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NEVADA INLAND PORTS

VIABILITY & FUNDING STUDY

SEPTEMBER 2012



Nevada Inland Ports: Viability and Funding

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I. INTRODUCTION

During the two decades preceding the advent of the Great Recession, Nevada either led the nation, or was in the top 10 percent of states in terms of population growth. One of the consequences of this population growth was a rapid expansion of the state's economy. Still another validation of Nevada's success was its ongoing ranking in the top quartile of "best places to do business" in a myriad of publications and indices. All this seemed to point to prosperity to be enjoyed well into the future. Suddenly, in late-2007, like the rest of the nation, Nevada was blindsided by the second most devastating economic downturn in the modern era since the Great Depression. Nevada saw its fortunes plummet along with its population, economic, employment and housing growth rankings. Five years later Nevada still suffers from high unemployment and other measures of economic distress.

One important effort to revitalize and reinvent the Nevada economy was the development and initiation of legislation in 2011 by the Nevada Legislature approved by Governor Brian Sandoval on May 31, 2011 that went in to effect on July 1, 2011. Assembly Bill No. 182 (as amended) was introduced in the Assembly on February 16, 2011 by the Committee on Commerce and Labor and relates to inland ports; the thought being that the potential economic benefits of having an inland port in the state could be significant.

To initiate a more aggressive economic development program focused on inland ports and the logistics cluster, the State of Nevada issued a request for proposals ("RFP") in February 2012 to conduct an Inland Ports Study. The purpose of the RFP was to retain a consulting firm to determine the viability of developing Inland Ports in Nevada to enhance trade and job creation.

The Governor's Office of Economic Development's ("GOED") request called for a two-part study. Part 1 includes primary research in the form of a "survey of both

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the public and private sectors. Each group was to be polled and ideas solicited for the features that would be desirable and necessary to make the creation of inland port(s) in Nevada viable. Part 1 also includes a significant amount of secondary research on the state of West Coast ports and inland ports around the country. Additionally, it includes discussions on rail and truck movements in Nevada and an overview of the logistics industry and supply chain process. Part 2 of the Study includes an assessment of potential public and private funding sources for use in developing inland ports in the state.

The Consultant Team led by RCG Economics LLC ("RCG") with Dr. Alan Schlottmann of the UNLV Economics Department and Michael Majewski was selected by GOED to conduct this study titled *Inland Ports: Viability and Funding Study* ("the Study"). The scope of work associated with the section of the Study that this segment will address is: a) Conduct an outreach to public sector (cities, counties, federal and state agencies) as well as the private sector (both import/export), logistics, and transportation companies to verify the feasibility of inland ports in Nevada; and b) Catalogue the common attributes desired for inland ports—from the discussions that favor inland port development in Nevada.

Inland Port Benefits

A successful inland port can generate direct economic benefits as well as indirect benefits on a state's economic structure and development. To the extent that an inland port can offer a cost-effective alternative to existing methods of freight movement and storage, freight carriers and other logistics providers can experience lower per-unit costs and/or increased ease of delivery to important urban markets and population centers. Consumers, in turn, can benefit from the reduced logistics costs made possible by a nearby inland port since the cost-savings experienced by local retailers are passed on to consumers in the form of lower prices. As part of a comprehensive strategy of economic development, facilitating regional goods movement is an attractive factor for future business expansion.

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Residents in a region immediately surrounding an inland port project also benefit from the economic development benefits associated with such a facility. Inland port projects can bring hundreds of millions of dollars in infrastructure investment. This can lead directly to the hiring of thousands of construction workers as well as workers for ongoing operations. The presence of an inland port can also increase a region's significance within the national and global economies and spur new corporate investment within the region – thus contributing indirectly to additional job creation.

By alleviating commercial traffic congestion on local highways and improving the safety of multi-modal grade crossings, inland ports can also provide a meaningful benefit to local commuters. Reduced traffic congestion, in turn, leads to a reduction in emissions and can improve the environmental and air quality of the region. For example, congestion costs at leading port facilities, such as Long Beach have led to suggestions for inland “satellite terminals”.

In short, an inland port, when well-planned and where there does exist pent-up demand or the potential to create demand, can provide numerous benefits to a regional economy. While this wide dispersion of benefits might signal the value that an inland port can provide to a community, it has rendered the question of who should finance inland port construction challenging to answer. With both public and private parties expected to benefit from inland port development, how should each party be expected to contribute toward a project's capital cost?

A review of relevant case studies reveals that although there is no predominant model of capital financing for inland port projects, historically, federal funding has been important. Of the 37 case studies examined by RCG (listed in Appendix to Part 2), the majority received significant shares of public aid or loan support. However, in several cases where private incentives have been the driving motivation for inland port development, these projects were financed primarily through private, commercial investment.

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Examples include the Chicago Area Consolidation Hub, which primarily services United Parcel Service (“UPS”), and the Alliance Texas Logistics Park (“Alliance Texas”), a \$5 billion inter-modal freight transfer and storage facility that houses more than 140 private companies.¹ At the other extreme, large, inter-modal developments like the Port of Charleston’s Cooper River Bridge project have been almost completely financed with public resources.²

The question of who should contribute toward the construction of an inland port or other inter-modal transfer facility, and by how much, is further complicated by the increasing demands placed on public funds during a period when governments at all levels have faced stagnant revenue growth. The increasing scarcity of public resources should create additional incentive to maximize private-sector participation in the development of any large inland port project. However, there are many cases where the public benefits of economic development, reduced traffic congestion on public roadways, improved highway safety, and/or reduction of vehicular emissions have been judged significant enough to warrant the expenditure of public resources.

Fortunately, for policymakers at the state and local levels, there are a number of federal programs that offer public financing for potential inland port projects. While pending legislation may change the parameters for many of these programs, it does appear that the majority of these sources will continue into the future. Hence, even a relatively small commitment from state or local government entities can be sufficient to leverage large amounts of investment from federal and private sources in order to carry a project to completion.

An important result of RCG’s research herein for Nevada policymakers is that the case studies reveal that the development of any inland port is likely to involve a multi-funding source package. Although Congress has recently approved more flexible federal funding programs targeted toward inter-modal transfer hubs, including inland ports, any significant inland port project is still likely to require a

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package of funding sources—including financial support from federal, state and local governments as well as private-sector investment.

This report is comprised with three major sections. **Part 1** will analyze the viability of inland ports in Nevada. The findings in Part 1 are based on primary and secondary research. Direct one-on-one, confidential interviews with key private and public individuals and organizations were conducted. During these interviews particular attention was paid to the following factors: 1) demand, 2) capacity, 3) leadership roles, 4) site selection and 5) organization/administration. Our interviews placed a heavy focus on the “demand-side” of the inland port viability question for Nevada. The results of 73 interviews are consolidated in the following pages. A listing of the parties interviewed is included in the Exhibit at the end of this section. Then, in **Part 2** this report shifts its focus to highlighting the variety of public financing mechanisms, which are available. Particular attention is drawn toward potential federal funding sources, with an eye toward leveraging state and local government expenditures as highly as possible. Finally, **Part 3** includes our conclusions and recommendations.

Nevada Assembly Bill No. 182

As noted above, the Nevada legislature, in the 2011 session, enacted AB182. Specifically, Assembly Bill No. 182 related to the creation of inland ports in the State of Nevada, by: “authorizing the creation of inland ports and inland port authorities under certain circumstances; requiring the Commission on Economic Development to develop a State Plan for Inland Ports; and providing other matters properly relating thereto.” This bill was an essential first step in evaluating the viability of creating inland ports in Nevada in that it set forth the criteria that enables local jurisdictions, or consortiums of local jurisdictions to create an inland port authority. AB182 also requires the “Commission on Economic Development [Governor’s Office of Economic Development] to “(1) develop a State Plan for Inland Ports; and (2) set forth the requirements for the creation of an inland port.”

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The intent and purpose behind AB182, as an economic development tool, was further validated in an extensive study commissioned by GOED jointly prepared by SRI International and the Brookings Institution. This study entitled *“Unify, Regionalize, Diversify: An Economic Development Agenda for Nevada”*, and prepared in 2011, recommended seven industry clusters that were identified as target opportunities for Nevada. Of these seven clusters, four have impacts, to varying degrees, on the potential for inland ports in Nevada. These industry “clusters” are: 1) Logistics and Operations, 2) Mining Materials, and Manufacturing, 3) Business IT Ecosystems and 4) Aerospace and Defense.

It is obvious that the Logistics and Operations Cluster is the basis for any inland port or logistics/distribution center discussion. The SRI/Brookings report summarily described the Logistics and Operations Cluster in Northern and Southern Nevada as follows:

“Northern Nevada has an established and growing critical mass and competitive advantage in logistics, distribution, and transportation, as evidenced by the wide range of national-name logistics/distribution companies that have already set up operations in the region. Linked with these activities are a number of assembly-based and light manufacturing operations that have also set up facilities in Northern Nevada, primarily to serve as a West Coast hub and take advantage of the region’s strong distribution and transportation network. The region has strong near-term opportunities to build on this momentum and existing infrastructure/assets to continue to attract investment and expand this industry, with a wide range of opportunities related to logistics, distribution, air cargo, assembly/kitting-based manufacturing, food processing, and related activities; Southern Nevada already has solid infrastructure and assets in place to potentially attract and expand activities related to distribution, logistics, transportation, and air cargo – with the aim of serving as a West Coast hub of operations for such activities. Due to the region’s traditional focus on tourism, gaming, and other service-based activities, this industry does not yet have a widespread degree of momentum and support from regional stakeholders for its development beyond its role in serving passenger and tourism-related functions. As such, this opportunity is more likely to be a longer-term target (as compared to the industries described above), but the necessary pieces are in place for industry development if desired by the region. In the near-term, strong opportunity exists to attract distribution centers that can tap into the excess outgoing capacity in the belly of passenger planes (for small packages) and outgoing freight trucks (which often return from Las Vegas to their origins empty.)”³

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The report went on to say the logistics cluster had the potential to create 11,000 jobs in the state over the next five years.

Key components within the other clusters that the report noted and which potentially impacted logistics are: Mining, Materials and Manufacturing – a supply chain and vertical linkage development, as well as associated value added assembly and time sensitive shipping; Business IT Ecosystems – e-commerce operations and retail fulfillment centers, which require state of the art telecommunications and inventory control systems and Aerospace and Defense - maintenance, repair and overhaul of military equipment and munitions.

RCG's research and analyses herein took into account the findings and recommendations included in the SR/Brookings report by delving more deeply in answering the question of the viability of inland ports in Nevada in the context of the Logistics and Operations Cluster. RCG also researched additional logistics opportunities and options that Nevada's elected and business leaders should consider for the state. This additional research should facilitate discussion of alternative types of distribution within modern supply chain systems.

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Appendix: Persons & Organizations Surveyed

PRELIMINARY INTERVIEW CONTACTS	ORGANIZATION	TELEPHONE
Gerry Shear, Managing Partner	GENCO Realty Investments	435-901-8018
Lisa Stark, Director, Public Affairs Corporate Relations	Union Pacific Railroad	916-789-5957
Barry Michaels, Vice President, Intermodal Operations	Union Pacific Railroad	402-544-4138
Joe Arbona, Director, Policy & Participation	Union Pacific Railroad	402-210-1625
Thomas Huff, General Director, International Intermodal Marketing	Union Pacific Railroad	402-544-5301
Michael Dickmeyer, Business Director, Intermodal	Union Pacific Railroad	402-544-6435
Kevin Kelly, Business Director, Lane Management	Union Pacific Railroad	402-544-6158
Paul Marcinko, Regional Manager, Economic Development	Union Pacific Railroad	626-935-7614
Joseph Comella, Director of Sales	Progressive Logistics, Inc.	888-909-6975
Rob Denny, President	All Phase Transportation, Inc.	253-447-7580
Lena Kent, Public Information Officer	Burlington Northern Santa Fe Railroad	909-386-4140
Doug Geinzer, CEO	Southern Nevada Medical Industry Coalition	702-530-5627
Andrew Edlefsen, Director, Las Vegas Export Assistance Center	US Department of Commerce	702-388-6694
Arnold Lopez, Economic Development Executive	NV Energy	702-402-5225
Richard Myers, President	Thomas & Mack Development Group	702-896-2076
Perry Muscelli, Broker	ND Commercial Real Estate Services	702-358-0000

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Jane Michael, Designer	Tate Snyder Kimsey	456-3000
Lesa Coder, Economic Development	Clark County	702-380-9987
Larry Singer, Vice President, Transaction Services	Grubb & Ellis	702-733-7500
Herb Okada, Vice President	Specialized Rail Service	702-388-9277
Ralph Murphy, Director of Development	Pullman Palace Car Company	702-256-2313
Ray Nair, Director, Western Division	CDW	702-495-5050
Donna Alderson, Senior Vice President, Industrial Properties	CB Richard Ellis	702-369-4866
Somer Hollingsworth, President & CEO	Nevada Development Authority	702-791-0000
Doug Mack, Vice President of Operations	Bally Technologies	702-584-7700
Randall Walker, Director of Aviation	McCarran International Airport	702-261-5150
Rosemary Vassiliadis, Deputy Director of Aviation	McCarran International Airport	702-261-4525
David Scherer, Executive Vice President, Transaction Services	Grubb & Ellis	702-733-7500
Tim Chaplan, District Sales Manager	FedEx	702-547-7509
Pan Western, President	Pan Western Rail Services	702-851-1746
Rod Martin, Vice President, Director of Development	Majestic Realty	702-896-5564
Mike Baughman, Executive Director	Lincoln County Regional Development Authority	775-883-2051
Scott Adams, Chief Urban/Redevelopment Officer	City of Las Vegas	702-229-6501
Bob Cooper, Economic Development/Redevelopment Manager	City of Henderson	702-267-1654
Terri Sheridan, Economic Development Administrator	City of North Las Vegas	702-633-1523

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Randy Innis, Chairman	Nevada District Export Council	702-292-1330
Shelley Hartmann, Executive Director	Mineral County Economic Development Authority	775-945-5896
Pam Borda, Executive Director	Elko County Economic Development Authority	775-738-2100
Brenden Egan, Regional Director of Development	Dermody Properties	775-858-8080
Don Vetter, Consultant	Lander County Economic Development Authority	775-425-9271
Russ Romine, Vice President, Transportation	Legacy Supply Chain Services	775-331-8010
Steve Wolanin, Director of Retail	Urban Outfitters, Inc	775-971-1302
John Appert, Director of Fulfillment	Urban Outfitters	775-857-7928
Bill Cline, Director, US Commercial Service, Northern Nevada	US Department of Commerce	775-784-5342
Darryl Bader	ITS Logistics	775-356-3101
Daniel Allen	ITS Logistics	775-358-5300
Jeff Lynch	ITS Logistics	775-356-3103
Dan Oster, Adjunct Professor, Supply Chain Management, MBA Program	University of Nevada	775-336-4665
Tina Iftiger, Vice President, Airport Economic Development	Reno-Tahoe International Airport	775-328-6417
Brian Pratte, Director of Air Service and Cargo Development	Reno-Tahoe International Airport	775-328-6411
Pat Whitten, County Manager	Storey County	775-847-0968
Lance Gilman, Broker	Tahoe-Reno Industrial Center	775-843-7587
Len Gilman, Sales and Site Selection	Tahoe-Reno Industrial Center	775-843-7587

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Amanda Pratt, Marketing and Communications	Tahoe-Reno Industrial Center	775-843-7587
Rob Hooper, Executive Director	Northern Nevada Development Authority	775-883-4413
Mike Kazmierski, President/CEO	Economic Development Authority of Western Nevada	775-829-3711
Stan Thomas, Executive Vice President	Economic Development Authority of Western Nevada	775-829-3731
Paul Kinne, Vice President Marketing	Economic Development Authority of Western Nevada	775-829-3720
Doug Roberts, Partner	Panattoni Development Company	775-829-6112
Becky Angeli, Account Executive	OnTrac	775-355-9055
Todd Royer, General Manager	OnTrac	775-355-9055
Eric Bennett, Vice President Industrial Properties Group	CB Richard Ellis	775-823-6963
Joe Wade, Chairman/CEO	Wade Development Company	775-348-9444
James Applebach, Regional Vice President Operations	OHL	775-412-0687
Steve Stallings, Vice President Operations West Region	OHL	775-412-0689
Jim Garza, Director	White Pine County Community & Economic Development	775-293-6592
Mike Jordan, Director of Operations North American Transportation	OHL	775-412-0637
Robert Skinner, CEO	RMS Development	775-852-9922
Susan Clark, Managing Partner	Nevada Venture Accelerator	775-329-3225
Karen Craig, Partner	Nevada Venture Accelerator	775-329-3225
John Tegins, Distribution Center Manager	MSC Industrial Supply	775-645-7270

Endnotes

¹ The Tioga Group, Inc., "Inland Port Feasibility Study, Project No. 06-023, Inland Port Case Studies," Prepared for Southern California Association of Governments, June 30, 2006, pp. 14-19, Available: <http://floridailc.com/PDF/SCAG-InlandPortCaseStudies063006.pdf>.

² Isaac Shafran and Anne Strauss-Weidar, "Financing and Improving Land Access to U.S. Intermodal Cargo Hubs," National Cooperative Highway Research Program Report No. 497, 2003, pp. 43-60, Available: http://www.as-w.com/pdf/nchrp_rpt_497.pdf.

³ *SRI International and the Brookings Institution, Unify, Regionalize, Diversify: An Economic Development Agenda for Nevada (November 2011).*
<http://www.brookings.edu/research/papers/2011/11/14-nevada-economy>.

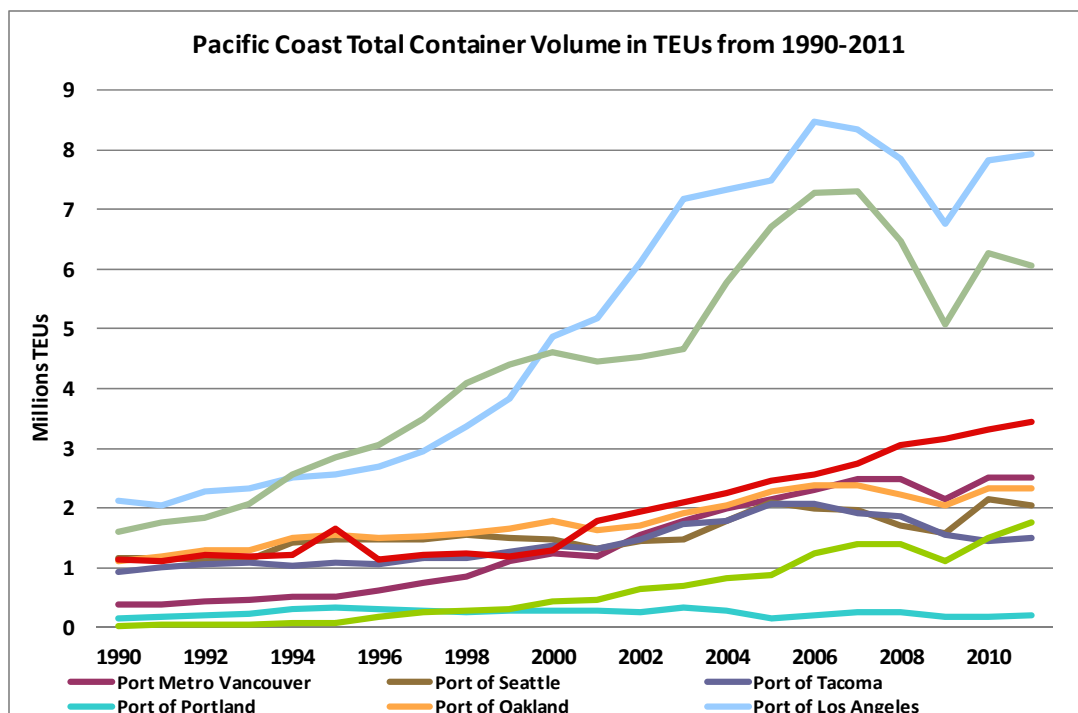
PART 1: Nevada Inland Ports: Viability and Funding

I. THE STATE OF WEST COAST PORTS

Pacific coast ports handled 27.8 million TEUs (Twenty-Foot Equivalent Units. One TEU represents the cargo capacity of a “standard” intermodal container, 20 feet long by eight wide) in 2011, a slight increase of 250,000 from 2010. Just eight ports — Vancouver, Seattle, Tacoma, Portland, Oakland, Los Angeles, Long Beach and Manzanillo — were responsible for 24.3 million, or 87.6 percent of these TEUs. That percentage has changed little in the last 22 years and is likely to remain so in the foreseeable future as these ports continue to expand their capacities to keep up with the demand for containerized goods.

More than half of the container volume handled by these ports flows through the two California ports of Los Angeles and Long Beach.

Exhibit I-1: Pacific Coast Total Container Volume in TEUs, 1990-2011



Sources: Port Metro Vancouver, Port of Seattle, Port of Tacoma, Port of Portland, Port of Oakland, Port of Los Angeles, Port of Long Beach and the American Association of Port Authorities.

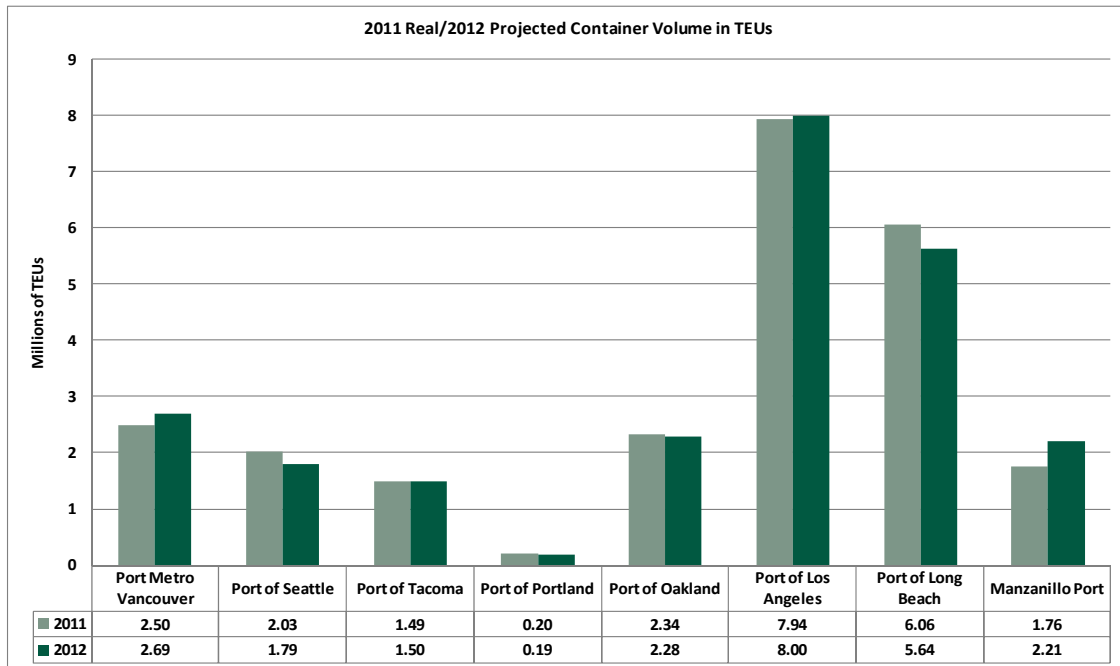
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As Figure 1 illustrates, these two ports have also grown considerably faster during the last 22 years than their six competitors. Consequently they have also felt the effects of the economic downturn and its resulting slump in imports between 2007 and 2009 more strongly.

In 2010, a recovery in the container market meant that many of the ports recovered to pre-recession volumes, although 2011 proved challenging, with some ports experiencing declines in TEU volume.

2012 continues this mixed trend, with Seattle, Portland, Oakland and Long Beach expecting declines in container volume, while the other ports will show increases in the two percent to five percent range. Based on the available year-to-date numbers, we can estimate some numbers for this year, as shown in Figure 2.

Exhibit 1-2: 2011 Real & 2012 Projected Container Volume in TEUs



Sources: Port Metro Vancouver, Port of Seattle, Port of Tacoma, Port of Portland, Port of Oakland, Port of Los Angeles, Port of Long Beach and the American Association of Port Authorities. 2012 projections for Seattle, Tacoma and Los Angeles are percentage changes based on information obtained from the ports. The remaining estimates for 2012 are extrapolations based on year-to-date traffic numbers.

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Projecting numbers for TEU volume has proven to be a very difficult task. For example, a report produced in May of 2011 for Port Metro Vancouver, titled *“Preliminary Container Traffic Projections for Port Metro Vancouver: 2011 to 2030”* using 2010 numbers predicts that the port will handle between 2.81 million and 2.94 million TEUs this year. By next year, the projections are for between 2.97 million and 3.18 million TEUs, a number that the port is unlikely to reach. The calculation using the available year-to-date numbers falls short of the low 2012 number projected in the report by 19 percent. Thus, the vulnerability of ports to rapid changes in the world economy makes such predictions more of a guessing game than is desirable to long-term planning.

Nonetheless, all ports have to plan for the future, and their capital improvement plans look toward the future as far as 2050, as is the case with Port Metro Vancouver.

According to the U.S. Port Infrastructure Investment Survey 2012-2016, conducted by the American Association of Port Authorities (“AAPA”) and completed May 31, 2012, the ports of the North Pacific plan to invest at least \$7.68 billion from 2012-2016, with nearly \$6 billion coming from private sector partners and the remaining \$1.76 billion falling to the ports themselves. These numbers are likely to be low, since the AAPA reported that most ports were unable to provide a full accounting of how much their private-sector partners were planning on spending.

The Figure on the following page illustrates how much spending each port’s capital improvement plan calls for.

Exhibit I-3: Estimated Capital Investment

Estimated & Projected Capital Investment Spending		
Port	Investment	Time frame
Port Metro Vancouver	\$300 million	2012-2014
Port of Seattle	\$42 million	2012-2017
Port of Tacoma	\$500 million	2012-2022
Port of Portland	\$12 million	2010-2015
Port of Oakland	\$719 million	2012-2016
Port of Los Angeles	\$1.20 billion	2012-2017
Port of Long Beach	\$3.44 billion	2010-2035
Manzanillo	\$751 million	2009-2013

Sources: Port Metro Vancouver, Port of Seattle, Port of Tacoma, Port of Portland, Port of Oakland, Port of Los Angeles, Port of Long Beach and the American Association of Port Authorities.

Port Metro Vancouver

With its Container Capacity Improvement Program (“CCIP”)ⁱ, Port Metro Vancouver has undertaken a number of substantial projects, such as the Deltaport Third Berth, which was completed in 2010. The port estimates that its container traffic will double in the next 10 years and nearly triple by 2030. In addition, the port is evaluating development of the Roberts Bank Terminal, a multi-berth marine container terminal with an additional 2 million TEUs capacity. The public consultation process for this terminal should be completed by 2016.

The Robert Banks Rail Corridor program to separate rail and road traffic will begin construction later in 2012 and should be complete by 2014. The project is expected to cost \$300 million, \$50 million of which the port, its tenants and stakeholders will contribute with the rest coming from private and public funding partners.

A similar road and rail improvement project for the Deltaport Terminal is also being studied.

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Port of Seattle

As part of its Century Agendaⁱⁱ, the port of Seattle plans to grow its annual container volume to more than 3.5 million TEUs over the next 24 years, although no specific projects are currently planned.

Port of Tacoma

The port's Strategic Plan 2012-2022ⁱⁱⁱ, aims at doubling container volume to 3 million TEUs by 2020 as well as increasing dry bulk, break bulk and automotive import volume. Over the 10-year period, the port will invest \$500 million to improve existing property, building and infrastructure. However, the 2011-2016 capital budget^{iv} only includes \$97.4 million. The General Central Peninsula container complex will be redeveloped to serve larger trans-Pacific ships and the port hopes to secure funding for SR 167 and develop a long-range rail system plan to meet future capacity needs. The Strategic Plan estimates that the \$500 million investment eventually will bring additional public and private investments of \$15 billion to \$25 billion.

Port of Portland

The Port's strategic plan 2010-2015 forecasts 193,948 TEUs for 2012 and 210,000 for 2013.^v There are no substantial capital improvements ongoing or in the planning stages, but the Marine Terminal Master Plan 2020 reserves West Hayden Island as an alternative for eventually doubling the port's cargo volume.^{vi}

Port of Oakland

The Port of Oakland is currently working on a shore power program for \$85.4 million that was started in 2011 and will be completed in late 2013.^{vii} The port's major new project is the redevelopment of the former Oakland Army Base, which will include site remediation, a new rail terminal, new trade and logistics facilities

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and restoration of the deep-water break-bulk terminal during the first phase, which will cost \$438 million. In addition, the port is looking into alternative funding methods for reconstruction of the APL wharf (\$115 million), the Outer Harbor Intermodal Terminal (\$274 million), the 7th Street grade separation (\$220 million) and additional dredging (\$10 million), bringing the total investments projected through 2016 to \$790 million.

Port of Los Angeles

The port is expected to spend approximately \$1.2 billion over the next five years, according to its executive director, Geraldine Knatz, Ph.D.^{viii} China Shipping will develop a container terminal; the TraPac wharves will be expanded to \$274 million; the main channel will be deepened to 53-feet for \$370 million; and the Pier 300 marine terminal redevelopment will modernize the Eagle Marine Services Ltd. container terminal for \$196 million, starting late in 2012 and lasting two years.^{ix}

Port of Long Beach

The major project at the Port of Long Beach is the Middle Harbor Redevelopment, which will modernize two shipping terminals to allow them to handle twice the current volume, up to 3.3 million TEUs annually at a cost of \$1 billion.^x Completion of this complex project is expected in 2020. The port's old Gerald Desmond Bridge will be replaced starting in early 2013, with construction of the \$1 billion project taking approximately five years. The Pier G modernization project is a multi-year, \$800 million renovation of the International Transportation Service container terminal. The first phase was finished in 2008, and a new terminal administration and operations complex, new maintenance and repair facilities and expanded on-dock rail yard are currently being added. A \$40-million dredging project is also underway as are environmental studies for the Pier S Container Terminal, a proposed project for vacant land at the port that would cost \$650 million to construct.

Manzanillo Port

International Container Terminal Service' ("ICTSI") Mexican unit Contecon Manzanillo is building Specialized Container Terminal 2 ("T2"), which will double the port's container handling capacity to 4 million TEUs annually. The first phase, expected to be complete by 2013, will cost \$250 million.^{xi} The cost of the entire project, at \$751 million, will be shared by Contecon Manzanillo and the Mexican government.

Manzanillo Port's Competitive Advantages/Disadvantages vs. California Ports

Maritime/land area for potential development is plentiful at Manzanillo, with only 658 acres of the port's enclosed area of 1,081 acres developed; the remaining 423 acres are available for future developments. In contrast, most of the maritime/land area within the boundaries of the ports of Los Angeles and Long Beach is developed, with the exception of 160 acres of Pier S at Long Beach that were remediated from a former oil field.

Manzanillo Port claims faster turnaround times for container ships than the California Ports, largely as a result of its smaller size, an advantage that might be reduced by substantial growth like the new container terminal now being built and the resulting additional traffic.

The two major competitive disadvantages that face Manzanillo Port are security concerns — some of which are being addressed by cooperation with the U.S. Department of Homeland Security as part of the so-called Megaports project — and the lack of a sophisticated rail system. The double stack rail service available at Manzanillo Port can take cargo to the U.S. by way of Calexico, Nogales, El Paso and Eagle Pass through Ferromex's rail system, which offers cross-border service in partnership with KCS, UP and BNSF Railway.

