



Another Winter Storm Ahead!

December 21, 2022
5:15 AM

Wednesday Through Saturday

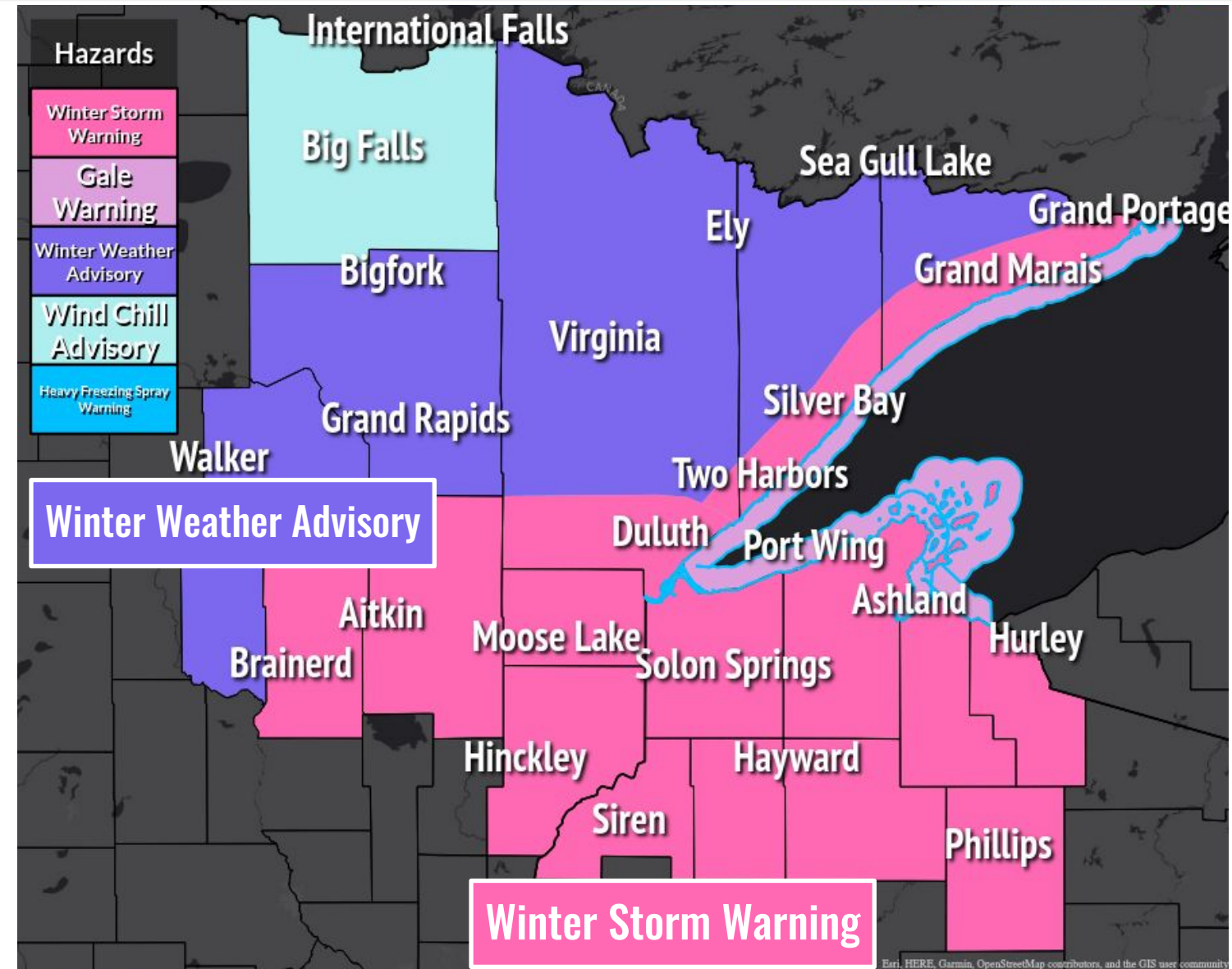
Key Messages

→ Long Period of High Winds & Blowing Snow

- ◆ **Tree damage and power outages anticipated when combined with snow loaded trees!**
- ◆ Visibility reductions with blowing snow - blizzard conditions possible Thursday evening.

→ **Heavy snow possible**, especially for northwest Wisconsin, the I-35 corridor and the Arrowhead of Minnesota.

→ **Dangerous Wind Chills:** -25 to -40° wind chills Friday and Saturday.



July 17

Next Scheduled Update

- Wednesday afternoon, December 21, 2022

National Weather Service
Duluth, MN

NEW What Has Changed

- N/A



Prolonged High Winds

December 21, 2022
5:15 AM

Peak Gusts Through Saturday

- ➔ **What:** North to northwest gusts around 45 mph. Higher gusts are forecast near Lake Superior.
- ➔ **Timing:** Winds will significantly increase Thursday morning and remain strong through at least Saturday
- ➔ **Trees that remain snow-loaded from the previous storm combined with strong winds are a concern for additional tree damage and power outages.**
- ➔ **Significantly reduced visibility in blowing snow. **Blizzard conditions possible Thursday evening!****

