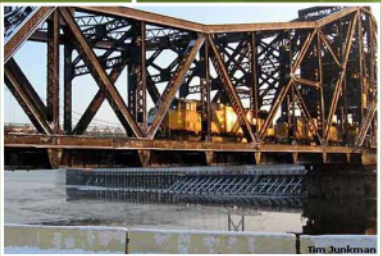




USDOT  
**TIGER**  
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# MISSISSIPPI RIVER BRIDGE AT CLINTON, PHASE 1 **TIGER DISCRETIONARY GRANT APPLICATION**



**Type of Project:** Rail  
**Location:** Clinton, Iowa  
**District:** Iowa 1st  
**Area:** Rural  
**Grant Funds Requested:** \$33,000,000  
**DUNS#** 12-052-7275  
**GAGE# for CCR:** 46ZQ4

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## MISSISSIPPI RIVER BRIDGE AT CLINTON, PHASE 1: PROJECT AT A GLANCE

This application, submitted by the Iowa Department of Transportation (IDOT) on behalf of Union Pacific Railroad (UP) for the United States Department of Transportation's Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants program, requests a total of \$33 million in funds for the completion of Phase 1 of the Mississippi River Bridge at Clinton, Iowa (the project). The project consists of a \$66 million public-private partnership that completes the first phase of a new, high-level, fixed-span railroad bridge over the Mississippi River. The high bridge will replace a 100-year old, low-level bridge that must open and close each time a river barge tow passes, stopping rail traffic five hours of every day on one of the most heavily used transcontinental main lines in the United States. The new high bridge will:

- Increase train capacity across the Mississippi River by nearly 50 percent;
- Eliminate diversions of freight to longer routes that are more costly to shippers and the public;
- Eliminate diversion of freight to trucks that increase public costs for pavement damage, emissions, highway congestion, and highway accidents;
- Eliminate the barge collisions, restrictions on river traffic, and navigation hazards caused by the existing low-level bridge, and reduce fuel use, air emissions, and costs of river transportation;
- Improve the competitiveness of agricultural producers and freight shippers in Iowa and throughout the U.S.; and
- Create two construction job-years for every single job-year of TIGER investment, due to the 50 percent UP match.

This Phase I project initiates construction of the bridge by relocating an existing railroad yard in Clinton that occupies the location where the approaches to the new bridge will be constructed (the \$356 million cost to build the new bridge is Phase II of the project and funding for it is not requested from the TIGER program). The existing railroad yard is adjacent to the \$25 million Liberty Square urban redevelopment project in Clinton that has already received \$8.6 million in initial funding from the Federal Highway Administration and the Iowa Department of Transportation. Relocation of the railroad yard will increase the public's return on investment in the Liberty Square project and the livability of Clinton. The new rail yard will be located in rural land west of Clinton near the town of Low Moor, Iowa.

Upon completion of the bridge, over the 20-year study period, the project will in 2009 dollars generate the following benefits:

- Deliver \$2.8 billion in net public benefits, or nearly \$85 for every TIGER dollar invested;
- Create 8,999 construction job-years for the entire project, and 614 jobs per year for the two-year duration of the Phase 1 project alone;
- Reduce transportation costs to rail and Mississippi River freight shippers throughout the U.S. by nearly \$1.5 billion;
- Reduce long-distance truck traffic in more than 17 states by 12.6 billion miles, by year 2032;
- Reduce public expenditures for highway maintenance, congestion, and emissions in more than 17 states, plus rail and river traffic emissions, by \$675 million;
- Reduce carbon emissions by 22.4 million tons and save 1.9 billion gallons of fuel; and
- Reduce the cost of highway accidents by \$678 million.

UP intends to fund 50 percent of the \$66 million required to complete Phase 1. The \$33 million requested in this application will be used to fund project construction. By February 17, 2012, more than 48% percent of these funds will be spent and the balance by August 2012. The benefits calculated in this application over the 20-year study period are discounted to 2009 dollars, using a 7 percent discount rate and following the U.S. Department of Transportation's (USDOT's) most recent methodology for assessing public benefits. Public benefits are calculated for a completion of the bridge in December 2019.

**Website Link:** <http://www.iowadot.gov/recovery/TIGER/UP-Clinton.html> for additional information.

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Website Link: <http://www.iowadot.gov/recovery/TIGER/UP-Clinton.html> for additional information.

## PROJECT DESCRIPTION

The Union Pacific Railroad (UP) Phase 1 of the Mississippi River Bridge Replacement at Clinton, Iowa (the project) consists of the relocation of an existing rail yard in Clinton, Iowa, to remove it from the footprint of a proposed high-level rail bridge across the Mississippi River that is constructed subsequently. The new bridge will replace a 100-year-old bridge that is a persistent hazard to navigation and causes significant loss of national economic competitiveness due to delays it creates to train traffic and river barge traffic, and the capacity limits it places on both train and barge traffic.

UP's Mississippi River Bridge at Clinton, Iowa, carries transcontinental rail traffic including agricultural products, new autos, manufactured goods, building products, and coal (see Figure 1). The UP rail line across the bridge, known as the Overland Route, is one of only four principal transcontinental rail routes across the U.S. There are no economic or practical rail route alternatives to the bridge that can accept the volume of commerce the bridge carries, which until the recent economic downturn averaged 63 trains per day. Currently, an average of 51

trains per day use the bridge, carrying more than 40 million tons of freight per year. There is also no economic or practical alternative to ceasing river traffic on the Upper Mississippi River, which carried 29 million tons of commodities in 2007, primarily grain.

The existing Mississippi River Bridge at Clinton, built in 1909, is a movable bridge—it opens and closes to enable river traffic to pass an average of nine times every day, and 14 times per day during peak river shipping season (see Figure 2). For a cumulative five hours of every 24, the bridge is open for river traffic, during which time trains must stop. The United States Coast Guard (USCG) has designated the Clinton bridge a hazard to navigation, and recognizes it is a significant impediment to both marine and train traffic. UP plans to replace the existing movable bridge with a high-level bridge under which river traffic can freely pass and over which rail traffic can freely move. The new high-level bridge would be funded by a combination of private and public funds provided under the Truman-Hobbs Act. Based on Truman-Hobbs funding provided in the past for similar projects, Union Pacific anticipates receiving approximately \$50 to \$60 million of Truman-

