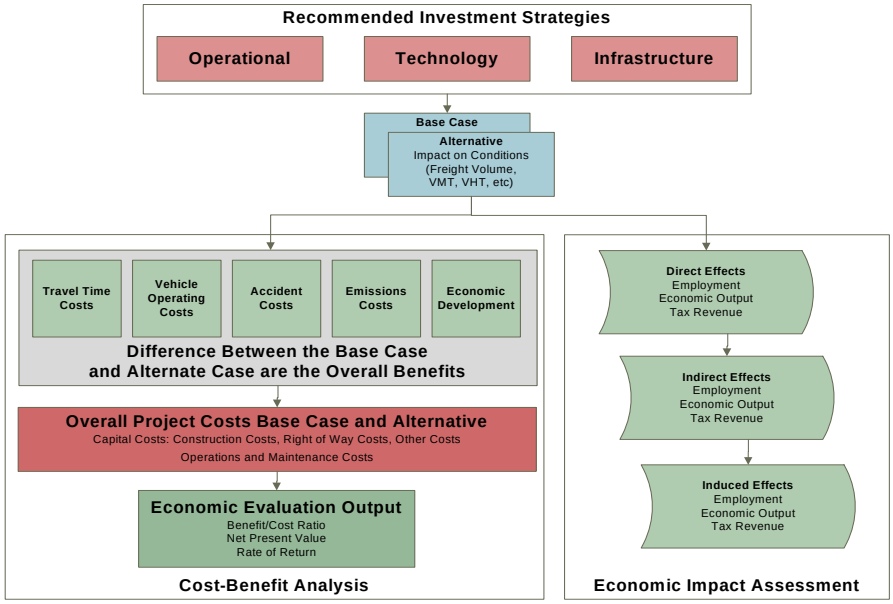
After the qualitative review and feedback from Workshop participants, a list of 13 projects was finalized to undergo the economic analysis (see Table 2, above). This list includes those projects that are best aligned with the community's vision for a vibrant Inland Pacific Hub and were selected to undergo another round of quantitative economic evaluation that includes high-level benefit-cost analysis and economic impact assessments.

Figure 9 illustrates the overall quantitative evaluation approach. The approach includes two economic assessments, one for estimating the market and another for estimating the non-market benefits of individual projects on this list.

1) **Market Benefits** would be in terms of jobs and output created in the region. Market benefits are accounted for through an **Economic Impact Assessment (EIA),** which studies the effect of a change in demand for goods and services as a result of the transportation investment.

2) **Non-Market Benefits** would be reflected in improvements in travel conditions, environmental benefits and increased economic development. These social benefits are quantified and measured within the framework of **Benefit-Cost Analysis (BCA),** using high level estimations based on average cost to build and to maintain per mile or acre and likely average benefits over the life of the project.

Figure 9: Quantitative Evaluation Approach



It is important for readers to keep in mind that the analysis conducted here is a high-level analysis (with high-level models) designed to assist at the regional strategic planning level. They were developed as part of a process to assist the IPH Advisory Board, who will advocate for, foster community consensus on, and coordinate efforts around strategies and initiatives but not fund any large capital projects itself.

A more detailed Benefit-Cost Analysis (BCA) intended to support a federal grant application or help manage the funding of a large capital project would certainly more project-specific details. A more detailed BCA would require much more effort than what was specified in the IPH Phase 2 scope. Given that the economic analysis in this Phase II study is a conceptual assessment, the IPH team recognized there would be some uncertainty surrounding the assumptions and thus incorporated a risk analysis framework.

Different levels of BCAs are used for different purposes, though they can all inform each other.

4.3.1 Benefit-Cost Analysis Approach

Any transportation investment brings with it both benefits and costs. From an economic and budgetary perspective, the most desirable infrastructure investments are those whose benefits exceed their total costs. The benefits of the investment stem from its significant effect on improving the mobility of goods and people, its ameliorative effects on traffic congestion, and its positive impact on the economic development of the region. These benefits are measured and quantified based on the changes the

project would cause in certain conditions, such as changes in speed, congestion, and travel time when implemented (build scenario) compared to the status quo (no-build scenario). They are then assessed relative to total project costs over the period of analysis, accounting for both capital and operations and maintenance costs.

For the projects being evaluated for inclusion in the IPH Blueprint, costs (to build as well as annual incremental operations and maintenance costs) were estimated annually for the total timeframe including 30 years of operations. Detailed cost information was available for a small portion of the projects evaluated; for the others, estimates were made based on number of lanes, miles and type of improvement.

These benefits are measured and quantified based on the changes the project would cause in certain conditions, such as changes in speed, congestion, and travel time when implemented (build scenario) compared to the status quo (no-build scenario). The estimated benefits of these transportation investments included:[18]

- **Reductions in Travel Time Costs**, stemming from improvements to travel speeds and reductions in congestion.
- **Reductions in Vehicle Operating Costs (VOC)**, primarily to fuel, tire wear, etc stemming from improvements to travel speeds and reductions in congestion. These are among the most recognized road-related transportation investment benefits because they typically involve out-of-pocket expenses. Note that the optimal speed for these costs overall is lower than highway free-flow speeds (the speed limit).
- **Reductions in Accident Costs,** due to improvements in safety.
- **Reductions/Changes in Emissions Costs**, due to reductions in congestion and/or increases in (new) induced traffic.

Each project is assumed to make its route more attractive, more reliable and/or less costly to users, which in turn will result in more users on that facility or in that corridor. These new users, described as "induced demand" by economists, will generate increased freight shipments but will also lead to additional emissions costs and perhaps additional vehicle operating costs. Therefore, these two categories may be negative, or act as "disbenefits" in those particular categories, though most likely outweighed by the benefits generated in other categories by those same additional induced trips.

Several criteria are used by decision-makers to determine whether investment projects are economically advisable to undertake. The most widely used of these decision criteria, and the ones that are estimated in this study, are as follows:

- **Benefit-Cost Ratio –** A benefit-cost ratio is the ratio of a project's discounted stream of benefits to the project's discounted stream of costs. A benefit-cost ratio greater than 1.0 indicates that a project generates more discounted benefits over the analysis time frame than costs generated

[18] Note that benefits were not able to be calculated in each category for each project, due to the availability of data and the methodology used to estimate additional users.

in undertaking the project. A benefit-cost ratio greater than 1.0 can also be interpreted as a project being economically worthwhile. Any project with a benefit-cost ratio less than 1.0 indicates that the project's costs exceed its benefits and cannot be considered economically worthwhile.

- **Net Present Value (NPV) –** The net present value is the discounted present value of benefits minus the discounted present value of costs. The net present value is measured over the life-cycle of the project under consideration. A net present value greater than zero indicates that the investment returns benefits proportionally in excess of costs.
- **Internal Rate of Return (IRR) –** The internal rate of return is the discount rate that, when applied to costs and benefits, results in a net present value of zero. Although the IRR gives the same fundamental answer as NPV, it does give added perspective. An IRR of, for example, 10 percent, means that the flow of benefits is sufficient to yield a return of 10 percent each year on that part of the investment, which has not been paid out. If a project's IRR is greater than the return available by investing in low-risk bonds it can be considered economically worthwhile.

4.3.2 Economic Impact Assessment Approach

While benefit-cost analysis measures the economic efficiency of investment projects, the Economic Impact Assessment (EIA) measures their macroeconomic effects – i.e. how a project changes demand (spending) for goods and services and the level economic activity in a given area, as measured by changes in business output (total sales), employment (jobs), and labor income and tax revenue.

The construction and ongoing operation of a transportation investment will require inputs (purchases) of labor, materials, equipment, and services, which must be supplied by local (and non-local) producers. To the extent that these purchases result in new investment from outside of the region, or in improved productivity or increased levels of labor force utilization (employment), they will cause real growth in the local and regional economy and result in greater employment, labor income, business profits and local tax revenue.

Economic impact analysis involves the estimation of three types of expenditure/production activity within a regional economy, commonly referred to as "direct effect," "indirect effect," and "induced effect." The total economic impact is simply the sum of the direct, indirect and induced effects. These effects are defined as follows:

- The **direct effect** represents the initial economic activity resulting from direct expenditures (e.g., construction expenditures) by businesses located in the study area.
- The **indirect effect** represents the impact of the additional business spending that is generated as these businesses sell more output and in turn purchase additional inputs from their suppliers (e.g., machinery manufacturers).
- The **induced effect** represents the increase in economic activity – over and above the direct and indirect effects – associated with increased labor income that accrue to workers and is spent on household goods and services purchased from businesses in the area.

These economic impacts can be calculated for both the short-term (i.e. jobs and output driven by construction spending) and long-term (impacts on jobs and economic output driven by operations and maintenance spending as well as user cost savings). The long-term jobs estimates are a function of the incremental increases in operations and maintenance, which is net new activity, plus any vehicle operating cost saving which can be diverted to other purchases.

