North/West Passage

# Tech Memo 2

*Freight Funding Opportunities*

3.24.2015

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# I. Introduction and Purpose

The North / West Passage (NWP) Freight Task Force was created to help the NWP identify projects that will help the coalition understand and support freight movements along I-90 and I-94. A previous technical memorandum undertaken for this project identified and ranked nine projects with the ability to improve commercial vehicle operations in the corridor.

This Technical Memorandum (#2) was developed to identify resources necessary for the North / West Passage Freight Task Force (FTF) to carry out and implement its work plan. The document also attempts to match funding opportunities to the list of projects identified in the FTF work plan (Tech Memo #1) to support project implementation by the NWP. The focus of the project effort is on freight related Intelligent Transportation Systems (ITS) deployments along the I-90 / I-94 corridors; however, the mix of projects also includes non-technology based activities that could more broadly improve commercial vehicle operations in the corridor.

# II. National / Federal Funding Sources

## *Planning and Research Funding Programs*

A variety of funding sources are available for transportation planning, research, and projects. Nationally, the organizations most relevant to the NWP that fund relevant activities are administrations under the umbrella of the U.S. Department of Transportation (USDOT), including the Federal Highway Administration (FHWA), the Federal Motor Carrier Safety Administration, (FMCSA) and the Research and Technology Administration (RITA). (The FHWA was contacted for assistance and updates to current funding sources; however, because MAP-21 has been extended and a new reauthorization bill has not passed, many funding programs initiated or continued under MAP-21 or previous reauthorizations have uncertain immediate futures.)

The Transportation Research Board (TRB), a division of the National Academy of Sciences, administers several major research programs, including the National Cooperative Highway Research Program (NCHRP), which is sponsored by member departments of the American Association of State Highway and Transportation Officials (AASHTO), in cooperation with FHWA. The National Cooperative Freight Research Program, which was initiated in 2006 specifically to carry out applied research on problems facing the freight industry, was not reauthorized in MAP-21.

**Exhibit 1** summarizes several funding the programs administered by federal agencies within the USDOT and the TRB that appear to have the most relevance to the project funding needs of the NWP – Freight Task Forces. The next section provides brief descriptions of the relevant funding programs administered by the organizations highlighted above.

**Exhibit 1: Federal Planning & Research Funding Programs**

| Source | Agency | Funding (Annual) | Project Cost Range |
|---|---|---|---|
| **Exploratory Advanced Research Program** | FHWA | $10-11 million | $500k-$2M |
| **Border Enforcement Grants** | FMCSA | Varies | $40k - $18M |
| **CVISN and PRISM Grants** | FMCSA | $30 million | N/A |
| **Intelligent Transportation Systems Program** | RITA | $110 million | $300k- multi-million |
| **Multistate Corridor Operations & Mgmt Program** | RITA | N/A | |
| **Connected Vehicle Pilot Deployment Program** | RITA/FHWA | TBD | $2M - $20M |
| **National Cooperative Highway Research Program** | FHWA/TRB | $36.5 million | $200k-$600k |
| **Strategic Highway Research Program 2 (SHRP-2)** | TRB | ~$40 million | varies |
| **Safety Innovation Deployment Program** | FHWA | $12.75 million | $25k-$750k |

## *Federal Highway Administration (FHWA)*

FHWA is a modal administration under USDOT, responsible for overseeing the nation's highways. FHWA's mission is to "improve mobility on our Nation's highways through national leadership, innovation, and program delivery." While the agency has a variety of management and administrative roles, including providing leadership, guidance, and direction to State Departments of Transportation in planning, constructing, and maintaining transportation projects, it also funds transportation planning and research activities related to highways.

**FHWA Office of Research, Development, and Technology (RD&T)**

FHWA's RD&T Office leads the development of a nationally coordinated research and technology program; champions the advancement of highway technological innovation in support of FHWA strategic goals and performance objectives; advances knowledge through research, development, testing, and evaluation services; and provides support and assistance throughout FHWA in matters relating to research, development, and technology.[1]

The RD&T administers several programs that provide funding opportunities to state DOTs and other partners; the most pertinent RD&T programs for the NWP Coalition include the Exploratory Advanced Research Program (EAR), and the Transportation Pooled Fund Program.

### Exploratory Advanced Research (EAR) Program

**Agency:** FHWA – RD&T

**Funding Available:** Statements may be submitted year-round; project costs range between $500,000 and $2,000,000.

**Description:** The EAR Program funds exploratory advanced research across the range of issues that are critical to the transportation industry, including predicting societal and complex

[1] http://www.fhwa.dot.gov/research/tfhrc/offices/

natural systems, studying next generation solutions to build, maintaining and managing future highways, identifying next generation solutions for system operations and reducing congestion, and ensuring next generation pedestrian and driver safety. Research may include foundational work that anticipates the questions and future needs in applied research or work that applies innovations from other industries to the transportation sector.

**Selection Process:** FHWA uses peer review panels to evaluate proposals. These panels are typically made up of federal, state, academic, and international scientific and engineering experts and are vetted to avoid conflicts of interest.

**Schedule:** Future rounds may be announced in the fall or winter quarter of the federal fiscal year (October 1 to September 30) with deadlines in the spring / summer.

## *Federal Motor Carrier Administration (FMCSA)*

FMCSA was established in 2000 as a separate modal administration under the USDOT, responsible for overseeing the nation's highways (before 2000, it was under the umbrella of FHWA). The primary mission of FMCSA is to prevent commercial motor vehicle-related crashes and injuries. FMCSA works with federal, state, and local enforcement agencies; the motor carrier industry; labor and safety interest groups; and others to accomplish its mission. FMCSA also provides states with financial assistance for roadside inspections and other commercial motor vehicle safety programs. It promotes motor vehicle and motor carrier safety through several grant programs; those most applicable to the NWP are summarized below.

