

## **CLOSEOUT REPORT**

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

## **TOWFLOW**

### Lead States Team Members and Agencies:

Tim Chojnacki, Chair – Missouri DOT  
Jim Carney – Missouri DOT  
Greg Duncan – Tennessee DOT  
Bill Hoffman – Nevada DOT  
Steve Lund – Minnesota DOT  
Steve McCarthy – Utah DOT  
Wess Murray – Missouri DOT

Date: March 6, 2012



## **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.



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the following technology:

## **TOWFLOW**

### **Introduction**

The TowFlow was selected as a focus technology by the AASHTO Technical Implementation Group (TIG) Executive Committee in December of 2009. A Lead States Team (LST) was identified and charged with providing transportation agencies enough information about TowFlows to allow them to make sound implementation decisions regarding this technology.

The LST held a preliminary teleconference on July 8, 2010 and a face to face kickoff meeting on August 17-18, 2010. See Appendix A for the kick-off meeting agenda. Outcomes from the meeting and follow-up teleconferences were a market analysis (Appendix B), a marketing plan (Appendix C), and marketing media (Appendix D). The AASHTO TIG Executive Committee approved the proposed work plan and a budget of \$38,100 at its October 28, 2010 meeting.

Tasks of the LST have included development of a brochure, a long and short version PowerPoint presentation, trade journal articles, website additions and updates, and presentations at various conferences and meetings across the country.

This closeout report is divided into five sections:

- Marketing Activities,
- Transition Plan,
- Lessons Learned,
- Performance Measurement, and
- Final Expenditure Summary.

## Marketing Activities

The TowPlow gives transportation agencies the opportunity to build stronger relationships with their customers. TowPlow is a visual demonstration of the agency's commitment to innovation. The image of a TowPlow in operation clearly communicates cost savings and other efficiencies that the public can both understand and respect. It has the added benefit of being a "made for TV" maintenance operation that allows local news outlets to convey both basic information about the benefits of the technology and information that allows motorists to operate more safely when TowPlows are in use.

The LST conducted outreach through presentations at conferences and workshops, provided information on the AASHTO TIG website, distributed marketing materials and submitted articles for trade journals.

### *Hosted Demonstration Workshops*

Date (in chronological order)	Workshop Title	Location	Total Attendance
	No workshops held		

Although the LST did not develop demonstration workshops, individual team members did participate in equipment demonstrations with neighboring states, including Idaho, Arkansas, Oklahoma, Kansas, Kentucky, Virginia, and North Carolina. Wess Murray and another MoDOT employee also trained Iowa DOT personnel on the use of the equipment.



***Presentations at Conferences and Meetings***

Date (in chronological order)	Conference or Meeting Name, Location	Presenter Name, Organization	Presentation Title	Written paper? (Y/N)
Sep. 23, 2010	AMOTIA 2 <sup>nd</sup> Annual Meeting, Nashville, TN	Greg Duncan, Tennessee DOT	Informal presentation	N
Oct. 6, 2010	AASHTO Equipment Management Technical Service Program Combined Northeast/Midwest States Regional Meeting, Pittsburgh, PA	Tim Chojnacki, Missouri DOT	Informal presentation	N
Feb. 28, 2011	WASHTO Regional SCOM Meeting, Omaha, NE	Jim Carney, Missouri DOT/Brad Darr, North Dakota DOT	AASHTO TIG Project – TowPlow: Clearing the Way to Keep America Moving	N
April 10, 2011	American Public Works Association (APWA) Snow Conference, Spokane, WA	Tim Jackson, Missouri DOT (on behalf of TowPlow LST)	AASHTO TIG Project – TowPlow: Clearing the Way to Keep America Moving	N
June 14, 2011	AASHTO Equipment Management Technical Service Program Southeast States Regional Meeting, Morgantown, WV	Steve McCarthy, Utah DOT	AASHTO TIG Project – TowPlow: Clearing the Way to Keep America Moving	N
July 18, 2011	AASHTO Subcommittee on Maintenance (SCOM) Meeting, Louisville, KY	Jim Carney, Missouri DOT	AASHTO TIG Project – TowPlow: Clearing the Way to Keep America Moving	N
Aug. 29, 2011	AASHTO Equipment Management Technical Service Program Western States Regional Meeting, Seattle, WA	Steve McCarthy, Utah DOT	AASHTO TIG Project – TowPlow: Clearing the Way to Keep America Moving	N

Sep. 20, 2011	Winter Maintenance Peer Exchange, Bozeman, MT	Greg Duncan, Tennessee DOT	AASHTO TIG Project – TowPlow: Clearing the Way to Keep America Moving	N
Sep. 28, 2011	American Public Works Association (APWA) Western States Snow & Ice Conference, Estes Park, CO	Tim Chojnacki, Missouri DOT	TowPlows – We’ve Tried Them and Love Them (AASHTO TIG Project – TowPlow: Clearing the Way to Keep America Moving)	N

***Comments and Observations on Presentations***

The LST team continued to update the message over time so that the presentation did not become dated. At the 2010 AASHTO meeting, a presentation was made that focused on the TIG team process; later presentations focused on the TowPlow operations and benefits. Presentations given at the end of 2011 included more detailed costs and benefit analyses, since the audiences saw the previous presentations and wanted that information.

The audiences were mainly concerned with the initial cost and benefit/cost analyses. The audiences did not seem as concerned with perceived safety and operational difficulties.

***Publications***

Date Produced	Publication Type	Total Number Produced	Recipients and Distribution Method
March 25, 2011	Brochure	350	Taken to meetings/conferences

Although the LST did not produce publications directly, many articles and news reports were published that mentioned the technology and LST activities. A sample of those articles is shown in the bibliography (see Appendix E).



The tow plow costs between \$99,000 and \$106,000 based on equipment. Photo by MoDOT.

**11/23/2011 PennDOT, PA Turnpike Unveil New Tow Plow**

Motorists using the Pennsylvania Turnpike and Interstate highways this winter will be in for a bit of a surprise. In addition to traditional plows, snow removal crews will also be using a 30-foot-long, tow-behind snowplows.

**Missouri rolls out mother of all snow removal equipment, the TowPlow**



By Zach Bowman    
 Posted Jan 13th 2012 5:00PM

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Comments **66**

If you happen to call the East Coast home, there's a good chance you recently woke up to plenty of winter weather. Given that we're facing down a few long months of snow and ice ahead, we thought we'd take the time to explore one of the more interesting innovations in snow removal.

**Applications and Innovations**

August 01, 2010 | Applications & Innovations |



**Speed the plow**

**New tow plow moves more snow, faster**

By Mike Anderson



The numbers just didn't add up for Bob Lannert back in his days with the Missouri DOT: There were too few plow trucks to clear snow and ice from the newly-added lanes of highway his crew was responsible for.

## Performance Measurement

According to the LST surveys, the number of TowPlows currently owned has increased significantly from 76 to 113. A discussion with the TowPlow manufacturer indicated the number of TowPlows in use in North America is significantly higher than the 113 enumerated in our survey. This difference is due to turnpike authority and contractor ownership as well as some states that did not respond to the survey. In addition, the final survey indicates that more states are planning to or have purchased TowPlows.