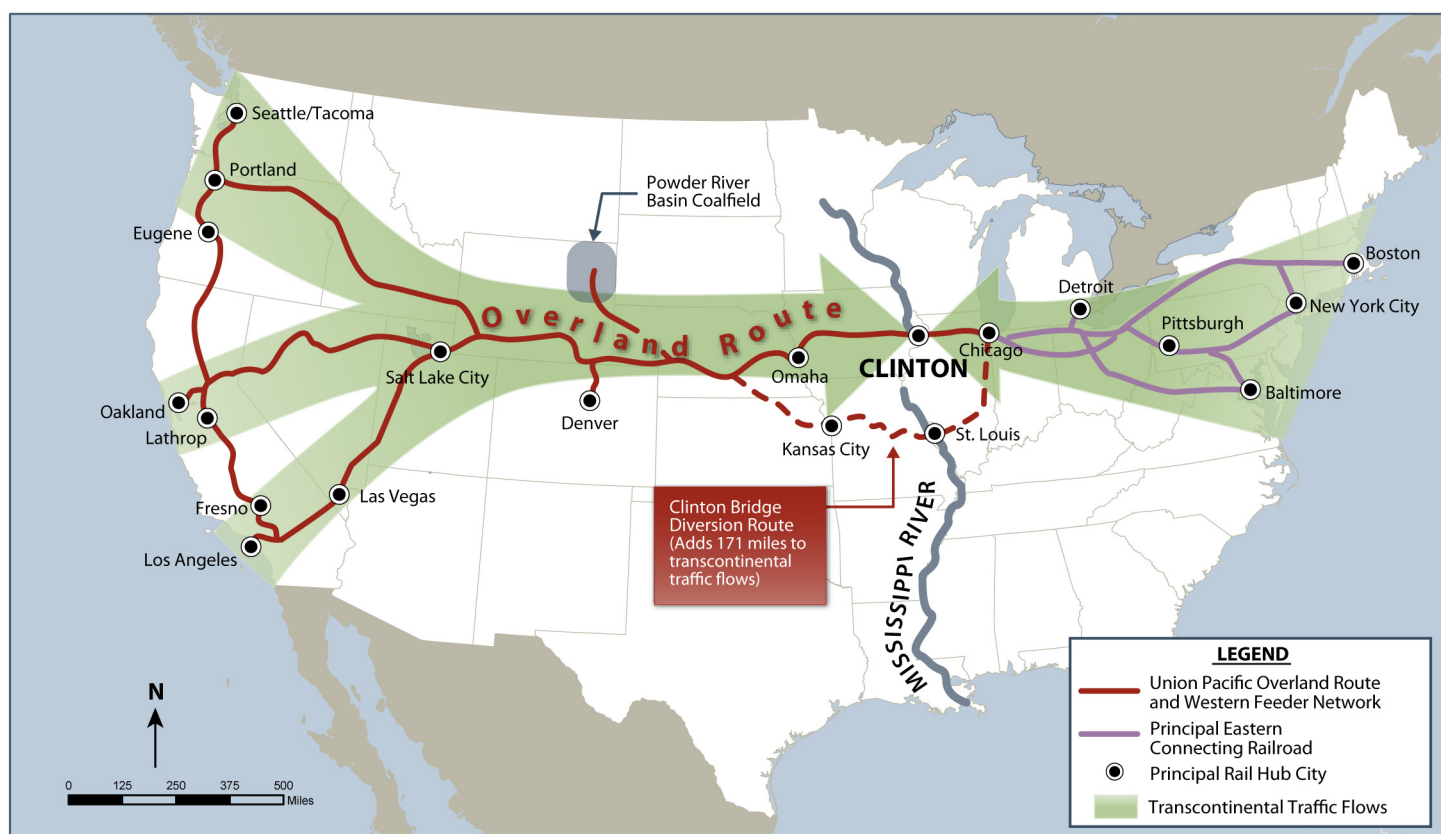


Figure 1: Union Pacific Railroad and national traffic flows through Clinton, Iowa.



Hobbs funding, over a period of time, for the Clinton bridge project. (Truman-Hobbs funding is predicated on allocations made at the discretion of Congress.)

### The Existing Bridge

The existing bridge at Clinton is a double-track steel bridge, 890 feet long, opened to rail traffic in 1909. It consists of a 460-foot long movable bridge of the swing-span type – it swings horizontally around a pier in the middle of the river channel to open and close – and two fixed spans totaling 430 feet in length. When closed, the bridge is aligned with the double-track rail line at each end, and rail traffic can proceed. To open for river traffic, the bridge rotates on its pier 90 degrees to be parallel with the direction of the river, allowing river traffic to proceed on one side of the fixed pier, in a channel 177 feet wide. The steel structure of the bridge clears the normal river level by 18 feet, seven inches, which is insufficient for tugs and barge tows to clear.

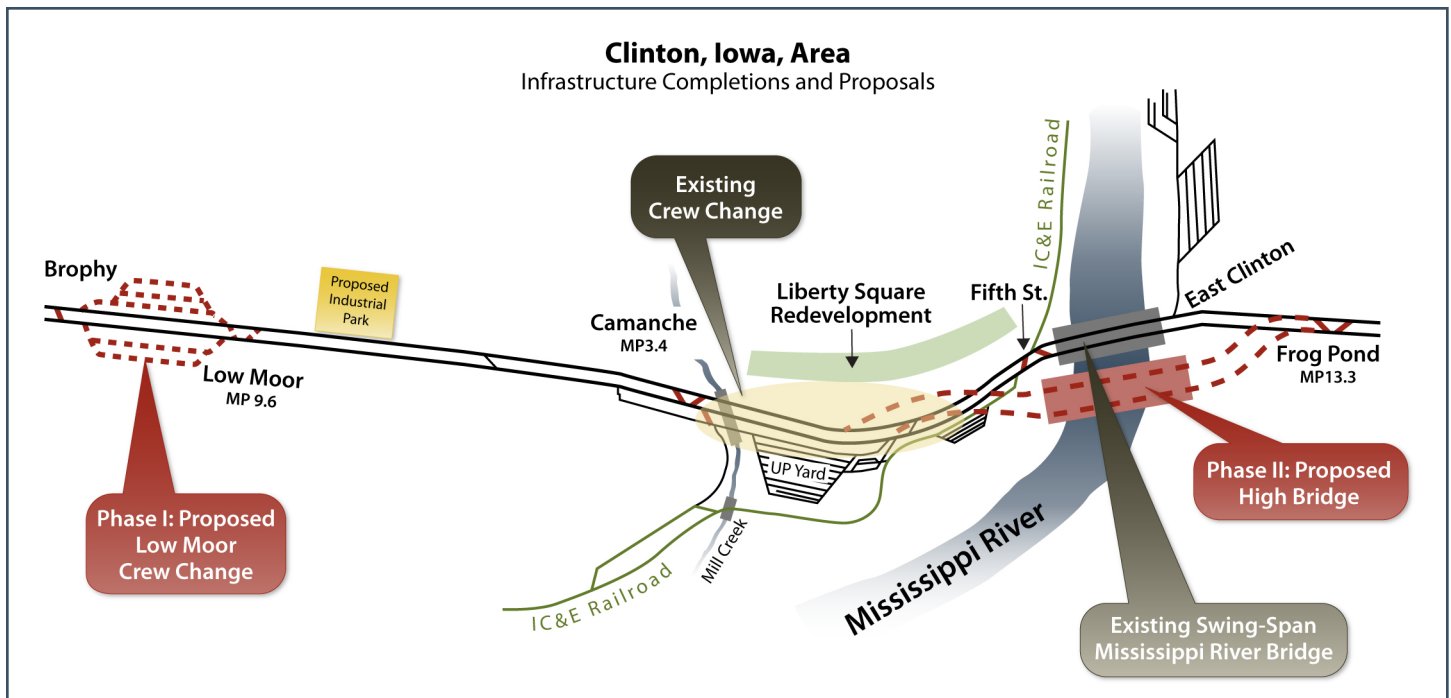
When a barge tow approaches the Clinton Bridge, the tugboat pilot radios the bridge operator. The bridge