### Border Enforcement Grant (BEG)

**Agency:** FMCSA

**Funding Available:** In fiscal year 2013, FMCSA issued 13 grants totaling nearly $32 million. Award amounts ranged from $43,367 (New Hampshire) to $18 million (Texas). Two NWP members, Montana and North Dakota, also received grant awards.

**Description**: The BEG program is a federal discretionary grant program providing financial assistance to states and entities that share a land border with another country for carrying out border commercial motor vehicle (CMV) safety programs and related enforcement activities and projects.

The goal of the BEG program is to reduce the number and severity of commercial motor vehicle crashes in the U.S. Congress intended BEG to be used primarily for enforcement activities related to foreign-domiciled carriers that engage in foreign commerce by crossing the Mexican or Canadian borders.

The federal share of the BEG may be 100 percent of the expenditures approved in the state or entity's Border Enforcement Plan, provided the maintenance of expenditures amount is met.

**Eligibility:** An entity or state must share a land border with another country. Applications from local governments must be coordinated through the state-lead commercial motor vehicle inspection agency.

**Selection Process:** The amount of the award to a qualified applicant is based on recommendations from FMCSA Division offices and a technical review panel, as well as the amount of BEG funding available. The national technical review panel prioritizes funding

requests based on multiple factors, some of which can be found at the following site: http://www.fmcsa.dot.gov/border-enforcement-grant/border-enforcement-grant-award-criteria

## Commercial Vehicle Information Systems and Networks (CVISN) Grant

**Agency:** FMCSA

**Funding Available:** In December 2014, FMCSA announced that $25 million in grant funds were available to eligible states for upgrades to improve technical capabilities and promote the deployment of ITS applications for commercial vehicle operations.

**Description:** The CVISN grant program provides funding for states to deploy, operate, and maintain elements of their CVISN programs, including a commercial vehicle, a commercial driver, and carrier-specific information systems and networks**.**

**Eligibility:** Only the agency in each state that is designated as the primary agency responsible for developing, implementing, and maintaining CVISN-related systems is eligible to apply for funding. Eligible states must also be Core CVISN Compliant. **Exhibit 2** displays the lead CVISN agencies for NWP member states, as well as their compliance status.

**Exhibit 2: NWP Lead CVISN Agencies and CVISN Core Deployment Status**

| State | Lead CVISN Agency | CVISN Status |
|---|---|---|
| **Idaho** | Idaho Transportation Department | Core compliant |
| **Minnesota** | Minnesota State Patrol | Deploying |
| **Montana** | Montana Department of Transportation | Deploying |
| **North Dakota** | North Dakota State Patrol | Deploying |
| **South Dakota** | South Dakota Department of Transportation | Core Compliant |
| **Washington** | Washington State Patrol | Core Compliant |
| **Wisconsin** | Wisconsin Department of Transportation | Core Compliant |
| **Wyoming** | Wyoming Department of Transportation | Deploying |

**Selection Process:** Applicants must be registered with grants.gov to apply for funding. Applicants must download, complete, and submit the grant application package on the Internet at the following location: http://www.grants.gov/applicants/apply-for-grants.html

## Performance and Registration Information Systems Management (PRISM) Grant

**Agency:** FMCSA

**Funding Available:** In December 2014, FMCSA announced that $5 million was available to eligible states to help integrate state CMV registration and licensing systems.

**Description:** PRISM technologies enable states to determine the current registration or licensing status of a motor carrier's vehicles. The PRISM system automatically suspends or withholds ineligible commercial vehicle registration from one state to another.

**Eligibility:** Same as for CVISN above.

**Selection Process:** Same as for CVISN above.

## *Research and Innovation Technology Administration (RITA)*

The Research, Development, and Technology (RD&T) department within USDOT was established to foster innovations leading to effective, integrated, and intermodal transportation solutions. Research activities are funded through administrations listed below. Some activities provide funding for competitive programs managed by other organizations, such as the programs administered by TRB.

Other activities support research conducted by department employees. Some funding is provided for competitive research programs such as the Surface Transportation Environment and Planning Cooperative Research Program (STEP).

The Research and Innovative Technology Administration (RITA) coordinates USDOT's research programs and is charged with advancing the deployment of cross-cutting technologies to improve the nation's transportation system. RITA brings together important data, research, and technology transfer assets of the Department of Transportation. RITA also provides strategic direction and oversight of USDOT's Intelligent Transportation Systems Program. Much of RITA's coordinating function within USDOT is overseen by the Research, Development, and Technology (RD&T) Planning Council, an advisory board made up of all USDOT's modal administrators and chaired by the RITA administrator.

### Intelligent Transportation Systems (ITS) Joint Program Office (JPO)

The USDOT's ITS program, the ITS JPO, is housed in RITA and focuses on designing intelligent vehicles, designing intelligent infrastructure, and creating an intelligent transportation system by integrating these two components. This program supports the overall advancement of ITS by investing in major research initiatives, conducting exploratory studies, and providing a deployment support program, including technology transfer and training.

The ITS JPO has department-wide authority in coordinating the ITS program and initiatives among the following DOT Offices: FHWA, FMCSA, FTA, FRA, NHTSA, and MARAD. The ITS program director leads the JPO, which includes program managers and coordinators of the USDOT's multimodal ITS initiatives. In addition, individual staff members manage technology transfer functions, such as National ITS Architecture development and maintenance, standards development, professional capacity building, and program assessment.

## Intelligent Transportation Systems Program

**Agency:** RITA

**Funding Available:** Solicitations are posted as necessary; range of project costs – a few hundred thousand to several million dollars.

**Description:** The USDOT's Intelligent Transportation Systems (ITS) Program focuses on designing intelligent vehicles, designing intelligent infrastructure, and creating an intelligent transportation system by integrating these two components. This program supports the overall

advancement of ITS by investing in major research initiatives, conducting exploratory studies, and providing a deployment support program, including technology transfer and training.