Effects of the Panama Canal Expansion

Issues arising from the expansion of the Panama Canal are:

- Shippers are using larger container ships with capacities up to 18,000 TEUs.
- The number of vessels is likely to decrease as larger vessels replace smaller ones, while total cargo will increase.^{xii}
- Channels at the Atlantic and Gulf Coast ports need to be deepened to accommodate these larger vessels.
- The Panama Canal Authority's Rodolfo Sabonge estimates that container volume transiting the canal may double as soon as 2015,^{xiii} while the Canal's annual capacity will increase by more than 75 percent.^{xiv}

In addition, imports from Asia are expected to outpace capacity increases at the Pacific Coast Ports, in part because Pacific Coast ports are physically constrained. Approximately 40 million TEUs of capacity are planned at Asian export terminals while fewer than 4 million TEUs of capacity are planned at West Coast terminals.^{xv}

Larger ships mean more containers, likely reaching a volume that West Coast ports will no longer be able to handle themselves. Consequently, more ships will want to take the direct route through the Panama Canal to land at Gulf and Atlantic Coast ports.

However, currently only a handful of East Coast ports can accommodate the bigger vessels, which draft to nearly 50 feet, while most channels are less than 45 feet deep. Consequently, 18 ports along the East Coast are deepening their channels and many are adding new terminals and wharfs.^{xvi}

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The deepening of the channels comes at a price, however. As the law stands now, the Federal Harbor Maintenance Tax, a tax paid by shippers designed to finance the dredging of shipping channels, pays all of the maintenance dredging of channels up to 45 feet deep, but local port authorities have to foot the bill for 50 percent of the differential cost of maintaining a deeper channel.^{xvii} In the long run, this will mean that ports like New York/New Jersey, which has deepened its channel and is planning to raise the Bayonne Bridge 65 feet to accommodate taller ships, will also have to pay more to maintain their channels.

The Federal Harbor Maintenance Trust Fund has actually accumulated a \$5.6 billion surplus since its inception in 1986^{xviii}, and the AAPA argues that this surplus should be used to pay the full fare for maintaining deeper channels, especially now that post-Panamax container ships are becoming the norm in international trade.^{xix}

Though most of the major East Coast ports are anticipating an increase in traffic from the Asia-Pacific region, there is little consensus as to just how much more traffic. Sabonge's view is understandably the most optimistic. Asaf Ashar, co-director of the National Ports and Waterways Institute at the University of New Orleans, expressed a more restrained view; he "describes the canal expansion as 'a change but not a game-changer.'"^{xx}

One thing there is consensus on, however, is that the additional traffic directed through the Panama Canal will depend greatly on the ability of West Coast ports to handle additional Asia-Pacific containers.

In the past, West Coast ports have always found a way to expand that enabled them to accommodate growth, and projects are underway at all the major ports to expand capacity further and make the ports more efficient, but it remains to be seen if they can continue to do so.^{xxi}

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Sabonge said that he sees the ports of New York/New Jersey, Hampton Road, Savannah, Charleston and the ports in Florida and the Gulf of Mexico benefiting the most from the expansion.^{xxii}

But time will also be a factor, since getting through the Panama Canal and then making it to the East Coast ports will take longer than landing in Los Angeles or Long Beach or Prince Rupert Port in Canada and then shipping the cargo by rail or truck to its final destination.

At a symposium on the Panama Canal^{xxiii} Sabonge explained that “there is little to improve in the time [it takes to travel through the Canal]. The travel time is approximately 18 hours, and the average is about 24.”

While travel time may be in favor of the West Coast ports, monetary considerations favor taking the Panama Canal and landing on the East Coast. According to an estimate by Dewry Supply Chain Advisors^{xxiv}, shipping a container by water to the East Coast could save as much \$250 to \$1,000, a substantial portion of the \$3,500 it would take to transport the same container through a West Coast port. Other estimates not cited specifically in “Battle of the Ports” are much lower, as low as \$60 per container at which point time is, perhaps, more precious than money.

Endnotes

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- ^{vi} www.portofportland.com/MTMP_Overview.aspx, accessed July 2012.
- ^{vii} Budget Summary Fiscal Year 2012, Port of Oakland, 2012
- ^{viii} "Port of Los Angeles Approves Eagle Marine Services' "Pier 300" Container Terminal Expansion." Port of Los Angeles Press Release, June 7, 2012
- ^{ix} "Fiscal Year 2012-2013 Proposed Annual Budget." City of Los Angeles Harbor Department, June 7, 2012
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- ^{xii} "Potential Effects of the Panama Canal Expansion on the Texas Transportation System" prepared for the Texas Department of Transportation by Cambridge Systematics Inc. with the Center for Transportation Research-University of Texas, October 2011.
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II. WHAT IS AN INLAND PORT?¹

The concept and functions of an inland port have been in existence for many years. Early commerce in Europe relied on inland waterways to transport primarily agricultural products between seaports in larger urban areas and the farming regions of the hinterland. With industrialization came freedom from waterways and commercial modes and distribution centers tied directly to rail transportation.

There have been large inland terminals in North America since development of the continental railway system in the late 1800s. Their locations corresponded to large inland market areas. These markets customarily grew around expanding metropolitan areas, which commanded a regional manufacturing-base and distribution system. Any discussion as to the viability of an inland port must begin with the definition of an inland port and the characteristics of what makes one successful. An inland port is “A rail or a large terminal that is linked to a maritime terminal with regular inland transport services. An inland port has a level of integration with the maritime terminal and supports a more efficient access to the inland market both for inbound and outbound traffic.”²

Another definition is offered by Center for Transportation Research at the University of Texas. “An Inland Port is a physical site located away from traditional land, air and coastal borders with the vision to facilitate and process international trade through strategic investment in multi-modal transportation assets and by promoting value-added services as goods move through the supply chain”.³

Unlike the wide array of definitions for an inland port, the reason for one is quite simple. “An inland port must permit economies of scale in inland distribution by being able to handle larger volumes at a lower unit cost. Otherwise, direct services

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from the maritime terminal are a better option.”⁴ Strategically located inland ports are most advantageous for businesses to use when:

- “Throughput and transportation at your major import entry points are slowed by heavy port congestion.
- The economics of rail shipping can exceed that of trucking.
- There is a need to consolidate import and distribution functions in one location.
- Space for necessary warehousing and distribution facilities, as well as labor, is cheaper than around a coastal port, or public-sector tax climates and other incentives make an inland location more desirable.
- An inland location permits you to consolidate real estate and other resources and still satisfy your logistics needs.
- You are a producer in the interior United States seeking a quick channel to coastal or export markets.
- Your company has a strong sustainability initiative that can benefit from rail shipping’s lower fuel costs or terminals that operate in a “greener” fashion.”⁵

How an inland port accomplishes these economies of scale and supply chain efficiencies is a function of several variables. The most important of these variables are: distance from ports, proximity and size of market centers (imports), proximity to manufacturing centers (exports), transportation networks, and volume of freight. All these functions of geography play such an important role because logistics is extremely sensitive to transportation costs. Transportation costs account for over

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50 percent of the total costs associated with logistics, followed by inventory costs, a distant second at 21.8 percent. Exhibit 1 provides a complete breakdown of logistics costs.⁶

There are also a variety of models or concepts under which an inland port can develop. The most common of these are: Satellite Marine Terminals, Multi-modal Logistics Parks, Rail Intermodal Parks, Logistics Air Parks, Trade Processing Centers and a new concept termed Economic Development Initiative/Virtual Inland Port.

Satellite Marine Terminals are considered extensions of specific seaports and are customarily owned and operated by those seaports. They are connected to their seaports by intermodal rail. Virginia Inland Port (“VIP”) is an example of Satellite Marine Terminals. The key to VIP’s success is the long standing relationship with the Norfolk Southern Railroad.

The railroad supported the development of VIP to the extent of committing to run trains and absorb the train operating cost during the initial stages of development. VIP has almost 18,000 feet of rail adjacent to the Norfolk Southern main line and easy access to I-81, running north and south and I-66 running east and west. Started in 1989 VIP handled approximately 25,000 containers in 2010.

Multi-modal Logistics Parks utilize a transportation infrastructure of rail, truck and air, or rail, truck and seaport as the focus of their business model. They are not extensions of any seaport and are closely aligned with shippers, carriers and consignees. Alliance Texas Logistics Park is perhaps the best known of the multi-modal centers. The entire park covers 17,000 acres and is divided into multiple subdevelopments including an air trade center, technology and research complex, manufacturing complex and even a retail complex.

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“Started in 1988 with the 7,500 acres Alliance Airport, this complex now has almost 300 corporate residents, 50 of which are listed on the Fortune 500, Global 500 or Forbes’ Top List of Private Firms, employing over 28,000 people, located in over 31 million square feet of facilities, at an investment of over \$7.3 billion.”⁷ Its success derives from a strong public/private partnership, being served by both the Union Pacific and Burlington Northern Santa Fe Railroads, the later operating a 735 acre intermodal yard built at their expense, strong north/south/east/west interstate connections, and a foreign trade zone. 48 million and 111 million people can be served in the U.S. within one and two days, respectively, from Alliance Texas.

Rail Intermodal Parks are usually built and owned by the railroads. The Joliet Arsenal, sometimes referred to as the Port of Illinois is such a park. It is located just outside of Chicago on over 6,000 acres containing over 30 million square feet of industrial facilities, including a 3.4 million square foot Wal-Mart facility that can be expanded to 5.2 million square feet. Once again success comes from two very willing and active participating railroads. BNSF operates a 750-acre intermodal terminal and UP an 840-acre intermodal terminal. This complex also has a large barge terminal, and sits at the intersection of I-80, and I-55.

This transportation network provides strong connections to both east and west coast seaports. A foreign trade zone and a private overweight road system contribute to the center handling 4 to 6 million Twenty Equivalent Units (“TEU-the standard container measurement) per year. This volume ranks Joliet the fourth busiest container port in the U.S., behind the seaports of Los Angeles, Long Beach and New York/New Jersey.⁸

As the name suggests, **Logistics Air Parks** have at their core an all-cargo, or primarily cargo airport, usually redeveloped from former military bases. The San Bernardino International Airport, converted from the former Norton Air Force Base is an example of such a center. It covers 600 acres with an additional

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redevelopment project area of 13,000 acres of surrounding properties. This project has attracted aircraft related business centers and commercial distribution centers. There are multiple buildings in existence or under development totaling 64 million sq. ft. The airport is within 60 miles of LAX, surrounded by freeways (I-10, I-215, I-30 and I-210), and is within two miles of the BNSF intermodal facility.⁹ Alliance California, the same firm as in Alliance Texas operates a 2,000 acre trade and logistics center which incorporates a FTZ adjacent to the airport.

Trade Processing Centers is a concept encouraged by U.S. Customs and Border Protection to shift trade related activity away from congested ports and border crossings. “These proposals differ from the others in that the development attraction is presumed to be a regulatory function, “trade processing” that required a physical location rather than a transportation or logistics function.”¹⁰ Though none have been built to date, the Kingman International Trade Processing Center is an example of this concept. Its planned location is adjacent to the BNSF main line and I-40.

SmartPort or Virtual Port is the newest, and perhaps most unique concept. Sometimes referred to under the heading of “Economic Development Initiatives”, the Kansas City SmartPort is the only one in existence in the U.S. today. This concept is a confederation of remote sites, which straddle 18 counties in Missouri and Kansas. The centerpieces of the KC SmartPort include: the KCI Intermodal Business Center, adjacent to Kansas City Intermodal Airport; Northland Park in Clay County, Missouri; Centerpoint Intermodal Center in Jackson County, Missouri and KC Logistics Park in Johnson County, Kansas.

Though not tied to a single physical location, the KC SmartPort contains two cargo airports, six intermodal facilities and 10,000 acres of FTZ space. It is served by both the UP and BNSF railroads, as well as the confluence of I-35, I-29 and I-70. The “KC SmartPort outlined multiple factors that have been critical to success thus

far that include the development of a formal business plan with measurable performance metrics, an aggressive media campaign that promotes the entire 70-mile radius of the Kansas City, Missouri region as an integrated freight hub, and a comprehensive database of available freight facilities and sites to provide information for potential clients and customers. Additionally, the assembly of attractive financial packages for clients and a development-friendly environment for transportation facilities proved advantageous for the port. Most recently, KC SmartPort has transitioned from a skeleton organization of part-time staff to employing two full-time staff.”¹¹

Endnotes

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III. ATTRIBUTES OF AN INLAND PORT

While the concepts, models and reasons for inland ports that exist around the U.S. are as varied as their locations, the basic attributes of a successful inland port or logistics center are common to all. Of all the information found on the attributes of an inland port, Richard Allen, Chief Executive Officer for the Allen Group presents the most succinct list. He writes, "According to a report produced by Heitman Real Estate Investment Management Firm, an Inland Port is characterized by seven key attributes:

1. Access to major container seaport
2. Intermodal facility serviced by a Class I railroad
3. Minimum of 1,000 acres of total land
4. Foreign Trade Zone status
5. Strong local market access (e.g., near a major metropolitan area)
6. Nearby access to north/south and east/west interstate highways
7. Access to a strong local labor pool."¹

Actually, numbers 1 and 2 above should be combined. All of the successful inland ports in the U.S. have access to a major container seaport, via a Class 1 railroad. In addition, it should be noted that during the interview process there were those who were of the opinion that the optimal "model" contains two Class 1 railroads to provide for greater flexibility and cost effectiveness. Two railroads would better serve the various regions of the country with direct service, while the competition between them would theoretically provide for lower shipping costs.

The minimum number of acres an inland port should contain is by far the least agreed upon of the key attributes. Literally, through secondary research and the interview process, the optimal size ranged from 100 to 10,000 acres, meaning there is no consensus on this factor.

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The largest determining factor for size and dimension is rail siding capacity. The land parcel dimension contiguous to the track has to be of sufficient length to come off the main line, which is usually 10,000 linear feet of siding capacity. Other factors that dictate size include: the number of trains serving the site; the volume of the freight that will be accommodated; the land uses included: manufacturing, warehousing, distribution or a function of all three; the consumption and market size of the local area; the amount of empty containers or other transportation equipment stored on site; etc. The actual size of an inland port/logistics complex/distribution center cannot be determined at the outset of the project, but only after careful examination as to what functions will be contained in such a facility.

Foreign Trade Zones (“FTZ”) are a needed attribute agreed upon by all involved in logistics centers, yet it may be the least understood of the key factors (Please see the exhibit at end of this section for a listing of the difference between an FTZ and a Bonded Warehouse.). Because of this, it is important to understand FTZs and their benefits. “Foreign Trade Zones (FTZs) were created in the United States to provide special customs procedures to U.S. plants engaged in international trade-related activities. Duty-free treatment is accorded items until they are brought out of the FTZ for sale in the U.S. market. This helps to offset customs advantages available to overseas producers who compete with domestic industry. The Foreign Trade Zones (FTZ) Board (composed of representatives from the U.S. Departments of Commerce and Treasury) has its operational staff in the International Trade Administration’s Import Administration²

The marketing publication promoting Southern Nevada’s Foreign Trade Zone #89 provides a straight forward discussion of the benefits to doing business in an FTZ as it compares the advantages of an FTZ over a bonded warehouse (Exhibit B).³

Strong local market access and demand is yet another attribute that has a significant impact on the location of inland ports. Some suggest, such as Hillwood,

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the developer of Alliance Texas, that a base population of 3 million is a critical need in the development of an inland port.⁴ And while this 3 million population-base number is often utilized and referenced in numerous subsequent studies and reports on the subject, a less confining view was given during our interview with the Director of the U.S. Commercial Service in Nevada who suggested that a minimum of 3 million persons within a 200-mile radius is needed. Regardless, the requirement for a relatively large population-base seems to be universal.

Large metropolitan areas provide a “Demographic advantage in the form of proximity to a significant percentage of the nation’s manufacturing capacity and/or to the buying public.”⁵ Large metropolitan areas are usually regional centers that already have a built in consumptive demand for products that would be shipping inbound to that area regardless of the existence of an inland port. This alone provides a transportation cost savings in that the goods would already be traveling to the metropolitan destination. By combining this movement of goods with those that will be distributed to a more dispersed market area affords economies of scale resulting in lower unit transportation costs. The reciprocal of this inbound consumptive movement is the outbound movement of goods produced (manufacturing capacity) for export outside the metropolitan area. The presence of large outbound shippers is more prevalent in a major metropolitan area. The balance of inbound and outbound movements makes for an efficient use of transportation infrastructure, and thereby once again lowers the unit cost of the goods shipped.

Nearby access to north/south and east/west Interstate highways is an attribute associated with an inland port’s flexibility to distribute throughout entire sections of the country. The current “Hub & Spoke” concept of distribution, which is most prevalent in the U.S. today, because most supply chain linkages between retail and manufacturing depend on “just-in-time” truck delivery, would not be possible without a very strong highway system radiating out from the warehouse location.

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The impact of the nation's Interstate highway system on the economy has been tremendous. "Although the Interstate at 47,000 miles represents only 1 percent of total system mileage, it carries 24 percent of all traffic and 41 percent of combination-vehicle truck traffic. It is a strategic system of arterials which performs well. But it has meant far more to our economy and way of life than its designers could have imagined."⁶

This strong relationship between interstate highways and our nation's economy will continue well into the future. As global economies evolve, more emphasis is being placed on highway systems throughout North America. This is most easily seen in the designation and development of trade corridors (highway systems) within the North American Free Trade Agreement (NAFTA) directly linking Canada, the United States, and Mexico through a series of interstate highways.

Access to a strong labor shed is the seventh and final key attribute identified in the Allen Group Report. Though this attribute is directly related and can be considered a function of being located near a major metropolitan area, labor is essential to any business venture. A project the size of a large inland port demands a large population-base. An inland port must be assured of a skilled and stable supply of labor, not only in the initial construction and start-up phases of the project, but in the subsequent growth stages as well. The amount of capital investment associated with development of an inland port will be significant by any standard, and it is inconceivable that the funds required for such an undertaking would be available without at least a statistical guarantee that the required trained labor force does exist.

In addition to the seven referenced key attributes, there are two more that can be considered essential to a successful inland port in today's global economy. The first and foremost is a willing political structure committed to a common goal: the quintessential public/private partnership. As with any economic development project that aims to attract large amounts of private investment and employment

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opportunities, a coordinated effort between the public and private sectors is required. Infrastructure development that benefits the whole community or region, combined with the necessary entitlements and adherence to regulations that will allow for this construction is only accomplished through full private-public cooperation. This also applies to the marketing of the project and development of incentives to attract the correct mix of transportation and logistics services, as well as the end-user companies.

The second is the "Presence of an information technology infrastructure that supports leading-edge information technologies required to facilitate the efficient movement of goods into and out of the area. This includes telecommunications networks and information service providers that can readily meet the needs of the international trade and transportation community."⁷ In today's global economy, connectivity is paramount. An inland port, by definition, is a location where goods from throughout the world are distributed. And immediate access to that world is via telecommunications and information technology. Transportation cannot only be defined as the movement of people and goods as it was in the past. Success in the future global economy comes with an understanding that transportation also consists of ideas and information.

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Exhibit III-1: Bonded Warehouse vs. Foreign Trade Zone

Function	Bonded Warehouse	Foreign Trade Zone
Customs entry.	A bonded warehouse is within U.S. Customs territory and a customs entry must be filed to enter goods into the warehouse.	A zone is not considered within customs territory. Customs entry is not required until goods are removed.
Permissible cargo.	Only foreign merchandise.	All merchandise, whether domestic or foreign.
Customs bonds.	Each entry must be covered by either a single-entry term bond, or a general term bond.	No bond required.
Payment of duties.	Duties are due prior to release from bonded warehouses.	Duties are due only upon entry into U.S. territory.
Manufacture of goods.	Manufacturing is prohibited.	Manufacture is permitted with duty payable at the time the goods leave the zone for U.S. consumption. No duty on waste material or on value added in manufacturing. No duties paid on export goods.
Appraisal and classification.	Immediately.	Tariff rate and value are determined at your discretion, either at the time of admission, or when goods leave the zone.
Storage periods.	Not to exceed five years.	Unlimited.
Operations on merchandise for domestic consumption.	Only cleaning, repackaging and sorting may take place, all under customs supervision.	Sort, destroy, clean, grade, mix with foreign or domestic goods, label, assemble, manufacture, exhibit, sell, repack.
Customs entry regulations.	Apply fully.	Only applies to goods removed for U.S. consumption.
Jurisdiction of other federal agencies.	Applies to all foreign merchandise.	Application of regulations depends on products and agency involved.

Source: Nevada Development Authority

Endnotes

¹ "Inland Ports: Solving the Logistics Puzzle of Growth in Global Trade", Richard S. Allen, Chief Executive Office, The Allen Group, www.NAIOP.org/industrylinks/network/allen.

² "Foreign Trade Zone", Ian MacLeod, Trade Information Center, Trade Development, U.S. Dept. of Commerce, June 2000.

³ "Advantages of a Foreign Trade Zone Over A Bonded Warehouse," Southern Nevada's Foreign Trade Zone #89, Nevada Development Authority.

⁴ Sara Jean Leitner and Robert Harrison, "The Identification and Classification of Inland Ports", Center for Transportation Research, University of Texas, August 2011.

⁵ Clyde Kenneth Walter and Richard F. Poist, "Desired Attributes of an Inland Port: Shipper vs. Carrier Perspectives", *Transportation Journal*; Fall 2003.

⁶ "The Future of the Interstate Highway System", American Association of State Highway and Transportation Officials, <http://www.transportation1.org>.

⁷ *Op cit.*, note 16.

IV. LOGISTICS/DISTRIBUTION CENTERS: BACKGROUND FOR NEVADA POLICYMAKERS

Introduction

The distribution of products to customers, whether to intermediate users or directly to end-users, is a key focus of any product or service company.¹ The logistics of efficient goods distribution is a critical component of profitability within the overall movement of inputs and outputs of what is popularly termed “supply chain management” (IBS Center for Management Research, 2012). As recently noted, the seven habits of effective supply chains require excellent distribution networks and facilities (Supply Chain Digest, 2012).

The purpose of this section is to provide an overview of the emerging three main types of distribution facilities. These three types of distribution facilities are fulfillment centers, the emergence of reverse logistics facilities and distribution associated with e-commerce. Although all three types require the fundamentals of efficient distribution, the purpose herein is to highlight significant differences. However, in order to provide an overall frame of reference for Nevada policymakers, it is necessary to present a brief overview of the current state of logistics.

Logistics: Emerging Issues

The increasing importance of distribution and logistics in company decision-making is due, in part, to the continued costs associated with transportation and inventory carrying costs.² The two major costs of the logistic system have almost universally been associated with transportation costs and inventory carrying costs. In 2010, both of these components increased by over 10 percent, which far exceeded the prevailing relatively low national rate of inflation (Council of Supply Chain Management Professionals, 2011).

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It is important to note that the costs of the national logistics system rose in 2010 to \$1.2 trillion, which represents an increase of \$114 billion from 2009 even within a recessionary environment. This resulted in logistics costs similar to those which prevailed in 2005. As in the past, trucking costs remain the dominant factor in the transportation component (78 percent).

Companies are reacting to this cost environment through plans to search for both new efficiencies and a growing focus on their distribution systems. Cost containment remains the single overall goal within distribution sector (UPS, 2010 and 2011). It is important to note that this emphasis on cost containment is particularly true for high-tech companies with cost being their top concern.

As outlined in the 2010 UPS supply chain survey, the three top priorities for future distribution systems reflect directly and indirectly cost concerns (UPS, 2010). These three focal points are an increased focus on achieving higher service levels (83 percent), aligning distribution needs with demand through improved planning (80 percent) and a management focus on the supply chain (74 percent).

In 2011, cost management remained a top priority with the majority of companies (63 percent) citing cost reduction and improved operating efficiency as a top-three business priority (UPS, 2011a).³ There also appears to be a continuing emphasis to explore innovative distribution designs and innovative information technology.

With this background, presented below is a discussion of the three major types of distribution activities.⁴

Types of Distribution Centers

The following narrative is organized as follows. The first section briefly outlines the three current and emerging focuses of distribution and logistics. The second section evaluates the current workforce structure of Nevada and how it is currently positioned to assist development of logistic centers.

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Fulfillment Centers

In its most basic sense, fulfillment centers are warehouse and distribution facilities where incoming orders are received (electronically), operationally processed and then shipped to customers. Within manufacturing and equipment, customers can, of course, represent intermediate processes within the supply chain (i.e. parts centers). However, fulfillment centers are generally associated within retail trade or wholesale distribution by servicing potentially numerous locations or outlets.⁵ Two newer developments within this general space are discussed below, namely reverse logistics and e-commerce.

Several characteristics of recent literature on fulfillment centers bear directly on the potential for Nevada (or any state) to develop modern logistic centers. These developments are:

- An increasing use of information technology to assist both order fulfillment and customer service (FedEx, 2012; Distribution Center Management, 2009)
- Optimizing transportation networks to minimize costs (Dell, 2012; Fleming and McIntyre, 2007)
- Designing innovative product delivery sub- systems to include both “most processed” products and “least processed” products (Kulp, 2012; Li and Muckstat, 2011)
- Large facilities to handle the retail “explosion” in item catalogs associated with larger retailers such as Amazon and Wal-Mart (Charles and Thi Dau, 2005).

Reverse Logistics Centers

One of the more important recent logistic trends is the establishment of dedicated reverse logistics centers.⁶ Reverse logistics to include repair, secondary market

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sales and recycling in high-tech electronics is a relatively new area of distribution development. Reverse logistics stresses the capture of value from company products as opposed to the traditional model of “return and discard” (UPS, 2011b; Mollenkopf and Weathersby, 2004; Barry, 2003).

Fundamentally, these centers receive goods flows of “unwanted” goods or equipment which may be related to traditional returns, end-of-lease products, product recalls, technologically outdated new product from the company itself, etc. Reverse logistics can represent several different operations such as reuse through repair and secondary market sales, recycling or disposal (UPS, 2011b).

Companies have increasingly have found that reverse logistics can represent profit potential and the ability to capture value, particularly within retail and higher end electronics (Reverse Logistics Professional, 2012). As shown in Table 1, the majority of product is either reworked in some manner or sold either directly or indirectly.

Table IV-1: Comparison of Disposition Options between Retailers & Manufacturers

Disposition	Retailers	Mfgs.
Sent to central processing facility	29.2%	17.7%
Resold as is	21.4%	23.5%
Repackaged and sold as new	20.5%	20.0%
Remanufactured/Refurbished	19.9%	26.7%
Sold to broker	16.8%	10.1%
Sold at outlet store	14.5%	12.8%
Recycled	14.1%	22.3%
Land Fill	13.6%	23.8%
Donated	10.6%	11.8%

Source: “Going Backwards: Reverse Logistics Trends and Practices”, University of Nevada, Reno Center for Logistics Management, 1998.

The interest in reverse logistics as capturing lost value stems, in part, from the realization that truly defective merchandise is often less than 20 percent of traditional returns (UPS, 2011b). It is important to note that as part of an economic

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development strategy, reverse logistics can augment regional employment through repair and reship. The repair, repackaging for primary markets, secondary market sales and recycling functions add additional activities (and employment) not associated with traditional distribution.

These newer employment functions can include:

- Return products (repackaged) to original stocking inventories
- Repair facilities with reshipment to customer
- Recycling of components and/or valuable materials
- Organizing sales in the secondary market (to include outlet stores, liquidators)
- Establishing spare parts

Reverse logistics is particularly applicable to high-tech companies with opportunities for reselling in the secondary market (UPS, 2011b). For example, it has been estimated that 400 million units of electronic “wastage” occur on an annual basis, product that has significant potential for capturing value. The capture of rare materials from these products has gathered increasing interest with the large price increases of rare materials. In addition, regulations on disposal of electronic components in many states are fostering reverse logistics as a method to avoid the risks of regulation.

E-Commerce

The growth of e-commerce has caused considerable change to the traditional fulfillment center in several ways. These changes are due primarily to the often huge number of items offered for sale and hence increased demands on efficient distribution management (Kulp, 2012; Damen, 2001; Ricker and Kalakota, 1999).⁷

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Item growth has been exacerbated by the need to often ship individual small items rather than bulk shipments and do so on a critical time basis (FedEx, 2012). In addition, with respect to electronics and similar high value items, tracking and inventory control within the distribution system has taken on increased importance (Kulp, 2012).

For example, large e-commerce distribution systems have been required to innovate within distribution facilities new ways of handling operations. This process in the early years of e-commerce took companies significantly up the learning curve for internal tracking and order fulfillment. As discussed in Charles and Thi Dau (2005), e-commerce distribution for companies such as Amazon include so-called item activity or profiling into forward and reserve storage. This dichotomy is then further split into prime locations, which then can themselves be subject to various methods of storage ranging from small cases to pallet bins. The need for within facility information flow is critical.

In order to function smoothly, all of these e-commerce activities require using information technology within the facility and from external customers and management. Hence, a region's workforce needs to be comfortable with use of information technology. Any economic development plan keyed to these e-commerce facilities without a technological capable workforce is likely not feasible.

With these basic facts on the three types of distribution facilities in mind, the next section examines the ability of the Nevada workforce to provide needed labor services.

Nevada Workforce: Assessment to Meet Logistics Cluster Needs

Nevada appears to have a workforce with strong characteristics to meet the needs of all three types of distribution systems. It is well known that Nevada's dominant industry, the leisure and hospitality sector, has used computer technology throughout its operations from front desk to food preparation. This has helped

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create a workforce culture in Nevada that is comfortable with information technology.

Additionally, as presented in the Appendix to this section, Nevada has a workforce with experience in specific occupations that can support future logistics development in the state. The Appendix provides a broad sense of Nevada occupations that are conducive to logistics and distribution center development as discussed in this report.

The data suggest that a focus on distribution centers in Nevada as part of a comprehensive economic development strategy appears to be relatively in sync with Nevada's existing labor force and required skills within this sector. Accordingly, immediate labor force issues should not be a major impediment to the growth of a vibrant logistics cluster. Taking advantage of federal workforce training initiatives and funds should allow any imbalances to be met in a timely manner.

The Appendix at end of this section presents the information for four geographic areas. These four areas are the State of Nevada, its two largest economic centers, Clark County and Washoe County, and the Balance of State.

Data on the selected occupations in Nevada are shown by two alternative methods, namely occupations ranked by median wage and by "location quotient" (that is, relative concentration of the occupation).

In this respect, the column labeled location quotient is a measure of the relative concentration of workers in a category compared to the national average. Thus, a figure greater than 1 implies that the Nevada workforce has a (relatively) greater concentration of workers than average with a value of less than 1 suggesting a (relatively) smaller concentration. However, many occupations have similar cross-skills, which suggest that the Nevada workforce appears adaptable to occupation switching where needed. For example, motor repair and electronics repair have cross-skills with telecommunications repair.

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Several observations include:

- The Nevada workforce has strong skills in materials handling and warehousing which support fulfillment centers.
- The repair function and recycling function required in reverse logistics appear to be well-represented within occupations in Nevada.
- The functions of many well represented occupations in Nevada are associated with the use of both basic and advanced information technology as utilized in e-commerce distribution.
- A basic transferability of skills between industries in the Nevada workforce appears to be conducive to development of distribution facilities.

Thus, it appears there are no short-run constraints in the labor force internal to Nevada that would impede distribution center development.

