

**Delivering ITS Solutions through TIGER Discretionary Grants**  
**Guidance for Potential Applicants**  
*The Intelligent Transportation Society of America (ITS America)*  
July 1, 2009

## **Summary**

At a time when our nation is facing significant economic challenges, the need for more widespread deployment and effective operation of Intelligent Transportation Systems (ITS) has never been more important. As transportation agencies and policymakers seek to create a more efficient multimodal transportation network that will move people and goods on time and provide a backbone for economic growth and global competitiveness, ITS solutions are here now that can contribute to our economic prosperity by saving lives, time and money, and sustaining the environment.

In the past, we put people to work building and repairing publicly-run infrastructure in order to stimulate the economy. Today, ITS technologies complement most major roadway and infrastructure projects. ITS solutions are critical for measuring, managing and improving the performance of our transportation system, from reducing traffic congestion, CO<sub>2</sub> emissions, and vehicle-related injuries and fatalities, to providing real-time multimodal traveler information and options. ITS applications can make our transportation system work more efficiently for commuters and other transportation users, optimize the public's transportation investment, create more livable and sustainable communities, and improve the intermodal supply chain to support jobs and economic recovery. As policymakers work to encourage economic recovery, it is vital that public agencies and private sector partners invest in the deployment of ITS solutions in order to create near- and long-term jobs and economic growth while providing long-term benefits to our global competitiveness and quality of life.

## **Recovery Act and TIGER Grant Opportunity**

On February 17, 2009, President Obama signed the American Recovery and Reinvestment Act (ARRA) of 2009 – the “Recovery Act” – with three main goals:

1. *Preserve and create jobs and promote economic recovery,*
2. *Invest in transportation infrastructure that will provide long-term economic benefits, and*
3. *Assist those most affected by the current economic downturn*

As part of the Recovery Act, \$1.5 billion in discretionary grant funding was provided to the U.S. Department of Transportation (DOT) to be awarded for capital investments in surface transportation infrastructure. These grants are known as “**Transportation Investment Generating Economic Recovery**” or “**TIGER Discretionary Grants**.”

We encourage you to consider applying for a TIGER grant, and have created this white paper as a guide to help you complete a successful grant application by the **September 15, 2009 deadline**. As you will see from the grant criteria, ITS projects provide an ideal investment opportunity for agencies that are working to fulfill the goals of the Recovery Act and take advantage of funding opportunities made available through the TIGER grant program. As a potential applicant, you may ask, “Do I qualify for a TIGER Grant; and if so, and how do I apply?” This white paper will seek to answer your questions and help you advance innovative solutions that will put our nation and communities back on the path toward economic growth and prosperity.

## **TIGER Grant Selection Criteria**

The goals of the TIGER Discretionary Grants are outlined below in the primary and secondary selection criteria:

**Primary Selection Criteria** (*intended to capture the primary objectives of the TIGER Discretionary Grants provision of the Recovery Act, which include near-term economic recovery and job creation, maximization of long-term economic benefits and impacts on the nation, a region, or a metropolitan area, and assistance for those most affected by the current economic downturn*):

**1. Long-Term Outcomes**

*Projects that have a significant impact on desirable long-term outcomes, including a state of good repair, economic competitiveness, livability, sustainability, and safety.*

**2. Job Creation & Economic Stimulus**

*Projects expected to quickly create and preserve jobs and stimulate rapid increases in economic activity, particularly jobs and activity that benefit economically distressed areas.*

**Secondary Selection Criteria** (*intended to capture the benefits of new and/or innovative approaches to achieving programmatic objectives*):

**1. Innovation**

*Projects that use innovative strategies to pursue the long-term outcomes outlined above and to significantly enhance the operational performance of the transportation system. Examples include but are not limited to ITS, dynamic pricing, smart cards, real-time dispatching, active traffic management, RFID, and innovations that demonstrate the value of new approaches to transportation finance, contracting, project delivery, congestion management, safety management, asset management, or long-term operations and maintenance.*

**2. Partnership**

*Projects that receive financial commitments from, or otherwise involve State and local governments, other public entities, or private or nonprofit entities, including projects that engage parties not traditionally involved in transportation projects such as nonprofit community groups.*

## **Eligible Recipients**

If you represent a State or local government, including a U.S. territory, tribal government, transit agency, port authority, metropolitan planning organization, other political subdivision of State or local governments, or multi-State or multijurisdictional applicants, you are considered an “Eligible Applicant” for a TIGER grant. However, ITS America would also like to emphasize the opportunity for its non-public sector members to collaborate with eligible applicants in order to meet the *Partnership* criteria for the TIGER grants, which encourages collaboration between State and local governments, private or nonprofit entities, and parties not traditionally involved in transportation projects such as nonprofit community groups.