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

Survey Information	Initial Survey (2010)	Final Survey (2012)
# of survey recipient organizations	52	52
# of survey responses received	32	30
# of agencies that have not used this technology	18	14
# of agencies with limited knowledge of this technology	1	1
# of agencies interested in receiving more information about this technology	8	N/A
# of agencies that saw information presented at a conference/meeting	17	11
# of agencies fairly familiar with this technology but have not yet tried it	13	12
# of agencies planning to try this technology on an upcoming project	4	7
# of agencies that have tried this technology and are evaluating its benefits	8	12
# of agencies currently using this technology on a limited basis	6	7
# of agencies currently using this technology on a routine basis, in one area	2	4
# of agencies currently using this technology on a routine basis throughout the state	3	2
# of TowPlows currently owned	76	113
# of agencies that plan to adopt this technology on a limited basis	9	10

# of agencies that plan to adopt this technology on a routine basis, in one area	2	3
# of agencies that plan to adopt this technology on a routine basis throughout the state	4	6
# of agencies who do believe that this technology will provide substantial benefit	16	19
# of agencies who do NOT believe that this technology will provide substantial benefit	10	8
# of agencies who have tried this technology and plan to use it in the future	11	14
# of agencies who have tried this technology and do NOT plan to use it in the future	1	1

***Summary Responses from Surveys***

The number of agencies who believe that this technology will provide substantial benefits has increased according to the final survey.

Based on the survey trends, the LST expects additional states to use this technology in the future mainly because there is momentum towards adopting it.

States that are not likely to implement the TowPlow in their winter operations cite two basic factors. States that do not receive much snowfall, believe that their investment could be better spent on additional trucks that can do other tasks in addition to plowing snow. The other factor cited by a few states is the high initial cost of the TowPlow. It is often difficult for states to overcome initial costs, even where long-term benefits exist.



## **Lessons Learned**

### ***Effective Tools and Methods***

The Powerpoint presentations and brochures, as well as face-to-face testimonials, were all effective.

### ***Unique Tools and Methods***

Using MoDOT's short video clips in equipment training helped explain TowPlow operations. Although the LST did not hold a formal workshop, LST members did share their experiences with neighboring states. The LST believes this was just as effective as a formal workshop.

### ***Ineffective Tools and Methods***

None identified.

### ***General Comments***

Having three MoDOT members (the nominating DOT) was very beneficial for this LST. In addition, having members with experience on the AASHTO Subcommittee on Maintenance (SCOM) Safety and Reliability Technical Working Group (TWG) and Equipment TWG was also very beneficial. Finally, the Nevada DOT member helped in identifying barriers for adopting this technology, since the Nevada DOT did not own a TowPlow; this helped other states overcome these barriers.

The LST recommends having a standing agenda item concerning AASHTO LST activities for committees that have members from upper management (i.e., SCOH).

# Transition Plan

## Reference Materials

Reference	Publisher	URL (if available on web)
Brochure	LST	<a href="http://tig.transportation.org/Documents/TowPlow/TowPlow-brochure-final.pdf">http://tig.transportation.org/Documents/TowPlow/TowPlow-brochure-final.pdf</a>
Powerpoint Presentation – Long Version	LST	<a href="http://tig.transportation.org/Documents/TowPlow/TowPlow-PowerPoint-Long-Version.pptx">http://tig.transportation.org/Documents/TowPlow/TowPlow-PowerPoint-Long-Version.pptx</a>
Powerpoint Presentation – Short Version	LST	<a href="http://tig.transportation.org/Documents/TowPlow/TowPlow-PowerPoint-Short-Version.pptx">http://tig.transportation.org/Documents/TowPlow/TowPlow-PowerPoint-Short-Version.pptx</a>
TowPlow LST Website	LST and AASHTO	<a href="http://tig.transportation.org/Pages/TowPlow.aspx">http://tig.transportation.org/Pages/TowPlow.aspx</a>
MoDOT Video Clips	MoDOT	<a href="http://www.youtube.com/watch?v=YJEgkbq_b2Q">http://www.youtube.com/watch?v=YJEgkbq_b2Q</a> Also, several other videos can be found using the query below: <a href="http://www.youtube.com/results?search_query=towplow">http://www.youtube.com/results?search_query=towplow</a>
MoDOT Training Materials	MoDOT	<a href="http://tig.transportation.org/Documents/TowPlow/TowPlow-training-manual.pdf">http://tig.transportation.org/Documents/TowPlow/TowPlow-training-manual.pdf</a> <a href="http://tig.transportation.org/Documents/TowPlow/TowPlow-training-operators.pptx">http://tig.transportation.org/Documents/TowPlow/TowPlow-training-operators.pptx</a> <a href="http://tig.transportation.org/Documents/TowPlow/TowPlow-training-course.pdf">http://tig.transportation.org/Documents/TowPlow/TowPlow-training-course.pdf</a> <a href="http://tig.transportation.org/Documents/TowPlow/TowPlow-training-operator-checklist.pdf">http://tig.transportation.org/Documents/TowPlow/TowPlow-training-operator-checklist.pdf</a> <a href="http://tig.transportation.org/Documents/TowPlow/TowPlow-training-inspection.pdf">http://tig.transportation.org/Documents/TowPlow/TowPlow-training-inspection.pdf</a>

## Technology Transfer

Contact	Office Name, Location	Phone	Email

In the case of snow and ice equipment, the FHWA is not the primary organization to “carry the baton” for this technology.



**Primary On-going Implementation Responsibility**

Contact	Committee Name, Organization	Phone	Email
Steve Lund	Safety and Reliability Technical Working Group AASHTO Subcommittee on Maintenance	(651)366-3566	Steven.Lund@state.mn.us
Erle Potter	Equipment Technical Working Group, AASHTO Subcommittee on Maintenance	(804)786-0584	Erle.Potter@vdot.virginia.gov

**Other Planning Efforts for On-going Implementation**

Contact	Committee Name, Organization	Responsibility Discussed and Response
R. Mark DeVries	APWA Winter Maintenance Subcommittee	Tim Chojnacki contacted Mr. DeVries on 3/19/12. Mr. DeVries was receptive to including a link to the AASHTO TIG TowPlow website on the APWA Winter Maintenance subcommittee webpage following some current revamping of the page.
Cliff Spoonemore	Wyoming DOT (Clear Roads Chair)	Tim Chojnacki contacted Mr. Spoonemore on 3/16/12. The issue of including a link to the AASHTO TIG TowPlow website on the Clear Roads webpage will be discussed at the upcoming Clear Roads Spring meeting to be held March 26-29, 2012 in Salt Lake City, Utah. In general, Mr. Spoonemore was receptive of the request.

**Specific Future Actions**

Future Activity	Time Frame	Recommended Organization to Perform
Keep AASHTO Technical Working Groups Updated Annually	Three to Five Years	MoDOT
Continue to Identify State Contacts and Annually update the list in Appendix F	Ongoing	MnDOT - Steve Lund VDOT - Erle Potter

**On the Web**

<http://tig.transportation.org/Pages/TowPlow.aspx>

**Final Expenditure Summary**

**Remaining Expense Claims**

Date of Expense	Service Type	Claimant	Estimated Claim Amount
TOTAL ESTIMATED REMAINING EXPENSE CLAIMS			\$ 0.00

**Total Expenses**

*(Provide an estimate of the final total of expenses (to AASHTO TIG) which were incurred in executing the entire marketing plan. The AASHTO office can provide your team a current total spent to date.)*

<b><u>Item</u></b>	<b><u>Cost</u></b>
Travel	\$ 5,606.08
Printing & Banner	\$ 1,430.20
Professional Services	\$ 7,957.50
<b>Total</b>	<b>\$ 14,993.78</b>