The ITS Management Council reorganized the functions of the ITS program to focus on particular high payoff areas. Each major initiative is multimodal, public-private sector involved, and aims to improve safety, mobility, and / or productivity. These include connected vehicle research, mode specific research, cross cutting research, and exploratory research. The ITS JPO also provides resources for deployment and supports development of the ITS profession through technology transfer, training, and evaluation of ITS deployments.

**Selection Process:** The ITS JPO follows all FHWA procurement processes and regulations. ITS JPO research funding varies, but all research projects are guided by the ITS JPO strategic plan, and most are awarded through a competitive bidding process. Open procurements may become available through a variety of solicitations such as Requests for Proposals (RFP) and Broad Agency Announcements (BAA). Opportunities can be found on http://www.its.dot.gov/exit/fedbizopps.htm.

## Multistate Corridor Operations & Management (MCOM) Program

**Agency:** ITS Joint Program Office, RITA

**Funding Available:** TBA (provides 80 percent of project costs; minimum 20 percent match required)

**Description:** The Multistate Corridor Operations & Management (MCOM) Program provides funding for existing and potential multistate organizations, coalitions, or other entities engaged in corridor transportation activities. The program was authorized by SAFETEA-LU and continued through MAP-21; however, a source of funding has yet to be identified in FY2015 and beyond. The purpose of MCOM is to promote regional cooperation, planning, and shared project implementation for programs and projects to improve multimodal transportation system management and operation.

**Selection Process:** Competitive grant application

## Connected Vehicle (CV) Pilot Deployments

**Agency:** ITS Joint Program Office, RITA (Funding administered by FHWA)

**Funding Available:** A Broad Agency Announcement (BAA) published by USDOT on January 31, 2015, indicated that a total program amount has not yet been determined. The BAA also stated that FHWA intends to award multiple Firm Fixed Price Contracts in Phase 1. The total amount of the awards for all three phases of the research is expected to be between $2 million and $20 million.

**Description:** Connected vehicle research is being sponsored by the USDOT and others to leverage the potentially transformative capabilities of wireless technology to make surface transportation safer, smarter, and greener. These efforts have resulted in a considerable body of research that is now in hand to support pilot deployments. Building on the collective body of connected vehicle research, the Connected Vehicle Pilot Deployment Program seeks operational deployments of connected vehicle applications that capture and use new forms of connected vehicle and mobile device data. The goal is to improve multimodal surface transportation system performance and enable enhanced performance-based systems

management. The overall objective of Phase 1 is to set the stage for a connected vehicle pilot deployment that has an observable and measureable near-term impact, is deployed on-time, and falls within budget.

**Selection Process:** Competitive grant application

## *Transportation Research Board (TRB)*

TRB administers several major research programs sponsored by state departments of transportation and other organizations. The oldest and largest of these programs, the National Cooperative Highway Research Program (NCHRP), is sponsored by the state transportation departments in cooperation with FHWA. TRB also administers research programs for transit, airports, hazardous materials, and railroads. (Note: In 2005 Congress authorized a separate freight research program – The National Cooperative Freight Research Program -- that was repealed in MAP-21.)

Each year the TRB solicits "problem statements" for potential research activities under each of its cooperative research program areas. Various standing committees at the TRB or AASHTO then prioritize and select problem statements for further development based on the level of funding from year to year. (Typically the available funding can only support a small number of the problem statements submitted.) After the slate of problem statements has been selected, the TRB organizes panels of experts to provide guidance on technical aspects of the research and to translate problem statements into requests for proposals with well-defined objectives. Research proposals are then solicited from private and public research organizations with the capability and experience in the problem areas to be studied. The technical panels review the proposals, recommend contract awards, monitor research in progress, provide technical guidance, and determine the acceptability of the final reports.

### National Cooperative Highway Research Program (NCHRP)

**Agency:** FHWA & State DOTs through TRB

**Funding Available:** Total annual funding: ~ $36.5 million; range of project costs: $200,000–$600,000

**Description:** Administered by the Transportation Research Board (TRB), the National Cooperative Highway Research Program (NCHRP) was created in 1962 as a means to conduct research in areas that affect highway planning, design, construction, operation, and maintenance nationwide. NCHRP is sponsored by the state departments of transportation in cooperation with FHWA. Support is voluntary and funds are provided from the states' Federal-Aid Highway apportionment of State Planning and Research (SP&R) funds. Each state's voluntary contribution amounts to 5.5 percent of its SP&R apportionment, resulting in an annual cooperative pool of $36.5 million to fund the program's activities (based on 2008 funding levels).

NCHRP does not conduct basic research; instead, the program focuses on solutions that are practical and readily usable. Successful problem statements address issues of critical concern and interest to many states. In addition, the review committee considers whether the problem can be handled effectively in the cooperative research environment supported by NCHRP and will have a high probability of success.

**Selection Process:** State DOTs and FHWA propose research topics annually, and the AASHTO Standing Committee on Research (SCOR) recommends both the projects to be funded and the levels of funding for those projects, subject to approval of the AASHTO Board of Directors. The funds can be spent only for the administration of problems approved by at least two-thirds of the states. A technical panel of experts is also assembled for each selected project. These technical panels review the problem statements and contractor proposals, recommend contract awards, monitor research in progress, provide technical guidance, and review reports for acceptability and for accomplishment of the agency's research plan.

