CLOSEOUT REPORT

Submitted by the AASHTO TIG Lead State Team for
the following technology:

Weigh-in-Motion (WIM/VWIM)

Lead State Team Members and Agencies:

Tom Bold, Chair, North Dakota DOT

Guy Boruff, Indiana DOT

Tony Rivera, Nevada DOT

Craig Wilson, Florida DOT

Terry Woehl, North Dakota DOT

Randy Woolley, California DOT

December 2009

American Association of State Highway and Transportation Officials
AASHTO
The Voice of Transportation

Driving Innovation for Transportation
TIG
http://aashtotig.org
AASHTO Technology Implementation Group

DISCLAIMER

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the American Association of State Highways and Transportation Officials (AASHTO) or any individual member organization of AASHTO.

Where the names of products or manufacturers appear herein, their inclusion is considered essential to the objectives of this report. AASHTO does not endorse products or manufacturers.

TABLE OF CONTENTS

Page

CLOSEOUT REPORT

Submitted by the AASHTO TIG Lead States Team for
the following technology:

Weigh-in-Motion (WIM/VWIM)

Introduction

(Provide a brief synopsis of the responsibility assigned to the lead states team.)

The TIG chose Virtual Weigh-in-Motion (VWIM) as a focus technology because several States sparked a non-traditional use: wirelessly linking WIM information to a highway patrol officer's laptop in his or her vehicle. The application of "virtual technologies" demonstrates an innovative approach to solving size and weight enforcement issues that ranges beyond the WIM traditional role in data collection and vehicle classification. The AASHTO-TIG recognized that other transportation agencies could benefit from the knowledge and experience of agencies that were successfully using VWIM/WIM technologies.

An initial Lead States Team was assembled based on their knowledge and experience with WIM/VWIM technologies. Their primary responsibility was to combine their knowledge and experience into a "message" that could be used as a technology transfer mechanism to promote the use of WIM/VWIM for truck size and weight enforcement.

The Lead States Team felt it was important to identify other states or provinces that could contribute to the body of knowledge and possibly join in the effort to promote WIM/VWIM technologies. Members of the AASHTO RAC were sent an initial survey to identify their current and future level of involvement with WIM/VWIM technologies, and were invited to participate as members of the Lead States Team. From the responses, it was judged that the experience of the original Lead States Team reflected an above average representation of how the technology was being used, and all respondents declined the invitation to participate in the project.

Team Members participated by providing their knowledge, experience, and unique perspective on the impact of VWIM/WIM in their own states. The work of the Team focused on the development of a promotional message that would be used to offer other transportation agencies with information on our "best practices", our successes, and our challenges.

Distribution of the promotional message would be accomplished through the development of an informational brochure, Powerpoint presentations, and a

narrated video presentation adapted from the original Powerpoint presentation. These tools would be used at local and regional transportation and technology conferences to get out the message. Additional accessibility to these promotional products would be provided through the AASHTO-TIG website.

This closeout report is divided into four sections:

Marketing Activities,
Performance Measurement,
Lessons Learned, and
Transition Plan

Marketing Activities

(Provide an introductory marketing approach paragraph.)

Team Members identified local and regional transportation and technology conferences where WIM/VWIM could be promoted using the Powerpoint presentations and brochures in personal presentation.

Hosted Demonstration Workshops

Date (in chronological order)	Workshop Title	Location	Total Attendance
12/ 2006	ITS California (Half Day)	Sacramento, Ca	45
10/2007	FDOT CVO Workshop	Tampa FL	60
01/2009	FDOT CVO Workshop	Tampa, FL	40

Comments and Observations on Demonstration Workshops

(Provide any LST comments and observations in a paragraph or paragraphs here.)

Please provide your Lead States Team comments here:

- NDDOT did not host any demonstration workshops (TW)
- Unfortunately I was only involved in one presentation which was in Palm Springs and I'm sure that Randy Woolley will list it in his report. (TR)
- This workshop presented the long version of the AASHTO TIG WIM Working Group Power Point and then conducted a question and answer session. The discussion was lively, and questions informative to the group. This was a late addition to the agenda, and with the companion Plenary Session using the short version was well attended. Most attendees were from California, and agreed that funding is the most serious problem related to expanding or updating Weigh in Motion and Virtual Weigh in Motion in California. Attendees included representatives from Caltrans, California Highway Patrol, Federal Highway Administration, local cities and counties, and a few from private industry. A specific attendance list is not available. The agenda simply included working through the power point slides, and a question and answer/discussion session. No specific feedback was received. (RW)

Copies of the attendee list(s), for some of these presentation venues are located in the appendices to this report.

Presentations at Conferences and Meetings

Date (in chronological order)	Conference or Meeting Name, Location	Presenter Name, Organization	Presentation Title	Written paper? (Y/N)
12/2006	ITS California, Sacramento, CA Plenary Session	Randy Woolley, Caltrans	WIM Best Practices (Short Version)	N
12/2006	ITS California, Sacramento, CA Plenary Session	Randy Woolley, Caltrans	WIM Best Practices (Short Version)	N
3/20/2007	American Society of Highway Engineers (ASHE)	Terry Woehl – NDDOT	Virtual WIM/VWIM	N
06/2007	ITS America, Palm Springs	Randy Woolley, Caltrans	WIM Poster Session, WIM demo in parking lot	N
?/2007	FDOT – Fort Meyers, law enforcement staff	Craig Wilson-FDOT	WIM Best Practices (Short Version)	N
10/13/2007	ITS World Congress, Beijing, China	Richard Easley, E-Squared Engineering (consultant working with Craig Wilson-FDOT)	WIM Best Practices (Short Version)	N
10/23/2007	CVO Workshop, Tampa, FL	Craig Wilson, FDOT	WIM Best Practices (Short Version)	N
12/2007	ITS California, City of Industry, Ca	Randy Woolley, Caltrans	WIM Best Practices (Short Version)	N
03/2008	Caltrans Division of Research & Innovation, Staff Meeting, Sacramento, Ca	Randy Woolley, Caltrans	AASHTO TIG WIM Team results (Randy Summary)	N
08/2008	Bridge Weigh-in-Motion, Birmingham, Al	Randy Woolley, Caltrans	WIM Best Practices (Short Version)	N
01/13/2009	CVO Workshop, Tampa, FL	Tom Tundra/Richard Easley (consultant working with Craig Wilson-FDOT)	WIM Best Practices (Short Version)	N

Comments and Observations on Presentations

(Provide any LST comments and observations in a paragraph or paragraphs here.)

Please provide your Lead States Team comments here, regardless if you had an opportunity to make presentations:

- The various presentation venues used by TIG team members was an appropriate vehicle for WIM/VWIM information dissemination. (TW)
- Randy Woolley gave various presentations as listed above. All were at state or national meeting venues attended by transportation officials and practitioners representing state, national, and international organizations. All used the short version of the AASHTO-TIG WIM Working Group Power Point and then conducted a question and answer session, with the exception of the Poster Session at ITS America in Palm Springs. All included question and answer/ discussions sessions with interesting and informative questions. Most attendees agreed that the state of the practice has advanced, and that WIM and VWIM are indeed mature enough to be a reliable and useful tool for planning and especially for law enforcement. All in the discussion sessions agreed that funding is the primary barrier to significant implementation. As the lead states team found, no one at these discussions will use WIM or VWIM as an automated enforcement tool, but all are interested in using them as an enforcement screening tool.
- Randy Woolley also participated in the FHWA/AASHTO sponsored Scanning Tour investigating Commercial Motor Vehicle Size and Weight Enforcement in Europe June 16 through July 2, 2006 as the AASHTO TIG WIM Team representative. The Scan Team found the same issues in Europe as the Lead States team found in the United States: (Some of these comments were from the scan tour final report; most were common in the final report and the discussion sessions.)
    - WIM is used for screening, but not for automated enforcement.
    - Cost is a significant issue for expanding the systems.
    - Cost is a significant issue for maintenance and calibration.
    - Better data quality is needed to use WIM data for purposes beyond screening and planning.
    - Use of WIM as a screening tool for commercial enforcement improves safety for the motoring public as well as for commercial vehicles.
    - Use of WIM as a screening tool for commercial enforcement helps reduce emissions and unnecessary deceleration, idling, and acceleration of compliant vehicles.
    - Use of WIM as a screening tool for commercial enforcement improves commercial vehicle productivity by increasing the supply chain velocity.

- Use of WIM as a screening tool for commercial enforcement improves delivery of enhanced enforcement by improving effectiveness and efficiency.
- Use of WIM as a screening tool for commercial enforcement improves safety by helping to control the operation of non-permitted, not compliant overweight or oversized vehicles. (RW)

Summaries of participant feedback are located in the appendices to this report.

Publications

(Publications listed should include any production of the lead states team which was distributed to or made available for viewing by prospective users of the technology. Typically these may include brochures, posters, video productions, facts sheets, and similar informational pieces. Workshop announcements and similar invitations, as well as papers written in conjunction with the presentations listed above, do not need to be listed or attached in the appendices.)

Date Produced	Publication Type	Total Number Produced	Recipients and Distribution Method
	Tri-fold brochure	500	Lead States Team for distribution at presentations, AASHTO-TIG
	Powerpoint Presentation – Short Version –	6	Lead States Team Members, *DVD, AASHTO-TIG Website*
	Powerpoint Presentation – Long Version –	6	Lead States Team Members *DVD, AASHTO-TIG Website*
	Narrated Video from Powerpoint Presentation	1	*AASHTO-TIG Website*

Except as described above, a copy of each publication has been included in an appendix to this report.

Please provide your Lead States Team comments here:

- The publication information developed and deployed during this project will provide a very good background of the capabilities of WIM/VWIM and to provide a look at a cost/functionality range of WIM/VWIM systems. (TW)
- I passed out the brochure to several entities within the state commercial vehicle enforcement structure and it prompted our CVISN committee to expend funds to put in a prototype virtual WIM site on I-15 with several other locations slated for possible inclusion of a virtual WIM system. (TR)

Performance Measurement

(Describe the degree of success obtained using the performance assessment methods described in the performance measurement plan section of the approved marketing plan.)

Please provide your Lead States Team comments here:

- The surveys were a very good tool to gather information and participation interest in the topic. This information gave the team a snapshot as to the depth of WIM/VWIM deployment and interest in the topic. (TW)
- The format for comparing Initial and Final Survey results provided in this template is difficult to work with, in that it does not accurately represent the variety or breadth of the questions asked on the Surveys. (TB)

The following table compares responses to the initial and final technology experience surveys.

Note: In many cases, the questions in the Table do not directly relate to the questions asked in the Initial or Final Surveys. Additionally, it was determined that more revealing information could be gained by making slight changes in the questioning during the Final Survey. A “best effort” was made to quantify the Survey responses based on the questions in the Table..

The results tabulated in the Table are an approximation of the actual responses provided in the Surveys. The Table questions do not accurately represent the variety and breadth of the Survey questioning, and therefore to gain an accurate perspective, the reader should use the Table in conjunction with the actual Survey results provided in this document.

Survey Information	Initial Survey (2005)	Final Survey (2008)
# of survey recipient organizations	60 – US & Canada (AASHTO RAC Members)	20 - Original Respondents (Does Not Include Lead States Team Members)
# of survey responses received	26 (includes 5 Lead States Team Members)	11 (Does Not Include Lead States Team Members)
# of agencies that have not used this technology	9 of 26	4 of 11
# of agencies with limited knowledge of this technology	Not Determined	Not Determined
# of agencies fairly familiar with this technology but have not yet tried it	9 of 26	4 of 11
# of agencies planning to try this technology on an upcoming project	8 of 26	3 of 11
# of agencies that have tried this technology and are evaluating its benefits	17 of 26	7 of 11
# of agencies currently using this technology on a routine or standard basis	17 of 26 (Size & Weight) 0 of 26 (Ticketing) 8 of 26 (Video Imaging) 8 of 26 (Truck Safety)	See Final Survey Responses based on additional questions
# of agencies that plan to adopt this technology as a requirement	Not Determined	Not Determined
# of agencies that have adopted this technology as a requirement	17 of 26	7 of 11
# of agencies that plan to adopt this technology as an option in the plans, to be used at the contractor's discretion	Does Not Apply	Does Not Apply
# of agencies that have adopted this technology as an alternate in the plans, to be bid against conventional methods	Does Not Apply	Does Not Apply
# of agencies that plan to adopt this technology as an alternate in the plans, to be bid against conventional methods	Does Not Apply	Does Not Apply
# of agencies that have adopted this technology as an option in the plans, to be used at the contractor's discretion	Does Not Apply	Does Not Apply
# of agencies who do not believe that this technology will provide substantial benefit	1 of 26	1 of 11
# of agencies who have tried this technology and do not plan to use it in the future	0 of 17	0 of 10

Summary Responses from Surveys

(Provide brief summaries of why some agencies believe that this technology will not provide substantial benefit to their agencies, and why some agencies do not plan to use the technology in the future.)

