PACIFIC NORTHWEST SNOWFIGHTERS

In partnership with CLEAR ROADS

# Winter Maintenance Scenario Based Roundtable Exercise

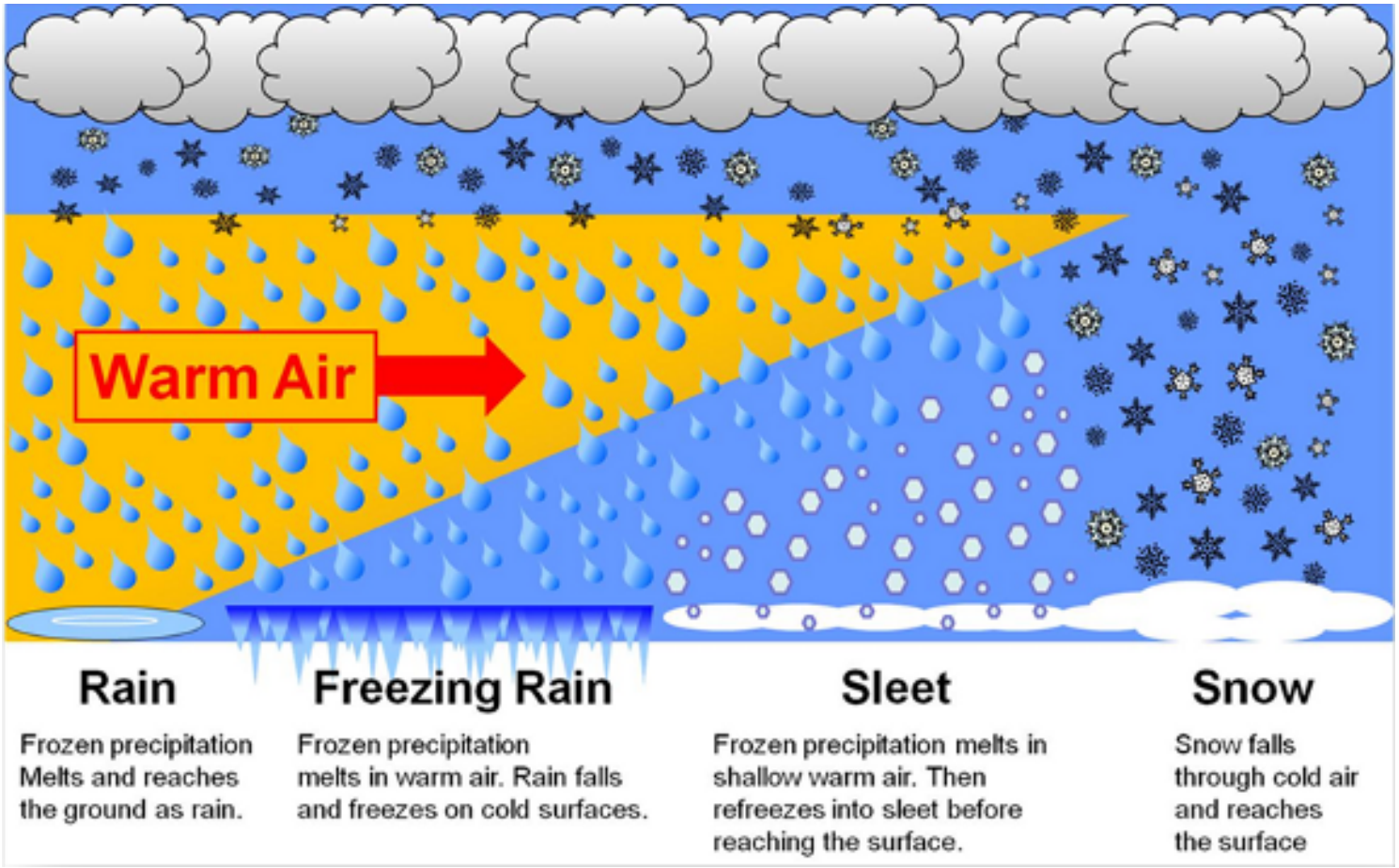
## Ice Storms

# Todays Agenda

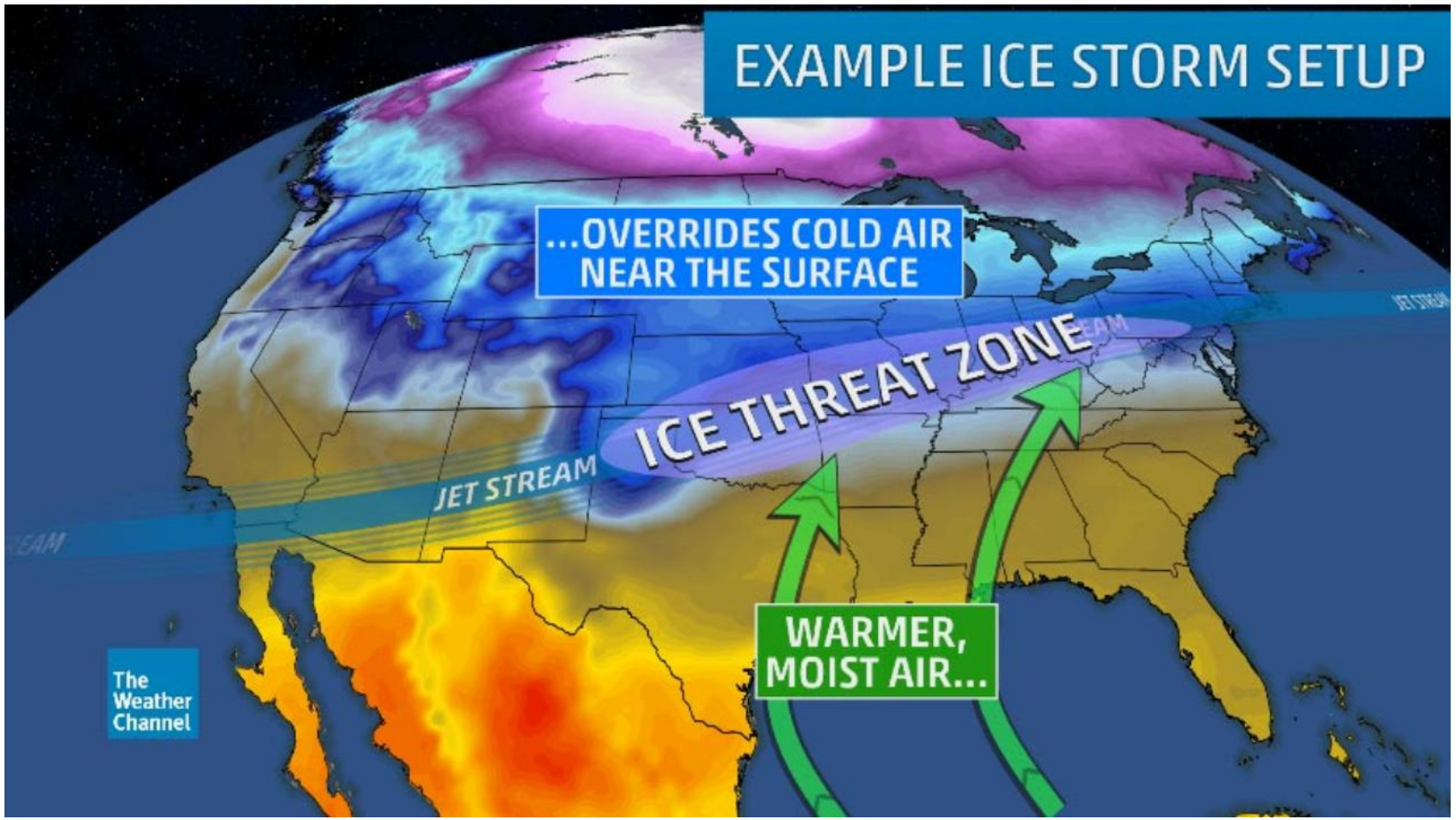
- How ice storms occur
- Typical ice storm situations
- Dealing with the issues
- Case studies
- What would you have done
- Sharing the results
- Changes the agencies implemented