**Schedule:**

- Early July – AASHTO Standing Committee on Research (SCOR) solicits problems
- Mid-September – Problem statement submission deadline
- December / January – Ballots sent to selection panel (SCOR and Research Advisory Committee (RAC))
- February / March – Ballots compiled
- Late March – Projects selected by SCOR
- Mid-April – Technical panel nominations requested
- May / June – Final list of projects approved by AASHTO Board of Directors
- June / July – Panels selected
- July / August – First panel meetings

## Strategic Highway Research Program 2 (SHRP-2)

**Agency:** Administered by TRB under a Memorandum of Understanding (MOU) with FHWA and AASHTO

**Funding Available:** SHRP-2 was authorized by SAFETEA-LU through federal fiscal year 2009, and continuing resolutions extended the program through June 2015. Total funding has been authorized at $232.5 million.

**Description:** SHRP 2 focuses on applied research in four focus areas:

- **Safety**: Prevent or reduce the severity of highway crashes by understanding driver behavior.
- **Renewal**: Address the aging infrastructure through rapid design and construction methods that cause minimal disruption and produce long-lived facilities.
- **Reliability**: Reduce congestion through incident reduction, management, response, and mitigation.
- **Capacity**: Integrate mobility, economic, environmental, and community needs when planning and designing transportation capacity.

The SHRP-2 program approaches problems from a customer-oriented view of highway needs, based on the following characteristics: 1) Address needs from a systems perspective; 2) Is open to research in nontraditional highway-related areas; and, 3) Explicitly acknowledges the interdependence of highway research and technology programs.

Through targeted, short-term, results-oriented research, SHRP 2 develops recommended procedures, practices, and applications to advance the nation’s highway system in the program’s key focus areas. With SHRP as a model, many SHRP 2 products could be adopted as standards, guides, or recommended practices at the local, state, or federal level.

**Selection Process:** Project solicitations advertised through TRB and federal contracting websites. Project needs are determined by several committees established under the SHRP-2 program. Previous SHRP2 Solutions have included the following freight resources: "Strategies for Improving the Project Agreement Process between Highway Agencies and Railroads (SHRP2 Report S2-R16-RR-1), Round 2; "Freight Demand Modeling and Data Improvement" (SHRP2 Report S2-C20-RR-1), Round 3; and "Integrating Freight Considerations into the Highway Capacity Planning Process: Practitioner's Guide", (C15).

## *Other Potential Federal Project Funding Sources*

During the research conducted for this Technical Memorandum, the consulting team identified several other federal programs that may have the potential for funding future projects within the NWP corridor. However, for the current list of identified future projects, these programs where not viewed as being applicable at this time. It was also the case that several programs created under previous Congressional transportation reauthorization bills were not renewed or funded in MAP-21. A brief summary of these potential resources is provided below.

**Exhibit 3: Other Federal Project Funding Sources**

| Source | Agency | Type |
|---|---|---|
| **Congestion Mitigation and Air Quality Program** | USDOT | Project |
| **Highway Safety Improvement Program** | FHWA | Project |
| **National Highway Performance Program** | FHWA | Project |
| **Surface Transportation Program** | FHWA | Project |
| **TIGER Grant Program** | USDOT | Project |
| **Transportation Infrastructure Finance and Innovation Act** | USDOT | Project |

### *Congestion Mitigation and Air Quality Program (CMAQ)*

**Agency:** USDOT

**Description:** The CMAQ program provides a flexible funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas). Freight related projects that may be eligible for CMAQ funding include those that reduce emissions by improving the efficiency of freight flows and reducing congestion. This source of funding is most applicable to urban areas along the NWP Corridor.

### *Highway Safety Improvement Program (HSIP)*

**Agency:** FHWA

**Description:** Authorized in SAFETEA-LU, the FHWA Safety Program administers grants, cooperative agreements, and contracts with states, other federal agencies, universities and colleges, private sector entities, and nonprofit organizations to conduct research, development, and technology transfer for innovative safety technologies. The HSIP supported projects that improve the safety of road infrastructure by correcting hazardous road locations, such as dangerous intersections, or making road improvements, such as adding rumble strips.

Between 2006 and 2009, program funding ranged from $9 million to $12.75 million per year.

### *National Highway Performance Program (NHPP)*

**Agency:** FHWA

**Description:** The NHPP provides support to maintain the condition and performance of the National Highway System (NHS), to construct new facilities on the NHS, and to ensure that investments of federal-aid funds in highway construction are directed to support progress toward achieving performance targets established in a state's asset management plan for the NHS.

NHPP projects must be on an eligible facility and support progress toward achieving national performance goals for improving infrastructure condition, safety, mobility, or freight movement on the NHS; they must also be consistent with Metropolitan and statewide planning requirements. Eligible activities that may apply to the NWP corridor include the following:

- Highway safety improvements on the NHS
- Capital and operating costs for traffic and traveler information, monitoring, management, and control facilities and programs
- Capital and operating costs for traffic and traveler information, monitoring, management, and control facilities and programs

### *Surface Transportation Program (STP)*

**Agency:** FHWA

**Description:** Last authorized in SAFETEA-LU, the STP program provides flexible funding for projects on any federal-aid highway, bridges on public roads, transit capital investments, intra- and inter-city bus terminals and facilities, non-motorized paths, bridge and tunnel inspection, and inspector training. STP remains the federal-aid highway program with the broadest eligibility criteria.

Between 2006 and 2009, program funding ranged from $6.27 million to $6.86 million per year.

### *TIGER Discretionary Grants*

**Agency:** USDOT

**Funding Available:** $500 million for FY 2015

**Description:** To support growth in exports and stimulate economic activity, the U.S. Department of Transportation is investing in freight transportation infrastructure through the TIGER (Transportation Investments Generating Economic Recovery) program. In 2013 alone, $474 million was granted to 52 transportation projects across 37 states. Of this, $123.4 million was designated for projects in rural areas, including rail projects, intermodal terminals, and other

freight-related projects. TIGER funding is appropriated on a year-by-year basis since its inception in 2009.