Initial WIM/VWIM Survey

The initial survey was conducted in 2005. Distribution was made by e-mail using the AASHTO RAC mailing list.

A copy of the survey and the results follows.

Weigh-in-Motion / Virtual Weigh-in-Motion Survey
AASHTO-Technology Implementation Group
Focus Technology Project

1.) Does your state currently use, or plan to use Weigh-in-Motion and/or Virtual Weigh-in-Motion technologies for the following: (***Results from 23 Responses)***

	Currently Use		Plan to Use	
Enforcing Truck Weight & Size Regulations?	**15** Yes	____ No	**5** Yes	____ No
Ticketing Overweight Trucks?	**4** Yes	____ No	**3** Yes	____ No
Recording Video Images for Vehicle ID?	**7** Yes	____ No	**8** Yes	____ No
Checking Truck & Driver Credentials?	**8** Yes	____ No	**4** Yes	____ No
Other: ***See Comments in Summary***	____ Yes	____ No	____ Yes	____ No

2.) If your state has implemented or is actively pursuing technologies for any of these activities, are you or another representative of your state, willing to participate in the AASHTO-TIG project to promote your "best practices" for acquisition, installation, deployment, operation, and maintenance of these technologies?

14 Yes ____ No

3.) Who is the most knowledgeable person within your state to contact to obtain additional information regarding the above responses?

Name _____
Position_____
Agency _____
Phone Number _____
E-mail Address _____

4.) Comments or Suggestions:

_____
_____
_____
_____
_____
_____

Please complete and return by November 11, 2005

Return survey by e-mail or fax to:

Thomas A. Bold
NDDOT - Materials & Research Division
300 Airport Road
Bismarck, ND 58504-6005
(701) 328-6921 - Phone
(701) 328-0310 – Fax
tbold@state.nd.us

Results of Initial Survey Conducted November 2005

	Question #1												Question #2
States & Provinces	Do you Use WIM for Enforcing Truck Weight & Size Regulations?		Ticketing Overweight Trucks?		Recording Video Images for Vehicle ID?		Checking Truck & Driver Credentials?		Checking Truck Safety Compliance?		Other?		Is your agency willing to participate in the AASHTO-TIG project?
	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	
Alaska													
Alabama													
Arkansas	Y		N	N	N	Y	N	Y	N	Y	NR	NR	Y
Arizona	Y		Y		Y		Y		Y		See Comments*		Y
California	N	Y	N	Comments	N	Y	N	?	N	?	See Comments*		Y
Colorado													
Connecticut	Y		Y	NR	N	Y	Y		Y		NR	NR	Y
Delaware	Y		NR	NR	N	NR	N	NR	N	NR	NR	NR	N
Florida	N	Y	N	N	Y	Y	N	Y	NR	Y	See Comments*		Y
Georgia													
Hawaii													
Iowa													
Idaho													
Illinois													
Indiana		Y		Y		Y	NR	NR	NR	NR	NR	NR	Y
Kansas													
Kentucky	Y		N	N	Y		Y*		N	Y	See Comments*		Y
Louisiana													
Massachusetts													
Maryland													
Maine	Y		N	N	N	?	N	?	N	?	NR	NR	N
Michigan													
Minnesota	N	Y	N	N	N	Y	N	NR	N	NR	See Comments*		Y
Missouri	Y		N	NR	N	NR	Y		Y		See Comments*		N
Mississippi													
Montana	Y		N	N	Y		N	NR	N	NR	See Comments*		N

Results of Initial Survey Conducted November 2005 (continued)

	Question #1												Question #2
States & Provinces	Do you Use WIM for Enforcing Truck Weight & Size Regulations?		Ticketing Overweight Trucks?		Recording Video Images for Vehicle ID?		Checking Truck & Driver Credentials?		Checking Truck Safety Compliance?		Other?		Is your agency willing to participate in the AASHTO-TIG project?
	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	
North Carolina													
North Dakota	Y	Y	N	N	N	N	N	N	N	N	NR	NR	
Nebraska	Y		N		N		N		N		See Comments*		N
Hew Hampshire													
New Jersey	N		N		N		N		N		See Comments*		NR
New Mexico													
Nevada	Y		N		N		N		N		See Comments*		Y
New York	N	Y	N	N	N	Y	N	Y	N	Y	NR	NR	Y
Ohio													
Oklahoma													
Oregon	Y		Y		Y		Y		Y		See Comments*		Y
Pennsylvania													
Rhode Island	N	Y	N	Y	N	N	N	N	N	N	See Comments*		N
South Carolina													
South Dakota													
Tennessee													
Texas	Y		N	NR	Y		Y		Y		See Comments*		Y
Utah													
Virginia													
Vermont	Y		Y		N	Y	Y		Y		See Comments*		N
Washington	Y		N	?	Y		NR	Y	NR	NR	NR	NR	Y
Wisconsin	Y		N	N	N	Y	Y		Y		NR	NR	Y
West Virginia													
Wyoming	N	NR	N	NR	N	NR	N	NR	N	NR	See Comments*		N

Results of Initial Survey Conducted November 2005 (continued)

States & Provinces	Question #1												Question #2
	Do you Use WIM for Enforcing Truck Weight & Size Regulations?		Ticketing Overweight Trucks?		Recording Video Images for Vehicle ID?		Checking Truck & Driver Credentials?		Checking Truck Safety Compliance?		Other?		Is your agency willing to participate in the AASHTO-TIG project?
	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	
Canada													
Alberta	N	N	N	N	N	N	N	N	N	N	See Comments*		Y
British Columbia	Y		N	N	Y		Y		Y		See Comments*		Y
Manitoba													
New Brunswick													
Newfoundland													
Nova Scotia													
Ontario													
Prince Edward Island													
Quebec													
Saskatchewan	N	Y	N	Y	N	Y	N	Y	N	N	NR	NR	Y
Total "YES" Responses	**17**	**8**	**4**	**3**	**8**	**10**	**8**	**5**	**8**	**4**			**18**

Total Surveys Sent **60**
Total Responses **27**

Results of Initial Survey Conducted November 2005 – COMMENTS

State/ Province	Comments
Alaska	
Alabama	
Arkansas	The Arkansas Highway Police Division of the AR State Highway & Transportation Department (AHTD) currently uses WIM at its interstate weigh and inspection stations for screening purposes. The AHTD has selected a site for a virtual weigh station incorporating WIM but is waiting on approval for the type of roadway construction method that will be used. The test site is on US Highway 64 between Alma and Van Buren. The project is about 25% completed.
Arizona	Other : Planning Virtual Sites Now - Plan to Use = Yes
California	Successful Prototype of Virtual Weigh Station at ITS World Congress 2005 in San Francisco. This demonstration added extracting license plate numbers from photographs of the front of the trucks. This is the first fusion of WIM Data, Video Images of the front and right side of the truck, and using Optical Character Recognition (OCR) to accomplish License Plate Reading. Caltrans and their vendor partners will continue to develop this technology. *Note: In California, this data will be passed to the California Highway Patrol (CHP). CHP is solely responsible for enforcement on California's Freeways and State Routes. Caltrans will provide accurate, reliable, and timely data. This data may be used by CHP as "probable cause" to stop a truck. Follow-up weighing at a certified scale and inspection by CHP may lead to enforcement activities. California has NO plans to implement automated enforcement from the Virtual Weigh Station any time in the foreseeable future.
Colorado	
Connecticut	Enforcement agencies need tours or "peer to peer" site visits of functioning installations
Delaware	We have a planning committee looking into the possibility of implementing some or all of these technologies in the future - probably several years away.
Florida	All plan to use technologies are to be tested at UCF Virtual WIM lab at Palm Coast Expressway on I-95 and are at this time not in deployment. So far we have tested 3Dlaser measuring devices several camera technologies and are currently in the process of getting a permanent structure on site to house necessary equipment for future testing such as mainline WIM install and testing accuracy of at the fixed site 1.5 miles from test site. Have also tested laser camera for obtaining lengths Are currently looking at capturing US DOT #'s with UCF and several camera vendors who have donated cameras to project.
Georgia	
Hawaii	
Iowa	
Idaho	
Illinois	
Indiana	We currently use WIMs at permanent Weigh Stations as a sorting device. We have looked at video capture at virtual weigh sites for downstream enforcement. The virtual WIM program is a joint effort of the Highway Statistics group, ITS, State Police and Purdue University.

Results of Initial Survey Conducted November 2005 – COMMENTS (continued)

State/ Province	Comments
Kansas	
Kentucky	Our Virtual Weigh Station WIM just got paved over, so weight checking is not currently operational. Will be deploying a "next generation" system at a future date. Other : Checking Company Credentials - Currently Using = Yes, Plan to Use = Yes Other: Checking Company Safety Record - Currently Using = Yes, Plan to Use = Yes Other: Checking Vehicle Safety Records - Currently Using = No, Plan to Use = Yes Other: Checking Driver Credentials & Record - Currently Using = No, Plan to Use = ? Other: Checking Driver Credentials & Record - Currently Using = No, Plan to Use = ? Other: Checking Driver Credentials & Record - Currently Using = No, Plan to Use = ? You may want to coordinate this work with that of the Intelligent Transportation Society of America (ITS America). They have a working group that is focused on technology for roadside commercial vehicle enforcement, and they are gathering information on what the various states have done with regard to virtual weigh stations.
Louisiana	
Massachusetts	
Maryland	
Maine	We are presently undertaking a planning project to install vehicle screening systems at our I-95 Kittery-York truck weigh area. We should have a better idea by late summer 2006 what technology we will install. Funding will be an issue. We are endeavoring to become CVISN Level 1 compliant so that we can be eligible for federal funds to enhance our vehicle screening capabilities, including WIM. Currently, we use portable WIM for screening purposes at one of our weigh areas
Michigan	
Minnesota	Other: Screening @ Weigh Stations, Currently Using = Yes; See attached MN Statewide Commercial Vehicle Weight Compliance Strategic Plan
Missouri	Other: Prepass System, Currently Using = Yes
Mississippi	
Montana	Montana weigh stations use WIM Measurements as part of the bypass check along with credentials checks at PrePass equipped weigh stations. But driver credentials cannot be checked without the driver being called into the weigh station.
North Carolina	
North Dakota	None
Nebraska	Other: Prepass System, Currently Using = Yes
New Hampshire	

Results of Initial Survey Conducted November 2005 – COMMENTS (continued)

State/ Province	Comments
New Jersey	Other: Screening & Bypass WIM at State Police enforcement facilities, Currently Using = Yes. Our Executive Director of ITS has no plans to incorporate these technologies into New Jersey's ITS program. I forwarded this survey to John Powers (john.Powers@dot.state.nj.us) of our Office of Freight Services to see if they have any plans for virtual WIM as part of Commercial Vehicle Operations
New Mexico	
Nevada	Currently use for planning purposes
New York	Use federal CVISN forum as information/status contact since it involves many if not all of any given state's managers for CVISN activities and is directed by Federal Motor Cattier Safety Administration. Have included for information a copy of New York's scope of services for electronic screening development project including WIM and license plate reader/video recognition research currently underway (Phase I complete, Phase II started in September 2005; 18-24 month effort).
Ohio	
Oklahoma	
Oregon	Oregon participation in a TIG cannot involve out of state travel
Pennsylvania	
Rhode Island	RIDOT is currently working with the RI State Police Commercial Enforcement unit to purchase a slow speed WIM system to help screen vehicles during enforcement weighing operations. We are very early in the planning process and have not entered into the purchasing stages yet.
South Carolina	
South Dakota	
Tennessee	
Texas	The Texas Department of Public Safety utilizes our equipment at eight (8) Temporary Border Safety Inspection Facilities and two additional locations for pre-screening trucks. TxDOT uses WIM equipment/technology for research, planning and more recently for pavement design. TxDOT currently has 16 locations statewide with an additional 11 sites in various stages of design and construction. Please note, TxDOT does not use State Planning and Research (SPR) funds for enforcement purposes.
Utah	
Virginia	
Vermont	Other: To determine inspector scheduling based on traffic statistics, Currently Using = Yes, Plan to Use = Yes
Washington	None
Wisconsin	None
West Virginia	
Wyoming	We are interested in the concept of virtual weight stations and would be interested in what you're finding out and implement.