## **Eligible Projects**

Eligible projects include, but are not limited to, highway or bridge projects eligible under Title 23, U.S. Code; public transportation projects eligible under Chapter 53 of Title 49, U.S. Code; passenger and freight rail projects; and port infrastructure investments, including projects that connect ports to other modes of transportation to improve freight efficiency. **ITS projects are an eligible expenditure under these programs, and should be considered for funding as standalone projects in addition to being integrated into other eligible projects.**

## **Available Grant Funding**

The Recovery Act specifies that no grants funded under the program may be less than \$20 million or greater than \$300 million; however, the US DOT may use its discretion to waive the \$20 million minimum grant requirement for the purpose of funding significant projects in smaller, cities, regions or states.

## ***When and where do I send my application?***

**The deadline to submit your application is September 15, 2009.** The only accepted way to submit your application is to email it to the TIGER Discretionary Grants program manager at [TIGERGrants@dot.gov](mailto:TIGERGrants@dot.gov).

### ***A Quick Overview***

The US DOT Recovery website provides important information which can help you get started in your pursuit of TIGER Grant funds. The Department considered public comments on the May 18, 2009, interim notice of funding availability, and published a revised notice for this program in the *Federal Register* on Wednesday, June 17, 2009. The revised notice announces funding availability, project selection criteria, application requirements, and the deadline for submitting applications which is September 15, 2009. We suggest that you start by reviewing the answers to some frequently-asked questions (FAQs). To do this:

1. Go to the USDOT web site at <http://www.dot.gov/recovery/ost/>
2. At the bottom of the page, click on: [Click here for frequently asked questions \(FAQs\)](#).

As you can see from the US DOT web site, the source document for information about TIGER Grants is Docket Number OST-2009-0115, originally published in the *Federal Register* on May 18, 2009 and updated on June 17, 2009. Because the *Federal Register* notice is the main source document, you will need to refer to it for additional details. To go directly to the *Federal Register* notice, click on the following link:

**Federal Register Notice:** <http://edocket.access.gpo.gov/2009/pdf/E9-14262.pdf>

The text for this *Federal Register* notice starts on the first page, 28755, of this PDF document in the upper right hand corner under the title DEPARTMENT OF TRANSPORTATION. You will see that this is a rather lengthy and complicated document. The reason we have written these guidelines is that we know that, if you are like most people in your position, it would be difficult for you find the time it would take to carefully read the notice and figure out how it all applies to you. We will refer to the heading references and page numbers of this notice as we discuss what you have to do to put together your application.

## ***What should I include in my application?***

**Contents of Application** (*Federal Register* notice, page 28764, third column)

Include all of the information listed below (A thru K) in your application. The US DOT may ask you for more data, but expects your application to be complete when you first submit it. As much as possible, use publically-available data and evidence of project merits. For TIGER TIFIA Payments, these requirements apply only to the applications required under this notice; for standard TIFIA requirements, go to <http://tifia.fhwa.dot.gov>.

### **A. Length of Applications**

The narrative portion of your application should be 25 pages or less. As needed, include documentation to support what you say in the narrative portion, but limit it to relevant information. If possible, include website links to the supporting documentation. If you want, you can reference (and described as unchanged) applicable information that you submitted before to a Cognizant Modal Administration (as defined in Section IV, Grant Administration) in support of a different US DOT discretionary program (for example, New Starts or TIFIA).

### **B. Contact Information**

Include the name, phone number, email address and organization address of your primary point of contact so that the US DOT can tell all concerned parties if it selects a project and/or if it needs more information.

### C. Project Description

- Include a detailed description of the proposed project and geospatial data for the project with:
  - A map of the project's location, and
  - Its connections to existing transportation infrastructure.
- Include a description of how the project addresses the needs of an urban and/or rural area.
- Clearly describe the transportation challenges you plan to meet and how you will solve them, including relevant and quantifiable data (i.e., passenger or freight volumes, congestion levels, infrastructure condition, or safety improvements).

### D. Project Parties

Provide information about the grant recipient and other project parties.

### E. Grant Funds and Sources and Uses of Project Funds

- Information about the amount of grant funding requested
- Sources and uses of all project funds
- Total project costs
- Percentage of project costs that would be paid for with TIGER Discretionary Grant funds, and
- The identity and percentage shares of all parties providing funds for the project—including Federal funds provided under other programs.

