



IMPLEMENTATION SUMMARY

Questions?

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PROJECT COST:

\$134,967



Some landowners are interested in using snow fences that are visually appealing or provide wildlife habitat.

Putting Research Into Practice: Expanding Alternative Snow Control Through Landowner Engagement

What Was the Need?

Minnesota spends close to \$100 million annually on equipment and maintenance, deicing material and labor to clear snow and ice from the roads. Preventing or decreasing blowing and drifting snow from obscuring the roadway in known problem areas has multiple benefits. In addition to improved safety and cost savings from the decrease in required winter maintenance, alternative snow control measures diminish the costs of lost travel time and enhance environmental benefits as a result of decreased vehicle emissions and the elimination of salt and chemicals entering the ecosystem.

[Previous research](#) identified the costs and benefits of snow fences to control blowing and drifting snow, with benefits far outweighing costs. Some fences are structural, constructed from metal, plastic or wood. Other fences are living (created by planting shrubs and trees) or vegetative (commonly formed by rows of cornstalks left standing after harvest).

A MnDOT program provides financial incentives to property owners to implement snow fences, which are generally built or grown and maintained by private landowners. Yet some owners remain reluctant or unaware of the program and its benefits. There are inconveniences—real and perceived—of installing, maintaining and farming around snow fences. MnDOT would like to improve communication with landowners regarding fences and ultimately increase their use.

What Was Our Goal?

Leveraging previous work, this project aimed to refine tools and methods to facilitate landowner and public engagement toward increased adoption of snow fences to address blowing and drifting snow problems.

What Did We Implement?

Because of the clear and compelling benefits of snow fences, MnDOT has put significant, ongoing effort into facilitating their use. In previous MnDOT studies, researchers developed a [tool](#) to calculate landowner compensation for installing fences and also created an outreach program that MnDOT district offices could use.

Most recently, MnDOT sponsored a [study](#) to understand landowners' knowledge of snow fences, their attitudes toward implementing this alternative snow control measure and their practices using snow fences. The current project takes the next step to encourage the adoption of snow fences through direct engagement with landowners.

How Did We Do It?

Researchers conducted a series of activities aimed at tracking snow fence use and better understanding landowner attitudes and beliefs regarding this alternative snow control measure. They first prepared 30 case studies of property owners who currently use snow fences, interviewing these owners to better understand their motivations and experiences. Case studies represented geographically diverse areas and a range of fence types and practices.

Some landowners maintain snow fences to control blowing snow, decreasing the resources MnDOT spends on winter maintenance. This project provides new information and updated tools to encourage more landowners to adopt this alternative snow control method.

“This work builds on our previous snow fence efforts by providing a more in-depth understanding of landowner motivations and concerns. MnDOT can facilitate greater adoption of this alternative snow control strategy, saving the resources we would otherwise use to clear snow and ice.”

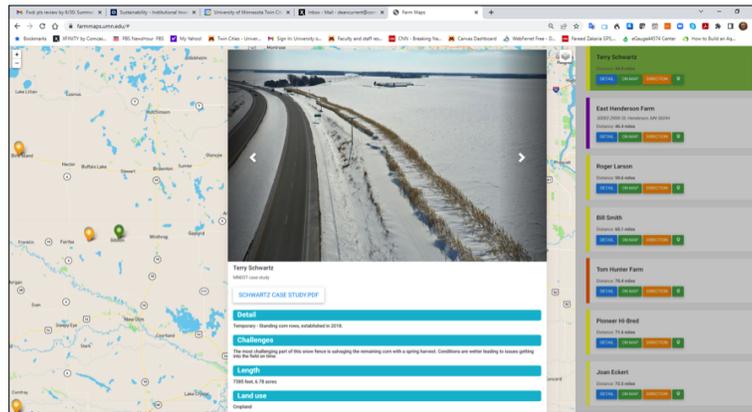
—Daniel Gullickson,
Blowing Snow Control
Supervisor, MnDOT Living
Snow Fences Program

“Building on what we have learned through previous projects, we’ve made tools and training more effective for MnDOT’s snow control program to increase the promotion, adoption and documentation of snow fences.”

—Dean Current,
Director, University
of Minnesota Center
for Integrated Natural
Resources and
Agricultural Management

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The Farmmaps tool allows landowners to share details about snow fences, such as the type of fence, length and challenges.

Next, the team adapted an existing database tool to include snow fences. Farmmaps, an online resource designed to track soil health and conservation practices, contains a public interface that allows anyone to share techniques and access information. The team also made improvements to SFMap, the online snow fence inventory database and reporting tool previously developed for MnDOT.

Finally, researchers consolidated and modified existing curricula for training MnDOT staff to work with landowners in promoting snow control measures. They also held a limited number of training sessions.

What Was the Impact?

Researchers gathered information that enabled them to expand data sets and improve tools to help MnDOT increase landowner adoption of snow fences to control blowing snow. In general, researchers found that the majority of early adopters have had positive experiences with the program. Several conclusions were drawn from these interviews:

- Most landowners learned of the snow fence program through a MnDOT employee, though many farmers and community members remain unaware of the program.
- The biggest motivator for building or growing and maintaining a fence was public safety or civic duty, followed by financial incentives. Conservation was not a strong motivator for most interviewees, though some were interested in environmental benefits.
- While there have been some increases in costs to maintain snow fences, mainly through labor or decreased crop yields, most landowners felt costs were not prohibitive and they received fair compensation from MnDOT.

The Farmmaps tool was amended to include a variety of operational details on the snow fences identified in the 30 case studies. Additionally, researchers expanded the database and added functionality to SFMap to include truck stations and district boundaries to allow MnDOT to better document and monitor snow fence practices.

Case study observations were used to refine the training materials for MnDOT district staff. While the number of planned training sessions was reduced due to COVID-19 restrictions, researchers did hold two online training sessions, which allowed them to reach a broader audience than in-person trainings.

What’s Next?

Using the tools developed in this project, MnDOT’s snow control staff members will continue reaching out to landowners and communities to increase adoption of snow fences. Further, they will expand entries in the SFMap tool and incorporate it into the agency’s transportation asset management system.

This Implementation Summary pertains to Report 2022-14, “Promoting the Adoption of Snow Fences Through Landowner Engagement,” published May 2022. The full report can be accessed at mndot.gov/research/reports/2022/202214.pdf.