Results of Initial Survey Conducted November 2005 – COMMENTS (continued)

State/ Province	Comments
Canada	
Alberta	Other: Currently Using = No, Plan to Use = No. Alberta operates six piezo electric weigh in motion (WIM) sites. The six sites monitor 20 lanes in total. They have been in operation since September 2004. As part of the operation, a truck of known weight is driven over each lane ten times each month. This currently gives us 160 tests of each lane. To date the test results have been disappointing as far as weigh measurement goes, though the measurement of speed length, and vehicle classification has been satisfactory. We would be happy to share our experience and test results with those who are interested.
British Columbia	Other: Sorting tool; Currently Using = Y
Manitoba	
New Brunswick	
Newfoundland	
Nova Scotia	
Ontario	
Prince Edward Island	
Quebec	
Saskatchewan	Saskatchewan has recently installed 3 WIM sites with cameras and will be operational in a matter of weeks.

Follow-Up Survey

After reviewing the responses; a follow-up survey was conducted in December 2005 to gather more detailed information from states that had indicated they were actively using WIM/VWIM technologies, and were willing to participate in the project at some level. Lead States Team members conducted the telephone survey and had detailed discussion with the respondents from the initial survey.

Surveys were conducted with the following states, Arkansas, Minnesota, New York, Saskatchewan, and Wisconsin.

A copy of the survey and the results follows.

Weigh-in-Motion / Virtual Weigh-in-Motion Survey
AASHTO-Technology Implementation Group
Focus Technology Project

*** Follow-up Survey - 12/2005***

As a follow-up to our initial survey, we need to obtain more detailed information from agencies that indicated that they were actively using the technology and that they were willing to participate in our project at some level.

- When contacting your assigned agency, use the list of ***Question Responses*** and ***Survey Comments*** I provided earlier, to identify the questions where they provided "yes" responses.
- Add any questions that you feel are appropriate to gather the information we need to produce a "current practices" or "state-of-the-technology" presentation.
- Try to determine if the project would benefit from the participation of the agency you are interviewing, and their willingness to join in our efforts.

State or Province: _____
Contact Information: _____
_____
_____
_____
Interviewer: _____

If the agency provided a positive response to a question, ask them to describe the equipment being used (Question 1) and their use of WIM/Virtual WIM technology (Question 2-6).

1. Describe your WIM/VWIM, video capture system, etc.
    a. Type of Equipment
    b. Procurement Type or Process for the Above Equipment
    c. Maintenance Issues

2. Enforcing truck weight & size regulations. (recommended info, add as you see appropriate)
    a. Number & Location of Sites
    b. Operational Issues
    c. Overall Experience

3. Ticketing overweight trucks. (recommended info, add as you see appropriate)
    a. Number & Location of Sites
    b. Operational Issues
    c. Overall Experience

4. Recording video images for vehicle ID. (recommended info, add as you see appropriate)
    a. Number & Location of Sites
    b. Data Retention Schedule
    c. Operational Issues
    d. Overall Experience

5. Checking truck & driver credentials (recommended info, add as you see appropriate)
    a. Number & Location of Sites
    b. Databases Used for this Activity
    c. Operational Issues
    d. Overall Experience

6. Other uses of the technology (recommended info, add as you see appropriate)

7. What agencies within your state or province are involved in the above activities and what are their responsibilities as they relate to: (recommended info, add as you see appropriate)
    a. Site Selection
    b. Equipment Specification
    c. Procurement
    d. Installation
    e. Operation
    f. Maintenance
    g. Data Processing, Storage, Retention, Etc.

8. Would your agency be willing to continue participating in the efforts of this project?

Results of Follow-up Survey Conducted December 2005

Question 1			
Describe your WIM/VWIM, video capture system, etc?			
State	Type of Equipment	Procurement Type or Process for the Above Equipment	Maintenance Issues
Arkansas	Arkansas has Virtual WIM in Planning Stages right now they are using piezo strips (both Kistler and IRD) for planning purposes and they have 8 low speed WIM locations where officer's work.	For piezo's they have a line item contract in place that tech services just order products off of.	The Highway Dept. does their own maintenance and with 80 sites and just 5 techs they have trouble with calibration's being performed often enough and being over paved and with the fixed sites IRD does maintenance.
Minnesota	IRD electronics with Kistler sensors, no video capture.	3 sites, MnDOT purchased their own equipment and had it installed by state forces. 3 sites were put in by contract	none identified at this time
New York	Do not presently have system, still with Engineering Consultants	RFP	The Highway Dept. handles there current WIM deployment maintenance and Rick was unaware of any major issues.
Wisconsin	WIM – Wisconsin currently uses IRD equipment at all but one of its 5 facilities equipped with a WIM system. The Kenosha facility is equipped with a Mettler Toledo system. Video capture system – N/A	The purchase of this equipment is subject to the bid process currently used for all purchases in Wisconsin. Regular bid process	None identified at this time WIM – Wisconsin did not elect to purchase a maintenance package as a part of the procurement. Video capture system – N/A
Saskatchewan	WIM is all International Road Dynamics (IRD) equipment. The 3 sites that they have are; (1) load cell and (2) Bending Plate sites, all 3 have cameras installed.	Procurement for all equipment was through their normal bid process.	None so far, they have only recently been installed

Results of Follow-up Survey Conducted December 2005 *(continued)*

Question 2			
Enforcing truck weight & size regulations?			
State	Number & Location of Sites	Operational Issues	Overall Experience
Arkansas	This is done at the 8 fixed weigh stations located throughout state.	Not high speed and have to do extensive maintenance.	Satisfied but know technology can be improved for far better results.
Minnesota	MnDOT currently does not enforce truck weight & size regulations through their WIM sites	N/A	N/A
New York	Currently utilizing 1 WIM location for this purpose. Hope to have 10 to 20 Virtual WIMs at border locations in the next 4 to 5 years	Interagency communication issues	N/A for VWIM since none deployed
Wisconsin	Wisconsin has 13 permanent safety and weight enforcement facilities. Nine of the facilities are located on the interstate system and four are located on the national highway system. Wisconsin also maintains 3 improved pull-off sites for inspections.	As with most states, Wisconsin has experienced a reduction in personnel resources. As a result, Wisconsin has been evaluating strategies to increase our efficiency while maintaining our effectiveness. For example, Wisconsin has installed Pre-Pass at two of its facilities and also incorporated mainline WIM systems	Overall, enforcement activity is up and the CMV crash rate has been positively impacted over the last 5 year period.
Saskatchewan	All 3 sites are currently being used on an experimental basis on how to accomplish this.		
	3sites, all are on provincial highways (non-TransCanada Highways) that allow the highest GVW limit of all roads within the province.	None at this time	Still experimental stage – no legislation to accomplish this or ticket off of WIM – however, a 2 week server “dumping” of pictures (both license plate and side view of trucks) to PC’s allows for an audit/investigation of the truck/company. A consultant is currently studying legislative issues as they pertain to enforcement.

Results of Follow-up Survey Conducted December 2005 *(continued)*

Question 3			
Ticketing overweight trucks?			
State	Number & Location of Sites	Operational Issues	Overall Experience
Arkansas	----	Not high speed and have to do extensive maintenance.	Satisfied but know technology can be improved for far better results.
Minnesota	----	----	----
New York	----	----	----
Wisconsin	----	----	----
Saskatchewan	----	----	----

Question 4				
Recording video images for vehicle ID?				
State	Number & Location of Sites	Data Retention Schedule	Operational Issues	Overall Experience
Arkansas	Planning 1 site on Highway 64 near Alma and Fort Smith	Not a definite yet, but thinking 7 days	Server space and where to store data	N/A since not experienced one yet
Minnesota	MnDOT currently does not record video images for vehicle ID purposes	N/A	N/A	N/A
New York	None at present hope to have 10 to 20 deployed over next 4 to 5 years	Did not have firm number but thought 24 hours might be sufficient	Foresees ongoing maintenance challenge and fiscal responsibility	N/A
Wisconsin	Wisconsin hopes to incorporate the virtual weigh technology on one of its bypasses with the reconstruction of the Madison fixed facility.	This has not been determined	N/A	N/A
Saskatchewan	Number & location of sites – 3 sites have cameras that capture both the license plate and information on the sides of trucks	Data retention is 6 months to 1 year on a centrally located server with access limited to the Transport Investigations Unit/Transport Compliance Branch	Controlling unauthorized access of this information	Good picture quality so far, no cold weather issues to date.

Results of Follow-up Survey Conducted December 2005 *(continued)*

Question 5				
Checking truck & driver credentials?				
State	Number & Location of Sites	Databases Used for this Activity	Operational Issues	Overall Experience
Arkansas	This task is done at the 8 sites strategically located in State	This task is done at the 8 sites strategically located in State	Having fast enough LAN or wireless network access to check databases	Not satisfied with today's resource availability
Minnesota	----	----	----	----
New York	Currently just do this at certain rest areas when officers are available	Using CVIEW/OSCAR database	Keeping traffic flow going while searching databases for possible violations, dealing with permits or updated IFTA stickers and overweight citations	With current WIM only deployment it is easy for driver's to find alternate route so WIM only is not solution
Wisconsin	As stated above, Wisconsin utilizes Pre-Pass at two of its facilities and hopes to incorporate the system with future projects.	Wisconsin enforcement staff utilize ISS-2 at all fixed facilities and in the cruisers	The only issue of concern is timeliness of accurate data in the cruisers. Inspectors do not currently have internet access from the roadside and therefore only get updates periodically. Wisconsin is currently evaluating the different options for providing internet access in the cruiser.	Although inspectors have access to a tremendous amount of information, there is a gap in providing driver-related information for sorting purposes. If driver behavior is responsible for a significant number of CMV crashes, we need to be able to sort the bad drivers out from the rest of the operators.
Saskatchewan	No real time checking of truck & driver credentials is currently taking place however; the Transport Investigations Unit (TIU) receives a computer download of images captured over a two week period. The TIU then uses this information to conduct compliance checks, audits and investigations.	Unknown	None at this time	Still very new technology

Results of Follow-up Survey Conducted December 2005 *(continued)*

Question 6	
Other uses of the technology?	
State	
Arkansas	Main purpose is for planning and law enforcement
Minnesota	None
New York	Can see other agencies sharing information to meet their needs did not name specific
Wisconsin	Wisconsin is currently the only state in North America utilizing Performance-Based Brake Testers (PBBT) in its roadside enforcement program. We have found this technology to be extremely beneficial to our program.
Saskatchewan	All traffic data collected (ADT) is shared with appropriate traffic entities.

Results of Follow-up Survey Conducted December 2005 *(continued)*

Question 7							
What agencies within your state or province are involved in the above activities and what are their responsibilities as they relate to?							
State	Site Selection	Equipment Specification	Procurement	Installation	Operation	Maintenance	Data Processing, Storage, Retention, Etc.
Arkansas	Highway Patrol and Planning Division	Planning	Department of Highway Patrol	New VWIM will be done through bid process current piezo installed by own technicians within Arkansas Highway & Transportation Dept	Highway Police for weight enforcement and credentialing or safety violations	Arkansas State Highway and Transportation Dept.'s	Arkansas State Highway and Transportation Dept's own IT personnel
Minnesota	----	----	----	----	----	----	All the above activities were performed and accomplished by George Cepress of MnDOT
New York	State Troopers	None others than NYDOT	First one may be sole sourced since it is under a research project	NYSDOT	NYSDOT and State Troopers	NYSDOT technicians	Dept. of Tax and Financing, DMV and State Police
Wisconsin	The above activities are all contained within the Wisconsin Department of Transportation and therefore everyone has a seat at the table.						
	Division of Transportation Investment Management and Division of State Patrol	Division of State Patrol and Division of Business Management.	Division of Business Management	Private contractors and/or Division of Business Management.	Division of State Patrol	Division of Business Management	N/A
Saskatchewan	A group (consisting of consultants, contractors and TIU) effort was utilized for reviewing and making decisions concerning the above factors.						

