AASHTO Technology Implementation Group

Nomination of Technology Ready for Implementation

2012 NOMINATIONS DUE BY FRIDAY, SEPTEMBER 16, 2011

<table>
<tr><td rowspan="9">Sponsor</td><td rowspan="9">Nominations <u>must</u> be submitted by an AASHTO member DOT willing to help promote the technology.</td><td colspan="3">1. Sponsoring State DOT: Utah Department of Transportation (UDOT)</td></tr>
<tr><td colspan="3">2. Name: Rukhsana Lindsey, Cameron Kergaye</td></tr>
<tr><td colspan="3">Title: Maintenance Planning</td></tr>
<tr><td colspan="3">Mailing Address: UDOT Maintenance Planning, PO Box 148250</td></tr>
<tr><td>City: Salt Lake City</td><td>State: Utah</td><td>Zip Code: 84114-8250</td></tr>
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<tr><td colspan="3">3. Date Submitted: 09/15/2011</td></tr>
<tr><td colspan="3">4. Is the Sponsoring State DOT willing to promote this technology to other states by participating on a Lead States Team supported by the AASHTO Technology Implementation Group?
Please check one: ☒ Yes ☒ No</td></tr>
<tr><td rowspan="3">Technology Description (10 points)</td><td rowspan="3">The term “technology” may include processes, products, techniques, procedures, and practices.</td><td colspan="3">5. Name the technology: Heatwurx In-Place Recycling</td></tr>
<tr><td colspan="3">6. Please describe the technology: Heatwurx In-Place Recycling (HIPR) is an on-site, in-place method for rehabilitating pavements. This innovative process is used to correct deteriorating pavements such as alligator cracking, raveling, potholing, low friction values, as well as distortion confined to the wearing course such as corrugations and shoving. HIPR is very economical compared with alternative treatments due to not having to transport the hot mix asphalt. This technology makes the HMA on site using the existing material. The process softens the existing deteriorated asphalt pavement structure with infrared electric heat, tilling and processing the surface material to a depth up to 6 inches, then mixing the recycling agent and additional material if required; it places and compacts the new recycled asphalt surface on the roadway, leaving a seamless pavement that matches the existing grade.
A second use of this technology is during new construction, eliminates the cold joint in between lanes. Cold joint has been the cause of early failure, heating the cold joint when paving the second lane allows for higher density and longevity.</td></tr>
<tr><td colspan="3">7. If appropriate, please attach photographs, diagrams, or other images illustrating the appearance or functionality of the technology. (If electronic, please provide a separate file.)
Please check one: ☒ Yes, images are attached. ☐ No images are attached.</td></tr>
<tr><td rowspan="2">State of Development (30 points)</td><td rowspan="2">Technologies must be successfully deployed in at least one State DOT. The TIG selection process will favor technologies that have advanced beyond the research stage, at least to the pilot deployment stage, and preferably into routine use.</td><td colspan="3">8. Please describe the history of the technology’s development. Heatwurx came to UDOT Research in 2008. Region 2 did a pilot project using this technology to pothole patch and bituminous pavement repair. We have also used to to eliminate cold joint getting more density on or near the joints. Utah has cold temparatures and many freeze thaw cycles and traditional repairs are costly with little success. This technology was evaluated over a season in the harshest climate with major truck traffic. It was found to be very successful. Since then the manufacturer has evolved into a better processor and a larger infrared electric heater to be able to repair a larger section. Udot maintenance crews are very excited about this new technology because their cost to repair bituminus pavement is lower and lasts longer and they are using the technology to keep their roads in operational condition without having to remove and replace the entire road. Heatwurx is also working with TxDOT and MInnesota DOT to share UDOT's Specification for their Research and working on a pilot project with them. (see attached links to videos explaining the technology)</td></tr>
<tr><td colspan="3">9. For how long and in approximately how many applications has your State DOT used this technology? The state of Utah has used this technology since the end of 2008, 2009, 2010 and expanded the use in 2011. UDOT has written a Warrantee specification for this technology so that we can use it as another tool in our toolbox to do pavement maintenance and pavement preservation at a lesser cost. The Warrantee specification was written to repace the technical specification after UDOT had many successes with this technology and experienced the durability of the repair to last over 2 years. This new technology is imparitive to the budget shortfalls in operations due to the economy. UDOT has used this technology statewide successfully. The LDS church has used this technology in 35 of their parking lots. Wyoming has also repaired their pavements with great success. Texas DOT has done a pilot through their Research division and Minnesota DOT is interested in trying out this technology.</td></tr>
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		10. What additional development is necessary to enable routine deployment of the technology? The technology is developed and sound. Training is essential for any one who will purchase/lease equipment and use it to repair asphalt. Heatwurx has developed a training video.The training that is completed is the step by step process on how to make sure the recycled mix is a perfectly formulated for the target area. (Please see attached). Marketting and awareness is nessary to enable the routine deployment of this technology. TIG could help market this in every state so that the nation can also benefit from having a seamless repair of their deteriorated asphalts and bridge decks.
		11. Have other organizations used this technology? Please check one: ☒ Yes ☐ No If so, please list organizations and contacts.