For the projects being evaluated to determine inclusion in the IPH Blueprint, regional economic and fiscal impacts of the selected projects and strategies were estimated using the IMPLAN® economic impact modeling software, which is an input-output[19] model based on an economic impact assessment system originally developed by the U.S. Forest Service and now maintained by the Minnesota IMPLAN Group, Inc. Using IMPLAN, the direct, indirect, and induced effects of each project/strategy is estimated, using the IMPAN data files that include data on transaction information (intra-regional and import/export) on 440 industrial sectors (corresponding to four and five digit North American Industry Classification System (NAICS) codes) and data on 21 economic variables – including employment, total value added, and labor income. IMPLAN is a proprietary software program which uses detailed data on each economic sector in each county and how spending in each sector then increases other spending in other local sectors. These spending relationships by industrial sector or multipliers allow economists to calculate how much each additional dollar spent in each sector, such as construction, flows through multiple sectors and the resulting total impact on the local economy in terms of jobs.

4.3.3 Risk Analysis

Both Benefit-Cost Analysis (BCA) and Economic Impact Analysis (EIA) necessarily involve developing analytical models and estimating future conditions, therefore entailing an element of uncertainty which poses the risk of error in the final assessment. To address this inherent uncertainty, the BCA and EIA conducted on the Blueprint candidate projects incorporated a formal risk analysis framework which takes into account and quantifies the uncertainties inherent in the values of the input variables.

Usually, the outcomes of BCA and EIA are presented as single expected values for outcome metrics. Such single expected values represent a single "best" estimate, but do not offer any additional information on the range of other possible outcomes and their associated probabilities. At most, these studies are accompanied by a single "best" estimate for a "high case" scenario and one for a "low case" scenario to bracket the central estimate, or by a limited sensitivity analysis in which key forecast assumptions are varied one at a time in order to assess their relative impact on the expected outcome. However, neither the high and low scenario analysis nor the sensitivity analysis are realistic representations of the world, since the former requires the input values to all change simultaneously in one direction and the latter requires input values to change one at a time.

This study employed a risk analysis framework that defines ranges and probability distributions for the values that the input variables could take, leading to a better understanding of the range of likely

[19] An input-output ("I-O") approach was followed in this study, drawing on an extensive body of research and experience with successful applications to transportation projects. An I-O model calculates impact multipliers, which are then used to compute direct, indirect and induced effects.

outcomes. In this risk framework, probability distributions are defined for low and high input values and select parameters corresponding to the 10th and 90th percentiles for each metric, respectively. The low value means that there is a 10% chance that the actual value is less than the low value. High values are defined similarly. Next, through Monte Carlo simulation, the model is run hundreds of times, each time with a different set of input value used for all the input variables simultaneously to generate probabilistic estimates of the output measures, as opposed to a single best estimate. The end results are central forecasts, together with estimates of the probability of achieving alternative outcomes given uncertainties in underlying variables and coefficients.

Details on BCA and EIA results are presented in the Appendix to this report. Those results include high, medium and low estimates of benefits by high-level category, total costs, net present value, benefit-cost ratio, internal rate of return, and the employment, labor income and value added impacts.

Key Finding

Individual projects advanced through the screening process are found to be economically feasible with each one showing a positive net present value and a benefit-cost ratio greater than 1.0. This is not a surprise as these projects have been identified by the local agencies for some time as essential to meet regional infrastructure needs, as well as they have scored high in meeting key regional criteria. The next chapter focuses on the collective benefits and the economic worthiness of these projects as they fulfil the IPH vision.

Table 3: Summary Results[20]

Project Name	Employment	Labor Income ($ million)	Total Value Added ($ million)	NPV ($ million)	B/C Ratio	IRR
Continued Expansion of US-95 North towards Canada (from Bonners Ferry)	745	$28	$37	$74.40	2.5	12.6%
Continuation of US-395 North Spokane Corridor (Francis to the River)*	4,415	$246	$336	$239.30	1.8	8.7%
US-195 Improvements between Lewiston and Spokane	1,010	$56	$77	$71.00	1.9	9.5%
Huetter Corridor (Coeur d'Alene Bypass)	3,014	$168	$230	$274.80	2.3	11.0%
US-95 Improvements from/to Snake River Ports	491	$19	$25	$27.50	1.8	9.4%
Widen I-90 through Spokane and Kootenai Counties	1,785	$93	$127	$126.50	2.0	9.7%
Improve Truck Routes serving the Geiger Spur Realignment	644	$36	$49	$18.60	1.3	6.7%
Upgrade Airport Access Infrastructure	773	$43	$59	$16.20	1.3	6.1%
Improve Bridges on Important Truck Routes (first one: Sullivan Road Bridge near I-90)	266	$15	$20	$20.30	2.1	10.6%
Increase Level of Maintenance and Repair Work	2,180	$114	$155	$7.00	1.1	12.1%
Eliminate Safety Hazards from Roads	161	$8	$11	$10.70	2.0	10.0%
Expand Access to North-South Rail Link to Canada	2,423	$135	$185	$218.20	2.4	12.0%
Bridging The Valley (Grade Separations only)	4,158	$217	$296	$37.80	1.1	5.0%
Full Completion of US-395 North Spokane Corridor (Francis to I-90)	21,536	$1,199	$1,641	$291.07	1.2	5.1%
Bridging The Valley (Full Project)	11,421	$596	$813	($403.70)	0.4	-1.0%

*The economic analysis conducted for the continuation of the North Spokane Corridor estimates the incremental costs and benefits for the considered portions, not the entire corridor, and by definition will be smaller than the estimates prepared by WSDOT for the full corridor.

[20] Note: These results are the product of high-level models designed to assist regional strategic planning purposes. They were designed to assist the IPH, an entity which advocates for, works to foster community consensus on, and coordinates efforts around strategies and initiatives but does not fund large capital projects itself. A Benefit-Cost Analysis (BCA) intended to support a federal great application or help manage the funding of a large capital project would include more project-specific details and much more effort than what was specified in the IPH Phase 2 scope.

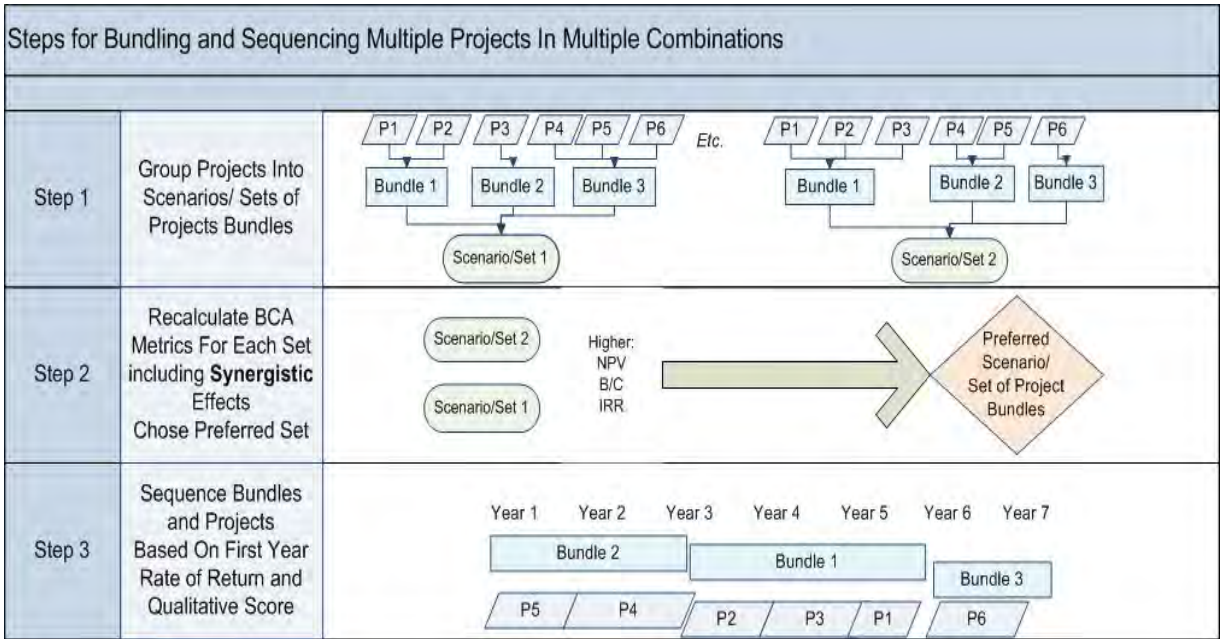
5. Economic Benefits of the IPH Investments

All 13 projects which underwent economic analysis were advanced forward to be a part of the overall IPH development plan. To assess the collective impact of these projects, the IPH team developed a three-step process to account for the economy of scale in terms of the synergy amongst projects along with the implementation timing:

1. **Synergy Identification**: Since each of the projects would play a major role in enhancing the connectivity across the valley, improving freight movement, and promoting intermodal investment, this step identified which projects complement each other to meet IPH objectives and yield higher aggregate benefits;
2. **Bundling Impact**: To incorporate the synergies that would arise for some projects when in place with others in the plan, the second step assessed the combined economic impact of certain 'bundled' projects. The BCA metrics for each bundle of projects take into account the economies of scale due to the synergies;
3. **Sequencing for planning**: Given the funding constraints and the fact that some projects have been already advanced in some capacity and have political support, this step provided an ordering of the bundles and the projects within the bundles. The sequencing accounted for both the rate of return *and* the likelihood of meeting the region's goals, especially in terms of political support and funding potential.