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Appendix: Logistics & Operations Cluster, Key Occupations

Key Occupations in Logistics & Operations Cluster¹

SOC Code	Occupation
Facility and Mobile Equipment Maintenance Cluster	
47-4061	Rail-Track Laying and Maintenance Equipment Operators
49-2091	Avionics Technicians
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles
49-3011	Aircraft Mechanics and Service Technicians
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists
49-3042	Mobile Heavy Equipment Mechanics, Except Engines
49-3043	Rail Car Repairers
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics
49-3093	Tire Repairers and Changers
49-9099	Installation, Maintenance, and Repair Workers, All Other
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers
51-2031	Engine and Other Machine Assemblers
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors
Logistics Planning and Management Services Cluster	
11-1011	Chief Executives
11-3011	Administrative Services Managers
11-9199	Managers, All Other
13-1081	Logisticians
Sales and Service Cluster	
41-2022	Parts Salespersons
43-1011	First-Line Supervisors/Managers of Office and Administrative Support Workers
43-3021	Billing and Posting Clerks and Machine Operators
43-5011	Cargo and Freight Agents
Transportation Operations Cluster	
11-3071	Transportation, Storage, and Distribution Managers
17-3021	Aerospace Engineering and Operations Technicians
29-9011	Occupational Health and Safety Specialists
43-5032	Dispatchers, Except Police, Fire, and Ambulance
47-2011	Boilermakers
47-2073	Operating Engineers and Other Construction Equipment Operators
49-9092	Commercial Divers
53-1011	Aircraft Cargo Handling Supervisors
53-2011	Airline Pilots, Copilots, and Flight Engineers
53-2012	Commercial Pilots
53-2021	Air Traffic Controllers
53-2022	Airfield Operations Specialists
53-3032	Truck Drivers, Heavy and Tractor-Trailer
53-3033	Truck Drivers, Light or Delivery Services
53-4011	Locomotive Engineers
53-4021	Railroad Brake, Signal, and Switch Operators
53-4031	Railroad Conductors and Yardmasters
53-6051	Transportation Inspectors
53-7021	Crane and Tower Operators
53-7032	Excavating and Loading Machine and Dragline Operators
53-7051	Industrial Truck and Tractor Operators
Transportation Systems/Infrastructure Planning, Management and Regulation Cluster	
13-1199	Business Operations Specialists, All Other
19-3099	Social Scientists and Related Workers, All Other
53-6051	Transportation Inspectors
Warehousing and Distribution Center Operations Cluster	
43-5061	Production, Planning, and Expediting Clerks
43-5071	Shipping, Receiving, and Traffic Clerks
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine/Vehicle Operators
53-7062	Laborers and Freight, Stock, and Material Movers, Hand
53-7064	Packers and Packagers, Hand
53-7121	Tank Car, Truck, and Ship Loaders

Sources: O*Net OnLine; U.S. Bureau of Labor Statistics.

¹ O*Net OnLine defines the transportation, distribution and logistics cluster as the "planning, management, and movement of people, materials, and goods by road, pipeline, air, rail and water and related professional and technical support services such as transportation infrastructure planning and

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Nevada Occupations: Ranked By Location Quotient

Nevada

Location Quotients for Logistics & Operations Cluster Occupations

Ranked by Location Quotient

SOC Code	Occupation	2012 Location Quotient	Median Hourly Wage	2012 Jobs
53-2012	Commercial Pilots	2.2	\$28.08	786
47-4061	Rail-Track Laying and Maintenance Equipment Operators	2.0	\$26.88	267
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	1.6	\$25.02	1,867
17-3021	Aerospace Engineering and Operations Technicians	1.5	\$30.87	118
49-9099	Installation, Maintenance, and Repair Workers, All Other	1.5	\$19.68	3,178
49-3093	Tire Repairers and Changers	1.5	\$12.28	1,251
53-6051	Transportation Inspectors	1.5	\$15.55	350
43-5032	Dispatchers, Except Police, Fire, and Ambulance	1.4	\$15.04	2,329
49-3011	Aircraft Mechanics and Service Technicians	1.4	\$26.58	1,440
53-2021	Air Traffic Controllers	1.2	\$45.78	310
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1.2	\$11.87	###
43-5071	Shipping, Receiving, and Traffic Clerks	1.1	\$13.67	6,750
29-9011	Occupational Health and Safety Specialists	1.1	\$32.12	519
11-3071	Transportation, Storage, and Distribution Managers	1.1	\$29.89	1,023
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	1.1	\$14.11	156
53-2022	Airfield Operations Specialists	1.0	\$35.90	85
11-9199	Managers, All Other	1.0	\$25.38	###
53-3033	Truck Drivers, Light or Delivery Services	1.0	\$15.13	8,189
53-7032	Excavating and Loading Machine and Dragline Operators	1.0	\$21.25	611
43-5011	Cargo and Freight Agents	1.0	\$18.78	750
43-1011	First-Line Supervisors/Managers of Office and Administrative Support Workers	1.0	\$20.95	###
49-9092	Commercial Divers	1.0	\$19.40	105
47-2073	Operating Engineers and Other Construction Equipment Operators	0.9	\$25.93	3,053
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	0.9	\$19.75	1,410
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine,	0.9	\$22.64	1,538
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	0.9	\$23.10	1,903
11-1011	Chief Executives	0.8	\$45.26	3,772
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	0.8	\$42.17	193
43-3021	Billing and Posting Clerks and Machine Operators	0.8	\$15.67	3,693
11-3011	Administrative Services Managers	0.8	\$29.57	1,669
53-7064	Packers and Packagers, Hand	0.7	\$10.43	4,614
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	0.7	\$13.39	234
53-3032	Truck Drivers, Heavy and Tractor-Trailer	0.7	\$21.17	###
41-2022	Parts Salespersons	0.7	\$14.95	1,215
53-7051	Industrial Truck and Tractor Operators	0.6	\$14.91	3,123
13-1199	Business Operations Specialists, All Other	0.6	\$26.60	5,654
53-7021	Crane and Tower Operators	0.6	\$31.73	208
49-3043	Rail Car Repairers	0.6	\$25.95	112
43-5061	Production, Planning, and Expediting Clerks	0.6	\$21.16	1,390
53-4021	Railroad Brake, Signal, and Switch Operators	0.6	\$25.23	116
53-4011	Locomotive Engineers	0.5	\$27.25	197
53-4031	Railroad Conductors and Yardmasters	0.5	\$29.15	177
19-3099	Social Scientists and Related Workers, All Other	0.5	\$33.15	151
49-2091	Avionics Technicians	0.4	\$26.12	75
47-2011	Boilermakers	0.4	\$27.82	89
53-2011	Airline Pilots, Copilots, and Flight Engineers	0.4	\$51.93	285
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	0.4	\$27.13	47
53-5011	Sailors and Marine Oilers	0.3	\$15.82	82
53-7121	Tank Car, Truck, and Ship Loaders	0.3	\$17.41	31
13-1081	Logisticians	0.2	\$32.54	221
51-2031	Engine and Other Machine Assemblers	0.2	\$16.97	72
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	0.2	\$20.53	62

Sources: EMSI; Nevada Department of Employment, Training and Rehabilitation.

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Nevada Occupations: Ranked By Hourly Wage

Nevada

Location Quotients for Logistics & Operations Cluster Occupations

Ranked by Median Hourly Wage

SOC Code	Occupation	2012 Location Quotient	Median Hourly Wage	2012 Jobs
53-2011	Airline Pilots, Copilots, and Flight Engineers	0.4	\$51.93	285
53-2021	Air Traffic Controllers	1.2	\$45.78	310
11-1011	Chief Executives	0.8	\$45.26	3,772
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	0.8	\$42.17	193
53-2022	Airfield Operations Specialists	1.0	\$35.90	85
19-3099	Social Scientists and Related Workers, All Other	0.5	\$33.15	151
13-1081	Logisticians	0.2	\$32.54	221
29-9011	Occupational Health and Safety Specialists	1.1	\$32.12	519
53-7021	Crane and Tower Operators	0.6	\$31.73	208
17-3021	Aerospace Engineering and Operations Technicians	1.5	\$30.87	118
11-3071	Transportation, Storage, and Distribution Managers	1.1	\$29.89	1,023
11-3011	Administrative Services Managers	0.8	\$29.57	1,669
53-4031	Railroad Conductors and Yardmasters	0.5	\$29.15	177
53-2012	Commercial Pilots	2.2	\$28.08	786
47-2011	Boilermakers	0.4	\$27.82	89
53-4011	Locomotive Engineers	0.5	\$27.25	197
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	0.4	\$27.13	47
47-4061	Rail-Track Laying and Maintenance Equipment Operators	2.0	\$26.88	267
13-1199	Business Operations Specialists, All Other	0.6	\$26.60	5,654
49-3011	Aircraft Mechanics and Service Technicians	1.4	\$26.58	1,440
49-2091	Avionics Technicians	0.4	\$26.12	75
49-3043	Rail Car Repairers	0.6	\$25.95	112
47-2073	Operating Engineers and Other Construction Equipment Operators	0.9	\$25.93	3,053
11-9199	Managers, All Other	1.0	\$25.38	15,086
53-4021	Railroad Brake, Signal, and Switch Operators	0.6	\$25.23	116
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	1.6	\$25.02	1,867
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	0.9	\$23.10	1,903
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine,	0.9	\$22.64	1,538
53-1011	Aircraft Cargo Handling Supervisors	1.0	\$21.71	58
53-7032	Excavating and Loading Machine and Dragline Operators	1.0	\$21.25	611
53-3032	Truck Drivers, Heavy and Tractor-Trailer	0.7	\$21.17	12,904
43-5061	Production, Planning, and Expediting Clerks	0.6	\$21.16	1,390
43-1011	First-Line Supervisors/Managers of Office and Administrative Support Workers	1.0	\$20.95	12,033
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	0.2	\$20.53	62
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	0.9	\$19.75	1,410
49-9099	Installation, Maintenance, and Repair Workers, All Other	1.5	\$19.68	3,178
49-9092	Commercial Divers	1.0	\$19.40	105
43-5011	Cargo and Freight Agents	1.0	\$18.78	750
53-7121	Tank Car, Truck, and Ship Loaders	0.3	\$17.41	31
51-2031	Engine and Other Machine Assemblers	0.2	\$16.97	72
43-3021	Billing and Posting Clerks and Machine Operators	0.8	\$15.67	3,693
53-6051	Transportation Inspectors	1.5	\$15.55	350
53-3033	Truck Drivers, Light or Delivery Services	1.0	\$15.13	8,189
43-5032	Dispatchers, Except Police, Fire, and Ambulance	1.4	\$15.04	2,329
41-2022	Parts Salespersons	0.7	\$14.95	1,215
53-7051	Industrial Truck and Tractor Operators	0.6	\$14.91	3,123
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	1.1	\$14.11	156
43-5071	Shipping, Receiving, and Traffic Clerks	1.1	\$13.67	6,750
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	0.7	\$13.39	234
49-3093	Tire Repairers and Changers	1.5	\$12.28	1,251
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1.2	\$11.87	22,373
53-7064	Packers and Packagers, Hand	0.7	\$10.43	4,614

Sources: EMSI; Nevada Department of Employment, Training and Rehabilitation.

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Clark County Occupations: Ranked By Location Quotient

Clark County, Nevada

Location Quotients for Logistics & Operations Cluster Occupations

Ranked by Location Quotient

SOC Code	Occupation	2012 Location Quotient	Median Hourly Wage	2012 Jobs
53-2012	Commercial Pilots	2.7	\$28.00	665
47-4061	Rail-Track Laying and Maintenance Equipment Operators	1.8	\$28.23	170
53-2021	Air Traffic Controllers	1.6	\$46.31	274
53-6051	Transportation Inspectors	1.5	\$14.69	259
43-5032	Dispatchers, Except Police, Fire, and Ambulance	1.5	\$14.74	1,757
49-9099	Installation, Maintenance, and Repair Workers, All Other	1.4	\$19.38	2,120
49-3011	Aircraft Mechanics and Service Technicians	1.4	\$26.16	1,010
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	1.3	\$14.05	134
49-3093	Tire Repairers and Changers	1.2	\$11.80	743
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1.1	\$12.00	###
43-1011	First-Line Supervisors/Managers of Office and Administrative Support Workers	1.0	\$20.67	9,040
11-9199	Managers, All Other	1.0	\$25.98	###
17-3021	Aerospace Engineering and Operations Technicians	1.0	\$33.36	53
53-1011	Aircraft Cargo Handling Supervisors	1.0	\$22.49	42
43-5071	Shipping, Receiving, and Traffic Clerks	0.9	\$13.61	3,893
53-3033	Truck Drivers, Light or Delivery Services	0.9	\$15.39	5,061
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine,	0.9	\$22.24	1,044
29-9011	Occupational Health and Safety Specialists	0.8	\$32.06	277
49-9092	Commercial Divers	0.8	\$17.81	62
43-3021	Billing and Posting Clerks and Machine Operators	0.8	\$16.07	2,575
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	0.8	\$19.80	842
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	0.8	\$42.11	128
11-1011	Chief Executives	0.8	\$47.05	2,471
43-5011	Cargo and Freight Agents	0.8	\$20.93	417
11-3071	Transportation, Storage, and Distribution Managers	0.8	\$30.64	505
53-7032	Excavating and Loading Machine and Dragline Operators	0.8	\$22.44	336
11-3011	Administrative Services Managers	0.7	\$28.43	1,118
53-7064	Packers and Packagers, Hand	0.7	\$10.27	3,031
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	0.7	\$22.37	1,066
47-2073	Operating Engineers and Other Construction Equipment Operators	0.7	\$28.08	1,477
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	0.6	\$24.36	520
53-7021	Crane and Tower Operators	0.6	\$33.15	153
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	0.6	\$13.08	136
41-2022	Parts Salespersons	0.6	\$14.86	737
13-1199	Business Operations Specialists, All Other	0.6	\$25.80	3,627
53-7051	Industrial Truck and Tractor Operators	0.5	\$15.20	1,819
43-5061	Production, Planning, and Expediting Clerks	0.5	\$21.67	857
53-3032	Truck Drivers, Heavy and Tractor-Trailer	0.5	\$21.53	6,086
49-3043	Rail Car Repairers	0.4	\$29.81	56
53-4021	Railroad Brake, Signal, and Switch Operators	0.4	\$28.52	57
53-4011	Locomotive Engineers	0.4	\$28.43	96
53-4031	Railroad Conductors and Yardmasters	0.3	\$32.04	85
19-3099	Social Scientists and Related Workers, All Other	0.3	\$35.51	75
47-2011	Boilermakers	0.3	\$28.78	45
53-2011	Airline Pilots, Copilots, and Flight Engineers	0.3	\$49.68	151
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	0.3	\$29.55	23
49-2091	Avionics Technicians	0.2	\$25.17	25
53-7121	Tank Car, Truck, and Ship Loaders	0.2	\$16.89	15
13-1081	Logisticians	0.2	\$36.29	113
51-2031	Engine and Other Machine Assemblers	0.2	\$15.19	35
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	--	--	<10
53-2022	Airfield Operations Specialists	--	--	<10

Sources: EMSI; Nevada Department of Employment, Training and Rehabilitation.

PART 1: Nevada Inland Ports: Viability and Funding

Clark County Occupations: Ranked By Hourly Wage

Clark County, Nevada

Location Quotients for Logistics & Operations Cluster Occupations

Ranked by Median Hourly Wage

SOC Code	Occupation	2012 Location Quotient	Median Hourly Wage	2012 Jobs
53-2011	Airline Pilots, Copilots, and Flight Engineers	0.3	\$49.68	151
11-1011	Chief Executives	0.8	\$47.05	2,471
53-2021	Air Traffic Controllers	1.6	\$46.31	274
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	0.8	\$42.11	128
13-1081	Logisticians	0.2	\$36.29	113
19-3099	Social Scientists and Related Workers, All Other	0.3	\$35.51	75
17-3021	Aerospace Engineering and Operations Technicians	1.0	\$33.36	53
53-7021	Crane and Tower Operators	0.6	\$33.15	153
29-9011	Occupational Health and Safety Specialists	0.8	\$32.06	277
53-4031	Railroad Conductors and Yardmasters	0.3	\$32.04	85
11-3071	Transportation, Storage, and Distribution Managers	0.8	\$30.64	505
49-3043	Rail Car Repairers	0.4	\$29.81	56
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	0.3	\$29.55	23
47-2011	Boilermakers	0.3	\$28.78	45
53-4021	Railroad Brake, Signal, and Switch Operators	0.4	\$28.52	57
11-3011	Administrative Services Managers	0.7	\$28.43	1,118
53-4011	Locomotive Engineers	0.4	\$28.43	96
47-4061	Rail-Track Laying and Maintenance Equipment Operators	1.8	\$28.23	170
47-2073	Operating Engineers and Other Construction Equipment Operators	0.7	\$28.08	1,477
53-2012	Commercial Pilots	2.7	\$28.00	665
49-3011	Aircraft Mechanics and Service Technicians	1.4	\$26.16	1,010
11-9199	Managers, All Other	1.0	\$25.98	###
13-1199	Business Operations Specialists, All Other	0.6	\$25.80	3,627
49-2091	Avionics Technicians	0.2	\$25.17	25
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	0.6	\$24.36	520
53-1011	Aircraft Cargo Handling Supervisors	1.0	\$22.49	42
53-7032	Excavating and Loading Machine and Dragline Operators	0.8	\$22.44	336
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	0.7	\$22.37	1,066
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine	0.9	\$22.24	1,044
43-5061	Production, Planning, and Expediting Clerks	0.5	\$21.67	857
53-3032	Truck Drivers, Heavy and Tractor-Trailer	0.5	\$21.53	6,086
43-5011	Cargo and Freight Agents	0.8	\$20.93	417
43-1011	First-Line Supervisors/Managers of Office and Administrative Support Workers	1.0	\$20.67	9,040
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	0.8	\$19.80	842
49-9099	Installation, Maintenance, and Repair Workers, All Other	1.4	\$19.38	2,120
49-9092	Commercial Divers	0.8	\$17.81	62
53-7121	Tank Car, Truck, and Ship Loaders	0.2	\$16.89	15
43-3021	Billing and Posting Clerks and Machine Operators	0.8	\$16.07	2,575
53-3033	Truck Drivers, Light or Delivery Services	0.9	\$15.39	5,061
53-7051	Industrial Truck and Tractor Operators	0.5	\$15.20	1,819
51-2031	Engine and Other Machine Assemblers	0.2	\$15.19	35
41-2022	Parts Salespersons	0.6	\$14.86	737
43-5032	Dispatchers, Except Police, Fire, and Ambulance	1.5	\$14.74	1,757
53-6051	Transportation Inspectors	1.5	\$14.69	259
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	1.3	\$14.05	134
43-5071	Shipping, Receiving, and Traffic Clerks	0.9	\$13.61	3,893
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	0.6	\$13.08	136
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1.1	\$12.00	###
49-3093	Tire Repairers and Changers	1.2	\$11.80	743
53-7064	Packers and Packagers, Hand	0.7	\$10.27	3,031
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	--	--	<10
53-2022	Airfield Operations Specialists	--	--	<10

Sources: EMSI; Nevada Department of Employment, Training and Rehabilitation.

PART 1: Nevada Inland Ports: Viability and Funding

Washoe County Occupations: Ranked By Location Quotient

Washoe County, Nevada

Location Quotients for Logistics & Operations Cluster Occupations

Ranked by Location Quotient

SOC Code	Occupation	2012 Location Quotient	Median Hourly Wage	2012 Jobs
47-4061	Rail-Track Laying and Maintenance Equipment Operators	3.3	\$26.06	73
11-3071	Transportation, Storage, and Distribution Managers	2.3	\$27.25	361
53-2022	Airfield Operations Specialists	2.3	\$34.85	31
49-3093	Tire Repairers and Changers	2.0	\$12.27	295
43-5071	Shipping, Receiving, and Traffic Clerks	1.8	\$13.47	1,742
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	1.6	\$19.35	395
53-3033	Truck Drivers, Light or Delivery Services	1.5	\$14.60	2,012
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1.4	\$11.15	4,636
49-9099	Installation, Maintenance, and Repair Workers, All Other	1.3	\$16.84	468
43-5032	Dispatchers, Except Police, Fire, and Ambulance	1.2	\$14.61	347
29-9011	Occupational Health and Safety Specialists	1.2	\$31.18	94
43-5011	Cargo and Freight Agents	1.2	\$17.55	150
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	1.1	\$23.30	216
47-2073	Operating Engineers and Other Construction Equipment Operators	1.1	\$24.95	598
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	1.1	\$25.46	405
53-7051	Industrial Truck and Tractor Operators	1.1	\$14.32	879
53-2012	Commercial Pilots	1.1	\$30.04	64
49-9092	Commercial Divers	1.1	\$21.05	20
53-7064	Packers and Packagers, Hand	1.0	\$11.16	1,091
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	1.0	\$15.60	56
11-9199	Managers, All Other	1.0	\$25.29	2,468
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine,	1.0	\$22.51	296
43-3021	Billing and Posting Clerks and Machine Operators	1.0	\$14.43	781
53-3032	Truck Drivers, Heavy and Tractor-Trailer	1.0	\$20.83	3,205
53-1011	Aircraft Cargo Handling Supervisors	1.0	\$18.37	10
53-6051	Transportation Inspectors	1.0	\$15.63	40
19-3099	Social Scientists and Related Workers, All Other	1.0	\$31.10	53
11-1011	Chief Executives	1.0	\$44.22	716
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	0.9	\$44.86	36
53-4021	Railroad Brake, Signal, and Switch Operators	0.9	\$21.67	32
43-1011	First-Line Supervisors/Managers of Office and Administrative Support Workers	0.9	\$22.64	1,801
49-3011	Aircraft Mechanics and Service Technicians	0.8	\$24.40	147
53-4011	Locomotive Engineers	0.8	\$22.36	53
11-3011	Administrative Services Managers	0.8	\$32.15	297
41-2022	Parts Salespersons	0.8	\$16.31	253
17-3021	Aerospace Engineering and Operations Technicians	0.8	\$30.91	10
43-5061	Production, Planning, and Expediting Clerks	0.8	\$20.46	321
53-4031	Railroad Conductors and Yardmasters	0.7	\$27.89	45
13-1199	Business Operations Specialists, All Other	0.7	\$26.89	1,141
53-7032	Excavating and Loading Machine and Dragline Operators	0.7	\$19.63	75
49-3043	Rail Car Repairers	0.5	\$22.01	16
47-2011	Boilermakers	0.5	\$27.00	18
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	0.5	\$12.27	12
53-7021	Crane and Tower Operators	0.4	\$24.67	21
13-1081	Logisticians	0.4	\$25.03	56
53-2011	Airline Pilots, Copilots, and Flight Engineers	0.3	\$41.93	33
53-2021	Air Traffic Controllers	--	--	<10
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	--	--	<10
49-2091	Avionics Technicians	--	--	<10
53-7121	Tank Car, Truck, and Ship Loaders	--	--	<10
51-2031	Engine and Other Machine Assemblers	--	--	<10
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	--	--	<10

Sources: EMSI; Nevada Department of Employment, Training and Rehabilitation.

PART 1: Nevada Inland Ports: Viability and Funding

Washoe County Occupations: Ranked By Hourly Wage

Washoe County, Nevada

Location Quotients for Logistics & Operations Cluster Occupations

Ranked by Median Hourly Wage

SOC Code	Occupation	2012 Location Quotient	Median Hourly Wage	2012 Jobs
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	0.9	\$44.86	36
11-1011	Chief Executives	1.0	\$44.22	716
53-2011	Airline Pilots, Copilots, and Flight Engineers	0.3	\$41.93	33
53-2022	Airfield Operations Specialists	2.3	\$34.85	31
11-3011	Administrative Services Managers	0.8	\$32.15	297
29-9011	Occupational Health and Safety Specialists	1.2	\$31.18	94
19-3099	Social Scientists and Related Workers, All Other	1.0	\$31.10	53
17-3021	Aerospace Engineering and Operations Technicians	0.8	\$30.91	10
53-2012	Commercial Pilots	1.1	\$30.04	64
53-4031	Railroad Conductors and Yardmasters	0.7	\$27.89	45
11-3071	Transportation, Storage, and Distribution Managers	2.3	\$27.25	361
47-2011	Boilermakers	0.5	\$27.00	18
13-1199	Business Operations Specialists, All Other	0.7	\$26.89	1,141
47-4061	Rail-Track Laying and Maintenance Equipment Operators	3.3	\$26.06	73
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	1.1	\$25.46	405
11-9199	Managers, All Other	1.0	\$25.29	2,468
13-1081	Logisticians	0.4	\$25.03	56
47-2073	Operating Engineers and Other Construction Equipment Operators	1.1	\$24.95	598
53-7021	Crane and Tower Operators	0.4	\$24.67	21
49-3011	Aircraft Mechanics and Service Technicians	0.8	\$24.40	147
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	1.1	\$23.30	216
43-1011	First-Line Supervisors/Managers of Office and Administrative Support Workers	0.9	\$22.64	1,801
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine	1.0	\$22.51	296
53-4011	Locomotive Engineers	0.8	\$22.36	53
49-3043	Rail Car Repairers	0.5	\$22.01	16
53-4021	Railroad Brake, Signal, and Switch Operators	0.9	\$21.67	32
49-9092	Commercial Divers	1.1	\$21.05	20
53-3032	Truck Drivers, Heavy and Tractor-Trailer	1.0	\$20.83	3,205
43-5061	Production, Planning, and Expediting Clerks	0.8	\$20.46	321
53-7032	Excavating and Loading Machine and Dragline Operators	0.7	\$19.63	75
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	1.6	\$19.35	395
53-1011	Aircraft Cargo Handling Supervisors	1.0	\$18.37	10
43-5011	Cargo and Freight Agents	1.2	\$17.55	150
49-9099	Installation, Maintenance, and Repair Workers, All Other	1.3	\$16.84	468
41-2022	Parts Salespersons	0.8	\$16.31	253
53-6051	Transportation Inspectors	1.0	\$15.63	40
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	1.0	\$15.60	56
43-5032	Dispatchers, Except Police, Fire, and Ambulance	1.2	\$14.61	347
53-3033	Truck Drivers, Light or Delivery Services	1.5	\$14.60	2,012
43-3021	Billing and Posting Clerks and Machine Operators	1.0	\$14.43	781
53-7051	Industrial Truck and Tractor Operators	1.1	\$14.32	879
43-5071	Shipping, Receiving, and Traffic Clerks	1.8	\$13.47	1,742
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	0.5	\$12.27	12
49-3093	Tire Repairers and Changers	2.0	\$12.27	295
53-7064	Packers and Packagers, Hand	1.0	\$11.16	1,091
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1.4	\$11.15	4,636
53-2021	Air Traffic Controllers	--	--	<10
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	--	--	<10
49-2091	Avionics Technicians	--	--	<10
53-7121	Tank Car, Truck, and Ship Loaders	--	--	<10
51-2031	Engine and Other Machine Assemblers	--	--	<10
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	--	--	<10

Sources: EMSI; Nevada Department of Employment, Training and Rehabilitation.

PART 1: Nevada Inland Ports: Viability and Funding

Balance of State Occupations: Ranked By Location Quotient

Balance of State (net Clark County and Washoe County)
Location Quotients for Logistics & Operations Cluster Occupations
Ranked by Location Quotient

SOC Code	Occupation	2012 Location Quotient	Median Hourly Wage	2012 Jobs
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	7.9	\$25.96	1,124
17-3021	Aerospace Engineering and Operations Technicians	5.8	\$28.60	55
53-2022	Airfield Operations Specialists	4.4	\$37.43	44
53-7032	Excavating and Loading Machine and Dragline Operators	2.6	\$18.73	196
29-9011	Occupational Health and Safety Specialists	2.5	\$32.98	146
47-2073	Operating Engineers and Other Construction Equipment Operators	2.4	\$21.07	964
49-9099	Installation, Maintenance, and Repair Workers, All Other	2.1	\$23.35	578
49-3011	Aircraft Mechanics and Service Technicians	2.1	\$29.27	275
49-3093	Tire Repairers and Changers	2.0	\$13.98	211
43-5011	Cargo and Freight Agents	1.9	\$15.14	178
49-2091	Avionics Technicians	1.9	\$27.17	40
49-3043	Rail Car Repairers	1.7	\$22.53	40
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	1.5	\$22.68	418
53-6051	Transportation Inspectors	1.5	\$20.26	44
53-3032	Truck Drivers, Heavy and Tractor-Trailer	1.5	\$20.98	3,448
43-5071	Shipping, Receiving, and Traffic Clerks	1.5	\$14.01	1,068
47-4061	Rail-Track Laying and Maintenance Equipment Operators	1.4	\$20.86	24
49-9092	Commercial Divers	1.4	\$21.40	19
11-9199	Managers, All Other	1.3	\$22.51	2,404
11-3071	Transportation, Storage, and Distribution Managers	1.3	\$34.03	151
53-2012	Commercial Pilots	1.2	\$26.69	52
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	1.2	\$20.42	51
53-2011	Airline Pilots, Copilots, and Flight Engineers	1.1	\$57.20	93
53-4021	Railroad Brake, Signal, and Switch Operators	1.1	\$22.88	28
53-3033	Truck Drivers, Light or Delivery Services	1.1	\$14.73	1,063
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	1.1	\$11.20	42
11-1011	Chief Executives	1.0	\$36.93	564
53-4011	Locomotive Engineers	1.0	\$30.25	48
53-4031	Railroad Conductors and Yardmasters	1.0	\$25.49	46
43-5032	Dispatchers, Except Police, Fire, and Ambulance	1.0	\$18.46	209
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	1.0	\$37.69	28
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1.0	\$12.77	2,297
41-2022	Parts Salespersons	1.0	\$13.62	220
47-2011	Boilermakers	0.9	\$26.69	25
11-3011	Administrative Services Managers	0.9	\$31.08	238
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine,	0.9	\$25.20	185
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	0.9	\$20.34	161
53-2021	Air Traffic Controllers	0.8	\$43.71	25
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	0.8	\$24.40	12
53-7021	Crane and Tower Operators	0.8	\$26.74	33
43-1011	First-Line Supervisors/Managers of Office and Administrative Support Workers	0.7	\$19.99	1,110
51-2031	Engine and Other Machine Assemblers	0.7	\$19.54	29
13-1199	Business Operations Specialists, All Other	0.7	\$28.85	800
53-7051	Industrial Truck and Tractor Operators	0.7	\$15.07	390
43-5061	Production, Planning, and Expediting Clerks	0.6	\$19.86	190
43-3021	Billing and Posting Clerks and Machine Operators	0.6	\$15.46	315
19-3099	Social Scientists and Related Workers, All Other	0.6	\$30.13	22
53-7064	Packers and Packagers, Hand	0.5	\$10.22	406
13-1081	Logisticians	0.4	\$32.71	44
53-1011	Aircraft Cargo Handling Supervisors	--	--	<10
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	--	--	<10
53-7121	Tank Car, Truck, and Ship Loaders	--	--	<10

Sources: EMSI; Nevada Department of Employment, Training and Rehabilitation.

