

Salt Symposium 2024

Minimizing Salt Use Through Technology

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Speaker Background

I grew up in a gravel pit surrounded by a stockpile of sand and gravel, as well as equipment of all sorts, so it seemed natural for me to seek my first job at the local highway department. There, I rose through the ranks and eventually became the Highway Commissioner, a position I held for 24 years. During that time, I was also a paid-on-call firefighter and paramedic, retiring from that position in 1998. I left my elected position in 2017 to work as a consultant to other Highway Commissioners. In 2021, I became Interim Public Works Director in North Chicago, Illinois.

It's safe to say that much has changed in the over 50 years that I have been in public works.

Winter Road Maintenance



- ❖ Use of road salt to achieve bare pavement causing harm to the environment
- ❖ Progress and advancements in technology is changing the landscape of winter road maintenance

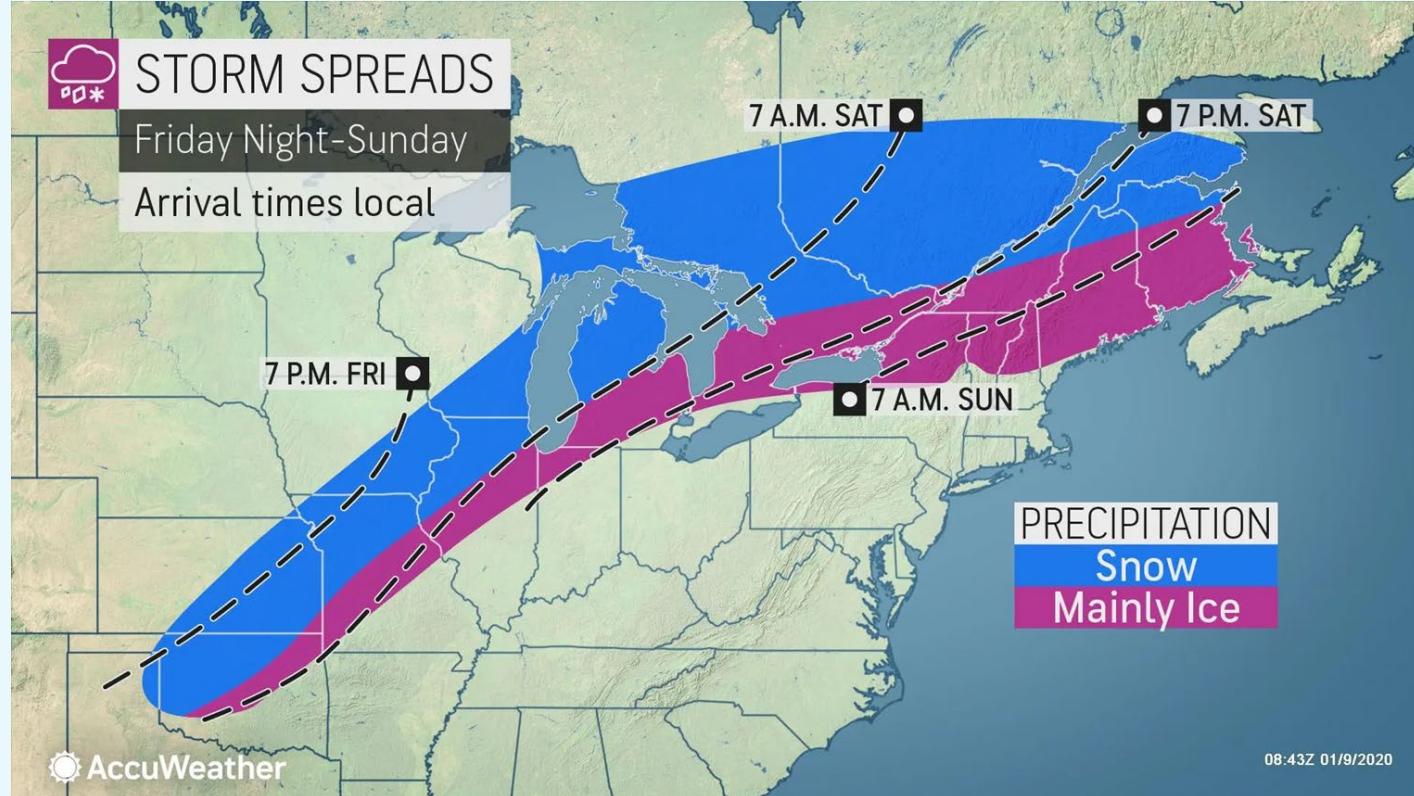


- ❖ Minimizing the use of road salt through the use of various liquids
- ❖ Minimizing the use of road salt through the use of tools and technology



Technology and Tools

- ❖ Mother nature is unpredictable
- ❖ Advancements in radar and other technology to assist with weather monitoring



Mini RWIS

- ❖ Solar powered, personalized, mini weather station, featuring real-time data as well as visual picture



What's a Mini RWIS?