operator then notifies the UP train dispatcher to stop approaching trains and opens the bridge. At least 22 minutes is required to open the bridge, wait for the barge tow to pass, then close the bridge. However, in many cases the duration of time is much longer, accounting for the average of five hours in every 24 that the bridge is open and train traffic at a standstill. Additional train delay occurs while trains stop, bunch up, restart and accelerate back to speed, and re-space on the UP main line, much like stop-and-go rush-hour traffic on a freeway. The resulting delays to UP trains impact national rail traffic flows between Chicago and the Pacific Coast. Bridge openings do not occur on any schedule and cannot be planned for in rail schedules.

On this portion of the Mississippi River, a single barge tow consists of up to 15 barges tied together and pushed by a tugboat from the rear, stretching 600 feet long and spanning 105 feet wide. The barge tows pass through the 177 foot navigable channel on one side of the swing-span's fixed center pier. For safety reasons, many of the barge tows hire a "helper boat" to attach to the front end



Figure 2: The existing Mississippi River Bridge at Clinton, showing barge tow and bridge in open position



**Figure 3: Mississippi River Bridge at Clinton, showing proposed infrastructure and improvements and Liberty Square Redevelopment**

of the tow, to reduce the risk of their barges colliding with the bridge and other hazards that are created by the river congestion around the narrow swing-span opening.

Despite this and other precautions taken by tow operators, the swing span, its piers, and other bridge structures are struck repeatedly by river traffic. Collisions cause delay to both railroad and river traffic while repairs are made to the bridge. Because of the frequency of collisions and the potential they create for significant interruptions to river and rail commerce, on May 16, 1996 the USCG issued an Order to Alter and declared the bridge "an unreasonable obstruction to navigation." This designation makes the Clinton bridge eligible for Truman-Hobbs Act funding. To date in 2009, five accidents have occurred, consisting of river traffic striking, damaging, or fouling the bridge. Collisions of river traffic with the bridge that damage the bridge or prevent the bridge from closing cause delays to trains while repairs are made to the bridge. Trains carrying time-sensitive commodities are delayed, and if bridge repairs are lengthy, train traffic is either rerouted or stalled for lengthy periods, disrupting shipper inventory needs, plant operations, and electricity generation.

### Proposed New Bridge

UP and the USCG are engaged in discussions for the design of a proposed new bridge (see Figure 3). Several

alignments and bridge types have been studied. The proposed new bridge consists of a high-level bridge that clears river traffic and does not require a movable span. The estimated cost of the new bridge is \$356 million. A portion of that cost would be eligible for funding under the Truman-Hobbs Act funding, which pays for the portion of a hazard-to-navigation alteration project that removes the hazard to navigation (33 CFR 116.50). Based on Truman-Hobbs funding provided in the past for similar projects, UP anticipates that the Act would provide approximately \$50-60 million in funding, over a period of time. (Truman-Hobbs Act funding is predicated on allocations made at the discretion of Congress.)

### Rail Traffic on the Bridge

Traffic on the Overland Route is representative of U.S. rail traffic, consisting of a mix of grain and agricultural products, coal and other bulk minerals, manufactured and consumer goods, new automobiles and light trucks, and lumber and construction materials. Rail traffic, conservatively estimated to continue to grow at 2.6 percent per year for the next 20 years from the current economic downturn, will exceed the sustainable capacity of the existing bridge, 63 trains per day, by 2019. Once rail traffic exceeds the capacity of the bridge, the traffic must be diverted to alternate, longer rail routes or to truck (for certain types of traffic that cannot accommodate longer transit times).

is to change train crews on through trains. The project is estimated to cost \$66,453,860, of which UP and Iowa DOT are requesting \$33 million in USDOT TIGER Grant funds. Almost all of the trains that pass through Clinton and over the bridge stop in Clinton to change crews, each crew working a district such as Chicago-Clinton, and Clinton-Boone, Iowa. Arriving trains will pull into a track, a rested crew replaces the inbound crew, and the train departs.

Key elements of the project are:

- Five through tracks and site civil work to support construction of five future run-through tracks;
- Site civil development to support construction of a future manifest yard where freight cars that will be distributed to or collected from shippers in the Clinton area are switched, sorted, and stored;
- A new crew-change and office building, parking for employees, site improvements, and utilities.

Upon completion of the new facilities at Low Moor, crew change activities at Clinton will cease, and the existing Clinton Yard will become available for construction of the approaches to the new high-level Mississippi River Bridge. Crew-change activities adjacent to the Liberty Square

The project consists of construction of a new rail yard near Low Moor, Iowa, a rural location three miles west of Clinton (see Figure 4). The primary purpose of the yard





redevelopment in Clinton will cease. Liberty Square is a 220-acre, \$40 million, 20-block redevelopment to reinvent Clinton's urban core. When complete, it will:

- Install landscaping, walking trails, and reconfigured roadways to improve the desirability and functionality of Clinton's urban core;
- Install tourist gateways at each end to introduce tourists to Clinton's attraction;
- Create new integrated uses for residential, commercial, retail, and light-industrial development; and
- Improve the environment through modern storm-water control and retention areas, landscaping, and materials that reduce air emissions and water pollution.

The Low Moor project has independent utility because it consists of a complete project that when complete will be fully functional for its purpose of changing crews. While the public benefits associated with avoidance of train diversion and truck diversion do not occur until the bridge is completed, the local public benefits associated with improvement of livability in Clinton and its Liberty Square project commence upon completion of the project. The Low Moor project is estimated to cost \$66 million, with a completion date of August 2012. Completion of the bridge is contingent upon economic conditions, adequate funding including availability of Truman-Hobbs funding, final engineering, and permitting.

## Project Parties

### *Iowa Department of Transportation*

The Iowa Department of Transportation (Iowa DOT) is the project sponsor. Iowa DOT was created by the Iowa Legislature in 1975. Its principal responsibilities include:

- Manage state-owned roads and bridges;
- License the state's drivers and vehicles;
- Register aircraft and aircraft dealers in Iowa and advocate and deliver services to the air transportation system;
- Advocate and assist in the preservation and development of a safe, efficient, and economically healthy freight railroad transportation system; assist in safety improvements at public highway-rail grade crossings; and advocate development of additional passenger rail services;
- Promote river navigation; and
- Provide financial and other assistance to public transit systems and intercity bus carriers.