## **Appendix A: Kickoff Meeting Agenda**

**Initial Meeting  
TowPlow (TP) Lead States Team**

**Missouri Department of Transportation  
600 N.E. Colbern Rd.  
Lee's Summit, MO 64086  
August 17-18, 2010**

**Tuesday, August 17: 8:00 AM to 5:00 PM**

**Task Assignment and Background  
Lead Person**

Welcome..... Tim Chojnacki  
Self Introductions (including experience with technology).....All  
Initial Process Questions from Team Members..... Paul Krugler  
Agenda Review and Goals of the Meeting..... Tim Chojnacki and Paul Krugler  
Overview of the Marketing Plan Development  
Process.....Monica Worth

**Brainstorm Market Analysis and Marketing Plan**

Development of Concepts for Market Analysis and Marketing Plan  
.....Monica Worth

- Benefits/Challenges
  - “Why This Technology, Why Now?”
    - Discussion of benefits
    - Potential partners
      - Who else wants this technology now?
  - “Why *Not* This Technology, Why *Not* Now?”
    - Discussion of potential challenges
- Goals/Audience/Tools/Delivery
  - What are we trying to accomplish?
    - What is to be the ultimate impact of this team?
  - Who do we need to reach in order to get there?
  - What do they need to learn to take action?
    - How do they get their information?
- High Value Goals & Actions (Develop Work Plan Tasks)
  - What specific goals and actions will most effectively and measurably accelerate adoption of this technology within 1–3 years?

**Detailed Development of Market Analysis and Marketing  
Plan Documents.....**Paul Krugler and Monica Worth

Marketing Analysis  
-see Lead States Team Guidebook page 15 and Appendix E  
“Work Plan” Section of Marketing Plan  
-see Lead States Team Guidebook page 16

**Wednesday, August 18: 8:00 AM to Noon**

**Review Draft Market Analysis and Marketing Plan .....** Tim Chojnacki and Monica Worth

Revisions and/or additions

**Completion of Marketing Plan .....** Paul Krugler and Monica Worth

Develop Schedule of Activities (schedule/milestones, assignments/leads)  
Develop Communication Plan  
Develop Performance Measurement Plan  
Develop Annual FY Budgets

**Meeting Wrap Up/Review**

What Are the Next Steps? ..... Tim Chojnacki and Paul Krugler

Travel Claim Submittal Guidance ..... Paul Krugler

**Adjourn at Noon**





# Appendix B: Market Analysis

**AASHTO TIG  
Lead States Team  
Marketing Analysis**

**for**

**TOWFLOW**

September 3, 2010



## MARKETING ANALYSIS

### What is the need for this technology?

#### Cost-Efficiency

In an environment of historic cost cutting and budget restrictions, the TowPlow embodies the “doing more with less” concept. It creates a host of operational improvements in snow removal that contribute significantly to cost efficiencies. With the TowPlow, an agency can either maintain the same level of service with less staff or clear more miles of roadway with existing personnel.

The time required for snow removal cycles decreases as a result of the ability to clear up to two lanes in a single pass and the potential exists to achieve this at higher operating speeds.

*With shrinking numbers and reallocations of agency personnel, the task of maintaining a nonetheless growing network of lane miles becomes ever more challenging. The TowPlow can increase productivity, allowing agencies to maintain or even increase levels of service in the face of reduced operating budgets and fewer personnel for snow and ice removal.*

States that outsource snow removal operations may benefit from reduced contracting costs because contractors may realize increased efficiency and profitability from utilizing the TowPlow.

#### Safety

The TowPlow has the potential to increase both operator and motorist safety as compared to traditional plowing methods. Fewer passes with less equipment reduces the potential for traffic accidents during snow and ice removal. Plus, reductions in cycle time give the travelling public a greater number of hours in which to operate on fully cleared roadways as a weather event unfolds.

The TowPlow is also a more “forgiving” piece of equipment in terms of any encounters with fixed objects. It moves more freely than fixed plows and traditional wing plows should it strike an object. The TowPlow pivots when it strikes an object and does not tend to rotate the tow vehicle, which reduces the potential for tow vehicle damage and operator injury.

Because the operator is able to better control the TowPlow and adjust to varied situations, the operator has options to clear areas that might not be feasible using traditional operations. For instance, the TowPlow is quickly maneuvered, allowing clearing of bus turnouts, climbing or auxiliary lanes, and other variable lengths and widths of roadway. TowPlow drivers note quieter operation. The reduced number of passes required to clear lanes means a potential reduction in operator fatigue.

### **Mobility**

Keeping America moving is always a priority in winter maintenance operations. Unfettered freight and passenger travel is essential to economic vitality. Clearing more lanes in less time with less equipment improves mobility, and thus offers considerable economic benefits to any State. The public expects and demands not to be caught behind maintenance vehicles, particularly on urban and rural Interstate highways. Traditional snowplows operate at lower speeds resulting in slower public travelling speeds and increased delay. TowPlows, on the other hand, can operate at higher speeds improving travel time reliability for the motoring public. This not only reduces delays in a real sense, but increases public acceptance of plowing operations.

### **Environmental/Carbon Footprint**

The TowPlow allows for a reduction in the number of vehicles required to clear a given roadway. This means less fuel consumption and a lower carbon footprint per cycle or weather event.

### **Public Relations**

The TowPlow gives transportation agencies the opportunity to build stronger relationships with their customers. TowPlow is a visual demonstration of the agency's commitment to innovation. The image of a TowPlow in operation clearly communicates cost savings and other efficiencies that the public can both understand and respect. It has the added benefit of being a "made for TV" maintenance operation that allows local news outlets to convey both basic information about the benefits of the technology and information that allows motorists to operate more safely when TowPlows are in use.

### **Contractor Incentives**

Contractors can easily recognize the benefit of doing more with less. If a snow removal contractor can envision the operating benefits of TowPlow, the potential for increased profitability becomes clear: removing snow from a wider portion of roadway at potentially higher speeds means lower operating costs. The contractor will have a short term increase in capital cost, which will be offset by lower operating costs. The contractor must therefore be committed to snow removal services over a period of time.

In turn, state agencies can realize savings on contracted services. Once contractors take advantage of the lower operating cost, the competitive nature of the bidding process will lead to lower contracting costs for the state.

### **Operational Improvements**

*TowPlow offers operational benefits beyond simple cost efficiencies. A sample of some of these operational efficiencies includes:*

- Decreased plow truck cycle time due to one pass clearing and wider clearing path*
- Potentially higher operating speeds*
- Ability to quickly position or relocate snow removal equipment in preparation for an event.*

*-Equipment reliability due to TowPlow’s long service life (estimated at 30 years, or twice the life of the average plow vehicle)*

*-Extended plow blade life due to reduced down force*

*-Fewer snow removal vehicles on the road and more efficient clearance mean fewer vehicle trips to resupply treatment materials.*

*Both rural and urban areas benefit from TowPlow operations.*

In gang-plowing operations, TowPlow’s 24’ (or two lane) clearing capability means two trucks with TowPlows can do the work of three and sometimes four trucks with other equipment.

The TowPlow offers advantages in congested urban areas with left turn lanes, islands and commercial entrances. At a minimum, one less pass is needed due to the width and maneuverability of the TowPlow unit. In some cases, snow clearing can be accomplished with half the trucks and operators, creating substantial savings.

On rural divided four-lane highways, one TowPlow and one conventional snowplow can clear both the driving and passing lanes and the shoulder in a single pass. On two-lane roadways with paved shoulders, one TowPlow can clear the driving lane and the shoulder.

In addition, with TowPlow’s capability to clear up to 24’ in one pass, the opportunity for snow to be redeposited on the roadway as an unintended result of clearing operations becomes less of an issue since snow can be pushed farther off the road.

