



Winter Maintenance Strategy: Implementation Status Report

Legislative Reporting for HB2017



Prepared For:
The Oregon Transportation Commission

Prepared by:
ODOT Maintenance and Operations Branch

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Implementation Status Report 2019

Background

In 2017 the Legislature required ODOT to “develop a Winter Maintenance Strategy that included the use of solid salt or similar solid deicer, and consider environmental impacts.” The Strategy was developed, presented to the OTC, and approved in 2018 (see Attachment 2); a minor modification was made to the Strategy in 2019.

The Strategy outlines the use of various winter maintenance materials and equipment as a toolbox approach in support of using the right tool in the right place at the right time and the right amount. It includes guiding principles that call for phasing in the use of salt, focusing on interstates and freeways first. The guiding principles reflect ODOTs commitment to highway safety, cost effective use of materials/equipment/labor, and minimization of environmental impacts.

Implementation Status

Storage

ODOT has constructed 12 salt storage sheds to service salt use areas. An additional 10 sheds are planned with funding for roughly 6 (depending on cost) in the 2019-2021 biennium (see Figure 1). ODOT also has access to one salt shed in California, owned by Cal Trans, and one salt shed in Washington, owned by the Washington State Department of Transportation. Salt shed buildout is dependent on available capital improvement funds that are used for all ODOT facilities. Based on feedback from this last winter (2018-2019), ODOT is accelerating storage buildout by prioritizing a significant amount of funds for salt sheds but this level of prioritization may not be sustainable.

Several locations along I-5 without existing salt sheds are storing bulk salt in large 2,500 lb. bags that enable certain sections to manage strategic locations during certain storms until storage sheds are built; it is not possible to store the large quantities of bagged salt needed for widespread or long duration storms due to limitations in storage space.

Material Use and Tracking

ODOT continues to use liquid deicer for proactive anti-icing as it remains the most cost effective. Solid salt is most effective when used as a deicer during or after a storm, depending on pavement and weather conditions.

During the 2018-19 winter, ODOT used approximately 5,000 tons of salt statewide on approved routes.

Districts are finding salt works well to manage for freezing rain and to prevent or reduce pack buildup during snow storms. Average application rates range between 100-200 lbs. per lane mile, with limited applications of up to 400 lbs. per lane mile.

ODOT is preparing a Request For Proposals to purchase hardware that will automatically track activities including when and where plowing and material application occurs. About 90% of deicer (liquid and solid) trucks will be equipped during the winter of 2020-2021, depending on electronic controller compatibility.

Equipment

ODOT has continued to purchase salt application equipment, and make necessary modifications to existing trucks to apply salt in an effective and efficient manner. Some new spreaders including a combo

spreader (holds large quantities of both liquid and solid material), dual auger spreaders (allow for accurate, low application rates), stainless steel spreader boxes (resistant to salt corrosion), and tow plows (maximizes staffing resources) were purchased.

Significant corrosion has been observed on application equipment despite frequent washing. As other salt-using states have experienced, ODOT expects shorter equipment life due to corrosion.

Training

In 2018, ODOT trained over 160 employees in the use of deicer for winter maintenance.

A Winter Forum is planned to bring statewide managers together in Fall 2019 to discuss effective winter maintenance strategies and materials including salt. The Forum will focus on sharing expectations, experiences, and feedback on the program.

Crash and Mobility Data

ODOT is interested in evaluating crash and mobility data to assess our strategy.

ODOT is exploring ways to evaluate statewide crash and mobility data; at this early stage of implementation no data trends have emerged. We expect this to change over time.

Environmental Impacts

ODOT continues to work with the US Geological Survey on modeling chloride impacts to surface and groundwater. The current research builds on recent findings of fluctuating levels of chloride in streams following salt applications. The additional information should help ODOT examine our practices. The final report is expected after 2021.

Lessons Learned

ODOT continues to learn about salt as a tool in the winter maintenance toolbox. Lessons learned are shared during annual statewide training and after action storm reviews. Guidelines, equipment, shed designs, and other program elements are modified as needed to improve outcomes.