## *Union Pacific Railroad*

UP is an operating subsidiary of Union Pacific Corporation, employing 45,000 people. UP operates North America's largest railroad system, covering 23 states in the western two-thirds of the U.S., with 32,000 route miles. The railroad links every major West Coast and Gulf Coast port and provides service to the east through its four major gateways in Chicago, St. Louis, Memphis, and New Orleans. Additionally, UP serves all six major gateways to Mexico, and interchanges traffic with the Canadian rail systems at several major gateways.

UP is one of the largest intermodal carriers in the U.S., carrying 3.4 million trailers and containers in 2007 and substantially contributing to a national reduction in highway maintenance, congestion, emissions and capital costs. UP has consistently reinvested to maintain its capacity and, where possible, to add capacity to handle new traffic, including additional double- and triple-track on its Overland Route in Illinois, Iowa, and Nebraska. UP is committed to reducing reliance on oil and reducing air emissions through its purchase of more fuel-efficient, lower-emissions locomotives.

## Reasons to Support TIGER Funding

The State of Iowa DOT and UP are committed to deliver Phase I of the Mississippi River Bridge at Clinton, but require \$33 million in TIGER funding to leverage UP's \$33 million of funding to deliver Phase I, accelerate the construction of the bridge, and recognize the public benefits of the new bridge at the earliest date.

### *Federal Investment Leverages Private Investment*

UP continues to invest in expansion of its Overland Route between Chicago and the Pacific Coast, which will increase capacity, increase schedule reliability and reduce transit times for all types of freight. Since 1997, in just the Iowa portion of the Overland Route, UP has invested more than \$1.1 billion in capital improvements, including:

- Construction of second main track and signaling systems to increase train capacity and improve speed and reliability of trains;
- Upgrades to branch lines to accommodate 286,000-pound gross weight rail cars and afford rural shippers access to the most efficient rail cars; and
- Construction of a new \$50 million double-track bridge west of Boone, Iowa, rated for 70-mph train speeds, replacing a 107-year-old bridge limited to 25 mph.



### ***Federal Investment Is a Permanent Investment***

From its own revenue stream, UP will maintain the Phase I and subsequently constructed bridge, as well as the multi-state rail infrastructure that provides the network on which trains using the Mississippi River Bridge at Clinton reach shippers and receivers. The reduced transportation costs and public benefits created by federal investment in the project will not require further federal investment in maintenance and upkeep. UP's \$33 million investment in the project represents its commitment to the new bridge. The TIGER grant investment represents the national need for lasting, increased productivity and higher transportation value for freight shippers, freight receivers, agricultural producers, and consumers; increased jobs and economic activity for citizens; and decreased expenditures on highway expansion and maintenance projects.

### ***The Project Creates Jobs***

Job creation and preservation resulting from this application for TIGER funds includes both construction and permanent employment. During the two-year construction period of Phase I, 614 construction and construction-related jobs per year for the terminal are created or preserved. The project as a whole, including construction of the bridge, creates 8,999 job-years (a job-year is a job lasting one year). In addition, the project, by reducing transportation costs for a substantial amount of U.S. rail traffic, serves to preserve jobs that would otherwise be at risk due to loss of competitiveness of the shippers and receivers of the freight.

Union Pacific is a member of the DirectEmployers Association. This organization ensures that job opportunities are made available to State, diversity and niche sites including military. It also hosts a rapid re-employment initiative for displaced workers. Additionally, UP has strong relationships with the State Workforce Agencies and the State Urban Leagues. These agencies have worker and employer services that tie together to help employers connect disadvantaged workers to jobs.

### ***The Project Promotes Sustainability***

The project will contribute to environmental sustainability by reducing reliance on oil from trains that are not diverted to longer routes, river barges and freight trains that are not delayed, and freight that is not diverted to truck. The capacity of the new bridge will enable growth in intermodal freight to continue to move by rail, and avoid

the public impacts of emissions and a four-fold increase in oil consumption caused by 12.6 billion unneeded truck-miles on U.S. highways. By eliminating reroutes to trains, freight moving by truck instead of train, and delays to trains and barge tows at the existing swing-span bridge, the project will:

- Save nearly 1.9 billion gallons of fuel;
- Eliminate 22.4 million tons of carbon dioxide (CO<sub>2</sub>) emissions;
- Eliminate 2,327 tons of hydrocarbon emissions
- Eliminate 14,890 tons of nitrogen oxide (NO<sub>x</sub>) emissions; and
- Eliminate 1,208 tons of particulate matter emissions.

### ***The Project Enhances Economic Competitiveness***

This public-private partnership will provide a variety of long-term benefits that will result from increased supply-chain capacity and productivity for rail traffic that crosses the new Mississippi River Bridge and for river traffic that passes beneath it. An increase in capacity, productivity, and efficiency will result in private and public benefits and increased economic output. Permanent supply-chain cost savings that accrue to shippers, receivers, and consumers of goods throughout the U.S. result in increased economic output and job creation.

The project will increase economic competitiveness by:

- Reduction in transportation costs due to future intermodal traffic not diverted to truck, saving shippers \$361 million;
- Reduction in transportation costs due to avoidance of future rail diversions to longer rail routes, saving shippers \$1.1 billion (see Figure 1); and
- Reduction in transportation costs due to reduced travel time for marine traffic, saving shippers more than \$11 million.

### ***The Project Creates Multi-modal Connections***

The project leverages the technological capabilities of rail and water transportation modes, enabling both modes to deliver the highest value to shippers, receivers, and consumers. The project will enable growth to continue in domestic rail-intermodal transportation, the fastest-growing sector of the rail transportation market. Even in the current economic climate, rail intermodal has proved resilient, growing 0.9 percent between April and August 2009. Domestic intermodal leverages the fuel and long-haul productivity advantages of railroads and

the short-haul flexibility and service of trucks. The project also eliminates a significant bottleneck and cause of uncertainty for Mississippi River transportation, enabling its growth to continue. This complements current and future river projects along the Mississippi River and assures U.S. agricultural producers in the Mississippi River basin continued access to global markets.

### ***The Project Decreases Highway Maintenance Cost***

By decreasing truck miles, the project provides highway maintenance benefits that accrue to at least 17 states (see Figure 1). Reduced maintenance costs enable public monies to be used for other needed transportation projects that would otherwise not be funded. The benefit expected in this category is:

- Public roadway pavement cost savings of \$222 million from truck trips now moved by rail.