Project Wrap-up Survey

The project wrap-up survey was conducted in December 2008. The survey was sent to the individuals from the states that responded to the last survey. The 2005 survey serves as the baseline. The wrap-up survey measures changes in their WIM/VWIM status. It was felt we had the best chance for response if we went back to those people who took the time to respond to our initial survey.

Surveys were sent to the following states, **bolded states** provided responses:

Arkansas	New Jersey
Arizona	**New York**
Delaware	**Oregon**
Kansas	Texas
Kentucky	**Vermont**
Maine	**Washington**
Minnesota	Wisconsin
Missouri	**Wyoming**
Montana	*Canada* - **Alberta**
Nebraska	Saskatchewan

A copy of the survey and responses received follows.

Weigh-in-Motion / Virtual Weigh-in-Motion Survey
AASHTO-Technology Implementation Group
Focus Technology Project

Project Wrap-up Survey -2008

1.) Does your state currently use, or plan to use Weigh-in-Motion, Virtual Weigh-in-Motion, or other electronic technologies for the following:

	Currently Use	Plan to Use
Enforcing Truck Weight & Size Regulations:		
• Screening Overweight Trucks?	**7** Yes **2** No	**5** Yes **1** No
• Ticketing Overweight Trucks?	**1** Yes **8** No	**1** Yes **8** No
Capturing Video Images of Vehicles?	**4** Yes **3** No	**8** Yes **0** No
Reading or Verifying:		
• License Plate Numbers?	**3** Yes **3** No	**8** Yes **1** No
• US DOT Numbers?	**1** Yes **5** No	**6** Yes **4** No
Checking Truck & Driver Credentials?	**5** Yes **5** No	**4** Yes **3** No
Checking Truck Safety Compliance?	**5** Yes **4** No	7 Yes **1** No
Other: _____	___Yes ___No	___Yes ___No

2.) If your state has implemented, or is actively pursuing technologies for any of these activities; please describe your experience and elaborate on measured or perceived benefits:
_____
_____
_____
_____

3.) What challenges or obstacles to implementing WIM/VWIM technology do your state face; (i.e., philosophy, management support, funding, etc.)? How have you addressed these challenges? Please elaborate: _____
_____
_____
_____

4.) If other than yourself; who is the most knowledgeable person within your state to contact to obtain additional information regarding the above responses?
Name _____
Position_____
Agency _____
Phone Number _____
E-mail Address _____

Please complete and return by December 24th, 2008

Return survey by e-mail or fax to: Thomas A. Bold
NDDOT - Materials & Research Division
300 Airport Road
Bismarck, ND 58504-6005
(701) 328-6921 - Phone
(701) 328-0310 – Fax
tbold@nd.gov

Results of Final Survey Conducted December 2008

Question #1														
Does your state currently use, or plan to use Weigh-in-Motion, Virtual Weigh-in-Motion, or other electronic technologies for the following:														
	Screening Overweight Trucks?		Ticketing Overweight Trucks?		Capturing Video Images?		Reading or Verifying License Plate Numbers?		Reading or Verifying US DOT Numbers?		Checking Truck or Driver Credentials?		Checking Truck Driver Compliance?	
States & Provinces	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use	In Use	Plan to Use
Arizona	Y	-	Y	-	-	Y	-	Y	-	Y	Y	-	Y	-
	Currently using freeze frame camera													
Delaware	-	Y	-	N	-	Y	-	Y	-	Y	-	Y	-	Y
	Plan to use toll diversion													
Maine	-	Y	-	N	-	Y	-	Y	-	Y	Y	-	Y	-
	Plan to use ramp sorting for credentials and weight													
Minnesota	Y	Y	N	N	N	Y	N	N	N	N	N	N	Y/N	Y/N
	MN/DOT conducted a pilot study regarding capturing images. We plan to deploy additional cameras at WIM sites.													
Montana	Y	-	N	N	-	Y	-	Y	-	N	N	N	-	Y
New York	Y	-	N	N	Y	-	Y	-	N	Y	N	N	N	Y
Oregon	Y	-	N	N	Y	-	Y	-	Y	-	Y	-	Y	-
	At 6% for gross and 10% for axles, WIM are not accurate enough to use for enforcement				Use cameras at 8 interstate and NN highways to capture images of bypassers		Tied into the mainframe database based on transponders in vehicles				At 22 WIM sites around the state			
Vermont	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y
Washington	Y	-	N	-	Y	-	-	Y	-	N	Y	-	Y	-
Wyoming	Y	Y	N	-	N	Y	N	Y	N	Y	N	Y	N	Y
Canada														
Alberta	N	N	N	N	Y	Y	Y	Y	N	N	Y	Y	Y	Y

Question # 2	
If your state has implemented, or is actively pursuing technologies for any of these activities; please describe your experience and elaborate on measured or perceived benefits:	
States & Provinces	Comments
Arizona	We have six SORTER systems in operation within our state. These are all in high volume facilities that without this technology we could not begin to effectively screen CVO traffic for credential or size and weight. Continuous data collection, Officer Effectiveness, and the ability to concentrate our efforts of the illegal loads or vehicles has been invaluable.
Delaware	Delaware will begin to use our first WIM location in a couple of months at the new US 301 Weigh Station. It will be used in conjunction with mainline electronic screening. Delaware also plans to construct at least 3 Virtual WIM sites. Mainline screening helps reduce the number of trucks that must slow down and enter the weigh station. Virtual WIMs help to spread out limited enforcement resources, and hopefully keep more trucks on the mainline.
Maine	Next year, using FMCSA CVISN grant funding, Maine will be installing a vehicle screening system at our Kittery I-95 southbound enforcement area and a CVIEW system for credentialing. This is part of Maine's Core CVISN effort. A future enhancement is planned for our York I-95 northbound enforcement area, if funding can be obtained.
Minnesota	MN/DOT conducted a pilot study of adding digital imaging to one of our WIM sites. That pilot was successful, and we plan to add more cameras as funding becomes available.
Montana	Through the use of WIM, camera and communications technologies, MDT captures WIM records for use in Highway Planning, detecting overweight commercial vehicles activities and highway design. For highway planning, WIM data provides more quantity and accurate information for forecasting pavement impacts. For truck enforcement, WIM information provides information about overweight vehicle activities used to focus enforcement resources. Engineering uses WIM data to better design roadways.
New York	NYSDOT is in the final stages of completing its prototype e-screening site, located 20 miles southwest of Albany on Interstate 90. This test site will be fully operational during the first half of 2009 and will serve as the model for all future e-screening and virtual weigh station (VWS) installations in NYS. NYSDOT has led efforts with its sister agencies (NYS Thruway Authority and NYS Bridge Authority) and is currently in the planning phase for the installation of several additional VWS sites at strategic locations throughout NYS, including a key Hudson River bridge facility. With the eventual development of a VWS/e-screening network deployed strategically throughout NYS, it is anticipated that law enforcement capabilities and program/asset management planning (i.e. pavement life predications, pavement design improvements) efforts for all NYS stakeholders will dramatically improve.
Oregon	Oregon has 22 WIM/AVI sites around the State. The AVI/WIM system is tied into our mainframe databases for tax, registration, and safety. In addition to the on-road WIM weights, we query the system for every truck that has a transponder and if the carrier compliance is in good standing, they receive a Greenlight to legally bypass the weigh station. For those trucks that are not using a free transponder, we still review the screening record to determine if the truck can use the in-scale bypass lane. Over the life of our system we estimate the reduction in costs to motor carriers in the millions of dollars, the saved time in the hundreds of thousands of hours travel time and are now working with the Oregon DEQ to estimate the reduction in air pollution saved from the foregone slowing coming in and accelerating out of the weigh stations. Finally, the additional data points generated by the system helps our truck inspection efforts to the point that we place drivers OOS for hours of service violations at an average about 3 ~ 4 times the national average.

Vermont	Vermont is in there very beginning stages of assessing individual elements of Virtual Weigh-In-Motion technology/and e-screening. Vermont is at a point where wireless air-card and Wi-Fi connectivity may make it possible to evaluate these capabilities. The state currently utilizes WIM technology and Vermont DMV is looking at ways to enhance each sites capability in order to maximize limited resources in the current economic environment.
Washington	Weigh in Motion (WIM) has been used in the State of Washington since the 1990s. Automatic Vehicle Identification (AVI) was added in 1999. There are currently 11 weigh stations in the state using WIM/AVI. These technologies allow the officer to focus attention on overweight and/or unsafe carriers. The addition of the License Plate Reader technology will level the playing field between trucks with transponders and those without. Washington DOT is also conducting a study of possible sites in Eastern Washington for Virtual WIMs. Installation of Virtual WIMs will maximize funding and augment existing fixed weigh stations.
Wyoming	No Comment
Canada	
Alberta	The Partners in Compliance or PIC program has transponders placed on participating heavy vehicles which allows them to pass Vehicle Inspection stations without reporting. Trucking companies can apply to join the program based on them meeting driver, safety and weight compliance criteria. We also have a virtual inspection station which has video monitors to alert inspection services officers to investigate non-compliant vehicles.

Question # 3	
What challenges or obstacles to implementing WIM/VWIM technology does your state face; (i.e., philosophy, management support, funding, etc.)? How have you addressed these challenges? Other?	
States & Provinces	Comments
Arizona	Our major challenge has been to obtain funding for our projects. Present ADOT emphasis has been on adding new roads and highways as that is the political pressure they respond to. Continued efforts to educate on the reduced maintenance costs of existing highways and the benefits of the WIM systems are an ongoing effort.
Delaware	Inoperability between screening systems, specifically PrePass is unwilling to share information or let other screening systems equipment to be located with their equipment.
Maine	Interagency cooperation (Motor Vehicles, DOT, State Police) has been crucial to our success in CVISN and has gone well. Also important was the invaluable assistance of Valinda Gorder of Parker Young, a nationally recognized expert on CVISN compliance. Integration of engineering and IT aspects of the project is essential, along with good planning for future maintenance after implementation. Higher level management has bought into the need for CVISN and fostered its development in Maine.
Minnesota	Funding is number one, establishing appropriate communications is number two, management support and interagency cooperation/support is number three.
Montana	Philosophy, management support and funding are integral to successfully deploying, operating and maintaining WIM systems. Any challenges were overcome by having a technology "Champion" at the highest level and all divisions that benefitted for WIM deployment working together for a common objective.
New York	NYSDOT has had difficulties finding an available, COTS e-screening system that suits the needs of NYS. As such, NYSDOT has worked diligently with its e-screening vendor to develop a system that will address the credentialing needs for commercial vehicle enforcement in NYS. NYSDOT has also had to deal internally with the legal ramifications of utilizing license plate reader (LPR) technology for commercial vehicle enforcement purposes. Specific policy relating to the use of LPR cameras for commercial vehicle inspection purposes is currently being developed. Additionally, NYSDOT has had to work with State agencies that have, for a variety of reasons, displayed a hesitancy to implement this technology. NYSDOT continues to make progressive strides at periodic stakeholder meetings in alleviating these concerns and demonstrating the significant advantages of utilizing this technology. Support from NYSDOT management has been rising with the gradual realization of the merits of such systems.
Oregon	Because Oregon retains and uses the data for tax and safety compliance, the motor carrier industry was initially suspicious of "big brother" watching over their collective shoulders. When the system was deployed years ago, we launched a large outreach campaign to educate the carriers about the data and how we would use it.
Vermont	Current obstacles involve funding and continued support after installation. We are still not sure if we also may have to deal with some privacy concerns as well (cameras were an issue with our state legislature when installing RWIS stations).
Washington	Washington state is fortunate in that the Dept of Transportation (DOT) and the Washington State Patrol (WSP) partner in implementing WIM/AVI technology. Additionally, the Washington Trucking Associations is a strong advocate of the program. Funding is the biggest challenge. The DOT Commercial Vehicle Services and the WSP Commercial Vehicle Division are responsible to jointly develop a Six Year Weighing/Inspection Facilities Plan and further to work together to obtain funding for the design, development, and operation of the facilities identified in the Plan. This process has been successful as the two agencies present a united Funding Package request to the legislature.