- ❖ Modular towers with weather sensors
- ❖ Often invasive to roads/roadsides
- ❖ Often requires frequent calibration
- ❖ Typically \$100k+



- ❖ Self-install in 15 minutes on any pole
- ❖ Non-invasive and self-powered (no wires needed)
- ❖ No calibration needed
- ❖ Affordable lease pricing

Mini-Weather Station

(Mini-RWIS)



Weather Data

- ❖ Captured every minute
 - Pavement temperature
 - Air temperature
 - Relative humidity
 - Dew Point

❖ Current + Forecasted Conditions

- ❖ Full radar overlay
- ❖ Customized 72-hour forecast
- ❖ Pavement and condition forecast (dry, wet, packed snow, etc.)
- ❖ Grip/coefficient of friction

❖ Photos

- ❖ Photos and data uploaded regularly
- ❖ Photos and data also available on-demand

❖ Day + Night Vision Camera

- ❖ Wide-angle field of view
- ❖ Night vision from IR illuminator
- ❖ Lens defroster
- ❖ On-demand photo requests
- ❖ Photos stored for ~4 years

❖ Battery + Form Factor

- ❖ 4+ year lifetime
- ❖ Solar rechargeable battery or hard-wired versions available
- ❖ 50+ days of battery without sun
- ❖ Easy pole or wall mount
- ❖ Water and weatherproof

Air temp: 26°F

26.5°F

Grass, sun

20.2°F

2" underground

26.6°F

Concrete, shade

22.9°F

Grass, shade

30.7°F

Concrete, sun

37.2°F

Asphalt, sun

25.9°F

Asphalt, shade



Where Customers See ROI



Route Planning



Fuel Cost



De-Icing Materials

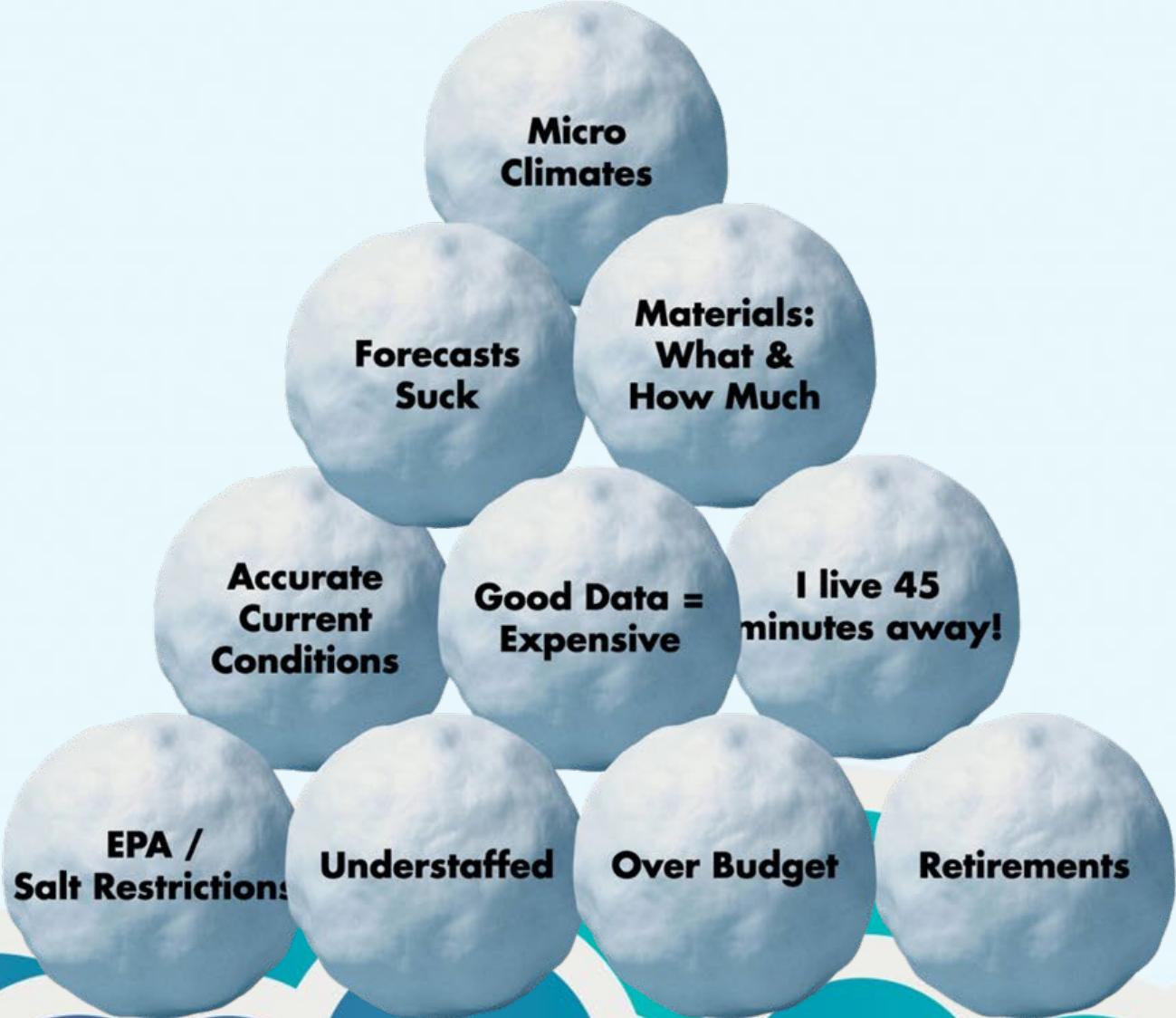


Labor Cost



**Slip-and-Fall
Liability**

Snow removal challenges keep piling up



Conclusion

Cities and villages are feeling pressured to get to black pavement as quickly as possible - and using more and more road salt to do so. Now more than ever, it is important to look to other tools and strategies that can be employed in our Winter Road Maintenance.