### F. Selection Criteria

You must include information required for the US DOT to assess each of the selection criteria which are specified beginning at the top of page 28758 in Section II (A) (*Selection Criteria*), Section II (B) (*Additional Guidance on Selection Criteria*), and Section II (C) (*Program-Specific Criteria*). You are encouraged to demonstrate the responsiveness of your project to any and all of the selection criteria with the most relevant information that you can provide. If you are not sure whether any of the program-specific criteria apply to your project and if they should be addressed in your application, ask the US DOT per Section XI (*Questions and Clarifications*) by submitting a question to the TIGER Discretionary Grants program manager via e-mail at [TIGERGrants@dot.gov](mailto:TIGERGrants@dot.gov). The Department will post answers to these questions and other clarifications at <http://www.dot.gov/recovery/ost/>. Quantify the information as much as possible to describe how the project impacts the nation, a metropolitan area, or a region. Include projections for both the build and no-build scenarios for the project for a point in time at least 20 years beyond the project's completion date or the lifespan of the project, whichever is closest to the present.

In the selection criteria, the **most important requirement** is to **show long-term benefits of long-term outcomes**. As stated in the *Federal Register* notice, the three main purposes of the Recovery Act are to:

1. Preserve and create jobs and promote economic recovery,
2. Invest in transportation infrastructure that will provide long-term economic benefits, and
3. Assist those most affected by the current economic downturn.

Because it is (1) in the list above, you might assume that the main requirement for you to qualify for a TIGER Grant is to demonstrate the likelihood that your project will “Preserve and create jobs and promote economic recovery.” However, that is NOT the case. The *first* “Primary Selection Criteria,” listed at the top of page 28758, is “Long-Term Outcomes,” which is actually related to (2) in the list above. To see this, reference the boxes on page 28763 and read the summary of the selection criteria. The criteria are listed in order of importance:

1. Long-Term Outcomes
2. Jobs Creation & Economic Stimulus
3. Innovation & Partnership
4. Project-Specific Criteria

As you read in the right box, notice how the emphasis is on “Long-Term Outcomes.” As important as it is to have “Job Creation and Economic Stimulus”, a project will NOT be considered unless the US DOT is *first* convinced that it will have “Long-Term Benefits” in one or more of the five “Long-Term Outcomes” identified.

**Primary Selection Criteria #1: The Five “Long-Term Outcomes”** - If your grant request is more than \$20 million but less than \$100 million, you are required to include in your application estimates of your project’s expected benefits in the 5 Long-Term Outcomes listed below. Any applicant seeking a TIGER Discretionary Grant in excess of \$100 million must provide a well-developed analysis of expected benefits and costs, including a calculation of net benefits and a description of input data and methodological standards used for the analysis. The analysis should indicate the values that were assigned for qualitative measures, in addition to quantitative measures (see page 28759 for additional guidance). The 5 Long-Term Outcomes are:

- State of Good Repair: *Improving the condition of existing transportation facilities and systems, with particular emphasis on projects that minimize lifecycle costs.*
- Economic Competitiveness: *Contributing to the economic competitiveness of the United States over the medium- to long-term.*
- Livability: *Improving the quality of living and working environments and the experience for people in communities across the United States.*
- Sustainability: *Improving energy efficiency, reducing dependence on oil, reducing greenhouse gas emissions and benefitting the environment.*
- Safety: *Improving the safety of U.S. transportation facilities and systems.*

For details on how to demonstrate to US DOT that your project does indeed “demonstrate a likelihood of significant long-term benefits in any of the five long-term outcomes”, please review section *B. Additional Guidance on Selection Criteria*, which starts in the middle of page 28758. ITS applications can provide significant benefits across all of the long-term outcome categories, but are particularly relevant in light of the following excerpts from the *Additional Guidance on Selection Criteria* section:

- Additional Guidance for State of Good Repair: “In order to determine whether the project will improve the condition of existing transportation facilities or systems, including whether life-cycle costs will be minimized, the Department will assess whether:
  - the project is part of, or consistent with, relevant State, local or regional efforts to maintain transportation facilities or systems in a state of good repair;
  - an important aim of the project is to rehabilitate, reconstruct or upgrade surface transportation projects that threaten future economic growth and stability due to their poor condition;
  - the project is appropriately capitalized up front and uses asset management approaches that optimize its long-term cost structure; and
  - the extent to which a sustainable source of revenue is available for long-term operations and maintenance of the project.”
- Additional Guidance for Economic Competitiveness: In order to determine whether a project promotes the economic competitiveness of the U.S., the Department will assess whether the project will measurably contribute over the long term to growth in employment, production or other high value economic activity.
  - “Priority consideration will be given to projects that: (i) Improve long-term efficiency, reliability or cost-competitiveness in the movement of workers or goods, or (ii) make improvements that allow for net new investments in expansion, hiring, or other growth of private sector production at specific locations, particularly Economically Distressed Areas.”
  - “Economic competitiveness may be demonstrated by the project’s ability to increase the efficiency and effectiveness of the transportation system through integration or better use of all existing transportation infrastructure (which may be evidenced by the project’s involvement with or benefits to more than one mode and/or its compatibility with and preferably augmentation of the capacities of connecting modes and facilities)...”