The TowPlow can be equipped with liquid tanks or granular spreaders and can be used as an anti-icing or de-icing treatment device.

It is important to note that, while snow-belt states may realize great benefits through the use of TowPlow, there are significant benefits for “fringe” snow states as well. In smaller snow removal operations, the TowPlow builds clearing capacity while not increasing the size of the on-road equipment fleet. It allows states to establish a cost-efficient “stand by” capability, which helps them get ahead quicker during occasional snow events. This is critical to public safety, mobility, and perceptions.

**Who are the broad target audiences for the TowPlow LST?**

Agency	Primary Target	Secondary Target
State DOTs	X	
Public Works and other Government Agencies		X
Toll Authorities and CDAs		X
Industry Associations (AMOTIA)		X

**Who will be the decision makers for the TowPlow technology in primarily targeted agencies?**

Agency	Decision-Making Office
State DOTs	Highway Commissioners/Chief Engineers/Executive Directors Maintenance/Fleet Management (State and Regional/District) Maintenance Supervisors Field Personnel Public Information Officers
Counties and Cities	Public Works Directors

**What information will decision makers want to know to reach a conclusion about trying or adopting this technology?**

Information	Interest Level	
	Critical	Desirable
<u>Cost and Savings Information:</u>		
Purchase and implementation costs	X	
Maintenance costs and system rental rates		X
How long will it take to recoup cost through savings being obtained?	X	
Cost / Benefit ratio	X	
Availability	X	
Patent Issue Resolution	X	
Estimated savings per hour, per route		X
<u>Operator and Compatibility Information:</u>		
Compatibility with existing equipment	X	
Changes to truck configuration	X	
Ease of use	X	
Expected useful life of TowPlow		X
Case histories - Success / Failure Testimonials	X	
Videos and news clips of the equipment in operations		X
Demo's during winter months, ride-a-longs with neighboring states that have TowPlows.		X

TowPlow mobility to shift snow removal resources		X
Safety – public and worker	X	
Environmental/Carbon footprint		X
Improved public mobility and level of service	X	

**What are actual and perceived barriers to be overcome for an agency to decide to do a trial or to make use of TowPlow a standard operating procedure in their state?**

Barrier	Type	
	Actual	Perceived
<u>Budget and Purchasing Constraints:</u> Shrinking equipment budgets Single source – proprietary issue Cost for equipment with only partial year use	X X	X
<u>Operational Concerns:</u> Increased difficulty in operation Difficult maneuvering in traffic Operation not possible in difficult terrain, Equipment incompatibility with existing trucks	X	X X X
Possible incorrect thought that my state doesn't have enough snow events to warrant the investment.	X	X
Thought that snow accumulation has to be fairly deep for TowPlows to pay off.		X
How much operator training is needed? If specialty training is needed, who provides the training?	X	
	X	

Current state specs for contracted maintenance may need modification.		
Safety concerns are increased using TowPlow		X
Paradigms (we always have done it another way)	X	
Potential resistance from current work force to utilize equipment.	X	

**What marketing opportunities already exist?**

Opportunity	Location - Date
American Public Works Association (APWA) Snow Conference	Spokane, Washington – April 10-13,2011
AASHTO Subcommittee on Maintenance (SCOM) Meetings	Louisville, KY – July 2011
Peer Presentation at AASHTO Standing Committee on Highways (SCOH) Meetings	May 2011
AMOTIA Annual Meeting	Nashville – September 2011
Four Regional SCOM Meetings WASHTO	Omaha, NE – February 2011
All four Regional Equipment Fleet Managers Meeting AASHTO EMTSP	2011
Winter Maintenance Peer Exchange	Montana – September 2011
TRB Winter Maintenance Committee	January 2011 and/or 2012
Pacific Northwest Snow Fighters Conference	Joint meeting with APWA (above)
Rocky Mountain Snow and Ice Conference	September 2011
Rocky Mountain Fleet Management Meeting	September 2010 and 2011
Toll Authority Conference (IBTTA)	Nashville – Oct/Nov 2011
SCOM Newsletter	Periodic
Focus Article	Periodic
Trade Magazine Articles	Periodic
DOT Internal Publications	Periodic



**Who are our potential partners in marketing this technology?**

Potential Partner	Possible Supporting Activities
AASHTO Subcommittee on Maintenance (SCOM)	Agenda presentations, peer exchange
Industry	Reach contractors
FHWA	Focus Articles
Vendor - Inventor	Training Materials, Field Demonstrations, Compatibility to existing equipment
APWA	Publications
Salt Institute	Publications



# Appendix C: Marketing Plan

# **AASHTO TIG Lead States Team Marketing Plan**

**for**

## **TOWPLOW**

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### **Lead States Team:**

Tim Chojnacki , Chair, Missouri DOT  
Steve Lund , Minnesota DOT  
Bill Hoffman , Nevada DOT  
Greg Duncan , Tennessee DOT  
Steve McCarthy , Utah DOT  
Wess Murray , Missouri DOT  
Jim Carney , Missouri DOT

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September 3, 2010



## WORK PLAN

<b>Task 1.</b>	Title: <b>Web Site Information Development</b>
<p>Task Description:</p> <p>Prepare TowPlow information suitable for populating the TowPlow lead states team area of the AASHTO TIG web site. This information should include a description of the technology and its value, photography, lead states team contact information, as well as all communication tools developed by the lead states team. (Lead - Tim Chojnacki)</p>	
<b>Task 2.</b>	Title: <b>Identify Existing and Potential TowPlow Champions</b>
<p>Task Description:</p> <p>Contact states currently using TowPlow to determine who best contact is for additional information. Develop list of personnel other than SCOM members who are key in their states and potential champions. This information will come from a review of peer exchange attendance and personnel knowledge of lead states team members. (Lead - Bill Hoffman)</p>	
<b>Task 3.</b>	Title: <b>Create Communications Tools</b>
<p>Task Description:</p> <p>Task 3.a. Prepare a tri-fold brochure for distribution at conferences attended by team members, by mail, and for making available on the AASHTO TIG web site. (Lead - Tim Chojnacki, subcontractor assistance, printing by AASHTO or subcontractor)</p> <p>Task 3.b. Prepare a PowerPoint presentation suitable for presentation to upper State DOT management. Estimated length is 7 to 15 minutes. (Lead - Tim Chojnacki, subcontractor assistance)</p> <p>Task 3.c. Prepare a PowerPoint presentation suitable for presentation to State Maintenance Engineers and State Fleet Managers. Estimated length is 20 to 30 minutes. (Lead - Tim Chojnacki, subcontractor assistance)</p> <p>Task 3.d. Prepare a frequently asked questions (FAQ) sheet for distribution at conferences, by mail, and to be placed on the AASHTO TIG web site. (Lead - Steve Lund)</p> <p>Task 3.e. Gather testimonials from State Maintenance Engineers and TowPlow operators and possibly a SCOH member. (Lead - Wess Murray and Jim Carney)</p> <p>Task 3.f. Prepare a short demonstration video for inclusion in PowerPoint presentations. (Lead - Wess Murray and Jim Carney)</p> <p>Task 3.g. Develop trade journal article(s). (Lead - Bill Hoffman)</p>	

