Iowa DOT Salt Use Dashboard

Spreading salt on road surfaces is one of the primary means for removing and preventing accumulation of snow and ice. The Iowa Department of Transportation (Iowa DOT) has a new management dashboard featuring actual salt usage during maintenance operations compared to estimated usage amounts, based on road weather conditions. Managers monitor this Dashboard to make sure current usage is reasonable given the weather and is within Iowa DOT's standard application rate guidelines. Development of this Dashboard is very recent, with implementation occurring in August 2011 before the start of the winter season. Already, the tool is encouraging and allowing maintenance staff to keep a tighter control on salt usage.

System Components: As seen in Figure IA-1, the salt use dashboard consists of the following elements:

- State, district, and garage-level displays
- Color-coded dials indicating actual salt usage versus the targeted usage
- Interactive graphs and charts to view area and time period of choice
- Salt purchasing status
- Comparisons to estimated 'target' use, based on storm weather information
- Comparisons to budget availability
- Daily, Pay Period, or Year-to-Date summaries

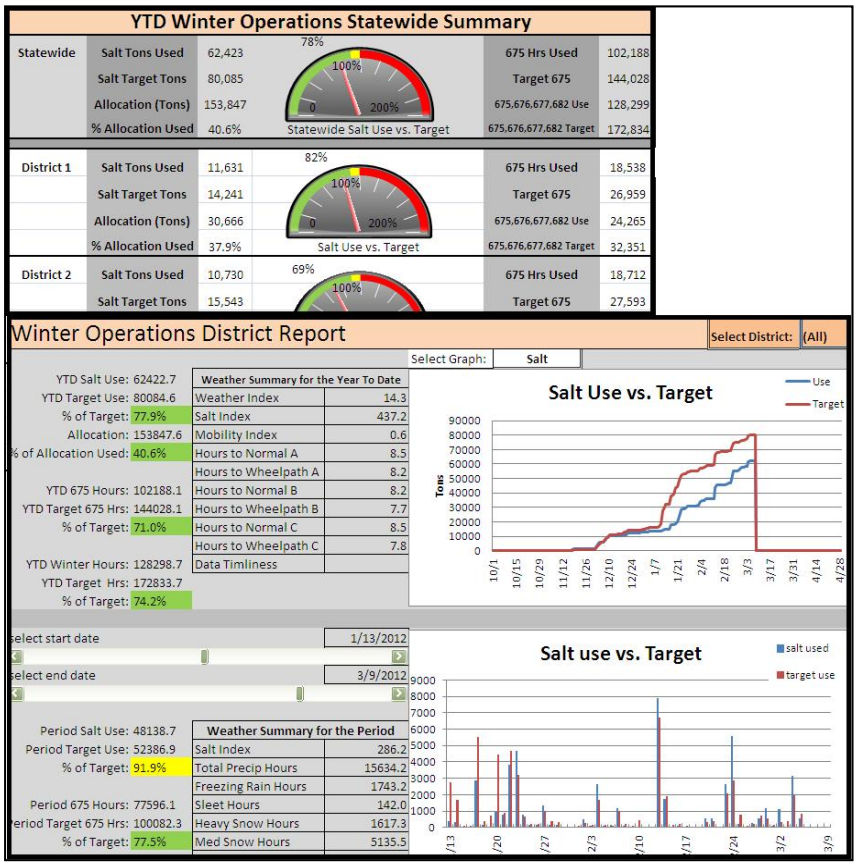

Figure IA-1. Example screenshots from the Iowa DOT Salt Use Dashboard.

System Operations: There are several inputs to the Dashboard to generate the usage visualizations and outputs which aid managers in their decision making. Road temperature information from Road Weather Information Systems (RWIS) is merged with winter storm information from standard crew reports. This weather information helps to estimate salt use rates. These rates are based on Iowa DOT salting guidelines, as derived from the "Guide for Snow and Ice Control" published by the American Association of State Highway and Transportation Officials. Garage responsibility-miles and service requirements information modify the basic rate estimates (in total salt per lane-mile) into a garage-specific daily total tonnage.

The Dashboard accesses the actual usage information and the weather-based estimates from a database and displays it in the dashboard application. Dashboard information is rerun every week and distributed to management and garage supervisors via email. Currently, the Dashboard is built in Microsoft Excel. There are plans to convert it to commercial dashboard software in summer 2012 for release prior to the winter season.

Transportation Outcome(s): The Salt Use Dashboard helps Iowa DOT ensure that salt usage and labor usage compares favorably with department guidelines. This helps provide a uniform and predictable level of service, and keeps costs within budget. It can also be used to identify practices that seem to provide better service with less salt.

Implementation Issues: Sometimes when maintenance actions adhere to the recommended salt usage rates the desired level of maintenance and service is not obtained. Iowa DOT is still investigating these cases to determine whether the guidelines are inadequate or if maintenance practices need to be altered. It is also still unclear how the usage rates should be modified for different levels of service or traffic volumes.

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Reference(s):

- Transportation Research Board, 2004. *NCHRP Report 526, Snow and Ice Control: Guideline for Materials and Methods* <http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_526.pdf>
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