Chittenden County's Road Salt Story

Authors:

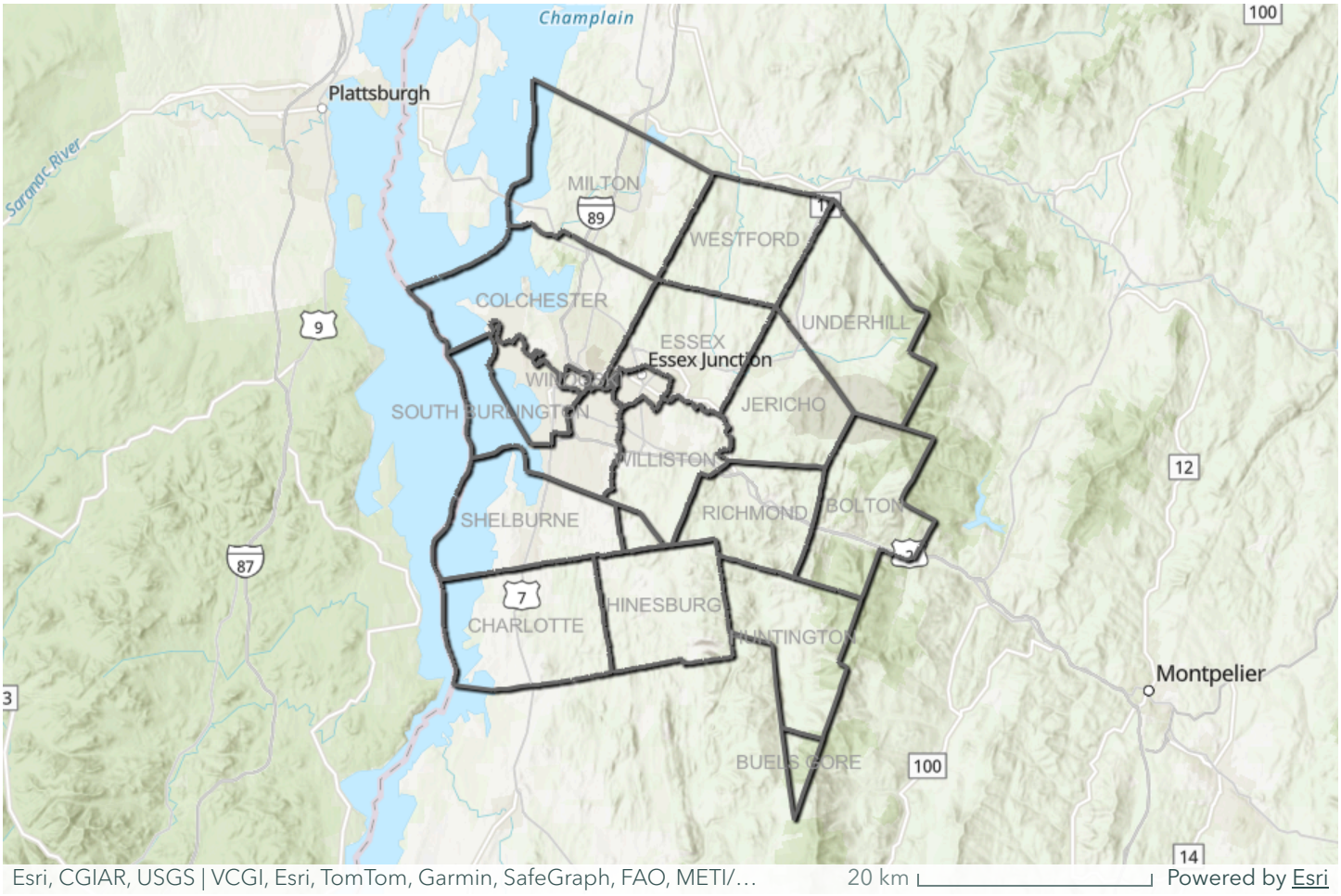
Kris Stepenuck - Lake Champlain Sea Grant:
kstepnu@uvm.edu

Dana Allen - FluidState Consulting:
dana@fluidstateconsulting.com

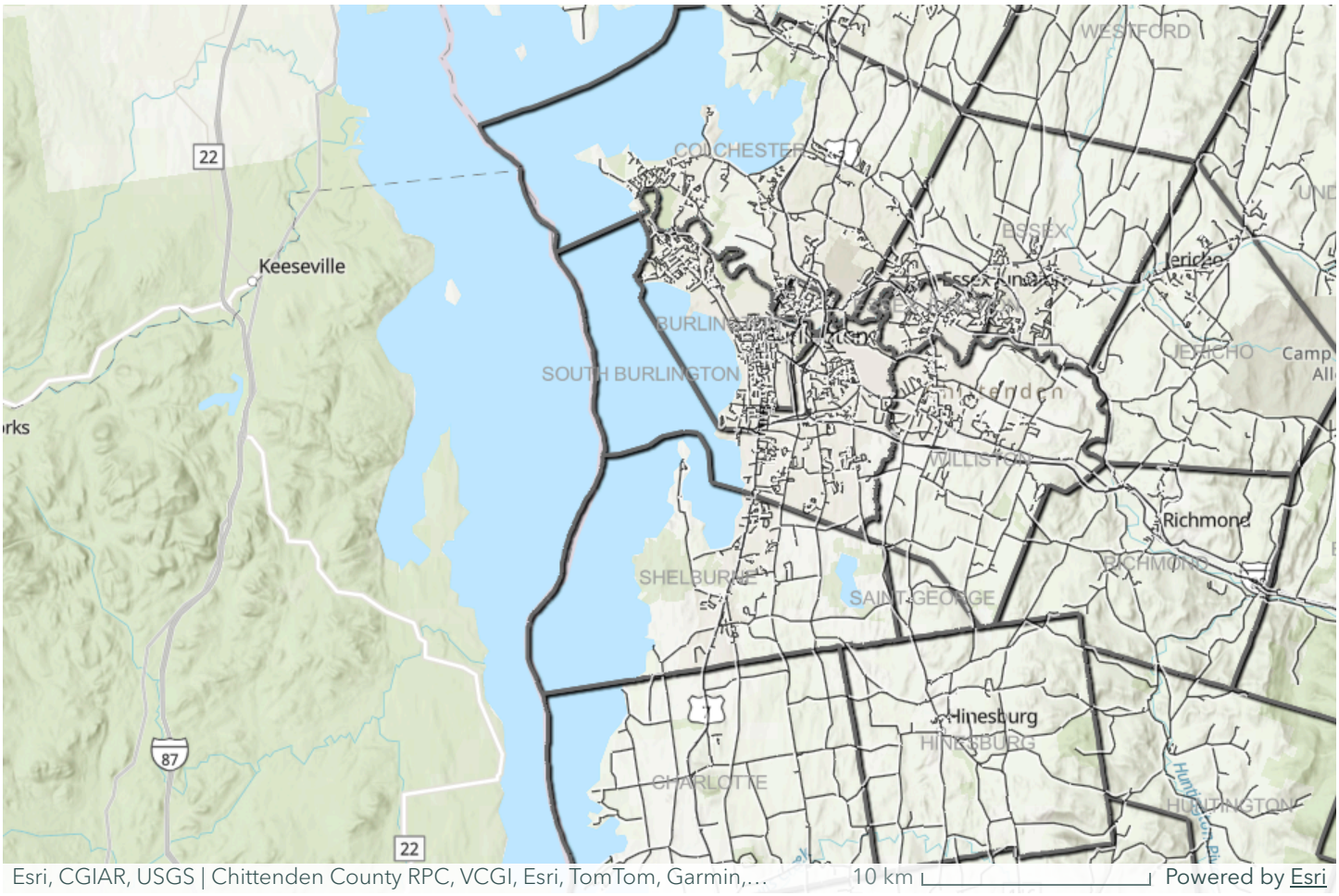
This project was funded through a grant from Vermont's Lintilhac Foundation.