Figure 10, below, illustrates this process as it involves the assessment of multiple versions of project bundles.

Figure 10: Steps for IPH Bundling and Sequencing

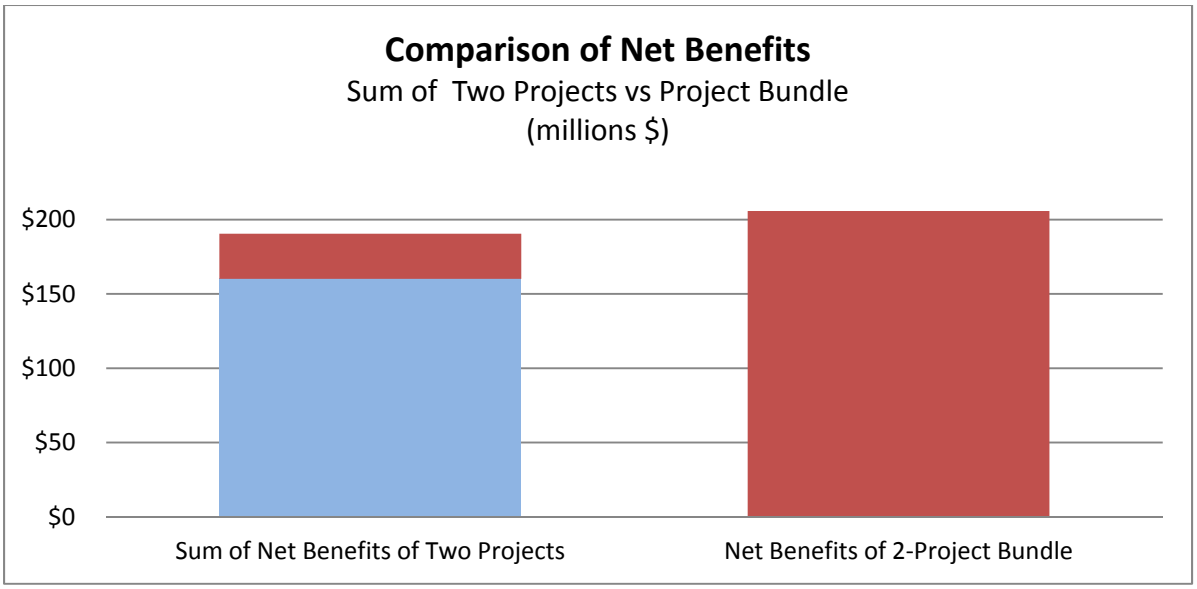


The bundling and sequencing analysis recognizes that other criteria such as funding constraint, legislative requirements, and the level of participation of various stakeholders may alter the individual project's scope and prioritization.

5.1 Project Synergies

Given the IPH connectivity goal, several of these projects complement each other and therefore together may have a greater net economic impact than the sum of their individual impacts due to a *greater* increase in additional freight activity. HDR transportation economists evaluated each combination of projects and classified them as having either: No Impact, Very Low, Low, Medium, High, or Very High Synergies and applied an appropriate factor (from 0.0% to 20.0%) to the expected Induced Demand (see Working Paper #2: Preliminary Investment Strategies for greater detail). Figure 11 illustrates a case in which two projects when assessed together as part of a bundle (such as Expansion of US-95 - Sandpoint to Canadian Border and US-95 Improvements from/to Snake River Ports - East Route) were estimated to generate greater net benefits than when considered separately.

Figure 11: Example Comparison of Net Benefits of Sum of Projects vs. Bundle



In the analysis, the two phases of both the North Spokane Corridor and the Bridging the Valley projects were modeled separately. This was done for two reasons. The first is that the total costs of the entire projects are so high that they will push all other projects in the long-run. Separating them into phases allows for them to be evaluated in a phased approach that can include other projects in the short and medium term. In addition, it is the opinion of the IPH consultant team that both projects are already being considered in a phased approach. The NSC has already (reasonably) been segmented so that the Francis to Spokane portion comes first (to avoid discontinuous expansion). The Bridging the Valley Project grade-crossing improvements should occur before the realignment because additional traffic will be diverted onto a segment before the crossing on that segment is improved.

5.2 Project Bundling Scenarios

These proposed projects will not be developed in a vacuum. Several projects are likely to compliment, have dependencies on, or coincide with others and therefore the region is likely to see the synergies described in the section above. Any plan going forward benefits from considering how projects might be developed in groups (bundles) and their timing.

The 13 IPH projects could be grouped in a variety of related projects and many combinations were considered. Combinations of project bundles, or bundle scenarios, were constructed so that no one bundle would be so large as to encompass most of the projects, or so small as to contain only one project (though in some cases, that may be the best option for a couple of projects being considered). Therefore, projects were grouped together based on a view that they support each other and are likely to generate greater economic benefits when together than when separate. The overall bundling rules used in this analysis included:

1. Earlier bundles should take advantage of projects already in the pipeline, have political support, and have higher likelihood for funding;
2. Bundles should cover projects from different geographic areas to account for equity and build regional support;
3. No project could appear in more than one bundle;
4. Each bundling scenario included all the considered projects to fulfill the overall IPH vision; and
5. Bundling must account for funding level and timing constraints, and therefore some major projects may need to be broken into various phases.

Over time, as regional efforts shift, funding changes, etc, the ideal bundling scenario may also shift. For this analysis, the project team prepared a conceptual assessment using results from the economic analysis and broke the candidate projects into three main bundles: a Short-Term bundle, a Mid-Term bundle, and a Long-Term bundle, presented below in Table 4.[21]

[21] Note that the full build out of the NSC and the realignment portion of Bridging the Valley are presented as "extended projects" assuming a phased approach for these two large undertakings.

Table 4: Bundle Scenario

Bundles	Projects	Project Name
Short-Term Bundle	Project 1	Continued Expansion of US-95 North towards Canada (from Bonners Ferry)
	Project 2b	US-395 North Spokane Corridor, continuation from Francis to the River
	Project 7	Improve Truck Routes serving the Geiger Spur Realignment
	Project 8	Upgrade Airport Access Infrastructure
	Project 9	Improve Bridges on Important Truck Routes
	Project 10	Increase Level of Maintenance and Repair Work
	Project 11	Eliminate Safety Hazards from Roads
Mid-Term Bundle	Project 5	US-95 Improvements from/to Snake River Ports
	Project 12	Expand/Improve North-South Rail Link to Canada
	Project 13b	Bridging The Valley: Grade Crossing Improvement
Long-Term Bundle	Project 3	US-195 Improvements between Lewiston and Spokane
	Project 4	Huetter Corridor(Coeur d'Alene Bypass)
	Project 6	Widen I-90 through Spokane and Kootenai Counties
Extended Projects	Project 2a	US-395 North Spokane Corridor, *Full* Completion (Francis to the River *and* the River to I-90)
	Project 13a	Bridging The Valley: Grade Crossing Improvement *and* Realignment

The same qualitative analysis and the benefit-cost metrics that were used to assess individual projects were also prepared for the bundling scenarios, including benefit/cost ratio, net benefits, and internal rate of return. Results for each of the five bundling scenarios considered are available in the appendix to this report.

5.3 Sequencing Scenarios and Projects

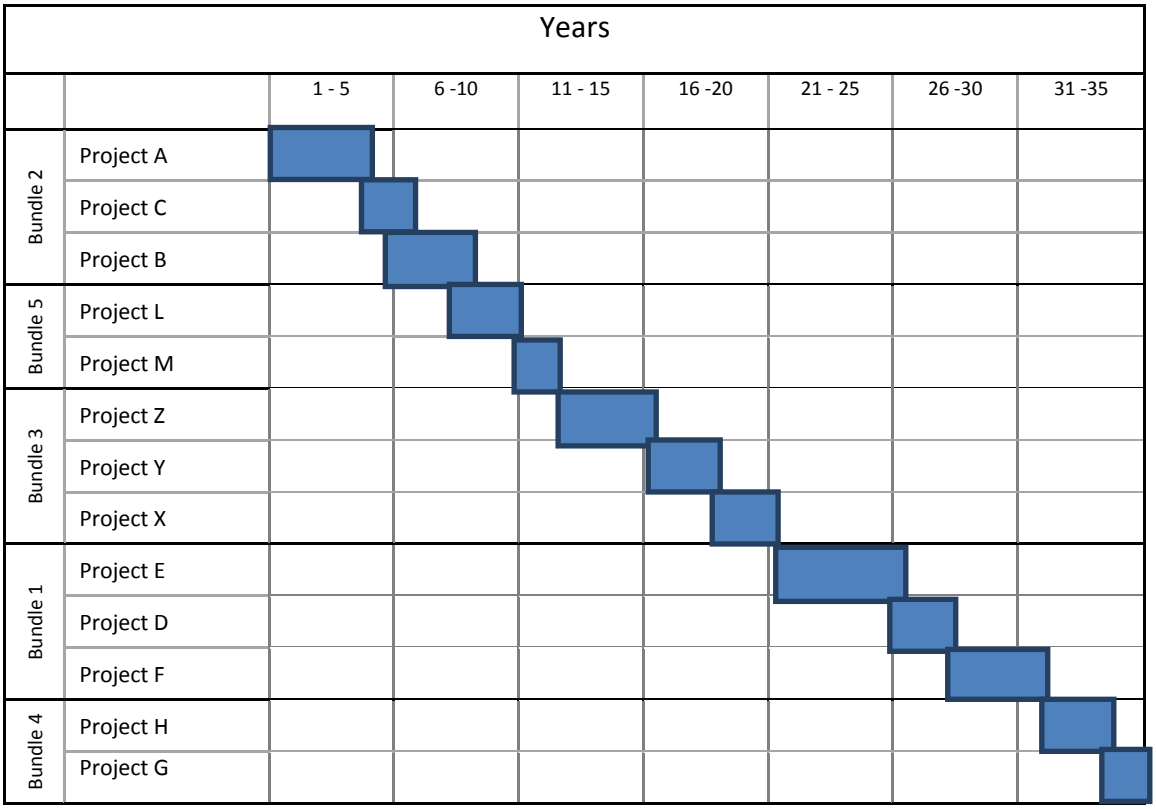
After economic impacts were re-estimated for bundles of projects, their optimal timing was estimated using both the qualitative scores described in section 4.2 and the first year rate of return. Bundles were first sequenced and then the projects within the bundles were sequenced. This sequencing process ensured that those projects which both aligned highly with IPH goals and had high early returns on the investment would be placed first – balancing both economic and non-economic priorities.

