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The heartland fast-freight rail system.

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Today, the Class I railroads are operating at peak levels of capacity and efficiency, given their current infrastructure and technology. However, the major railroad systems are individual networks that are not well integrated and lack multi-directional movements. The individual railroad systems are suffering from the original nineteenth-and early twentieth-century designs. Since then, rail networks have evolved by mergers and acquisitions, rather than market-led needs and purposeful design. Consequently, rail chokepoints plague the railroads from gaining greater efficiencies and capacity that is needed today. Additionally, these chokepoints contain intermodal facilities, which, due to the inherent rail congestion, limit efficient connectivity with other modes of transportation.

THE PROBLEM STATEMENT

It has been said that over one-third of U.S. rail traffic passes through the Chicago metro area (www.createprogram.org and Chicago Region Environmental and Transportation Efficiency [CREATE] Program Final Feasibility Plan 2005). Chicago, known as the world's Rail Capital, has become the world's largest rail bottleneck and the epitome of congestion. Total rail volumes in the U.S. are projected to increase by 69 percent by 2035 (American Association of State Highway and Transportation Officials AASHTO 2007b) and total freight volumes, transported via all modes, are expected to increase by 70 percent (U.S. Department of Transportation 2002). Unless change occurs we will continue to have rail congestion in Chicago, albeit a worsening condition. As a result, daily rail traffic is significantly delayed. These consistent delays and inherent congestion negatively impact the national economy, national security, public safety, freight security, and the environment.

FACTS BEARING ON THE ISSUE

There are seven relevant facts that need to be identified and addressed. First, six Class I railroads operate daily in Chicago and all have switching, intermodal, and/or refueling sites in this area. Second, most of the rail freight entering the Chicago metro area is categorized as "pass through" and not having an origin or destination in Chicago. Third, rail freight loses an average of two days in transit time by passing through Chicago. Fourth, Chicago, as a rail mega-hub, and thus inherently the rail congestion capital, poses a security risk. Blockage could impede the use by the military and key industries such as energy (i.e., coal, oil) and food (i.e., grain). These include a national security risk due to potential terrorist activity and sabotage, a local security risk to theft and damage while trains are parked (ingress) on rail lines waiting to enter yards in Chicago and passing through (egress) the Chicago metro area, a national economic risk due to disruption in rail service, and a safety and environmental risk due to potential catastrophic problems (i.e., derailment, hazmat spill) or natural disasters. Fifth, other than Chicago, there is no single common geographical point in which all major railroads intersect or meet. However, at many of the Chicago locations there are no rail-to-rail connections. The passing of rail bulk freight cars and rail freight is normally routed on rail, albeit slowly, to avoid transloading. However, the transfer of intermodal containers (COFC) and piggyback (TOFC) between railroads is not seamless. Many trailers and containers move via truck, across town, to connect among the railroads. Sixth, in September 2006, the Chicago Region Environmental and Transportation Efficiency (CREATE) Program was partially funded by the federal government, the State of Illinois, several major railroads, and the City of Chicago. Over three years, \$330 million was awarded to improve and/or build infrastructure, within the greater Chicago area, to enhance rail traffic mobility and alleviate congestion. However, an additional \$1.2 billion is needed to complete the project. The project is expected to take more than ten years (www.createprogram.org). Seventh, there is limited potential to increasing rail capacity through Chicago. The improvements planned in the CREATE program will improve rail infrastructure and thus mitigate congestion. But by 2025 the rail car volume in Chicago is expected to increase by 78 percent (www.createprogram.org). Regardless of the infrastructure improvements, Chicago will continue to be a rail bottleneck.

ASSUMPTIONS

To further the conversation on this matter some plausible and reasonable assumptions are necessary. First, a national plan is best suited to lead the effort to remedy the rail congestion issue, as cooperation among the railroads could be perceived as a breach to antitrust laws. Second, the major railroads operate autonomously, but cooperate to varying degrees among themselves, predicated upon direct geographical competition versus relying on each other to complete freight movements via interline agreements. Third, building an alternate west-east rail corridor adjacent or near an existing transportation corridor will minimize the impact to the environment, public health, and communities. Fourth, a project of this magnitude will be costly and will likely require a joint funding effort of the public and private sector.