- Additional Guidance for Livability: “In order to determine whether a project improves the quality of the living and working environment of a community, US DOT will qualitatively assess whether the project:
  - will significantly enhance user mobility through the creation of more convenient transportation options for travelers;
  - will improve existing transportation choices by enhancing points of modal connectivity or by reducing congestion on existing modal assets;
  - will improve accessibility and transport services for economically disadvantaged populations, non-drivers, senior citizens, and persons with disabilities, or to make goods, commodities, and services more readily available to these groups; and/or
  - is the result of a planning process which coordinated transportation and land-use planning decisions and encouraged community participation in the process.”
  
- Additional Guidance for Sustainability: “In order to determine whether a project promotes a more environmentally sustainable transportation system, the Department will assess its ability to:
  - Improve energy efficiency, reduce dependence on oil and/or reduce greenhouse gas emissions; applicants are encouraged to provide quantitative information regarding expected reductions in emissions of CO<sub>2</sub> or fuel consumption as a result of the project, or expected use of clean or alternative sources of energy; projects that demonstrate a projected decrease in the movement of people or goods by less energy-efficient vehicles or systems will be given priority; and
  - “Maintain, protect or enhance the environment, as evidenced by its avoidance of adverse environmental impacts and/or by its environmental benefits. Applicants are encouraged to provide quantitative information that validates the existence of substantial transportation-related costs related to energy consumption and adverse environmental effects and evidence of the extent to which the project will reduce or mitigate those costs.”
  
- Additional Guidance for Safety: “In order to determine whether the project improves safety, the Department will assess:
  - The project’s ability to reduce the number, rate and consequences of surface transportation-related crashes, and injuries and fatalities among drivers and/or non-drivers in the United States or in the affected metropolitan area or region...”

**Primary Selection Criteria #2: Job Creation & Economic Stimulus** – Once you have demonstrated long-term benefits in the outcome areas listed above, the Department will give priority to projects that are expected to quickly create and preserve jobs and stimulate rapid increases in economic activity, particularly jobs and activity that benefit economically distressed areas as defined by section 301 of the Public Works and Economic Development Act of 1965, as amended (42 U.S.C. 3161). While Economically Distressed Areas are typically identified under the Act at the county level, for the purposes of this program the Department will consider municipalities or other similar political subdivisions of a State to be Economically Distressed Areas if an applicant can demonstrate that any such area otherwise meets the requirements of an Economically Distressed Area as defined in section 301 of the Public Works and Economic Development Act of 1965.

**Secondary Selection Criteria #1: Innovation** – “In order to measure a project’s alignment with this criterion, the Department will assess the extent to which the project uses innovative technology (including ITS, dynamic pricing, rail wayside or onboard energy recovery, smart cards, real-time dispatching, active traffic management, radio frequency identification, or others) to pursue one or more of the long-term outcomes outlined above and/or to significantly enhance the operational performance of the transportation system. The Department will also assess the extent to which the project incorporates innovations that demonstrate the value of new approaches to, among other things, transportation funding and finance, contracting, project delivery, congestion management, safety management, asset management, or long-term operations and maintenance.”

**Secondary Selection Criteria #2: Partnerships** – Many ITS projects are multi-jurisdictional and/or multimodal in nature, and have a regional ITS architecture which may help build the case under this criteria.

- **Jurisdictional & Stakeholder Collaboration:** In order to measure a project’s alignment with this criterion, the Department will assess the project’s involvement of non-Federal entities and the use of non-Federal funds, including the scope of involvement and share of total funding. The Department will give priority to projects that receive financial commitments from, or otherwise involve, State and local governments, other public entities, or private or nonprofit entities, including projects that engage parties that are not traditionally involved in transportation projects, such as nonprofit community groups. Pursuant to the OMB Guidance, the Department will give priority to projects that make effective use of community-based organizations in connecting disadvantaged people with economic opportunities. The Department will also assess the extent to which the project demonstrates collaboration among neighboring or regional jurisdictions to achieve National, regional or metropolitan benefits. Multiple States or jurisdictions may submit a joint application and should identify a lead State or jurisdiction as the primary point of contact.
- **Disciplinary Integration:** In order to demonstrate the value of partnerships across government agencies that serve the various public service missions and to promote collaboration on the objectives outlined in this notice, the Department will give priority to projects that are supported, financially or otherwise, by non-transportation public agencies that are pursuing similar objectives. For example, the Department will give priority to transportation projects that create more livable communities and are supported by relevant public housing agencies, or transportation projects that encourage energy efficiency or improve the environment and are supported by relevant public agencies with energy or environmental missions.