Task 4.	Title: Presentations at Conferences and Meetings	
<p>Task Description:</p> <p>A member of the lead states team will make a presentation and may also provide a booth/exhibit at primarily targeted conferences. Secondary targets will be attended to supplement information sharing when a team member is already attending the conference or as needed to fill a remaining gap in information transfer.</p>		
Opportunity	Location - Date	Responsibility to get on Program
<b>Primary Conference Targets</b>		
American Public Works Association (APWA) Snow Conference	Washington – April 2011	Bill Hoffman
Peer Presentation at AASHTO Standing Committee on Highways (SCOH) Meetings	May 2011	Steve McCarthy
AASHTO Subcommittee on Maintenance (SCOM) Meetings	Louisville, KY – July 2011	Bill Hoffman
All four Regional Equipment Fleet Managers Meeting AASHTO EMTSP	June through September 2011	Steve McCarthy
Winter Maintenance Peer Exchange	Montana – September 2011	Bill Hoffman
AMOTIA Annual Meeting	Nashville – September 2010 Other – September 2011	Greg Duncan
WASHTO Regional SCOM Meeting	Omaha, NE – February 2011	Bill Hoffman
TBD Conferences	TBD	TBD
<b>Secondary Conference Targets</b>		
TRB Winter Maintenance Committee	January 2011 and/or 2012	Bill Hoffman
Pacific Northwest Snow Fighters Conference	Joint meeting with APWA (above)	Steve McCarthy and Bill Hoffman
Rocky Mountain Snow and Ice Conference	September 2011	Steve McCarthy
Rocky Mountain Fleet Management Meeting	September 2010 and 2011	Steve McCarthy
Toll Authority Conference (IBTTA)	Oct/Nov 2011	Tim Chojnacki

<b>Task 5.</b>	Title: <b>Publish Articles</b>
Task Description:	
<p>Task 5.a. Contact target trade journals and provide article for their consideration. (Lead - Steve Lund)</p> <p>Task 5.b. Contact FHWA and request their development of an article for Focus. (Lead – Jim Carney)</p> <p>Task 5.c. Provide article to those responsible for content of the SCOM Newsletter. (Lead – Jim Carney)</p>	
<b>Task 6.</b>	Title: <b>Quantification of TowPlow Benefits Compared to Costs</b>
Task Description:	
<p>Gather information and credibly estimate savings which can be enjoyed given several scenarios of current equipment and operations. Estimate is to be based on:</p> <p>Task 6a – existing information.</p> <p>Task 6b – information to be gathered during the 2010/2011 winter.</p> <p>(Lead - Greg Duncan, minor TTI assistance offered)</p>	
<b>Task 7.</b>	Title: <b>Distribute Operational Guidelines and Training Materials</b>
Task Description:	
<p>Contact other states indicating TowPlow experience on initial survey. Gather and review information from lead states team states and other states with TowPlow experience and distribute selected materials to interested states. Missouri DOT is currently developing this type of information for their agency. There may be other states doing the same. (Lead – Jim Carney)</p>	
<b>Task 8.</b>	Title: <b>Document Technical Details Necessary for TowPlow Deployment</b>
Task Description:	
<p>Prepare a document describing accessory options, truck requirements, and other information needed by agencies preparing to acquire initial TowPlow equipment. (Lead – Wess Murray and Steve McCarthy)</p>	
<b>Task 9.</b>	Title: <b>Final Survey</b>
Task Description:	
<p>A survey will be developed, distributed, and the information analyzed to determine nationwide use level among State DOTs at conclusion of lead states team activities. (Lead - Tim Chojnacki)</p>	
<b>Task 10.</b>	Title: <b>Prepare and Submit Closeout Report</b>
Task Description:	
<p>A Closeout Report will be developed to document the work of the lead states team and the level of increase in nationwide use of TowPlow. A closeout meeting of the lead states team will be held to finalize this report. (Lead - Tim Chojnacki)</p>	

### Activity Schedule

Activity	Original Schedule		Revision Date:																							
	O	R																								
			Work Completed																							
FY 2011												FY 2012														
J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J			
Task 1.			X	X							X	X														
Task 2.			X																							
Task 3a.			X	X	X																					
Task 3b.			X	X	X																					
Task 3c.			X	X	X																					
Task 3d.			X	X	X	X																				
Task 3e.				X	X																					
Task 3f.			X	X	X	X																				
Task 3g.			X	X																						
Task 4.			X	X	X	X	X	X	X	X	X	X	X	X												
Task 5a.					X																					
Task 5b.			X																							
Task 5c.					X																					
Task 6a.			X	X	X	X																				
Task 6b.			X	X	X	X	X	X	X	X																
Task 7.			X	X	X																					
Task 8.			X	X	X																					
Task 9.																		X	X	X						
Task 10.																				X	X					



## COMMUNICATIONS PLAN

Communication Targets	Method(s)	Purpose
State DOT Upper Management	SCOH Meeting Presentation and Brochure	Answer high-level questions and provide information for their assessment of desirability of use of TowPlow in their state.
State Maintenance Engineers and Equipment Fleet Managers	Annual and Regional SCOM Meetings	Answer technical questions and provide information for their assessment of desirability of use of TowPlow in their state.
Snow Removal Contractors	APWA Snow Conference and AMOTIA Annual Meeting	Promote use of TowPlow on state contract snow removal.
Public Works Directors	APWA Snow Conference	Allow cities, counties and others to learn, adopt, and benefit from TowPlow
Maintenance Equipment Operators	Testimonials from peers in brochure and articles	Win confidence in equipment.
Viking-Clives	Telephone, email.	Determine assistance concerning training and equipment demonstrations.

## PERFORMANCE MEASUREMENT PLAN

Performance Measure	Measurement Method
Number of agencies that have obtained or have made the decision to obtain and use this equipment as of the date of the final survey, relative to the number since initiation of the lead states team.	Initial and final surveys of all AASHTO agencies.
Number of agencies that report being knowledgeable of this technology as of the date of the final survey, relative to the number since initiation of the lead states team.	Initial and final surveys of all AASHTO agencies.

# ANNUAL BUDGETS

## FY 2011 Annual Lead States Team Budget

Focus Technology: TowPlow

Budget Period: July 1, 2010 through June 30, 2011

Cost Type / Description	Estimated Non-reimbursed Costs to Lead States	Costs to be Reimbursed by AASHTO	Additional Description	Subtotals of Costs to AASHTO
<b>Labor</b>				
Lead States Team Members				
Others from Lead States				
Other				
<b>Total Labor</b>	\$ -			
<b>Expendable Goods &amp; Supplies</b>				
Describe item				
Describe item				
Insert additional goods and supplies rows here				
<b>Total Expendable Goods &amp; Supplies</b>	\$ -			\$ -
<b>Operating and Other Expenses</b>				
Travel and Marketing Expert for Initial Meeting		\$ 10,000		
Travel for Task #4 - Conference Presentations		\$ 6,000		
Travel for Task #				
Travel for Task #				
Insert additional travel rows here				
Long Distance Telephone Charges				
Reproduction				
Shipping				
Insert additional operating or rental rows here				
Equipment Rental				
<b>Total Operating and Other Expenses</b>	\$ -			\$ 16,000
<b>Equipment Purchases</b>				
Describe item				
Describe item				
Insert additional equipment purchase rows here				
<b>Total Equipment Purchases</b>	\$ -			\$ -
<b>Subcontracts**</b>				
Worth & Associates (Task 3a, 3b, 3c)		\$ 7,500		
Printing not done by AASHTO office (Task 3a)		\$ 1,000		
To be determined (Task 6)		\$ 2,000		
<b>Total Subcontracts</b>	\$ -			\$ 10,500
<b>TOTAL LEAD STATES CONTRIBUTION</b>	\$ -			
<b>TOTAL AASHTO BUDGET REQUEST FOR THIS FISCAL YEAR</b>				<b>\$ 26,500</b>

\* AASHTO's fiscal year is July 1 through June 30.