### ***The Project Improves Safety***

The project will reduce accidents involving trucks on highways by moving intermodal trailers and containers by rail. One in seven fatal highway accidents involves a heavy truck. The project will:

- Reduce highway accident costs by \$678 million during the next 20 years; and
- Reduce river accident costs by \$344,585.

## **PRIMARY SELECTION CRITERIA**

### **Long-term Outcomes**

TIGER grant funds invested in the Phase I Mississippi River Bridge at Clinton will create durable and lasting value. The project infrastructure life will be substantially in excess of the 20-year study period requested in TIGER application



**Figure 5: UP Train Moving Through Existing Clinton Yard**

guidelines, resulting in life-cycle costs that are substantially lower relative to other common types of transportation infrastructure. UP will maintain and operate the new crew-change yard at Low Moor and the follow-on high bridge. Future federal support for maintenance or for replacement of components that wear out or become obsolete is not a necessity.

TIGER grant funds invested in the Phase I project to accelerate construction of the bridge will enable substantially increased access to higher-value rail transportation for shippers throughout the U.S. This increase in access will be permanent. In addition, the investment will create new ability for shippers to expand rail-shipping activities, or locate on rail lines, improving their ability to compete globally and to reduce their logistics costs.

The national transportation market served by the UP Overland Route across the Mississippi River Bridge at Clinton is expected to expand substantially for the foreseeable future. The rail system that converges on the bridge serves a broad variety of markets and commodities throughout the U.S., and can transition immediately to changes in transportation markets, commodities and goods, and demand. Therefore, TIGER investment is unlikely to be stranded or rendered superfluous. The volume of the types of freight handled by the bridge are expected to increase steadily during the next 20 years, across all types.

The UP Overland Route is advantageously located and has been a principal transcontinental rail route since 1869. It follows the route originally selected by the U.S. Government as the best transcontinental rail route, during the Pacific Railroad Surveys of the 1850s. There is no likely alternative rail route nor is this rail route likely to diminish in importance in the foreseeable future.

### ***State of Good Repair***

The project will improve the nation's state of good repair by replacing a 100-year old bridge in one of the nation's most important rail routes. It will reduce truck wear on highways and bridges, enabling existing highway maintenance dollars to maintain highways to a greater standard, and by reducing rail maintenance that would be required by diverting trains to longer routes. Transcontinental traffic flows through Iowa on Interstate

Highway 80, and would increase in the absence of this project's construction. The public benefit calculation is net — it includes an adjustment for privately funded increased rail maintenance.

Reduced maintenance costs enable public monies to be used for other needed transportation projects that would otherwise not be funded. The public benefit anticipated in this category over the 20-year study period (all benefits are discounted at 7 percent and are in 2009 dollars) is:

- Public roadway maintenance cost savings from truck of \$222 million

### ***Economic Competitiveness***

The project will increase competitiveness by lowering transportation costs to shippers across the U.S. The benefits that come from increases in productivity are recorded in this category and are anticipated to include:

- Reduction in transportation costs due to future traffic not diverted to truck when the capacity of the bridge is exceeded, of \$361 million;
- Reduction in transportation costs due to avoidance of future rail diversions to longer rail routes, of \$1.1 billion;
- Reduction in transportation costs due to reduced delay to river traffic, elimination for need for helper boats at the existing bridge, and reduced fuel consumption of \$15 million;

### ***Livability***

The project improves livability through reduction of highway congestion caused by long-haul freight moved by truck, and through benefits to Clinton's Liberty Square redevelopment project. Benefits in Clinton include reduced noise emissions from trains waiting to cross the existing swing-span bridge, and in the Clinton yard. Long-distance highway congestion benefits are distributed through at least 17 states; since some intermodal traffic is likely to be moved into Eastern and Southeastern states by rail from Chicago, congestion reduction benefits will likely accrue to those states as well.

A new federal partnership between HUD, DOT and EPA (Office of Smart Growth) has been developed to develop a Sustainable Communities Initiative. Central to this partnership is the coordination and integration of land use, mobility, energy and affordability. The project addresses each of these areas by delivering the long-term

value of reduced highway congestion through avoidance of truck diversion that accrues to communities throughout the U.S., reduction of dependence upon oil, reduction of emissions, and reduction of highway accident rates. The project is also central to transportation choice, economic competitiveness, support of existing communities, and leveraging investments, and valuing communities. The benefit calculated in this category that is anticipated over the 20-year study period is:

- Reduction in highway congestion costs of \$132 million.

### ***Sustainability***

The Federal Highway Administration estimates that tons of domestic freight transported will increase by 90.5 percent from 2002 to 2035. When import and export freight is added, tons are estimated to increase by 113.7 percent. This growth will challenge national sustainability goals such as energy security, attainment of the Environmental Protection Agency's (EPA's) National Ambient Air Quality Standards, and reduction of climate change. As the most environmentally-friendly and energy-efficient mode of ground-based transportation, freight railroads provide long-term solutions.

Since 1980, railroads have improved locomotive fuel efficiency by more than 80 percent through advances in technology and operations. A single train carrying domestic intermodal containers can replace 280 or more trucks. The EPA estimates that for every ton-mile, a locomotive emits approximately one-third the nitrogen oxides and particulates of trucks. The Association of American Railroads (AAR) estimates that if just 10 percent of the nation's freight converted to rail, fuel savings would approach 1 billion gallons annually. Sustainability benefits created by the project include reduction in fuel use and emissions for long-haul freight not diverted to longer rail routes, and long-haul freight not diverted to truck, when the existing bridge reaches capacity.

The benefits calculated in this category, for decreased long-haul truck traffic and increased long-haul rail traffic, and reduced delay to river traffic that are anticipated over the 20-year study period are as follows:

- Reduction in fuel use through moving long-haul freight by train instead of truck, on shorter rail routes, and reduced delay to river traffic, of nearly 1.9 billion gallons;



- Reduction in emissions through moving long-haul freight by train instead of truck, of \$235 million;
- Reduction in emissions through moving long-haul freight on shorter rail routes of \$85 million;
- Reduction in emissions through reduced delay to marine traffic of \$1 million;
- Reduction in CO<sub>2</sub> emissions of 22.4 million tons;
- Reduction in hydrocarbon emissions of 2,327 tons;
- Reduction in NO<sub>x</sub> emissions of 14,890 tons; and
- Reduction in particulate matter emissions of 1,208 tons.

### **Safety**

Long-haul transportation of freight by rail instead of truck will result in improved highway safety by reducing truck miles and the potential for truck and truck-automobile accidents. In addition, the new bridge will reduce the potential for river navigation accidents. The anticipated safety benefits over the 20-year study period are:  
Reduction in highway accident costs of \$678 million  
Reduction in river navigation accident costs of \$344,585.

### **Job Creation and Economic Stimulus**

Use of TIGER grant funds to support the construction of the Mississippi River Bridge Project, Phase I, supports national, state, and local goals for job creation and economic stimulus.