**Program-Specific Criteria** – The Department will use certain program-specific criteria in the evaluation and selection process to help differentiate between similar projects. Similar projects are those that have similar characteristics and satisfy the eligibility requirements of existing programmatic structures (for example, two urban light rail projects eligible to participate in the New Starts program). To the extent two or more similar projects have similar ratings based on the selection criteria outlined in Section II(A) (*Selection Criteria*) the program specific criteria will be used to assign priority among these projects.

**Evaluation of Project Performance** – The Department also encourages applicants to 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. For more information on evaluating your project, refer to the ITS Reporting and Evaluation Guidelines on the ITS Joint Program Office web site at: [http://www.its.dot.gov/evaluation/eguide\\_safetealu.htm](http://www.its.dot.gov/evaluation/eguide_safetealu.htm)

#### **G. Federal Wage Rate Requirement**

Include a certification, signed by you, stating that you will comply with the requirements of subchapter IV of chapter 31 of title 40, U.S. Code (Federal wage rate requirements), as required by the Recovery Act.

#### **H. National Environmental Policy Act (NEPA) Requirement**

Provide details as to whether the project will significantly impact the natural, social and/or economic environment. If the NEPA process is completed, you must indicate the date of, and provide a website link or other reference to, the final Categorical Exclusion, Finding of No Significant Impact or Record of Decision. If you have started the NEPA process, but it is not complete, your application must include:

- Where your project is in the process;
- The anticipated date of completion; and
- A website link or other reference to copies of any NEPA documents prepared.

Many ITS projects may qualify for a categorical exclusion under NEPA. Categorical exclusions are actions which meet the definition contained in federal code (40 CFR 1508.4) and, based on past experience with similar

actions, do not involve significant environmental impacts. They are actions which do not induce significant impacts to planned growth or land use for the area; do not require the relocation of significant numbers of people; do not have a significant impact on any natural, cultural, recreational, historic or other resource; do not involve significant air, noise, or water quality impacts; do not have significant impacts on travel patterns; or do not otherwise, either individually or cumulatively, have any significant environmental impacts.

Examples of ITS projects that would qualify for a categorical exclusion under federal law (23 CFR Section §771.117) and do not normally require any further NEPA approvals include, but are not limited to:

- Activities included in the State's highway safety plan;
- Installation of fencing, signs, pavement markings, small passenger shelters, traffic signals, and railroad warning devices where no substantial land acquisition or traffic disruption will occur;
- Improvements to existing rest areas and truck weigh stations;
- Alterations to facilities or vehicles to make them accessible for elderly and handicapped persons;
- Purchase and installation of operating or maintenance equipment to be located within the transit facility and with no significant impacts off the site; and
- Deployment of electronics, photonics, communications, or information processing used singly or in combination, or as components of a fully integrated system, to improve the efficiency or safety of a surface transportation system or to enhance security or passenger convenience. Examples include, but are not limited to, traffic control and detector devices, lane management systems, electronic payment equipment, automatic vehicle locaters, automated passenger counters, computer-aided dispatching systems, radio communications systems, dynamic message signs, and security equipment including surveillance and detection cameras on roadways and in transit facilities and on buses.

Additional activities may be designated as categorical exclusions only after Administration approval. Applicants should submit documentation which demonstrates that the specific conditions for these categorical exclusions are satisfied and that significant environmental effects will not result. Examples include, but are not limited to:

- Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes;
- Highway safety or traffic operations improvement projects including the installation of ramp metering control devices and lighting;
- Bridge rehabilitation, reconstruction or replacement or the construction of grade separation to replace existing at-grade railroad crossings; and
- Construction of new truck weigh stations or rest areas.

## **I. Environmentally-Related Federal, State and Local Actions**

You must:

- State whether the proposed project is likely to require actions by other agencies (e.g., permits);
- Report the status of such actions; and
- Provide a website link or other reference to materials submitted to the other agencies, and/or demonstrate compliance with other Federal, State and local regulations as applicable, including, but not limited to:
  - Section 4(f) *Parklands, Recreation Areas*
  - *Refuges, & Historic Properties*
  - Section 106: *Historic and Culturally Significant Properties*
  - Clean Water Act: *Wetlands and Water*
  - Executive Orders: *Wetlands, Floodplains, Environmental Justice*
  - Clean Air Act: *Air Quality* (specifically note if the project is located in a non-attainment area)
  - Endangered Species: *Act Threatened and Endangered Biological Resources*
  - Magnuson-Stevens Fishery Conservation and Management Act: *Essential Fish Habitat*
  - The Bald and Golden Eagle Protection Act, and/or
  - Any State and Local requirements.