\*\* Subcontracts should be established directly with AASHTO. Contact the AASHTO TIG Program Manager for assistance.

### Notes:

1. The proposed AASHTO reimbursed budget is not to include salary and fringe benefits for lead states team members providing services.
2. Travel expenses for lead states team members representing industry are not reimbursable by AASHTO.
3. Appropriate indirect charges may be included in the individual cost estimates above.

**FY 2012 Annual Lead States Team Budget**

Focus Technology: TowPlow

Budget Period: July 1, 2011 through June 30, 2012

Cost Type / Description	Estimated Non-reimbursed Costs to Lead States	Costs to be Reimbursed by AASHTO	Additional Description	Subtotals of Costs to AASHTO
<b>Labor</b>				
Lead States Team Members				
Others from Lead States				
Other				
<b>Total Labor</b>	\$ -			
<b>Expendable Goods &amp; Supplies</b>				
Describe item				
Describe item				
Insert additional goods and supplies rows here				
<b>Total Expendable Goods &amp; Supplies</b>	\$ -			\$ -
<b>Operating and Other Expenses</b>				
Travel for Task #4 - Conference Presentations		\$ 6,600		
Travel for Task #				
Travel for Task # 10 - Closeout Meeting		\$ 5,000		
Insert additional travel rows here				
Long Distance Telephone Charges				
Reproduction				
Shipping				
Insert additional operating or rental rows here				
Equipment Rental				
<b>Total Operating and Other Expenses</b>	\$ -			\$ 11,600
<b>Equipment Purchases</b>				
Describe item				
Describe item				
Insert additional equipment purchase rows here				
<b>Total Equipment Purchases</b>	\$ -			\$ -
<b>Subcontracts**</b>				
Describe subcontract				
Describe subcontract				
Insert additional subcontract rows here				
<b>Total Subcontracts</b>	\$ -			\$ -
<b>TOTAL LEAD STATES CONTRIBUTION</b>	\$ -			
<b>TOTAL AASHTO BUDGET REQUEST FOR THIS FISCAL YEAR</b>				\$ 11,600

\* AASHTO's fiscal year is July 1 through June 30.

\*\* Subcontracts should be established directly with AASHTO. Contact the AASHTO TIG Program Manager for assistance.

**Notes:**

1. The proposed AASHTO reimbursed budget is not to include salary and fringe benefits for lead states team members providing services.
2. Travel expenses for lead states team members representing industry are not reimbursable by AASHTO.
3. Appropriate indirect charges may be included in the individual cost estimates above.



## **Appendix D: Marketing Media**

## **TOWPLOW**

### **Clearing The Way To Keep America Moving**

“With just one truck (and operator) able to do the work of more than two conventional snow plow trucks, the benefits of the TowPlow are adding up quickly.”

– *excerpt from 2007 Missouri Governor’s Award for Quality and Productivity*

### **WHAT IS A TOWPLOW?**

The TowPlow is a steerable snow plow trailer equipped with a 26’ moldboard and either a liquid delivery system or a granular spreader. In conjunction with a conventional snow plow truck, the combination is able to plow a path approximately 24’ wide – or the width of two typical traffic lanes.

### **WHY TOWPLOW? WHY NOW?**

The TowPlow is a time-saving, safe addition to conventional snow plowing trucks and provides a higher level of service to roadway users.

This ready-for-use, innovative technology not only creates a method to increase performance but directly impacts two customer needs: prudent stewardship of taxpayer dollars and roadway safety.

#### **Improves Cost-Efficiency**

The TowPlow embodies the “doing more with less” concept. It creates operational improvements in snow removal that contribute significantly to cost efficiencies.

With shrinking numbers and reallocations of agency personnel, the task of maintaining a nonetheless growing network of lane miles becomes ever more challenging. The TowPlow can increase productivity, allowing agencies to maintain or even increase levels of service in the face of reduced operating budgets and fewer personnel for snow and ice removal.

Agencies that outsource snow removal operations may benefit from reduced contracting costs because contractors may realize increased efficiency and profitability from utilizing the TowPlow.

### **Increases Operator and Motorist Safety**

Fewer passes with less equipment mean lower potential for traffic accidents during snow and ice removal. Reductions in cycle time also give the traveling public more hours in which to operate on fully cleared roadways as a weather event unfolds.

TowPlow is forgiving – it pivots when it strikes an object and does not tend to rotate the tow vehicle, which reduces the potential for tow vehicle damage.

### **Keeps America Moving**

Unfettered freight and passenger travel is essential to economic vitality. Clearing more lanes in less time with less equipment improves mobility, and offers considerable economic benefits to any State.

### **Reduces Emissions**

The TowPlow reduces the number of vehicles required to clear a given roadway. In turn, this means less fuel use and a lower carbon footprint per cycle or weather event.

### **Builds Stronger Relationships With Customers**

TowPlow is a visual demonstration of the agency's commitment to innovation – communicating cost savings and other efficiencies that the public can easily understand and respect.

### **Increases Profitability**

Removing snow from a wider portion of roadway at potentially higher speeds means lower operating costs.

Although contractors will have short-term increases in capital costs, those committed to long-term snow removal services will, in the long-term, offset those increases with lower operating costs.

As contractors take advantage of lower operating costs, the competitive nature of the bidding process will lead to lower contracting costs for state agencies.

## **Improves Operations**

TowPlow offers operational benefits beyond simple cost efficiencies:

- Decreased cycle time due to one pass clearing and wider clearing path
- Higher operating speed potential
- Quickly position or relocate snow removal equipment
- Improved equipment reliability
- Extended plow blade life due to reduced down force
- Efficient clearance means fewer vehicle trips to resupply treatment materials
- Benefits rural and urban areas
- Builds clearing capacity while not increasing on-road equipment fleet size

***What is the average benefit or cost savings with a TowPlow purchase? How long does it take to break even?***

Utah, like other states, has not completed a true cost savings evaluation of the TowPlow, but recognizes other benefits. Among these are staff reductions and higher levels of service to customers as a result of the ability to maintain increased lane miles. This equates to safer roads, fewer accidents and less congestion.

In Missouri, the use of a TowPlow doubles the clearing width of a conventional truck equipped with only a front snow plow. As a result, labor and fuel costs are cut in half.

The breakeven point of the TowPlow depends on numerous factors. As a rule of thumb, the TowPlow will pay for itself in four to five years based on replacing one snow plow truck for 250 hours per year.

***Does the use of the TowPlow require any special training for my operator?***

As with any new piece of equipment some training is needed; however, special training is not required. Operators should become familiar with the TowPlow operation in a controlled area prior to using it on the highway. The Missouri DOT has developed a 12-hour TowPlow training class.



***How much additional operator attention does the TowPlow require? Should I have concerns about operator overload?***

Operating a TowPlow is comparable to operating a truck-mounted wing plow. In fact, some operators believe the TowPlow is easier to operate than the wing plow. The Utah DOT requires that TowPlow host trucks are equipped with automatic transmissions.

***Are there any problems with deploying or retracting the plow? How quickly can the TowPlow be engaged and disengaged?***

The TowPlow can be fully deployed or retracted quicker than a wing plow can be picked up. This will vary slightly depending on the hydraulic systems on the host vehicles. Cold weather can also affect performance of hydraulic systems and slow the time for engaging and disengaging but not to a degree that limits use of the TowPlow.