Locally, job growth in Clinton County is increasingly important because, although Iowa's unemployment rate is lower than the current national average, Clinton County's unemployment rate is higher than Iowa's average. According to Iowa Workforce Development, in June 2009, Iowa's unemployment rate was 6.2 percent, while Clinton County's was 7.9 percent. Local benefits include:

- Construction jobs;
- A better environment for the Liberty Square redevelopment project in Clinton, increasing its likelihood of economic success; and
- Increased access to high-value rail transportation for Clinton shippers and receivers.

Statewide, the State of Iowa sees significant benefit for the Mississippi River Bridge at Clinton project to remove future limits on the economic competitiveness and job creation potential of Iowa. The project is listed in a new category covering rail freight capacity improvements and removing impediments to growth in draft Iowa DOT's 2009 Iowa Railroad System Plan.

Statewide benefits include:

- Increased access to higher-value transportation for agricultural producers and processors, manufacturers and distributors;
- Productivity gains to enhance competitive market position; and
- Improved access to global markets.

The project promotes short- and long-term creation of jobs and promotes expanded business opportunities for shippers that have new ability to use higher-value rail transportation. Job creation was estimated using metrics established the White House Council of Economic Advisers (CEA), in which \$92,136 of government spending creates one job-year, and by using the IMPLAN Model. These estimates are detailed in Appendix B.

- CEA guidance predicts the Phase I project will create 651 job-years of employment;
- The IMPLAN Model predicts the project will create 1,228 job-years of employment.

Note that the 50 percent UP match effectively doubles the number of job-years created per dollar of federal investment. The project is anticipated to be complete by August 2012, with an average of 614 jobs created and sustained each year during the 2.0-year project life, using the IMPLAN model.

### **Schedule**

With the help of TIGER funds, the project's initial construction and implementation schedule indicate the project's activities will be substantially complete by August 2012. For a detailed construction and implementation schedule, please refer to Appendix C. Project design, environmental permitting, and land acquisition are in progress and are expected to be ready in time for obligation of TIGER funds. UP plans to complete its permit application with the U.S. Army Corps of Engineers (Corps) relative to the development of Low Moor Yard by August 2010 and to complete design work by September 2010. UP is working to complete right-of-way acquisition by October 2010. It plans to complete construction, including utility relocation, by February 2012.

### **Environmental Approvals**

A summary of the environmental work completed to date is provided in the NEPA and environmental related federal, state, and local activities sections of this application.

### **Legislative Approvals**

The project will not require any legislative approvals.

### **Project Supporters**

The project has received support from its state partner and local organizations. In addition to support received from the project's sponsor, Iowa DOT, the project has received support from Governor Chet Culver and the City of Clinton.

### **State and Local Planning**

The project is consistent with the [draft Iowa DOT 2009 Iowa Railroad System Plan](#). The most recent draft of the plan contains a new category on rail freight capacity improvements and removing impediments to growth. The project is listed specifically in this new category.

### **Technical Feasibility**

UP has completed internal studies to show that the project is technically feasible, economically feasible to construct, and economically feasible to operate and maintain from revenues generated by UP for the long term. UP's knowledge and decades of experience in the freight business make the project feasible from both the engineering and economic points of view. The preliminary engineering for the project has been completed. For information regarding the percentage of engineering tasks completed to date, please refer to Appendix C.

### **Financial Feasibility**

As stated previously, UP is committed to funding 50 percent (\$33 million) of the total project cost and is seeking to build a public-private partnership to fund the remaining \$33 million required to complete the project. Thus, UP is requesting the remaining \$33 million be financed with TIGER funds. The funds would assure substantial completion of the project by February 2012, and as a result, would accelerate the benefits of the project.

## **SECONDARY SELECTION CRITERIA**

### **Innovation**

Construction of the bridge is anticipated to contain innovative technologies. Final design is contingent upon approval of the USCG and other agencies. Innovative technologies may include use of weathering steel for structural members in lieu of steel that requires painting to prevent corrosion. Phase I and subsequent trackwork may

use concrete ties, which according to some recent studies have lower life-cycle emissions costs than preservative-treated wood ties, and may use newly developed remote control yard switches for yards.

### **Partnerships, Jurisdictional and Stakeholder Collaboration**

Support for the project spans a variety of stakeholders. For letters of support, see Appendix E. The project has received support from the project's sponsor, the Iowa Department of Transportation, Iowa Governor Chet Culver, and the City of Clinton.

## **PROGRAM SPECIFIC CRITERIA**

Not applicable to this application.

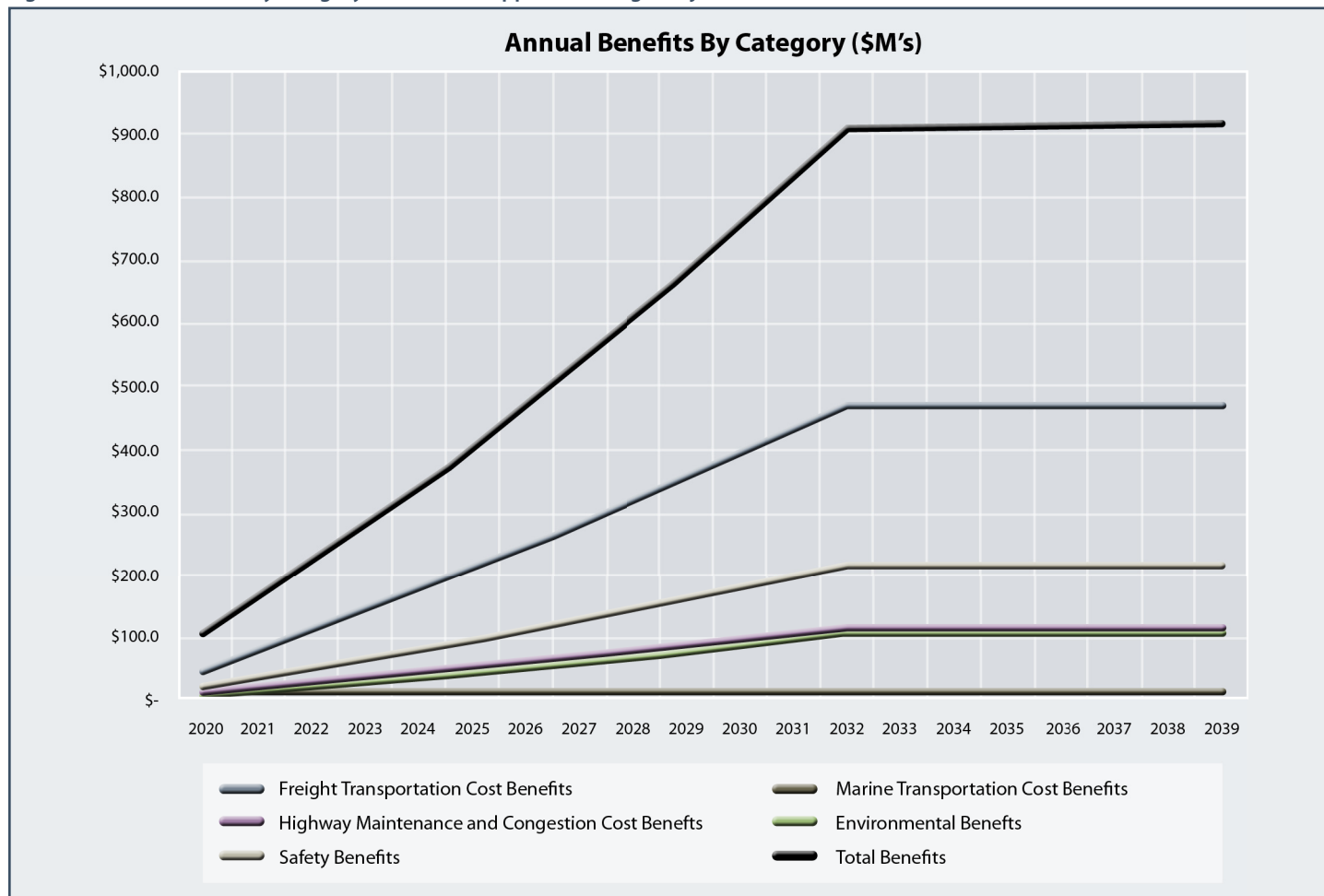
## **EVALUATION OF PROJECT COSTS AND BENEFITS**