Wyoming	As shown above in the yes in plan to use, may mean 20 years from now. Wyoming has just started the discussion on VWIM. As with the WIM the funding is just the first obstacle. Hopefully sometime in the near future Wyoming may implement a VWIM location.
Canada	
Alberta	There are two major obstacles to the use of WIM technology; 1) The accuracy of the weights measured is not sufficient to use in weight enforcement, and 2) Our highways do not have enough truck volumes for WIM systems to operate optimally.

Question # 4					
If other than yourself; who is the most knowledgeable person within your state to contact to obtain additional information regarding the above responses?					
States & Provinces	Name	Position	Agency	Phone Number	E-mail Address
Arizona	Doug Eberdine	Data Analysis	Arizona DOT	602-712-8585	deberdine@azdot.gov
Delaware	Gregory Oliver	Assistant Director of Planning, CVISN/PRISM Project Manager	Delaware DOT	302-760-2116	gregory.oliver@state.de.us
Maine	Tim Bolton	Policy Development Specialist, Office of Freight Transportation & Business Services	Maine DOT	207-624-3559	tim.bolton@maine.gov
Minnesota	Matt Oman	Engineer, Office of Transportation Data and Analysis	Minnesota DOT	651-366-3855	matthew.oman@dot.state.mn.us
Montana	Dennis Hult	MCS Operations Bureau	Montana DOT	406-444-9237	dhult@mt.gov
New York	Richard McDonough	Intermodal Transportation Specialist 3	New York State DOT	518-457-5871	rmcdonough@dot.state.ny.us
Oregon	David McKane	Manager, Federal Safety Programs & Greenlight System	Oregon DOT	503-373-0884	David.J.McKane@odot.state.or.us
Vermont	William Elovirta	-	Vermont DOT	-	William.Elovirta@state.vt.us
Washington	Doug Deckert	CVISN Systems Architect	Washington DOT	360-561-6360	DeckerD@wsdot.wa.gov
Wyoming	Richard Smith	Port of Entry Technical Support	Wyoming DOT	307-777-4878	Richard.smith@dot.state.wy.us
Canada					
Alberta	Peter Kilburn, PE	Modeling & Forecasting Specialist	Alberta Transportation	780-415-1359	peter.kilburn@gov.ab.ca

Total Surveys Sent: **23**
Total Responses: **11**

Lessons Learned

Effective Tools and Methods

(From the viewpoint of your lead states team, which were the most effective marketing tools and methods they used, and why were they believed to be the most effective.)

Please provide your Lead States Team comments here:

- The website with all the project developed information can be accessed by most everyone without travel restrictions and at convenient times for the interested users/entities. (TW)
- It has been my experience that promoting the AASTHO/TIG web page which briefly describes the scope of this committee and gives interested entities the contacts they need to answer questions as they arise prior to or during deployment of a virtual WIM program beneficial to a large degree. I personally lost count of how many questions I fielded in the last few years in regard to deployment of WIM technology which could be directly attributed to the AASHTO/TIG website. (TR)
- Lessons learned in California mostly followed the consensus of the workshops and presentations throughout the country given by Randy Woolley. They include:
    - WIM is used for screening, but not for automated enforcement. No law enforcement agency I talked with was considering using WIM for automated enforcement. All believe that a sworn officer must write the ticket in order to include judgment in the process. Additionally, WIM alone cannot check credentials, currency of inspections, hours of service, vehicle safety, and such items.
    - Cost is a significant issue for expanding the systems
    - Cost is a significant issue for maintenance and calibration
    - Better data quality is needed to use WIM data for purposes beyond screening and planning
    - Use of WIM as a screening tool for commercial enforcement improves safety for the motoring public as well as for commercial vehicles
    - Use of WIM as a screening tool for commercial enforcement improves delivery of enhanced enforcement by improving effectiveness and efficiency
- Use of WIM as a screening tool for commercial enforcement improves safety by helping to control the operation of non-permitted, not compliant overweight or oversized vehicles.(RW)

Unique Tools and Methods

(List any particularly creative or unique elements or methods used by your lead states team that other lead states teams should consider using.)

Please provide your Lead States Team comments here:

- The tri-fold brochure is unique in that it gives a quick overview of WIM/VWIM systems.
- The narrated video is easy listening, informative and packed with WIM/VWIM highlighted information.
- The webinars were an excellent communications tool for the team to meet and communicate. (TW)

Ineffective Tools and Methods

(From the viewpoint of your lead states team, which tools and methods were much less productive than desired, and provide your team's recommendations concerning future use of these methods or activities.)

Please provide your Lead States Team comments here:

- None identified (TW)
- Presentations can be an effective tool but it's been my experience that conferences are not the most cost effective method of getting the word out and should be scheduled judiciously. (TR)
- Use of WIM without sufficient funding to support maintenance and calibration dramatically reduces the effectiveness of WIM as a law enforcement screening tool. Additionally, it raises questions of data validity for all WIM uses. (RW)

General Comments

(Provide any lessons learned not included above.)

Please provide your Lead States Team comments here:

- Good team involvement and communication will help ensure a successful project. These concepts are greatly facilitated by a strong and engaging team leader that is skilled in conducting/chairing meetings. This project was more of a success because of our team leader. He kept the team focused, on topic and kept all team members involved in the project. (TW)
- As stated before I believe the best tool at our disposal is the website with contact information. I believe that the most effective way to get our message out is to promote the website and the benefits of the technology by methods such as pamphlets and electronic presentations. (TR)

Transition Plan

Reference Materials

(Provide a list of the most beneficial reference materials pertinent to this technology.)

Reference	Publisher	URL (if available on web)

- No recommendations (TW)

Technology Transfer

(Name and contact information for the primary FHWA office to become the on-going contact for technology transfer for this technology.)

Contact	Office Name, Location	Phone	Email
	,		

Primary On-going Implementation Responsibility

(Name and contact information for the technical committee/group/association to assume primary responsibility for continuing implementation of this technology.)

Contact	Committee Name, Organization	Responsibility Discussed and Response
Jodi L. Carson, Ph.D., P.E.	Texas Transportation Institute	Research Engineer
Warren B. Dunham Associates, L.C.	,	CVISN Consultant
Tom Kearney,	Federal Highway Administration	FHWA Truck Size and Weight Project
Jeff Secrist	FMCSA Office of Research and Analysis	Chief, Technology Division (MC-RRT)

Other Planning Efforts for On-going Implementation

(Identification of technical committees/groups/associations that have been contacted by the lead states team about assuming a future responsibility involving this technology, and the response received from each organization.)

From the early days of the AASHTO-TIG WIM/VWIM project; it became clear that FHWA was working along a parallel path. The FHWA European Scan Tour is an example of their activities in this arena. A Lead States Team Member participated in the Scan Tour and his experiences added to the Team's collective knowledge on the subject.

During that same time, an expanded CVISN ad hoc team was working on issues of roadside enforcement activities that included some of the VWIM technologies being used in the states represented in the AASHTO-TIG WIM/VWIM project.

Most recently (9/14-16/09), FHWA/AASHTO held a Commercial Motor Vehicle Weight Enforcement Strategic Forum and many issues familiar to the Lead States Team were discussed. This forum was attended remotely by members of the Lead States Team and it was their opinion that in some areas, States surveyed in our AASHTO-TIG project had already made strides with the technology. This was represented by responses received in our surveys and in several cases, by the experiences of the Lead State Team members.

The proceeds of that forum are contained in a ninety page document, the cover of which follows.

ACHIEVING EFFECTIVE AND EFFICIENT COMMERCIAL MOTOR VEHICLE WEIGHT ENFORCEMENT

♦♦♦♦♦

BRAINSTORMING SESSION OUTPUT TO SUPPORT SHORT-, MEDIUM-, AND LONG-RANGE STRATEGIC PLAN DEVLEOPMENT FOR WEIGH-IN-MOTION (WIM) SYSTEM USE AND DEPLOYMENT

Prepared By:

Dr. Jodi L. Carson, P.E.
Texas Transportation Institute
Texas A7M University System

Prepared For:

Federal Highway Administration
Truck Size and Weight Team

and

American Association of State Highway and Transportation Officials
Subcommittee on Highway Transport

NOVEMBER 2009

The Lead States Team believes that the necessary network and connections already exist between AASHTO and FHWA/USDOT agencies actively involved in these efforts of technology transfer for WIM/VWIM.

That being said, Lead States Team Members continue to be receptive to provide information and are responsive to questions for interested states and researchers. Each Team Member has a great deal of experience they are willing to share.

Specific Future Actions

(If there are specific future implementation activities foreseen as desirable or necessary, list that information here.)

Future Activity	Time Frame	Recommended Organization to Perform

On the Web

(List the url if a web site has been identified where the information on this technology has been transferred, or where later information on this technology can best be obtained.)

http://tig.transportation.org/?siteid=57&pageid=1003

Final Expenditure Summary

Remaining Expense Claims

(Provide a list of marketing plan expense claims, including travel claims, yet to be submitted for reimbursement from AASHTO.

Date of Expense	Service Type	Claimant	Estimated Claim Amount
Total Estimated Remaining Expense Claim			*$ 0.00*

To our knowledge, all expenses have been submitted for payment.

Total Expenses

Remaining Expense Claims
(Provide an estimate of the final total expenses (to AASHTO TIG) which were incurred in executing the entire marketing plan.)

Air fare, hotel, and meeting room expenses relating to the organizational meeting were paid through the AASHTO travel agent. Lead States Team Member incidental expenses were submitted and reimbursed through the normal process.

Media and marketing agencies submitted estimates for their services and submitted their invoicing directly to AASHTO for payment.

Expenses for Lead States Team Members to travel on the European Scan Tour and to presentation venues were paid by AASHTO travel agents or submitted to AASHTO for reimbursement.

Appendix A: Demonstration Workshop Information

(Agendas and attendance lists.)

Please provide the details from workshops you attended or presentations you gave. This should include agendas, presentation notes, attendance numbers, etc.:

Date	Presented by	Venue	Presentation	Attendance
12/06	Randy Woolley – Caltrans	ITS Workshop	Short Version	Approx. 54 DOT and Consultants
03/20/07	Terry Woehl-NDDOT	ASHE	Short Version	Approx. 30 DOT and Consultants
10/23/07	Craig Wilson-FDOT	CVO Workshop	Short Version	(see list provided)
01/13/09	Tom Trunda-FDOT	CVO Workshop	Short Version	(see list provided)