PART 1: Nevada Inland Ports: Viability and Funding

Balance of State Occupations: Ranked By Hourly Wage

Balance of State (net Clark County and Washoe County)
Location Quotients for Logistics & Operations Cluster Occupations
Ranked by Median Hourly Wage

SOC Code	Occupation	2012 Location Quotient	Median Hourly Wage	2012 Jobs
53-2011	Airline Pilots, Copilots, and Flight Engineers	1.1	\$57.20	93
53-2021	Air Traffic Controllers	0.8	\$43.71	25
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	1.0	\$37.69	28
53-2022	Airfield Operations Specialists	4.4	\$37.43	44
11-1011	Chief Executives	1.0	\$36.93	564
11-3071	Transportation, Storage, and Distribution Managers	1.3	\$34.03	151
29-9011	Occupational Health and Safety Specialists	2.5	\$32.98	146
13-1081	Logisticians	0.4	\$32.71	44
11-3011	Administrative Services Managers	0.9	\$31.08	238
53-4011	Locomotive Engineers	1.0	\$30.25	48
19-3099	Social Scientists and Related Workers, All Other	0.6	\$30.13	22
49-3011	Aircraft Mechanics and Service Technicians	2.1	\$29.27	275
13-1199	Business Operations Specialists, All Other	0.7	\$28.85	800
17-3021	Aerospace Engineering and Operations Technicians	5.8	\$28.60	55
49-2091	Avionics Technicians	1.9	\$27.17	40
53-7021	Crane and Tower Operators	0.8	\$26.74	33
53-2012	Commercial Pilots	1.2	\$26.69	52
47-2011	Boilermakers	0.9	\$26.69	25
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	7.9	\$25.96	1,124
53-4031	Railroad Conductors and Yardmasters	1.0	\$25.49	46
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine,	0.9	\$25.20	185
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	0.8	\$24.40	12
49-9099	Installation, Maintenance, and Repair Workers, All Other	2.1	\$23.35	578
53-4021	Railroad Brake, Signal, and Switch Operators	1.1	\$22.88	28
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	1.5	\$22.68	418
49-3043	Rail Car Repairers	1.7	\$22.53	40
11-9199	Managers, All Other	1.3	\$22.51	2,404
49-9092	Commercial Divers	1.4	\$21.40	19
47-2073	Operating Engineers and Other Construction Equipment Operators	2.4	\$21.07	964
53-3032	Truck Drivers, Heavy and Tractor-Trailer	1.5	\$20.98	3,448
47-4061	Rail-Track Laying and Maintenance Equipment Operators	1.4	\$20.86	24
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	1.2	\$20.42	51
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	0.9	\$20.34	161
53-6051	Transportation Inspectors	1.5	\$20.26	44
43-1011	First-Line Supervisors/Managers of Office and Administrative Support Workers	0.7	\$19.99	1,110
43-5061	Production, Planning, and Expediting Clerks	0.6	\$19.86	190
51-2031	Engine and Other Machine Assemblers	0.7	\$19.54	29
53-7032	Excavating and Loading Machine and Dragline Operators	2.6	\$18.73	196
43-5032	Dispatchers, Except Police, Fire, and Ambulance	1.0	\$18.46	209
43-3021	Billing and Posting Clerks and Machine Operators	0.6	\$15.46	315
43-5011	Cargo and Freight Agents	1.9	\$15.14	178
53-7051	Industrial Truck and Tractor Operators	0.7	\$15.07	390
53-3033	Truck Drivers, Light or Delivery Services	1.1	\$14.73	1,063
43-5071	Shipping, Receiving, and Traffic Clerks	1.5	\$14.01	1,068
49-3093	Tire Repairers and Changers	2.0	\$13.98	211
41-2022	Parts Salespersons	1.0	\$13.62	220
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1.0	\$12.77	2,297
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	1.1	\$11.20	42
53-7064	Packers and Packagers, Hand	0.5	\$10.22	406
53-1011	Aircraft Cargo Handling Supervisors	--	--	<10
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	--	--	<10
53-7121	Tank Car, Truck, and Ship Loaders	--	--	<10

Sources: EMSI; Nevada Department of Employment, Training and Rehabilitation.

Endnotes

¹ As noted by Charles and Thi Dau (2005), the early adoption and innovation of new distribution techniques helped establish cost advantages for Amazon and Wal-Mart.

² Transportation and inventory carrying costs have historically dominated other costs of product distribution (Council of Supply Chain Management Professionals, 2011).

³ UPS (2011a) Reverse Logistics Whitepaper.

⁴ For a comprehensive discussion of distribution within an overall logistics system, see a lengthy text such as IBS Center for Management Research (2012).

⁵ The emphasis on a single distribution facility satisfying numerous outlets or customers is a major reason for the increasing size of major distribution facilities, see Kulp (2012).

⁶ UPS (2011b) Reverse Logistics Whitepaper.

⁷ As noted, major e-commerce companies have tended to take the lead in building larger distribution centers than the traditional industry average in their marketplace, see Kulp (2012) for a discussion of design trends for direct to consumer fulfillment.

V. NEVADA FREIGHT OVERVIEW

An integral part of understanding the current and future demand for logistics facilities in the State of Nevada is an analysis of the rail and freight movements throughout the state. In this regard, the Consultant Team evaluated rail and truck data maintained by the Federal Highway Administration (“FHWA”). Our analysis is summarized on the following pages.

According to the FHWA, “The Freight Analysis Framework (FAF) integrates data from a variety of sources to create a comprehensive picture of freight movement among states and major metropolitan areas by all modes of transportation. With data from the 2007 Commodity Flow Survey and additional sources, FAF version 3 (FAF³) provides estimates for tonnage, value, and domestic ton-miles by region of origin and destination, commodity type, and mode for 2007, the most recent year, and forecasts through 2040. Also included are state-to-state flows for these years plus 1997 and 2002, summary statistics, and flows by truck assigned to the highway network for 2007 and 2040.”

The figure below summarizes the value of freight in millions of 2007 dollars for Nevada from 1997 through 2004.

Exhibit V-1: Nevada Rail & Truck Freight, 1997-2040

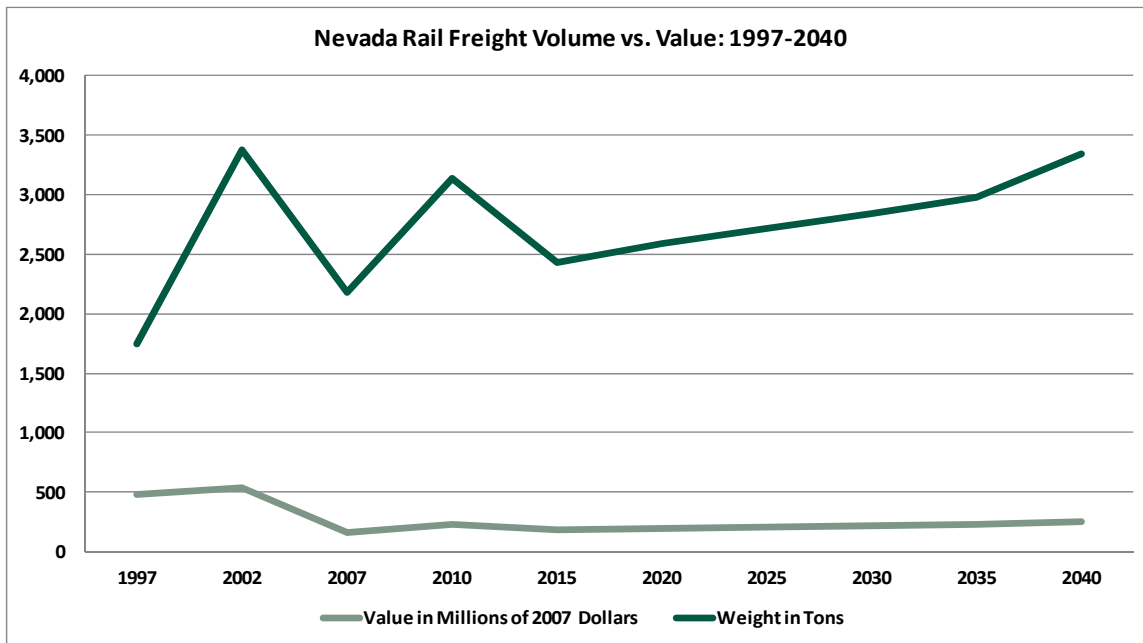
Nevada Rail & Truck Freight										
By Value in Millions 2007 Dollars										
Year/Mode	1997	2002	2007	2010	2015	2020	2025	2030	2035	2040
Rail	\$ 486	\$ 541	\$ 167	\$ 234	\$ 188	\$ 199	\$ 208	\$ 218	\$ 228	\$ 251
Truck	\$ 34,191	\$ 46,474	\$ 66,642	\$ 65,304	\$ 83,292	\$ 94,893	\$ 105,394	\$ 117,780	\$ 130,432	\$ 147,129
By Weight in Thousands of Tons										
Year/Mode	1997	2002	2007	2010	2015	2020	2025	2030	2035	2040
Rail	1,751	3,371	2,177	3,142	2,435	2,593	2,711	2,840	2,980	3,344
Truck	44,631	55,572	91,887	90,064	102,257	112,746	122,253	131,308	140,711	155,598

Source: Freight Analysis Framework 3 (FAF3), faf.ornl.gov/fafweb/Extraction0.aspx

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According to the Freight Analysis Framework 3 (“FAF3”) data tabulation tool, Nevada’s rail freight decreased in value (2007 US dollar basis) by 51.85% between 1997 and 2010, even though tonnage increased by 79.42%. Between 2010 and 2040, the model predicts an increase in the value (2007 U.S. dollar basis) of rail freight of 7.27% and an increase in volume of 6.44%. (See the figure below.)

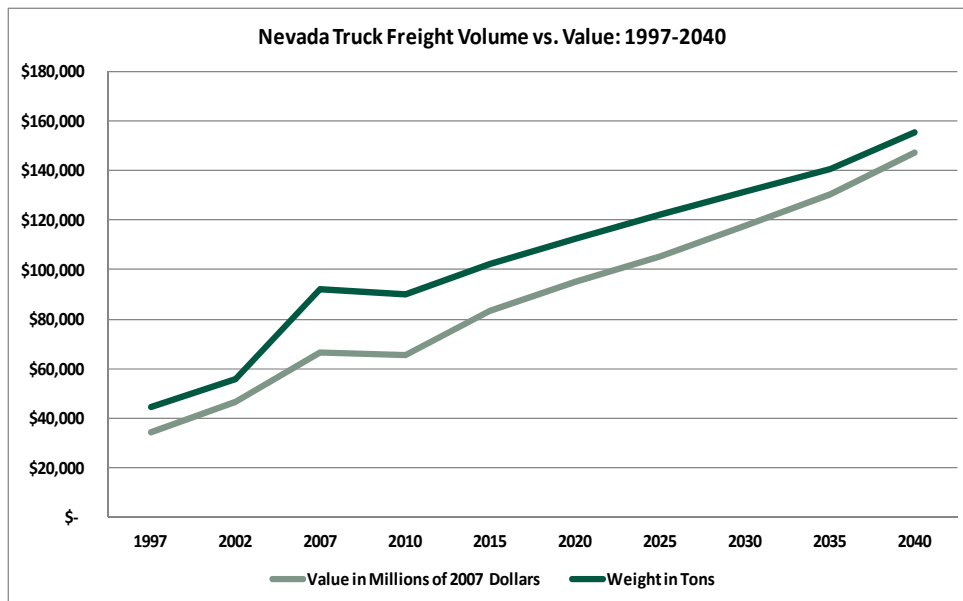
Exhibit V-2: Nevada Rail Freight Volume vs. Value, 1997-2040



Source: Freight Analysis Framework 3 (FAF3), faf.ornl.gov/fafweb/Extraction0.aspx

Compared to the relatively flat numbers for rail freight, Nevada truck freight showed impressive growth from 1997 to 2010 and is expected to continue to do so between 2010 and 2040. The FAF3 shows that the value of truck freight jumped by 91% from 1997 to 2010 and is predicted to increase a further 125.3% by 2040. Truck freight tonnage, meanwhile, rose by 101.79% from 1997 to 2010 and is projected to grow a further 72.76% by 2040. (See the figure below.)

Exhibit V-3: Nevada Truck Freight Volume vs. Value: 1997-2040



Source: Freight Analysis Framework 3 (FAF3), faf.ornl.gov/fafweb/Extraction0.aspx

What the data tell us is that, while rail will remain an important component of the state's logistics infrastructure network, it is the rapid growth in trucking that will drive the future of logistics in Nevada. The growth of truck value and volumes will have a long-term impact on the type of logistics cluster that state should be planning for.

Because of Nevada's proximity to all major West Coast markets, and an established Interstate highway system to serve these markets, the State should target logistics clusters, which require the flexibility and predictability that truck transportation provides. Fulfillment centers and reverse logistics activities are two subgroups within the Logistics and Operations Cluster that are well-suited to take advantage of these attributes. From locations in Nevada, small parcels that characterize the outbound movement of fulfillment centers and the inbound movement of reverse logistics can easily be accommodated. Nevada has the capabilities to provide overnight and one-day delivery services, via truck, to and from the entire West Coast.

VI. INTERVIEWS: OVERVIEW

The centerpiece of this study to “determine the viability of developing Inland Ports in Nevada” was the primary research function of conducting “an outreach to public sector (cities, counties, federal and state agencies), as well as the private sector (import/export), logistics and transportation companies to verify the feasibility of inland ports in Nevada.” The majority of these interviews were conducted in person combined with telephone interviews to those individuals whose schedule did not allow for a face to face interaction, or the distances to do such were deemed impractical. Every effort was made to conduct these interviews with groups or companies that represent the depth and breadth of the logistics industry, in Northern, Southern and rural Nevada, although a statistical sampling technique was not utilized in this process. Consequently, the information obtained was of a qualitative nature, but extremely insightful, and very practical in helping to understand the variables that support or refute the establishment of an inland port(s) in Nevada. The information also proved useful in adapting to Nevada the data collected through secondary research included elsewhere in this report.

Process

The interview process was designed to elicit an open and free flowing dialogue with an absence of predetermined outcomes. This was accomplished through questions on: market demand, transportation capacities, and role of the State of Nevada in encouraging inland ports, organization of the ports and potential site locations. A standardized questionnaire was not utilized. This resulted in the interviews focusing on the priorities of the individual respondents and responses that were colored by those priorities. However, this also resulted in discussions that allowed for comments and ideas to be introduced by the respondents that gave further insights into the logistics process and allowed for the flexibility to delve into details that assisted in the development of the Conclusions and Recommendations sections in

this report. At the outset of each interview, the respondent(s) were informed that no quotes used in the report would be directly attributed to them, nor would any particular piece of information be attributed to an individual unless it was in support of a direct quote obtained through secondary research and referenced in the report. Consequently, responses provided below, while combined for brevity, are submitted in the words of the respondents to the greatest extent possible. However, because these are the opinions of the respondents', contradictions do occur; most notably on the economic impacts of the Panama Canal and I-11, as well as the level of rail service in the Reno area.

The interviews were conducted over a three-month period and included a diverse cross section of the public and private sector. Though, because the primary objective of these interviews was to assess the market demand for an inland port, and the capacity of transportation systems to service that demand, an emphasis was placed on the private sector. Seventy-three interviews were conducted, or numerous attempts with key organizations were attempted, with individuals representing a variety of private and public organizations. These organizations included: Northern, Southern and rural Nevada economic development authorities, County and City officials, State government staff, rail companies, trucking companies, package delivery companies, manufacturers, warehousing operations, fulfillment centers, third party logistics companies, airports, real estate brokers, architects and business park developers. A complete list of those interviewed, along with their title, company, and contact information is provided in the Appendix at the end of the Introduction.

Key Responses

The overwhelming responses indicated that Nevada has an excellent business environment that provides a foundation from which a variety of businesses can take root and grow. The state's proximity to California and other West Coast and

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western region markets makes it a good location from which to distribute products, as witnessed by logistics facilities developing on their own in both Northern and Southern Nevada. **However, the concept of a traditional inland port, one that is connected to a deep water port via multi-modal transportation links, is not practical for Nevada in the short or medium-terms.** This finding is based on three primary factors:

1. The Ports of Long Beach, Los Angeles and Oakland are currently not functioning at anything approaching full capacity, and have, or are taking steps to alleviate port congestion in the near future, such as the Alameda Corridor in Southern California, which allows trains to be loaded right on the piers and efficiently moved directly to the main lines;
2. Alternatives to the California ports are being developed in Mexico, Canada, through the expansion of the Panama Canal and in the Gulf of Mexico, and Eastern regions of the United States, lessening demand for overland transit through the Western United States to the East; and
3. Nevada is too close (less than the 500-mile limit “rule of thumb” used by Class 1 railroads such as UP and BNSF) to the ports for rail to be economically feasible, but too far for trucking to be competitive.

A concern in Nevada that has long-term impacts, but clearly must begin to be addressed immediately, is development of additional infrastructure. Nevada needs to promote better highway access, such as I-11 from Phoenix to Las Vegas, and then on to Reno, the widening of I-15 between Las Vegas and Southern California, and the extension of State Route 805 from I-80 to U.S. 50. Utility infrastructure must also be addressed to open large tracts of land for future commercial development. The bright spot in the State’s transportation infrastructure are

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McCarran and Reno/Tahoe International Airports. They are both first class facilities with capacity to increase air cargo operations.

Though a traditional inland port may not be viable for Nevada for the foreseeable future, the responses still point to a bright future for a Logistics and Operations Cluster in Nevada. It was felt that a key logistics subgroup that Nevada can pursue with some success is that of e-commerce, fulfillment and/or reverse logistics centers. The state's telecommunication network, package delivery and airport infrastructure make this logistics segment a very good target on which to focus Nevada's resources. Additionally, Nevada workforce's skill set is reasonably aligned with these subsectors. This was presented in further detail in Section IV above. More importantly, the majority of the respondents directly associated with the logistics industry expressed a willingness to work closely with the state's private and public sector economic development community in developing a strategy to make such an effort successful.

A. INTERVIEWS: LOGISTICS CLUSTER

Distribution is customarily the first activity a company places in a remote location some distance from its manufacturing or administrative operations. Consequently, logistics is the "low hanging fruit" that can provide Nevada with the pathway that will attract the focused attention of corporate America on the state. It can allow Nevada to showcase its commercially-oriented attributes, both in terms of geographical location and political commitment, and prove its claims of being one of the most business friendly environments in the U.S. Companies can test the water, so to speak, with an initial investment in the state, thereby discovering first-hand its access to markets, labor productivity, regulatory procedures and quality of life. And as in the recent case of Apple's \$1 billion data center in Northern Nevada, commit to a larger stake that will greatly increase employment opportunities, as well as state and local tax revenues.

General Interview Comments:

- We must think of Nevada as a place from which to first serve the West and second to serve the Pacific Rim, logistically.
- Logistics' job today is different from that of yesterday. We cannot define an outcome for the future, based on today's standards. Accordingly, we don't know what innovations or economic changes will take place that defines the future of logistics.
- Las Vegas is relatively competitive on land and labor costs when compared to California, but not when compared to Arizona and Utah. This is why Wal-Mart chose Hurricane, Utah for its large logistics and cross-dock operation. But even the Hurricane facility does not utilize rail, because it is not cost effective due to its proximity (less than 500 miles) to Los Angeles and Salt Lake City.
- Distribution and logistics do not lead to highly-skilled jobs, but they could lead to a company moving manufacturing functions to Nevada, which is a key to creating relatively well-paying jobs. Nevada should focus on manufacturing jobs in the incentive process.

E-Commerce/Fulfillment Centers

- There is a world-wide shift from retail to e-commerce. The importance of distribution is increasing. As one of the fastest growing business sectors in the world today and Nevada must provide a safe haven for the e-commerce company.

- Nevada should also focus its logistics strategy on high-value commodities like those associated with fulfillment centers. Fulfillment centers are also effective at creating jobs and can provide up to 500 in just one facility.
- Recently, more e-commerce has come into the market because it can afford to pay the higher shipping costs. These companies have many more transactions going out the door and primarily utilize parcel delivery companies.

Reverse Logistics

- Reverse logistics is rapidly becoming a component of many companies' supply chain strategies and can provide an excellent opportunity for Nevada to attract jobs that demand a skill set significantly above the average warehouse occupation.
- Currently in Southern Nevada, there are no significant reverse logistics activities taking place. For example, CDW in the North Las Vegas is not involved in "reverse logistics". If product arrives damaged, or not in working condition, the company send a replacement article. However, CDW does not provide warranty work; that is done by the original equipment manufacturers ("OEM" as with any consumer products).
- In Northern Nevada, the third-party logistics company ("3PL") Company, OHL, provides some reverse logistics for Apple and Nutri-system, but no warranty work, just replacement and "Apple-Care", which refurbishes some of the Apple products.

Manufacturing Component

- The State of Nevada should also go after “value added” or component assembly segments of logistics within the supply chain.
- Light manufacturing is probably the best industry group to seek out. It customarily has shipping requirements that can take advantage of dead-heading, opportunities (the discounting of commercial transportation to avoid non-revenue situations contributed to excess supply over demand), while matching the current education levels of a significant portion of Nevada’s workforce.
- Nevada should think in terms of entire supply chain, not just the logistics component, and determine what types of industries have the best potential to attract distribution operations. For example, how might the recruitment of a box manufacturer fit into a strategy to attract distributors? This example may indeed hold promise, especially in light of the fact that one of Southern Nevada’s chief exports to China is waste cardboard as an input to the Chinese recycling industry.
- Value added manufacturing can be an important employment generator. Twill USA, which manufactures appliqués will be locating in North Las Vegas. The company puts names or graphics on the back of athletic jerseys and other finished products. It will also apply logos or other messages on blank mud flaps for semi-tractor trailers.
- For logistics to be economically viable in Nevada, products have to ship from Nevada back to the West Coast. To do this, Nevada must attract national and international exporters, or Nevada should concentrate on

attracting manufacturing to take advantage of the dead-heading opportunities.

Market Perspectives

- Nevada is in the middle of an 11-state western region that encompasses 73 million people, or 23 percent of the U.S. population. This central location makes Nevada a natural distribution hub.
- I-80, U.S. 395 and easy access to I-5, are significant reasons why Reno has developed into a large West Coast-focused logistics center.
- Many companies choose Reno over Las Vegas, because Reno allows for overnight deliveries to the Northwest in addition to all of California, and Las Vegas does not.
- There is a perception, surprisingly, in both Northern and Southern Nevada, that the workforce in Reno understands logistics better than in the south, is better qualified, with little turnover and is more “grounded”.
- Phoenix is the biggest competitor for Reno. The majority flow of goods from the Ports of Los Angeles and Long Beach to the Midwest and Northeast is through Phoenix.
- Las Vegas will not move the needle on logistics, because it is not a big market, and because it lacks the transportation connectivity of the quality that Reno, Salt Lake City and Phoenix has. If containers from the ports are opened in Southern Nevada, where do the products go? An issue with a large logistics center (e.g., Alliance in Dallas) in Southern Nevada is that Las Vegas is a geographically-isolated, medium-sized MSA that is too

distant from the large Western metro areas where most of the consumers live.

Case Studies

CDW

- CDW, listed in the top Fortune 300, located to Southern Nevada within the past eight years and employs 220 people in Las Vegas; 70 percent are permanent jobs and 30% are full time temporary workers.
- CDW may be considered a fulfillment center, but it does not provide products to the general consumer. It supplies large volume customers, i.e.: school districts, hospitals, government entities, etc. While it does some customizing work for its customers, like logo etching on products, or adding extra memory to laptops and the like, CDW does nothing that could be considered value-added on a routine basis. However, if a customer is in need of a data center, CDW will send out a team of engineers to design and build it for them.
- CDW did not located in Southern Nevada due to the proximity of nearby markets, but rather to distribute to 33 percent of the CDW market, which is located west of Kansas City.
- CDW based its decision to locate in Southern Nevada on three major factors: 1) Close proximity to its various OEM customers, or the OEMs' distribution partners; 2) The strong labor market and 3) Ease of doing business/the business friendly policies of North Las Vegas. Other factors included: transportation network, infrastructure and cost of real estate. Interestingly, the first phone call CDW made in the site location process was to FedEx.

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- No rail is utilized at CDW, only trucks, but it does not utilize dead-heading or brokers. Furthermore, outbound product is zip code driven with no full truck shipments. CDW has no say on the inbound transportation. Product arrives by truck from the vendors usually with free inbound freight negotiated.
- CDW's North Las Vegas operation continues to evolve; does not look the same as it did when the company opened several years ago. For example, CDW does no more "box pushing", meaning it no longer pays middlemen in the distribution system. It ships direct to its large institutional customers.
- CDW just completed an in-house location analysis and has indicated that if it had to make its decision today, it would still choose Southern Nevada based on the original three factors noted above.

Bally's Technologies

- Bally's Technologies is an example of a Nevada manufacturer that successfully ships containers of its products all over the world.
- Bally's exports many container loads to South America, Europe, Asia and Australia. The company trucks the containers to the ports whether it's California, Houston or the East Coast. None of its inbound or outbound products goes by rail. Bally's even ships by truck containers of components to the East Coast to be placed on ships for transport to Amsterdam for final assembly.
- Bally sees rail as being unpredictable, while trucking allows it to keep a close eye on its product movements to the ports. Bally needs the

- predictability and precision that trucking offers. It must know that its products will arrive in time for the sailing of the designated ship.
- For inbound container shipments with imported parts or components, Bally's needs the products right away.
 - The more day's products spend in transit, the more inventory the company must have in its supply chain, which Bally's sees as a needless waste of capital.
 - Bally's uses a variety of specialized carriers and have not experienced any major logistical obstacles in Nevada. All slot machines must be sealed and are inspected upon arrival to ensure the seal has not been broken. This requires high security trucks. Also, some of the company's shipments to small casinos around the U.S. may require a semi-trailer with a lift gate, because many of casinos do not have a loading dock.
 - Because of the rising price of fuel, Bally's conducted a study in late-2011 to evaluate the use of rail. The study concluded that rail was not an option for the company's transportation requirements. The study found also that rail is not that much cheaper than trucking. The actual transportation by rail is much less expensive, but the drayage is very expensive.

Urban Outfitters

- Urban Outfitters ("UO") opened its first Nevada facility in Reno only a few years ago at 215,000 square feet with 74 jobs. This facility serves UO's retail stores in the Western U.S.

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- 10 to 15 containers arrive at the facility per week by truck and leave in large shipments by truck as well. No rail is used. All product is trucked from the Port of Oakland or Los Angeles International Airport.
- UO chose Reno because of I-80 and U.S.395. San Francisco is five hours away and Ontario, California is nine hours away. The company can serve all their West Coast stores within two days. Phoenix was the big competitor for Reno. Las Vegas was never considered.
- UO has one other facility in Pennsylvania to serve the rest of the country.
- UO bought its buildings as build-to-suit from Panattoni, who was its first contact within the State of Nevada. Panattoni handled every phase of construction without incident. UO also had a good experience with its Nevada-based architects, engineers and subcontractors.
- UO also had a great experience with local government and Economic Development Authority of Western Nevada (“EDAWN”), and found Nevada very easy with which to do business. So much so that UO is in the final stages of opening a new 495,000-square-foot fulfillment center, which will create 130 initial jobs. This building is also a purchase.
- Location of the new fulfillment center was also based on labor. Because of Nevada labor laws, UO can move labor from one facility to the other, depending on inbound and outbound demand. This is essential for UO, because each facility has peak periods at different times of the year.

B. INTERVIEWS: INLAND PORTS

There can be no discussion of inland ports without a general knowledge of why they would even exist and what purposes they serve. The original premise for development of an inland port is to provide congestion relief for a deep sea terminal facility. This is accomplished by the development of lower value land, some distance from seaport, into an intermodal facility that is usually associated with the movement of container oriented freight.

At first glance, Nevada's proximity to California, its deep water ports and market demand, presents a tempting target for the development of inland ports and the original concept on which this study is based. However, a number of interviewee responses to this concept contradict the notion that Nevada can serve as an inland port site at this time. Not only are the California ports no longer operating at full capacity, but new transportation system projects, such as the widening of the Panama Canal and increased investments in competing ports, such as those in Mexico and the Gulf Coast do not bode well for the viability of alternative port facilities in Nevada for the foreseeable future.

There is also a general consensus by the "demand-side" interviews RCG conducted that one of Nevada's primary attributes for attracting business as being adjacent to California, with its large population, is actually detrimental to the development of an inland port in Nevada. This coupled with the relative isolation of Nevada's two urban/population centers from other larger Western U.S. centers, and the primary competition of the already established logistics centers of the Inland Empire, Phoenix and Salt Lake City, makes inland port development impractical in Nevada for the short- and mid-terms.

West Coast Ports

- Container shipments will continue to grow worldwide, perhaps as much as 3% annually for the foreseeable future.
- In 2006 and 2007 there were huge off-loading delays at the Ports of Los Angeles and Long Beach. There were never delays at the Port of Oakland. Additionally, it is believed that Los Angeles and Long Beach will run out of space long before Oakland.
- Because of the Great Recession, the deep water ports in California are not operating at capacity. As the world economy recovery plods along, full capacity will most likely not be experienced at the ports of Los Angeles and Long Beach for several more years. The Port of Oakland may experience excess capacity into the near future.
- Usually, the goods on an inbound ship to one of the California ports clear customs before the boat arrives. The ship files its entries one day before the vessel arrives.
- Productivity differs between all the ports in the world. There are many factors that impact productivities at ports that cannot be defined in a single statement. Labor has one of the biggest impacts on port productivity, especially ILWU labor rules.
- California has a very high cost for doing business. Fees associated with doing business are expensive. The California Environmental Protection Agency makes doing business difficult, especially around the ocean and bay fronts. General regulations are also obstacles for business. Labor costs are very high and the Longshoremen's Union is one of the most powerful labor

organizations in the state; work stoppages at the ports are frequent. Because of this, transportation and shipping companies have been seeking alternatives to the Southern California ports for some time now.

- Long Beach has recently instituted a “container tax pier pass” to pay for improvements, but this places a larger cost burden on the shipping companies.
- Frequent labor unrest in both the Ports of Los Angeles and Long Beach has hurt the ports’ image in the world’s transportation and logistics markets. Alternatives to these ports have been sought for many years. Rising competition on the West Coast is expected to come directly from Manzanillo Mexico, which is already operating at 4 million containers annually.

Competition

- The new port that is operational at Manzanillo, Mexico will continue to grow in amount of tonnage processed at the expense of the Southern California ports, and the Union Pacific Railroad has a direct line into Monterey, Mexico and will be able to efficiently move product from Manzanillo into the U.S.
- Some observers think the Panama Canal expansion will have a potentially significant impact on West Coast ports with Houston, Texas, Jacksonville, Florida and Newport News Virginia, all expanding their facilities to take advantage of the Panama Canal expansion.
- Other observers believe the Panama Canal may not have a significant impact on the West Coast ports upon its completion due to many factors, including: the expansion capacity of the Canal is very costly, resulting in much higher usage fees upon completion to pay back the debt; potential and

unpredictable future fee increases; a large percentage of the U.S. population lives in western states and contains the majority of the fastest growing urban centers; West Coast ports are extremely well-positioned to handle future freight increases and the transportation infrastructure is in place to cost-effectively move that freight inland.

- There is a possibility that the Panama Canal could take a certain amount of rail freight away from the West Coast ports that is bound for the Eastern and Gulf Regions of the U.S., but Union Pacific Railroad only expects that a small percentage (two percent) of east-west freight tonnage will be impacted by the Canal.
- Houston will be the strongest competition to the Southern California ports. Its labor and land costs are much less expensive, and there are significantly less government regulations than California. With the modifications to the Panama Canal it may be cheaper to rail containerized product all the way back to Southern California from Houston than from the Southern California ports, because of the costs of doing business in California.