### **Freight Modal Shift Methodology**

The diversion of future freight traffic from rail to long-haul truck, rail traffic across the bridge onto longer rail routes, as well as river navigation benefits, underlies the public value of the project. Marine benefits were calculated by projecting forward studies done by the USCG, using likely river traffic increases predicted by the USACE and USCG.

Truck diversion quantity was determined by using data obtained from the Transearch (Global Insights, formerly Reebie) database and applying a series of data filters to determine potential truck traffic that could shift to rail. Transearch captures existing freight transportation in tons between Bureau of Economic Analysis business areas (BEAs). Filters were applied to the Transearch dataset of trucks to estimate divertible volumes as follows:

- Tonnage was divided by 17.5 to determine number of intermodal units. One intermodal unit represents one truckload or one intermodal semi-trailer or container. The number 17.5 was deemed a conservative estimate for long-term average tonnage moving in truckload freight or intermodal freight.
- BEAs were selected for intermodal hubs currently served on the UP system via Clinton and for hubs on eastern railroad connections served via gateway cities such as Chicago, St. Louis, Kansas City, and Memphis.
- BEAs were restricted to 100-mile maximum dray length for Western U.S. hubs and 75-mile dray lengths for Eastern U.S. hubs, representing typical intermodal industry capture basins.

**Figure 6: Annual benefits by category of the Mississippi River Bridge Project at Clinton, Phases I and II, in millions of dollars (undiscounted)**

- The tonnages captured were segregated using Transearch data into traffic currently moved by truck and by rail intermodal. The weighed tonnage growth was projected forward using a 2.6 percent compound annual growth rate provided by Global Insights. Two important and conservative assumptions were made:
- The market share of rail intermodal in the lanes across the bridge at Clinton would not change; only the market would grow in total size.
- Future market growth would be in strict proportion to existing rail market shares in each existing rail-served intermodal lane.

Train diversion quantity was projected forward using Global Insights compound annual growth rates for each market segment, e.g., coal, grain, manufactured goods, finished autos. The train diversion was applied on a weighted average of all train types excepting intermodal. Train diversion mileage was supplied by UP. Tons per train,

used to calculate shipping cost increases, inventory cost increases, and fuel consumption and emissions increases, used average weights for trains from AAR, FHWA, and USDOT databases.

The economic projection does not require speculative assumptions that rail intermodal will become more attractive to shippers than it already is, or require increased market penetration in any lane or in any commodity by rail, or change any other condition other than continue existing patterns but only on a larger total market size.

### Public Benefit Calculation Methodology

Public benefits from the project fall into several categories, including: shipping costs, environmental, safety, congestion, and pavement maintenance cost savings. These benefit categories are measured in terms of the net impact from diversion; that is, reduced truck costs and increased rail costs associated with utilizing longer rail

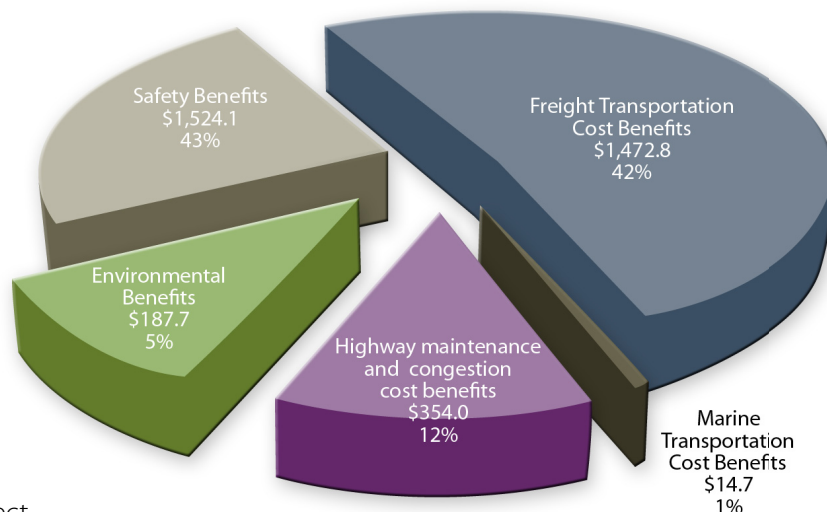


routes. This section presents a brief explanation of the type and magnitude of benefits, as well as the overall public value of the project. Details on the calculations that support the monetizing metrics for benefit calculations are included in Appendix A. This section also explains how results change under alternative data or scenarios (e.g., a 3 percent discount rate).

Over 20 years, annual benefits far exceed costs. From a total discounted cost of \$66,453,860, which includes public and private capital expenditures (annual operations and maintenance costs are covered by UP), the project would generate a net value of more than \$2.8 billion. For every TIGER dollar invested, the public would realize a gain of nearly \$84 in return. If transportation cost savings are excluded, the TIGER investment cost-benefit ratio is 41 to 1. Measured against the total project cost of \$423 million, the cost-benefit ratio is 6.6 to 1. Public benefits are discounted by 7 percent and measured in 2009 dollars.