FDOT CVO Workshop – 10/23/07

LAST NAME	FIRST NAME	TITLE	COMPANY	BUSINESS ADDRESS	CITY	ST	ZIP	PHONE	EMAIL
Akridge	Michael	Deputy Traffic Operation Engineer	FDOT	605 Suwannee St, MS 90	Tallahassee	FL	32399	850-410-5607	michael.akridge@dot.state.fl.us
Beck	Tom	Principal Planner	Hillsborough County MPO	601 E. Kennedy Blvd, 18th Floor	Tampa	FL	33602	813-272-5940, x359	beckt@plancom.org
Birriel	Elizabeth	Deputy State Traffic Ops Engineer	FDOT	605 Suwannee St, MS 90	Tallahassee	FL	32399	850-410-5606	elizabeth.birriel@dot.state.fl.us
Brown	Ernest	Captain	FDOT Motor Carrier Compliance Office	PO Box 613069	Ocoee	FL	34761	407-532-2787	ernest.brown@dot.state.fl.us
Burke	Thomas	Senior Transportation Planner	Lake Sumter MPO	1616 South 14th St	Leesburg	FL	34748	352-315-0170	tburke@lakesumtermpo.com
Calhoun	Jay	President	VANUS, Inc.	4350 W. Cypress St.	Tampa	FL	33607	813-831-8870	calhoun@vanusinc.com
Creel	Charles	Sr. ITS Specialist	PBS&J	605 Suwannee St, MS 90	Tallahassee	FL	32399-1450	850-410-5613	charles.creel@dot.state.fl.us
Duncan	Tammy	Senior Research Analyst	Southwest Research Institute	6220 Culebra Road	San Antonio	TX	78238	210-522-3927	tammy.duncan@swri.org
Easley	Richard	President	E-Squared Engineering	43969 Tavern Dr, #200	Ashburn	VA	20147	703-858-5588	reasley@e-squared.org
Easley	Sharon	Project Manager	E-Squared Engineering	43969 Tavern Dr, #200	Ashburn	VA	20147	703-858-9545	seasley@e-squared.org
Edwards	Laura	Transportation Planner	Alaska DOT	11900 Industry Way, Bldg M, Ste 2	Anchorage	AK	99515	907-365-1210	laura.edwards@alaska.gov
Folsom	Ezra	Lieutenant	FDOT-MCCO	4700 Terminal Dr	Fort Myers	FL	33907	352-588-5999	buchanan.folsom@dot.state.fl.us
Foutz	Larry	Transportation System Manager	Miami Dade MPO	111 NW First St., Suite 901	Miami	FL	33128	305-375-1522	lfoutz@miamidade.gov
Funny	John	President	Grice & Associates, Inc.	1349 West Peachtree St, Suite 1290	Atlanta	GA	30309	404-577-6300	jfunny@griceinc.com
Gaines	Danena	Transportation Planner	Cambridge Systematics, Inc	730 Peachtree St, Suite 1050	Atlanta	GA	30308	404-443-3200	dgaines@camsys.com
Genge	Colin	President	Bay Area Transport, Inc.	14092 Amero Lane	Spring Hill	FL	34609-6209	813-391-4297	candhgenge@msn.com
Gilhooley	George		HNTB	300 Primera	Lake Mary	FL	32746	407-547-2997	ggilhooley@hntb.com

				Blvd, Suite 200					
Gordin	Eric	Asst. District Traffic Ops Engineer	FDOT	PO Box 613069	Ocoee	FL	34761	407-264-4161	eric.gordin@dot.state.fl.us
Gunther	Thomas	Lieutenant	California Highway Patrol	444 N. 3rd St	Sacramento	CA	95811	916-445-1865	tgunther@chp.ca.gov
Hancock	Jessica	Administrative Assistant	FDOT Motor Carrier Compliance Office	PO Box 613069	Ocoee	FL	34761	407-532-2787	jessica.hancock@dot.state.fl.us
Hayworth	Dick	CVISN Program Manager	IN Motor Carrier Services	5252 Decatur Blvd, Suite R	Indianapolis	IN	46241-9524	317-615-7211	dhayworth@dor.in.gov
Hicks	Don	Transportation Sales	Daktronics, Inc.	331 32nd Ave.	Brookings	SD	57006	888-325-8726	transportation@daktronics.com
Hooker	Dennis	Manager of Technical Services	Metroplan Orlando	315 E. Robinson St., Suite 355	Orlando	FL	32801	407-481-5672, x321	dennish@metroplanorlando.com
Kerr	Patrick	Research Engineer	UCF-CATSS	4000 Central Florida Blvd	Orlando	FL	32816	407-823-0206	pkerr@mail.ucf.edu
Krueger	Lorin	CEO	LK Consultants	4578 Louvinia Ct	Tallahassee	FL	32311	850-656-9095	lbkrueger@aol.com
Lane	Christopher	Program Coordinator	ITS America	1100 17th St. NW, Suite 1200	Washington	DC	20036	202-721-4225	clane@itsa.org
Lane	Julie	Technology Division	FMCSA	1200 New Jersey Ave, SE	Washington	DC	20590	202-385-2391	julie.lane@dot.gov
Lantz	Lorraine	Principal Planner	Collier County MPO	2885 S. Horseshoe Dr	Naples	FL	34104	239-659-5779	lorrainelantz@colliergov.net
Lee	Chanyoung	Senior Research Asssociate	Center for Urban Transportation Research (USF)	4202 East Fowler Ave, CUT 100	Tampa	FL	33620-5375	813-974-5307	cylee@cutr.usf.edu
Long	James	Vice President	Florida Trucking Association	350 E. College Ave.	Tallahassee	FL	32317	850-222-9900	jlong@fltrucking.org
Lopes	Robert	ITS Project Manager	FDOT	11201 N. Mckinley Dr	Tampa	FL	33612	813-975-6700	Robert.Lopes@dot.state.fl.us
Miller	Stephen	Assoc Director for Research Programs	FAU Civil Engineering	5353 Parkside Dr, SR 237	Jupiter	FL	33458	561-799-8571	stmiller@fau.edu
Morrison	Renee	Senior Specialist	E-Squared Engineering	43969 Tavern Dr, #200	Ashburn	VA	20147	703-858-9545	rmorrison@e-squared.org
Nandam	L.K.	District Traffic Operations Engineer	FDOT-Traffic Operations	801 N. Broadway Ave	Bartow	FL	33830	863-519-2490	l.nandam@dot.state.fl.us
Nedilsky	Kalyna	CVISN Program Manager	MD State Highway Administration	Motor Carrier Division, 7491 Connelley Dr	Hanover	MD	21076	410-582-5719	knedilsky@sha.state.md.us

Needham	Kevin	Senior Project Manager	Jacobs Edwards and Kelcey	1247 Ward Ave.	West Chester	PA	19380	610-701-7000	kevin.needham@jacobs.com
Olson	Don	Traffic Incident Management / Project Manager	FDOT-Traffic Operations Division	801 N. Broadway Ave	Bartow	FL	33831-1249	863-519-2274	don.olson@dot.state.fl.us
Onder	Michael	Team Leader-Freight Ops	Federal Highway Administration	1200 New Jersey Ave, SE E84	Washington	DC	20590	202-366-2639	michael.onder@dot.gov
Phelan	Thomas	Senior Associate	Eng-Wong, Taub & Associates	One Gateway Center	Newark	NJ	07102	973-986-0192	tphelan@eng-wongtaub.com
Ramasamy	Shankar	Research Associate	UCF-CATSS	4000 Central Florida Blvd	Orlando	FL	32816	407-823-2733	sramasam@mail.ucf.edu
Reed	Harry	Executive Director	Capital Region Transportation Planning Agency	300 South Adams St, Box A-19	Tallahassee	FL	32301	850-891-8540	reedh@talgov.com
Selter	Jack	Director	UCF-CATSS	4000 Central Florida Blvd	Orlando	FL	32816	407-823-2272	jselter@mail.ucf.edu
Sharma	Rakesh	Traffic Service Specialist	Florida Turnpike Enterprise	Mile Post 263, Turkey Lake Plaza, Florida's Turnpike, Bldg 5317	Ocoee	FL	34761	407-264-3846	rakesh.sharma@dot.state.fl.us
Susor	Bob	Weigh In Motion Sales Manager	Mettler Toledo	1900 Polaris Parkway	Columbus	OH	43420	614-638-1162	bob.susor@mt.com
Thompson	Troy	Captain	FDOT-MCCO	4700 Terminal Dr	Fort Myers	FL	33907	239-938-1120	troy.thompson@dot.state.fl.us
Vega	Peter	District Two ITS Engineer	FDOT	2198 Edison Ave	Jacksonville	FL	32258	904-360-5463	peter.vega@dot.state.fl.us
Weidner	Austin	Mobility Manager	FDOT	3400 W. Commercial Blvd	Fort Lauderdale	FL	33309	954-777-4649	sandra.burton@dot.state.fl.us
Williamson	Michael	Senior Associate	Cambridge Systematics, Inc	110 East Broward Blvd., Ste 1700	Fort Lauderdale	FL	33301	954-315-3817	mwilliamson@camsys.com
Wilson	Craig	Weigh Scale Program Manager	FDOT	Woodcrest Office Park, Building K, 325 John Knox Road	Tallahassee	FL	32303	850-245-7932	Craig.Wilson@dot.state.fl.us
Zambito	Joseph	Team Leader	Hillsborough County MPO	601 E. Kennedy Blvd, 18th Floor	Tampa	FL	33602	813-272-5940, x330	zambitoj@plancom.org
Zielinski	John	Intermodal Supervisor	FDOT District Five	133 S. Semoran Blvd	Orlando	FL	32807	407-482-7868	john.zielinski@dot.state.fl.us

Oloufa	Amr		UCF-CATSS						aoloufa@mail.ucf.edu
UPDATED									
10/18/2007									
Glascock	Stephen	ITS Director	LA Department of Transportation & Development	PO Box 94245	Baton Rouge	LA	70804-9245	225-379-2516	stephenglascock@dotd.la.gov
Saxena	KK	Principal	Kimley-Horn and Associates, Inc.	5200 NW 33rd Ave, Suite 109	Fort Lauderdale	FL	33319	954-535-5100	kk.saxena@kimley-horn.com

FDOT – Transportation Planning CVO
Workshop 01/12/2009

Michael Akridge
Deputy State Traffic Engineer
Florida DOT
605 Suwannee St., MS 90
Tallahassee, FL 32399-0450
PH: 850-410-5607
FX: 850-410-5501
Email: michael.akridge@dot.state.fl.us

Lauren Brand
South Atlantic Gateway Director
Maritime Administration/DOT
51 SW 1st Ave., Suite 1305
Miami, FL 33130
PH: 305-890-6016
FX: 321-208-7160
Email: lauren.brand@dot.gov

Ernie Brown
Captain
FDOT-MCCO
Milepost 263, Florida's Tpke;
Turkey Lake Plaza, Bldg 5318
Ocoee, FL 34761
PH: 407-532-2787
FX: 407-521-2592
Email: ernest.brown@dot.state.fl.us

Romona Burke
ITS Operations Support Manager
Florida DOT
11201 N. McKinley Dr.
Tampa, FL 33612
PH: 813-615-8613
FX: 813-615-8662
Email: romona.burke@dot.state.fl.us

Patricia Campbell
Senior Planner
HDR, Inc.
5426 Bay Center Dr., Suite 400
Tampa, FL 33609
PH: 813-282-5301
FX: 813-282-2430
Email: patricia.campbell@hdrinc.com

David Dees
Colonel
FDOT-MCCO
325 John Knox Rd.
Tallahassee, FL 32303
PH: 850-245-7927
FX: 850-245-7978
Email: david.dees@dot.state.fl.us

Tammy Duncan
Principal Analyst
Southwest Research Institute
6220 Culebra Rd., Bldg 64
San Antonio, TX 78238
PH: 210-522-3927
FX: 210-522-3396
Email: tduncan@swri.org

Richard Easley
President
E-Squared Engineering
43969 Tavern Dr., #200
Ashburn, VA 20147
PH: 703-858-5588
FX: 703-724-0983
Email: reasley@e-squared.org

Sharon Easley
Project Manager
E-Squared Engineering
43969 Tavern Dr., #200
Ashburn, VA 20147
PH: 703-858-9545
FX: 703-724-0983
Email: seasley@e-squared.org

Carol Gergely-Retey
Traffic Incident Management Assistant
Florida DOT
605 Suwannee St., MS 90
Tallahassee, FL 32399-0450
PH: 850-410-5632
FX: 850-410-5501
Email: carol.gergely-retey@dot.state.fl.us

John Gilligan
TMC Manager
URS Corp/Mississippi DOT
2567 N. West St.
Jackson, MS 39215
PH: 601-709-9770
FX: 601-359-1987
Email: jgilligan@mdot.state.ms.us

Jessica Hancock
Compliance Review Admin.
FDOT-MCCO
Milepost 263, Florida's Tpke;
Turkey Lake Plaza, Bldg 5318
Ocoee, FL 34761
PH: 407-264-3391
FX: 407-521-2592
Email: jessica.hancock@dot.state.fl.us

Terry Hensley
ITS Operations Manager
Florida DOT
11201 N. McKinley Dr.
Tampa, FL 33612
PH: 813-615-8611
FX: 813-615-8662
Email: terry.hensley@dot.state.fl.us

Joel Hiatt
Director, Southern Service Center
US DOT FMCSA
61 Forysth St., SW Suite 17T75
Atlanta, GA 30303
PH: 404 562 3610
FX: 404 562 3704
Email: joel.hiatt@fmcsa.dot.gov

Eric Hooks
Sales Representative
IRD
636 Country Club Dr.
Burlington, NC 27215
PH: 336-214-2076
FX: 336-261-5764
Email: eric.hooks@irdinc.com