DISCUSSION

There are five Class I railroads in the U.S. and two in Canada. Two railroads, the UPRR (Union Pacific) and BNSF (Burlington Northern Santa Fe), operate primarily west of the Mississippi River, generally on several west-east axes. The KCSI (Kansas City Southern) operates in the central plains states and Mexico, primarily on north-south lines. Two railroads, the CSXT and NS (Norfolk Southern), operate in the eastern half of the U.S. The two Canadian railroads operate some lines in the upper Midwest. As such, no one railroad can exclusively transport freight across the contiguous forty-eight states. These Class I railroads exchange cars and freight to affect delivery. Common transfer locations include Kansas City, St. Louis, Chicago, and points in Ohio.

Railroads traditionally operate independently and are very competitive. Those railroads that operate primarily in the West rely on those that operate in the East for haulage and trackage cooperation (interline agreements) to complete the transportation service on freight movements. However, the farther the railroads can transport freight on their own freight lines/ system, the more revenue they generate. As a result, customers, who depend on transcontinental rail service, experience delays caused by transferring between railroads. So Chicago remains as the major rail hub, albeit a highly congested one. Furthermore, at the projected rate of rail volume growth, Chicago's rail congestion and its associated problems will worsen. Generally, freight flows efficiently across the major rail systems. But freight movement becomes congested and encounters significant delays at chokepoints. Infrastructure investment to relieve and/or bypass chokepoints can increase transportation productivity throughout the entire system (Transportation Research Board 2003 and 2005). A well engineered and efficient freight rail system designed to reduce congestion, improve operational efficiency, enhance mobility, improve safety, maximize security, and minimize effects to the environment, public health, and communities is the win-win solution we need.

The creation of a fast-freight rail system would greatly alleviate rail congestion in the greater Chicago area and significantly enhance freight mobility throughout the U.S. and the Midwest. Through rail traffic, bypassing Chicago, would reduce transit time by two to three days. This would be a high-value project for the private logistics sector and to the public (consumers). Note that the last time rail freight passed from coast to coast unimpeded was upon the completion of the Transcontinental Railroad (actually a seven-year project that began in 1862, from California to Iowa, covering approximately 1,800 miles), which linked the East and West Coasts with one rail system.

To receive political and financial support from the public and private sectors, the concept of a fast-freight rail system, in which Chicago is bypassed, must pass a rigorous test for validation. First, it must improve freight mobility and decrease overall transit time. The projected efficiencies must be worth the cost. Second, it must enhance the economy by getting freight/ products to market in a timely manner. Third, it must reduce congestion in the greater Chicago area. Fourth, it must reduce risk to our national economy and mitigate risk to terrorism. Fifth, it must improve security by minimizing exposure to freight theft and damage by keeping trains moving. Sixth, it must improve safety. A modern rail system must not pose risk to the public. Seventh, the impact to communities and the environment must be negligible. Finally, it should provide economic development in certain geographic locations. It may be a daunting task to positively affect all these criteria to a significant level, but that should be the goal.

A Heartland Fast-Freight Rail System, consisting of multiple rail lines, could be constructed adjacent, or in proximity to, the Interstate 70 corridor (see Figure 1). Recently the Indiana Department of Transportation, in conjunction with the departments of transportation for the states of Missouri, Illinois, and Ohio, submitted a proposal to the Federal Highway Administration (FHWA) for the CFP (Corridors of the Future Program) entitled The I-70 Dedicated Truck Lanes Corridor. The FHWA chose this project as one of the finalists--further refinement in the selection process is expected during the summer of 2007. The Heartland Fast-Freight Rail System could be designed to operate in proximity and in harmony with this project. Presently, there are some existing rail lines, many of them underutilized, adjacent to this corridor. Portions of these existing rail lines could be incorporated. Doing so would eliminate some of the burden of purchasing land and acquiring rights-of-way. The HFFRS could be a common connector, by designing connectivity for all seven Class I railroads, for the timely and efficient movement of rail freight through and to the Midwest. Further, this project could serve as the initial component to a transcontinental railroad system, as recommended by AASHTO.

The Heartland Fast-Freight Rail System, initially a double track system, could be a joint venture between two of the Class I railroads, one of the major western railroads, and one of the major eastern railroads. Although the Class I railroads have been increasing their cooperation with each other, this option may not be feasible due to the high infrastructure costs that would be solely borne by such a partnership. An alternative to this scenario could be a public-private partnership (P3) project in which two Class I railroads in conjunction with the government, to include several states, major cities, and the federal government, form a partnership to fund the infrastructure. The justification to expend public funds could be manifested in the direct impact of reduced transit times, improved safety, enhanced security, and reduced environmental and community impact. Indirect benefits would be economic development, in the form of employment and distribution at certain key points on the rail system. Also of note, several adjacent states, in addition to those states in which the fast-freight rail system would be geographically located, should invest as they also stand to reap significant public benefits.