## **J. Protection of Confidential Business Information**

As much as possible, the information you submit shall use publicly-available data or data that can be made public and methodologies that are accepted by industry practice and standards. However, if your application includes information that you consider to be a trade secret or confidential commercial or financial information, you should:

1. Note on the front cover that the submission “**Contains Confidential Business Information (CBI)**”
2. Mark each affected page “CBI”
3. Highlight or otherwise denote the CBI portions.

The US DOT protects such information from disclosure to the extent allowed under applicable law. If the US DOT receives a Freedom of Information Act (FOIA) request for the information, the Department will follow the procedures described in its FOIA regulations at 49 CFR §7.17. Only information that is ultimately determined to be confidential under that procedure will be exempt from disclosure under FOIA.

## **K. First Page of Application**

The first page of an application should clearly identify:

- What type of project is the proposed project (highway, transit, rail, port or other)
- Information about the location of the project, including State, city, county and congressional district
- Whether the project is in an urban or rural area, and
- The amount in dollars of Grant Funds that the applicant is seeking.

Recipients of TIGER Discretionary Grants and their first-tier sub-awardees will be required to have a DUNS number (<http://www.dnb.com>) and a current registration in the Central Contractor Registration (<http://www.ccr.gov>). You do not need to have these items as part of the application, but a TIGER Discretionary Grant will not be awarded if a recipient or first-tier sub-awardee does not have these items.

## **Reporting Requirements for Grant Recipients**

The White House Office of Management and Budget (OMB) recently released a memo transmitting "government-wide guidance" that details the reporting requirements that will be imposed on those receiving funding under the American Recovery and Reinvestment Act. The OMB guidance directs funding recipients to file quarterly information that includes the total funds received and spent; the names of organizations assisting with a project and the amount paid to each; a list of projects, including location and completion timelines; and jobs associated with each project. Additionally, if a vendor is paid more than \$25,000 in connection with a project, the prime recipient needs to report the vendor's name, how much was paid, and what services the vendor rendered. The guidance provides rules and procedures regarding the reporting requirements, and should be carefully reviewed by potential applicants. OMB also announced a new web portal, [www.FederalReporting.gov](http://www.FederalReporting.gov), which will serve as "a one-stop-shop" for providing funding information. A copy of the document is online at [http://www.whitehouse.gov/omb/assets/memoranda\\_fy2009/m09-21.pdf](http://www.whitehouse.gov/omb/assets/memoranda_fy2009/m09-21.pdf).

## **Examples of ITS Benefits**

In your application, it is very important to make a strong case for how investment in ITS will help achieve the desired project outcome. As you have probably done in previous proposal bids, to justify expenditures, you are required to submit information with calculations to show that the benefits of your project outweigh the costs.

As with most infrastructure improvement projects that include an ITS component, you have to consider the impact on the overall economy and the people who are impacted by the work provided. Each phase of deployment affects people's jobs—including the planning, purchase, and installation stages of a typical ITS project. In

addition, we tend to overlook one of the most important aspects of a successful ITS project: the ongoing operation and maintenance (O&M) phases, which ensure the most long-term deployment benefits. The O&M phases of a successful ITS deployment have far-reaching implications on maintaining current employment levels, and provide the opportunity for the public and private sectors to employ more people. Most grant recipients will employ engineering services firms to design projects, technology suppliers to sell their equipment and provide continuous system upgrades, and contractors to build out the infrastructure. In turn, your agency will maintain vital jobs needed to support these projects during the deployment phase but, more importantly, you will help keep these internal jobs throughout the project's operations and ongoing maintenance program.

Summarized below are excerpts from a document released on January 16, 2009 by the US DOT's ITS Joint Program Office entitled "*Investment Opportunities for Managing Transportation Performance through Technology*." While we have provided just a few examples, additional US DOT cost/benefit data can be found at [http://www.itsa.org/industry\\_member\\_news\\_content/c219\\_d2632/News/Industry\\_amp\\_Member\\_News.html](http://www.itsa.org/industry_member_news_content/c219_d2632/News/Industry_amp_Member_News.html). We would also encourage you to use relevant data from the ITS Joint Program Office's ITS benefits database at <http://www.itsbenefits.its.dot.gov>, and the ITS deployment database at <http://www.itsdeployment.its.dot.gov>. While this data can help you support your application, we strongly encourage you to provide detailed and quantifiable information about how your specific project request will help achieve TIGER Grant objectives.