### *Transportation Infrastructure Finance and Innovation Act (TIFIA)*

**Agency:** USDOT

**Funding Available:** Competitive grant / financing / required match

**Description:** The TIFIA program provides federal credit assistance in the form of direct loans, loan guarantees, and standby lines of credit to finance surface transportation projects of national and regional significance. TIFIA credit assistance provides improved access to capital markets, flexible repayment terms, and potentially more favorable interest rates than can be found in private capital markets for similar instruments. TIFIA can help advance qualified, large-scale projects that otherwise might be delayed or deferred because of size, complexity, or uncertainty over the timing of revenues. Any type of project that is eligible for federal assistance through STP is eligible for the TIFIA credit program. Additionally, bridges and tunnels, inter-city passenger bus and rail facilities and vehicles, publicly owned freight rail facilities, private facilities providing public benefit for highway users, intermodal freight transfer facilities, projects that provide access to such facilities, service improvements on or adjacent to the National Highway System, and projects located within the boundary of a port terminal under certain conditions are eligible.

# III. State Funding Sources

## *State Planning & Research Funding Sources*

**Exhibit 4: State Planning & Research Funding Sources**

| Source | Agency | Type |
|---|---|---|
| Transportation Pooled Fund Program | FHWA | Planning / Research |
| State Planning & Research Funding* | State DOTs | Planning / Research |

*From Highway Trust Fund

### Transportation Pooled Fund (TPF) Program

**Agency:** FHWA – RD&T

**Funding Available:** Within the TPF Program, the typical source of funding is State Planning and Research (SP&R) funds. The normal match for State Planning and Research (SP&R) funds is at least 20 percent non-federal with maximum participation being 80 percent federal funding. Cases do exist where the state match requirement can be waived. In-kind or alternative contributions other than monetary contributions are also allowed. Foreign governments and private organizations can also contribute to pooled fund projects.

**Description:** A TPF pooled fund study is intended to address a new area of research, to fund planning, or technology innovation, or to provide information that will complement or advance previous efforts in these areas. FHWA sponsors the program as a means for interested states, FHWA, and other organizations to partner when significant or widespread interest is shown in solving transportation–related problems. Partners may pool funds and other resources to solve

these problems through research, planning, and technology transfer activities. To qualify as a pooled fund study, more than one state transportation agency, federal agency, other agency such as a municipality or metropolitan planning organization, college / university, or private company must find the subject important enough to commit funds or other resources to conduct the research, planning, and technology transfer activity. If a subject has been studied previously, the new study should provide new information that will complement or advance previous investigations of the subject matter. Federal and state transportation agencies may initiate pooled fund studies. Local and regional transportation agencies, private industry, foundations, and colleges / universities may partner with any or all of the sponsoring agencies to conduct pooled fund projects.

A Pooled Fund study website was created under NCHRP Project 20–39(2): http://www.pooledfund.org/. The website includes program procedures and information about all studies. Authorized users in the states and FHWA may post study solicitations, make funding commitments, update study records, and view funding reports.

**Selection Process:** Establishing a pooled fund project requires that a proposal for the project be developed that identifies the lead agency, project description, cost, duration, and the proposed funding contribution of each potential partner. Pooled fund projects can be state-led or FHWA-led.

Proposals are sent to FHWA for approval, and, once approved, solicitations are posted to the TPF website: http://www.pooledfund.org/browse/Open.

**Schedule:** TPF projects follow no fixed schedule. If approved, project reports must be submitted on a quarterly basis.

## State Planning & Research Funding (SP&R)

**Agency:** State DOTs, Universities

**Funding Available:** From 2005-2009, about $700 million was authorized, with individual project costs ranging from $50,000 to over $1 million, mostly through competitive RFPs.

**Description:** Approximately 30 percent of the total amount of dollars allotted for research under transportation authorizations bills is spent on research activities that are directed through state DOTs through dollars that come out of State Planning and Research (SP&R) funds. SP&R funds are derived from a mandatory 2 percent of every state's total apportionment of dollars under certain programs from the Highway Trust Fund. The specific programs under which states must set aside 2 percent of their total dollars apportioned include the following: Interstate Management (IM), National Highway System (NHS), Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ), Highway Bridge Replacement and Rehabilitation Program (HBRRP), and the Highway Safety Improvement Program (HSIP). Of the 2 percent set aside from each of these programs, one-quarter of these funds must be spent on research-related activities; however, states can spend more than 25 percent of their SP&R funds on research if they desire.

The SP&R Program is intended to direct research toward finding solutions to local, regional, and statewide problems and issues. State DOT research is typically applied to research programs. Research activities often include applying new technologies and / or technology transfer. On a national level, state DOTs also use their SP&R funding to contribute to research programs and organizations to help coordinate research activities, including pooled fund studies and NCHRP.

The 25 percent of SP&R funds allotted toward research is referred to as SP&R Part 2, with the remainder being SP&R Part 1. Part 1 funding may be used for the following:

- Engineering and economic surveys and investigations
- The planning of future highway programs and local public transportation systems and the planning of the financing of such programs and systems (including MPOs and statewide planning)
- Development and implementation of management systems
- Studies of the economy, safety, and convenience of surface transportation systems and the desirable regulation and equitable taxation of such systems
- Research, development, and technology transfer activities necessary in connection with planning, designing, constructing, managing, and maintaining highway, public transportation, and intermodal transportation systems
- Study, research, and training on the engineering standards and construction materials for transportation systems, including evaluating and accreditation of inspection and testing, and the regulation and taxation of their use

**Schedule:** Each state has a different schedule and process for project solicitation, prioritization, and selection. The AASHTO Standing Committee on Research maintains a website with links to this information: http://research.transportation.org/Pages/LinkstoDOTResearchBranches.aspx

**Project Solicitation & Selection:**
Solicitation recipients, topics, and schedules vary from state to state, as well as submission schedule. The states that widely solicit for research ideas include at least those listed below. Unless otherwise specified below, no set time frame exists for soliciting research needs. Many states use the NCHRP listserv to disseminate RFP and / or research topic solicitations.