Maximum Wind Gust Forecast

	12/22	12/23				12/24				12/25			Maximum
	Thu 6pm	12am	6am	12pm	6pm	12am	6am	12pm	6pm	12am	6am	12pm	
Ashland	26	31	36	37	37	37	35	35	30	26	21	20	37
Brainerd	31	35	38	38	35	30	30	28	20	16	15	15	38
Duluth Airport	37	40	41	41	40	37	38	35	30	29	17	17	41
Duluth Downtown	39	41	41	40	41	38	37	35	35	32	20	17	41
Ely	26	31	33	35	35	35	37	35	29	23	17	17	37
Grand Marais	41	48	49	49	49	47	48	44	44	41	32	26	49
Grand Rapids	28	35	35	35	35	31	33	30	23	17	14	14	35
Hayward	26	32	35	35	35	31	30	29	22	16	16	16	35
Hinckley	31	36	36	37	33	31	33	30	24	20	14	14	37
Hurley	30	35	38	40	39	37	36	36	31	26	21	21	40
International Falls	25	29	31	32	31	29	32	30	23	20	14	15	32
Moose Lake	30	37	37	37	33	32	33	31	24	21	15	15	37
Phillips	26	32	36	36	36	33	35	32	26	21	15	15	36
Silver Bay	40	45	45	44	44	44	45	40	41	40	30	23	45
Siren	28	31	36	37	33	30	30	29	23	17	15	15	37
Solon Springs	28	31	35	35	33	31	32	29	24	20	15	16	35
Superior	30	33	35	35	33	32	31	30	28	25	16	16	35
Virginia	30	35	37	37	37	36	36	33	26	22	16	16	37
Walker	29	35	36	36	32	29	30	28	20	16	14	14	36



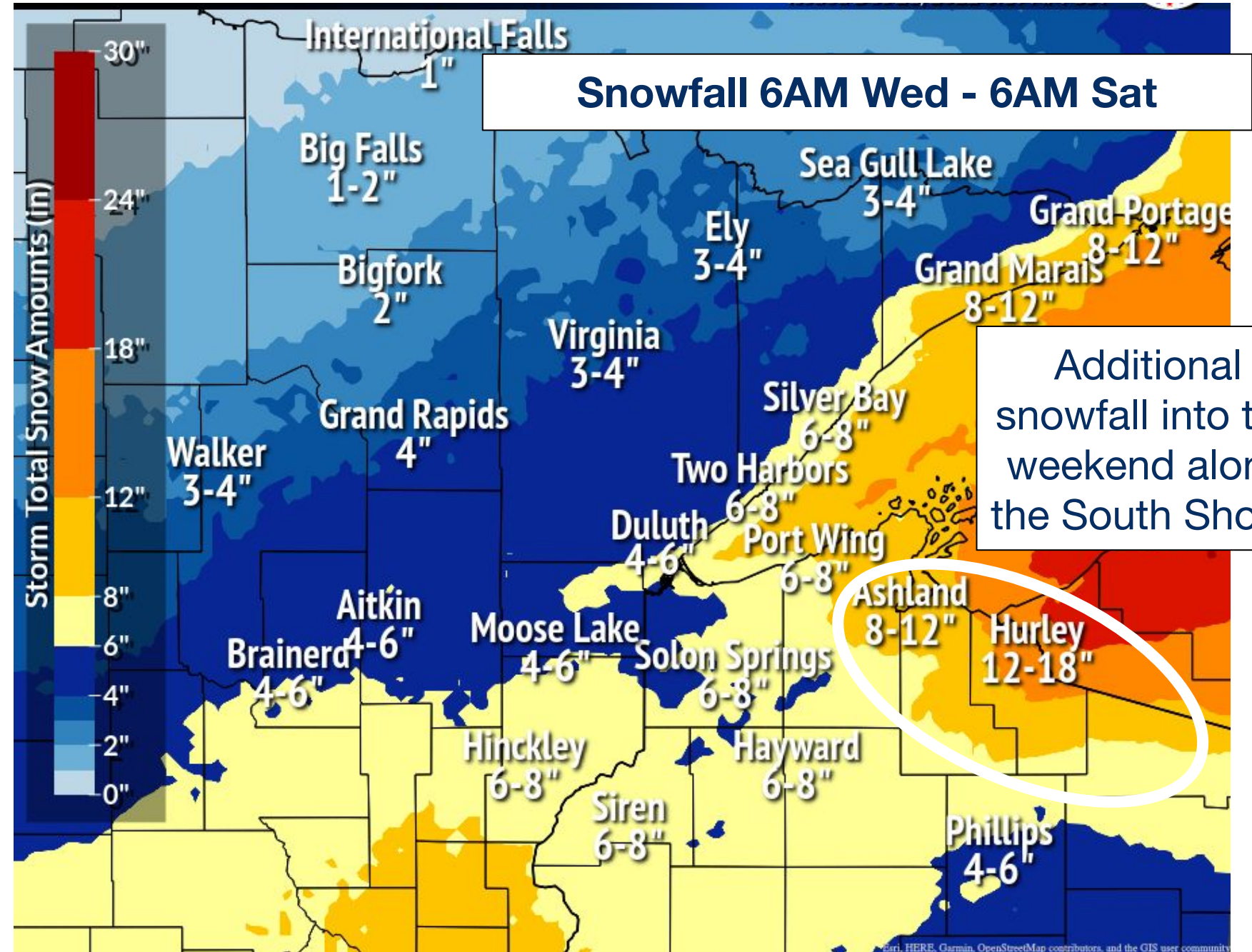
Forecasted Snowfall

December 21, 2022
5:15 AM

Through 6AM Saturday

Details

- Snow is forecast to **begin through the day on Wednesday** pushing from west to east.
- **North Shore lake enhanced snowfall** possible for Cook County Wed evening into Thursday morning.
- Snow continues for the South Shore snow belt through Saturday.
 - ◆ Moderate to heavy snowfall possible at times, especially over the Bayfield Peninsula and northern Ashland/Iron County.
- Snow will be *light and fluffy!*





Snowfall Intensity Timing

December 21, 2022
5:15 AM

12 hour period starting at:

	Wed, Dec 21 - 6 AM	Wed, Dec 21 - 6 PM	Thu, Dec 22 - 6 AM	Thu, Dec 22 - 6 PM	Fri, Dec 23 - 6 AM	Fri, Dec 23 - 6 PM	Sat, Dec 24 - 6 AM
Twin Ports Duluth, Superior, Hermantown	<i>Light to moderate snow - heaviest Wed PM</i>						4-6" by 6 AM Saturday
Iron Range Grand Rapids, Hibbing, Virginia	<i>Light to moderate snow - heaviest Wed PM</i>						3-4" by 6 AM Saturday
Borderland International Falls, BWCA		<i>Light snow Wed PM - Thur AM</i>					1-4" by 6 AM Saturday
MN Arrowhead North Shore north of Duluth	<i>Light to moderate snow - heaviest Wed PM</i>						4-11" by 6 AM Saturday
North-Central MN Brainerd, Walker, Aitkin	<i>Light to moderate snow - heaviest Wed</i>						3-6" by 6 AM Saturday
NW WI Snow Belt Northern Ashland/Iron Counties	<i>Light to moderate snow - heavy snow into Thurs/Friday</i>						8-18" by 6 AM Saturday <i>Greatest amounts in higher terrain</i>
NW WI Inland Outside of the snow belt region	<i>Light to moderate snow - heaviest Wed PM</i>						5-8" by 6 AM Saturday

Snow Wed-Thu, Followed by Strong Winds Thu - Sat

- **Light to moderate snow pushes southwest to northeast** through the day Wednesday
 - Snow will be light and fluffy but **snow covered roads and hazardous travel conditions** are possible.
 - **Lake effect snow continues** along the South Shore through Saturday





Wind Timing/Impact

December 21, 2022
5:15 AM

Table depicts risk level for blowing snow/blizzard conditions

	Wed, Dec 21 - 6 AM	Wed, Dec 21 - 6 PM	Thu, Dec 22 - 6 AM	Thu, Dec 22 - 6 PM	Fri, Dec 23 - 6 AM	Fri, Dec 23 - 6 PM	Sat, Dec 24 - 6 AM
Twin Ports Duluth, Superior, Hermantown	Low	Low	Minor	Winds <u>25-35mph</u> - whiteout conditions possible			Moderate
Iron Range Grand Rapids, Hibbing, Virginia	Low	Low	Minor	Winds 25-35mph - whiteout conditions possible			Moderate
Borderland International Falls, BWCA	Low	Low	Minor	Winds 25-35 mph - visibility reductions possible			Minor
MN Arrowhead North Shore north of Duluth	Low	Low	Minor	Winds <u>40-50 mph</u> - whiteout conditions very likely			Major
North-Central MN Brainerd, Walker, Aitkin	Low	Low	Minor	Winds 25-35mph - whiteout conditions possible			Moderate
NW WI Snow Belt Northern Ashland/Iron Counties	Low	Low	Minor	Winds 30-40mph - whiteout conditions possible			Moderate
NW WI Inland Outside of the snow belt region	Low	Low	Minor	Winds 25-35mph - whiteout conditions possible			Moderate
Whiteout Risk Levels	Low	Low	Minor	Moderate	Major	Extreme	

This outlook depicts timing and magnitude of potential impacts from high winds which could lead to adverse impacts to travel and property.



Dangerous Wind Chills

December 21, 2022
5:15 AM

- Cold this morning- **Wind Chill Advisory in effect through this morning.**
- Brief “warm up” Wednesday before temperatures plummet due cold air and very strong winds
- **Dangerous wind chills of -25°F to -35°F** return Thursday night and continue through Saturday.
 - ◆ **If drivers become stranded during the storm, conditions could be life-threatening.**
- **Frostbite in 15 minutes or less** is possible to exposed skin

	Minimum Wind Chill Forecast																		12/26 Mon Minimum		
	12/21 Wed			12/22 Thu				12/23 Fri				12/24 Sat				12/25 Sun					
	6am	12pm	6pm	12am	6am	12pm	6pm	12am	6am	12pm	6pm	12am	6am	12pm	6pm	12am	6am	12pm		6pm	12am
Ashland	-23	-10	-3	-6	-9	-12	-15	-20	-20	-18	-18	-20	-20	-15	-11	-16	-17	-10	-5	-7	-23
Brainerd	-20	-18	-19	-27	-30	-29	-30	-32	-32	-26	-29	-30	-30	-20	-23	-27	-25	-9	-6	-15	-32
Duluth Airport	-29	-15	-14	-21	-25	-27	-30	-34	-34	-28	-30	-30	-30	-23	-25	-27	-26	-14	-12	-17	-34
Duluth Downtown	-26	-10	-9	-19	-23	-22	-25	-30	-30	-26	-25	-27	-27	-21	-20	-24	-23	-12	-8	-12	-30
Ely	-31	-14	-16	-19	-22	-23	-27	-32	-32	-26	-30	-31	-31	-23	-24	-25	-23	-12	-12	-14	-32
Grand Marais	-26	-8	-12	-10	-11	-17	-23	-29	-30	-23	-25	-28	-28	-19	-22	-23	-23	-8	-9	-12	-30
Grand Rapids	-19	-18	-21	-26	-29	-28	-31	-33	-33	-28	-31	-33	-33	-24	-25	-27	-26	-13	-12	-17	-33
Hayward	-14	-12	-9	-12	-19	-20	-24	-29	-29	-23	-25	-28	-27	-17	-19	-21	-22	-8	-7	-4	-29
Hinckley	-16	-15	-14	-23	-27	-26	-29	-31	-32	-25	-27	-28	-28	-17	-20	-22	-22	-8	2	-11	-32
Hurley	-26	-9	-8	-6	-10	-14	-17	-23	-23	-19	-20	-23	-23	-17	-16	-20	-21	-10	-9	-10	-26
International Falls	-28	-14	-19	-23	-26	-25	-28	-30	-30	-27	-30	-32	-31	-24	-26	-29	-28	-15	-14	-19	-32
Moose Lake	-16	-13	-13	-21	-26	-25	-28	-32	-32	-25	-28	-29	-29	-19	-23	-23	-22	-8	0	-13	-32
Phillips	-14	-8	-8	-2	-12	-17	-21	-27	-28	-22	-24	-28	-28	-18	-19	-21	-22	-8	-7	-3	-28
Silver Bay	-25	-6	-9	-13	-16	-20	-22	-27	-27	-20	-24	-24	-24	-17	-20	-21	-20	-6	-8	-9	-27
Siren	-15	-13	-11	-19	-23	-24	-28	-30	-31	-24	-26	-27	-27	-17	-19	-22	-20	-9	-6	-10	-31
Solon Springs	-16	-9	-9	-17	-21	-20	-25	-31	-31	-24	-26	-28	-28	-17	-19	-25	-25	-11	-10	-12	-31
Superior	-24	-9	-9	-15	-20	-21	-24	-28	-29	-24	-24	-26	-26	-17	-20	-21	-21	-11	-7	-12	-29
Virginia	-20	-14	-19	-24	-27	-27	-31	-33	-34	-30	-31	-32	-33	-25	-26	-27	-27	-13	-12	-16	-34
Walker	-23	-19	-23	-28	-33	-30	-31	-34	-34	-30	-33	-35	-34	-24	-27	-28	-26	-12	-12	-19	-35