Another scenario, albeit somewhat radical, could be a publicly sanctioned project. The time is overdue to question whether our 200-year approach of privately owned track has outlived its usefulness. A new quasi-government agency could be created to build and operate a fast-freight rail system. Similarly, private ownership of such a rail line, much akin to the new movement of leasing interstate toll roads, should be considered. This would allow all of the major railroads an equal opportunity to use the facility. To seek competitive advantages it would be likely that most, if not all, of the major railroads, as well as some smaller railroads, would use the Heartland Fast-Freight Rail System. Both are plausible options, but if we build it, will the railroads come? Railroads would gain the use of a modern rail system without added fixed costs. However, they would be charged a rail toll, similar to those paid by commercial trucks operating on toll roads. Additionally, they may lose control over route scheduling. But, like commercial trucking, the railroads would retain the option of using their existing system, funneled through Chicago, or pay a toll and use a modern, efficient rail system.

[FIGURE 1 OMITTED]

In all of the possible options, on this 800-mile rail system, the design could incorporate accessibility by all major railroads. Also, a midpoint intermodal facility could be built to allow the railroads to exchange freight, allow drayage to points in the Midwest, provide fuel, etc. Many would argue that we cannot afford a project of this magnitude. However, the logical position is that we cannot afford not to do it. A project of this scope would take ten to twelve years to construct and cost \$6 to \$10 billion upon approval to complete. So, while we need it now, it will be a benefit for the next generation.

Some recent examples of major railroad cooperation cause one to hope that such a project, over time, could become a reality. The Alameda Corridor, which just surpassed five years of operation, and has been a major success, involved the UPRR, the BNSF, and the ports of Long Beach and Los Angeles. The Meridian Speedway, a joint venture between the Kansas City Southern (KCS) Railroad and the Norfolk Southern Railroad, has been

productive during its first year to enhance rail movements among the Southwest, Southeast, and Mexico. The Schneider National intermodal service, in collaboration with CSX Intermodal and KCS Railroad, is an innovative solution to reduce transit time and congestion by avoiding Chicago. The BNSF and CSX railroads agreed to a high-volume rail corridor to provide timely and reliable service among California, Atlanta, Georgia, and the Southeast. Finally, the Norfolk Southern Railroad, in conjunction with the states of Virginia, West Virginia, and Ohio, has developed the Heartland rail corridor from Norfolk, Virginia to Columbus, Ohio. Clearly, the major railroads are concerned about the network congestion and its negative impact on moving containers from the gateway ports to inland destinations.

What is the solution? First, the status quo is not a viable course of action. Clearly a major problem exists. Procrastination will not make the situation go away. Second, the CREATE program will eliminate several notorious crossings, construct twenty-five new grade separations, and six rail-rail flyovers. This will eliminate some congestion and mobility will be enhanced. CREATE will enhance safety and security and positively impact the environment. But it will not resolve overall congestion nor enhance mobility. CREATE projects focus on the bulk cargo rail freight movements and passenger rail, Metra (Northeast Illinois Regional Commuter Railroad Corporation), and to a lesser degree, the intermodal portion, which is the fastest growing rail freight segment. Nationally, intermodal shipment volumes are growing 3.8 percent per year (AASHTO 2007a) and in Chicago the increase is expected to double by 2025 (www.createprogram.org). So, while CREATE helps, it does not solve the problem. No other transportation mode in the U.S. funnels one-third of its total volume into and through one city. Why not? Because it does not make sense. When so much volume is compressed into such a focal point, one can reasonably expect problems, whether directly or indirectly. If a natural disaster were to occur, rail service would be greatly disrupted. This would negatively affect most of the U.S.

Third, a new rail corridor, to streamline west-east rail flows, is highly desired. The Chicago rail hub, one of the largest strategic rail centers in the U.S., possesses enormous strategic importance, and enormous risk. Rail-freight traffic from the Pacific ports to the Midwest and East Coast markets as well as Midwest exports to U.S. and global markets are vital to our national security and national economy. Only a small percentage of the rail freight, which goes to/through Chicago, actually terminates within the Chicago metro area. Therefore, a large percentage of the freight must pass through Chicago because there are few options. Imagine if all the intercontinental truck freight were forced to pass through two or three cities—it would be gridlock. But the rail systems move huge proportions of rail traffic through Chicago. To exacerbate the problem, Chicago is one of the most congested areas for truck freight. It is important that rail intermodal service complement truck freight transportation and have efficient connectivity between the two (Federal Highway Administration 2005a and 2005b). The majority of the connection problems in the Chicago area are physical in nature, not due to a lack of railroad cooperation. Rail yards are situated in locations that were feasible many years ago. As the Chicago area has grown, these locations are isolated. Likewise, much of the intermodal connections require truck movement, which greatly exacerbates metro congestion. To counter this, some of the Class I railroads have developed new intermodal yards, i.e., the UPRR in Rochelle, Illinois and the BNSF in Joliet, Illinois. Another factor is that many of the movements are coordinated by third-party logistics providers on behalf of shippers, railroads, and steamship lines. So, often the railroads are not in control of the routing of freight movements.