# How ice storms occur

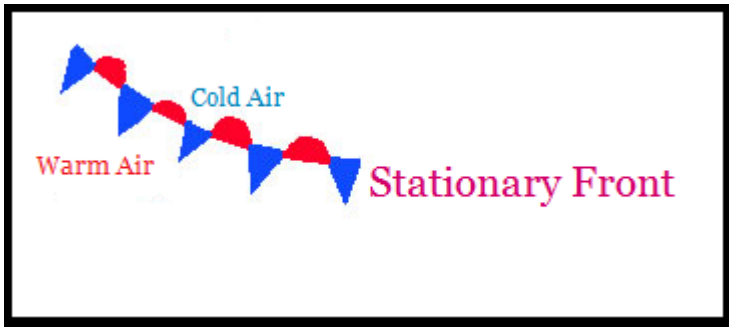
# Different types of precipitation

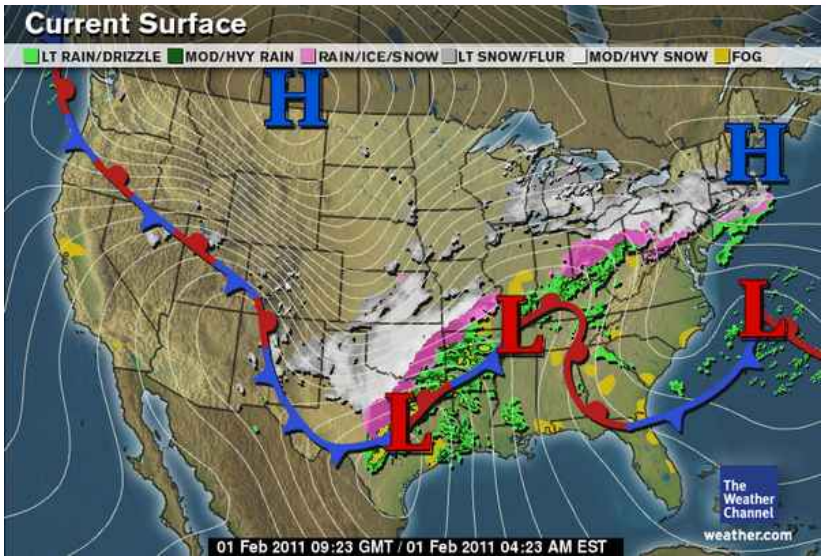


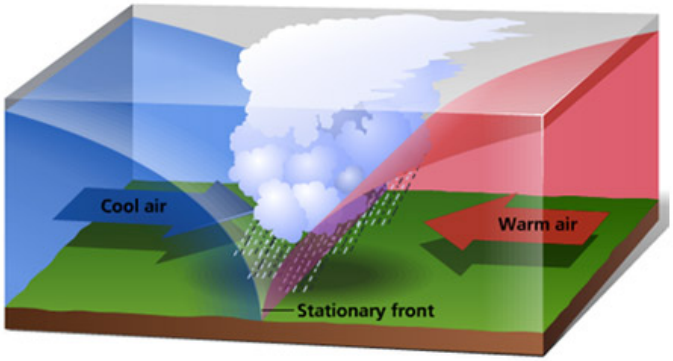
# The classic set up



# Stationary fronts in winter



# Typical ice storm situations

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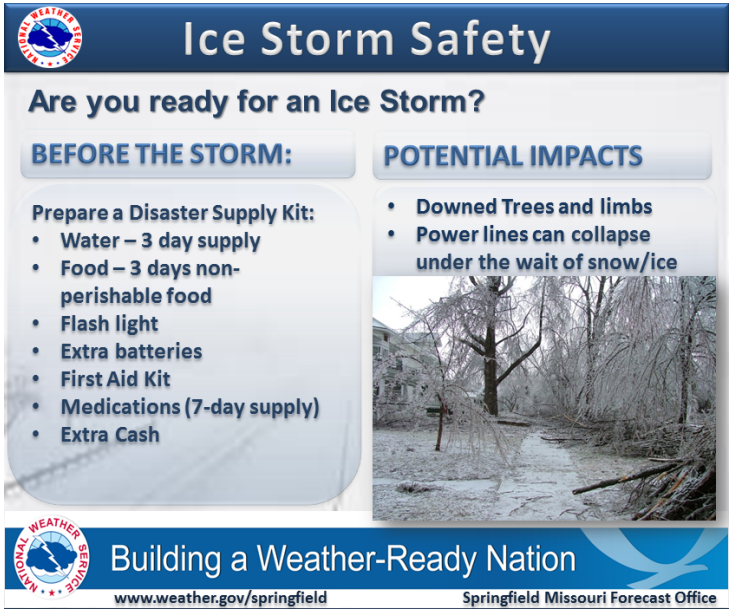


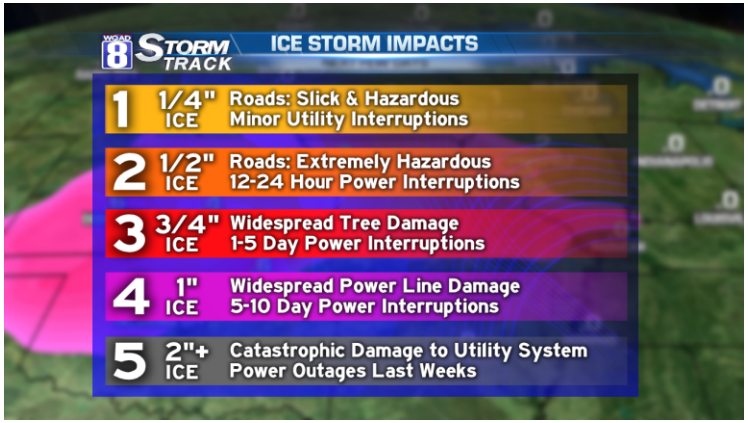

# Tree Damage

# Downed power lines and ice covered roadways

# They can be beautiful as well unless you have to deal with them

# Sharing Part One

Discuss in your groups for a few minutes your experiences with icing events and how you deal with the issues.

Then we will collect the data