During this project we talked with highway foremen in Chittenden County to understand how road salt (sodium

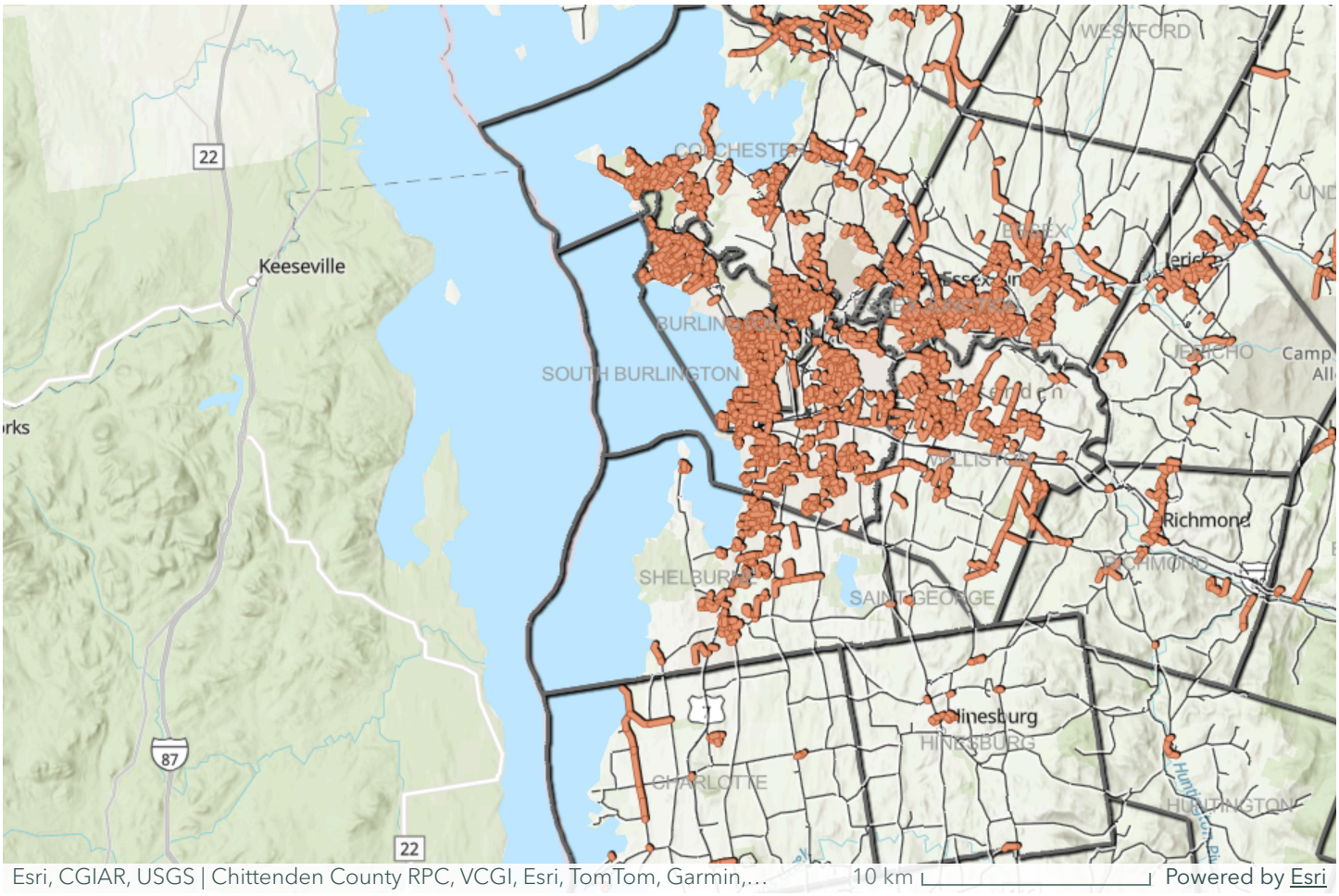
chloride) and other products are used to maintain public safety in winter and to inform future outreach.