Gary Kleker
Planning Manager
HDR, Inc.
5426 Bay Center Dr., Suite 400
Tampa, FL 33609
PH: 813-282-2341
FX: 813-282-2430
Email: gary.kleker@hdrinc.com

Tim Lattner
Director, Office of Maintenance
Florida DOT
605 Suwannee St., MS 52
Tallahassee, FL 32399
PH: 850-410-5656
FX: 850-410-5510
Email: TIM.LATTNER@DOT.STATE.FL.US

Pei-Sung Lin
Program Director, ITS
USF-Center for Urban Transportation Research
4202 E. Fowler Ave., CUT100
Tampa, FL 33620
PH: 813-974-4910
FX: 813-974-5168
Email: lin@cutr.usf.edu

Anthony Longo
Intergovernmental Coordinator
Florida DOT
3400 W. Commercial Blvd
Ft. Lauderdale, FL 33309
PH: 954-777-4490
FX: 954-677-7892
Email: anthony.longo@dot.state.fl.us

Roger Marrero
Senior Associate
TransCore
3720 Executive Way
Miramar, FL 33025
PH: 954-342-0690
FX: 954-342-0697
Email: roger.marrero@transcore.com

Jesus Martinez
Principal Engineer
Southwest Research Institute
652 NW 129th Ave.
Miami, FL 33182
PH: 305-986-2596
FX: 305-229-1937
Email: jesus.martinez@swri.org

Pamela Minton
Planner II
SOA/DOT&PF/MSCVE
11900 Industry Way, Bldg M
Anchorage, AK 99515
PH: 907-365-1219
FX: 907-365-1220
Email: pamela.minton@alaska.gov

Renee Morrison
Senior Specialist
E-Squared Engineering
43969 Tavern Dr., #200
Ashburn, VA 20147
PH: 703-858-9545
FX: 703-724-0983
Email: rmorrison@e-squared.org

Jeremy Mullings
Transit Coordinator
Florida DOT
3400 W. Commercial Blvd
Ft. Lauderdale, FL 33309
PH: 954-777-4490
FX: 954-677-7892
Email: jeremy.mullings@dot.state.fl.us

Patrick Odom
Traffic Incident Management & Road Ranger
Program Manager
Florida DOT
605 Suwannee St., MS 90
Tallahassee, FL 32399-0450
PH: 850-410-5631
FX: 850-410-5501
Email: patrick.odom@dot.state.fl.us

Thomas Phelan
Senior Associate
Eng-Wong, Taub & Associates
One Gateway Center
Newark, NJ 07102
PH: 973-986-0192
FX: 973-693-4477
Email: tphelan@eng-wongtaub.com

Anthony Russo
Project Manager
Tindale-Oliver & Associates
1000 N. Ashley Dr., Suite 100
Tampa, FL 33602
PH: 813-224-8862
FX: 813-226-2106
Email: trusso@tindaleoliver.com

Tim Rutherford
Major
Office of Agricultural Law Enforcement
PO Box 428
White Springs, FL 32096
PH: 386-963-1460
FX:
Email: ruthert@doacs.state.fl.us

John Selter
Director
UCF-CATSS
4000 Central Florida Pkwy; PO Box 162450
Orlando, FL 32816
PH: 407-823-2272
FX: 407-823-4676
Email: jselter@mail.ucf.edu

Thomas Trunda
District OIS Manager
Florida DOT
325 John Knox Rd.
Tallahassee, FL 32301
PH: 850-245-7928
FX:
Email: tom.trunda@dot.state.fl.us

Joe Zambito
Transportation Team Leader
Hillsborough County MPO
601 E. Kennedy Blvd., 18th Floor
Tampa, FL 33602
PH: 813-272-5940, x330
FX: 813-301-7172
Email: zambitoj@plancom.org

Matthew Ubben
Vice President
Florida Trucking Association
350 East College Ave.
Tallahassee, FL 32301
PH: 850-222-9900
FX: 850-222-9363
Email: mubben@fltrucking.org

Carlton Urban
Senior ITS Engineer
DKS Associates
12000 N. Dale Mabry Hwy, Suite 112
Tampa, FL 33618
PH: 813-962-5959
FX: 813-962-5744
Email: ccu@dksassociates.com

Bud Whitehead
Senior Planner
Hillsborough County MPO
601 E. Kennedy Blvd., 18th Floor
Tampa, FL 33602
PH: 813-272-5940
FX: 813-301-7172
Email: budw@plancom.org

Mark Wilson
State Traffic Operations Engineer
Florida DOT
605 Suwannee St., MS 90
Tallahassee, FL 32399-0450
PH: 850-410-5419
FX: 850-410-5501
Email: mark.wilson@dot.state.fl.us

Appendix B: Marketing Media

(Copies of brochures, posters, and other reproducible media used in marketing activities.)

Lead States at a Glance

Nevada DOT
- Permanent WIM for high volume systems.
- Portable WIM for lower order roads.
- Remote installations are viable alternatives.
- General Packet Radio Service (GPRS) communications and solar power sources replace permanent utilities.

Florida DOT
- Pioneer of License Plate Reader systems.
- All Interstate facilities equipped with 45 mph ramp WIM lanes, 2 static scales, comfort/inspection barns & parking lots for 23-36 trucks.
- Florida DOT/MCCO and University of Central Florida researching; 3-D scanning in mainline, camera technology for USDOT Optical Character Recognition, and improved loop and sensor triggering devices.
- Demonstration sites constructed to evaluate virtual technologies.

Indiana DOT
- Unique working relationship among DOT, State Police, DOR/MCS & Purdue University.
- Evaluation of VWIM technology with remote cameras technology and wireless communications for enforcement screening.
- Data analysis for trend identification and targeting enforcement activities.

North Dakota DOT
- Increased emphasis on WIM sites vs. fixed scales.
- Statewide implementation of WIM for increased data collection and mobile enforcement.
- 12 Mainline WIM sites - wirelessly communicating with enforcement vehicle.

California DOT (Caltrans)
- 1/6 of WIM sites in the country.
- Pacific Rim significant ports: freight bound for other states/countries.
- Evaluating VWIM technology with LPR in highway speed mainline application.

VWIM Lead States stand ready to offer more information. Contacts are:

North Dakota DOT
Tom Bold
Chair, AASHTO TIG
WIM Lead States Team
Materials & Research Division
(701) 328-6921 • tbold@nd.gov

Terry Woehl
Planning & Programming Division
(701) 328-3531 • twoehl@nd.gov

Nevada DOT
Tony Rivera
Traffic Information Division
(775) 888-7444 • trivera@dot.state.nv.us

Indiana DOT
Guy Boruff
Traffic Management Business Unit
(317) 899-8605 • gboruff@indot.in.gov

California DOT (Caltrans)
Randy Woolley
Division of Research & Innovation
(949) 756-4930 • randy.woolley@dot.ca.gov

Florida DOT
Craig Wilson
Motor Carrier Compliance Office
(850) 245-7932 • craig.wilson@dot.state.fl.us

AASHTO
Technology Implementation Group
http://aashtotig.org

October 2006

Virtual Weigh-In-Motion

A "WIM-win" for Transportation Agencies, Industry, and the Public

DRIVING INNOVATION FOR TRANSPORTATION
TIG
http://aashtotig.org
AASHTO TECHNOLOGY IMPLEMENTATION GROUP

AASHTO TIG and Virtual WIM

The Technology Implementation Group (TIG) of the American Association of State Highway and Transportation Officials (AASHTO) shares high-payoff, market-ready technologies among transportation agencies through its Lead States Teams. The goals: promote technological advancements in transportation, sponsor technology transfer efforts, and encourage implementation.

The TIG chose Virtual Weigh-in-Motion (VWIM) as a focus technology because several States sparked a non-traditional use: wirelessly linking WIM information to a highway patrol officer's laptop in his or her vehicle. The application of "virtual technologies" demonstrates an innovative approach to solving size and weight enforcement issues that ranges beyond the WIM traditional role in data collection and vehicle classification.

Why VWIM; Why Now?

Indiana's Seymour Weigh Station, May 9, 2006: Backups like this make the case for VWIM; it developed 10 minutes after the scale house opened. Trucks are forced to bypass because the station weighing them can't handle the throughput.

"Over the next 20 years, truck tonnage is expected to double in the U.S., a rate more than five times that of population growth."
Texas Transportation Institute

What's new? Virtual WIM for weight compliance, screening & enforcement

Virtual WIM, or Virtual Weigh Station, is non-intrusive, unmanned, automated data collection—real time data from a distance. The technology augments fixed scale stations, but doesn't replace them. A VWIM system may include wireless communications, remote cameras, electronic transponders, optical character recognition (OCR) cameras, and/or license plate reader (LPR) technology to support enforcement. The strength of Virtual WIM technology is its flexibility to screen targets, focusing on vehicles in violation.

VWIM at Work

Virtual WIM technology expands the typical Weigh-in-Motion system beyond its standard capabilities to identify the number of axles, vehicle length and classification, and weight. The VWIM may incorporate:

- Wireless communication to transfer data to weight and size enforcement officers.
- Remote cameras to capture and transmit images of non-compliant vehicles.
- LPR and OCR technology to verify vehicle identification.
- 3-Dimensional imaging to identify over-size/overdimension vehicles.
- Satellite communications and solar power sources to eliminate requirements for permanent utilities.
- Electronic pre-clearance transponder systems (PrePass, NorPass, GreenLight, etc.) to provide real-time verification of vehicle credentials against State & National databases, reducing unnecessary delays. In some States, transponder systems are linked to WIM at scale facilities.

Electronic credentialing helps, but future growth demands VWIM to screen for violators so non-violators can move on down the road.

Virtual Weigh-in-Motion: A "WIM-win" for Transportation Agencies, Industry, and the Public


Florida license plate reader

Increases:	For DOTs & Law Enforcement	For Industry	For the Public
Enforcement activity	✓		✓
Personnel efficiency	✓		
Data collection	✓		
Design accuracy	✓		
Freight movement	✓	✓	✓
Asset management	✓	✓	
Rewards to legal carriers	✓	✓	✓
Penalties to offenders	✓	✓	✓
Safety	✓	✓	✓
Security	✓		✓
Mobility		✓	✓
Commerce	✓	✓	✓
Reduces:			
Right-of-way costs	✓		✓
Infrastructure cost	✓		✓
Construction costs	✓		✓
Operating costs	✓	✓	✓
Labor costs	✓	✓	✓
Maintenance costs	✓	✓	✓
Delay & idle time		✓	
Freight delivery times		✓	✓
Fuel consumption	✓	✓	✓
Pollution		✓	✓
Congestion	✓	✓	✓

QUOTATION

Piedmont Press & Graphics
404 Belle Air Lane
Warrenton, VA 20186

Phone: 540-347-4466
Fax: 540-347-9335

Quotation No: 40904
Quotation Date: 07/05/2006
Sales Rep: Steve Winter

Customer Account: Worth and Associates
Name: Worth and Associates Inc.
Address: P.O.Box 456
820 Fodderstack Road
Flint Hill Va 22627
Contact: Ellen Piazza
Phone: 540-675-1250 Fax: 540-675-1450

Piedmont Press & Graphics now offers in house mailing services for postal savings and shorter turn times.
Please contact your representative for more information.

Job Description: TIG Weigh-In-Motion Brochure
8.5 x 11 - 4/4 4c with bleeds, Fold in Thirds to 8.5 x 3.67 - 100 White Gloss Text

INCLUDES 4 HOUR DESIGN/LAYOUT/TYPE

Component: OFFSET-TIG Weigh-In-Motion Brochure

Size:	8 1/2 X 11	Stock Description:	Titan Gloss Text
Front Colors:	4	Color:	White
Back Colors:	4	BWT:	100.00
Bleed:	Yes	Thickness:	.0048

Quantity	Price	Per Each	
500	$1,087.69	$2.1754	0.00
1,000	$1,128.52	$1.1285	0.00
2,500	$1,256.51	$0.5026	0.00
5,000	$1,468.35	$0.2937	0.00

This estimate is good for 60 days from the date shown and is subject to review upon receipt of all customer furnished materials.
Please notify us as soon as possible so scheduling can begin.