Winter Driving Safety

December 21, 2022
5:15 AM

Wednesday Through Saturday

Winter Driving Tips

→ Prepare for the unexpected by packing these items when traveling long distances

- ◆ Jumper cables
- ◆ Flashlights
- ◆ First Aid Kit
- ◆ Pet Supplies
- ◆ Shovel
- ◆ Extra clothes
- ◆ For further information check out this link

<https://www.weather.gov/safety/cold-before>



Additional Resources

[NWS Duluth Website](#)

[Snowfall Probability
Maps/Table](#)

[NWS Duluth on Facebook](#)

[NWS Duluth on Twitter](#)

[Forecast Points \(Hourly
Details\)](#)

Road Conditions

MN: 511mn.org

WI: 511wi.gov





Winter Storm Remains on Track

December 21, 2022
5:48 AM

Life Threatening Conditions Likely Thursday Night through Friday Night

Key Messages

- **Winter Storm Warning** for up to 5 to 9" of snow Wednesday morning through Thursday morning.
- **Wind Chill Headlines** for wind chills between -25° to -40°F Thursday through Friday night.
- **Blizzard Warning** for late Thursday into Friday night for W/SW MN. Watch presently in effect for remaining areas could be upgraded later today.

Travel conditions will be life threatening Thursday through Friday night due to the combination of extreme cold and blizzard conditions.

NEW

Important Updates

- No changes to headlines since Tuesday PM.
- Snowfall totals lowered a bit west and south.
- Winds will be slightly lower, but just as impactful.