- Minnesota - Submitters must identify a MnDOT or city / county champion, typically due in July of each year.
    - MnDOT Transportation Research Innovation Group (TRIG)
    - MN Local Road Research Board (LRRB)
- Montana - Sign up for the research topic solicitation email list; topic statements are accepted any time but are due annually on 4 / 30.
- South Dakota - Problem statements are accepted and considered at any time.
- Wisconsin - No idea solicitation URL is available; sign up to receive email updates on WisDOT research activities and projects.

# IV. Project Matching Guidance

The purpose of Tech Memo 1 of this Study was to create a business plan of projects the NWP FTF could undertake to improve freight operations in the corridor over the next 1-5 years. After developing the initial list of projects based on industry trends, needs of the corridor, and feedback from FTF members, the members were formally surveyed and asked to rank the nine projects by each project's importance to the corridor and their respective state DOT. The survey results were averaged across all scores to come up with a consensus ranking of the nine projects. The projects and survey results are below in Exhibit 5. Each project will be matched to a potential funding source that could be used to implement the project. As noted above, however, the absence of a permanent federal transportation bill makes it difficult to project the availability of program funds.

**Exhibit 5: NWP Freight Project Ranking Survey Results**

| Project Name | Average | Rank |
|---|---|---|
| Pilot Escort Certification and Reciprocity Universal Standard | 3.125 | **1** |
| Advanced Notice of Truck Parking Availability | 3.125 | **2** |
| Electronic Display of Oversize / Overweight Permits | 4 | **3** |
| Pursue a "Toward Zero Deaths" (TZD) Involving Commercial Vehicles Safety Campaign | 4.25 | **4** |
| NWP Virtual Weight Station Initiative | 5 | **5** |
| Oversize / Overweight Permitting Uniformity (Mid-long term) | 5 | **6** |
| Calibrate Downstream WIM Scales with Permanent Scale Data | 5.75 | **7** |
| Model Legislation for Autonomous Commercial Vehicle Operation | 6.875 | **8** |
| Multistate Commercial Vehicle Platoon Demonstration (Mid-long term) | 7.875 | **9** |
| Connected Vehicles Pilot for Over-Dimension Loads - **Not Ranked** | N/A | |

## 1. Pilot Escort Certification and Reciprocity Universal Standard

**Project Synopsis:** States typically require pilot escort vehicles for over-dimension loads that exceed specified width, height, or length limits. However, the dimensional triggers that result in a load to be accompanied by an escort vehicle vary from state to state, and this is also the case for the states in the NWP coalition. In addition to escort requirements based on the size of the load, some states allow certified private companies to provide escort vehicles, while other states require that escorts be provided by law enforcement agencies, such as the state police.

**Project Approach:** The initial effort would involve conducting market research in the corridor, including documenting key elements of pilot escort requirements for each NWP coalition state and their certification requirements. The research would also include interviews with key personnel to develop and agree upon a set of uniform standards for escort vehicle requirements and their certification. Based on the outcome of the initial effort, a subsequent task would develop a standard proposed for adoption by each state.

**Project Schedule / Budget:** 6-8 months; estimated cost - $35,000.

***Suggested Funding Source: Transportation Pooled Funds Program***

## 2. Advanced Notice of Truck Parking Availability

**Project Synopsis:** The shortage of available (and convenient) truck parking in the U.S. has been an ongoing issue for several decades that was documented in 1996 in a study of Interstate truck parking availability. That study and several subsequent efforts have noted the lack of readily available truck parking in many states. Previous research has demonstrated a need for real-time information about truck parking availability, especially for parking facilities that may be a short distance off primary highway facilities. Under the program funded by SAFETEA-LU, several pilot projects to test the feasibility of alternative technologies have been completed, including studies in Michigan and Minnesota. Additional pilot programs are in-progress, including corridor projects on I-95 and I-5.

**Project Approach:** The goal of this effort is to evaluate existing truck parking information technology systems and make a recommendation regarding standards for adopting technology and implementing among the NWP states. Implementing truck parking information systems corridor-wide under the standard will ensure compatibility and inter-operability across the corridor to provide real-time parking information to commercial vehicle drivers.

**Project Schedule / Budget:** 6 months; estimated cost - $30,000.

***Suggested Funding Source: Transportation Pooled Funds Program. Subsequent implementation (Phase 2) funding could likely come from each state's federally apportioned highway funds.***

## 3. Electronic Display of Oversize / Overweight Permits

**Project Synopsis:** Several states across the nation have started issuing electronic permits that carriers can display on a variety of electronic devices, including smartphones, iPads, tablets, laptops, and others. About half of the Northwest Passage states are now issuing electronic permits. The transmission of electronic permits eliminates paperwork and the need for carriers and drivers to physically print out oversize or overweight permit documents, saving both natural resources and time. This technology associated with displaying electronic permits is readily available, but the practice is relatively new among state agencies.

**Project Approach:** A consultant will assemble existing industry standards and available technologies currently in use for issuing electronic permits. The consultant will also conduct interviews and assemble case studies from states such as Maryland that are currently issuing permits electronically. The results of the evaluation and case studies will be presented in a technical report discussing the advantages and disadvantages of each technology option along with comparative information and recommendations for implementation among the NWP states.

**Project Schedule / Budget:** 6-8 months; estimated cost $25,000.

***Suggested Funding Source: Transportation Pooled Funds Program***

## 4. Pursue a "Toward Zero Deaths" CVO Safety Campaign

**Project Synopsis:** In 2009, FHWA and AASHTO partnered to develop a national strategy to prevent fatalities. In June 2014, the AASHTO Board of Directors endorsed the Toward Zero Deaths (TZD) strategy as a national vision for highway safety. Currently, 35 states have adopted a TZD vision or goal of zero highway fatalities. NWP member states could use TZD strategies and marketing materials to raise awareness and enroll partners within the commercial vehicle community across the corridor.