**Traffic Signal Optimization/Retiming** - The extent of benefits realized from traffic signal retiming depends on various factors including the quality of existing timing plans, street network configuration, and traffic patterns. However, the estimated benefit-to-cost ratio for optimizing signal timing plans, coordinating traffic signal control, and implementing adaptive signal control in California was found to be 17:1, and the Traffic Light Synchronization program in Texas demonstrated a benefit-to-cost ratio of 62:1.

**Traffic Incident Management** - Traffic incident management programs make use of a variety of ITS technologies to successfully detect, manage, and clear traffic incidents, improving safety for travelers by reducing the risk of secondary crashes, and reducing time and fuel wasted in traffic backups. Success builds from the ability of the programs to significantly reduce the duration of traffic incidents, from 15 to 65 percent, with the bulk of studies finding savings of 30 to 40 percent from incident management systems.

**Safety Service Patrols** – Safety Service Patrols, supported by an array of ITS technologies, can provide significant reductions in the time necessary for responding to and clearing incidents. Service patrols are considered one of the most essential components of a successful traffic incident management program. More recently, safety service patrols have become an effective component of work zone management, especially for long-duration work zones. In Atlanta, GA, the Highway Emergency Response Operators motorist assistance patrol program and NaviGator incident management program saved more than 187 million dollars, yielding a benefit-to-cost ratio over 4:1. In Indiana, the Hoosier Helper freeway service patrol had a projected benefit-to-cost ratio of nearly 5:1 for daytime operations, and over 13:1 for 24-hour operations.

**Surveillance and Detection** – Many strategies for arterial, freeway, and incident management systems are enabled by traffic surveillance and detection technologies. Examples of surveillance and detection systems include inductive loop, acoustic, and microwave vehicle detectors, and camera systems providing frequent images or full-motion video that are critical for enabling active traffic management and incident response. A US DOT evaluation of surveillance and detection systems shows a benefit-to-cost ratio of 5.6:1.

**Road Weather Information Systems** - Road weather management systems mitigate weather impacts by using technology to promote safety, improve mobility, increase productivity, and protect the environment. Road Weather Information Systems are critical components of many agencies' winter maintenance programs. Accurate and timely road weather information helps maintenance managers react proactively before problems arise, improving safety and reducing costs. Staff meteorologists at the transportation management center in Salt Lake City, UT provided detailed weather forecast information to winter maintenance personnel, reducing labor and materials costs for snow and ice control activities at a benefit-to-cost ratio of 10:1.

**Electronic Toll Systems/Open Road Tolling** - Electronic Toll Collection (ETC) is one of the most successful ITS applications with numerous benefits related to delay reductions, improved throughput, fuel economy, and safety. With technologies such as open road tolling (ORT), transactions can be processed automatically at freeway speeds to minimize traffic backups, reduce the need for toll booth barriers, and improve system efficiency. Many ORT projects can be implemented quickly as enhancements to existing toll facilities, creating an immediate economic and environmental benefit by reducing unnecessary delays and emissions. When added to a high-volume toll plaza in Orlando, FL, average delays were reduced by 50 percent for manual cash customers, by 55 percent for automatic coin machine customers, the speed for express ETC lanes increased by 57 percent, and vehicle crashes decreased by an estimated 22 to 26 percent.

**Ramp Metering Systems** - Ramp metering systems use traffic signals at on-ramps to control the rate of vehicles entering the freeway. The signals can be set for different metering rates to optimize freeway flow and minimize traffic congestion. In the St. Paul, MN area, ramp metering was shown to increase throughput by 30 percent and increase peak period speeds by 60 percent. In Minneapolis-St. Paul, the benefit-to-cost ratio for a ramp metering system was calculated to be 15:1. When the ramp metering system was temporarily shut down as part of a study, highway speeds fell by 7 percent and vehicle crashes increased by 23 percent.

**Electronic Border Crossing Systems** - ITS applications for commercial vehicle operations (CVO) are designed to enhance communication between motor carriers and regulatory agencies, particularly during interstate freight movement. ITS applications can aid carriers and agencies in reducing operating expenses, improving efficiency and throughput, and ensuring the safety of motor carriers operating on the Nation's roadways. In a study of the mid-continent transportation corridor from Duluth, MN to Laredo, TX, electronic border screening technologies were found to have a benefit-to-cost ratio ranging from 85:1 to an astounding 718:1 due to the significant reductions in motor carrier delays at the border crossing.

