



## Measurement

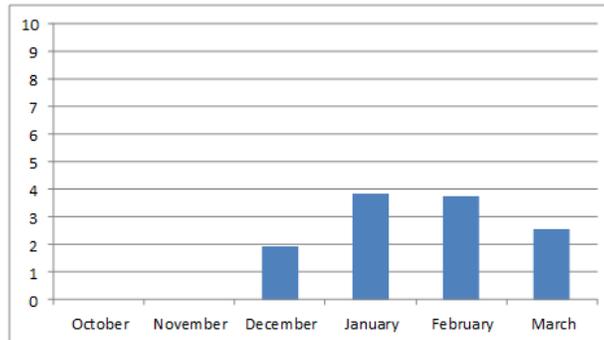
In winter maintenance, performance measurement is determined by the condition of the road throughout the event in relation to the severity of the storm and the treatments that have been applied. Under-treating a roadway will result in difficult driving conditions and possibly the formation of ice. Over-applying salt can result in wasting material and exceeding expected levels of service. If other application Best Management Practices are considered, it is evident that measurement must also be a BMP. For example, variable application rates are needed based on the severity of an event and the pavement temperatures during that event. Or, salt use in extremely cold situations may require that no salt be applied at all.

It is important to ensure that personnel are accountable for the decisions that they make in winter operations and particularly in material applications. In order to verify if an agency is under-treating, properly-treating or over-treating a roadway, data must be collected and then must be evaluated and weighed against the recommended actions.

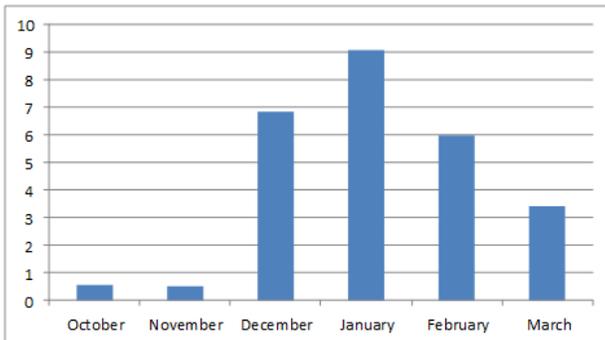
Measuring the performance of an agency in a winter event can be done in several different ways. When we consider that we are discussing the use of salt it should start with an individual operator. Tracking their salt usage in each event and on a seasonal basis is important. This can be done manually by tracking how many buckets of salt are loaded on a vehicle or by weighing the vehicle but perhaps one of the best ways is instrumentation. Computerized dispensing systems installed into vehicles can track the output of salt by the vehicle. On a larger scale some agencies look at salt use compared to the total snowfall for a season. Some agencies look at the average amount of salt used per lane mile for a given season. Many agencies now look at their salt use and include a storm severity index or a winter severity index to help normalize their actual use. Another method uses instrumentation to determine the grip of a roadway throughout an event and determine how they performed and what the mobility of the roadway was throughout the event.

**If you don't  
measure it,  
you can't  
manage it.**

**Moline 2013-14**  
**Total Salt Used = 13,420 Tons**  
**Tons/Index Point = 499**



**Moline 2012-13**  
**Total Salt Used = 11,200 Tons**  
**Tons/Index Point = 848**



A low Tons/Index Point indicates efficiency.

**The numbers:** It is hard to say exactly how much we can save by carefully measuring our winter maintenance actions and operations. For one thing, what would you compare your measurements to? The ones you did NOT make beforehand? Kind of tricky! But, management studies suggest that just by measuring what we do, we can cut down on waste by 10 to 30%.

**The Alternatives:** There really is no alternative to measuring what we do, unless you mean not measuring...

**The needs:** First decide what you are going to track – for example, it might be how much salt you use on each lane mile. Then figure out how to measure it – will you trust the spreader controller to be accurate? Will you tie in the spreader controller with GPS data? Finally collate all the information, see what it tells you and act upon that new knowledge by making appropriate changes.

**The future:** The key advance here is likely to be in the area of data collection and management. A system based on paperwork is much harder to handle than one that is fully automated, and the sensors to give us that fully automated data collection will be here soon if they are not here now.

Methods of measurement allow an agency to look back and determine if proper treatments were recommended, if those treatments were applied, if forecasts were accurate, if levels of service were achieved, and thus how they could adjust their operations in future events.