***How does the public respond to a TowPlow? Are you experiencing accidents involving TowPlow operation?***

“We have been running TowPlows for two winters and we haven’t had any problems. The public seems to have an added respect for the TowPlow. We are planning to buy more.”

– *Mark Fischbach*  
*Twin Cities Winter Maintenance Superintendent*  
*Minnesota Department of Transportation*

The Utah DOT is now in its third season of running TowPlows and has not had any accidents or problems. The public does seem to give them added respect and stays farther away from them when compared to a standard snow plow.

***We are a state that uses wings. Are there any benefits for us to add a TowPlow?***

For the operator, the TowPlow has fewer controls than the traditional wing plow – two compared to three. The TowPlow allows a wider clearing path than a wing, and some states have found that they can operate a TowPlow at a faster speed than wing plows, generating additional productivity gains. There is also a significant benefit on multi-lane Interstate highways where there is a need to apply additional salt/brine to the surface area. The TowPlow, with chemical storage, enables multiple lanes to be treated with the same pass.

***Do I need any special truck horsepower, hydraulic, or cooling requirements to pull a TowPlow?***

In general, larger trucks are better to pull TowPlows. Most trucks that pull TowPlows are tandem axle plow trucks with a minimum of 350 hp and available hydraulic circuits to operate the TowPlow. Some states use a horsepower rating and torque of 450 hp and 1650 torque. The cooling package will match the engine. Some states increase the hydraulic pump size and have independent spreader controls for both the truck and the TowPlow.

***Are there any unusual equipment maintenance issues or repairs that the TowPlow requires? What is the expected longevity of a TowPlow?***

There are no unusual maintenance or repair issues with the TowPlow. All components of the TowPlow are found routinely on other plows and trucks.

Utah DOT estimates a 20-year life cycle and is considering an increase to 25 years with a “recovery” rate of \$30.00 per hour.

***I can see value on multilane roads, but is there a benefit to using a TowPlow on a two lane/two way highway?***

The TowPlow can be used on two lane roadways where there are shoulders that need to be cleared simultaneously with the driving lane. Some two lane roads have auxiliary, climbing, or alternating passing lanes. The use of a TowPlow on these roadways allows wider sections to be cleared in one pass, rather than circling around to clear the additional pavement width.

***Have you realized any unexpected benefits?***

“... the TowPlow is more forgiving to a hit than a traditional wing and consequently the truck stays more in control. Also, because we are able to plow the snow back further, you can gain up to 14 feet more (depending on your wing set up) than a traditional plow and wing.”

– Randy Reznicek

*St. Cloud District Winter Maintenance Superintendent  
Minnesota Department of Transportation*

There are operators that use the TowPlow (with the plow in the “up” position) to increase chemical capacity for pre-treating operations. This allows operators to treat more miles of roadway without refilling the truck. States that use TowPlows have experienced very positive media coverage of their operations, with stories of the states’ innovative and efficient efforts to fight snow storms.

## **ABOUT TIG**

Dedicated to sharing high-payoff, market-ready technologies among transportation agencies across the United States, TIG promotes technological advancements in transportation, sponsors technology transfer efforts and encourages implementation of those advancements.

For more information visit [www.aashtotig.org](http://www.aashtotig.org).

## **HOW DO I LEARN MORE?**

TIG's Lead States Team includes DOT representatives with TowPlow experience who can help you implement the use of this technology in your agency. Turn to team members for insight, expertise and advice.

### **For more information about the TowPlow, contact:**

Tim Chojnacki (Chair)  
Missouri DOT  
[Tim.Chojnacki@modot.mo.gov](mailto:Tim.Chojnacki@modot.mo.gov)

Steve Lund  
Minnesota DOT  
[Steven.Lund@state.mn.us](mailto:Steven.Lund@state.mn.us)

Bill Hoffman  
Nevada DOT  
[whoffman@dot.state.nv.us](mailto:whoffman@dot.state.nv.us)

Greg Duncan  
Tennessee DOT  
[Greg.Duncan@tn.gov](mailto:Greg.Duncan@tn.gov)

Steve McCarthy  
Utah DOT  
[smccarthy@utah.gov](mailto:smccarthy@utah.gov)

Wess Murray  
Missouri DOT  
[Wess.Murray@modot.mo.gov](mailto:Wess.Murray@modot.mo.gov)

Jim Carney  
Missouri DOT  
[Jim.Carney@modot.mo.gov](mailto:Jim.Carney@modot.mo.gov)



## **Appendix E: Bibliography**

## **Tow Plow Bibliography**

AASHTO Technology Implementation Group

Note: the first nine articles credit the AASHTO TIG for this technology. The total number of news stories about TowPlow are too numerous to list.

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3. DOT's try new tricks for snow removal. (2011, January 01). *American City & County*. Retrieved from [http://americancityandcounty.com/pubwks/streets\\_hwy\\_bridges/dot-snow-removal-201103](http://americancityandcounty.com/pubwks/streets_hwy_bridges/dot-snow-removal-201103)
4. States approach winter roads with variety of techniques. (2010, December 10). *The Transporter*. Retrieved from [http://itd.idaho.gov/transporter/2010/121010\\_Trans/121010\\_AASHTOwinter.html](http://itd.idaho.gov/transporter/2010/121010_Trans/121010_AASHTOwinter.html)
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8. (2011). States use technology and efficiency to cut the cost of battling winter. *ICA Eye on the Road*, 7(1), Retrieved from [http://www.ica-onramp.com/static/assets/about/newsletters/PDFfor\\_WebPlus\\_Supplement.pdf](http://www.ica-onramp.com/static/assets/about/newsletters/PDFfor_WebPlus_Supplement.pdf)
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10. USA Today News Story dated 12/21/2010  
[http://www.usatoday.com/news/nation/2010-12-21-plowingroads21\\_ST\\_N.htm](http://www.usatoday.com/news/nation/2010-12-21-plowingroads21_ST_N.htm)
11. Maryland news story on TowPlow dated 11/17/11, WUSA Channel 9  
<http://www.wusa9.com/news/article/175283/158/Motorists-Warned-To-Steer-Clear-Of-The-Tow-Plow>

**Appendix F: State Contact List**  
[see the attached Excel Worksheet]





## AASHTO Technology Implementation Group

### TowPlow National Contact List

(\* TIG Team Member)

11.21.11, newer updates highlighted

State	Operations Contact Name	Operations Contact Phone	Operations Contact Email	Equipment Contact Name	Equipment Contact Phone	Equipment contact Email	Number of TowPlows in use in your State
Alaska	Michael Coffey/Diana Rotkis	907-465-3904/907-269-0787	<a href="mailto:mike.coffey@alaska.gov">mike.coffey@alaska.gov</a> / <a href="mailto:Diana.Rotkis@Alaska.gov">Diana.Rotkis@Alaska.gov</a>				None but have a keen interest in them
Arizona				Dennis Halachoff	602-712-7284	<a href="mailto:dhalachoff@azdot.gov">dhalachoff@azdot.gov</a>	None at this time - trying to develop interest
Arkansas	Tony Sullivan	501-569-2231	<a href="mailto:tony.sullivan@ahtd.ar.gov">tony.sullivan@ahtd.ar.gov</a>	Danny Keene	501-569-2672	<a href="mailto:danny.keene@ahtd.ar.gov">danny.keene@ahtd.ar.gov</a>	None yet, being considered.
California	Steve Kirkpatrick	(530) 741-4318	<a href="mailto:steve_kirkpatrick@dot.ca.gov">steve_kirkpatrick@dot.ca.gov</a>				Working through justification process
Colorado	Phillip Anderle	970-350-2119	<a href="mailto:phillip.anderle@dot.state.co.us">phillip.anderle@dot.state.co.us</a>	Clay Adams	970-350-2100	<a href="mailto:clay.adams@dot.state.co.us">clay.adams@dot.state.co.us</a>	Deployed first towplow in September of 2011 and have our second towplow on order as of November 2011
Connecticut	Richard Baron	860-594-2639	<a href="mailto:richard.baron@ct.gov">richard.baron@ct.gov</a>				Used a demo last year. None in serv.
Delaware	Alastair Probert	302-853-1305	<a href="mailto:Alastair.probert@state.de.us">Alastair.probert@state.de.us</a>	LJ Hardy	302-760-2405	<a href="mailto:Lawrence.Hardy@state.de.us">Lawrence.Hardy@state.de.us</a>	Looking into buying a tow plow for a trial but it likely won't be operational until next season.
District of Columbia							