# Dealing with the issues

# So how do you adjust to an ice storm?

- What materials will you use – what do you always have on hand?
- How will you adjust your crew?
- What warnings do you give the crews?
- How will you deal with trees down, power lines, barricades to close roads, media, police, emergencies etc.
- What are the biggest priorities?

# Case Studies

McHenry County, Illinois - The Night of Ice

Fairbanks Alaska - It isn't suppose to rain in January

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# WINTER 2013-2014

## 2014 Headlines!

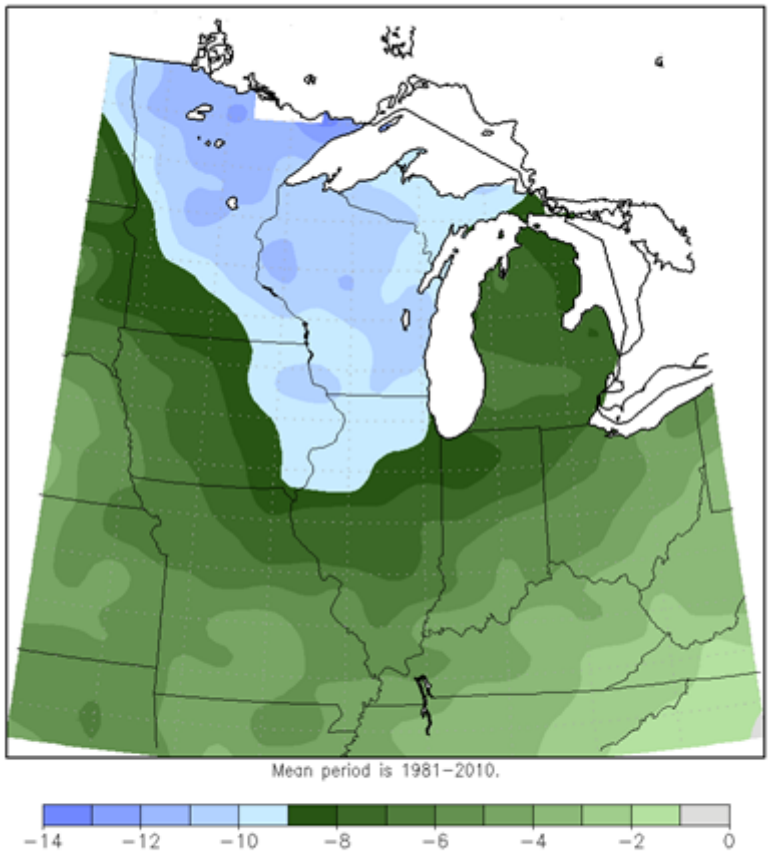
Salt supplies holding up, but winter costs are eating into summer maintenance budgets