Next Scheduled Update

- This afternoon

Blizzard Conditions Likely Late Thursday through Friday Night





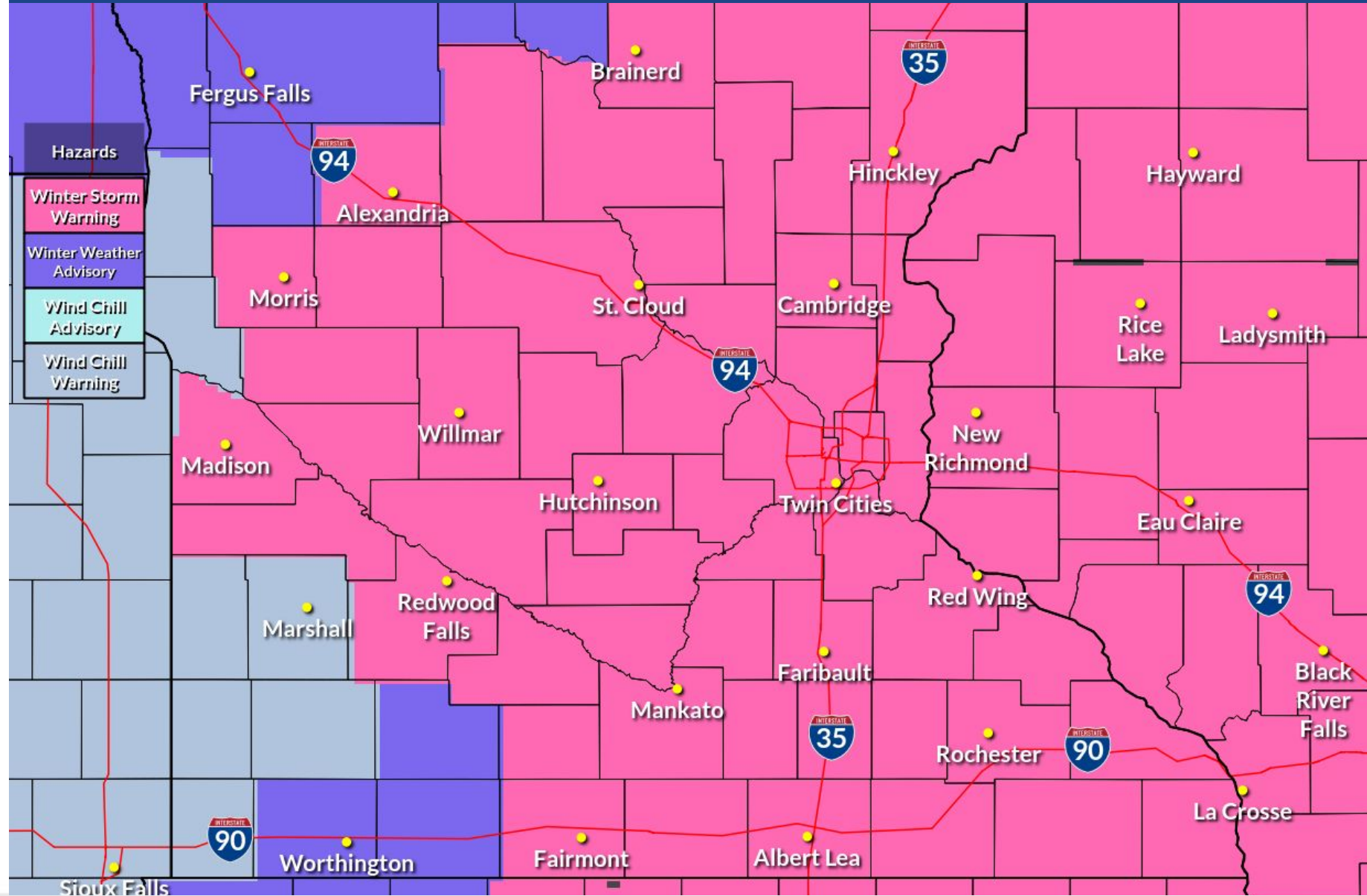
Today: Snow

Accumulating *fluffy* snow today

Key Messages:

- **Winter Storm Warning** for 5-9 inches of light, fluffy snow on Wednesday for much of the forecast area. Slightly less west and south.
- A brief break beginning late Wednesday night with limited new snow before winds increase on Thursday.

Winter Storm Warning for Wednesday Snowfall Through Thursday morning



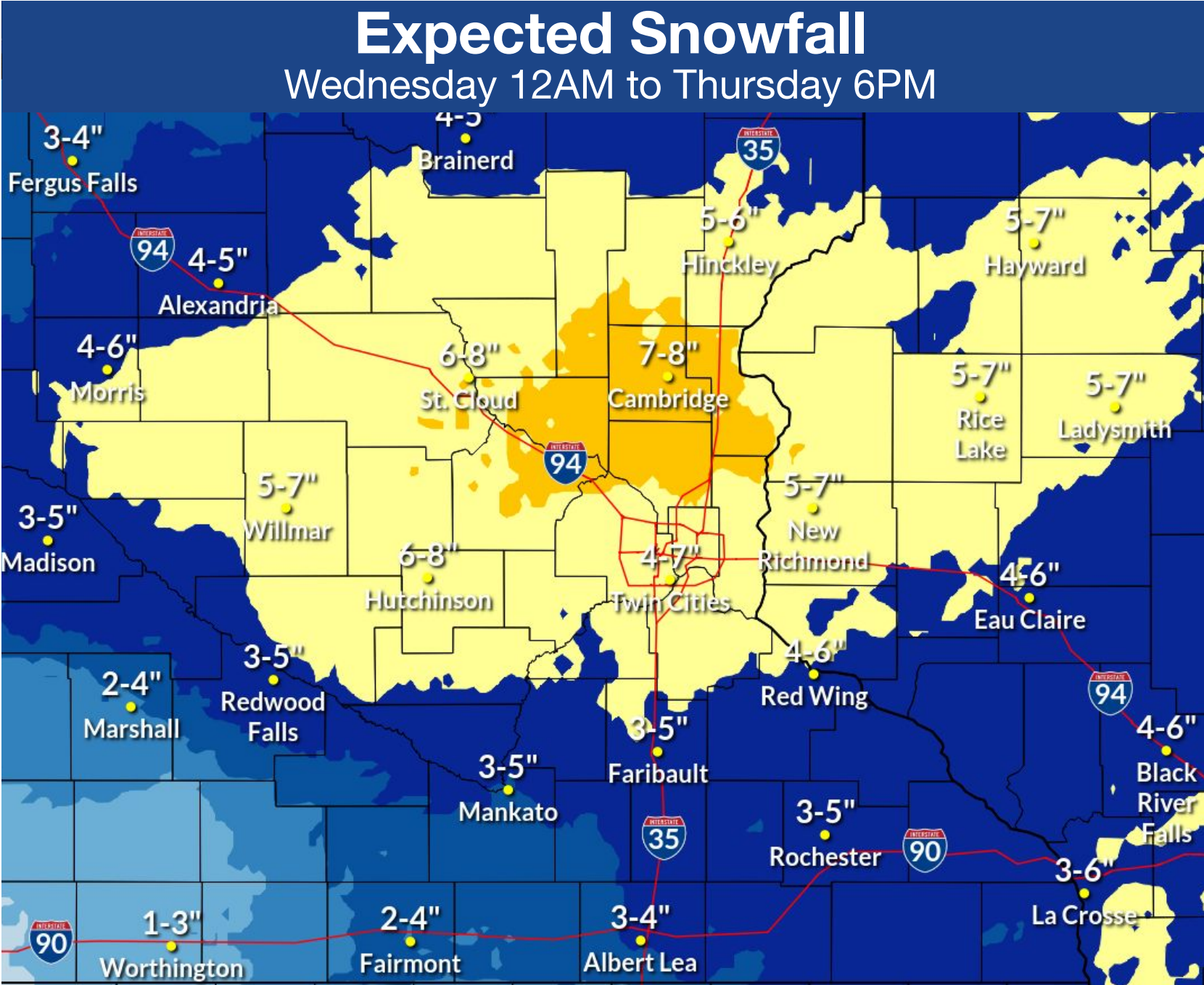


Today: Snow

Accumulating *fluffy* snow today

WHAT/WHERE/WHEN

- Snow develops Wednesday morning and lasts into early Thursday.
- 5 to 9" of light fluffy snow likely for much of the area, with slightly lower amounts in southern and western Minnesota.
- This will set the stage for blizzard conditions when northwest winds increase on Thursday.





