What is Clear Roads?

- 29 current members: CA, CO, CT, IA, ID, IL, KS, MA, ME, MI, MO, MN, MT, ND, NE, NH, NY, OH, OR, PA, RI, SD, UT, VA, VT, WA, WI, WV, WY

- Primary activities include:
  - Evaluating winter maintenance materials, equipment and methods.
  - Developing specifications and recommendations.
  - Studying and promoting innovative techniques and technologies.
  - Supporting technology transfer by developing practical field guides and training curriculum to promote the results of research projects.
Plug and Play Initiative Update
Problem

In-cab electronics used on DOT vehicles are often provided by different vendors.

Each vendor has their own proprietary communication protocols and data formats.

Costly and time intensive to integrate the different systems into one data stream.
The goal was to develop specifications that would support a “plug and play” approach to integrating electronic devices and sensors on plow trucks.

Clear Roads developed an initial specification and then engaged the vendor community to get their support and input.
Specify a universal bi-directional communications protocol for in-cab electronics
Examples of in-cab electronics include spread controllers, temperature sensors, plow up/down indicators, etc.

The protocol will be configurable and dynamic
To provide the end user with the maximum available data at the lowest cost

Wherever possible it will be backwards compatible to support legacy equipment
Expected Results

A standard protocol that each state can specify in procurement to facilitate a “plug and play” approach to sharing operational data from electronic devices on modern winter maintenance vehicles.
A collaborative group of spreader and AVL vendors have developed a draft protocol. It was posted for public comment in February 2014. It will be posted for a second round of public comments in August 2014.

Testing and validation will take place in the 2014-2015 winter season. Revisions will be made based on the testing.

Clear Roads will host a free web-based “test bed” so that vendors can validate that they are compliant with the protocol.

The protocol should be final by the 2015-2016 season.
Recent Project Results
Understanding the True Costs of Snow and Ice Control Operations

**Completed Research Highlights**

**True Cost of Winter Maintenance Estimating & Data Entry Tool**

Prepared by: **PARSONS BRINCKERHOFF**

- Estimation Mode
- Data Entry Mode
- Storm Comparison
- Period Comparison

**Note:** Macros must be enabled

**Disclaimer:**
These results are based on user inputs. The outputs generated by this assessment are only as relevant as the data put into the model.

All dollar amounts in the tool are in year-of-expenditure dollars.
Completed Research Highlights

Determining the Toxicity of Deicing Materials
Completed Research Highlights

Environmental Factors Causing Fatigue in Snowplow Operators
Completed Research Highlights

Development of a Totally Automated Spreader System
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