Winter Storm Pax Update for South:
Power Slowly Returning to Thousands in Georgia, N.C. and S.C.

The Daily Show pounds Atlanta with fresh snark storm
Jon Stewart on Atlanta's "ice age doomsday zombie apocalypse"

Fast Facts:
- MDOT has used more than 440,000 tons of salt so far this winter, about 80 percent more than this time last year.
- MDOT is expecting to use more than 600,000 tons of salt this winter.
- MDOT expects to exceed its $88 million winter budget by $40 million.

# Winter 2013-2014-Polar Vortex




Average Temperature (˚F): Departure from Mean December 1, 2013 to February 28, 2014

Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana-Champaign

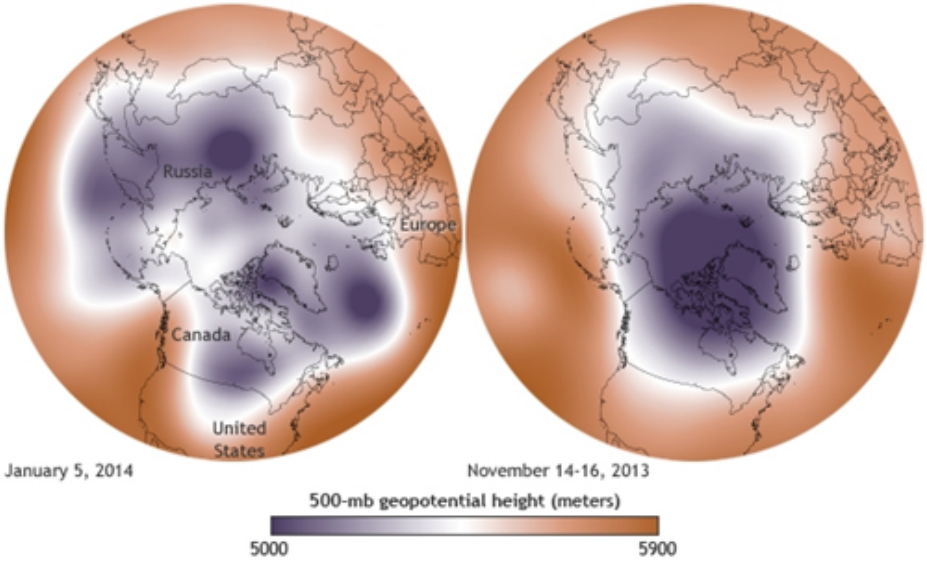



FIGURE 1


IMPACTS OF NEAR-RECORD GREAT LAKES ICE COVER
•REDUCED LAKE-EFFECT SNOWFALL
•LESS CLOUDS & EVAPORATION
•LOWER TEMPERATURES
•ICE JAMS
© Accuweather
AccuWeather.com
13:32Z 02/21/2014

Chicago and Lake Michigan. Another new term – Chiberia
Nearly 90% of the great Lakes were covered in ice