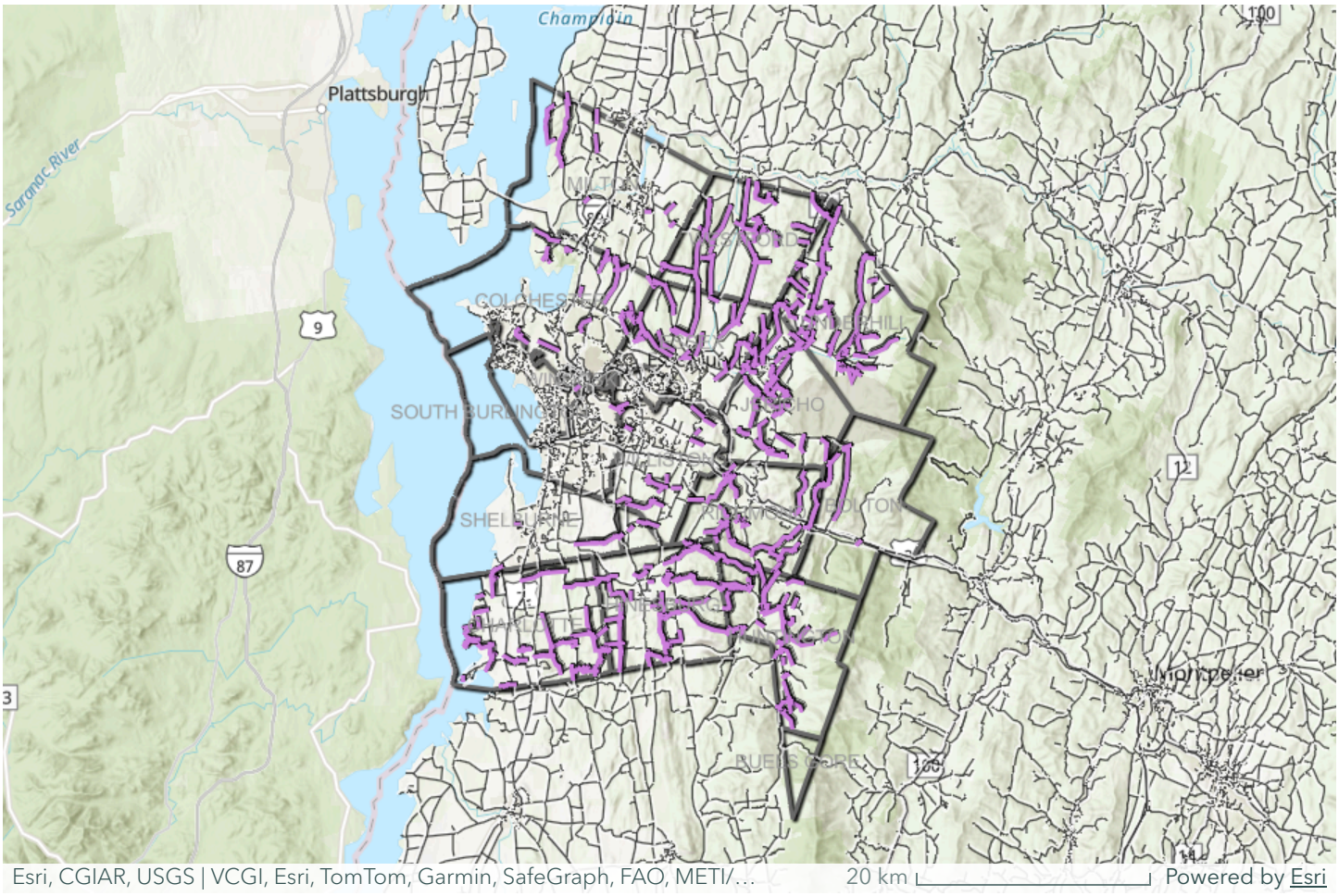
Communities in Chittenden County maintain many types of surfaces in the winter.



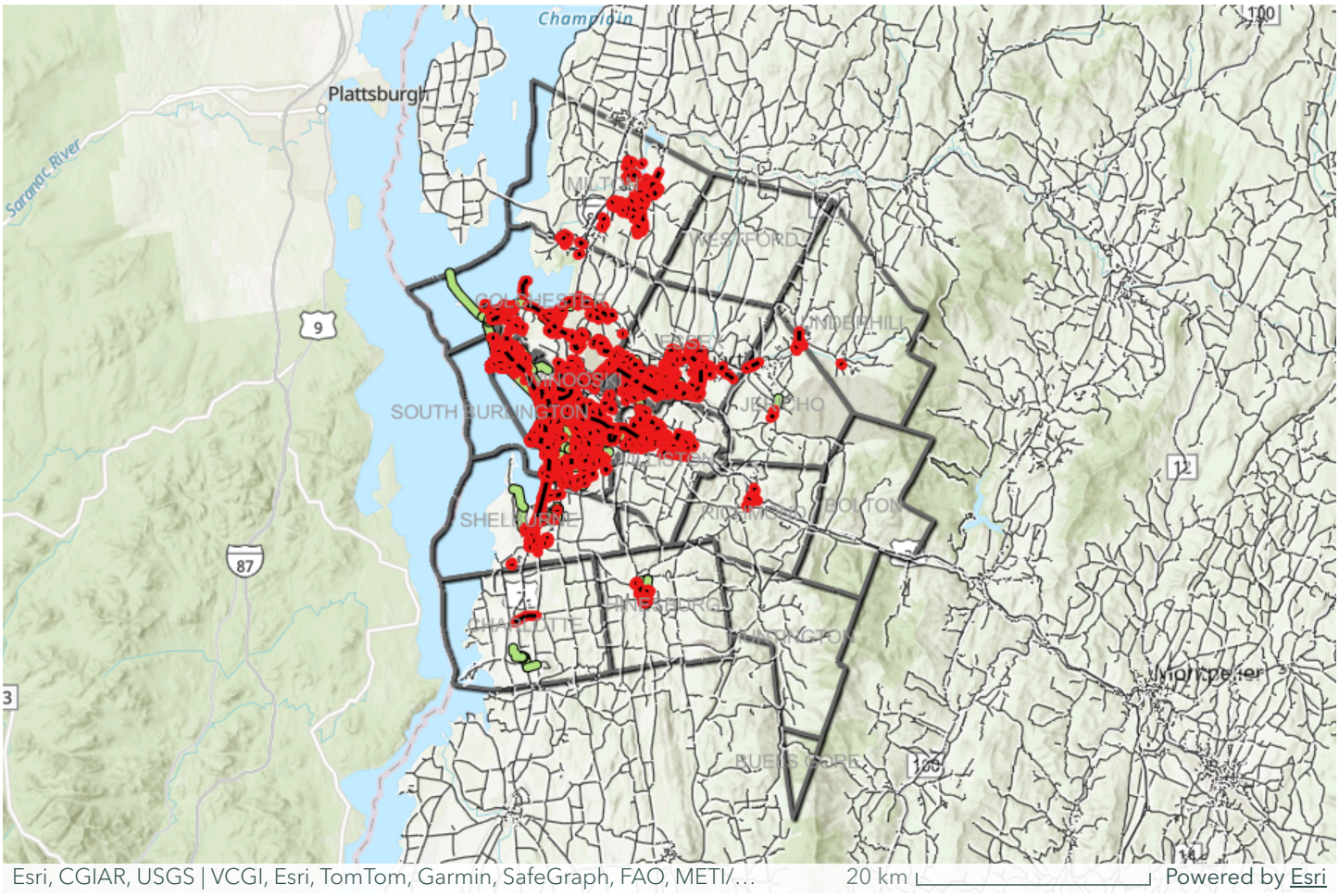
Chittenden County contains approximately 1,240 miles of roads - some of which are maintained by the State and some are maintained by municipalities.



