

National Winter Maintenance Peer Exchange

Columbus, Ohio

AUGUST 28-29, 2007

Research Needs Generated at Round Table Discussions, and their Champions

Rank	Research Needs Statement	Vote Tally	Champion
1	How to determine the proper timing and frequency of anti-icing and deicing?	72	Xianming Shi, WTI
2	Develop an anti-icing, de-icing and pre-wetting implementation guidelines	62	Paul Brown MASS/Clear Roads
3	Synthesis of Unconventional Staffing Strategies to Meet Increasing Demands	61	
4	Develop standardized performance measure for snow & ice.	59	Xianming Shi, WTI
5	Are the FHWA TE-28 anti-icing guidelines accurate, appropriate and effective?	57	Xianming Shi, WTI, John Clarke, Ohio
6	Identify long- term impacts of not funding maintenance fully for summer and winter activities.	43	Cosmo Ignoto, CT DOT
7	Improvements in sensing and forecasting of ice, freezing rain and frost conditions	42	
8	Determine staffing and funding for core maintenance activities.	40	David Ray, Ohio
9	Develop tools to manage and communicate LOS, expectations, and costs associated to urban, sub-urban and rural routes	39	Brad Darr, ND DOT David Ray, Ohio
10	Build a test facility to provide objective data regarding the effectiveness of various winter maintenance treatments	37	Tina Greenfield, Dennis Burkheimer, Iowa, Eli Cuelho, WTI
11	Developing the next generation concept vehicle and optimized plow design	36	John Clarke, Ohio
12	Seamless wireless communication for transferring data from vehicle to maintenance garage	35	Brent Jennings, Idaho
13	Is there a defensive way to determine or establish LOS nationwide (corridor management and seamless LOS across state boundaries).	34	Allen Williams, UDOT
14	Best way to measure the chloride content on the surface and determine how long they last	34	
15	Support more meetings for peer exchange, similar to this one	34	
16	Cost-benefit analysis of winter maintenance equipment purchases and upgrades	33	
17	Develop on-vehicle salinity sensor	33	
18	The Importance of Post-Storm Meetings	32	David Ray, Ohio

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19	Determining an Appropriate Wintertime LOS for Specific Areas	30	
20	Better use of RWIS and weather forecasts for decision making	28	
21	Best Practices in winter maintenance performance (e.g. post storm assessment)	27	
22	Synthesis of best practices for reducing corrosion on winter maintenance equipment	27	David Ray, Ohio
23	Synthesis of Strategies for Retaining Trained Personnel	27	Brent Jennings, Idaho
24	How to we establish appropriate dedicated funding levels for maintenance	26	
25	Investigate alternative blade inserts	26	Lynn Bernhard, UDOT
26	Developing improved precipitation sensor	26	
27	Pilot evaluation of virtual pavement sensors and on-board friction devices	25	Eli Cuelho, WTI
28	State-of-the-Practice for Using Driver Simulators as a Training Tool	25	Steve Lund, MnDOT
29	Development of standards for in-vehicle equipment	25	Dennis Burkheimer, Iowa Chris Strong, WTI
30	Can chemical blends cause slippery and refreezing?	22	
31	Optimizing the ergonomics for snowplow operators	22	
32	Develop standard ratings and descriptors for road conditions	22	Philip Anderle, CDOT
33	Develop acceptable dynamic messages for snow and ice.	21	
34	Develop standard specifications for components and communications	21	John Clarke, Ohio
35	Developing Tools for Outreach	21	Jim Cota, Vermont DOT
36	Develop a state winter severity index as a tool to compare materials use and costs (Mn/DOT, WashingtonDOT, New Hampshire)	20	Chris Strong, WTI
37	How to most effectively communicate performance measures and associated costs to internal staff, operators and stakeholders.	19	
38	Need a tool to provide or ensure funding is available to cover salt/sand stockpiles and secondary containment for liquids.	19	
39	Training for how to use technologies (e.g. RWIS, in-vehicle pavement sensors)	19	
40	Road prioritization formula for winter maintenance LOS	18	
41	Best Practices for Balancing Politics and	18	

Rank	Research Needs Statement	Vote Tally	Champion
	Performance		
42	Is there a defensive way to determine or establish LOS nationwide (corridor management and seamless LOS across state boundaries).	17	
43	Inform stakeholders of the critical activities and impacts of maintenance on daily lives.	17	
44	Investigate what factors influence refreezing on the road	17	Xianming Shi, WTI, Eli Cuelho, WTI
45	Investigate collision avoidance systems for snowplows	17	
46	Explore use of highly detailed satellite imagery in winter maintenance operations	17	Mike Mattison, Nebraska
47	Training for maintenance personnel to interpret forecasts	16	
48	Meeting Increasing Training Challenges	15	
49	Optimization of the in-vehicle driver interface	13	
50	Synthesis how to effectively relay and communicate winter maintenance budget is needs to upper management and legislatures.	12	
51	Standardized tests for winter maintenance equipments	12	
52	Improved chemical sensor	12	
53	Developing Methodologies for Evaluating Training Efforts	10	
54	Developing measures of forecast accuracy	10	
55	Develop guidelines for BMPS to achieve attainment in areas of concern	9	Jim Cota, Vermont DOT
56	Educating meteorological community about the maintenance personnel's weather information needs	9	
57	Pursue objective testing to verify the effectiveness of innovative maintenance treatments	9	
58	Establish seamless boundaries for winter information across states.	8	
59	Feedback of customers expectation on winter maintenance	8	
60	Can the road surface refreeze due to over application of salt?	8	
61	Improvements in forecasting of low-elevation weather conditions	8	
62	Innovative Solutions for Real-Time Vehicle-to-Center Data Communications	8	
63	Develop plan for improving weather forecasts through outreach to meteorological community	7	
64	FHWA develop pilot /demonstration projects for seamless winter operations (NCHRP 20-74A problem statement).	5	

Rank	Research Needs Statement	Vote Tally	Champion
65	Synthesis of Methods to Compete with Industry	5	
66	What is the true cost of a data collection system (e.g. AVL)?	5	
67	Case Studies on Ensuring Consistency in Winter Maintenance Practice Across State Borders	5	
68	Boilerplate Language for Data Sharing	4	
69	Education about Microclimates	2	
70	Best practices for snow fences	2	
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