**Project Approach:** The goal of the project is to reduce commercial vehicle crashes and fatalities in the NWP corridor. A first step is to analyze state crash statistics for CMV crashes occurring on I-90 and I-94 (available federal data does not provide the geographic granularity required to isolate crashes occurring on the corridor). Based on the analysis, specific strategies under the TZD campaign, as well as strategies from the AASHTO Strategic Highway Safety (NCHRP Report 500, Volume 13: A Guide for Reducing Collisions Involving Large Trucks), would be proposed for implementation along the corridor.

**Project Schedule / Budget:** 12 months; estimated cost $50,000 - $75,000.

***Suggested Funding Source: Safety Innovation Deployment Program or successor***

## 5. NWP Virtual Weight Station Initiative

**Project Synopsis:** Enforcement pre-clearance or "e-screening" technologies have existed for several decades around the U.S. to reduce the time that compliant trucks spend at enforcement sites. Most trucks enrolled in a pre-clearance network have a transponder. As a truck with a transponder approaches an enforcement site, the transponder transmits data identifying the truck, while in-road and / or roadside sensors feed information such as vehicle weight and carrier credentials to a scale house or port of entry facility. Using this same concept, new character recognition and camera technologies have entered the market that allow vehicles the carriers operating trucks to be identified in real time using license plates, USDOT, or vehicle identification numbers. Using a suite of technologies that include weigh-in-motion (WIM) scales, cameras, screening software, and communication infrastructure, Virtual Weight Stations (VWS) allow enforcement officials to weigh vehicles and, in most instances, check safety records and carrier credentials without a physical facility. A mobile enforcement unit equipped with a laptop or a table with an Internet browser and a broadband link can be stationed downstream from the VWS. VWS enables enforcement officers to make informed decisions about pulling offenders over and conducting static weight checks or more thorough inspections. Previous research suggests that some states view VWS as the future of truck enforcement due to the cost of maintaining brick-and-mortar weight stations. This may be a particularly useful tool in rural expanses of the NWP corridor.

**Project Approach:** Assemble information about existing VWS implementation across NWP corridor states and within the corridor itself. Research the state-of-the-practice and state-of-the-

art in VWS technologies, and make recommendations for technology standards and installation sites within the corridor. This phase 1 project would also establish protocols for sharing performance results from enforcement, as well as technology cost-effectiveness.

**Project Schedule / Budget:** 6 months; estimated cost - $20,000.

***Suggested Funding Source: Transportation Pooled Funds Program. Subsequent implementation (Phase 2) funding could likely come from each state's federally apportioned MCSAP or CVISN funding.***

## 6. Oversize / Overweight Permitting Uniformity (Mid-long term)

**Project Synopsis:** To date, the NWP Corridor has undertaken three studies of oversize / over vehicle permitting uniformity, with little progress on implementing changes that result in greater uniformity. This project would seek to identify and document the costs to industry resulting from the lack of uniform regulations and then communicate those costs to senior DOT managers and policy makers. The project would also highlight the highest-cost non-uniformity issues in the corridor and demonstrate how the lack of uniformity affects the cost of doing business for some industries.

**Project Approach:** The project would be designed to complement national studies and initiatives on OS / OW permit uniformity currently under way at AASHTO and TRB. This effort would focus on creating case studies using real data from specialized carriers operating in the NWP Corridor. The results from case studies would then be used to examine economic impacts across the corridor from non-uniformity in specific areas of permitting such as the following:

- Time-of-day and other holiday restrictions
- Type and size of escort vehicles
- Escort requirements
- Size and weight differences between jurisdictions
- Others

**Project Schedule / Budget:** 1 year; with an estimated cost of approximately $150,000.00.

***Suggested Funding Source: NCHRP Program – consideration requires a problem statement be submitted by a state DOT***

## 7. Calibrate Downstream WIM Scales with Permanent Scale Data

**Project Synopsis:** Weigh-in-motion scale technology has become an essential tool in helping states collect and report traffic volume and weight data that are crucial inputs to highway and bridge design, performance management, and weight enforcement monitoring. States are also increasingly combining WIM with other advanced technologies to implement virtual weigh station facilities. While the accuracy and durability of WIM technology has continued to advance over the past several decades, maintenance and calibration remains a time and resource

consuming activity. In 2006, as part of the International Technology Scanning Program sponsored by FHWA, AASHTO, and TRB, a group of U.S. truck size and weight enforcement experts conducted a scan of European counties and learned of a system being used by France:

> *Nationwide, France uses 170 WIM systems to collect weight data and provide statistical planning support through the SIREDO (Système Informatisé de REcueil de DOnnées) Network. These systems rely largely on automatic self-calibration and a comparative review of static weight data (captured during enforcement activities) to meet data quality requirements. The combination of auto-calibration and static weight data comparative procedures has eliminated the need for resource-intensive manual calibration conducted typically on an annual basis*.

Since many trucks operating on I-90 and I-94 today are equipped with transponders, a technology test could be developed for using live load information from trucks that are weighed either by static scales or low-speed WIM scales at enforcement sites. The information gathered on transponder equipped trucks could be used to calibrate high-speed WIM scales.

**Project Approach:** The goal of this project would be to improve the accuracy and reduce the resources required to calibrate WIM scales on I-90, I-94, and major intersecting highways. The approach is to: 1) Evaluate existing use and calibration methods for WIM scales across the corridor; 2) Meet with technology vendors and trucking industry representatives to discuss demonstration program participation; 3) Identify the required technology for permanent weigh station facilities to communicate with WIM scales and transponders on trucks that have passed through a static scale; 4) Develop calibration algorithms, 5) Implement and test the technology; and, 6) Write a final report.