- ODOT has learned from the past and is improving on the storage shed design to mitigate water/moisture inside the shed, improve ease of loading/unloading salt, and to reduce building damage.
- Because salt use is limited to certain routes, crews have to switch between products. Switching between solid products (solid salt and abrasives) can be challenging operationally. ODOT is working on ways to minimize operational impacts.
- Calibration and truck settings are important when using different solid products. It takes proper planning, preparation, concentration and focus to make sure settings are correct and to verify that the equipment is functioning properly for the material type being used. Crews are learning to trust the electronic spreader controllers.

Research

ODOT is involved in the Clear Roads pooled fund research committee, which funds national winter maintenance research projects and is currently supporting research into various application techniques to better manage material use and improve application effectiveness.

ODFW and DEQ

ODOT has reached out to ODFW and DEQ and provided updates on ODOT's winter maintenance strategy and implementation. ODFW and DEQ are mainly concerned about where salt is applied and in what quantity in terms of potential impacts to water quality and fish habitat; they are supportive of

ODOT's efforts to automatically track material application. Both DEQ and ODFW are represented on the Technical Advisory Committee for the USGS research project mentioned above.

Next Steps

The salt exception process has been phased out for freeway and interstate salt use. Districts are expected to document salt application capabilities, constraints and level of service expectations in District Winter Operations Plans.

ODOT is incorporating best management practices outlined in the Maintenance Operational Notice (referenced in the Winter Maintenance Strategy, Attachment 2) into existing policy. For example, storage requirements have been included in the recent revision to the *ODOT Maintenance Yards Environmental Management System (EMS) Manual* (to be published in 2019). The operational notice will remain in place to document those highway sections where salt is approved for use by the State Maintenance and Operations Engineer.

ODOT will continue to build salt storage capacity, track winter maintenance material use, provide effective training to staff and managers, and investigate ways to evaluate performance.

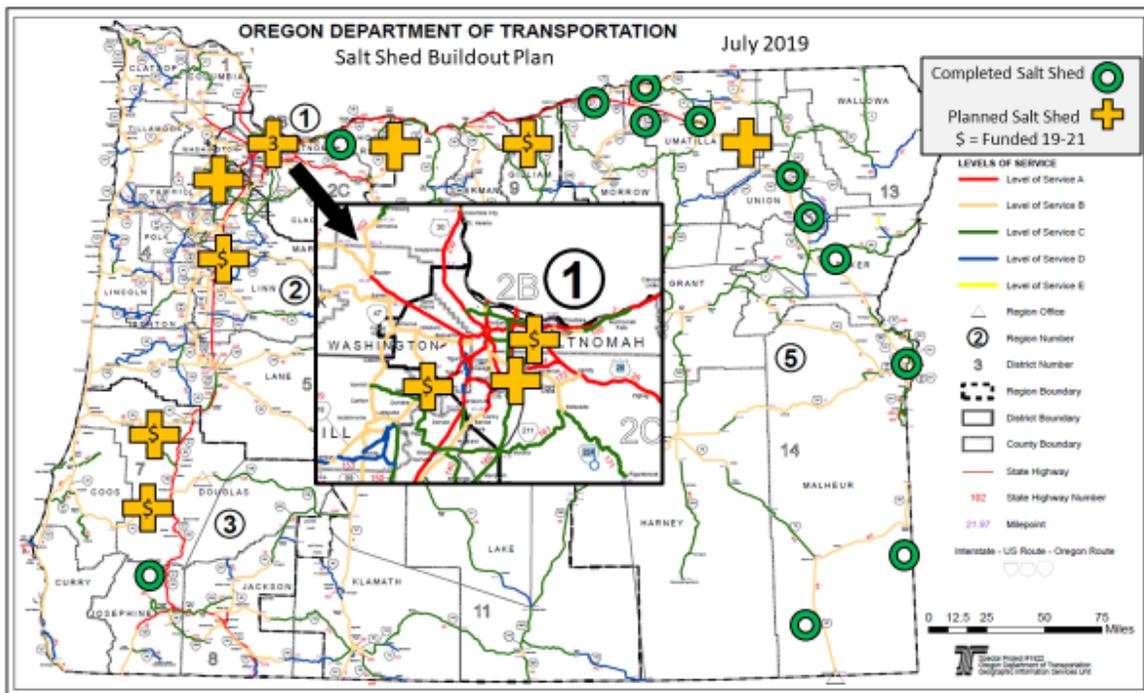


Figure 1. Salt Shed Buildout Plan (July 2019)