Alameda Corridor

- The Alameda Corridor is a completed 20-mile rail infrastructure project that provides congestion relief for the Ports of Los Angeles and Long Beach and allows for Union Pacific & Burlington-Northern-Santa-Fe railroads to operate directly from the piers and on to their main lines.
- Not only does the Alameda Corridor provide congestion relief at the Ports of Los Angeles and Long Beach, but because the rail line runs under the roadway networks near the ports (and not at grade level), it has a positive impact on traffic delays and public safety. However, the Los Angeles

metropolitan area is unique, and such a project may not be feasible or cost-effective in many other parts of the country.

- The Alameda Rail Corridor was constructed to relieve the Ports of Los Angeles and Long Beach, and is working well at this time. It currently handles about 10,600 TEUs per day from the two ports.
- While Alameda Corridor does provide relief regarding delays in off-loading, it will not be enough to offset other disadvantages at the ports.
- The Port of Oakland does not have the equivalent of an Alameda Corridor.

U.S. Inland Ports

- Inland port is a loose term with many meanings.
- Factors necessary for an inland port: 1) FTZ; 2) Population base of 3 million living within 200 miles, (necessary for product demand); and 3) Good North-South-East-West rail and highway connections.
- Alliance Texas near Forth Worth, Texas is a massive development that is 15 years old, and encompasses thousands of acres of unprotected and relatively flat land. These physical and entitlement characteristics, allow for efficient development of large warehouse buildings, rail facilities and runways, topography and geography that Southern Nevada cannot easily replicate. Both the BNSF and UP railroads have mainline tracks running adjacent to Alliance Texas. Alliance Texas is located within one mile of I-35, which runs North and South from Mexico to Canada. The project is also a short distance from I-20 & I-30, which are major east-west highways crossing the country. This allows direct, multi-directional freight flow. Alliance Texas also has a

large capacity, currently operating, non-commercial airport which allows for unrestricted air cargo handling.

- The availability of adjacent rail lines, an active non-commercial airport, and easy access to major highways makes Alliance Texas a superior location as an inland port. The developer of Alliance Texas originally thought air cargo would have been a major factor in its development. It ends up its proximity to rail and highways became far more important. Consequently, the concept of an inland port for air cargo has not proven as successful as originally intended.
- Closer to home, but less developed, are the Southern California Logistics Center (“SCLC”) and Alliance California projects. The same developer that built Alliance Texas is currently expanding the former Norton Air Force base in San Bernardino, California. The company has the development expertise gained from their experiences at Alliance Texas, with access to air, multiple rail lines and transcontinental highway access points.

Inland Ports in Nevada

- An inland port designation would be good for Nevada, because it would increase the weight of containers that could be shipped into the state. Current maximum container weight carried by truck is 4,200-4,400 lbs.; it is 5,800-5,900 by rail. Of course, a heavy-weight roadway zone would have to be built around any inland port, or there would be no benefit derived from the ability to bring these heavier loads in by rail.
- If an inland port were viable in Southern Nevada, then it would already be here. Private investment would have flowed in response to that demand by now.

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- RCG's research indicates that there is a lack of such demand in Southern Nevada to justify an inland port for the foreseeable future. This is true, not only in the lack of demand because of the size of the population and relative isolation from other population centers, but also in a lack of exports.
- For example, Southern Nevada does not produce anything in the quantities needed to support container shipping.
- Nevada is a consumption-based market, not a large export-based market.
- Additionally, for shippers and the transportation industry, there is limited real value for an inland port in Nevada. Reno and Las Vegas are located too close (less than the 500-mile limit that industry uses as metric) to West Coast ports to make it efficient.
- Before we spend a great deal of resources on the concept of an inland port or major logistics center in Nevada, we need to answer the question of why we would be successful, in the relatively near term, against established competition, such as Alliance Texas, SCLC and Alliance California.

Nevada Competition

- Alliance California and SCLC are located far closer to the final destination of most freight, closer to major transportation avenues to the eastern U.S. and closer to the Ports of Los Angeles and Long Beach. These attributes make the California-based inland port location superior to Nevada.
- Salt Lake City and Phoenix are significantly ahead of Northern and Southern Nevada in the development of logistic centers and multi-modal facilities. The

costs associated with trying to duplicate these facilities in Nevada are cost prohibitive.

- Nevada's major competition, as a logistics center, is the Freeport Center in Salt Lake City. It is at an ideal location from all major ports on the West Coast and is served by two railroads.
- Even Kingman, Arizona has a competitive advantage over Southern Nevada, because it is served by two railroads and is located to serve Southern California, Southern Nevada and the Phoenix MSA. As a distribution center. Kingman also has lower land and labor costs.

Salt Lake City has a huge jump on Nevada as a logistics center as well, because it is well-connected via Class 1 main rail lines to every major deepwater seaport on the West Coast, and the UP already operates a container yard there and utilizes it as one of its western hubs.

C. INTERVIEWS: TRANSPORTATION

Transportation is the single largest variable, by a wide margin, in the site location process of a logistics facility. Yet, this piece of the puzzle is the most complicated and dynamic of all the components, changing its shape with fluctuations in the price of fuel and/or regulatory changes. Not only does transportation react to market forces, but it is highly restricted by existing infrastructure. And, this infrastructure is primarily static and extremely expensive to develop, not only in terms of materials, labor, route selection and regulatory process, but also in the time it takes to complete a project from identifying a need to practical use.

The various modes of transportation are also complex. The costs associated with each mode: pipelines, water, rail, truck and air, are directly inverse to their

flexibility. In other words: the more cost efficient a mode of transportation, the more rigid its spatial network.

The responses gathered during the interview process reflect this complexity. While the responses were universal in their opinion that a large rail-served inland port or logistics center is not a viable option for Nevada, because of its near proximity to the California deepwater ports and lack of outbound rail demand, there were opposite views on the level of service and capacity of the state's rail systems.

While there were no negative responses to the capacity or service levels offered by the trucking industry in Nevada, it is also universally viewed that in this instance, Nevada is too distant from the California deep water ports to be viable as an inland port via drayage. However, it does appear that trucking offers the best opportunities, and options to develop and broaden Nevada's "Logistics and Operations" cluster.

The two international airports in the state, McCarran and Reno/Tahoe, are not operating anywhere near capacity for cargo movements, and may present significant opportunities to expand the logistics cluster in Nevada.

General Interview Comments

- Transportation costs are the single largest factor to consider in the location of logistics facilities, and account for over 50 percent of total costs to the industry.
- The more goods are handled at transfer points, the more costly the movement of those goods become.

- Freight movements follow the path of least cost, not necessarily the shortest route.
- Freight forwarders, both domestic and international, make the decisions on how, where and when freight is moved, and those decisions are based solely on the cost associated with the particular product to be moved and its market location.

Rail Efficiencies

- The economics of short-haul rail may not be viable for Nevada. Think of rail as a dumb-bell: the movement of goods on the rail is extremely efficient, but the costs associated with stopping, breaking down and assembling trains, and off-loading and on loading product drives up cost.
- Las Vegas is less than 300 miles from the ports in Southern California, Reno is even closer to the Port of Oakland. Short-haul rail movements may prove noncompetitive from a transportation cost perspective.
- The cost efficiency of rail is realized when the freight travels farther distances without being handled multiple times. For example, since Los Angeles is less than 500 miles from Las Vegas, rail would not be the efficient mode of transportation.
- Sites in Northern and Southern Nevada are too close to the ports in California, and do not provide the railroads any real benefits as a logistics centers. An inland port only 200-300 miles away from California ports is difficult for the railroads to serve. It is not efficient for the railroads to stop and start so close to these ports. The UP is not likely put its efforts into

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establishing a facility 300 miles from the ports, especially when its business model, which utilizes Salt Lake City, is so efficient for them.

- The railroads prefer less switching and moving of rail cars, therefore, they like to locate their intermodal facilities at the convergence of several mainlines. Salt Lake City has a well-established inland rail port that is also a container yard, and is located on three Class 1 UP mainlines that can handle containers from the Ports of Los Angeles, Long Beach, Oakland and Seattle. Salt Lake City is also a preferred distance from these ports for the railroads.
- Since Las Vegas is too close to the Southern California ports it is not efficient for rail facilities as a main component of an inland port. The cost of loading and unloading rail transport, whether box cars, containers or tank cars makes rail feasible only for long hauls. As noted, 500 miles is the approximate break even distance between truck and rail. Another disadvantage for Nevada is that it is only served by one railroad that can accommodate double stacked containers, and large shippers shy away from this type of situation.
- Southern Nevada is served by only one national rail carrier, the UP. It has no other local competition for rates or service. This competitive absence may make rail users wary, as they can have their shipping operations squeezed by price and availability.
- Another disadvantage for Southern Nevada is that the major UP route runs diagonally North-South through Salt Lake City, not directly east-west between the country's major markets.
- Inland container transportation to Reno from the East takes 3-4 days longer because the containers travel by rail through Reno, over the Sierra Nevada

Mountains to Lathrop, California, put on trucks then transported back over the Sierras to Reno.

- It is at the discretion of the shipper as to whether the freight stops in Reno, or is off-loaded in Lathrop, and trucked back to Reno.

Current Rail Capacity in Nevada

- The UP has capacity to serve both Southern and Northern Nevada from either the East or the West.
- BNSF cannot run double stack containers over the Sierras, because it did not participate in the cost of modifying the access points and tunnels along the route that enable the movement of these rail cars.
- Neither the UP or BNSF can provide double stack service to Reno because there are no facilities to offload double stack containers. It is essential that the feasibility of developing such an offload operation is explored.
- The lack of rail facilities is the biggest obstacle to inland ports in Nevada.
- The UP operates intermodal terminals at Reno (Sparks) – in Northern Nevada and also at Las Vegas – in Southern Nevada. Currently, both terminals are designated only for domestic shipments. Reno (Sparks) is focused more toward premium (expedited) shipments but will also handle standard shipments.
- The biggest need in Reno is an intermodal facility, both domestic and international. Not having it really hurts outbound shippers.

- In an initial regional search by rail users, Las Vegas is usually included, but is quickly eliminated, because it is not competitive for rail users.
- Las Vegas has no local railroad spurs, nor does it have good East and South rail connections. Must go back to Barstow, California to get to Southwest markets.
- Reno lost a Nestlé's Pet Care processing facility to Modesto, California, because Nestlé's required eight inbound bulk rail cars per day, but could not find a rail facility in Reno to accommodate its needs.

Rail Demand

- Traditionally in the U.S., manufacturing was located in the East and Midwest. Movement of these goods was east to west by rail. As manufacturing relocates to China and other Asian countries, the movement of these manufactured goods will be west to east by rail.
- Nevada is a consumption-based market, not an export-based market. By example, the Tucson/Phoenix area exports some amount of agricultural product predominantly by truck. Salt Lake City, which has been a consistent market for UP, is served by Class 1 rail from all the deep water ports on the West Coast. It also has an excellent North/South/East/West interstate system. For these reasons, it is one of many inland hubs for UP for domestic shipments from the East. However, the UP does not currently provide intermodal service from the East Coast.
- Intermodal facilities do not seem to work in Southern Nevada, because there is limited demand, and Las Vegas is not within the minimum 400-600-mile rail zone of Southern California to be currently economically feasible. The

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only way it might be feasible in the future is to assemble unit trains to Las Vegas. (A unit train is at least 45 cars of one commodity, or one stop at point A and one stop at point B.) Potentially, containers from West Coast ports could comprise a unit train.

- Currently, the only commodity shipped out of Southern Nevada by container is cardboard for recycling purposes, and the majority of this cardboard is bound for the Southern California ports and then China.
- Rail is excellent for inbound raw materials, such as: paper for large printing companies; chemicals for paint manufacturing; lumber; etc.
- Rail served industrial sites in Southern Nevada do not have a large impact on job creation. Even though there are several large vacant buildings served by rail there are no requests for these buildings.
- Rail users are very cost conscious, and those currently looking for space want less building and larger amounts of outdoor storage space. The only rail user recently looking at Southern Nevada requested a building of only 20,000 square feet on a rail spur. Rail is not considered a premium by the types of companies traditionally have looked at Las Vegas. Consequently, buildings with rail spurs are not marketed with a premium price.
- One of the largest 3PLs in the state (1.3 million square feet and 500 employees) does not utilize rail, but has rail access if required by a company. To-date there have been no requests for rail.
- One developer mentioned that in his 25-year career, he has been involved in only one deal that included rail as one of its strategies. Rail is a nice amenity, but does not make or break a deal.

- One developer that has had success with rail owns an industrial park in Fernley. Historically, half the companies in the park are rail users. This developer finds that rail makes land more usable and increases absorption rates. Companies might not utilize rail, but they like having it, and he can charge a \$0.15 per sq. ft. premium for a rail siding. However, all outbound freight goes by truck.

Rail Facilities

- The Pan Western Transload (“PWT”) facility located in North Las Vegas can transfer many types of bulk commodity products between rail and truck with a variety of specialized rail cars and trucks. Bulk commodities like paper, recycled materials, oil, etc., are the only products handled by the facility. PWT operates on a 60-acre site with access to 25 more acres to the north on the Las Vegas Paving site. One of the largest rail shippers from the facility is Strategic Materials, which processes and ships recycled glass throughout the country. Recycled content is very valuable right now for marketing purposes. There is a \$12MM cement facility on the site built by Portland Cement, and four oil companies operate on the property, including: Safety Klean, Wesco Petroleum and Clean Harbors. Negotiations are ongoing for the UP to lease the site and take over its operation. UP would be the master tenant and manage the site themselves or through a third party operator.
- Specialized Rail Service (“SRS”) contracts with the UP to manage and operate the off-load facility in North Las Vegas. The UP owns the land and all the facilities and fixed assets. SRS does have the capabilities to handle container shipments, including a supply of container truck chassis stored on site. SRS only handles domestic product; no imports or exports.

- A trans-load facility was recently developed in Elko and has had a significant economic impact on the economic diversification of the region. The Elko trans-load facility is primarily utilized for bulk items. Fuels, recycling and meals are chief inbound products, with mining equipment and pipes for the major pipeline project as well. Outbound is primarily mined materials.
- Though Lincoln County does not have a strategy implemented to attract logistics centers, it is trying to develop a trans-load facility.

Future Rail Efforts

- Historically, Midwest manufacturers shipped to Reno for West Coast distribution, but when manufacturing shifted to Asia it changed the dynamics. There is much less rail traffic from the East to Reno. This is the reason for the rise of Lathrop with the UP no longer stopping in Reno/Sparks. If Nevada stakeholders do not develop a strategy to have rail shipments dropped in Reno than Lathrop, with its easy access to the Port of Oakland, than Lathrop will become the logistics center in the north to the detriment of Reno.
- The State needs to investigate the demand-side of rail of rail services. Prior to this investigation, the State of Nevada should engage the UP and BNSF to determine exactly what information the railroad requires to make decisions on type and frequency of service.
- Northern Nevada should look at relieving congestion at the UP yards in Lathrop. To do this, the UP must be approached. The State needs it as a partner and it needs to find out exactly what information the railroad requires to make a decision on providing an intermodal facility in the Reno area. The State of Nevada should put together an independent group, a handful of

individuals who use and understand rail services, to study the data on the rail market size and present it to the UP. The railroad should be asked exactly what it needs and the state should work with UP to develop a database so that stakeholders know what goes into and out of the Reno market. While information sharing can often be a challenge, a way must be found to keep the data confidential. Good accurate information is the only way this can work.

- 100-150 containers come into Reno by truck each day from the Port of Oakland. This demand has the potential to result in 3-5 dedicated (unit) trains per week from Oakland to Reno. This would solve the drayage problem and also be a game changer for Reno. Because this would be new business for the railroads, it could be a talking point to which the railroads would listen.
- It would be beneficial for future communications and strategy development if Nevada designated one point of contact between the State of Nevada and UP. UP has been contacted in the recent past by NDOT, the Governor's Office of Economic Development, the Lieutenant Governor's Office and consultants pursuing a variety of information.

Truck Efficiencies

- Las Vegas' best opportunity as a logistics center lies with trucking, with its single biggest attribute being the tremendous amount of dead-heading that goes back to Southern California. However, even for truck-oriented transport, Las Vegas is not suitable for large volume shippers that utilize more than 40 trucks per day, (e.g., Hurricane, Utah Wal-Mart facility), because fuel costs mitigate the benefits of low-cost land and low-cost labor, and as the price of fuel increases, Southern Nevada is put in a worse competitive position.

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- Trucks have to travel long distances from Southern Nevada before they can make direct east or west progress. Regionally, highways have diagonal routes, and multi-hour detours before meaningful east-west progress can be achieved. Other inland port locations provide trucking advantages through access to multiple highways with strong multi-directional routing.
- In the case of commercial trucking, if there is no product to ship from Southern Nevada in containers then the containers must go back empty, which drives up the cost of shipping to Southern Nevada and container trucking, like the railroads, do not like those economics.
- There are no major problems with truck service in the Reno area.
- There is a 10-hour limit for over-the-road truckers, which is a negative factor for both the Las Vegas and Reno areas. This time-limit does not allow a truck to load at the California ports, travel to Las Vegas/Reno, unload and get back to home-base in California. Truck companies do not like, and probably will not pay overnight wages for drivers. And, this 10-hour limit may be reduced to 8 hours in the near future.
- 60 percent of FedEx volume from Southern Nevada goes east. Every state in the U.S., except Maine, can be reached within four days from Las Vegas, so if it ships on a Monday, it will be delivered on the East Coast by Friday. Las Vegas has direct loads to California and Memphis; Reno only to California.

Truck Costs

- The cost of drayage (moving containers by truck from a seaport to its final destination) is an impediment to logistics growth in Nevada. This is the number cost barrier between Nevada and California. Drayage costs from the

Port of Oakland to Reno is \$1,000/container, but only \$400 to Lathrop (essentially, Stockton, California). Drayage from the Port of Los Angeles to Las Vegas is \$800/container, but only \$175-\$275 to the Inland Empire.

- Examples of truckload shipping costs: Los Angeles-Las Vegas: \$875; Las Vegas-Los Angeles: \$450; Los Angeles-Phoenix: \$975; Phoenix-Los Angeles: \$350.

Trucking: General Interview Comments

- Mexico will be able to capture much of the West Coast shipping from deep water ports, but there is problem with the current crime situation in the country. Many trucking companies will only send “stripped down” versions of their trucks into Mexico so as not to have parts stolen, and drivers must stay with their trucks at all times.
- Trucking companies out of California want land on the south side of the Las Vegas Valley, because they want to avoid the traffic congestion through the Valley’s core.
- Tacoma has established an overweight highway corridor from the port that allows for 96,000 pounds on five axels. This is a huge incentive for trucking companies, especially those performing drayage movements. These weight limits add a huge maintenance cost to the roads, but it is subsidized by local government as an incentive. Also, Washington does not tax truckers at the pump like most states, but bills the operator on a miles driven basis.

Air Capacity

- Significant air cargo opportunities are limited in Nevada, because of our location in the country's time zones, and the lack of outbound freight. The vast majority of planes coming to Nevada are mid-size jets like the Boeing 737, which have small cargo doors, and limited cargo holds. Air cargo carriers have historically not established operations here, because there is no return freight to offset their costs. We need to understand that UPS and FedEx are located towards the East Coast for a reason; more time to pick up freight at the shippers dock, and more time to make West Coast deliveries at appropriate times.
- Both McCarran and the Reno/Tahoe airports have a FTZ designations, 24/7 customs ability, with capacity for their operation to grow. Both airports integrate parcel delivery companies like FedEx, UPS and DHL into their operations.
- In order for logistics to grow in any meaningful way in the state, a strong manufacturing-base must be established to create return air cargo demand. Like any other form of transportation, air must have a balanced approach. Dead-heading occurs on air as well as truck and rail.
- One 3PL distributes 8,000 packages a day by air, mostly with FedEx. These are primarily products from Apple and medical instruments and prove the viability of air logistics from Nevada locations.

McCarran International Airport

- McCarran is the 8th busiest airport in the U.S. for passenger traffic, but not even in the top-15 for cargo traffic.

- McCarran's main function is to provide demand for Southern Nevada's leisure and hospitality sector. It ranks second only to LAX (worldwide) as an origin/destination airport. Twelve percent of passengers are locals, and hubbing accounts for only 8 percent of volume.
- While the cargo facilities at McCarran are small for an airport of its size, they can be expanded by 50 percent, and while there has plenty of capacity for increased inbound and outbound cargo operations, there is historically been little demand. There was a petition several years ago to allow commercial activities, other than those directly associated with air operations, to locate in the air cargo buildings. Very little is manufactured in terms of volume in Southern Nevada, so there is very little demand for air cargo.
- Most inbound and outbound cargo travel is in the belly of passenger planes. Inbound is primarily fresh food and flowers, and the single largest outbound is mail order prescription medicine sales (i.e., Medco). Because McCarran has many direct flights to markets all over the world, it is ideal for high-value, low-weight and volume products that can be accommodated forward fulfillment centers and reverse logistics facilities.
- Though runway operations are McCarran's most constrained asset, the airport currently has capacity to handle its foreseeable future growth.

Reno/Tahoe International Airport

- Reno/Tahoe is committed to economic development through expansion as a cargo facility and has a designated economic development person, as well as a cargo development person.

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- Reno/Tahoe has developed statistics and a presentation as to its capabilities and the cost savings associated with air cargo utilizing Reno as a cargo hub over LAX, which currently handles the vast majority of dedicated cargo aircraft with goods bound for the West Coast. RNO is currently an official diversion airport for Air China Cargo. Its efforts have resulted in negotiations with an airfreight company to bring in dedicated cargo planes direct from China.
- Reno/Tahoe offers several unique incentives to potential air cargo-related companies: Because Reno/Tahoe is a standalone airport, companies do not have to pay property taxes if they are located on airport property; they only do ground leases, but will tie the term of the lease to the amortization of the tenant's investment; Reno/Tahoe has its own water rights and will allow the tenant free use of the water and, finally, Reno/Tahoe has a surplus of roadway impact credits that it will utilize for the benefit of a tenant to offset or defer the cost of roadway construction impacts imposed by local government jurisdictions.
- Reno/Tahoe also is responsible for another airport north of the city called Reno-Stead. The primary use for Stead is the Sierra Nevada Corporation, which tests its drones at the airport, and the Reno Air Races. Stead could be served by rail, but is not a large air cargo facility. A very large investment would have to be made to bring it up to standards. Accordingly, Reno/Tahoe is the focus for future cargo operations in Northern Nevada.
- Our research indicates that it would be beneficial for the State of Nevada to play a greater role in assisting the Reno area in attracting international freight and provide better statistics and information on products produced and shipped from Nevada. This could be done by GOED, utilizing the North American Industry Classification System.

D. INTERVIEWS: INFRASTRUCTURE

Infrastructure, though not glamorous, is the life blood of economic development both at the micro- and macro-levels. Without the correct types and capacities, the best laid plans to attract private capital investment and employment opportunities will never be realized. Land values, and consequently, government revenues, are a direct function of infrastructure location. Yet this component, which holds the key to an area's or region's economic prosperity, and should be designed and implemented with the highest levels of intergovernmental cooperation and coordination, is often the most politicized. Perhaps one reason for this is the cost of infrastructure, which can be daunting, especially for a public sector with limited resources.

Though the interview responses were at times diametrically opposed on specific components of infrastructure, such as the benefit associated with the construction of I-11, there was a consensus that one of the biggest hurdles facing Nevada's quest for economic diversification is the lack of sufficient infrastructure. In addition, political infighting and regional power struggles were seen as standing in the way of any meaningful advancement in addressing the state's infrastructure needs. It was thought that transportation-related infrastructure, primarily highway and rail, needs to be addressed at the State-level, while roadways and utilities must be wrestled with locally, but include multi-jurisdictional coordination.

General Interview Comments

- Infrastructure or the lack thereof, is the single biggest physical impediment to economic development in Nevada.
- The State should focus not only on the transportation element of commercial land development, but also the critical aspect of infrastructure.

- The State of Nevada should conduct a comprehensive study on infrastructure throughout the state.

Highways

- Nevada needs to promote the completion of I-11 from Phoenix to Reno. This is a north/south axis that would provide a huge impact on the Las Vegas and Reno as logistics centers.
- I-11 is hugely important for the Las Vegas MSA. The new bridge over the Colorado River is a good start, but the future of the region will open up with the completion of I-11 between Las Vegas and Phoenix.
- I-11 must be completed to give Nevada a competitive edge in logistics and manufacturing. It is the only missing segment in the Canamex Corridor which runs along I-15 and I-17.
- One respondent stated that I-11 will be good for Nevada, but it may not greatly boost freight movements. For example, I-90 did not have a big impact on economic development between Seattle and Spokane. If the demand is there, trucks will find a way to move product between Phoenix and Southern Nevada with, or without I-11.
- I-15 is near capacity between Southern Nevada and Southern California, and at certain times it is beyond capacity. One of the State's top priorities should be to expand capacity of that route.
- The most important public project now for Storey County is the USA Parkway/State Route 805, which is currently in the environmental review stage and is scheduled to open in 2017, but that is currently a soft date.

- The completion of SR805, to U.S.50 would reduce truck drive times to the south by 1.5 hours and also provide an access route for the labor shed in Lyon, County, one of Nevada's highest unemployment areas at 16%. It would provide a direct route for labor to the major industrial areas along I-80. It would also provide the impetus to build more affordable housing to the south of the Tahoe/Reno Industrial Center ("TRIC").
- One hurdle to completing SR805 is its cost. The TRIC developer related that they can construct the roadway to NDOT specifications in 24 months for \$40MM. NDOT has indicated that it can complete it by 2017 at a cost of \$172MM.
- The State should pursue more federal money for the USA Parkway and delay other highway projects in Nevada to divert funds to the USA Parkway.

Rail

- The construction of an intermodal facility is essential for the continued growth of the logistics sector in the Reno area.
- The cost of rail infrastructure is very expensive: approximately \$110/linear foot, not including the cost of land, \$250,000 for main line switch and \$15,000-\$25,000 for regular switch.

E. INTERVIEWS: REAL ESTATE

For the 20 years previous to the Great Recession, Nevada enjoyed a boom in real estate activity and values that was the envy of the U.S. With the onslaught of the Great Recession in late-2007, the real estate market in Nevada came to a grinding halt. Commercial real estate, which should have been based on supply-demand

fundamentals, was instead driven by cheap and easy credit as it was in the rest of the industry. What was different was the economy of the state, with the possible exception of the mining industry, Nevada's economy was largely consumption- and construction-based for most of the boom period.

To compound matters, the interview responses point to a "chicken and egg" cycle in which no new speculative buildings are being constructed, yet potential economic expansion from companies exploring a location in the state is stymied due to a lack of readily available commercial space suited to the requirements of these companies. Of course, this cycle of the economic development community demanding a large inventory of ready to be occupied buildings, because many job creating companies do not have the desire to go through the entitlement and construction process of a new building, with the development community not wanting to make large investments, based solely on speculation is generally the norm.

A state such as Nevada with large amounts of open space can identify many locations with enough land to permit the development of even the largest inland ports, logistics centers or distributions centers. From a real estate standpoint, at issue is identifying those locations that have all, or the majority of, the key attributes identified in previous sections of the report. RCG's interviews identified a handful of locations in both Northern and Southern Nevada, which have the potential to become significant logistics centers.

Buildings Demand

- There is a need to assemble large parcels of land for manufacturing and logistics facilities. While there is a need to assemble land for future projects, the more immediate need is to have an inventory of existing buildings. If there were 300,000- to 500,000- square-foot buildings available, more

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companies and jobs could be attracted to Nevada. Someone just needs to make the investment in these large facilities. However, developers are not speculatively building in today's economy climate, so it is hard to attract jobs, but no developer is willing to invest in speculative buildings until the economy improves. For example, three different developers looked at the 110 vacant acres in North Las Vegas, but they did not want to build new and go through the entire development process in the current economic climate

- The last big box speculative building in the Las Vegas Valley was built in 2008. There are no speculative buildings being built in the Reno area today. The last to be built was in 2008. There is no one in the real estate industry today that would advise clients to build a speculative building of any size in Nevada.
- Currently, it takes 5-6 months to complete tenant improvements on any large industrial buildings, but only 9-10 months to construct a building, and this includes the time to receive all permits associated with that construction.
- 2011 was a good year for leasing in Reno. In 2012, rents have been stable, unlike Las Vegas where they continue to fall.
- Companies now want to own their buildings, not lease them. 2012 has been good for sales, as prices have been decreasing significantly. Reno is still a healthy big box commercial market.
- Market demand makes Southern Nevada a more vibrant market for big box development than Northern Nevada.
- One of the developers interviewed talked about his company currently being in the process of building a 120,000-square-foot facility for Shufflemaster at

Jones & I-215 in the Las Vegas Valley. They are also negotiating another three or four build-to-suit facilities in Las Vegas of 100,000-150,000 square feet, which seems to be the preferred size in today's market.

- Reno loses large container operations to Stockton and the Inland Empire due to drayage costs, higher electric costs and big box rents, (e.g., \$0.47/sq. ft. in Reno versus \$0.37 Inland Empire).

Building Capacity

- According to one respondent, there are 73 million square feet of industrial space in Reno; 55 million of that is institutionally owned (owner occupied).
- There are 107.3 million sq. ft. of industrial space in the Las Vegas Valley.
- A constraint to existing inventory flexibility and absorption is many existing buildings are designed for warehousing, not manufacturing. Manufacturing customarily requires more power than the existing buildings in Nevada's Industrial markets can supply. This is especially true in state's traditional industrial areas. The majority of existing big box facilities were built with electrical capacity for warehousing operations. These operations do not require large electric loads, because they typically utilize sky-lights for visual needs and swamp coolers for cooling needs. This usually means that the initial electrical costs associated with construction for these buildings was low, but it now deprives the building of the flexibility required for manufacturing, data processing or administrative uses. And it becomes very costly to upgrade these facilities, especially those found in the older areas, because the surrounding electrical distribution infrastructure was not designed, or built to accommodate significantly larger loads. Trenches have to be dug and wires laid for great distances in these situations because they

have to be fed from electrical facilities some distances away, significantly driving up costs to retrofit these buildings.

Inland Port Requirements

- There are many attributes that are required for a large rail-served inland port, logistics or manufacturing center, the most important of which are: the land parcel dimension contiguous to the track has enough length for the intermodal train to completely clear the main line (which is usually 10,000 feet of siding capacity); highway access, preferably within a short distance of an interstate highway; that portion of the site which will contain rail access should not have more than a One-percent grade; and the site must be environmentally and politically acceptable.
- The size of the site also depends on many factors, including: the number of trains which will service the site; the volume of freight which will be accommodated; clear definition of uses: will the uses include manufacturing, warehousing, distribution or a combination of all three; the consumption and market of the local area; amount of empty containers or other transportation equipment stored on site; etc. The size of these centers typically range from 100 acres to over 2,000 acres in the U.S.
- In order to identify the potential of inland ports or logistics centers in Nevada, uses targeted for the center must be strictly defined. Market dynamics and the types of products will dictate the costs and feasibility associated with such a facility.
- A new requirement in rail served industrial parks is that all rail car storage space must be redundant. For each car to be brought off the main line enough additional track must be laid to store the car for long periods of time

until the railroad can pick it up. This new requirement doubles the cost of rail in an industrial park, as well as the need for additional amounts of land.

- Reno is running out of large tracts of industrial land.