**Project Schedule / Budget, Phase 1 – Concept Demonstration:** 18 months; estimated cost approximately $200,000- $250,000.

***Suggested Funding Source: SHRP-2 or successor program***

## 8. Model Legislation for Autonomous CVO

**Project Synopsis:** Truck Platooning (TP) is a mass flow concept of maximizing the throughput of commercial vehicles on a highway asset using physical and / or electronic connections that allow the entire platoon to be controlled as a single unit. The concept offers the benefit of dramatically reducing fuel consumption, eliminating delays caused by congestion on mixed vehicle facilities, and potentially reducing the cost of labor inputs. Enabling mass flow truck platoons is an area of Intelligent Transportation Systems (ITS) under the connected vehicle program at USDOT Joint Program Office. Currently, USDOT is sponsoring several demonstration projects around the country. However one of the first steps for implementing an automated vehicle program is enabling legislation. Currently, several states in the NWP coalition have considered automated driving statutes, but none have passed legislation (end of 2014).

**Project Approach:** California developed the first legislation to allow the operation of autonomous vehicles; several states have adopted legislation modeled after California. Similar

legislation has also failed in several states around the country, and more states are currently exploring options for advancing legislation. The project would collect existing legislation and interview representatives where legislation has failed or is under consideration to determine best practices. Using the information gathered, the consultant could develop model legislative language for potential adoption by states in the coalition.

**Schedule and Budget:** 6 to 9 months; estimated cost of approximately $25,000.

***Suggested Funding Source: Transportation Pooled Funds Program***

## 9. Multistate Commercial Vehicle Platoon Demonstration

**Project Synopsis:** Currently, several commercial vehicle platooning demonstrations are occurring around the world. Europe has completed demonstrations of five vehicle road trains that included both commercial vehicles and trucks under the Safe Road Trains for the Environment (SARTRE) project. Two-vehicle commercial vehicle platoon demonstrations are currently under way in Nevada and California through a USDOT funded project to optimize tractor-trailer platooning in partnership with Auburn University, Peterbilt / PACCAR, Denso, Meritor-WABCO, and ATRI.

Provided states in the corridor can get enabling legislation passed, the corridor could apply for demonstration grants to explore multi-state and / or mixed use vehicle platoons.

**Project Approach:** The demonstration would depend on states pursuing enabling legislation.

**Project Schedule / Budget:** 2 years; with an estimated cost of $250,000.00.

***Suggested Funding Source: Transportation Pooled Funds Program***

## 10. Connected Vehicles Pilot for Over-Dimension Loads

**Project Synopsis:** For many years, states have required escort car or pilot car services to accompany certain types of oversize loads. The goal of pilot car requirements is to provide the over-dimension load driver with additional eyes and ears to alert the driver of safety hazards, traffic backups and work zones, and to find adequate spaces to pull-off or park loads. While truck drivers and pilot car drivers are professionally trained and must meet minimal professional standards, the investigation into the Skagit Bridge incident suggests that, at the very least, drivers are prone to human error. It is quite possible-- if not likely-- that assistance from advanced vehicle to vehicle (V2V) technologies could have prevented all of the factors that contributed to an over-dimension load striking the Skagit Bridge, such as not maintaining a safe lead between the pilot car and the load. In addition, vehicle to infrastructure (V2I) technologies could have determined the correct height of the load and also indicated that clearance in the right-hand lane of the Skagit Bridge was insufficient for the height of the load.

Highway transportation is on the cusp of significant technology advancement in how vehicles share information with one another and the infrastructure on which they travel. These

technologies could be especially useful in helping the safe and efficient movement of over-dimension loads. For instance, V2I communications could help commercial vehicle drivers hauling oversize loads:

- Maintain the center or edge of a lane depending on conditions and lane width.
- Help drivers to identify when lane changes can be safely made.
- Provide advance warning of height or width restrictions.
- Notify drivers of parking areas large enough to accommodate over-dimension loads.
- Provide real-time, real place driving / pavement conditions during cold weather events.
- Notify the driver when approaching congestion, work zones, or traffic incidents.

V2V technologies could also assist driver and pilot cars:

- Maintain safe and consistent spacing between vehicles.
- Notify the driver of approaching emergency vehicles.
- Warn the driver of vehicles that may be in the driver's blind spot.
- An ancillary benefit of adopting connected vehicle technologies for over-dimension load movements is that it offers an opportunity for vehicle load permitting agencies to review legacy systems and procedures and adopt new systems and procedures that hopefully will be developed in cooperation for greater uniformity.

**Project Approach:** Using the NWP as a test bed to apply connected vehicle technologies to the over-dimension permit load environment would offer a real world environment to explore the following:

- Safety benefits to the motoring public
- Infrastructure preservation benefits from avoiding over-dimension loads striking highway overpasses and rail bridges
- Uniformity and efficiency benefits to the specialized carrier segment of the trucking industry

Based on the information presented in an agency-wide announcement on January 31, 2015, pilot programs will be conducted under three phases: Phase 1: Concept Development Phase, Phase 2: Design / Build / Test, and Phase 3: Maintain and Operate.

**Project Schedule / Budget:** Phase 1: 12 months; estimated cost of $250,000.00.

### *Suggested Funding Source: Connected Vehicle Pilot Deployments Program*

Northwest Passage members were surveyed in February 2015 to determine whether there was interest in developing an over-dimension proposal to meet the 2015 Connected Vehicle Pilot Program Phase 1 Concept Development deadline of March 16, 2015. Several individual state members expressed interest in the development of a pilot concept for consideration, but due to a short submittal deadline made a decision to instead consider an over-dimension pilot proposal for the 2017 USDOT solicitation.

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