AASHTO Technology Implementation Group
Nomination of Technology Ready for Implementation

Sponsoring DOT	1. Sponsoring DOT (State): North Dakota		
Primary Technical Contact	2. Name: Darcy R. Rosendahl		
	Organization: North Dakota Department of Transportation		
	Address: 608 East Boulevard Avenue		
	City: Bismarck	State: North Dakota	Zip code: 58505-0700
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Technology Description	3. Name of Technology: Multi-Agency Cooperative Weigh-in-Motion (WIM) Project		
	4. Briefly describe the technology. The technology consists of PAT/IRD Traffic (formerly PAT America) WIM Electronics/Processors along with Kistler Quartz Piezo Electric Sensors linked telemetrically with mobile highway patrol vehicles. There is also a direct link to the NDDOT for data collection purposes.		
	5. Briefly describe the history of its development. The 2003 State Legislative Session budget process called for a conceptual change in truck weight enforcement by moving away from the fixed scale concept. In 2003, the North Dakota Highway Patrol and the North Dakota Department or Transportation developed a plan to install four virtual weigh-in-motion (WIM) sites linked to 12 highway patrol vehicles with wireless communication capability. The first phase took place starting in mid-2003 and continued into 2004, resulting in converting four permanent manned scales to unmanned scales and installing four WIM sites. During the second phase three permanent scale sites will be converted to unmanned sites by July 2005, and eight additional WIM sites will be installed at strategic locations throughout the state.		
State of Development	6. For how long and in approximately how many applications has your organization used this technology? The project was started in September 2003 and in January 2004 there were four permanent WIM sites on line. From January through August 2004, we have obtained size and weight data on about 250,000 trucks at four sites.		
	7. What additional development is necessary to enable routine deployment of the technology? Identify additional site locations and monitoring opportunities.		
	8. Have other organizations used this technology? If so, please list organization names and contacts.		

Organization	Name	Phone	E-mail
North Dakota Highway Patrol	Captain Scott Brand	701-328-1864	sbrand@state.nd.us

Potential for Payoff	9. What benefits has your organization realized from using this technology? Include cost savings, safety improvements, transportation efficiency or effectiveness, environmental benefits, or other advantages over other existing technologies. The additional sites provide the NDDOT with better truck forecasting data. Eventually the NDDOT hopes to use WIM data to forecast Equivalent Single Axle Loadings (ESALS). The system also provides 24 hour seven day a week readouts on types and weight of trucks traveling on the highway system. The Highway Patrol has a wireless connection to log on to sites and monitor trucks. The Highway Patrol has greater knowledge of when and where overloads occur and can adjust enforcement efforts. When fully implemented, about 33 positions at the permanent scales will be eliminated at an annual estimated savings of about $1.3 million.

Implementation Potential	10. Please describe what actions another transportation agency would need to take to adopt this technology. Legislative support may be needed to direct partnerships between multiple agencies dealing with enforcement and roadway responsibility to undertake the endeavor. It may be necessary to develop agreements and memorandums of understanding between agencies involved.
	11. What is the estimated cost, effort, and length of time required for procurement or adoption by another transportation agency? Phase one took about eight months for procurement and installation of equipment. Installation of the four WIM sites took place during one construction season. Fine tuning of enforcement procedures has occurred over a period of 12 months. The cost for installing a WIM site on a two-lane roadway is $125,000. Installing a site on just one lane is about $105,000. Other requirements include a smooth surface, less than two percent grade, and the equipment must be located on a tangent section of the roadway. The total cost for installing the four WIM sites was about $715,000. It is estimated that it will cost about $903,500 to install the remaining eight sites.
	12. What organization(s) currently supply and provide technical support for this technology? PAT/IRD Traffic Company -- WIM equipment supplier Edling Electric -- Local electrical contractor North Dakota Department of Transportation -- Information Technology and Planning and Programming Division provide technical support. Highway Patrol – Provide support to software mobile units.
	13. Please describe any legal, regulatory, social, intellectual property, or other issues that could affect ease of implementation. None have currently been identified.
Willingness to Champion	14. Is the sponsoring DOT willing to promote this technology to other states, if partially supported by the AASHTO Task Force on Technology Implementation? Yes
Date Submitted	15. Date: August 27, 2004

16. Please include image(s) of sketches or photographs, if available ☐ Image(s) are attached

Please E-mail or Fax by August 27, 2004 to:	Jeremy Fissel Program Manager for Engineering AASHTO	Phone: 202.624.3640 Fax: 202.624.5469 jfissel@aashto.org

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