Key observations about the sources and magnitude of benefits include:

- Shipping cost savings from truck to rail. Shipping cost savings per mile are estimated to average 25 cents per intermodal unit per mile over long-haul distances, compared to truck. Generalized cost savings for diverted trucks and existing rail would include some combination of reduced travel time, improved reliability, and lower drayage costs, among other factors. These savings are realized for shippers due to their new access and efficiency of the project.
- Costs savings associated with reduced truck traffic include congestion savings and pavement maintenance cost savings. These benefits are accrued to continuing road users or public funds, generally. Fewer trucks on the road reduce congestion and damage to the road surface, thereby enabling lower maintenance costs. The monetizing costs for these factors were derived from the Federal Highway Administration's Highway Cost Allocation Study and employed assumptions about the type of truck and proportions of travel in urban and rural areas.
- Other costs savings (emissions, accidents, and noise) are associated with a net effect between truck and rail use. It is assumed in these cases that rail miles plus



**Figure 7: Present value of benefits by category of the project Mississippi River Bridge Project at Clinton, Phases I and II, in millions of dollars over 20 years (discounted 7 percent)**

local dray miles between rail hubs and shippers' and receivers' docks are 17 percent longer than head-to-head, dock-to-dock truck miles. Values for determining the rate of impact and monetary value of impact have been derived from economic literature and official government sources as described in Appendix A.

- Benefits from employment are included because the jobs created in this project are assumed to be new jobs. The value of a new job is monetized by the average wage rate.

### Sensitivity Analysis of Cost-Benefit Results

Best estimates of benefits and costs are presented in this application and are reproduced in Appendix A using a 7 percent discount rate. Additional sensitivity analysis on these results for global and specific metrics is presented here. Global changes include (a) lowering the discount rate to 3 percent; (b) an increased planning horizon of 30 years; and (c) a perspective on the return on investment, leveraging federal TIGER funds only. These changes were made independently to the main model.

The rationale behind these changes, with respect to an alternate elasticity, is that analysis purposefully uses a conservative basis for estimating percent cost savings per load. It is possible that transportation cost savings could be much larger for existing and new rail users. The

market capture rate assumes no innovation or change in pricing, service, equipment utilization or national shipping patterns, beyond general growth in the economy. Finally, from a TIGER-funds only perspective, the project generates a 84 to 1 return on public investment to calculated public benefits. In summary, this sensitivity analysis provides compelling evidence that the project will generate significant net benefits and a high return on investment.

## EVALUATION OF PROJECT PERFORMANCE

The project sponsor will provide a plan for evaluating the success of the project and measuring short- and long-term performance, specifically with respect to the economic recovery measures and long-term outcomes specified in this notice.

The project sponsor will monitor progress of all project-related activities, according to the master schedule presented in Appendix C of this application. Parameters that will be measured and monitored will be categorized into five specific areas: environmental, safety, financial, engineering design, and construction. The number and type of new jobs created and/or retained for each of these categories will be recorded. The project sponsor will provide periodic reports to USDOT that will include the following information:

- The amount of grant funds appropriated, allocated, obligated, and outlaid under the appropriation;
- The number of projects put out to bid under the appropriation and the amount of grant funds associated with these contracts;
- The number of projects for which the contracts have been awarded under the appropriation and the amount of grant funds associated with these contracts;
- The number of projects for which work has been completed and the associated amount of grant funds;
- The number of direct, on-project jobs created or sustained by the grant funds for projects under the appropriation and, to the extent possible, the estimated indirect jobs created or sustained in associated supplying industries, including the number of job-years created and total increase in employment since February 17, 2009; and
- The actual aggregate expenditures compared to the level of such expenditures planned to occur during the construction period.

The project sponsor will submit reports no later than 180 days, one year, two years, and three years after funds have been allocated.

## FEDERAL WAGE DETERMINATION

The applicant will comply with the requirements of Subchapter IV of Chapter 31 of Title 40, United States Code (Federal Wage Rate requirements), as required by the Recovery Act. A certification to that effect may be found at <http://www.iowadot.gov/recovery/TIGER/UP-Clinton.html>

## NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) REQUIREMENT

An environmental survey has been performed of the project area, and is provided in Appendix F. UP's process and status of NEPA compliance are detailed in the subsequent section of this application. The National Environmental Policy Act (NEPA) requires a consideration of environmental impacts for major federal actions that significantly impact the human environment. This review requirement can be satisfied in three ways, depending on the scope of a project. These three methods are: (i) categorical exclusions (CE), which are categories of projects that have been predetermined to have only minimal environmental impacts; (ii) environmental assessments (EAs) that result in a finding of no significant impact; and (iii) environmental impact statements for projects that are expected to have a significant impact.

UP has applied for a permit from the Corps because some of the project work will occur in waters of the U.S. To receive this permit, UP must supply the Corps with adequate information so the Corps can comply with NEPA. The information UP generates for the Corps will be used to enable the Federal Railroad Administration to comply with NEPA as part of the Federal Railroad Administration's approval process. UP expects to complete this process by August 2010.

## ENVIRONMENTAL RELATED FEDERAL, STATE, AND LOCAL ACTIVITIES

An environmental survey has been performed of the project area, and is provided in Appendix F. This survey included an assessment of ecological resources, cultural resources, and hazardous waste sites. Results of the survey show that the project impacts wetlands and other waters of the United States. As such, a Section 404 Permit

is required from the U.S. Army Corps of Engineers, Rock Island District. Other than two properties accounting for approximately 10 percent of the project site on which complete wetlands delineation and cultural resources survey remains to be completed, UP has completed wetlands delineation and reporting on the affected properties, met with the Corps/EPA at the site, obtained an approved jurisdictional determination from the Corps, wrote the draft of the compensatory mitigation plan to replace wetlands off-site, and has a cultural resources report for approximately 90 percent of the project area.

The Iowa Department of Natural Resources (IDNR) automatically issues a Section 401 Water Quality certification in conjunction with the Corps' Section 404 permit. The IDNR also has jurisdiction over the project (floodplain and Sovereign Lands). However, UP has not proceeded with permitting pending the completion of the wetlands delineation and cultural resources survey.

Clinton County also has jurisdiction at the local level (floodplain permitting). However, floodplain permitting has not been initiated due to the above reason either. Additionally, a meeting has been held with Clinton County

to discuss various issues related to the change of local drainage pattern and UP's responsibilities with respect to the local drainage district.

Finally, the project will disturb more than an acre, which requires development and implementation of an appropriate Storm Water Pollution Prevention Plan (SWPPP) and filing a Notice Of Intent (NOI) under the NPDES program with IDNR).

Any issues that may arise relating to the protection of aquatic, biological, cultural, or social resources will be addressed in the application for a permit from the Corps. These issues and actions are not expected to cause significant impact to the project schedule.

### **PROTECTION OF CONFIDENTIAL BUSINESS INFORMATION**

There is no information in this application deemed as confidential at this time.

**Website Link:** <http://www.iowadot.gov/recovery/TIGER/UP-Clinton.html> for additional information.