Thank you for your business

Customer Approval:

Signature Date

Appendix C: Total Expenses

Activity	Budget			Project Schedule		
	Original Proposed Activity & Estimated Cost	Revised Proposed Activity & Estimated Cost	Actual Cost	Projected Start Date	Projected End Date	Actual End Date
Project Development & Data Gathering						
Organizational Meeting for Technical Panel (work plan & budget development)	$4,000		$4,000.00	8/23/2005	8/24/2005	8/24/2005
Submission of Work Plan & Budget to AASHTO - TIG				9/12/2005	10/1/2005	10/1/2005
Conduct Survey for "Best Practices"	$0		$0.00	10/1/2005	10/22/2005	11/30/2005
FHWA European Scan Tour			$4,000.00	-----	-----	7/12/2006
Subtotal	$4,000	-----	$8,000.00			
Promotional Message Development						
Develop Powerpoint Presentation (includes printing and CD costs)	$3,000			10/1/2005	2/1/2006	*See below*
40+ slide version of PP (contracted = 20 hrs., actual = 93.5 hrs.)		$3,000	$3,000.00	-----	-----	3/22/2007
40+ slide version of PP - plus narration (contracted = xx hrs., actual = xx hrs.)		$7,795	$1,000.00	-----	-----	3/22/2007
15+ slide version of PP (contracted = xx hrs., actual = xx hrs.)		$4,045	$4,045.00	-----	-----	3/16/2007
Develop Video (Worth Assoc. est. 10 min.= $10,500) (Produced by Florida)	$15,000	$0		-----	-----	6/13/2007
Develop Brochure (Worth Associates)	$5,000	$2,850	$2,850.00	10/1/2005	11/1/2006	10/27/2006
Design, Layout, Typeset (Piedmont = 4hrs + Worth Assoc. = 1hr ($150.hr))			$750.00	-----	11/1/2006	10/27/2006
Printing – Piedmont (per 5,000 copies)			$1,468.35	-----	11/1/2006	10/27/2006
Subtotal	$23,000		$13,113.35			
Project Evaluation Meetings						
Mid-Point Project Evaluation Meeting	$5,000	Cancelled	$0.00	2/1/2006	-----	N/A
Final Project Evaluation Meeting	$6,000	Cancelled	$0.00	9/5/2007	9/6/2007	N/A
Subtotal	$11,000	-----	$0.00			
Message Delivery						
Delivery of Promotional Message	$12,000	-----	-----	2/3/2006	9/1/2007	2007-2008
Presentation Venues:						
ITSA Conference - Tony Rivera	-----	-----	$383.24	-----	-----	6/5/2007
Bridge WIM Conference - Randy Woolley	-----	-----	$889.25	-----	-----	8/12/2008
Project Completion & Final Results to AASHTO-TIG				-----	10/1/2007	1/1/2010
Subtotal	$12,000	-----	$1,272.49			
Total	**$50,000**	**-----**	**$22,385.84**			
Budget Remaining			**$27,614.16**			

American Trade Initiatives, Inc.
Transportation Technology Evaluation Division
8308 Bound Brook Lane, Alexandria, VA 22309 Tel: 703-780-3428 Fax: 703-780-6575

12 July 2006

Mr. Adam Fisher
AASHTO
444 North Capitol Street, NW
Suite 249
Washington, D.C. 20001

Subject: ATI Invoice # 06-101

Dear Mr. Fisher:

The total cost for the travel of Mr. Randy Woolley (CALTRANS) to participate in the "Vehicle Size and Weight" Scan was $7,990.93. (See attached Travel Summary with supporting documentation).

In accordance with the agreement between FHWA and AASHTO, the amount due American Trade Initiatives Inc. is $3,995.47. This amount will be credited by ATI to the Joint Scanning Program.

Please remit payment to:

American Trade Initiatives, Inc.
8308 Bound Brook Lane
Alexandria, VA 22309

Thank you,

Joseph N. Conn
Treasurer
American Trade Initiatives, Inc.

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

M E M O R A N D U M

June11, 2007

PSD 4.00

TO: Mr. Keith M. Platte

FROM: Tony Rivera, AASHTO TIG committee member

SUBJECT: Travel reimbursement for ITSA conference

Hello Mr. Platte,

I am sending you my expenses for the presentation in Palm Springs. I have requested 196.00 for driving my personal vehicle, which was approved by our chair, Mr. Tom Bold. As per the AASHTO guidelines this amount was considerably less than the .45 per mile but equal to the least expensive flight on the day that final approval was given by Mr. Bold. I will be sending you this both electronically and in hard copy. If you have any questions please contact me at trivera@dot.state.nv.us or 775-888-7444.

Thank you,
Tony Rivera

American Association of State Highway and Transportation Officials
444 North Capitol St., NW, Suite 249, Washington, DC 20001

AASHTO-TIG Official Travel Reimbursement Request

CHECK ONE: 6515 OVERSIGHT COMMITTEE ☐

6515-01 PBE ☐	6515-04 GPR ☐	6515-07 OSS ☐	6515-10 RSA ☐	6515-13 MDSS ☐
6515-02 ACT ☐	6515-05 GPS ☐	6515-08 TIS ☐	6515-11 WIM ☐	6515-14 CAST ☐
6515-03 WZS ☐	6515-06 AVA ☐	6515-09 HRX ☐	6515-12 CMB ☐	6515-15 PCPS ☐

Name: Tony R. Rivera
Organization (DOT): Nevada
Address: 1263 S. Stewart St.
Carson City, Nevada
89712

Meeting Name: ITSA conference
Meeting Date: 5-Jun-07
Depart. Date/Time: 4-Jun-07
Return Date/Time: 6-Jun-07

PLEASE ENCLOSE RECEIPTS WITH THIS FORM

DETAIL OF EXPENSES

Intercity Transportation

FROM	TO	AIRLINE CARRIER	TICKET AMOUNT
			$ -
			$ -
			$ -
			$ -

Local Transportation

FROM	TO	TAXI SERVICE	or PRIVATE AUTO MILES		AMOUNT
Minden, Nevada	Palm Springs, California	$ -		x $0.45 per mile	$ 196.00
		$ -		x $0.45 per mile	$ -
		$ -		x $0.45 per mile	$ -
		$ -		x $0.45 per mile	$ -
			AIRPORT PARKING:		NA

Lodging, Meals and Other Expenses (note: meals ≥ $25 per day require itemized receipts and limited to $46/day)

DATE	LODGING	MEAL 1	MEAL 2	MEAL 3	OTHER	(please specify)	AMOUNT
4-Jun-07	$ 63.62	$ 5.00	$ 15.00				$ 83.62
5-Jun-07	$ 63.62	$ 5.00	$ 15.00				$ 83.62
6-Jun-07		$ 5.00	$ 15.00				$ 20.00
							$ -
							$ -
							$ -

TOTAL EXPENSES:	$ 383.24
PAID IN ADVANCE BY AASHTO:	$ -
NET AMOUNT CLAIMED:	$ 383.24

MAKE CHECK PAYABLE TO: Tony R. Rivera

ADDRESS, IF OTHER THAN ABOVE: 1531 Wildrose Dr.
Minden, Nevada 89423

I certify that the above claim is correct and proper and that the amount for reimbursement therefore has not been received and that the expenses were incurred by me exclusively upon official business of AASHTO.

CLAIMANT'S SIGNATURE: Tony R. Rivera **DATE:** 6/11/2007

(Office Use Only)
AASHTO APPROVAL: _____ **DATE:** _____
PROJECT ACCT. #: _____

Rev: 1/18/2005

BWIM Workshop AASHTO Sponsored Travel Information

The following information is provided to clarify my request for Non Staff Travel Reimbursement.

1. I was a presenter and participant in the discussion on Monday Evening, August 11. This session was held at the designated conference hotel, the Doubletree Hotel in downtown Birmingham. I elected to stay at this hotel to facilitate my presentation. The conference rate was $109 plus tax, I was able to negotiate $108 plus tax.

2. Travel. I began investigating travel costs before the trip was approved in order to provide AASHTO and Caltrans with the required cost estimate. I obtained the following airline cost estimates:
   - American Airlines, Orange County, Ca to Birmingham and return: $938.50
   - Southwest Airlines, Orange County, Ca to Birmingham and return: $798.50

   All cost estimates were for refundable, changeable fares.

3. When AASHTO granted approval, and Caltrans approval seemed likely (though not received), I purchased Internet tickets on Southwest that included a stop in Denver on the return to meet with Colorado DOT and Colorado Department of Revenue to discuss Colorado's Weigh in Motion Operations. I also chose to stop in Denver to be able to visit family.

4. When I purchased the tickets, the estimated cost from Orange County to Birmingham and return with Internet non-refundable tickets was $637.50.

5. The tickets I purchased, including the stop in Denver totaled $696.00.

6. Upon finding that the hotel would provide a free shuttle to and from the Birmingham airport, I elected to use the shuttle and not rent a car. This saved an estimated $101.65 for an Enterprise car, the least expensive I could find.

7. On the travel reimbursement, I request reimbursement for the $696, my actual cost to fly. If you need more information, please call me at 949-378-5630.

8. Dinner on Monday and Tuesday were provided by the University of Alabama, but I was unable to determine how much I should deduct from the $44 for M&IE to account for that. If appropriate, please deduct the necessary amount for that.

Thank You
Randy Woolley
105 Via Presa
San Clemente, CA 92672
949-756-4930 (o) 949-378-4530 ©

AASHTO
THE VOICE OF TRANSPORTATION

Non-Staff Travel Reimbursement Request

Name/Phone/E-mail:	**Randy Woolley/ 949075604930/ randy.woolley@dot.ca.gov**	**Meeting Name:**	**BWIM Workshop**
Organization:	**Caltrans Division of Research & Innovation**	**Meeting Date:**	**Aug 11/12, 2008**
Address:	**3337 Michelson Drive CN 380**	**Depart. Date/Time:**	**08102008 0630 hrs**
	Irvine, CA 92612	**Return Date/Time:**	**08123008 0630 hrs**

PLEASE ENCLOSE RECEIPTS WITH THIS FORM

DETAIL OF EXPENSES

Intercity Transportation

FROM	TO	CARRIER	AMOUNT
San Clemente, Ca	Birmingham, Al	Southwest 191/1934	$ 348.00
Birmingham, Al	San Clemente, Ca	Southwest 2400/ 1770/ 2566	$ 348.00
			$ -
			$ -

Local Transportation

FROM	TO	CARRIER	or PRIVATE AUTO MILES	AMOUNT
San Clemente, Ca	Orange County Airport		25	$ 14.63
Orange County Airport	San Clemente, Ca		25	$ 14.63
RENTAL CAR:				$ -
PARKING:	Toll Ca SR 73 ($5.00 each way to/from home)			$ 10.00

Subsistence Expenses

DATE	MEALS	LODGING	OTHER	(please specify)	AMOUNT
10-Aug-08	$ 33.00	$ -	$ -	M&IE Birmingham	$ 33.00
11-Aug-08	$ 44.00	$ -	$ -	M&IE Birmingham	$ 44.00
12-Aug-08	$ 44.00	$ -	$ -	M&IE Birmingham	$ 44.00
13-Aug-08	$ 33.00	$ -	$ -	M&IE Birmingham	$ 33.00
	$ -	$ -	$ -		$ -
	$ -	$ -	$ -		$ -
	$ -	$ -	$ -		$ -
	$ -	$ -	$ -		$ -
				TOTAL EXPENSES:	$ 889.25
				LESS ITEMS PAID IN ADVANCE BY AASHTO:	$ -
				NET AMOUNT CLAIMED:	$ 889.25

MAKE CHECK PAYABLE TO: **Randy Woolley**

ADDRESS IF OTHER THAN ABOVE: **105 Via Presa, San Clemente, Ca 92672**

I certify that the above claim is correct and proper and that the amount for reimbursement therefore has not been received and that the expenses were incurred by me exclusively upon official business of AASHTO

CLAIMANT'S SIGNATURE _____ DATE: _____

AASHTO APPROVAL FOR PAYMENT _____ DATE: _____

PROJECT/PRODUCT ACCT.# _____ 6515 *as of 7/01/08

C:\Documents and Settings\tbold\Local Settings\Temporary Internet Files\Content.Outlook\52OV7CZP\RWoolley_Non_Staff_Travel_Reimbursement request.xls