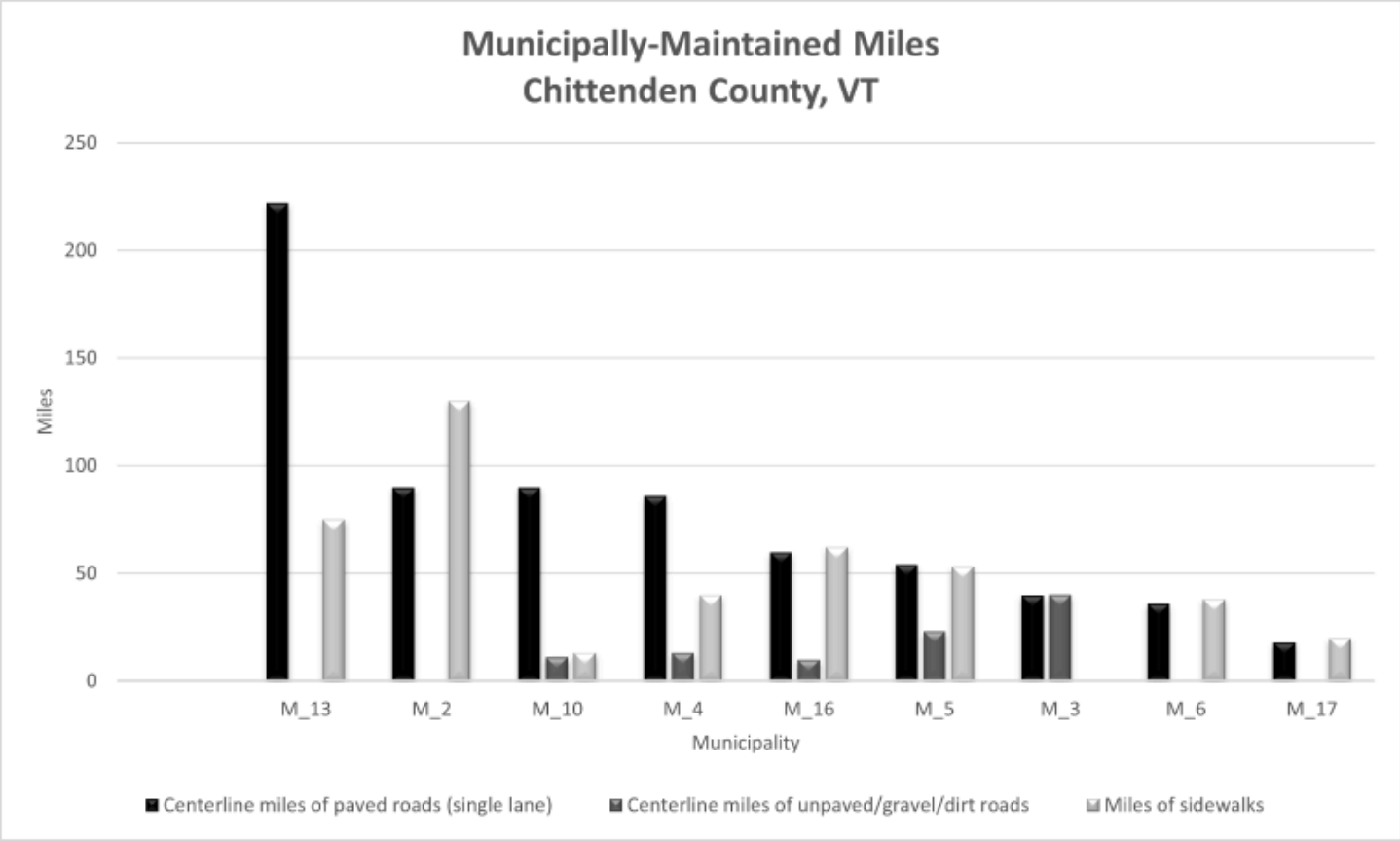
Municipalities maintain approximately 740 miles of paved roads in Chittenden County (derived from annual VTrans Mileage Certification Data).