By 2035 truck volumes are projected to double and the freight demand for rail will increase by 69 percent (AASHTO 2007a). This will put an enormous burden on an already strained transportation infrastructure. Increasing truck and rail traffic magnifies congestion and manifests significant security, economic, social, safety, and environmental problems. To maintain its current share of projected freight volumes, the railroad industry will need to invest from \$175 up to \$195 billion over the next twenty years. However, if the past is an indicator of the future, the rail industry will be able to meet only about 73 percent of the needed investment (up to \$142 billion). That leaves up to \$53 billion to come from other means, to include the public sector. If this were to come to fruition, then over 450 million tons of freight would stay on the rail, which would save shippers \$162 billion (freight costs, time, etc.), save highway users \$238 billion, and save \$10 billion in highway costs (AASHTO 2007b). We assume our economy will continue to grow. So, the bottom line reality is that the U.S., as a nation, can opt to pay \$6 to \$10 billion proactively, or it can "pay" significantly more in "hidden" or indirect costs (efficiency, congestion, safety, security, environmental, etc.).

RECOMMENDATION

The solution is to design and construct a multiple rail line system, with double-stack container capability, on a west-east axis through the heartland of the U.S., bypassing current major railway hubs, i.e. Chicago. The rail corridor generally should be planned with or near Interstate 70 as it runs nearly 800 miles from Kansas City through St. Louis, Indianapolis, Columbus, ending in northeastern Ohio. This initiative project should start as a multi-state project to include Kansas, Missouri, Illinois, Indiana, and Ohio to create a refined vision and strategy and determine feasibility and risk.

Thereafter, the Class I railroads need to become involved for participation, planning, and commitment. Finally, if the cost-benefit analysis is favorable, the Heartland Fast-Freight Rail System should be considered for a P3 project. Incentives to the railroads should include, at a minimum, the 25 percent tax credit for freight railroad capital investments. Supporting states could also reduce or eliminate associated property taxes. One of the western-based railroads and one of the eastern-based railroads could join a partnership with a host of Midwestern and Eastern states, major cities, and the federal government to jointly fund the infrastructure to build and operate a fast-freight rail system to provide a timely, efficient, safe, secure, and environmentally sound system to enhance our freight mobility needs. This option would allow the railroads to retain operational control and, most importantly, would be market-led, rather than government-operated. This would allow our governments to focus on their strength-setting the conditions for economic development.

If the railroads opt to not pursue the matter, and the public benefits are significant, then the federal and state governments should consider pursuing this matter with a private investment partner. Obviously, this is a major paradigm shift in the way that our rail system has developed throughout our history. This variation would lead to a toll rail system, which would be available to all railroads that opt to use it. The task of determining the business risk would be left to the investor.

CONCLUSION

Transportation congestion, regardless of mode, occurs at bottlenecks or as a result of bottlenecks. As such, infrastructure investment at the right location can be leveraged to provide large public benefit. The bottom line is that we have a mammoth transportation issue and it requires a major solution to resolve. To solve this problem we must think big and bold. The benefits to the public are many and such a project can serve as the catalyst and cornerstone to a new transcontinental rail system, which will allow the U.S. to remain the leader in the global economy.

The time to start the dialogue on this project is now. While some may scoff at this idea, we hope it will serve as a catalyst for serious thought and

debate to render a course of action to solve this major national freight transportation dilemma. Clearly, the solution will be costly because this is a monumental national issue, and the cost to solve the problem increases every day. Further, we need a national freight transportation policy and strategy that calls for an integrated freight transportation system as our end state. The various modes of transportation, to enhance freight mobility, are intrinsically linked. A transcontinental rail system, designed properly, can alleviate much roadway congestion. Our national security and economic security rests with this bold initiative to solve a major portion of our freight woes. The longer we wait, the more difficult the problem becomes to solve.

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