Organization	*Name*	*Phone*	*E-mail*
LDS Church	Larry Rust	801-597-1015	ustle@ldschurch.org
Innovative Excavating	Darrin Loertscher	801-230-7988	darrin@innovative-company.com
Union Pacific	Steve Jackson	801-558-5293	jeff.gilbert@cachecounty.org
Hill Airforce Base	Todd Sorensen	435-640-8417	mguy-sell@wfrc.org
TxDOT	Rick Collins	512-416-4731	rcollins@dot.state.tx.us

Payoff Potential (30 points)	*Payoff is defined as the combination of broad applicability and significant benefit or advantage over other currently available technologies.*	12. How does the technology meet customer or stakeholder needs in your State DOT or other organizations that have used it? This technology is being used to repair problem flexible pavement areas with a seamless repair, without having to remove and replace the entire road thus saving money. this will extend the life of the pavement at minimal cost. Eco-friendly process Heatwurx addresses the needs of maintenance managers to make best use of maintenance resources (manpower, equipment, and materials) and to provide the most cost effective repair method for deteriorated asphalt pavements without having to repair the entire width of the pavement and it allows for a shorter traffic control by repairing the section of the road and then moving forward to another section that needs to be repaired. For new construction projects it allows for higher density at the cold joints because it eliminates the cold joint by heating the joints allowing for a better bonding between lanes. Heatwux technology can be performed all year long. In the winter time, asphalt repair is difficult and the crews use cold mix and throw and go method to temporarily repair the asphalt. Heatwux provides a more durable fix and the olny tool to use in the winter to repair asphalt. (Cold mix temporary fix has to be revisited after every storm).
		13. What type and scale of benefits has your DOT realized from using this technology? Include cost savings, safety improvements, transportation efficiency or effectiveness, environmental benefits, or any other advantages over other existing technologies. Benefits that have been realized include: Safety benefits due to smaller work area only focusing on the problem, not a major construction zone. Cost savings benefits due to not having to haul material from a hot plant because the method reuses the existing material in the road and processes it in place and compacts it so that it is Eco-friendly, resulting in lower costs and less environmental impacts. The potential value of the benefits is enormous. Reduction in asphalt material needed to repair a flexible pavemet (recycling existing material) and increasing the life of the repair from 1 year to 3 to 5 years. Cost saving of 30 to 40% appear very achievable. This technology can be used all year long when other repairs in Utah can only be done in the warmer months.This can be done as a service contract or inhouse by purchasing the equipment or leasing the equipment form Wheeler and Caterpillar. This technology shouldnot be used if the road is beyond repair and is in need of a new surface. There is a window of opportunity to use this technology and if done timely the life of the pavements are extended resulting in major savings. Extendig the life of a pavent for 2 to 3 years of your roads is millions of dollars in savings depending on the number of lane miles a state owns.
		14. Please describe the potential extent of implementation in terms of geography, organization type (including other branches of government and private industry) and size, or other relevant factors. How broadly might the technology be deployed? Heatwurx technology could be productively deployed at both the state and local (county and municipal) level. Could be implemented world wide, any where there is flexible pavements. Currently in Utah and Wyoming only. Wheeler and Caterpillar dealers are the distributers of this EquipmentTechnology world wide. Private contractors can also provide this service for state and local highway departments as well as parking lots.

Market Readiness (30 points)	*The TIG selection process will favor technologies that can be adopted with a reasonable amount of effort and cost, commensurate with the payoff potential.*	15. What actions would another organization need to take to adopt this technology? Though this technology is sound, the states should try out this technology in their state to gain a confidence factor. Udot has tried this in the harshest climate, On I-80 in Utah. This route has major truck traffic and gets a lot of snow and plowing. The technology is ready to go and the equipment can be bought through Wheeler and Caterpillar dealers. Training can be provided by Wheeler, Caterpillar or Heatwurx. Maintenance supervisors and crews would require training. Finally, states would want to consider inspection of their roads to determine the areas that will be best repaired by this technology to ultimately realize the full benefit of Heatwurx. This is not a fix all but another durable tool in a maintenance supervisor's tool belt.
		16. What is the estimated cost, effort, and length of time required to deploy the technology in another organization? Other organizations could start getting their pavements repaired immediately. If they wanted to buy the equipment and get training to do it themselves, they would have to purchase the equipment and have a crew trained and then they could start preserving by repairing their flexible pavements. Training is one day and 4 man crew. Heatwux wants to expand to other states and do the work as well as provide the technology through Wheeler and Caterpillar dealers for private contractors to provide service for organization. Start up cost would be to try out a pilot project which may cost $ 50 to $75K depending on the size of the pilot project and whether equipment was purchases or service was contracted.
		17. What resources—such as technical specifications, training materials, and user guides—are already available to assist deployment? UDOT has the technical and a warrantee specification written, training materials and user guide with a step by step process video is developed. (See attached)
		18. What organizations currently supply and provide technical support for the technology? Heatwurx, Wheeler Dealers and Caterpillar Corporate world wide, as well as UDOT.
		19. Please describe any legal, environmental, social, intellectual property, or other barriers that might affect ease of implementation. No barriers for implementation.
Submit Completed form to		***http://transportation1.org/tig_solicitation/Submit.aspx***