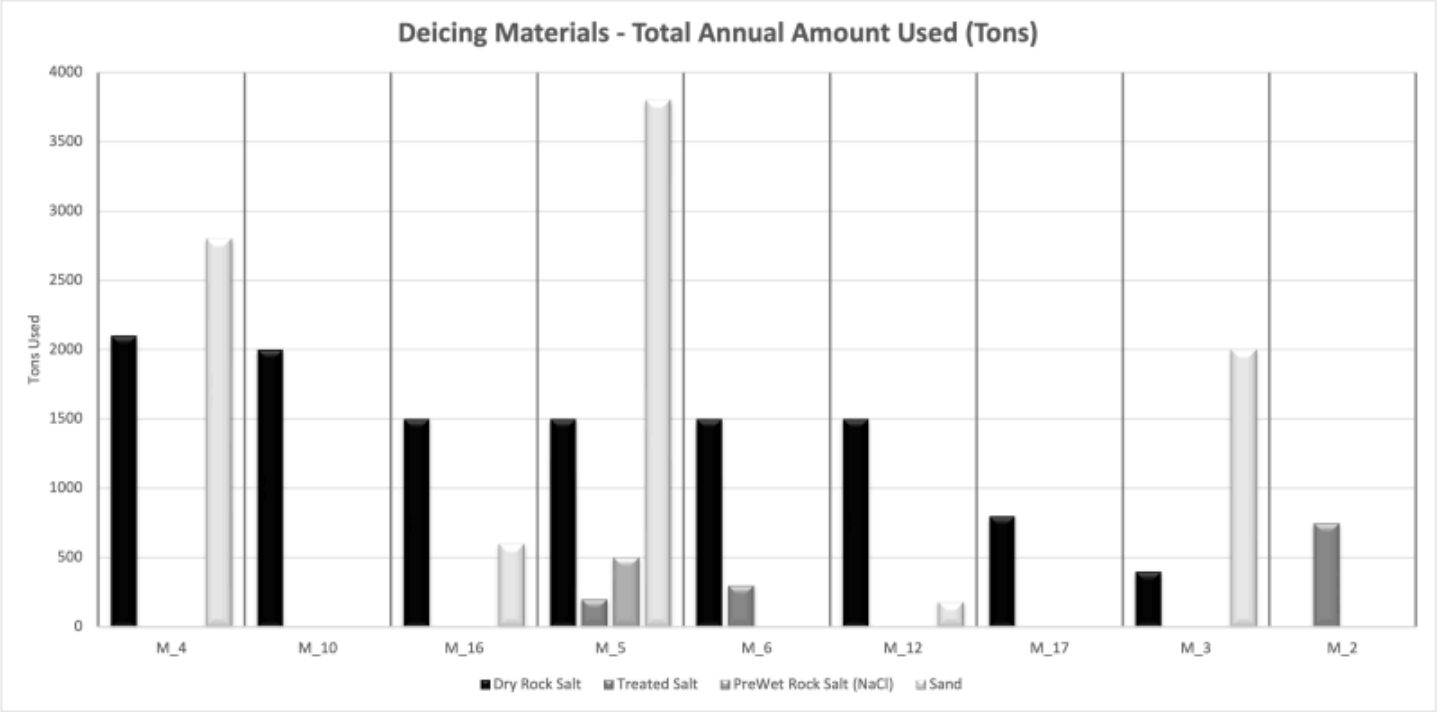
During winter, gravel roads are sanded, not salted, to provide traction.



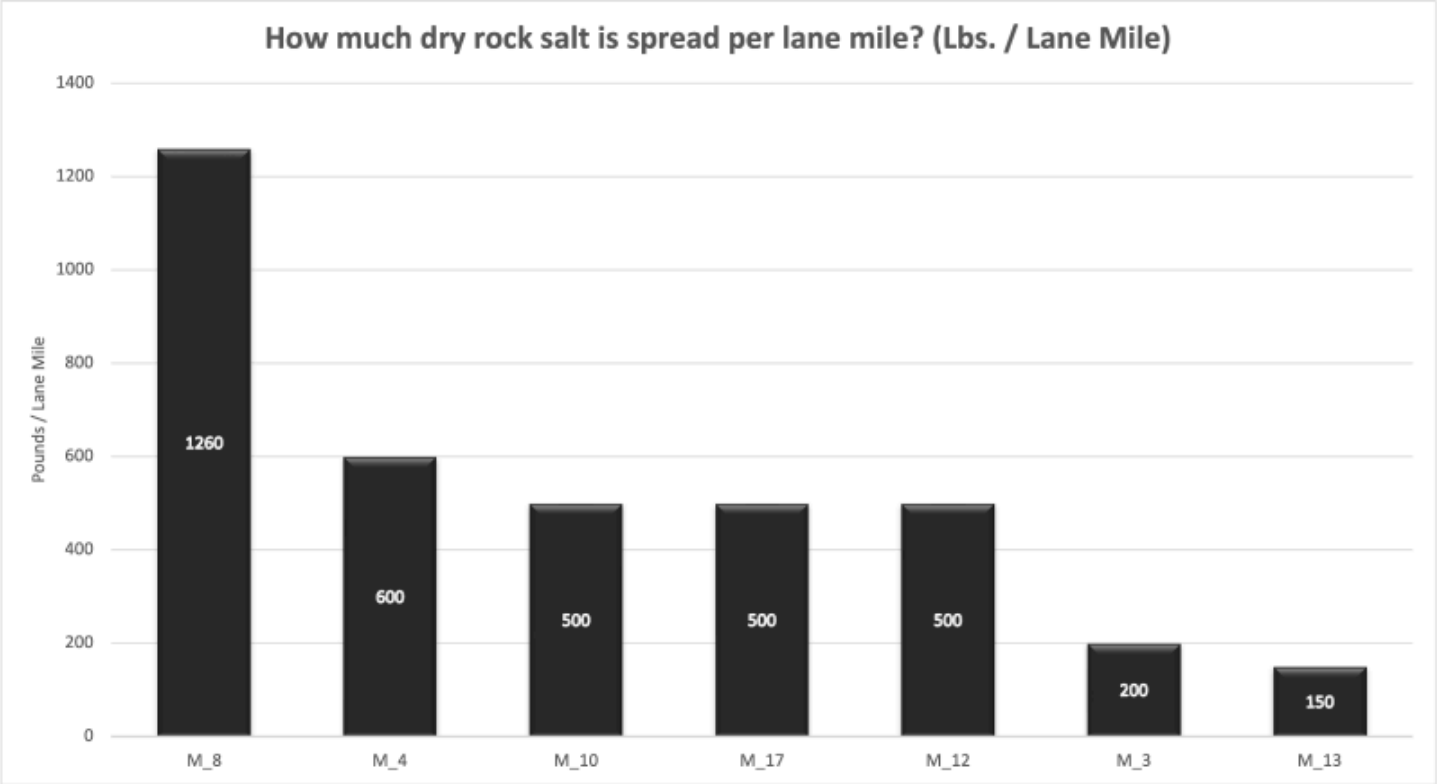
Communities also maintain sidewalks, some bike paths, as well as some shared-use (bike and pedestrian) paths in the winter. In Chittenden County there are approximately 587 miles of sidewalks, 53 miles of bike paths, and 109 miles of shared use paths (according to data provided by Chittenden County Regional Planning Commission).