The sequencing analysis included two phases:

1. Sequencing of Project Bundles and
2. Sequencing of projects *within* individual bundles.

Figure 12 illustrates graphically an example of sequenced project investments within sequenced bundles.

Figure 12: Example of Bundle and Project Sequences by Time Period



The project team analysed and sequenced the five potential bundle scenarios of short-term, medium-term and long-term projects. (See Appendix D for details on the different bundle scenarios.) These were developed by the IPH project team based on experience and input from workshop participants. Since expenditures and investment decisions are always made in an environment of limited financial resources, the sequencing analysis for this assessment assumed a financial constraint. As noted above, in this analysis the constraint was equal to the total cost of all projects divided by the number of years in the analysis (35 years - five years to build and 30 subsequent years of benefits), or a total of approximately $100 million per year.

Five different bundling scenarios were subjected to the sequencing for this analysis, with varying numbers of bundles and project combinations (See Appendix D for details). One bundling scenario was chosen to reflect fairly high-level combinations: and grouped together all the projects on a north-south corridor together, all the projects on or near I-90, and then all the rail and highway maintenance projects. The second bundling scenario was similar to the first, but with greater geographic separation: projects on north-south corridors were separated into two bundles – north and south of I-90; and the smaller projects near Spokane (Airport Access and Geiger Spur) were separated from the east-west/I-90 projects; and maintenance projects were separated from the rail projects. The third bundle took a larger grouping of the north-south projects but fewer for the east-west bundle. The fourth bundle examined

put the north-south projects in the northern part of the region in the short-term bundle while those in the southern part of the region were put in the long-term bundle, a notable difference in timing of the components of investments along the entire corridor(s); while maintenance projects were moved into the short-term bundle. The fifth bundling scenario focuses on the north-south corridor improvements below I-90 in the medium-term bundle and while the short-term bundle includes projects of different types for an eclectic mix.

The analysis for each bundling scenario included re-estimation of the EIA and BCA based on the timing dictated by the sequencing. Projects undertaken later will experience greater discounting (for the time value of money) and different sets of bundles have slightly different synergies. The following tables and graphics present both the timing and BCA and EIA results for the recommended scenario 4. These projects, in the order determined by the sequencing analysis, are only preliminary investment recommendations for the IPH. Further reconfiguration of these projects may lead to different sequences.

5.4 Recommended Projects Bundle Scenario

After reviewing the results for all five bundling scenario options, comments from Workshop participants regarding regional priorities and equity, and current political support for particular projects, the HDR consultant team recommends that the IPH Advisory Board focus on bundling option 4, which emphasizes the North-South Connections north of Spokane and Coeur d'Alene as well as maintenance in the short-run bundle. The reasons for recommending this bundle include:

- It has one of the highest benefit-cost ratios among the five (only bundling scenario 5 is higher). Its 2.0 B/C ratio indicts a likely return of two dollars for every dollar invested.
- This bundle maintains geographic equity between the states with relation to completion of the North-South corridors, which Bundling Scenario 5 (the only one with a higher benefit-cost ratio) does not. Equity continually arose as a critical issue during the workshops.
- It includes Continuation of US 395 North Spokane Corridor (NSC) from Francis to the River in the short term bundle, a project which already has significant political support. Additionally, other segments of the NSC are already under construction and realizing the full benefits from the investments in those segments cannot be fully realized until the Corridor is complete.

Bundling Scenario 4: Bundling Scenario 4 focuses on the northern most portions of the north-south corridors and I-90 improvements in the short-run, postponing other north-south corridor improvements to the long-term bundle. Another key difference is the inclusion of the rail projects in the medium-term bundle, together with the bridge improvements and improved access near Geiger Spur.

Table 5 Project Bundles for Recommended Scenario (#4)

Short-term Bundle	Medium-term Bundle	Long-term Bundle
US-395 North Spokane Corridor, continuation from Francis to the River	Expand Access to North-South Rail Link to Canada	US-195 Improvements between Lewiston and Spokane
Expansion of US-95 - North to Canada (from Bonners Ferry)	Bridging The Valley - Grade Separation Improvements	Widen I-90 through Spokane and Kootenai Counties
Increase Level of Maintenance and Repair Work	US-95 Improvements from/to Snake River Ports	Huetter Corridor (Coeur d'Alene Bypass)
Elimination of Safety Hazards from Roads		
Upgrade Airport Access Infrastructure		
Improve Bridges on Important Truck Routes		
Truck Routes Serving the Geiger Spur Realignment		
Extended Projects		
US-395 North Spokane Corridor, Full Completion (Francis to I-90)		
Bridging the Valley: Grade Separation Improvements and Realignment		

The sequencing analysis was conducted using the first phase of both the North Spokane Corridor and Bridging the Valley projects as separate from the second phases of those projects, which come at the end given their very high costs. The projects were separated for sequencing for two reasons. The first

reason is that the overall cost for each the completed project is currently too high to be funded and undertaken all at once. The second reason, which is a direct outgrowth of the first, is that both projects have well defined first phases which have more manageable funding requirements as well as strong support. Successful completion of the first portion of each project can viewed as a prerequisite to undertaking the second phase. Thus, we recommend that the IPH consider both as phased projects, and undertaking the second phase once the first is complete. The graphic below illustrates the sequencing of the projects in the recommended scenario, plus the timing for the second phases of both the North Spokane Corridor and Bridging the Valley projects.