# 2014 CHICAGO AREA STATS

- MOST DAYS BELOW FREEZING EVER
- THIRD COLDEST WINTER EVER
- SECOND SNOWIEST WINTER EVER

# MCHENRY COUNTY 2014 STATS

- FOUR ICE STORMS
- DEC 8 TO MARCH 1 – 71 OF 76 DAYS WORKED
- NO WEEKENDS OF HOLIDAYS OFF
- 111 TIMES WE DISPATCHED TRUCKS (61 NORMAL)
- 15,004 TONS OF SALT (NORMAL 9,320)
- 675,400 GALLONS OF LIQUID USED
- ALMOST NO SNOW FENCE & WORST BLOWING EVER
- 70,000 GALLONS OF DIESEL SO FAR
- 3 TIMES THE BUDGETED OVERTIME AMOUNT (125K NORMAL)

# SO IT SNOWED AND WAS CHILLY – WHY WAS IT SUCH A BIG IMPACT?

## THE COLD

Cold temperatures played a major role, (perhaps the biggest role), in the past winter. Snowfall was generally “dry snow” and the colder the pavement temperatures the less affective and the higher the quantity of salt needed. Wind was a big issue as well. It was a very windy winter and dry snow blows much easier that heavier wet snow. Pavement temperatures reached such low values that virtually all chemicals stopped working at times. Extreme cold is much harder on equipment and infrastructure. Even staff are affected by the cold (working in it, traveling in it etc.). Cold affected every area of our budgets from heating the facilities to overtime costs.

“Beach” on shore of Lake Michigan

# MATERIALS

Snowfall began in early December and never let up into march. Snow, blowing snow and ice storms ate salt supplies as events took place almost every other day. Salt suppliers we challenged not just by orders but the travel conditions as well. the extreme cold began freezing lake and river systems early and eventually stopped shipments needed for resupply. Many agencies used their entire seasons supplies by early January. With supplies dwindling agencies and private companies were forced into rationing the materials on had while seeking higher priced salt or other alternatives. The issues were not just local, it was a nation wide issue.

Placing materials at the optimum time

# ICE

As if snow and blowing snow was not enough, we encountered four ice storms throughout the season. Some of these did not affect the entire area. One was the worst night of ice I have ever seen. Three were traditional, warm air aloft, cold air at the surface and rain freezing as it fell affecting wires, trees and roads. The forth was extremely cold temperatures (-20) with pavement at -15, followed by a fast warm up to 39 degrees and thunderstorms. The ground and pavement was so cold rain froze on contact even though air temperatures were quite warm. Because of the hard rain, salt diluted very quickly (20 minutes or less) and everything refroze. In ice all you can do is spread materials and they ate supplies.

- https://youtu.be/OIN21UNgNCE

# ICE STORM MCHENRY COUNTY

# Alaska Case Study

*“ That won’t work in Alaska!”*

# The Driving Force

# Sharing Part Two

## What would you have done?

- Break into groups
- Put yourself in our situations
- Discuss how it would affect your agency
- Record some of the ideas

- Choose a spokesperson
- Share the finding with the group

# Changes the agencies implemented

- Lets hear how the agencies changed following the events

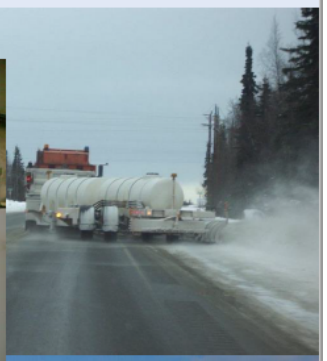
# After action discussion and policy changes

- No pre-treatment due to rain – solid would have been an option
- Prioritize routes and team up
- Always have abrasives on hand

# Sand

# Winter Maintenance Technologies

- 64 RWIS Installations
- Expanding Highway Anti-icing Program
  - 11 New Enhanced Salt Brine Units
- Airport De-icing
  - Urea and E36
- Six Tow Plows
- Smart Snowplows
- Automated Bridge De-icing System (E36)
- Telematics
- Mobile Weather Detection System
- Alaska Specific MDSS




# Ice Breaking Technology