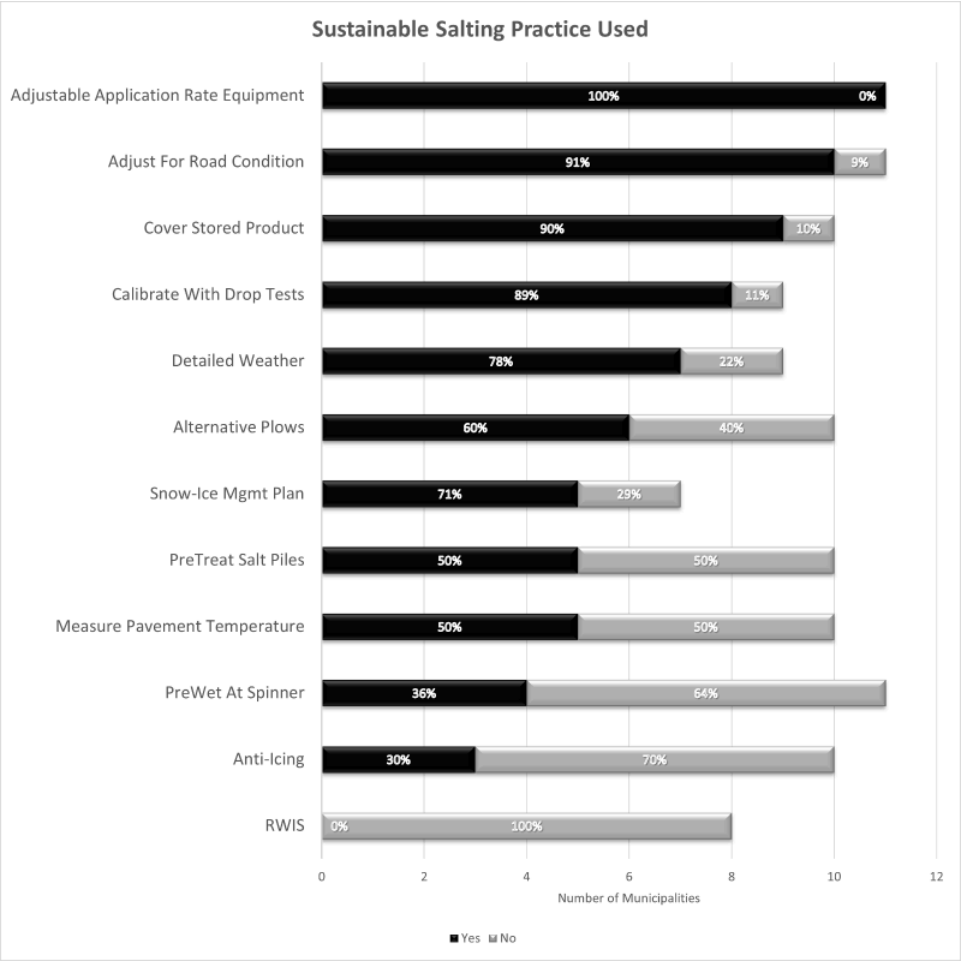
We interviewed highway foremen from 11 communities. They reported maintaining between 12 and 222 miles of paved roads.



Communities used between 400 and 2,100 tons of road salt per year, with an average of 1,350 tons of salt used per year (n = 8).

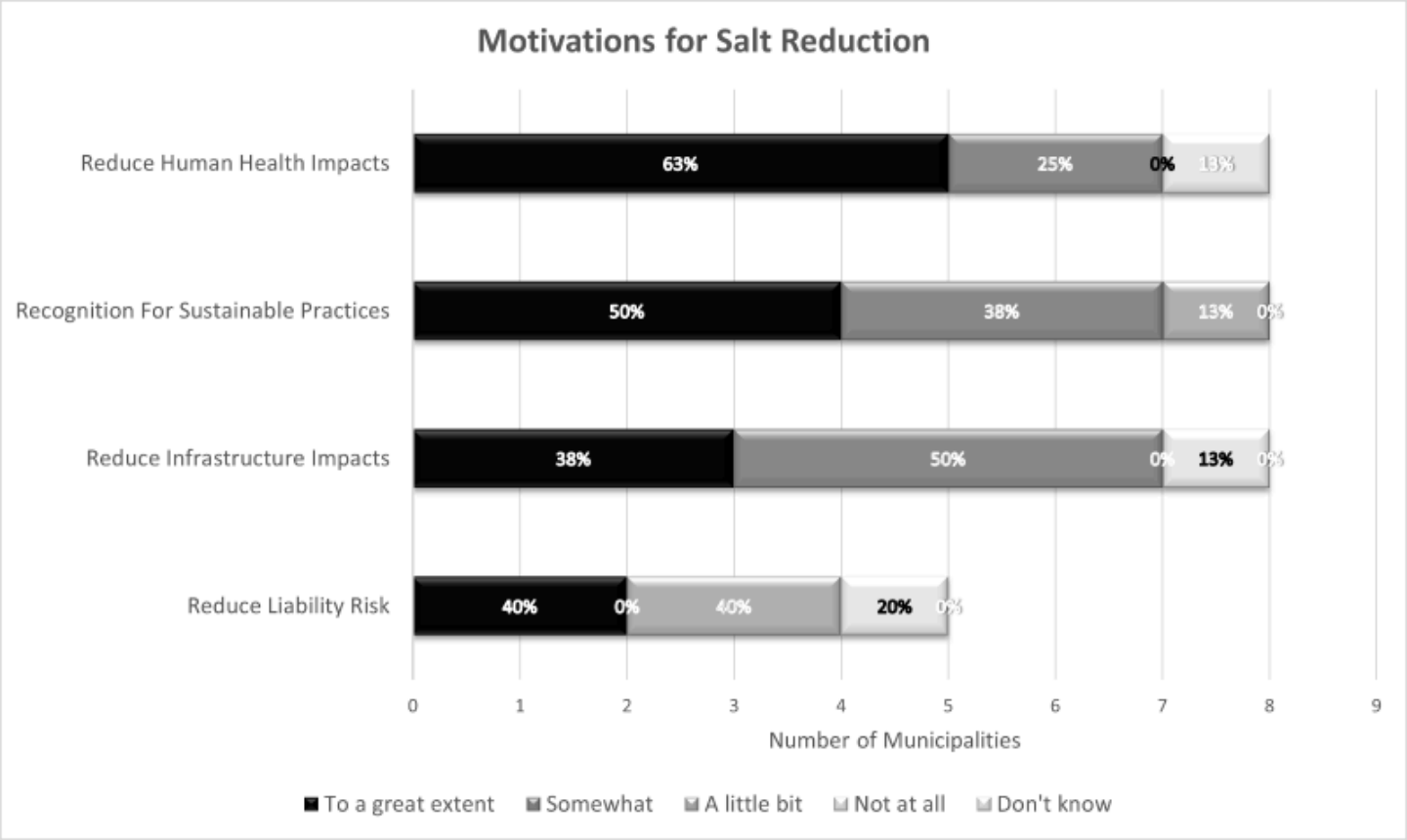


Communities salted at rates that ranged from 150 lbs/lane mile to more than 1200 lbs/lane mile. Most communities did not salt their sidewalks. As such, the communities used an average of 17 tons of salt/mile on their roads each year.