Thursday-Saturday: Blowing Snow

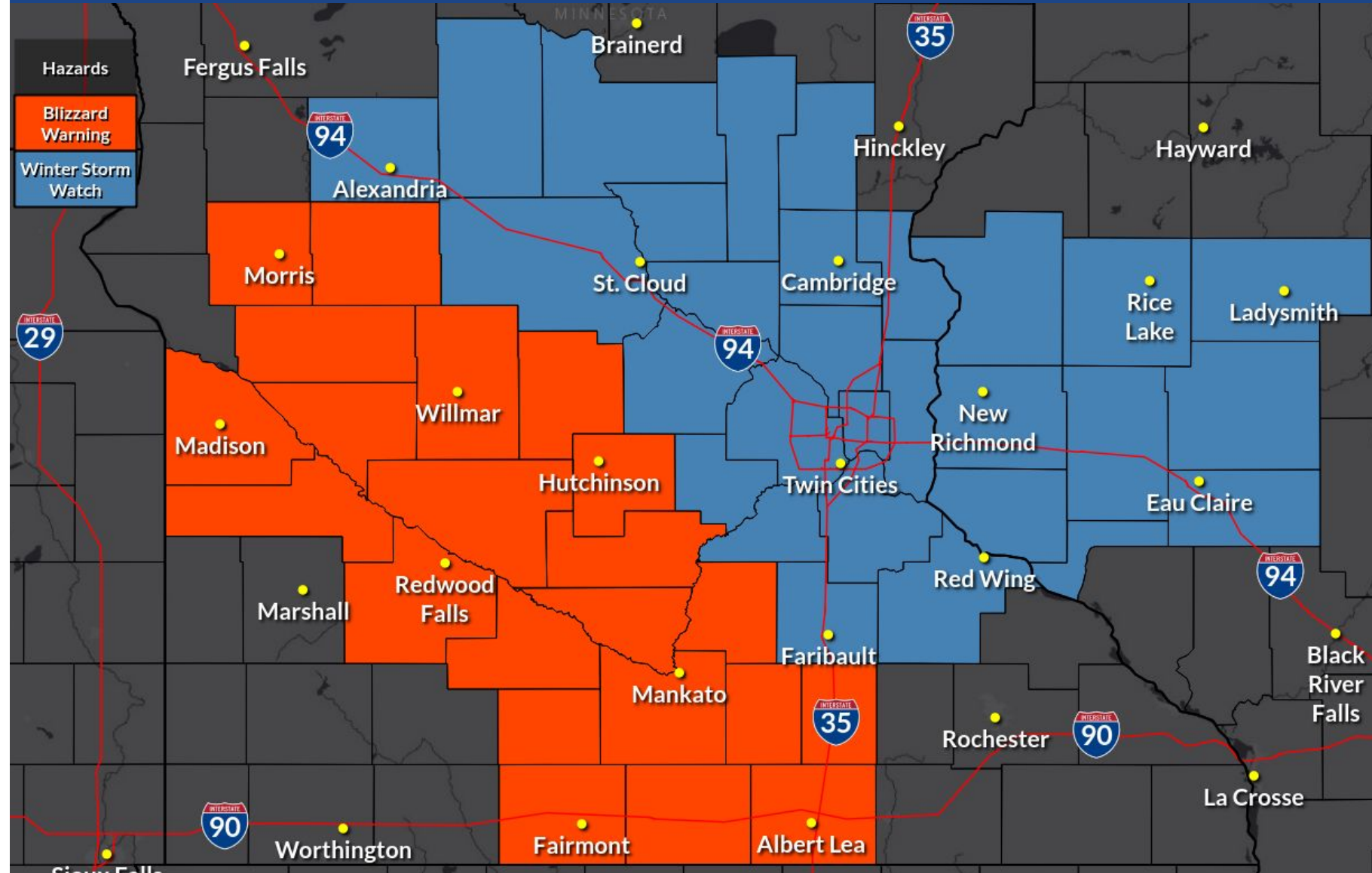
December 21, 2022
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Key Messages:

- **Blizzard Warning** for western and southern Minnesota where the strongest winds will also bring the lowest wind chills.
- **Winter Storm Watch** northeast of the Blizzard Warning will likely be upgraded later today as confidence increases.
- Conditions worsen the second half of Thursday, remaining extremely dangerous through midday Saturday.

Blizzard Warning and Winter Storm Watch

Thursday Afternoon through Friday Evening



NEW

Important Updates

- Forecast wind speeds have decreased a bit, but we still expect widespread 40 mph gusts, with a few near 50 mph at times.





Thursday-Saturday: Blowing Snow

December 21, 2022
5:48 AM

WHAT/WHERE/WHEN

- The strongest winds will be across western and southern Minnesota, however gusty winds resulting in significant blowing snow will be present everywhere.
- Sustained winds will be out of the northwest for the entire event at 20-30 MPH. Gusts to near 45 MPH are possible.
- Significant travel impacts are **LIKELY** across the area due to blowing and drifting snow, in addition to visibility impaired by the blowing snow.
- Power outages are possible in areas that still have snow on trees, as falling limbs have the potential to knock down power lines.

Wind Gust Forecast

Thursday 12PM to Saturday 12PM

	12pm	3pm	6pm	9pm	12am	3am	6am	9am	12pm	3pm	6pm	9pm	12am	3am	6am	9am	12pm
Albert Lea	32	32	33	33	36	39	40	41	41	41	41	40	39	35	32	31	30
Alexandria	30	30	31	31	33	37	39	40	41	41	41	40	37	32	31	28	28
Eau Claire	26	28	29	29	32	35	37	39	40	40	41	41	38	36	33	32	32
Fairmont	35	36	36	37	38	40	41	44	44	44	43	43	39	33	31	30	28
Hutchinson	30	32	32	30	33	37	38	39	40	40	39	38	37	32	30	28	28
Ladysmith	22	23	25	26	29	32	33	38	39	39	39	38	36	35	35	32	33
Little Falls	26	28	29	26	31	36	37	39	39	39	38	37	35	32	31	29	29
Madison	32	33	35	33	37	40	41	41	41	41	40	37	32	29	28	23	22
Mankato	31	32	31	32	35	37	38	39	40	40	40	38	37	31	28	28	28
Marshall	32	35	36	37	38	40	41	43	44	43	41	41	33	31	22	22	21
Mora	24	25	26	28	32	36	37	38	39	38	37	37	36	33	32	32	30
Red Wing	26	28	28	29	31	33	36	39	40	40	38	37	36	33	30	30	31
Redwood Falls	35	36	36	36	37	40	43	44	44	44	44	43	38	33	32	28	26
Saint Cloud	29	29	29	29	32	37	38	39	40	40	38	37	36	32	31	30	29
Saint Croix Falls	25	25	25	26	29	33	36	37	39	39	37	36	35	31	31	29	29
Twin Cities	28	29	29	26	28	31	35	38	39	39	38	36	35	31	30	28	28