Figure 13: Project Sequencing Schedule for Recommended Bundling Scenario 4

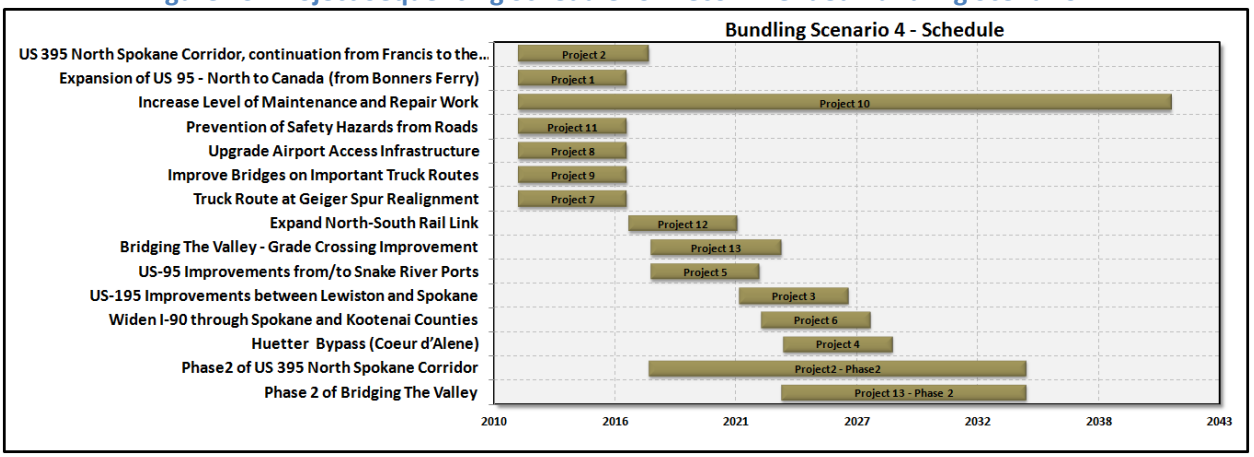


Table 6: Economic Assessment Results for Bundling Scenario 4

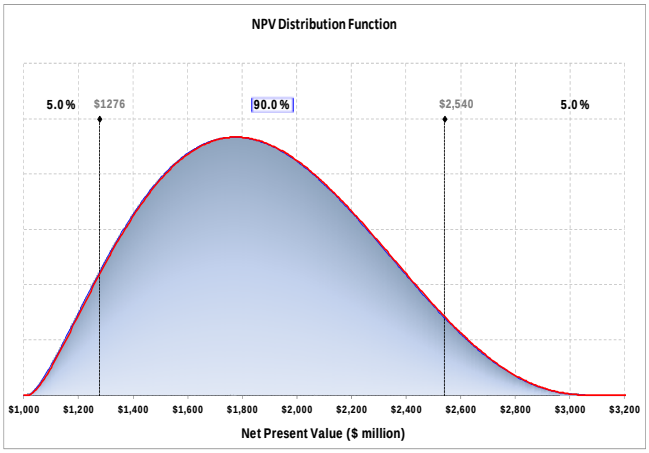
Economic Impact Analysis Results (including full build out of North Spokane Corridor and Bridging the Valley)				
	Direct	**Indirect**	**Induced**	**Total**
Employment (Number of Jobs)	24,873	8,872	12,704	46,449
Labor Income (Earnings; $million)	$1,438.8	$514.1	$ 557.4	$2,510.3
Total Value Added (Economic Activities $ million)	$ 1,634.6	$776.5	$ 1,017.4	$3,428.5
Cost Benefit Analysis Results of Sequenced Bundles (including project timing and discounting)				
	Low	**Medium**	**High**	
Net Present Value (Discounted Benefits Minus Costs in $M)	$1,015.90	$1,747.87	$3,049.81	
Benefit Cost Ratio	1.5	1.8	2.4	

Undoubtedly, after the short-run bundle projects are complete the IPH will need to re-visit all options to incorporate any unexpected shifts in the economy and any potential other larger regional or national efforts which may impact the IPH's growth. For instance, if currently proposed national efforts to expand north-south trade (such as the CANAMEX or I-11 initiatives) are delayed, the IPH may need to re-examine the choice to leave the projects for US-195 Improvements between Lewiston and Spokane and US-95 Improvements from/to Snake River Ports in the long-term bundle (as in Bundling Scenario 4). Additionally, if an unexpected funding opportunity arises for one of the projects in Bundling Scenario 4's long-term bundle, it will likely make sense to move that project forward in time.

5.5 Overall IPH Economic Worthiness

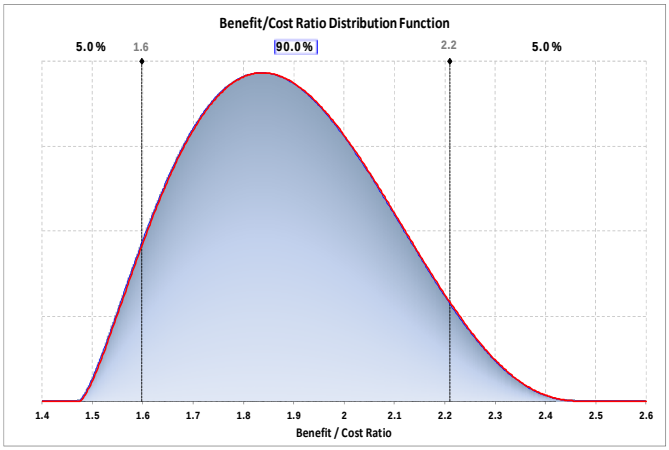
Regardless of the bundling scenario evaluated, the group of 13 candidate projects advanced for potential IPH infrastructure investment would yield a significant economic impact with a potential of creating over 26,000 jobs. The cost benefit analysis of the various bundling scenarios reveals that the net present value (discounted benefits minus discounted costs) will average about $1.7 billion (see Figure 14). Even when accounting for uncertainty surrounding key project assumptions, the net present value range shows that there is very little risk and that the upside potential may reach up to $3 billion (Figure 14).

Figure 14: Net Present Value Distribution Based on the Selected Bundle Scenarios



Similarly, when assessing the benefit cost ratio of various bundle scenarios, Figure 15 shows that for every dollar the region invests in these projects, it will get between $1.30 and $2.50 in return with a 90% confidence interval.

Figure 15: Benefit Cost Ratio Distribution Based on Selected Bundle Scenarios



The qualitative scoring and the economic analysis of the projects ensured that moving the projects forward individually is valuable in meeting IPH's objective. However, the bundling and sequencing process described in this paper is an exercise to illustrate the economies of scale that these projects may yield when combined. Such synergies are enhanced by sequencing the bundles based on their political, technical, and economic feasibility. As a complement to the infrastructure needs, the next step's focus is on strategies to build public and political support, lay down an institutional arrangement that will sponsor and foster the investment, and secure funding to make these infrastructure improvements a reality.

6. Finance and Funding Mechanisms

The IPH funding strategy should maximize the number of projects which can be undertaken, and done so quickly. It should also be geared to fund those projects that are identified as being part of the short-term bundle first, then those in the medium-term bundle and finally those in the long-term bundle, **as long as those choices do not diminish or slow down the total funding to the region**. The IPH region covers portions of two states and includes two MPOs, and the availability of funds and their applicability to IPH projects not entirely within their legislative geography may vary, and this must be taken into account.

Types of Funding Sources

Federal
- ***Grants***
- ***Loans***

State
- ***Direct Funds/Grants***
- ***Loans (i.e. State Infrastructure Bank)***

Private
- ***Ports and Terminals***
- ***Carriers***
- ***Other Users***

The financing plan needs to ensure that: [22]

A. A mix of funding sources should be included: Federal, State, local, as well private entities and user fees.

B. Projects should be directed to funding sources based on primary beneficiaries so that:
   1) Projects with relatively higher and broader *social benefits* get priority when seeking public funds, especially Federal funds.
   2) Projects with greater benefits accruing directly to *private interests* should actively seek out private funds and/or partners, or consider user fees. Projects with a combination of *large scale public benefits* ***and*** *significant direct private beneficiaries* are good targets for public loan programs, which offer subsidized rates (and thus lower overall financing costs).

C. It is flexible, as initiatives move from planning to design to implementation phases and be able to adjust to changes in scope, environmental requirements/findings, and community support. Financing needs may change, eligibility may shift and other competing needs for funds mean that strategies must be able to change as well. [23]

D. It considers the "competitive situation" of the hub when assessing the viability of financing that includes loans or bonds that would be repaid with user fees for larger projects with readily identifiable users.

E. Port/airport authorities participate in the financing, where possible, of projects which are either due to their expansion and/or operational needs or when the port is one of the primary beneficiaries.

6.1 Funding Sources

In practical terms, funding sources for freight hubs fall into three main categories: 1) Federal funds and programs; 2) state and local funds and programs; and 3) private funds. Both federal and state/local

[22] See Working Paper Working Paper #3: Implementation and Funding Strategies for greater discussion on funding principles.

[23] See Boske, *Innovative Strategies to Raise Efficiencies along Transportation Corridors and at Multimodal Hubs*, for discussion and examples of flexibility including for the Port Inland Distribution Network of the Port Authority of New York and New Jersey.

funds can be either grants (preferable) or loans[24], the latter usually subsidized. Each type has its own pros and cons: grants do not have to be repaid but in the current funding environment they are very competitive and may require significant investment of time, effort, and even expense with little guarantee of success. While state and Federal loans do need to be repaid, their terms are often quite favorable and can often be quite flexible. Federal funds have another downside in that they often require considerable additional efforts to comply with regulations and requirements, often delaying the start of construction considerably. Meanwhile, investments funded with private and state funds only, can move much more quickly. Yet the private funders are likely to require a clear return on their investment and more.

Grants are often preferred over loans by policymakers because the money does not need to be repaid. But not all projects will be able to receive grants, and some may need to seek loans. From the point of view of the region as a whole, those projects which **are** amenable to non-grant funding (subsidized loans, user fees, public-private partnerships) should ensure that they seek those sources out. Doing so will help ensure that more grant funding is available to those projects without other funding options, which are often projects with significant public benefits and few opportunities to capture the value to direct users. Such an approach is more likely to maximize the total funds that can be used for the region as a whole.

The table below presents many potential funding sources for infrastructure investments in the IPH area. Federal grants are listed first, as the most preferable, followed by Federal loans, state grants and loans, local funds, and likely types of private funds (individual private entities are not identified in this table).

Table 7: Possible Federal Funding Sources

Program/Entity	Funding Source	Program Notes
Federal- Grants		
Congestion Mitigation/Air Quality Improvement Program	FHWA	A wide range of projects in air quality nonattainment and maintenance areas for ozone, carbon monoxide, and small particulate matter, which reduce transportation-related emissions. Federal funding up to 80 percent.
FAA Airport Improvement Program— Entitlement Program	FAA	Grants for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems (NPIAS). Limited to on-airport projects or to access roads controlled by the airport authority and substantially dedicated to airport-related use. Federal funding up to 80 percent.
High Risk Rural Roads Program (HRRRP)	FHWA	Grants for high risk rural roads (HRRR) highway safety improvement projects. Projects may be selected on any public HRRR to correct or improve hazardous road locations or features.
Highway Bridge Program	FHWA	Replacement and rehabilitation of any public bridge.
Highway Safety Improvement Program	FHWA	For highway safety improvements; Includes multiple smaller programs as well.