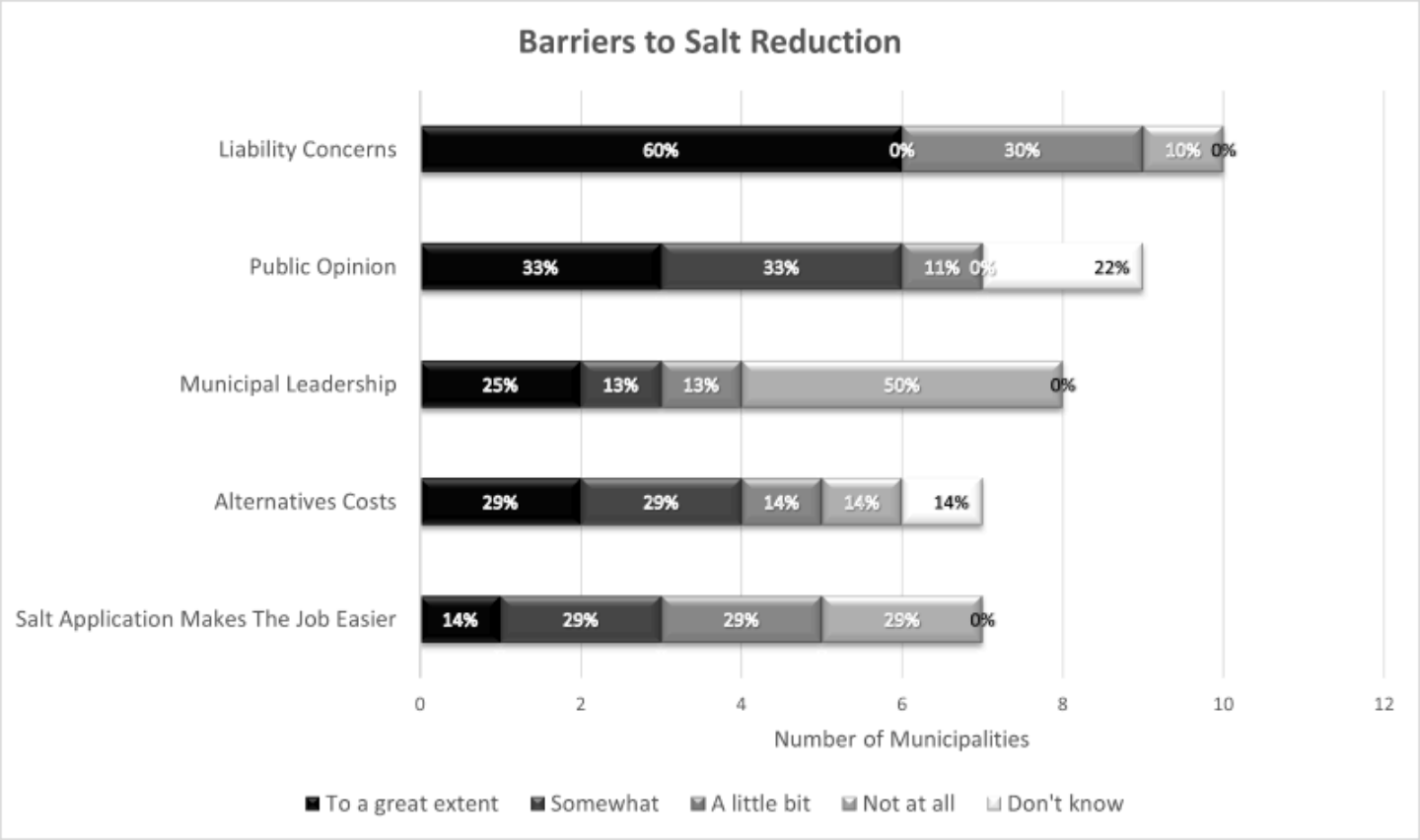


All communities used equipment with adjustable rates, and all except one adjusted rates of salt distribution based on road conditions.

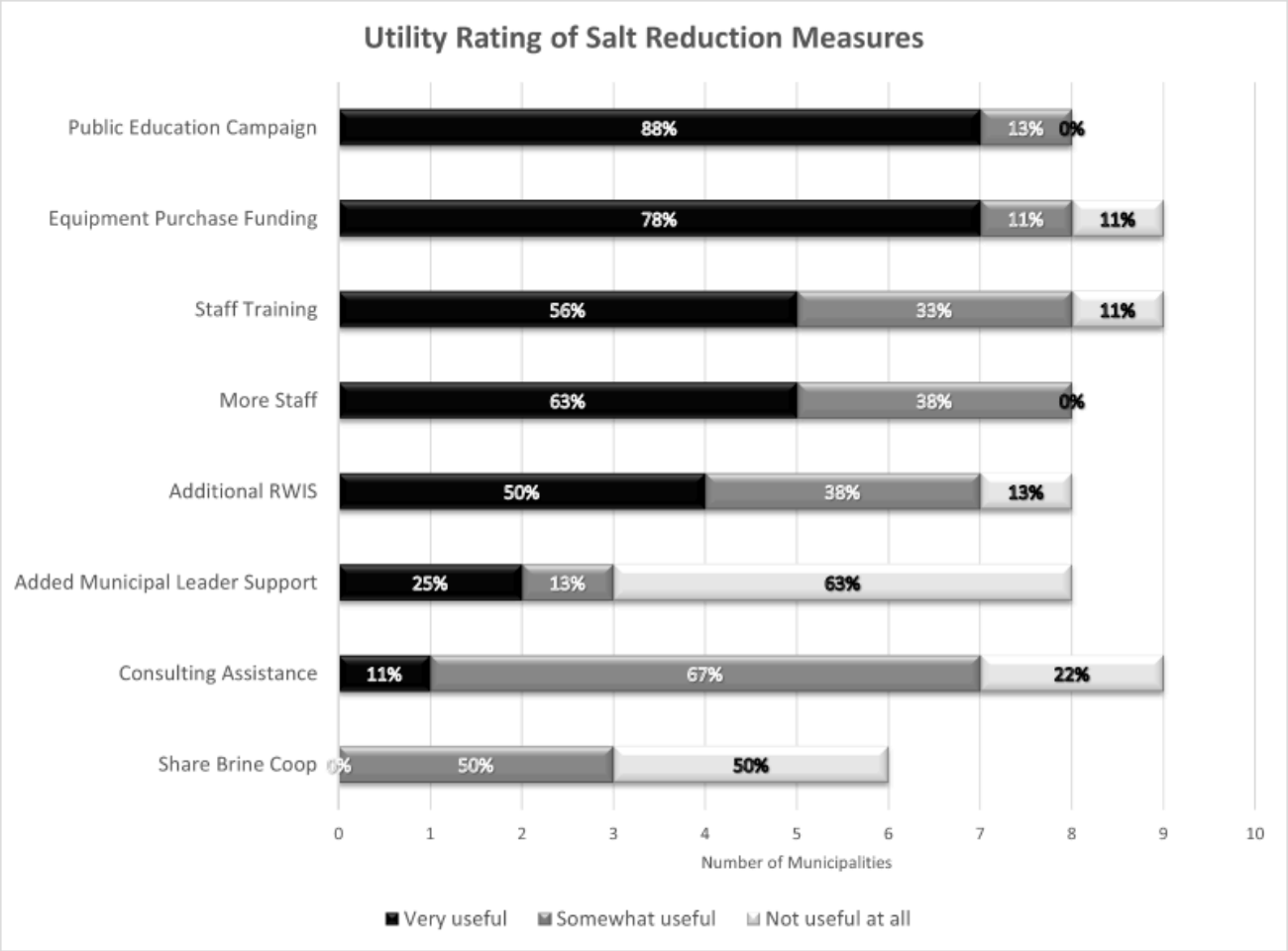
No municipalities used a Road Weather Information Station (RWIS) to monitor road conditions. RWIS provide real-time site-specific information about conditions at a site using cameras, and air and pavement temperature sensors.