Potential Sites, Northern Nevada

- The Tahoe-Reno Industrial Center ("TRIC") has 30,000 acres of industrial zoned land, 15,000 of which are completely infrastructure and can be served by both the UP and BNSF railroads.
- Wal-Mart operates a 1.2 million-square-foot facility in TRIC, and though it's not an e-commerce facility, it is a fulfillment center for food.
- In TRIC, 5,000 acres can support 100 million square feet of buildings, which in turn support 50,000 jobs. 150,000 jobs could be created just on the land already infrastructure, which when extrapolated equates into 300,000 jobs within the entire TRIC.
- Toys R Us operates a 350,000-square-foot facility and employs 200 people.
- GSI, which distributes for E-Bay employs 300-400 people in a 400,000-square-foot facility.
- Zulily, primarily a children's clothing outlet and one of the fastest growing e-commerce companies in the world, has created 400 jobs in a 300,000-square-foot facility

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- One item that must be addressed for TRIC is its distance from the Reno area labor shed. There is a high labor turnover for the companies within TRIC that could be solved with dedicated commuter buses.
- Crossroads Commerce Center consists of 3,000 acres and is located in Fernley, Nevada. This established industrial center has excellent access to I-80 and U.S. Highways 50 and 95. All utilities are readily available, and the railroad spur and rail sidings are served by both the UP and BNSF. Crossroads Commerce Center lies within the SONTERRA Master Planned community, which also allows for residential, retail and other commercial uses.
- Located between Fernley and Fallon, the Clean Energy Rail Center (“CERC”) is proposed on 10,000 acres of low cost developable land.
- CERC has redundant electrical power, and geothermal power can be made readily available. The site also has easy access to the pipeline that serves the Navy base. CERC is located on Class 1 railroad track, the fastest and heaviest track currently existing, and a spur which can service both the Yerington and Hawthorne areas. CERC is served by both the UP and BNSF. However, neither railroad currently feels this is a good intermodal site, because of its distance from major population centers.
- The best use for CERC may be adding value by refining minerals to higher levels of purity. To this end, CERC has been working with Pumpkin Hollow Mine to refine copper, silver and gold, as well as other companies to reprocess mill tailings from the mineral industry. CERC is working with still others to process hay and diatomaceous earth. Low cost energy from geothermal power would make these energy intensive uses feasible.

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- The biggest obstacle to CERC is the checkerboard Federal land ownership within the proposed site, and to the lack of infrastructure.
- Agriculture is another industry that can contribute to the success of CERC. A \$150-million beef operation north of the City of Yerington is scheduled to open in 2013 and projected to ship 1,500 head of beef/day. This beef operation combined with other agriculture in the region could result in unit train configurations.
- The State should place a major focus on CERC by redirecting funds that are being generated by the geothermal industry, but taken out of state, back into the construction of needed infrastructure at CERC.
- The U.S. Navy located the Hawthorne Ammunition and Weapons Depot (“HAWD”) at its present location in the 1940s to have easy access to all the West Coast military installations, but not be located near the coast in time of war, and designated it an inland port.
- While the Navy still operates the Nevada Underwater Warfare Center, a relic from the Cold War in Lake Hawthorne, the Army operates HAWD and primarily recycles and refurbishes munitions, in addition to managing a long-term storage facility for obsolete weapons utilized by every branch of the military.
- Military cargo comes into Hawthorne by rail and truck and because a large portion of the rail on the base is currently not utilized, the military will lease rail-served land and buildings to private companies. Several 10,000-square-foot buildings are available with truck and rail docks. In addition, HAWD also has available 10,000 acre feet of water for which the private sector can

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negotiate. Application Rail Service is a company negotiating with the Army to lease 75 miles of track to refurbish rail cars.

- The County owns 1,200 acres comprised of a variety of parcels that could be zoned industrial, and an additional 1,200 acres on the eastside of town is owned privately, zoned industrial, and has water wells and electrical capacity on site.
- An issue with rail service is that tribal approval is required, which can be a challenge, but fixable. An agreement with tribal entities for rail usage is currently being sought.
- Hawthorne also has a 6,000-foot runway at the airport. A rural airline with 18 planes is exploring Hawthorne as a rural hub. Their market would be ferrying workers out to renewable energy sites, delivering fresh produce to casinos, and high-end recreation travel to remote locations. If funds were found to extend runway to 7,000 feet, Hawthorne could have had a new job creating military training mission.
- The County also owns 500 acres of land around the airport, but as with the other large sites in the area, lack of infrastructure is the biggest hurdle to overcome.
- Strategically, highway 359, which connects to highway 395 in California, is passable even during the winter, and today serves as an alternate route when I-80 is closed in the Reno area.
- The area around the Reno/Stead Airport north of Reno contains thousands of acres of vacant land with both highway and rail accessibility. Existing infrastructure and proximity to a large population base makes this area a candidate for big box development.

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- The Ely area has vast amounts of vacant land that can accommodate large scale, land intensive activities, such as logistics facilities. Over 2,000 acres of land is already identified for industrial parks with a potential 12,000 acres of additional BLM lands. Ely has identified three target industry clusters: 1) Biomass: 1.2 million acres of BLM and National Forests producing large amounts of waste wood and other bio waste. Ely is currently working with a British tar company to pelletize biomass waste from surrounding area for fuel, as well as a company from Israel who is also interested in the biomass waste; 2) Wind Energy: The Ely area has a constant wind velocity; 3) Aerospace and Defense Technologies: There is a large demand for plane assembly and component manufacturing. The U.S. has 3,200 commercial planes on backorder. Ely has a 6,000-foot lighted runway, (that can land 737s), and a 5,000-foot non-lighted runway. Plans have been developed to extend rail onto the airport property.
- The area surrounding Battle Mountain contains large tracts of land primarily used for agriculture, but which may be converted to supply chain uses. In the center of this land lies the Lander County Airport, which consists of a 7,300 foot runway and accessible utilities. The runway was originally constructed for B-52 operations during World War II, and is used today as the central staging area for BLM firefighting activities in North central Nevada. The airport is situated just south of I-80. To the north of I-80 is a railroad spur that was once utilized for loading livestock. The mining industry employs over 2,000 people in Lander County, and the area's economic development strategy target value-added manufacturing for the mining, petroleum and chemical industries.

Potential Sites, Southern Nevada

- The best near-term location in the Las Vegas Valley for land priced to support logistics facility development is the northeast Valley near Nellis Air Force Base and the Las Vegas Motor Speedway. The area is accessible to I-15 and rail, as well as housing and infrastructure, but the infrastructure still needs to be constructed, which necessitates an end to political differences between Clark County and the City of North Las Vegas.
- The Apex area north of the Las Vegas Valley contains thousands of acres of land and is accessible by both rail and interstate. Due to infrastructure constraints, this has to be viewed as a long-term project.
- The Arden area, in the vicinity of Jones Boulevard and Blue Diamond Road is another option. The current UP yard is located in this area and this is the location where the railroad changes its crews, but it is close to residential uses and has limited access to I-15.
- There are two large parcels of land at the Henderson Airport that can accommodate logistical centers, but are not rail served. One is 150 acres and is already in escrow to an industrial developer, and the other is 300 acres. The runway at the Henderson Airport is 6,500 feet long, allowing for the operation of small cargo planes. This runway could be expanded to 8,000 feet, enabling much larger cargo plane operations, but environmental considerations may not allow for this expansion.
- There is currently a bill in Congress that has very good prospects of passing the legislative process that would transfer 200 acres of Federal land located between Jean and Sloan, to the State of Nevada. This land is just south of I-15 and has access to rail.

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- Not considering demand-side issues, an inland port site could be established near Jean, west of I-15, but that is desert tortoise habitat. The Jean prison site, as it stands, probably would not work primarily because of its size and the lack of flexibility, due to the existing structures. The prison site is not adaptable for use for logistics.
- Several respondents felt the best location for a large logistics center in Southern Nevada would be by the Ivanpah Airport. Ivanpah can accommodate air, rail and truck, and has the main fuel pipeline running through it that serves Southern Nevada from Southern California; providing abundant, inexpensive fuel.
- The Clark County Department of Aviation owns 6,000 acres of land in Ivanpah for the purpose of building and operating an airport. It controls and additional 16,000 acres of adjoining land to ensure the development of compatible uses, which would include manufacturing and distribution.
- A constraint to developing Ivanpah as a logistics center is the strict air quality standards in the Ivanpah Valley. Currently, the environmental study only includes airport operations. A new environmental application would have to be submitted to include a model for other commercial activities.
- Like the rest of Nevada, infrastructure costs will be the largest hurdle to overcome in developing the Ivanpah area. Phase 1 of the airport, which can accommodate 16 million passengers, is projected to cost \$7 billion: \$2 billion for the terminal and \$5 billion for infrastructure. The first phase could be completed in six to seven years from the start date. However, the cost to passengers would be the highest in the industry.

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- Currently, McCarran has capacity to handle all the existing hotel rooms (151,000) plus an additional 16,000 rooms. Delay factors to the airlines would have to grow tremendously for the Ivanpah project to move forward.
- The Laughlin area has thousands of acres around it, and is only 13 miles from I-40 and the BNSF main line to goes to the deep seaports in Southern California and the major market centers in the Midwest, Northeast and Southern U.S. There is also a trans-load facility in Needles, California. This is an option that is often forgotten about.
- Mineral County owns 1,200 acres comprised of a variety of parcels that could be zoned industrial, and an additional 1,200 ac. on the eastside of town is owned privately, zoned industrial, and has water wells and electrical capacity on site.
- An issue with rail service is that tribal approval is required, which can be a challenge, but fixable. An agreement with tribal entities for rail usage is currently being sought.

F. INTERVIEWS: WORKFORCE DEVELOPMENT/EDUCATION

The overall comments made during the interviews were very positive about the workforce in Nevada, through as noted earlier, there is a perception, both in the North and South, that the logistics workforce in Reno is of a higher quality than that in Las Vegas. However, the general consensus was that the State of Nevada should do more to promote the quality of the workforce in Nevada to prospective companies, or highlight its benefits in targeted marketing campaigns. There was also a general feeling that the State does not understand the benefits or impacts that logistics have on the Nevada economy.

Lamenting the demise of the Supply Chain Management Program at the University of Nevada-Reno was universal in the North and South. Depending on who you spoke with, the program was ranked either the third or fifth best logistics program in the country, and emotions ran high about how inconceivable was its termination. The Supply Chain Program at Truckee Meadows Community College is viewed favorably.

Finally, as one might expect, all those interviewed believe the State's education system is not viewed as good, and somebody should do something about it.

General Comments

- The State does not talk enough about the benefits of labor force in Nevada.
- The State should stop downplaying logistics jobs. These jobs still represent corporate America making investments in Nevada.
- The State should educate Nevada residents as to the benefits of logistics. Good paying jobs for the required skills. There are quite a few good stories in Nevada. People need to know that facilities are built by people who live here.

Impact of Logistics Jobs

- As a rule of thumb, 60-65 jobs are created for every 200,000 square feet of building in the logistics sector. When the 450,000-square-foot mark is reached, the jobs increase to 150.
- Low wages in any segment of the economy are a result of underemployment. The creation of jobs that may lead to full employment will lead to wage appreciation across the entire spectrum of occupations.

- Apple is an excellent example of a company who first came to Nevada with a logistics operation and is making a much larger investment here.

Workforce Training

- Logistics primarily needs technical skills. Entry level engineers, TLC logic people, control systems, basic technicians to work on the material handling machines, etc., which means a focus on community college curriculums.
- Truckee Meadows Community College offers a Supply Chain Program.
- The State can assist with specialized workforce education. For example, there is a shortage of truck drivers in Southern Nevada. A local training program for truck drivers is a good idea.

Higher Education

- As noted, University of Nevada-Reno should not have disbanded the Supply Chain Management Program. All that is left are a few classes on various subjects, but there is no major in the Management Department as before. A very big mistake was made when University of Nevada-Reno disbanded its program. The argument was made that many graduates from the program left the State. However, these grads are some of Reno's best ambassadors. When it came time for their companies to consider a West Coast logistics facility, these graduates could have recommended Nevada as a location. The same can be said for most of the science and engineering graduates from UNR and UNLV and those programs were not eliminated.

- Robotics is quickly becoming the norm in logistics, the State should embrace this and build curriculum in higher education around it. (Kiva robots were installed at Amazon).
- It is especially important that the State align higher education with what is required to achieve the Governor's Office of Economic Development's stated goals. Higher education funding should be tied to how well it brings jobs to Nevada and educating the workforce required to do those jobs.
- One interviewee was very surprised at a University of Nevada-Reno hiring event about how little the students knew of the opportunities in the supply chain industry.

General Comment

Education is not good in Nevada. The State must do a better job with our education system. How many potential companies do we lose to other states because those companies do not want to relocate their skilled workers and the workers' families to Nevada because of our education system?

G. INTERVIEWS: NEVADA GOVERNMENT

There were no interviewees that thought working with State of Nevada was a burden. High praise was given for the state's regulatory environment and the ease with which business is conducted. These comments came from established companies, companies which have recently moved to the state, or are in the process of moving to the state, and perhaps most important of all, existing companies, which have made a decision to make a substantial additional investment in Nevada that will result in job creation. Statements were made that Nevada must remain vigilant not to lose its edge.

Among local governments Storey County is taking a leadership role relative to “business friendliness” according to several of the interviewees from the Northern Nevada. Storey County was cited for not only having an attitude that promotes public/private sector cooperation, but policies and regulations that act as important incentives in bringing companies to the Reno area.

Generally, opinions from both Northern and Southern Nevada interviewees were that there is urgency regarding modifying the State of Nevada’s incentive programs. First and foremost one recommendation is to base incentives not on a statewide wage average, but those wages pertinent to specific clusters. Criteria should also be developed that will provide incentives for wages in an individual industry cluster to rise steadily over time, and reward companies based on their total economic impact to Nevada.

General Comments

- The interviewees generally felt that Nevada is generally business friendly; has a good labor force, with low turnover, and great tax advantages, especially when compared to California, (lack of inventory tax was a main selling point to Apple).
- Being a right to work state is a competitive advantage for Nevada. There are also huge gaps in Workman’s Compensation and Unemployment insurance between California and Nevada. This is California’s biggest issue.
- A political structure that is accessible is unique and sets Nevada apart from its competition.

Inland Port Administration

- Any formal port or logistics center must be a public/private partnership and should be patterned after the FTZ program.
- Some public authority has to oversee the process of establishing an inland port designation, but there should not be just one authority for the whole State. Port authorities should be structured to function on a localized basis, because local businesses and community leaders know what they need.
- The Federal Government should not have operational control of any inland port or logistics center, and the State should only be involved in creating port districts and the legislation that will allow them to thrive.
- In the North, perhaps EDAWN could be reorganized to perform inland port duties as well.
- Administration of any inland port should be conducted by a transportation commission made up of public/private sector representatives. The Regional Transportation Commission would be an ideal candidate to administer the physical activity of a port in Southern Nevada.
- We must protect against inland port authorities that might be just another layer of bureaucracy that will not allow innovation to take place.
- A major obstacle to a Nevada inland port location in the future is the Federal budget. Due to budgetary cutbacks, some interviews indicating that there doesn't appear to be sufficient funding available to hire additional customs agents in Nevada. Currently, McCarran International Airport and Reno/Tahoe International Airport are the only locations in Nevada with customs agents.

However, an inland port would significantly increase the demand for customs agents. Relocation of customs agents from other locations in the country is problematic.

- Don't worry about customs agents, because they would be paid by the tenants in the inland port/FTZ and thereby circumvent the Federal Budget.

Regulations

- Nevada is still considered one of the best places to do business by those interviewed, but we must continue to be vigilant that we don't lose that perception.
- A low regulatory environment is the key to enhancing business opportunities in a state.
- Northern Nevada was successful in attracting big box logistics users by specifically addressing the gross floor tax that was instituted in California.
- Some interviewees felt very strong about taxing e-commerce. The forthcoming Nevada tax on e-commerce will be a detriment to the state's ability to compete with surrounding states. It will kill job growth in this sector. Even California, which has an e-commerce tax, negotiated a deal with Amazon to waive the tax for them, which resulted in Amazon's decision to expand in California with 600 jobs. Amazon was looking at both Northern and Southern Nevada, but will now stay in California. Nevada must study the effects the new tax will have on our ability to recruit jobs to Nevada in this fast growing sector. It will only drive companies away, and Nevada will forfeit any leadership in this sector if we tax e-commerce. The State should not try

to tax a global economic entity like e-commerce on a regional basis. This should be done at the federal level.

- Nevada should refine its regulatory process. It needs to make doing business easier with a “one stop shop” for regulations.

Storey County

- Developers and companies speak very highly of Storey County for its implementation policy platform that is structured for speed, ease and cost saving for the private sector, making development seriously simple.
- Storey moves the construction process along relatively quickly. A company can get a building permit in 30 days, and know all its costs up front. The County redesigned the elements of a special use permit and made it a component of the business license. Storey County offers on-line plan reviews; phases all stages of the construction process for large building developments; will process special use permits within 30-45 days; and will send County staff, Planning, Fire, Engineers, etc., to visit an existing facility, regardless of where it's located, at the company's expense, to better understand the type of facility to be built. This creates a much better understanding, and better working relationship, than just reviewing plans and construction documents. A good example of its effectiveness is the Wal-Mart facility, 2/3 of which is refrigerated and freezer space: it took only six months to complete all County permits and complete construction from the close of escrow on the raw land to receiving the first food delivery.
- Storey County is responsive, but most of all, its processes are predictable.

Incentives

- State incentives should not be based on statewide wage averages, but must be applied by sector. To increase wages in any particular cluster, incentives could be awarded on the going rate of a job classification and then increased by 2 percent, or so.
- Nevada should reward companies for job creation directly tied to exporting products. Any State incentive should be tied to the economic impact.
- The State of Nevada should reward companies for achieving milestones, not try to pick winners on criteria, based on today's benchmarks. The State must develop a comprehensive plan and incentives that align to achieve the goals that will be set out. Must be aligned to the interests of the people.
- Collection of information for incentives should be simplified, because large companies often do not keep records of information required in the incentive process.
- The State should look at the Tennessee model for job training and tax incentives.
- State and local governments in Nevada are currently understaffed. There must be a coordinated effort developed between State and local governments to "fast track" projects through the broad array of government entitlements. A point person should be appointed at the State-level to proactively assist new companies, not just "throw a few dollars at them."

General Comments

- Federal ownership of land is a problem and Nevada's Native American tribes have too large of an impact on major projects moving forward.
- Policies toward water should be amended. Anyone can protest and tie up a project in court. The tribes can shut down the development of an entire region of the state with their stance on water issues.
- Nevada must protect against special interests groups having their own agendas. The State of Nevada cannot allow for special interests that might have a negative impact on job creation, because they do not want competition.

H. INTERVIEWS: COLLABORATIONS

Interview responses in this section look to a future that would bring together the public and private sectors in advancing a common goal within Nevada. It starts with the most basic step toward developing a comprehensive economic development strategy: objective research. The majority of those interviewed felt that the State of Nevada could do a much better job in the collection, analysis and most important of all, dissemination of data and information. It was surprising to find out how many companies found it difficult to obtain reliable and easy-to-use information from many of the State of Nevada's agencies.

The good news is that many of the companies interviewed showed an eagerness to actively participate with the State in future efforts to develop and promote the logistics cluster. Several respondents wondered why the State had not already reached out to the logistics community in light of its knowledge and expertise on the subject. It also came as a surprise that parcel delivery companies, like FedEx

and UPS, have the depth of service to conduct logistics studies for significant customers. In this scenario, these parcel delivery companies can take on the role of a site location consultant.

In terms of marketing, the majority of interviewees felt that the State of Nevada was missing the mark on telling its story, though as with other broad issues, opinions differed on the best methods to accomplish the desired results. For example, some felt the State should reinforce its efforts the competitive disadvantages of California in order to attract disgruntled companies from that state, while others saw that that strategy was short-sighted and insisted Nevada's focus should be targeted toward promoting its strengths, while focusing on global opportunities. Most interviewees were in agreement that a marketing emphasis should be placed on the companies already located within Nevada.

Research

- It is essential for Nevada to continue to develop and improve its various economic and business databases and research capabilities to provide useable information that companies require in order to make a location decision. One major company commented that it had to pay for information from the State of Nevada that was needed to recruit Apple.
- Nevada should realistically focus on the specific companies that are a good fit for the state and then develop a target market campaign around that information.
- State needs to level the playing field when it comes to dissemination of information. Information should be available to all.

Partnerships

- Nevada needs to partner with private sector to be most effective. It should start with an outreach program to the private sector.
- Many interviewees would like to get more involved in the economic development process. There was a strong willingness to meet and speak with companies thinking about a Nevada location.
- One company stated that existing logistics companies in Nevada have resources, such as knowledge and expertise about the logistics sector, as do industrial engineers and transportation engineers that can help the State, but have never been asked to participate in economic development discussions until this year.
- FedEx was the first company that CDW turned to when it contemplated a logistics center to be located in the Western United States.
- FedEx receives a lot of requests from customers on where they should locate logistics facilities. For large revenue generating customers, FedEx will analyze the inbound (suppliers) and outbound (market) data for a particular company and propose potential locales in which they should locate. It considers this a value added service, but in practical terms they act as a site selection consultant.
- Some interviewees indicated that the State of Nevada form a good relationship with the UP, and it's wholly owned subsidiary, Union Pacific Distribution Services. The UP has better relationships with corporate America than any local regional development authority is likely to have.

- One interviewee identified Las Vegas-based architecture firm, Tate Snyder Kimsey, as a company with 15 years of experience working with the design of various facilities at the Port of Long Beach and has a good understanding and experience in commercial goods movements through customs and inspection stations.

Strategies

- The State must decide what policies and incentives should be put in place to reshape Nevada in the long-term. This must start with a fresh and honest discussion of the future (short-, intermediate- and long-term).
- The Reno logistics cluster just happened by itself. It could progress greatly with a comprehensive strategy developed by the State and the private sector.
- In the past, Nevada was a state in which a new idea, (gaming) was allowed to flourish. We must replicate the same statewide attitude that made Las Vegas the entertainment capital of the world and apply it to logistics. Barriers to quick decision-making must be removed, which necessitates streamlined regulations to allow businesses to react quickly to market forces.
- Nevada can create a business environment to attract designated clusters. We have done it in the past with gaming. It just takes a total and focused commitment by both the public and private sectors. Legislation must be created to help foster a fledgling industry, not stand in its way with regulations. Follow the blueprint that was created with the resort industry that made Las Vegas the gaming capitol of the world.

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- We should make Nevada an offshore – onshore location. Give business the benefit of an offshore location here in the state.

Marketing

- The State of Nevada should understand the logistics sector better, and market itself accordingly. The State is not very well prepared to market itself at this time.
- We have good systems in place and need to sell ourselves better. The State should focus its marketing efforts on why prominent companies locate here. Marketing materials should display the logos of all the companies in Nevada.
- Location decision makers will locate where there are others, (they must know something we don't know). Success begets success.
- The State of Nevada needs to better market the companies that are already in Nevada. Companies considering moving to Nevada will often investigate which companies are already in the state and then explore a location here, because they think there must be good reasons for their competition to be operating here. The reason Nestle even looked at Reno was because Mars Pet Care was already in Northern Nevada.
- The State should concentrate on marketing to manufacturers, and California should be the primary target.
- The State should develop a national and a global marketing program, not just trying to “poach” companies from California.

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- Nevada always compares itself to California, when we should be comparing ourselves to its primary competition: Arizona, New Mexico and Utah.
- Nevada is in a global battle. The State of Nevada should not be comparing itself to California, but to places like Ireland, Singapore, Vietnam, etc. This is the competition of the future. Additionally, if the California economy doesn't do well, then Nevada's economy doesn't do well either.

I. INLAND PORT FINANCING OPTIONS

While the viability of an inland port, as described herein, remains in question in Nevada in the short and intermediate terms, we still thought it would be beneficial to GOED to understand the variety of funding options that are available for economic-development-related transportation (single-modal and multimodal projects). Some of the funding options are private, while others are public (federal and state). And some maybe more applicable and/or more effective than others in providing the needed infrastructure to support a healthy supply chain cluster in Nevada.

Factors Influencing Private-Sector Investment

The most direct beneficiaries to an inland port project are typically the private-sector logistics providers—including commercial railroads, trucking agencies, airfreight carriers, etc.—who will be housed in the new facility. A well-planned inland port should improve the logistical infrastructure available to these firms while lower their shipping, storage and processing costs on a per-container basis. As such, it might seem intuitive that private investment would be immediately forthcoming from these stakeholders to finance the continued development of inland ports along all high-capacity corridors with dedicated links to traditional ports of entry.

However, many considerations are factored into a private firm's willingness to invest capital into an inland port project. To discover what these considerations may include, and what potential obstacles arise to private investment, policymakers must first build an understanding of why a private logistics provider might perceive value in the construction of an inland port.

The development of inland ports has accelerated, particularly since the 1970s¹ for a number of reasons. First, inland ports and other inter-modal hubs have become an

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integral component of an increasingly integrated and capital-intensive national network of freight movement. In addition to streamlining trans-national freight movement, these hubs allow goods to be transferred from high-capacity shipping modes, including air and rail, to lower-capacity modes, like trucking, for local delivery in the region of a targeted market.

Second, as the traffic at freight harbors and other traditional ports of entry has begun to meet capacity limitations, logistics providers have looked to inland ports as a means of outsourcing certain value-added port functions to remote locations. With an inland port, logistics providers can offload shipping containers at the harbor or other point of entry and ship them by rail to the inland port for processing, storage and further distribution. In simple terms, an inland port offers the opportunity to serve as the ultimate “satellite terminal.”

As the case studies demonstrate, inland ports are typically located in outlying locations that are along existing commercial shipping routes and are within close proximity to major urban markets. A common characteristic of these sites is that land acquisition prices are significantly below those of the coastal lands adjacent to a freight harbor that would be required for harbor expansion. By expanding freight capacity with an inland port, as opposed to harbor expansion, logistics providers can also avoid additional dredging and port maintenance charges.

In short, private logistics companies have viewed inland port development as a way to remotely, and cost-effectively, maximize the freight capacity of traditional ports of entry. A corollary to this recognition is that, if port authorities at the traditional port of entry expand capacity to meet the needs that an inland port was designed to fill, then logistics providers’ demand for inland port capacity will subsequently decline and the commercial viability of the inland port may become endangered.

Among the factors that private actors must consider when deciding on infrastructure investment is which form of investment will produce the greatest return for the marginal dollar. Even if a logistics firm perceives value in the

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development of a given inland port project, its decision-makers may still determine that the firm can realize a greater return on investment by directing dollars toward some other aspect of its operation—whether it be a competing inland port project, research and development of new technologies, training of employees or some other expense.

Key to determining a firm's potential return on investment is the quality of infrastructure already in place:

How serviceable is the existing high-capacity rail line?

Will it require repairs in the near future?

How serviceable are the neighboring highway network and access routes?

Are electric and water connections readily available?

If a private firm can capitalize on existing infrastructure by making a marginal new investment, its decision-makers are more likely to pursue a proposed inland port project with private dollars.

Yet, even in instances when a private firm can clearly determine that a given inland port project offers the highest return on its marginal investment dollar, its investment decision may still be affected by the possibility of obtaining public financing. That is, where the potential for public subsidy exists, private firms have the incentive to reduce proposed private investment in anticipation of benefiting from a public expenditure.

This recognition presents Nevada policymakers with a challenge: While clear public benefits can result from the construction of an inland port, and while policymakers may rightfully want to encourage this type of infrastructure investment, signals that policymakers will make public dollars available to help finance the cost of an inland port may affect the financial commitment of private investors. Thus, policymakers should remain vigilant to ensure that private beneficiaries of an inland port project

have presented their financial commitment in good faith and that the level of private investment is consistent with the share of private benefit.

Encouraging Private-Sector Participation

Nevada policymakers at the State and local levels are facing the harsh reality of stagnant revenue growth at a time when the demands placed on public revenues are increasing substantially. Due to this increasing scarcity of public resources, policymakers hoping to encourage economic development through the construction of an inland port will need to leverage any financial investment from state and local sources to the greatest extent possible, with additional investment from private, as well as federal sources, to maximize a project's economic development impact.

While decisions about direct private investment—including up-front financing or contributions of land or rights-of-way—will generally be guided by the considerations outlined above, there are a number of possible methods for policymakers to use to encourage further private-sector participation. A typical method for state and local governments to recoup the publicly borne development costs from private beneficiaries, for instance, is to charge user fees to facility occupants. More than 80 percent of the \$2.4 billion in construction costs for Southern California's Alameda Corridor project, for instance will eventually be paid through per-container fees assessed on the facility's users (\$30 per 40-foot full container, \$15 per 20-foot full container and \$8 per empty container moving through between the Port of Long Beach and the inter-modal yard in downtown Los Angeles). These fees will be used to retire nearly \$1.2 billion in bond issues, \$400 million in federal loans and \$394 million in port authority contributions.²

In some highly competitive freight transportation regions, however, port authorities have been reluctant to pass development costs onto facility users for fear of damaging the facility's commercial viability. For instance, the Port of New York/New Jersey's Red Hook Container Barge that transfers containers from the port to an

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inter-modal yard operates free of user fees for this reason, but appears to require ongoing appropriations from state and local sources.³

In other cases, construction costs have been recouped through special tax assessments instead of user fees. The majority of the cost for the Port of Charleston's \$631 million Cooper River Bridge project, for instance, will ultimately be repaid through a local half-cent sales-tax levy, as well as a dedicated fuel tax assessment and truck registration fees.⁴ While the sales tax portion applies to the public broadly—reflecting the public benefit associated with the project—the fuel tax assessments and truck registration fees are intended to target the private beneficiaries of the project to recoup the project's cost.

Exhibit I-1: Project Contributions by Source, Selected Case Studies⁵

Project Name	Project Cost (Mil \$)	Private Sector%	Port/Airport Authority %	Public Sector %
1. Alameda Corridor, Ports of Los Angeles and Long Beach, CA	\$2,432.8	65%	20%	15%
2. Luis Munoz Marin International Airport Cargo Area Access Road, San Juan, PR	\$5.2	0%	25%	75%
3. Red Hook Container Barge/Port Inland Distribution Network, Port of New York and New Jersey	\$51.1	N/A	78%	22%
4. Skypass Bridge Project, Port of Palm Beach, FL	\$31.5	0%	32%	68%
5. Chicago Area Consolidation Hub (CACH) with Intermodal Facility	\$97.5	82%	0%	18%
6. Port of Tacoma Overpass Project, FAST, Port of Tacoma, WA	\$31.1	4%	16%	80%
7. Cooper River Bridge, Charleston, SC	\$636.6	0%	36%	64%
8. Tchoupitoulas Corridor, New Orleans, LA	\$70.0	0%	4%	96%
9. Joe Fulton International Trade Corridor, Port of Corpus Christi, TX	\$49.7	0%	36%	64%
10. Lombard Overpass, Port of Portland, OR	\$25.9	4%	7%	76%
11. Columbia Slough Railroad Bridge, Port of Portland, OR	\$13.0	77%	0%	23%
12. Kedzie Avenue Access Road, Chicago, IL	\$4.7	0%	0%	100%
13. Portway, Port of New York/New Jersey	\$48.7	0%	0%	100%
<i>Total/Weighted Average, All Cases</i>	<i>\$3,497.8</i>	<i>48%</i>	<i>17%</i>	<i>35%</i>

To determine an appropriate mix of user fees and/or special tax assessments that should be dedicated to financing an inland port project, Nevada policymakers will

first need to delineate the level of public versus private benefit associated with a proposed project. If policymakers determine that the public benefits accruing from economic development, improved air quality or reduced traffic congestion outweigh the project's potential benefit to private entities, then it will be more appropriate to rely on public options, such as a local sales-tax levy. Such public options also require significant acceptance by public stakeholders including the local community.