Idaho	Steve Spoor	(208) 334-8413	<a href="mailto:steve.spoor@itd.idaho.gov">steve.spoor@itd.idaho.gov</a>				None
Illinois	Tim Peters	217-782-8419	<a href="mailto:tim.peters@illinois.gov">tim.peters@illinois.gov</a>	Brad Siddens	<a href="mailto:bradley.siddens@illinois.gov">bradley.siddens@illinois.gov</a>	217-782-7233	None
Indiana	Dennis Belter		<a href="mailto:DBELTER@indot.IN.gov">DBELTER@indot.IN.gov</a>				Several
Iowa	Annette M. Dunn	515-239-1355	<a href="mailto:annette.dunn@dot.iowa.gov">annette.dunn@dot.iowa.gov</a>				3 Deployed (first winter) throughout the State
Kansas							
Kentucky	Nancy Albright	502-564-4556	<a href="mailto:Nancy.Albright@ky.gov">Nancy.Albright@ky.gov</a>				None
Maine	Randy Gray	207-941-4500	<a href="mailto:randy.gray@maine.gov">randy.gray@maine.gov</a>				one
Maryland	Russ Yurek; Marc Lipnick	410-582-5505; 410-582-5566	ryurek@sha.state.md.us; mlipnick@sha.state.md.us				none in use; 2 units in place January 2011
Massachusetts	Paul Brown	617-973-7792	<a href="mailto:Paul.Brown@state.ma.us">Paul.Brown@state.ma.us</a>				None in use
Michigan	Tim Croze	(517) 322-3394	<a href="mailto:CrozeT@michigan.gov">CrozeT@michigan.gov</a>				None but very interested
Minnesota	*Steve Lund	651-366-3566	<a href="mailto:steven.lund@state.mn.us">steven.lund@state.mn.us</a>	Robert Ellingsworth	<a href="mailto:robert.ellingsworth@state.mn.us">robert.ellingsworth@state.mn.us</a>	651-366-5704	6
Missouri	*Tim Chojnacki; *Jim Carney	573.751.1040 (Tim)	<a href="mailto:Tim.Chojnacki@modot.mo.gov">Tim.Chojnacki@modot.mo.gov</a> ; <a href="mailto:Jim.Carney@modot.mo.gov">Jim.Carney@modot.mo.gov</a>				71

Montana	Jon Swartz	406-444-6158	<a href="mailto:joswartz@mt.gov">joswartz@mt.gov</a>	Jeff Gleason	406-444-6151	<a href="mailto:jegleason@mt.gov">jegleason@mt.gov</a>	
Nebraska	Dale Butler	402-595-2534 x234;	<a href="mailto:dale.butler@nebraska.gov">dale.butler@nebraska.gov</a>				3 on order for the Omaha area
Nevada	*William Hoffman; Kevin Lee	775-888-7050; 775-777-2700	<a href="mailto:whoffman@dot.state.nv.us">whoffman@dot.state.nv.us</a> ; <a href="mailto:klee@dot.state.nv.us">klee@dot.state.nv.us</a>				none in use; 2 budgeted for next year
New Hampshire							
New Jersey							
New Mexico							
New York	Michael Lashmet	518-457-5796	<a href="mailto:mlashmet@dot.state.ny.us">mlashmet@dot.state.ny.us</a>	Robert Martz	518-457-9684	<a href="mailto:rmartz@dot.state.ny.us">rmartz@dot.state.ny.us</a>	none
North Carolina	Jennifer Brandenburg	919-733-3725	<a href="mailto:jbrandenburg@ncdot.gov">jbrandenburg@ncdot.gov</a>				None
North Dakota				Shane Freitag	(701) 328-2565	<a href="mailto:shfreita@nd.gov">shfreita@nd.gov</a>	We have two in operation. Two being purchased.
Ohio	Dave Ray	330-786-3101	<a href="mailto:david.ray@dot.state.oh.us">david.ray@dot.state.oh.us</a>				1 owned (1st winter of use)... planning on getting two more
Oklahoma	Kevin Bloss	405-521-2557	<a href="mailto:kbloss@odot.org">kbloss@odot.org</a>	Chuck Howard	405-521-2550	<a href="mailto:Chuck_Howard@fd9ns01.okladot.state.ok.us">Chuck_Howard@fd9ns01.okladot.state.ok.us</a>	none in use
Oregon							
Pennsylvania	W. James Smith ; Dave Adams	717-787-4299 ; 717-787-1567	<a href="mailto:walsmith@state.pa.us">walsmith@state.pa.us</a> ; <a href="mailto:daadams@state.pa.us">daadams@state.pa.us</a>				Demo Program in at least one District

Rhode Island	Paul R. Annarummo; Joseph A. Baker	401-734-4800; 401-734-4807	pannarum@do t.ri.gov; jbaker@dot.ri. gov				None
South Carolina							
South Dakota	Jason Humphrey		<a href="mailto:Jason.Humphrey@state.sd.us">Jason.Humphrey@state.sd.us</a>				None
Tennessee	*Greg Duncan	615.741.2027	<a href="mailto:greg.duncan@tn.gov">greg.duncan@tn.gov</a>				1?
Texas	Tammy B. Sims, P. E.	512-416-2476	<a href="mailto:tammy.sims@txdot.gov">tammy.sims@txdot.gov</a>				none
Utah	Lynn Bernhard;	801-965-4094 (Lynn)	<a href="mailto:lynnbernhard@utah.gov">lynnbernhard@utah.gov</a> ; <a href="mailto:smccarthy@utah.gov">smccarthy@utah.gov</a>	Steve McCarthy	801-965-4122	<a href="mailto:smccarthy@utah.gov">smccarthy@utah.gov</a>	6 in use, expect to add two more next year
Vermont	Wayne Gammell	802-828-2691	<a href="mailto:wayne.gammell@state.vt.us">wayne.gammell@state.vt.us</a>	Ken Valentine	802-828-0651	<a href="mailto:ken.valentine@state.vt.us">ken.valentine@state.vt.us</a>	bought first two towplows this year after a successful trial rental last winter
Virginia	Emmett R.	(804)-786-2949	<a href="mailto:Emmett.Heltze@vtdot.gov">Emmett.Heltze@vtdot.gov</a>				
Washington	Monty Mills	360-705-7803	<a href="mailto:millsm@wsdot.wa.gov">millsm@wsdot.wa.gov</a>				Zero
West Virginia							
Wisconsin							
Wyoming	Ken Shultz, Jeff Frazier	307-777-4458	ken.shultz@do t.state.wy.us; jeff.frazier@do t.state.wy.us				none in use; none budgeted for next year