The road foremen were asked the extent to which a variety of possible things were motivations for their community to reduce use of road salt. The greatest motivation to reduce salt use was to reduce human health impacts.



The road foremen were asked the extent to which a variety of possible things were barriers to their community implementing more sustainable salt practices. The most common barrier to reducing salt use was liability concerns.



The road foremen were asked how useful a variety of possible things would be to help their municipality implement reduced salt practices. The most useful of the options suggested to them was a public education campaign to help change expectations about how much salt should be used during snow and ice management.

The 63% of road foremen who said that municipal leader support was "not useful" were indicating that they already had such support.

Key Findings:

During the interviews, the highway foremen shared reasoning for their motivations and barriers to using sustainable road salting practices. They also shared how useful a variety of possible actions could be to aid their communities in further implementing sustainable salting practices.

We identified five key factors that influenced adoption of sustainable salting practices by Chittenden County communities. These represent both opportunities and realizations about the current use of sustainable practices.

1. Maintaining Public Safety is Paramount

Some respondents **emphasized tha**t **safety must remain the top priority**.

Of 10 respondents, liability concerns were the most commonly identified barrier to reducing salt use (60% of respondents indicated it was a significant barrier). **Sharing of success stories and best practices** across communities and businesses that have adopted sustainable practices is one way to begin to address concerns that sustainable practices may reduce level of service.

Lake Champlain Sea Grant developed videos to share best practices municipalities in the Lake Champlain Basin are using that have helped them reduce use of salt.

Visit Sea Grant's Website for Salt Savvy Tips for Municipal Snow Fighters

Visit Sea Grant's Website for Salt Savvy Tips and Resources for Private Contractors

2. Public Education is Needed

Not only was the importance of maintaining public safety apparent across the communities, but the influence of public opinion on the work of road crews was evident. 21% of road foremen indicated it was a barrier 'To a great extent' and 38% indicated it was 'Somewhat' of a barrier. When asked to consider actions that might help their community to reduce road salt use in winter, the road foremen most commonly expressed support for a public education campaign to modify people's expectations of roads and other surfaces in winter. Eighty-eight percent felt such a campaign would be very useful.

3. Funding for Technology and Equipment is Needed

> *"Economically viable alternative that's readily available."*

The road foremen recognized that using new technologies could help them reduce use of road salt. They expressed **strong support for obtaining funding** that would allow them to purchase updated equipment that incorporates use of new technologies. **Seventy-eight percent** indicated such funding would be very useful.

Technologies such as **segmented** and secondary plows, **air-ground temperature sensors** and **pre-wetting salt at the spinner** can help highway crews reduce use of salt. These tools allow them to clean surfaces better, apply salt only when and where it is needed, and keep salt in the places it is intended to be to reduce ice formation.

Salt savings achieved through adoption of such sustainable practices can be significant enough that communities can begin saving money not long after making initial investment costs. Watch this video (at right) from Hyde Park, VT, for a local example of using such technologies to reduce use of salt.

How to make and use salt brine - Hyde Park, VT

In addition, by minimizing damage caused by salt to local infrastructure like bridges, communities reduce future clean up and restoration costs.

4. Support of Leaders is Important

Six of nine of the highway foremen indicated that their municipal leaders were very supportive of implementing sustainable salting practices. Only two indicated that it would

be very useful to have municipal leader support, while one indicated it would be somewhat useful. The remaining five Chittenden County communities declined or did not respond to requests to be interviewed, so municipal support levels in those communities are unknown.

5. More Staff and Training are Needed

> *"...need employees to understand that they can use less salt when they are scraping the road better."*

Not only was there a need for additional staff to share the snow and ice management workload (several of the communities were understaffed at the time of the interviews), but there was a clear call for employee training and awareness programs.

The finding of such strong support of municipal leaders to reduce salt use suggests that highway crew training will be an important component of an educational program to promote further adoption of sustainable salt practices in the responding communities. This is because those crews are empowered to make sustainable salting decisions for their communities. In non-responding communities, education of both highway crews and municipal leaders may be beneficial to ensure broad understanding of sustainable practices and ability to maintain public safety while also reducing salt use. As a next step, a **series of Sustainable Salting Practices fact sheets** was developed. These introduce sustainable salting practices that communities and private contractors can employ.

Each of those sheets can also be accessed and downloaded using the tabs at the top of this page - click the header for the sheet of your choice.

For more information visit the Lake Champlain SeaGrant website:

Salt Savvy Champlain

Lake Champlain Sea Grant (2025)

https://www.uvm.edu/seagrant/home