When the potential benefit to private actors is judged to outweigh the public benefits of a project, then it will be appropriate to rely more heavily on user fees or special tax assessments, such as truck registration fees, that apply more narrowly to the population of benefit.

Federal Funding Sources

Legislative History*

As noted, federal funding has historically been an important element of both inland port and major transportation project development. Thus, not all of a project's financing costs need be provided by private sources or state and local governments. Over the past two decades, federal policymakers have taken an increasingly active role in supporting inland port development with federal dollars. Beginning with the Intermodal Surface Transportation Efficiency Act of 1991, federal grants became available to help finance a variety of inter-modal projects, including those for passengers and freight.

These grant programs were expanded and augmented with additional federal financing mechanisms through subsequent federal transportation legislation, including the Transportation Equity Act for the Twenty-First Century ("TEA-21") and, most recently, the Safe, Accountable, Flexible, Efficient Transportation Equity

** Note: This section was written to reflect the state of legislative affairs at the time of drafting this report. However, in the time since, MAP-21 has been signed into law and provides a new, multi-year authorization for all federal surface transportation programs. The final version of that legislation varies slightly from the version outlined in this analysis and, due to these facts; its implementation will alter the outline of federal funding programs offered in this report.*

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Act: A Legacy for Users (“SAFETEA-LU”). These multi-year authorization bills folded the funding programs created through prior legislation into a single, omnibus bill. TEA-21 authorized all federal surface transportation programs for the period 1998-2003, while SAFETEA-LU extended that authority from 2005-2009.

SAFETEA-LU remains the *de facto* authorizing law for federal surface transportation programs even though it was initially scheduled to expire on September 30, 2009. Since that time, Congress has extended the law’s authority in three-to-six month intervals while lawmakers have negotiated the framework for a new, multi-year authorization bill. The ninth, and most recent, extension of SAFETEA-LU is the Surface Transportation Extension Act of 2012, which prolongs SAFETEA-LU authority through June 30, 2012.⁶

It is important for Nevada policymakers to note that separate proposals to replace SAFETEA-LU with a new multi-year surface transportation bill have emerged in the House of Representatives and the Senate. In March 2012, the Senate voted in favor of the Moving Ahead for Progress in the Twenty-First Century Act (“MAP-21+, or “S. 1813”) while, a month later, the House approved the American Energy & Infrastructure Jobs Act (H.R. 7). Either of these bills would impose significant changes to the federal programs, which provide financing for inter-modal hubs, including inland ports.⁷ Critically, among the most significant changes from SAFETEA-LU, in each bill, is the elimination of earmarks for specific projects. SAFETEA-LU contained over 6,300 earmarks.⁸ This means that, in the future, projects would likely face increased difficulty receiving discretionary funding and, instead, will need to qualify under formula-driven criteria.

The federal financing matrix in the following table outlines the major programs currently available for a potential inland port project. The type of funding that is available through each program is noted, as well as the restrictions placed on funding through each program, what the evaluation criteria are, and the current or pending status of each program’s authorization.

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It's worth noting that the share of federal funding available through most federal transportation programs is higher for Nevada than other states due to the high concentration of federally controlled land within the state. As a result, federal financing is available to cover 95 percent of project costs through many programs, whereas the standard federal contribution is only 80 percent.⁹

For any proposed project to qualify for any federal transportation funding, states must include it in their official State Transportation Improvement Plan and provide full funding details for all project phases.

If either MAP-21 or H.R. 7 is enacted as a new multi-year surface transportation law, federal funding under the high-priority/demonstration project program and the Section 1118/1119 program is likely to be discontinued as these programs have been dedicated to earmarked projects. Additionally, both bills would substantially increase federal funding for the credit assistance program created through the Transportation Infrastructure Finance and Innovation Act ("TIFIA") from \$122 million annually to \$1 billion annually. Both bills would also expedite the environmental review process for multi-modal development and would require the U.S. Department of Transportation to develop a national freight transport plan to articulate the national priorities for future development of the shipping infrastructure.

MAP-21 would also create a new, dedicated funding program for freight infrastructure with \$2 billion in annual allocations, and would direct the U.S. Secretary of Transportation to identify shipping routes that constitute a Primary Freight Network ("PFN"). Apportionments through this program would follow a statutory formula, with first preference given to shipping routes on the PFN.

H.R. 7, by contrast, would allocate an additional \$750 million annually to capitalize state infrastructure banks ("SIBs") in an effort to more effectively leverage federal dollars. H.R. 7 would also make it easier for states to apply for and receive Railroad Rehabilitation and Improvement Financing ("RRIF").

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The following table highlights the major policy changes that could potentially result from enactment of either MAP-21 or H.R. 7.

Exhibit 2: Federal Financing Matrix

Finance Tool	Status	Funding Available	Restrictions	Evaluation Criteria
Surface Transportation Program (“STP”)	Current	80/20 matching grant (95/5 in the case of NV) with no direct repayment of federal portion; can be used to finance ports, airports, rail/intermodal yards, multimodal and private hubs (through public agencies)	Inland port projects must compete with all other transportation projects for these funds and total funding is subject to federal budget appropriations, federal application timeframes and federal requirements for undertaking a project	Apportioned funds are distributed according to the following: 25% based on total lane miles of Federal-aid highways; 40% based on vehicle miles traveled on Federal-aid highways; 35% based on estimated tax payments attributable to highway users within a state; each state receives a minimum of 0.5% of the funds apportioned for STP
High-Priority/Demonstration Projects	Current; Likely to disappear with passage of new multi-year transportation bill	Earmarked appropriations requiring no direct repayment; can be used to finance ports, airports, rail/intermodal yards, multimodal and private hubs (through public agencies); can be used for both planning and construction	Must be designated as a high-priority project in federal legislation; total funding is subject to federal budget appropriations, federal application timeframes and federal requirements for undertaking a project	Congressional discretion
Section 1118/1119	Current; Likely to disappear with passage of new multi-year transportation bill	80/20 matching grant (95/5 in the case of NV) with no direct repayment of federal portion; can be used to finance ports, airports, rail/intermodal yards, multimodal and private hubs (through public agencies)	1118/1119 budget has been dedicated to earmarked projects; total funding is subject to federal budget appropriations, federal application timeframes and federal requirements for undertaking a project	Congressional discretion
Transportation Enhancements	Current	80/20 matching grant with no direct repayment of federal portion; can be used to finance ports, airports, rail/intermodal yards, multimodal and private hubs (through public agencies); 10% of STP funds are set aside for this program	Inland port projects must compete with all other transportation projects for these funds and total funding is subject to federal budget appropriations, federal application timeframes and federal requirements for undertaking a project	Formulaic
Congestion Mitigation	Current	80/20 matching grant (95/5 in the	Funds are targeted for non-	Project must be located in a non-

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<p>and Air Quality Improvement (“CMAQ”)</p>		<p>case of NV) with no direct repayment of federal portion; can be used to finance ports, airports, rail/intermodal yards, multimodal and private hubs (through public agencies); can be used for capital costs and operations</p>	<p>attainment areas; inland port projects must compete with all other transportation projects for these funds and total funding is subject to federal budget appropriations, federal application timeframes and federal requirements for undertaking a project</p>	<p>attainment area and must have a demonstrable potential for reducing emissions</p>
<p>Highway Safety Infrastructure</p>	<p>Current</p>	<p>80/20 matching grant (95/5 in the case of NV) with no direct repayment of federal portion; can be used to finance ports, airports, rail/intermodal yards, multimodal and private hubs (through public agencies); 10% of STP funds are set aside for this program</p>	<p>Funds are targeted to eliminate hazards at rail/highway grade crossings; inland port projects must compete with all other transportation projects for these funds and total funding is subject to federal budget appropriations, federal application timeframes and federal requirements for undertaking a project</p>	<p>Formulaic</p>
<p>Transportation Infrastructure Finance and Innovation Act (“TIFIA”)¹⁰</p>	<p>Current/Funding would increase under MAP-21 OR H.R. 7</p>	<p>Offers direct loans or loan guarantees at interest rates equal to the federal government’s cost of borrowing; loan amount cannot exceed 33 percent of project cost; can begin payments 5 years after substantial completion; must complete payments 35 years from substantial completion</p>	<p>Total project cost must exceed \$50 million; project must be included in a State Transportation Improvement Plan and must also be funded in whole or in part from user charges or other non-federal dedicated funding sources</p>	<p>Projects are selected based on eight statutory criteria, including: impact on the environment, significance to the national transportation system, extent of economic benefits, leveraging of private capital, promotion of innovative technologies</p>
<p>Railroad Rehabilitation and Improvement Financing (“RRIF”)¹¹</p>	<p>Current/Potential Changes from H.R. 7</p>	<p>Direct loans can fund up to 100% of a railroad project with repayment periods of up to 35 years and interest rates equal to the cost of borrowing to the federal government; a portion of the funds are reserved specifically for freight rail development</p>	<p>Funding can be used to acquire, improve, or rehabilitate intermodal or rail equipment of facilities, including track, bridges, yards, buildings and shops</p>	<p>Priority is given to projects that: (1) enhance public safety; (2) enhance the environment; (3) promote economic development; (4) enable domestic companies to be more competitive in international markets; (5) enhance rail service to rural areas; (6) enhance capacity of the national rail system; (7) materially alleviate rail capacity</p>

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				problems
FAA Airport Improvement Program ("AIP") ¹²	Current	Offers direct grants to finance 75 to 95 percent of the cost of any approved airport capital improvement project that enhances airport safety, capacity, security and/or environmental concerns	Airport must be part of the National Plan of Integrated Airport Systems; the airport must be (1) publicly owned or (2) privately owned but designated as an FAA reliever or having scheduled service of at least 2,500 annual enplanements	Grants come from discretionary funds that are apportioned according to a nationalized prioritization formula
Transportation Investment Generating Economic Recovery ("TIGER") ¹³	Originally created as a component of ARRA, TIGER grant funding has continued under continuing budget resolutions	Non-formula-driven discretionary grant program	Specifically targets multi-modal freight improvements	Selected projects have been multi-modal, multi-jurisdictional and difficult to fund through other programs; projects must promise to achieve "critical national objectives" in infrastructure development
U.S. Econ. Dev. Admin ("EDA") Grant, Public Works & Development Facilities ¹⁴	Current	50/50 matching grant with no direct repayment of federal portion	Targeted toward access projects with definable economic development benefits Note: It can be difficult to quantify the economic development benefits of transportation projects in a way to satisfy the requirements of EDA grant applications.	Must compete with other projects for available federal appropriations based on expected economic development impact

Exhibit 3: MAP-21 versus H.R. 7

	MAP-21	H.R. 7
Term	Authorizes \$85.3 billion over FY12-FY13	Authorizes \$205 billion over FY12-FY16
Major Program Changes	Restructures federal law to create five "core" programs, including: CMAQ, Highway Safety Improvement, National Highway Performance Program (consolidates several existing programs), Transportation Mobility Program (to replace Surface Transportation Program), National Freight Network Program (new)	Retains National Highway System Program, Surface Transportation Program, and Highway Safety Improvement Program
	Eliminates Equity Bonus Program that ensures states receive apportionments roughly equal to the federal motor fuel taxes paid within the state	Changes Equity Bonus Program—Each state's annual grants will equal at least 94% of motor fuel taxes paid within the state.
	Eliminates Transportation Enhancement Program	Eliminates Transportation Enhancement Program
	Eliminates all earmarks	Eliminates all earmarks
Funding Structure	Eliminates formula factors; each state's amount, for each core program, is based on its share of total apportionments and allocations during FY05-FY09	Creates Alternative Transportation Account with \$40 billion in general fund dollars to help fund CMAQ, Ferry Boats and Terminals, Puerto Rico Highways, and Territorial Highway Program; Eliminates Mass Transit Account within the Highway Trust Fund
	Requires metro planning organizations to set targets for highway condition and performance	Allows expanded tolling on interstate system to add lane capacity
	Creates new dedicated funding program for freight with \$2 billion in annual allocations; Secretary of Transportation to designate roadways based primarily on freight volume and in consultation with shippers and carriers as Primary Freight Network (PFN); through formula allocation, states would be guided to spend their freight program apportionment on the PFN first before spending funds on other freight-related infrastructure; states could also spend up to a maximum of 10% of their freight program apportionment for public or private	Doesn't create separate, new freight funding source, but reduces funding programs elsewhere to increase freight-related funding (eliminates funding or terminates federal mandates related to non-motorized travel, historic preservation, transportation museums, highway beautification and university research; also ends transfer of federal gas taxes to mass transit trust fund; greater reliance on tolling to finance highway construction)

freight rail or maritime projects, but funds can be used for these projects only if the Secretary of Transportation determines that the project would make significant improvement to freight flow, that the public benefit exceeds the federal cost, and that the project provides better return on investment than a project on the PFN

Requires U.S. Department of Transportation, with stakeholders, to prepare and update a national freight transport plan to articulate the nation's priorities regarding freight improvements

Expands TIFIA program to leverage private investment; authorizes \$1 billion annually for TIFIA, up from \$122 million, if average subsidy cost is 10%, DOT would have capacity to make \$10 billion in new loans each year

Expedites environmental review process

Requires U.S. Department of Transportation, with stakeholders, to prepare and update a national freight transport plan to articulate the nation's priorities regarding freight improvements

Expands TIFIA program to leverage private investment; authorizes \$1 billion annually for TIFIA, up from \$122 million, if average subsidy cost is 10%, DOT would have capacity to make \$10 billion in new loans each year

Expedites environmental review process

Authorizes \$750 million annually to capitalize state infrastructure banks (SIBs)

Facilitates easier access to RRIF

Evaluating the Options

Based upon the above review of the many federal surface transportation funding programs and their requirements, it appears that few funding programs can be applied as specifically directed inland port sources. However, several programs can be applied and have been applied as individual components within a well-planned and comprehensive inland port project.

If, for example, a proposed inland port project is to include freight capacity improvements at an airport included in the National Plan of Integrated Airport Systems (“NPIAS”), then that component of the project might be eligible for a grant from the Federal Aviation Administration’s Airport Improvement Program (“AIP”). If rehabilitation of a neighboring rail yard is included within the inland port project’s master plan, then no portion of the AIP grant money can be applied toward that purpose. However, subsidized loans and/or loan guarantees might be available for the rail yard component through the Rail Rehabilitation and Improvement Financing (“RRIF”) program.

If the proposed project lies within a non-attainment area for air quality, then Congestion Mitigation and Air Quality Improvement (“CMAQ”) grants might be applied toward the entire project.

Surface Transportation Program (“STP”) grants can be applied broadly towards an inland port project, but these funds are apportioned to the states according to a statutory formula and are intended to fund all Title 23-eligible transportation projects. Hence, the use of STP grants for an inland port project will leave fewer federal resources available for roadway improvements and other needed projects.

Subsidized financing and loan guarantees available through TIFIA can be applied broadly to an inland port project and offer flexible repayment terms. Moreover, through both prospective, new, multi-year transportation bills, Congress has

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signaled a willingness to significantly expand the funding for this program. However, TIFIA loans can only be used to finance up to 33 percent of a project's costs.

It is particularly important for Nevada policymakers to note that Congress created a highly flexible new funding mechanism for multi-modal developments, including inland ports, when the Transportation Investment Generating Economic Recovery ("TIGER") program was included as a provision of the American Recovery and Reinvestment Act of 2009. TIGER offered discretionary grants specifically for multi-modal, multi-jurisdictional projects that were difficult to finance through previously existing programs. Although TIGER initially offered only a one-time appropriation of \$1.5 billion for multi-modal projects, Congress has continued the TIGER program with subsequent allocations of \$600 million for FY 2010 and \$527 million for the FY 2011 round of TIGER.¹⁵ The Consolidated and Further Continuing Appropriations Act of 2012 further continued TIGER with a \$500 million allocation for FY 2012.¹⁶ Single-project grants as large as \$105 million have been awarded through TIGER to construct the Crescent Corridor Intermodal Freight Rail Project through Tennessee and Alabama.¹⁷

Each federal funding program carries a unique set of conditions and limitations, as well as a unique application process and evaluation criteria. If Nevada policymakers are to pursue federal participation in a proposed inland port project within the state, they should carefully evaluate these limitations in order to come up with a total funding package that is appropriate to the project's purpose and its perceived benefits to public and private parties.

Leveraging State Transportation Dollars

Beyond traditional financing instruments, such as revenue bonds, a wide variety of innovative financing techniques is available to states for infrastructure development. Some available options, which have been authorized by Congress,

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allow states to further leverage their transportation investment dollars with federal and private resources.

Most states, for instance, have created state-infrastructure banks. These are revolving funds designed to offer flexible financing and loan support options at subsidized interest rates for transportation-related infrastructure projects, including inland ports. SIBs are eligible to be capitalized using up to 10 percent of a state's annual federal-aid transportation apportionment. In other words, SIBs can be capitalized using federal matching grants on an 80/20 federal/non-federal basis. Capital from SIBs can then support any transportation project that is eligible for federal support under Titles 23 or 49, including inland ports. Should H.R. 7 become law, Congress would allocate an additional \$750 million annually to capitalize SIBs.

A critical advantage of SIB financing is that discretion is given to state policymakers to determine which projects are among the highest priority to receive financing within their state. State authorizing legislation is required to create an SIB.¹⁸

Policymakers in some states have considered the SIB finance mechanism so advantageous that they have created accounts within their SIBs to be capitalized entirely with state dollars. Florida, Georgia, Kansas and Ohio all operate state-capitalized SIB accounts. The advantage of state-capitalized SIBs is that they allow policymakers to leverage state transportation dollars with private capital free of all federal requirements or limitations.¹⁹

Under current federal law, Section 129 of Title 23 allows the federal government to participate in state loans that are supported by a pledged revenue stream, such as user fees or special tax levies. Federal dollars can be used to match state dollars on an 80/20 federal/non-federal basis to provide subsidized loans or loan guarantees for transportation projects. In this sense, a Section 129 loan operates very similar to loans made through a federally capitalized SIB account.²⁰ However, if either MAP-21 or H.R. 7 becomes law, Section 129 loans are subject to substantial change

because Congress has signaled a preference for SIBs to serve as the financing vehicle.²¹

Another federally approved infrastructure financing instrument for states is the Grant Anticipation Revenue Vehicle (“GARVEE”). GARVEEs were authorized by the National Highway System Designation Act of 1995 to allow states or SIBs to bond against future expected federal-aid apportionments in order to provide up-front capital for any Title 23-eligible transportation project. In the context of an inland port, issuance of a GARVEE would provide up-front capital that would be repaid, over a period of years, with a dedicated portion of the State of Nevada’s annual STP apportionment.

Existing State- and Local-Government Finance Mechanisms

The Nevada Department of Transportation (“NDOT”) offers financing, through a number of programs, which might be applicable to an inland port project. First, the *Project Submittal Program* offers discretionary grants to projects that may not meet the requirements for federal funding or that have difficulty securing federal funding. Projects are considered on an *ad hoc* basis and are subject to budget limitations.

Second, the *Highway Safety Improvement Program* can consider safety improvement projects at grade crossings—a likely component of any proposed inland port project—for inclusion into the State’s *Annual Work Program*.

Third, the *Local Public Agency Program* allows local government entities that administer transportation projects with federal funding to complete such work on a reimbursement basis, with NDOT oversight. If an inland port project is administered by a local government agency, such as a port/airport or transit authority, and receives federal funding, this program could be used to provide important administrative flexibility.

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Finally, direct contributions to an inland port project from port/airport authorities, regional transportation commissions and state or regional economic development agencies has been common practice for many inland port projects, as shown by the case studies reviewed by RCG. As mentioned earlier, for instance, Southern California's Alameda Corridor project received \$394 million in port authority contributions, which will eventually be repaid by fees assessed on users at the Port of Long Beach.

State- and local-government financing options are summarized in the State/Local Financing Matrix in the table on the next page.

Exhibit 4: State/Local Funding Matrix

Finance Tool	Status	Funding Available <i>Tools for leveraging state transportation dollars</i>	Restrictions	Evaluation Criteria
State Infrastructure Banks (SIBs)	Current; Requires state authorizing legislation; Program would be expanded significantly under H.R. 7	Under current law, states can establish SIBs to provide revolving credit for infrastructure projects at subsidized interest rates and flexible payment terms, loan guarantees, and lines of credit; states can dedicate up to 10 percent of their Federal-Aid apportionments to capitalize the SIB, but states must match these contributions on an 80/20 federal/non-federal basis	All projects eligible for federal funding under Title 23 and Title 49 can receive funding through an SIB capitalized, in part, with federal funds; other projects related to surface transportation may be eligible with approval for SIB assistance with approval from the U.S. Secretary of Transportation	Projects are selected according to priorities or other criteria set state policymakers
State-Capitalized SIBs	Current; Requires state authorizing legislation	Florida, Georgia, Kansas and Ohio have established SIB accounts that are capitalized exclusively with state contributions to increase the leveraging of public transportation dollars ²²	State-capitalized SIB accounts are not subject to federal restrictions because they contain no federal dollars	Projects are selected according to priorities or other criteria set state policymakers
Section 129 loans	Current; Would likely change with passage of multi-year transportation bill	Similar to an SIB, Section 129 of Title 23 allows federal participation in a state loan, on an 80/20 basis, to support projects with a dedicated revenue stream; Interest rates and payment terms are flexible; Section 129 loans are also revolving loans—when they are repaid, the funds must be reallocated to a Title 23-eligible project or credit enhancement activity	Eligible project costs are limited to engineering, right-of-way acquisition, and construction; Repayment must begin within five years from substantial completion and final repayment must be made within 30 years the date federal funds were authorized for the loan	States can select any public or private entity as a recipient of a Section 129 loan, but the project must be eligible to receive federal funding under the guidelines of a Title 23 federal surface transportation program
Grant Anticipation Revenue Vehicle (GARVEE)	Current	Permits states to bond against expected future federal-aid highway apportionments and service the bond using these apportionments, generating up front capital for major highway projects that the State may be unable to construct in the near-term using traditional methods	Eligible costs include interest, retirement of principle, and costs of bond issue; GARVEEs can only be used to finance projects that receive federal funding and their issue does not guarantee a project will receive federal funding; GARVEEs are not guaranteed by the federal	States can elect to issue GARVEEs in order to finance projects approved for federal funding through an existing Title 23 federal program; GARVEEs are just a financial instrument, the project must be approved

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		government		according to the respective program's evaluation criteria
	<i>Possible state- and local-government funding sources</i>			
NDOT: Project Submittal Program	Temporarily discontinued due to low balance in state highway fund	State funding for projects that do not meet the requirements of federal programs		Considered on an ad-hoc basis and constrained by available funding
NDOT: Highway Safety Improvement Program	Current	Projects that qualify for federal funding are included in NDOT's Annual Work Program	Could be used to improve highway safety at grade crossings	Evaluated based on effectiveness in reducing fatalities and injuries
NDOT: Local Public Agency Program	Current	Allows local public agencies to complete federally-funded projects on a reimbursement basis, with NDOT oversight	Agency must have secured funding for the project, project must be partially funded with federal aid, and the local agency must be responsible for design, advertising, awarding and administering construction of the project	
State/Regional Economic Development Agencies	Current	Can authorize property, sales and modified business tax abatements; can provide direct financial support through the Governor's Office of Economic Development (GOED)	Must meet performance criteria to be outlined by GOED	Projects to be evaluated based on their impact on economic development
Port/Airport Authority and/or Transportation Agency Funding	Airport authorities and regional transportation commissions exist in Clark and Washoe Counties	Agencies have bonding authority to provide up-front capital which can be recouped, over time, through user fees or special taxes	Bond issues must be approved by the relevant debt oversight commission and special tax levies may require popular approval in the county where they are assessed	

Project Planning and Institutional Coordination

Project Sponsorship

Among the most important decisions to be made by Nevada policymakers concerning a potential inland port project is how the project will be conceived, managed and executed, from birth to completion. Based on our review of 37 major case studies (as shown in Appendix A), for an inland port project to be successful, it is critical that a specific organization serve as the lead sponsor and assume responsibility for orchestrating the project's planning phases, facilitating stakeholder input and organizing finances.

As with financing, there is no single paradigm regarding which organization should serve as the lead sponsor of a project. A review of the case studies shows that port or airport authorities, state departments of transportation, regional transportation agencies or metropolitan planning organizations, regional governments, as well as private companies have served as the primary sponsoring organization for all or parts of an inland port project. However, in most of the cases that involve port or airport facility improvements, the respective port or airport authority has served as the lead sponsor of the project. In the few exceptions where the port or airport authority was not the lead sponsor for these projects, the port or airport authority has been significantly involved—including taking primary responsibility for overseeing particular components of the project that directly involve modifications to port or airport facilities.

Indeed, an important lesson for policymakers is that, as with project finance, there is a high degree of flexibility with regard to project planning and execution. While projects are most easily executed when a single organization acts as lead sponsor, responsibility for particular components of a project can be delegated to cooperating organizations, based on their expert knowledge and expertise.

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In the majority of cases, the lead sponsor of inland port projects has been a public agency. However, in some cases where private interests have been the driving force for an inland port project, private firms have served as the lead sponsor and overseen projects from birth to completion. The Chicago Area Consolidation Hub and the Alliance Texas Logistics Park, which were planned and executed by the United Parcel Service and Hillwood, a Perot Company, respectively, fall into this category. Typically, though, port and airport authorities, regional planning agencies or state transportation departments serve as the lead sponsor.

Relatively small projects, such as those involving only access or grade crossing improvements, for example, can easily be planned and executed by a single agency—as is commonly the case. More complicated projects, such a construction of a new, major hub complex, require the involvement of many actors and organizations to be successful.

Project Planning: Best Practices²³

There are many ways to approach the planning phase of an inland port project. Many unsuccessful projects, however, failed to reach completion precisely because the planning phase failed to produce a proposal that addressed the needs of all stakeholders and financiers. Therefore, it will be instrumental for Nevada policymakers to note the planning processes that successful projects have in common. There appear to be three major elements that can be identified, which are critical for successful planning. Each of these three elements is discussed below in turn.

Successful project planning should not only seek to address the concerns of direct stakeholders, it should also evaluate how the project fits within the long-term needs of the surrounding community. Such a planning process should incorporate the following elements:

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Establish a public-private task force or coordinating committee. While initial discussions concerning the potential for an inland port project typically emerge through the statewide transportation planning processes hosted by state transportation departments or regional transportation agencies, once a project has been selected for serious consideration, a dedicated forum should be established to allow public and private stakeholders to discuss their concerns and proposed solutions. One public organization should assume clear responsibility for facilitating these discussions, but all concerned parties—public and private—should be invited to participate. The facilitator should maintain flexibility in trying to accommodate the concerns and suggestions of all participants in order to arrive at consensus on a practical and realistic proposal.

The public-private task force will also serve as an appropriate venue for securing financial commitments from interested private parties. In particular, if individual private firms make suggestions that would expand the project's scope by adding additional capacity or making additional access improvements, for example, these firms should be asked to finance any additional impact studies associated with those additional components and to contribute financially to the overall project.

Compartmentalize the project. For large projects, including the construction of a new, major multi-modal hub complex, divisible components should be identified so that policymakers can create a series of improvements that can be accomplished in phases, with each phase constituting a new, value-added function on its own. For example, high-capacity rail corridor and grade crossing improvements might constitute an initial phase. A rail-to-truck cargo hub and container storage facility might constitute a second phase. An all-cargo airport or high-capacity corridor or shuttle service connecting the rail-to-truck facility with an existing cargo airport might constitute a third phase, etc.

Each phase within the overall project should be reconciled with region's master plan for transportation development to ensure that it fits within the community's

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transportation needs. Then, each construction phase should be prioritized so that policymakers can add value with each individual phase, but also retain flexibility in the face of potential future changes in infrastructure demand or funding availability. The overall project should have the outward appearance of a series of individual projects that, together, combine to create a long-term development strategy wider in scope than any single phase.

Compartmentalization is also important because it will offer different public and private organizations the flexibility to take the planning lead for individual phases of the overall project, or even various components within a single phase. For example, a private railroad owner might oversee the planning and construction of a rail capacity improvement, a regional transportation agency might oversee the planning of highway access and grade crossing improvements, and an airport authority might oversee any related airport expansion.

Identify each phase's contribution to related public policy objectives. Every component of a proposed inland port project should be carefully evaluated to consider which public policy goals it might achieve in addition to improving the region's logistical infrastructure. For each component, policymakers should answer the following questions:

1. Will it alleviate traffic congestion on commuter roadways?
2. Will it improve air quality?
3. Will it contribute to economic development?
4. Will it lower shipping costs and benefit the region's consumers?
5. Will it achieve some other public policy goal?

If policymakers can positively address some or all of these questions—thereby broadening the objectives of each component to meet multiple public needs—it will be more likely for the project to gain wide public acceptance and earn a higher priority from many funding sources.

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Following these suggestions, policymakers should be able to anticipate and minimize any potential hurdles or opposition that might otherwise arise for an inland port project. It will be essential that policymakers remain flexible with the project design and execution so as to foster widespread support for the project from among the primary stakeholders.

