



# Local Operational Research Assistance (OPERA) Program

## Evaluating Pickle Brine for Ice Control

Like many snow- and ice-control professionals, Carver County Public Works maintenance operations staff are searching for new options to reduce the amount of chloride that reaches our waters from road salt operations. Using food production byproducts such as pickle brine are among the alternatives maintenance staff have been exploring.

Carver County regularly uses salt brine as part of their winter maintenance operations, which has become a widely accepted practice for controlling snow and ice. In the right situation, salt brine can be a more effective alternative to traditional road salt. An opportunity to obtain a free supply of sodium-rich pickle juice from a nearby canning facility seemed like a natural candidate worthy of consideration as a source of brine for county anti-icing and de-icing operations. In addition, recycling the pickle brine could reduce the amount of the waste byproduct.

The Carver County Public Works Department began testing samples of the pickle juice in 2016 with some encouraging results. But further testing showed the brine from the pickle cannery had variable salinity and pH levels that could damage maintenance equipment. Given the variables involved, staff determined it would be difficult to manually control the manufacture of the brine into a usable liquid. VariTech Industries recommended purchase of the Brine Boss, an automated brine blending system to manufacture the 23.3 percent brine solution needed for effective ice control operations. In addition, staff found adding potassium hydroxide to pickle brine neutralizes the pH level.

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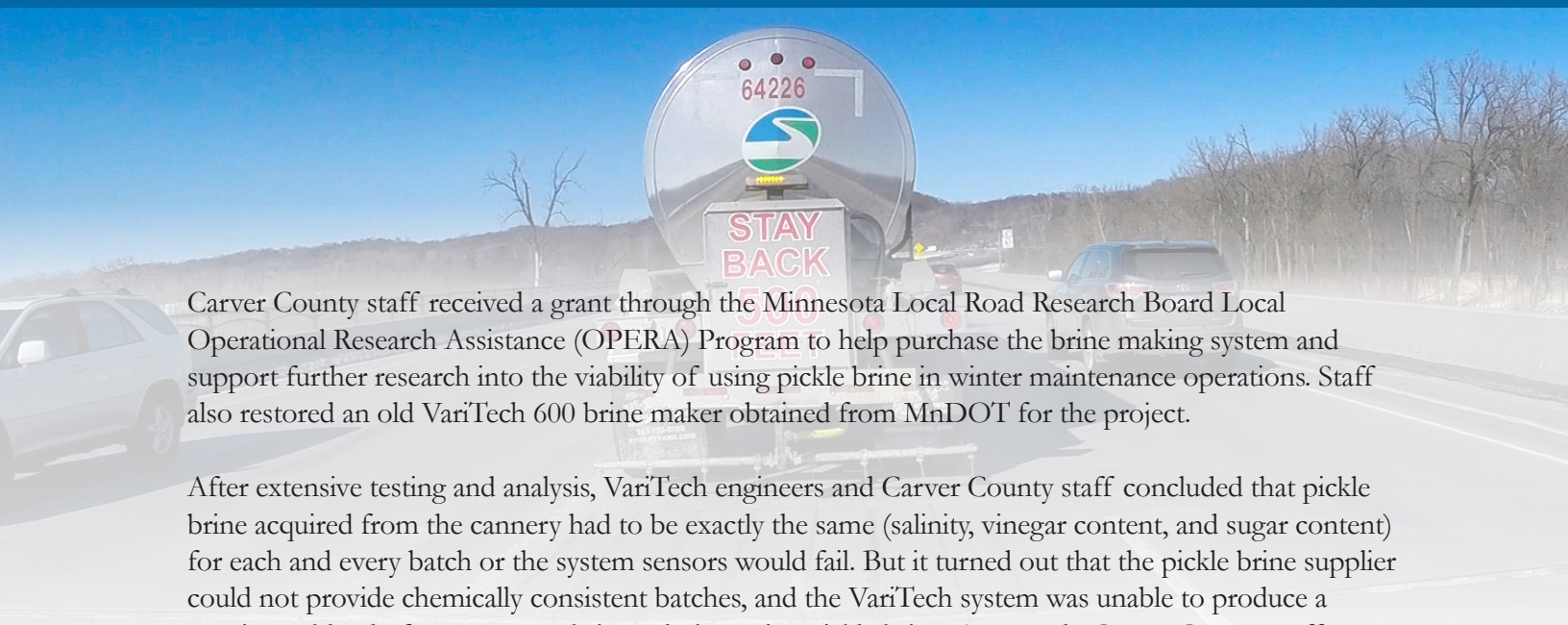
612-968-9775

### OPERA Funding

\$20,000







Carver County staff received a grant through the Minnesota Local Road Research Board Local Operational Research Assistance (OPERA) Program to help purchase the brine making system and support further research into the viability of using pickle brine in winter maintenance operations. Staff also restored an old VariTech 600 brine maker obtained from MnDOT for the project.

After extensive testing and analysis, VariTech engineers and Carver County staff concluded that pickle brine acquired from the cannery had to be exactly the same (salinity, vinegar content, and sugar content) for each and every batch or the system sensors would fail. But it turned out that the pickle brine supplier could not provide chemically consistent batches, and the VariTech system was unable to produce a consistent blend of 23.3 percent brine solution using pickle brine. As a result, Carver County staff determined they were unable to continue using pickle brine for snow and ice control.

Nevertheless, this project benefits other agencies considering the use of food production byproducts. The Carver County project demonstrates that there can be an alternative anti-icing product. As technology continues to advance, Carver County may revisit the use of pickle brine as a viable snow- and ice-control option.

The Local Operational Research Assistance (OPERA) Program encourages maintenance employees from all cities and counties to get involved in operational, “hands-on” research. OPERA helps to develop innovations in the construction and maintenance operations of local government transportation organizations and share those ideas statewide.

**Prepared by:**

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