**CVISN/Electronic Credentialing and Electronic Screening** - The Commercial Vehicle Information System and Networks (CVISN) program has created a nationwide framework of communication links to conduct business transactions electronically. Electronic registration and permitting at State agencies allows carriers to register online, decreasing the turn-around time associated with permit approval. Enforcement personnel at check stations can use national database clearinghouses to confirm carrier regulatory compliance data and crosscheck safety assurance information. Benefit-to-cost ratios were found to be as high as 40:1.

**Bus Rapid Transit** - Bus Rapid Transit systems can significantly benefit from ITS technologies such as transit signal priority at intersections, electronic fare payment systems, automated vehicle location/computer-aided dispatch, and Vehicle Assist and Automation Systems which provide transit operators with capabilities including precision docking, vehicle guidance, platooning, and automated vehicle operations. A 2005 analysis demonstrated a benefit-to-cost ratio for several transit case studies ranging from 1.92 to 9.49.

**Traffic Adaptive Signal Control** - Traffic signal optimization provides coordination along arterials to improve traffic flow and reduce delays at traffic signals. Traffic Adaptive Signal Control systems coordinate the control of signals along arterial corridors, adjusting the lengths of signal phases based on real-time traffic conditions. Studies from 11 cities found delay reductions ranging from 5 to 42 percent after installation of Adaptive Signal Control, including an average delay reduction of 10 percent at 7 intersections in Los Angeles.

**Transit Signal Priority** - Transit Signal Priority (TSP) is a cost-effective method to make bus transit service more reliable. TSP is often implemented on a conditional basis intended to help transit vehicles improve schedule performance by granting priority to transit vehicles at signalized intersections when they are behind schedule. TSP systems, through coordination with arterial management systems, can improve service quality and transit agency productivity resulting in additional ridership. Experiences in 10 cities in the U.S. and abroad demonstrated a reduction of up to 20 percent in bus travel time using transit signal priority.

**Traveler Information/Dynamic Message Signs** - Dynamic Message Signs (DMS) are traffic control devices used for traffic warning, regulation, routing and management, and are intended to affect the behavior of drivers by

providing real-time traffic-related information such as traffic conditions, incidents, weather, construction, safety, and special events. A San Antonio, TX deployment of an integrated DMS and incident management system resulted in an estimated 5.7 percent reduction in delays, 2.8 percent decrease in crashes, and 1.2 percent decrease in fuel consumption annually.

**Parking Management Systems** - Parking management systems monitor the availability of parking spaces and disseminate the information to drivers, reducing traveler frustration and traffic congestion associated with searching for parking. Ten parking facilities in St. Paul, Minnesota are connected to an advanced parking management system that provides information on facilities with available spaces. A study of downtown traffic found travel times were reduced by 9 percent and the stopped time delay decreased by 4 percent.

**Automated Vehicle Location/Computer-Aided Dispatch** - Transit and fleet management ITS applications improve efficiency and reliability through the use of automated vehicle location (AVL) and computer-aided dispatch (CAD) systems. These systems can improve the efficiency of transit and fleet operations and provide users with a more convenient and informed travel experience. Implementation of an AVL system in Denver, CO decreased the number of transit vehicles arriving early by 12 percent, decreased the number of late arrivals by 21 percent, and decreased the number of customer complaints by 26 percent.

**High Occupancy Toll (HOT) Lanes** - High-occupancy toll (HOT) lane facilities are designed to charge single-occupancy vehicles for the use of a high-occupancy vehicle (HOV) lane in order to reduce traffic congestion and travel times and raise revenues. The toll can be dynamically adjusted to ensure that traffic volume does not exceed an established threshold for all vehicles in the HOV lanes. In Minneapolis, MN, survey data was collected to determine travelers' willingness to pay to avoid congestion. The survey showed that 59 percent of passengers would be willing to pay two extra dollars to save twenty minutes of travel time.

**Work Zone Management Systems** - ITS solutions for work zone management include components such as smart work zones, traveler information/portable DMS, dynamic lane merge systems, variable speed limit systems, and portable traffic management systems—including surveillance and detection and safety service patrols. Smart work zones can reduce delay by an estimated 41 to 75 percent, and can also improve safety associated with highway construction projects. Based on a review of work zone ITS deployments from 17 states, the estimated benefit-to-cost ratio ranged from 2:1 to 42:1.

## **Conclusion**

There is no doubt that now, more than ever, the proven benefits of using ITS technology will deliver on the promise to get people back to work and keep them employed long into the future, while having a lasting impact on the performance of our nation's transportation system. The ITS applications deployed today will not only improve our existing economic condition, but will provide the foundation for future innovation and enhancements to our quality of life. We hope this white paper will guide you as you create a strong case for investing in ITS solutions, and we look forward to serving as a resource as you work to submit your TIGER Grant application.