[24] Note that 32 states and one territory have State Infrastructure Banks (SIB) funded with Federal dollars (see http://www.transportation-finance.org/funding_financing/financing/credit_assistance/state_infrastructure_banks.aspx.) but that Idaho is not one of them (Washington is). In addition, three states have funded SIB's with state funds. See Boske, Innovative Strategies for a discussion of Florida DOT's use of its ISB, which was one of the first in the nation.

Highways for Life Pilot Program	FHWA	Funding to demonstrate and promote state-of-the-art technologies, elevated performance standards, and new business practices in the highway construction process. Up to 20% but not more than $5 million, of the total project cost.
Innovative Bridge Research and Deployment Program	FHWA	Grants funds to promote, demonstrate, evaluate, and document the application of innovative designs, materials, and construction methods in the construction, repair, and rehabilitation of bridges and other highway structures
Interstate Maintenance Program	FHWA	Highway resurfacing, restoration, rehabilitation, and reconstruction (4R) on the IHS, including added lanes to increase capacity on most existing Interstate System routes
National Corridor Infrastructure Improvement Program	FHWA	A discretionary program that provides funding for construction of highway projects in corridors of national significance to promote economic growth and international or interregional trade. This program replaces TEA-21 section 1118, National Corridor Planning and Development program
National Highway System	FHWA	Funding for improvements to rural and urban roads that are part of the NHS, including the Interstate System and designated connections to major intermodal terminals.
Projects of National & Regional Significance	FHWA	Funding for high cost projects of national or regional importance. Project cost must be greater than or equal to the lesser of (1) $500,000,000 or (2) 75 percent of the amount of Federal highway funds apportioned to the State
Railway-Highway Crossings	FHWA	Grants for elimination of hazards and the installation of protective devices at public railway-highway crossings. Federal share is 90 percent
Surface Transportation Credit Program	FHWA	Provides direct federal loans, loan guarantees, and lines of credit for large surface transportation programs of national significance.
Surface Transportation Program (STP)	FHWA	Broad range of surface transportation capital needs on any Federal-aid highway, including the NHS, bridge projects on any public road. Generally the Federal share is 80 percent.
TIGER Grants	FHWA, FRA, FTA	Funds for projects that will have a significant impact on the Nation, a metropolitan area or a region, with emphasis on intermodal, multi-modal and projects. Minimum 20 percent state/local match
Transportation, Community & System Preservation Program	FHWA	Funding for a comprehensive initiative including planning grants, implementation grants, and research to investigate and address the relationships among transportation, community, and system preservation plans and practices and identify private sector-based initiatives to improve those relationships. Generally the Federal share is 80 percent.
U.S. Economic Development Administration (EDA) Public Works and Development Facilities	EDA	Grants to support the construction, expansion or upgrade of essential public infrastructure and facilities. Can be used to fund access projects with definable economic development benefits. A 50/50 matching grant.
Federal - Loans		
Railroad Rehabilitation & Improvement Financing (RRIF)	FRA	Direct federal loans and loan guarantees up to $35.0 billion to finance development of railroad infrastructure. Up to $7.0 billion is reserved for projects benefiting freight railroads other than Class I carriers.
TIFIA (Transportation Infrastructure Finance and Innovation Act of 1998)	FHWA	A federal credit program under which the USDOT may provide three forms of credit assistance—secured (direct) loans, loan guarantees, and standby lines of credit—for surface transportation projects of national or regional significance. The fundamental goal is to leverage federal funds by attracting substantial private and non-federal co-investment in critical improvements to the nation's surface transportation system.

Sources: National Highway Cooperative Research Program Report 497, *Financing and Improving Land Access to U.S. Intermodal Cargo Hubs*, Washington, DC, 2003; and individual program websites.

Table 8: Possible State anf Local Funding Options

State - Grants		
Transportation Agency Funding	Allocations from Federal gov.; state budget; referendums; user fees; Trust Funds; Bonding Programs, etc.	Can be used to fund a wide range of access projects of interest at the state level; may be available on a faster timeframe than federal funds; can be used as a match for federal funding mechanisms. Must adhere to state-specific requirements. Under greater budget pressure than federal grants due to balanced budget requirements
Transportation Improvement Districts	Property or special taxes within the district	Can be used to fund access projects in a specific area; may be available on a faster timeframe than federal or state funds; can be used as a match for federal funding
State Economic Development	Tax revenues, referendums, etc.	Must tie explicitly with defined goals and usually must focus on direct creation of jobs
State – Loans and Other		
State Infrastructure Bank	Can be capitalized through existing federal aid	Can be applied to a wide range of access projects. Often structured as a revolving loan fund, where loans are recycled for new projects. Repayments required back to SIB, for subsequent loans for other projects
Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE)		State-issued short-term note or long-term bond that uses future federal funds to support payment of principal and interest. Issuance and insurance costs are also eligible. This is generally used in combination with advance construction.
Local		
Local Transportation Funding Programs	Local and municipal budgets; user fees; tax revenue sources	Can be used to fund a wide range of access projects of interest at the local level; may be available on a faster timeframe than federal or state funds; can be used as a match for federal funding mechanisms. May be subject to voter referendums.

Private funds include not only user fees but also monies from ports, airports, and terminals, as well as individual companies with a significant interest in the facilities. In some cases, formal public-private partnerships are formed.[25]

[25] See NCFRP for discussion of the public-private partnership between the Columbus Regional Airport Authority, Norfolk Southern Railroad, the city of Columbus and the state of Ohio.

Table 9: Possible Private Funding Options

Program/Entity	Funding Source	Program Notes
Direct Funding	The private entity's revenues; Guarantee of loans and bonds	Can be used to fund projects that benefit specific users; much faster timeframe than public sources and may have fewer requirements. Upfront funding can eliminate the potential for user fees or longer term financing. May not meet all public objectives. Corporate investors must consider the costs/benefits of the project and will seek a faster return on their investment.
Contribution of Land or Right of Way	The private entity's revenues; Guarantee of loans and bonds	Private entities directly connected with the access improvement. Can be used to help fund projects that benefit specific users.
Special Tax	Corporations and others who pay tax	Special tax can be enacted to support upfront bonding for a program of transportation improvements. Can be developed as a limited-time program. Available on a much faster timeframe than public sources; used in transportation improvement districts. Challenges include likely resistance from private entities; developing an equitable tax structure; administering the tax program.
User Fees	Corporate revenues or users that benefit. Can be passed on to customers.	Can provide a revenue stream to support upfront bonding for a program of transportation improvements. Can be used to fund projects that benefit specific users; available on a much faster timeframe than public sources; can be used as a match for federal funding mechanisms. Challenges include likely from users; developing an equitable structure; potential negative impacts on transportation pricing for customers; private entities must have a visible improvement in revenues or operating costs.

6.2 Project Specific Funding

In general, projects which directly impact the airports or rail lines should seek to work with those entities for alternative funding options to supplement traditional sources. The more traditional highway projects and some intermodal projects may need to continue to rely heavily on Federal and STP funding.

Table 10: Potential Project Specific Funding Sources

Continued Expansion of US-95 North towards Canada (from Bonners Ferry)	**Federal grant funds:** - National Corridor Infrastructure Improvement Program; FHWA. - National Highway System; FHWA - Surface Transportation Program (STP); FHWA **Federal loans:** - Surface Transportation Credit Program; FHWA - TIFIA (Transportation Infrastructure Finance and Innovation Act of 1998); FHWA **State funds:** - Transportation Agency Funding - Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE)
Continuation/Completion of US-395 North Spokane Corridor, either: • Full Completion – Francis Interchange (to Spokane River then) to I-90 • Francis to Spokane River Segment	**Federal grant funds:** - Congestion Mitigation/Air Quality Improvement Program; FHWA. - National Highway System; FHWA - National Corridor Infrastructure Improvement Program; FHWA - Surface Transportation Program (STP); FHWA - U.S. Economic Development Administration (EDA) Public Works and Development Facilities **Federal loans:** - Surface Transportation Credit Program; FHWA **State funds:** - Transportation Agency Funding - Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE) **Local funds:** - Local Transportation Funding
US-195 Improvements between Lewiston and Spokane	**Federal grant funds:** - National Highway System; FHWA - Surface Transportation Program (STP); FHWA **Federal loans:** - Surface Transportation Credit Program; FHWA - TIFIA (Transportation Infrastructure Finance and Innovation Act of 1998); FHWA **State funds:** - Transportation Agency Funding - Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE)