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Appendix: Case Studies Examined by RCG

RCG examined 37 case studies in total. These case studies were selected to represent a wide range of multi-modal projects in order to expand the sample size of selected cases. While multi-modal facilities can serve a variety of purposes, most confront similar administration obstacles and can make use of the same finance tools. This appendix categorizes each case study by type, using the following definitions:

1. Satellite marine terminal: Remote, multi-modal harbor processing facility
2. Multi-modal logistics park: Logistics hubs featuring air-truck-rail or sea-truck-rail connections
3. Rail intermodal park: Rail-to-truck distribution outlets
4. Logistics airport: The core of the development is an all-cargo airport
5. Intermodal freight corridor: Rail, roadway, or grade crossing improvements designed to facilitate multi-modal freight movement between facilities or strategic locations
6. Freight shuttle service: Barge or rail transfer service between freight-handling facilities
7. Trade processing center: Intermodal storage and transfer hub that also hosts customs inspections and other regulatory functions related to international trade

Project	Location	Type
1. Virginia Inland Port	Warren County, VA	Satellite marine terminal
2. Metroport	Auckland, New Zealand	Satellite marine terminal
3. Alliance Texas Logistics Park	Fort Worth, TX	Multi-modal logistics park
4. Port of Huntsville	Huntsville, AL	Multi-modal logistics park
5. Rickenbacker/Columbus Inland Ports	Columbus, OH	Multi-modal logistics park
6. Logport	Duisburg, Germany	Multi-modal logistics park
7. Chicago Area Consolidation Hub	Chicago, IL	Rail intermodal park
8. Joliet Arsenal	Joliet, IL	Rail intermodal park
9. Global III	Rochelle, IL	Rail intermodal park
10. Port of Quincy	Quincy, WA	Rail intermodal park
11. California Integrated Logistics Center	Shafter, CA	Rail intermodal park
12. Neomodul	Stark County, OH	Rail intermodal park
13. Detroit Intermodal Freight Terminal	Detroit, MI	Rail intermodal park
14. Port of Montana	Butte, MT	Rail intermodal park
15. Europort	Vatry, France	Logistics airport
16. San Bernardino International	San Bernardino, CA	Logistics airport
17. Port of San Antonio	San Antonio, TX	Logistics airport
18. Southern California Logistics Airport	Adelanto, CA	Logistics airport
19. Global TransPark	Kinston, NC	Logistics airport
20. The Alameda Corridor	Ports of Los Angeles/Long Beach, CA	Intermodal freight corridor
21. Port of Tacoma Overpass Project/FAST Corridor	Port of Tacoma, WA	Intermodal freight corridor
22. Cooper River Bridge	Charleston, SC	Intermodal freight corridor
23. Tchoupitoulas Corridor	New Orleans, LA	Intermodal freight corridor
24. Joe Fulton International Trade Corridor	Port of Corpus Christi, TX	Intermodal freight corridor

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25. Lombard Overpass/Columbia Slough Railroad Bridge	Port of Portland, OR	Intermodal freight corridor
26. Kedzie Avenue Access Road	Chicago, IL	Intermodal freight corridor
27. Portway	Port of New York/New Jersey	Intermodal freight corridor
28. Heartland Corridor	Port of VA to Columbus, OH	Intermodal freight corridor
29. Skypass Bridge Project	Port of Palm Beach, FL	Intermodal freight corridor
30. Red Hook Container Barge/Port Inland Distribution Network	Port of New York/New Jersey	Intermodal freight corridor; Freight shuttle service
31. Albany Barge Service	Albany, NY	Freight shuttle service
32. Worcester-Kearny Rail Shuttle	South Kearny, NJ to Worcester, MA	Freight shuttle service
33. Luis Munoz Marin International Airport Cargo Area Access Road	San Juan, Puerto Rico	Freight access airport improvement project
34. Richards-Gebaur International Trade Center	Kansas City, MO	Trade processing center
35. Port of Battle Creek	Battle Creek, MI	Trade processing center
36. Kingman International Trade Processing Center	Kingman, AZ	Trade processing center
37. Greater Yuma Port Authority	Yuma, AZ	Trade processing center

Endnotes

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- ¹ Jean-Paul Rodrigue et al., “Functions and Actors of Inland Ports: European and North American Dynamics,” Department of Global Studies & Geography, Hofstra University and French National Institute for Transport and Safety Research, 2010, Available: http://people.hofstra.edu/jean-paul_rodrigue/downloads/Actors_Functions_Inland_Ports.pdf.
- ² *Op cit.*, note 2, Appendix C, pp. C1-C9.
- ³ *Ibid*, pp. C11-C16.
- ⁴ *Ibid*, pp. C25-C27.
- ⁵ *Op cit.*, note 2, p. 54
- ⁶ Legislative text can be viewed at the website for the Library of Congress, <http://thomas.loc.gov/>.
- ⁷ Marc Levinson, “Surface Transportation Reauthorization in the 112th Congress: Summary and Sources,” Congressional Research Service, Library of Congress, March 7, 2012, Available: <http://www.fas.org/sgp/crs/misc/R42350.pdf>.
- ⁸ *Ibid*.
- ⁹ U.S. Code, Title 23, Chapter 1, § 120, <http://www.gpo.gov/fdsys/pkg/USCODE-2011-title23/pdf/USCODE-2011-title23-chap1-sec120.pdf>; See also, U.S. Department of Transportation, Federal Highway Administration, “Financing Federal-aid Highways,” Publication No. FHWA-PL-07-017, March 2008, Appendix H: Federal Share and Period of Availability for Selected Programs, <http://www.fhwa.dot.gov/reports/financingfederalaid/apph.htm#1b>.
- ¹⁰ U.S. Department of Transportation, Federal Highway Administration, Transportation Infrastructure Finance and Innovation Act (TIFIA) website: <http://www.fhwa.dot.gov/ipd/tifia/defined/>.
- ¹¹ U.S. Department of Transportation, Federal Railroad Administration, Railroad Rehabilitation & Improvement Financing Program website: <http://www.fra.dot.gov/rpd/freight/1770.shtml>.
- ¹² U.S. Department of Transportation, Federal Aviation Administration, Airport Improvement Program website: <http://www.faa.gov/airports/aip/>.
- ¹³ U.S. Department of Transportation, Transportation Investment Generating Economic Recovery (TIGER) website: <http://www.dot.gov/tiger/>.
- ¹⁴ U.S. Department of Commerce, Economic Development Administration, Grant, Public Works and Development Facilities website: http://www07.grants.gov/aboutgrants/about_grants_gov.jsp.
- ¹⁵ *Op cit.*, note 15.
- ¹⁶ Notice of funding availability published in Federal Register, Vol. 77, No. 20, January 31, 2012, pp. 4863-4880.
- ¹⁷ S. Department of Transportation, “Transportation Investment Generating Economic Recovery Grants: Summary of 2009 Capital Projects,” February 17, 2010, Available: <http://www.dot.gov/tiger/docs/TIGER%20Capital%20Highlights.pdf>.
- ¹⁸ A primer on state infrastructure banks (SIBs) is available from the American Association of State Highway and Transportation Officials (AASHTO), at: http://www.transportation-finance.org/funding_financing/financing/credit_assistance/state_infrastructure_banks.aspx.
- ¹⁹ *Ibid*.
- ²⁰ A primer on Section 129 loans is available from the American Association of State Highway and Transportation Officials (AASHTO), at: http://www.transportation-finance.org/funding_financing/financing/credit_assistance/section_129_loans.aspx.
- ²¹ *Op cit.*, note 10.
- ²² *Op cit.*, note 20.
- ²³ *Op cit.*, note 2, pp. 60-84.

CONCLUSIONS & RECOMMENDATIONS

Conclusions

The conclusions in this study directly address the technical proposal issued by the State of Nevada to “determine the viability of developing Inland Ports in Nevada to enhance trade and job creation.” These conclusions were formulated using the primary research technique of confidentially and informally interviewing individuals within the public and private sectors. Specifically, the technical proposal called for the consultant to: “a) Conduct an outreach to public sector (cities, counties, federal and state agencies) as well as the private sector import/export, logistics and transportation companies to verify the feasibility of inland ports in Nevada; and b) Catalogue the common attributes desired for inland ports from the discussions that favor inland port development in Nevada.” Secondary research of other works conducted on the subject of inland ports, logistics centers, and transportation systems was also utilized to develop a base of information that became the foundation upon which the interviews were conducted. Finally, the interviews were conducted to ascertain the viability of inland ports in Nevada with particular attention paid to: 1) Demand, 2) Capacity, 3) Leadership, 4) Site Selection and 5) Administration.

Demand

The basis for any business venture is to address a need or demand in the marketplace. Without this demand no reasonable amount of government support or financial incentive will lead to long-term sustainable business activity, which is essential to attract private sector capital investment and employment creation.

Preliminary research conducted for this study found that the Ports of Los Angeles, Long Beach and Oakland ranked #1, #2 and #7 in North America, respectively, in

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terms of port volumes in 2010. Further, our research revealed that, while the top 11 ports in the world grew by an average of 14.7 percent between 2009 and 2010, the Ports of Los Angeles and Long Beach combined grew by only 8.1 percent, with Port of Oakland growing by 13.6%. When compared to Seattle, which grew by 36.8 percent during the same time period, it seems reasonable to speculate that the relatively low growth for the California ports was due to congestion; indicating a potential for inland services in both Northern and Southern Nevada.

Other studies conducted on the same subject matter have identified a need for ports to remove some of their activities from high-value, but congested property contained within the ports boundaries to inland areas some distance from the ports, where lower priced land with Interstate and rail corridor access could be utilized - another positive indicator for inland ports in Nevada.

However, the interviews conducted for this study, coupled with additional secondary research concluded; an inland port in Nevada was not viable in the near- and intermediate-terms. Several factors contribute to this conclusion:

- The deep water ports in California are currently not functioning at full capacity. While the Port of Oakland has never had a congestion issue in the past, and by all accounts has enough capacity to grow well into the future, the Ports of Long Beach and Los Angeles have, or are taking steps to alleviate port congestion in the future.
- One of the most visible projects that has taken place in the past decade is the construction of the Alameda Corridor. The Alameda Corridor, constructed at a cost of \$2.4 billion, is a 20-mile long rail cargo expressway, which allows the UP and BNSF Railroads to load unit trains of containers directly from the piers and travel unobstructed to each railroad mainline near downtown Los Angeles. The Corridor currently handles over

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10,000 TEUs per day from the two ports and has a positive impact on their capacity. And, the Port of Long Beach alone is undertaking a \$4 billion multi-year expansion, primarily focused on alleviating congestion. Additionally, the Federal Government has recently contributed to reducing port congestion by allowing inbound ships to file its entries and clear U.S. Customs one day before the vessel arrives in port.

- Another piece of the ports' congestion solution already in place, to the detriment of Southern Nevada, is the development of the San Bernardino Logistics Airport, converted from the former Norton Air Force Base. There is also the adjacent 2,000 acre logistics center being developed by Alliance California, the same group that has developed Alliance Texas, the premier example of inland ports in the U.S. The combination of a large amount of land, surrounded by four Interstate highways, with access to air, and within a few miles of a BNSF multi-modal facility on the mainline (between the ports and Southern Nevada) developed by a group with the necessary funding and expertise, will help alleviate port congestion into the foreseeable future.
- Still another component to lessening congestion at California ports are the alternatives to those ports that are under development. Closest to home is the Port of Lazaro Cardenas, located near Manzanillo, Mexico. This port has been steadily growing and when its current expansion is completed, will be able to handle over 4 million TEUs, annually. Furthermore, this port is connected directly by rail to Houston and Kansas City making it a viable competitor to California ports.
- Perhaps the single largest project that will compete with the California ports is the expansion of the Panama Canal. "An estimated \$5.25 billion is now being spent to deepen and widen the Panama Canal's Pacific and

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Atlantic entrance channels, to raise the water level of Gatun Lake – through which all ships must pass – and to install new locks on both sides of the waterway. It's due to open in April 2015.”¹ Currently, the Panama Canal can accommodate ships with a capacity of approximately 4,500 TEUs, after expansion that capacity will rise to over 12,000 TEUs. While opinions differ on the impact of the expansion, the Panama Canal can have a huge impact on the Southern California ports. “Worst case, there could be a 25 percent diversion from Los Angeles-Long Beach”, said Paul Bingham, the group’s chief economist. “That’s upwards of 3 million cargo containers.”²

Capacity

More important for Nevada than the West Coast ports not reaching full capacity for some time is the state’s transportation infrastructure. And because transportation costs are the single largest expense for inland ports/logistics centers, accounting for over 50 percent of total costs, this factor becomes the most vital component in the site location analysis. While Nevada has a transportation network that has allowed the logistics cluster to take root in the state, both primary and secondary research indicates it is not at a level to support an inland port, or large scale logistics center at this time.

Rail, the most cost effective method by which to move large amounts of goods inland from the seaports, does not view either Northern or Southern Nevada competitive from a transportation cost perspective. Nevada’s two large population centers, Las Vegas and Reno, are too close to the Ports of Los Angeles/Long Beach and Oakland, respectively. For rail to be cost-effective it must move at least 500-600 miles or the cost of loading and unloading trains makes trucks the more effective mode of transportation. Furthermore, large logistics centers prefer to

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locate where several Class 1 rail mainlines converge, offering North/South and East/West access; preferably operated by multiple railroad companies.

Paradoxically, Las Vegas and Reno are both too far from the California ports to make trucking containers from those areas feasible as well. The costs of drayage (moving containers from the port to the final destination) are made more costly to inland centers in Nevada than the established logistics areas in California. For example, drayage from the Port of Oakland to Reno is \$1,000 per container, while the cost to Stockton is only \$400. From the Southern California ports to Las Vegas, the drayage is \$800, but the cost to the Inland Empire is only \$175 to \$275.

Another trucking restriction that works against Nevada is the federally mandated allowed driving time limitations imposed on truckers in any given period. It is impossible for a truck to come to Nevada, unload and be back at a coastal facility within the time allotted. It becomes obvious that trucking as a mode of transportation to Nevada locations from California ports does not provide the economic benefits that make such movements viable, at least not in terms of being a driver for a large-scale distribution centers/logistics facilities in the state.

The Interstate highway system in Nevada is yet another hurdle to overcome. As with railroad networks, inland ports and large logistics centers locate where there is a convergence of Interstate highways that lead to all four points of the compass. Both interstates (I-80 and I-15) in Nevada traverse in an East/West direction only. This is less of an issue in the Reno area, because I-5, the Interstate spine that provides access to every West Coast market from Seattle to San Diego, is just over 100 miles from Reno via I-80. This I-80/I-5 system allows one-day package delivery and second-day truck service to a population of over 50 million. This is the primary reason Reno has a developing, but dispersed logistics cluster with no strong central focus today.

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Southern Nevada's situation is even less convenient for truck transport. While I-15 provides a direct link to the Southern California markets with overnight service, it is nearing capacity, and at times surpassing it, resulting in stop and go traffic at key chokepoints. And, Southern California is the only market that can be easily reached. Trucks must travel long distances from the Las Vegas area via the interstate system before they can travel to the South-central and Southeast markets in the country. That said, Federal legislation is currently moving forward on the planning for the I-11 connection between Las Vegas and I-40 and I-10, but it will be some time before such a link is funded/realized.

Exhibit 1 is a map of Class 1 rail lines throughout North America.³ Exhibit 2 depicts the Interstate Highway System.⁴ Exhibit 3 provides the location of established and emerging inland ports in the U.S. Taken together, these three exhibits are very illustrative as to the where, and why inland ports locate, and support RCG's primary and secondary research of the need for strong north/south/east/west rail and interstate connections as discussed throughout this report.

Consequently, according to the research conducted for this study, an inland port is not a viable option for the State of Nevada in the near- and intermediate-terms.

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Exhibit 1: USA Rail Network



Source: Maps of the World, 2010.

However, this does not mean that the Logistics and Operations Cluster should be abandoned as an economic development strategy for Nevada. There are many attributes in the state that can prove to be strong magnets to sub-groups within the larger cluster. These will be discussed in the section pertaining to our recommendations.

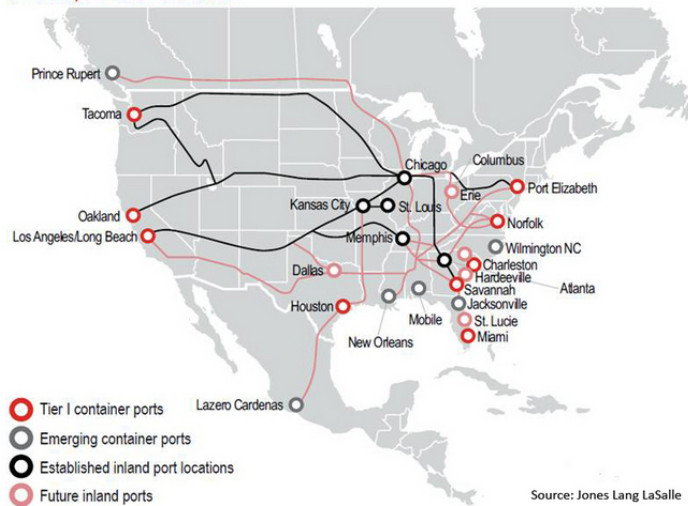
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Exhibit 2: U.S. Interstate Highway System



Source: US Department of Transportation

Inland port connections



Recommendations

The Economics

A key component of a successful logistics center is achieving a balance between inbound and outbound shipments. Too much of an imbalance results in higher transportation costs, because whatever mode being utilized, rail, truck or air, is only producing cash flow in one direction. Movement in only one direction results in a dead-heading effect, which does not make optimal use of the rolling stock, nor the very capital intensive infrastructure on which it rolls or flies.

This concept was referenced time and time again throughout the interview process. Many of those interviewed commented that Nevada and especially the Las Vegas area, produces very little, and therefore has very little outbound traffic. This is a limiting factor in attracting a logistics center that would create even more inbound traffic and, thereby, adding to the imbalance. By example, a trucking company representative interviewed by RCG stated that truckload shipping costs from Los Angeles to Las Vegas are \$875, while the same truckload costs are \$450 from Las Vegas back to Los Angeles. This in itself provides an opportunity to attract light manufacturing to the region. Many of those interviewed thought this should be a major focus of the State of Nevada's economic development program, and it also provides insight into the interrelationships between logistics and manufacturing.

To truly understand the potential of these two clusters, logistics and manufacturing, they must be studied and viewed as a continuum in the supply chain from raw material to market. The State should consider revamping its seven key clusters by combining manufacturing and logistics into a single supply chain strategy. While this concept broadens the field and multiplies the variables that must be addressed, it will allow GOED to focus on subsectors that would play to Nevada's strengths. For example, "value added" manufacturing is an important subgroup for further investigation.

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Often, the final steps in the manufacturing process of higher order products adds the majority of the value to those products, customarily through some sort of assembly process or other type of technologically advanced manipulation or modification. This is the premise on which the FTZ concept is based. Mass produced lower value goods could be transported in bulk to Nevada locations, and assembled into higher value goods. The inbound freight is shipped as a high-density, low value, less fragile input that is combined and modified into a much higher value more fragile output that perhaps is shipped in higher volume containers requiring extensive handling protocols.

As noted previously in this report, a telling example of this type of operation in Southern Nevada today is Bally's Technologies. Bally's is at the center of a worldwide inbound and outbound logistics chain, but because of the value and uniqueness of its products, it is insulated from the transportation costs of a Southern Nevada location. Even though the company is at the center of this logistics chain, and incurs significant transportation costs, it does not even begin to approach the average 50 percent share of total costs experienced by the logistics industry as a whole. For Bally's taxes and regulatory costs, as well as labor and real estate costs, play a much larger role in their total costs; items that favor Nevada as a location.

E-commerce and fulfillment centers are another subgroup in the supply chain concept that plays to Nevada's competitive advantages. Once again, the goal is to identify groups or individual companies for which transportation costs are not the single largest factor in the location-decision process. According to the interview respondents, e-commerce is the fastest growing segment of the retail sector with a very strong growth potential. And the most important factors to this segment of retail are the strong telecommunications network and a low tax environment that Nevada offers. While this is a good match for Nevada, the State of Nevada must

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enhance its communications with the existing companies engaged in this activity, because to a person, comments made during the interview process lamented the forthcoming state tax on e-commerce.

Fulfillment centers may provide Nevada with one of the best opportunities to attract capital investment and employment opportunities that are directly associated with e-commerce. Because these centers' outbound products are "zip code oriented", relatively small parcels, they too are less sensitive to transportation costs. The speed of delivery is more important than the cost of that delivery. In this segment of the logistics industry, the package delivery systems and services in place will play a paramount role in the location-decision process. These are systems that are well-developed in Nevada. Furthermore, fulfillment centers require larger amounts of space, and often more sophisticated retrieval systems, which necessitate large capital investments (Amazon's recent installation of the Kiva robotics system in its Fernley operation is a good case in point.). Fulfillment centers also require more labor than typical warehouse operations, because of the personalized nature of the distribution process.

This additional labor can be viewed as a "value-added" component in supply chain management and once again lowers the reliance on transportation costs and moves the needle more in Nevada's favor. The value-added concept can be seen at the sorting operation for Nutri-System. While no modification to the product itself takes place, the technology and human elements used to "assemble" the orders is very much a value-added component.

In many instances, the mode of transportation utilized by these centers also play to another of Nevada's strengths; international airports. Distribution of high-value, low-weight and volume products are excellent commodities to ship by air and are less sensitive to transportation costs. Examples of successful companies using this business model in Nevada are Apple in the North, which distribute consumer

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electronics and Medco in the South, which supplies prescription medicines throughout the country. Additionally, both McCarran and Reno/Tahoe International Airports have significant capacity to expand their cargo operations.

It would also be worth the effort to investigate the potential to segment further into subgroups within the fulfillment center segment of the supply chain. Perhaps outbound operations in the North could focus on trucking as its primary mode, because of its central location in the 11-state western region and strong highway connections to the entire West Coast market. In the South, the focus could be on air, because of the superior number of direct flights to most major markets in the United States, and the ever expanding direct flights to Asia, Europe and Latin America.

Future Steps

Moving forward with the development of programs and projects to promote the logistics, or supply chain cluster in Nevada will take a focus of state and local resources. Too often economic development efforts are conducted toward quick solutions: somehow or some way a silver bullet must be found to cure all our economic ills. Unfortunately, economic development is usually a process of progressive steps, one building upon the previous steps.

Provided below is a progression of tasks upon which Nevada's Logistics and Operations Cluster can grow and prosper. The tasks will be presented as near, intermediate- and long-term. For the purposes of this section of the report: near term will normally refer to a time period of within one year; intermediate-term will represent 1-3 years; and long-term will mean 4-7 years. For all tasks to be completed within these recommended timeframes, they must be initiated relatively quickly. For example, collecting detailed information on the supply chain cluster may take a year or more to collect, but must begin in 2012. Other projects, such as

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detailed infrastructure plans, must be outlined in the near-term, but may take several years, depending on the funding and resources available to conduct them.

Near-Term Task Forces

This first step is essential to the success in the further development of Nevada's Logistics and Operations Cluster. It must be recognized that any subsequent tasks and eventual strategies must be driven from the bottom-up. Elected officials and economic development professionals don't always completely understand the dynamics and intricacies of supply chain management as well as the logistics cluster operators. With the advent and rapid growth of e-commerce, this cluster is literally an industry in motion. The people who work and whose livelihood depends on supply chain management need to be sought out and their experience and expertise advanced to the greatest extent possible. To provide for a synergy of ideas and shared information, a task force should be established within the next several months and be initially comprised of companies directly involved in manufacturing and distribution of product. This would include manufacturers, manufacturer distribution centers, and 3PL companies.

After several meetings to organize goals and objects, transportation companies and education organizations, including workforce development (e.g. DETR), should be involved (Note: While the transportation sector should be represented by a sample of companies from the various modes, such as trucking and freight forwarders, it cannot be stressed enough the importance of bringing in every single package delivery company, FedEx, UPS, DHL, USPS, etc.). The rewards of working with these companies could be tremendous, because for all practical purposes they are site selection consultants to the supply chain industry and at some point may want to be organized into a separate, distinct group for target marketing purposes.

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Finally, the real estate community, brokers and developers and local governments should be added to the task force.

It is also highly recommended that a Northern Nevada and a Southern Nevada “logistics/supply chain task force” be initiated. The economic spheres of influence, transportation systems, workforce composition, and even culture identity are of enough difference that one size does not fit all in Nevada’s supply chain industry. And though this organization might put some additional strain on the GOED’s budget, it is also paramount, for the purpose of continuity, that the same member of the agency’s staff coordinate with and potentially attend all meetings, north and south. All future efforts the State undertakes in promoting the supply chain cluster will emanate from the ground work laid by these task forces.

Fortunately, throughout the interview process respondents commented on their willingness to actively participate as outlined herein. It is also important that the task forces are fully empowered and RCG further recommends that the invitation to participate on the task forces come from the Governor or the Director of GOED, and that the Governor is in attendance at the kick-off meetings in both the north and south. Appendix at the end of the Introduction provides the names and contact information for the persons interviewed or that RCG attempted to interview numerous times. This should be utilized as a preliminary invitation contact list for the task forces.

The most fundamental objective in the establishment of these task forces is to instill motivation within each individual member. Getting key individuals to attend the first meeting, especially if, as recommended above, it is convened by the Governor, will be easy. Much more difficult, will be to keep these individuals engaged until the successful completion of the process. The management of these task forces by GEOD staff, or other designated party, must include outputs that not only allow the individual members a personal satisfaction of accomplishment, but

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also will directly benefit their business. The following list of topics, which the task forces can begin tackling are:

- Data Collection, Analysis and Dissemination
- Transportation Requirements
- Target Markets
- Regulatory Requirements
- Channels of Communication

All of these five topics are discussed in more detail within this section of the Report that follows.

Potential Site Identification

It is also important to note that during the next year potential logistics center sites of 1,000 acres or more around the state should be identified and prioritized, and kept initially confidential. Because of the type of geographic features prevalent in Nevada, it should be possible to identify a variety of potential sites of 1,000 acres or more. Consequently, a process must be developed to prioritize the sites.

The first step would be to utilize criteria and attributes identified by the task forces comprised of supply chain and transportation companies, (excluding real estate and local government officials from this phase of the process might be prudent). Next would come a cost/benefit analysis of the six or seven top ranked sites in the North and South utilizing the criteria developed in the first step. This would not be a full feasibility study, (this would come at a later stage), but rather a review as to the sites' attributes (e.g., entitlements, master plan, preliminary offsite infrastructure, cost, potential private investment and employment creation). The prioritization of these sites using an "internal rate of return" type procedure would then be employed in the long-term to conduct a full blown feasibility study.

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A preliminary list of potential sites or areas to begin this investigation in the North is: the Tahoe Reno Industrial Center; Crossroads Commerce Center, the Clean Energy Rail Center, the Hawthorne Ammunition and Weapons Depot, the Reno/Stead Airport as well as the Ely and Battle Mountain areas, In the South this list includes: the Northeast Las Vegas Valley in which the Motor Speedway is situated; Apex and the surrounding properties, the area between Sloan and Jean, Ivanpah and Laughlin There are likely other sites/areas but these areas are suggested, based on one or more of the following criteria:

- An existing plan or strategy to attract supply chain companies
- Within 25 miles of interstate access
- Within 25 miles of main line railroad access
- Located within a Metropolitan Statistical Area

Intermediate-Term – Data Collection, Analysis and Dissemination

The collection of pertinent information and its dissemination is paramount to the development of any economic development strategy for Nevada. As we have noted, this was cited several times during the interview process as an activity in which the State of Nevada must improve. Here again, the task forces would help identify the types and complexity of the information required to ensure an accurate picture of Nevada's potential as a location for supply chain companies is presented and that this picture will result in positive outcomes for the state.

Transportation Requirements

Based on the task forces' work, a priority list of transportation infrastructure and facilities would be established, along with the information required to develop an accurate picture of what the market demand might be for these facilities. For example, the railroad, as a member of the task forces, would be engaged to

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specifically delineate the exact information required to determine whether unit trains from the deep water ports in California to locations in Nevada, or if the development of a state-of-the art multi-modal facilities are feasible.

In the North, air cargo companies should be engaged to determine the information required that would allow Reno/Tahoe International to become the pre-eminent inbound cargo airport in the Western United States. Even more critical to the future growth of the Reno/Carson City Metropolitan area is the initiation of an interstate bypass around Downtown Reno. The vast majority of future growth resulting in increased commercial truck traffic, whether taking place at the airport, Sparks, Stead area, TRIC, Fernley, Carson City, or beyond, will connect to I-80 east of the Downtown area. Even with current improvements underway on I-80 through the Downtown area this will become a major bottleneck, to the detriment of economic growth in Northern Nevada. Perhaps the most feasible route would be to the North of the City.

In Southern Nevada, the formation of a working coalition should be considered to include the States of Montana, Idaho, Utah and Arizona that would ensure timely funding for the proposed I-11 Interstate. This is important, not just because this roadway would link the only two metropolitan areas over 1 million populations not currently connected by an interstate, but because that segment is the missing piece of the Canamex Trade Corridor, and all communities and economies along the I-15, I-11, and I-17 corridors would greatly benefit from its completion.

Target Markets

From information garnered through the task forces and data collection process a detailed target supply chain market strategy should emerge. This strategy would examine the various subgroups within the supply chain, identify those that have the greatest growth potential, and that match the attributes found in the North and

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South for each group. For example, the proposal formulated earlier in this section that the North concentrate on outbound movements by truck and the South by air could be further explored in this phase. Specific companies would then be identified for whom a customized presentation would then be developed.

With assistance from the task forces, a marketing campaign would also be formulated in this intermediate-term phase. Specific marketing activities and media outreach programs, which focus on the target markets that are identified and prioritized would be initiated at this step. Of course, a more simplified marketing program could take place early on in the process, based on the numerous comments during the interviews, that a program highlighting the existing companies in the state could prove most effective in attracting like companies.

Regulatory Requirements

Nevada should never lose sight of the many outsiders' perception that the state has one of the nation's best business environments. And though this necessitates an ongoing vigilance on the part of the State and local governments, as well as the private sector, the target market strategy recommended herein should help fine-tune laws, regulations and policies in Nevada in a manner that will provide the optimal results in attracting supply chain companies. For this process to work, open communication between the public and private sectors is most important. The flow of correct information must flow freely between the two groups.

Many of the interview respondents have heard a rumor that the State of Nevada plans to impose a Nevada tax on e-commerce, and believe this type of tax should be imposed at the Federal level. Even though this is not the case, this rumor could greatly impact the State's ability to attract e-commerce-related companies and may even prompt existing companies to leave the state. While there may be no intention on the part of the State to impose such a tax, somehow this mis-information, and

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others like it, is circulating in the private sector, creating concern and potentially damaging public/private relations. Perhaps a periodical electronic newsletter by GOED could provide the vehicle to convey important messages.

Funding Requirements

Before meaningful progress can be made in the Logistics and Operations Cluster, or any of the State's economic development efforts for that matter, a reliable and stable source of funding must be identified for these activities. Economic diversification does not take place in the short or even intermediate terms, and even when stated goals and objectives are realized, the dynamics of the process requires an ongoing vigilance regarding future opportunities and threats. Without a dedicated funding source, much like the Leisure and Hospitality Industry's room tax, any advances in economic development and diversification will be less effective and sustainable over the long-term. To ensure a competitive footing with our neighbors in Arizona and Utah, the State of Nevada should identify how other programs throughout the country fund their economic development activities, and adopt the most applicable here in Nevada.

Long-Term

At this phase in the supply chain strategy continuum, full feasibility studies should be conducted on the prioritized list of sites identified in the near- and intermediate-phases of the process. A detailed analysis of a selected number of sites must take place, which will allow the State, and any other interested parties, to determine where the resources available to Nevada should flow in order to have the greatest economic benefit. The most viable cost estimates for infrastructure required to make the sites' development-ready, marketing cost and absorption rate analyses would also be conducted at this time. Returns to the Nevada's economy in the form

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of user fees, tax revenues, employment and wage data, as well as other economic/business benefit analyses would also be conducted here.

A very critical need identified during the interview process with both public and private sectors representatives, was infrastructure development. No matter how good the business environment, or the proximity to major markets, economic growth cannot take place effectively without an efficient and modern infrastructure. Infrastructure is a critical incentive and planning tool. It allows government to determine where and when development takes place in order to provide needed services in an efficient manner. And it can create or destroy the value of any particular parcel of land.

Nevada must develop a comprehensive understanding of what its future infrastructure requirements will be, based on strategies developed within the key industry clusters. This infrastructure must be seen by the State of Nevada as an investment in the future, and the State in partnership with local governments must develop the right mechanisms that will allow it to prioritize infrastructure development. This is especially important for entities with limited resources.

To identify the type and location of infrastructure in which to make a public investment that will act as an incentive for job creation, a detailed State-wide infrastructure plan should be developed. Within this plan, infrastructure projects would be prioritized, and linked to leveraging private investment and job creation. This could be accomplished through cost/benefit analysis. This, in turn, would help to focus State and local government funding and private grants, as well. This type of return on investment approach may help to minimize political influence.

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Final Thoughts

Nevada has a long but not insurmountable road ahead to sustained economic development. It has already taken the preliminary steps in identifying the key industry clusters to pursue. The supply chain cluster has already taken root on its own due to the market factors outlined in this report. With a concerted effort and a focus of public and private sector resources, it can become one of the cylinders in Nevada's economic development engine. As was noted in interviewee comments both North and the South: Nevada has experience in developing a business environment to attract and grow designated clusters. A total and focused commitment by both the public and private sectors has resulted in Nevada becoming the leisure and hospitality capital of the world. We can use the same techniques to attain equally successful results in developing a vibrant Logistics and Operations Cluster.

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Endnotes

¹ Ronald D. White, "L.A./Long Beach Ports Struggle to Meet Panama Canal Challenge," LA Times, December 28, 2011.

² "USA Rail Map", mapsofworld.com.

³ US Interstate Highway System, "Eisenhower's Creation of the U.S. Interstate Highway Systems," Quora.com.

⁴ "Inland Port Connections," Jones Land LaSalle.