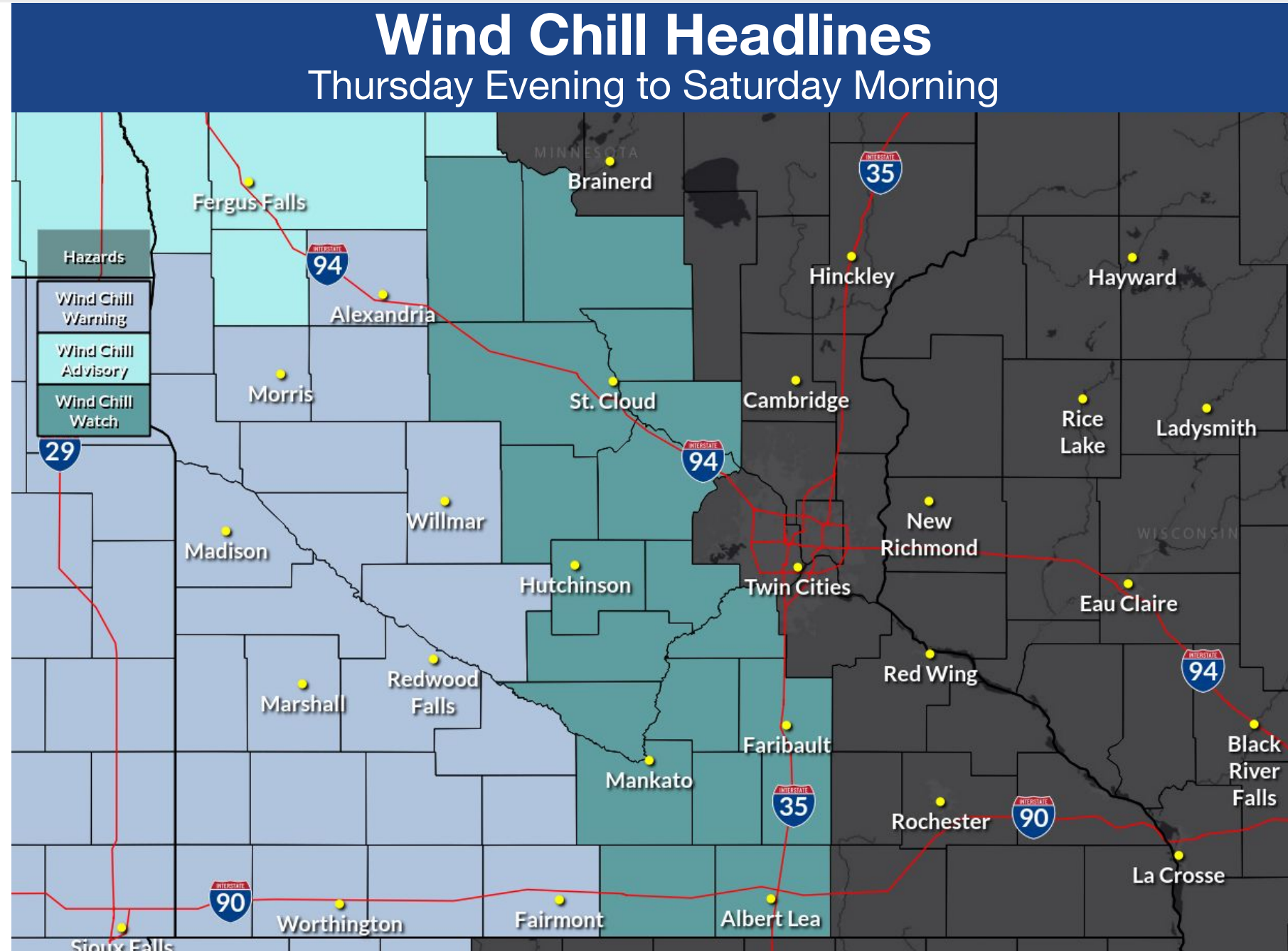


Thursday-Saturday: Dangerous Wind Chills

December 21, 2022
5:48 AM

Key Messages:

- A **Wind Chill Warning** is in effect for western Minnesota beginning Thursday morning through Saturday morning.
- A **Wind Chill Watch** is in effect for south central through central Minnesota from Thursday evening through Saturday morning.