Huetter Corridor (Coeur d'Alene Bypass)	**Federal grant funds:** - Surface Transportation Program (STP); FHWA - Transportation, Community & System Preservation Program; FHWA - U.S. Economic Development Administration (EDA) Public Works and Development Facilities **State funds:** - Transportation Agency Funding - Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE) **Local funds:** - Local Transportation Funding;
US-95 Improvements from/to Snake River Ports	**Federal grant funds:** - National Highway System; FHWA - Surface Transportation Program (STP); FHWA **Federal loans:** - Surface Transportation Credit Program; FHWA **State funds:** - Transportation Agency Funding - Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE)
Widen I-90 through Spokane and Kootenai Counties	**Federal grant funds:** - National Highway System; FHWA - Interstate Maintenance Program; FHWA - Surface Transportation Program (STP); FHWA **Federal loans:** - Surface Transportation Credit Program; FHWA **State funds:** - Transportation Agency Funding - Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE) **Local funds:** - Local Transportation Funding;
Truck Route at Geiger Spur Realignment	**Federal grant funds:** - Surface Transportation Program (STP); FHWA - Transportation, Community & System Preservation Program; FHWA - U.S. Economic Development Administration (EDA) Public Works and Development Facilities **State funds:** - Transportation Agency Funding - Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE) **State funds:** - Transportation Agency Funding - Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE) **Local funds:** - Local Transportation Funding; **Local funds:** - Special Tax/user Fee

Upgrade Airport Access Infrastructure	**Federal grant funds:** - Congestion Mitigation/Air Quality Improvement Program; FHWA. - FAA Airport Improvement Program— Entitlement Program; FAA. - Surface Transportation Program (STP); FHWA - Transportation, Community & System Preservation Program; FHWA **Federal loans:** - TIFIA (Transportation Infrastructure Finance and Innovation Act of 1998); FHWA **State funds:** - Transportation Agency Funding - Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE) **Local funds:** - Local Transportation Funding; **Local funds:** - Special Tax/User Fee **Private funds:** - Contribution of Land or Right of Way - Direct Funding (from Airport)
Improve Bridges on Important Truck Routes (first one: Sullivan Road Bridge near I-90)	**Federal grant funds:** - Highway Bridge Program; FHWA - Innovative Bridge Research and Deployment Program; FHWA - Surface Transportation Program (STP); FHWA **State funds:** - Transportation Agency Funding **Local funds:** - Special Tax/User Fee
Increase Level of Maintenance and Repair Work	**Federal grant funds:** - National Highway System; FHWA - High Risk Rural Roads Program (HRRRP); FHWA - Highway Safety Improvement Program; FHWA - Interstate Maintenance Program; FHWA **State funds:** - Transportation Agency Funding - Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE) **Local funds:** - Special Tax/User Fee
Elimination of Safety Hazards from Roads	**Federal grant funds:** - National Highway System; FHWA - High Risk Rural Roads Program (HRRRP); FHWA - Highway Safety Improvement Program; FHWA - Interstate Maintenance Program; FHWA **State funds:** - Transportation Agency Funding **Local funds:** - Special Tax/User Fee

Expand Access to North-South Rail Link	**Federal grant funds:** - Railway-Highway Crossings; FHWA **Federal loans:** - Railroad Rehabilitation & Improvement Financing (RRIF); FRA. **State funds:** - Transportation Agency Funding - Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE) **Local funds:** - Local Transportation Funding; **Private funds:** - Special Tax/User Fee - Contribution of Land or Right of Way Direct Funding (from Railroads)
Bridging The Valley, either: • Grade Crossing Improvement (BNSF route) and Realignment of UP mainline between Spokane and Athol • Grade Crossing Improvement only (BNSF route)	**Federal grant funds:** - Railway-Highway Crossings; FHWA **Federal loans:** - Railroad Rehabilitation & Improvement Financing (RRIF); FRA. **State funds:** - Transportation Agency Funding - Bond Cost Reimbursement: Grant Anticipation Revenue Vehicle (GARVEE) **Local funds:** - Local Transportation Funding; **Private funds:** - Special Tax/User Fee - Contribution of Land or Right of Way - Direct Funding (from Railroads)

7. Conclusions

With today's competitive global economy, the role of freight transportation has become more critical than ever to link manufacturers, assembly lines and consumers. In fact, freight movement has increasingly become one of the key necessary conditions for growth and prosperity of regional and national economies. Much of the economic growth in the past 30 years has been fueled by declining costs of technology, unit costs of transportation and communication. Meanwhile, trade is expected to grow as world economies became increasingly interdependent.

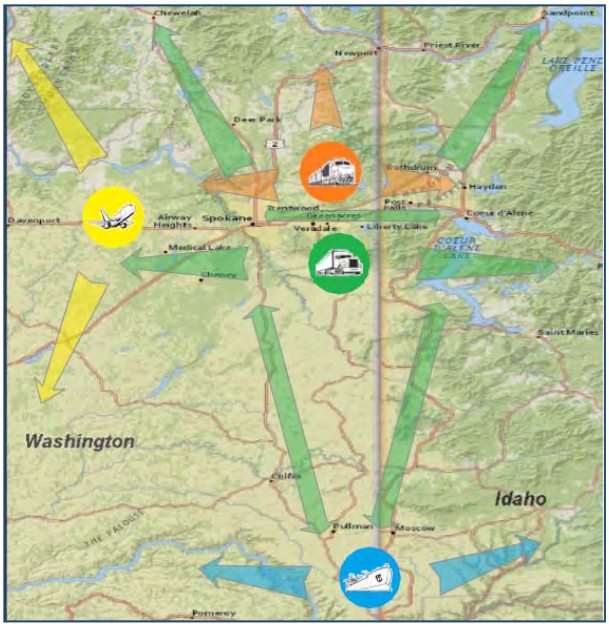
It is in this environment that the IPH public and private sector partners are working to help the region further develop into a multi-modal hub and global gateway for domestic and international trade. The IPH region is already endowed with affordable land, strategic geographic location, and strong education institutions among other assets. The challenge is to identify how best to capitalize on existing assets and prioritize investments to reach the region's goal of becoming an efficient and reliable transportation hub which in turn fuels local economic development.

This Blueprint is a high-level planning and guidance document designed to facilitate IPH efforts by identifying priority infrastructure projects and implementation strategies which the IPH would 'champion" to various public and private partners for implementation. But time does not stand still. Regional priorities, internal/external economic forces, and other factors may change, shifting the priorities identified by stakeholders and industry experts in the IPH effort. Thus, this Blueprint is best considered as a guideline or tool to help the community assess and revisit priorities and choices.

7.1 Study Goal and Analytical Approach

The Inland Pacific Hub's goal is to help further develop a commerce hub that attracts clusters of industries and facilitates the integration of production and distribution throughout the Northwest Region, with the ultimate goal of fueling regional economic development. The IPH will leverage the region's strategic location, infrastructure assets, and affordable land to enhance its economic competitiveness at the national and global levels. Such investments will better position the region as a commerce center within potential national or international trade corridors such as the CANAMEX and the I-11 initiatives, or the Great Northern Rail Corridor. The IPH region is an important gateway to the United States, especially with respect to the Canadian energy markets.

Figure 16 : IPH Key Multi-Modal Projects



Accordingly, this study focused on identifying and assessing various investments that complement existing infrastructure to reduce congestion and making the region an attractive hub for the freight sector. The study reviewed similar initiatives around the country to develop an analytical approach that incorporates success factors in the selection of infrastructure projects and the identification of effective implementation strategy.

The resulting approach screened a list of projects against a wide array of qualitative criteria, including regional priorities and goals, as well as through an economic assessment which include jobs creation and social benefits potential. Candidate projects were then assessed as a group of projects "bundles" to account for their synergy or economy of scale. The analysis, therefore, resulted in a bundle of projects that meet IPH vision and key success factors, as well as maximize economic benefits to the region.

7.2 Candidate Projects' Economic Worthiness

The analysis identified a set of candidate projects that passed the screening process described above. In general, these projects complement the North-South and East-West corridors, improve accessibility to the airport, railroad, and the port, and enhance the regional roadway maintenance. The table below provides a list of these candidate projects.

Assessing the value proposition for the implementation of the projects that meet the IPH vision and regional criteria, this study found that the projects will lead to significant jobs creation and regional output while individually their social benefits exceed their costs. The economic and social value of these projects stem from benefits relating to: (i) congestion management; (ii) improved safety; (iii) lower vehicle operating costs; and (iv) reduction in environmental costs. Some of the principal factors underlying the benefits of these projects include improvement in speed and reliability, potential traffic shifts to more direct connections, and better access to major highways, airport, and the border crossings. Projects Bundle Recommendation

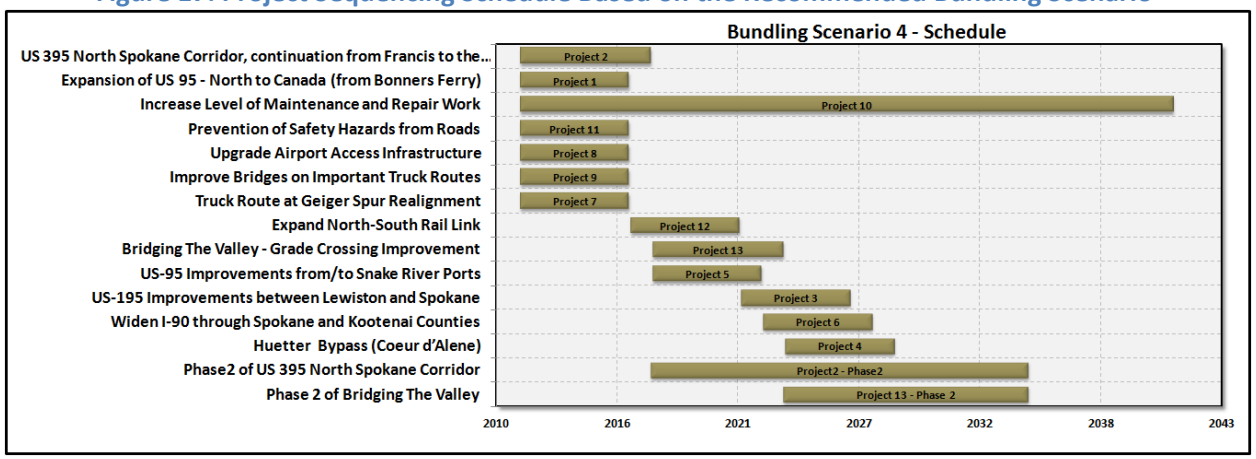
To take advantage of the synergy among these projects, the study assessed various bundling scenarios and sequencing scenarios in search of an optimal scenario that meet the success factors for IPH and maximizes the regional economic benefits. Economic benefits are likely to be forthcoming from the "network effects" of an interconnected system, namely the effects of enabling efficient freight movement and transfer between modes to improve the reliability and the productivity in the region. Such synergies can be enhanced further by sequencing the bundles based on their political, technical, and economic feasibility.

Significant transportation investments face budget constraints, even in robust economies. These projects are all economically worthwhile and the region could benefit from investments in all of them immediately. But budget realities require communities and policy-makers to choose which projects will come first and which later. The sequencing analysis was designed to give IPH stakeholders a schedule/recommended timing for projects based on economic criteria.

The recommended scenario consists of focusing on the northern portions of the north-south corridors as well as improving access to the airport in the short term and addressing rail investment in the

medium term. The capacity improvements for US-195 and I-90 as well as developing the Huetter Corridor can take place in the following years. The sequencing calls for an intensive investment in the first 5 years to take advantage of the connectivity of these corridors.

Figure 17: Project Sequencing Schedule Based on the Recommended Bundling Scenario



The recommended projects bundle assumes implementation over a 30-year period, when the full build of the North Spokane Corridor and Bridging the Valley projects are included. In that period, as Table 11 shows, these investments will lead to the creation of over 46,000 jobs and generate about $ 1.6 billion in regional value-added benefits over a 30-year period; more than 46,000 jobs and nearly $3.5 billion regional value-added benefits when indirect and other impacts are included.[26]

Table 11: Economic Impact Results for the Recommended Projects Bundling Scenario

Economic Impact Analysis Results (including full build out of North Spokane Corridor and Bridging the Valley)				
	Direct	**Indirect**	**Induced**	**Total**
Employment (Number of Jobs)	24,873	8,872	12,704	46,449
Labor Income (Earnings; $million)	$1,438.8	$514.1	$ 557.4	$2,510.3
Total Value Added (Economic Activities $ million)	$ 1,634.6	$776.5	$ 1,017.4	$3,428.5

The cost benefit analysis results (Table 12) for the recommended scenario shows that, when implemented, these projects will generate over $1.74 billion over a life-cycle period of 30 years. From a return on investment stand point, the results show that for $1 invested, the region gets back $1.80 in benefits.

[26] Note that regional value added refers to the economic activity generated, and is not the same as the benefits that are estimated as a result of the benefit-cost analysis. See sections 4.3.1 and 4.3.2 for greater detail.

Table 12: Cost Benefit Analysis Results for the Recommended Projects Bundling Scenario

Benefit Cost Analysis Results (Full Build out of North Spokane Corridor and Bridging the Valley)			
	Low	**Medium**	**High**
Net Present Value (Discounted Benefits Minus Costs in $M)	$1,015.90	$1,747.87	$3,049.81
Benefit Cost Ratio	1.5	1.8	2.4

The results also show that even when accounting for uncertainty in key project assumptions, the net present value range (Figure 18) shows that there is very little downside risk, while the upside potential may reach $3 billion. Similarly, estimates of the benefit cost ratio of various bundle scenarios shows that for every dollar the region invests, it will get between $1.3 and $2.5 in return, within a 90% confidence interval (Figure 19).

Figure 18: Net Present Value Distribution

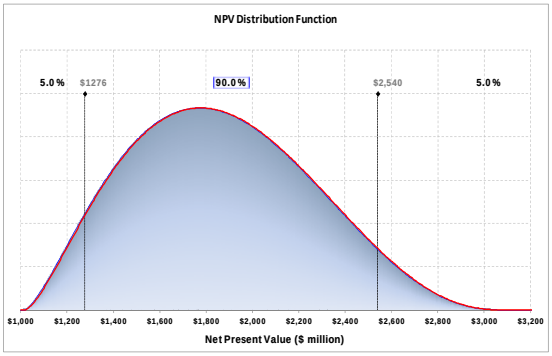
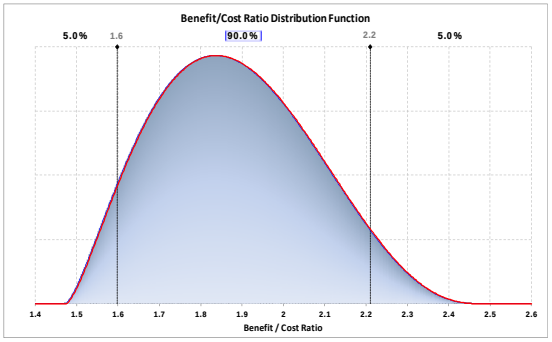


Figure 19: Benefit-Cost Ratio Distribution



One of the key reasons behind these positive results is that most of these projects have been already been identified as critical to the regional transportation network. The analysis also reveal that the "network effects" of an interconnected system, namely the effects of enabling efficient freight movement and transfer between modes, will improve the reliability and the productivity in the region. Such synergies can be enhanced further by sequencing the bundles based on their political, technical, and economic feasibility.

In summary this study identified and assessed investment strategies to optimize the economic opportunities and maximize the likelihood of success for the Inland Pacific Hub effort. The screening and evaluation of various projects resulted in a scenario that will meet the IPH vision and generate significant benefits.

7.3 Success Factors

While the projects bundle scenario described above is recommended as a necessary condition for the success of the IPH, it is not sufficient. Indeed, the success of the IPH concept hinges on the comprehensiveness of the implementation strategies along the infrastructure investments. These success factors include:

- **Effective Strategic Steps to Facilitate Planning:** This factor is important as it may require tremendous planning to achieve consensus among a large group stakeholders on the priorities and the planning mechanism.

- **Political/Regulatory Support**: Given the diverse political landscape in the region, the regional regulation harmonization is critical.

- **Institutional Arrangement and Partnerships:** This factor can be considered as the foundation to implement the IPH vision because it highlights the need for a strong and inclusive partnership among stakeholders to form or use an existing institution to sponsor, support, plan, and implement the IPH vision.

- **Funding Sources and Financial Mechanisms**: Given the various stakeholders involved and the difference among them, and in funding mechanisms and priorities, securing funding for the IPH projects will be challenging but required.

- **Public Outreach**: To build support, the IPH vision needs to be communicated and its potential regional benefits need to be highlighted as part of the outreach to various regional stakeholders

7.4 Next Steps

The IPH's effort to implement this Transportation Investment Blueprint will raise the region's profile as an economic center and improve the region's position as part of international trade corridor initiatives such as the CANAMEX, I-11, and the Great Northern Rail Corridor plans. While there is consensus that the IPH may bring significant opportunities to the region, the effective implementation of the identified strategies can be challenging. These challenges can be overcome through some key steps in the future such as:

1. Identification of a supportive institutional arrangement and the development of the governance structure among key stakeholders.
2. Incorporating the identified projects within both states' and MPOs' infrastructure plans. These should include policy plans, statewide system plans, corridor plans, and long-range plans. While the plans may be under different jurisdictions, the IPH vision should remain intact as a unified regional goal.
3. Scrutinizing projects further to reduce costs and improve connectivity and freight movement throughout the IPH Region.
4. Building support among political and community leaders in the region by emphasizing the IPH goals and regional benefits. Such support should be built through structured outreach to the public in urban and rural regions and should include various stakeholders such as tribes, farmers and the business community.
5. Securing funding by tapping into various sources while highlighting the multi-modal benefits to the region. Having a unified message at the state and federal levels will increase the likelihood of securing public funding. Funding should also include an assessment of private participation.

Going forward, it is the recommendation of this study that the recommended scenario described above should be advanced forward as part of the IPH implementation process. It is also the recommendation of this study that the planning agencies in the region need to focus on the success factors and the strategies laid out in the report. Based on similar investments and experience of other hub initiatives,

building political and public support should be a priority. The regional agencies should highlight the benefits of the project bundles in the recommended scenario rather than the individual projects to build political support. The political support will pave the way to the regulatory changes needed for a successful IPH. Similarly, such support will also help unify the regional vision and therefore establish a governance mechanism to develop and implement the necessary projects. The prospect of a bi-state port district generated significant enthusiasm among many stakeholders during Phase 2 and shows promise as an organizational mechanism that can generate momentum for IPH efforts, unify the IPH stakeholders under a common vision, and effectively bring political and economic support to the hub vision.