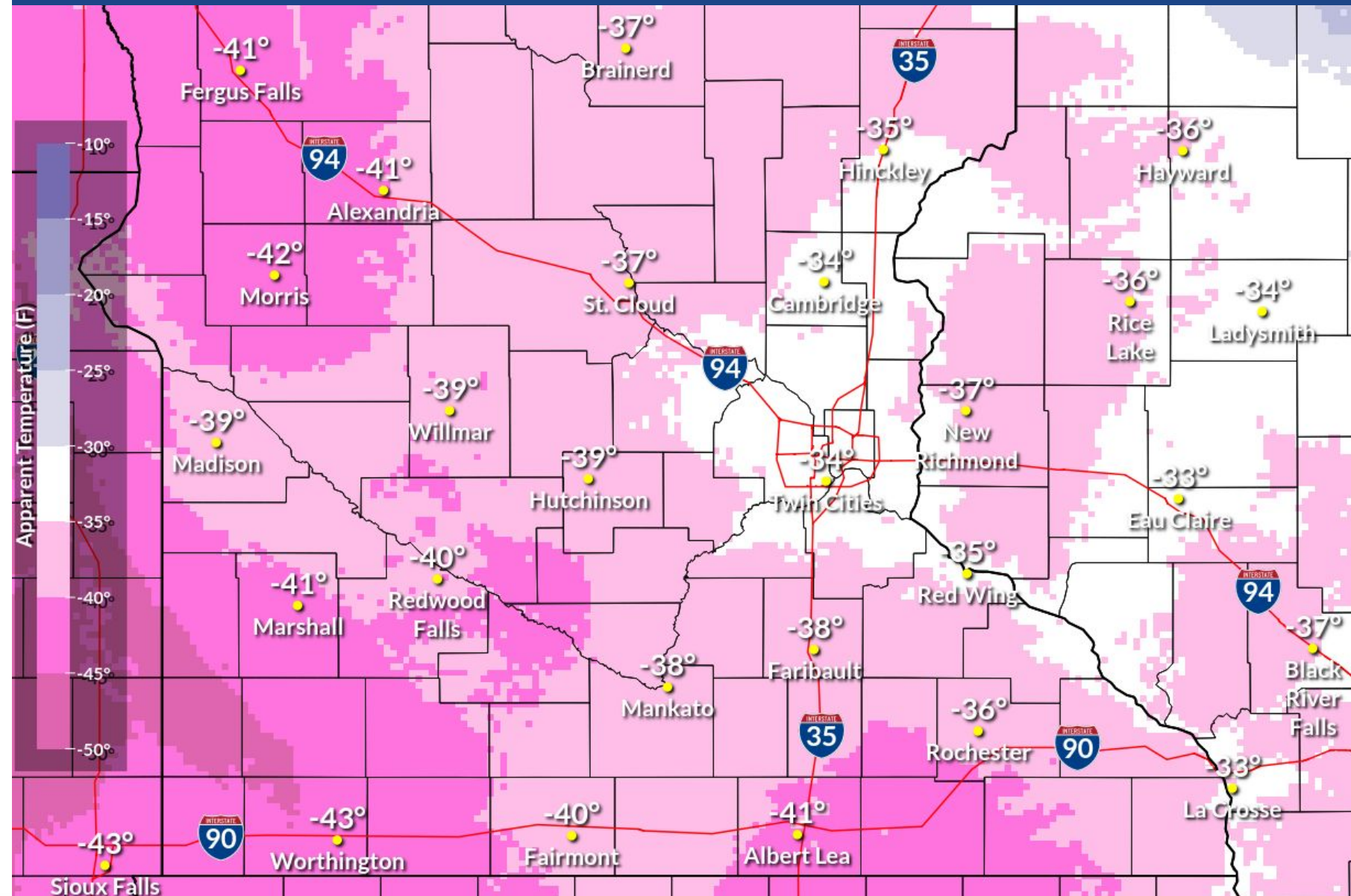
Thursday-Saturday: Dangerous Wind Chills

December 21, 2022
5:48 AM

WHAT/WHERE/WHEN

- Low temperatures in the teens below zero and wind gusts of 40-50mph will create extremely dangerous wind chills beginning Thursday and continuing through Saturday.
- The risk for travelers is especially high, with blowing snow and blizzard conditions making rescue efforts extremely difficult. Becoming stranded from Thursday through Saturday will have life-threatening implications not only for the motorists, but for anyone involved in rescue or recovery operations.
- Having an emergency kit which includes food, water, blankets, and other necessities could be life saving if travel is absolutely necessary.

Minimum Wind Chills Thursday 12PM to Saturday 12AM





Timing and Hazards: Cities

December 21, 2022
5:48 AM

	Wednesday			Thursday			Friday					
	6a-12p	12p-6p	6p-12a	12a-6a	6a-12p	12p-6p	6p-12a	12a-6a	6a-12p	12p-6p	6p-12a	
Redwood Falls	Moderate to Heavy Snow						Dangerous Wind Chills Blowing & Drifting Snow					
Alexandria	Moderate to Heavy Snow						Dangerous Wind Chills Blowing & Drifting Snow					
St. Cloud	Moderate to Heavy Snow						Gusty Winds Blowing Snow					
Twin Cities	Moderate to Heavy Snow						Gusty Winds Blowing Snow					
Mankato	Moderate to Heavy Snow						Gusty Winds Blowing Snow					
Albert Lea	Moderate to Heavy Snow						Gusty Winds Blowing Snow					
Eau Claire	Moderate to Heavy Snow						Gusty Winds Blowing Snow					

Snow	Light	→	Heavy
Blowing Snow	Limited	→	Significant
Cold & Blowing Snow			
Transition Period			



Timing and Impacts: Major Roads

December 21, 2022
5:48 AM

Route (North-South)	Wednesday				Thursday			Friday			
	6a-12p	12p-6p	6p-12a	12a-6a	6a-12p	12p-6p	6p-12a	12a-6a	6a-12p	12p-6p	6p-12a
US-59	Little/None	Limited	Little/None	Elevated	Extreme	Extreme	Extreme	Extreme	Extreme	Extreme	Extreme
US-71	Little/None	Limited	Little/None	Little/None	Significant	Extreme	Extreme	Extreme	Extreme	Extreme	Extreme
US-169	Little/None	Limited	Little/None	Little/None	Significant	Extreme	Extreme	Extreme	Extreme	Extreme	Extreme
I-35	Little/None	Limited	Limited	Little/None	Significant	Significant	Extreme	Extreme	Extreme	Extreme	Extreme
US-53	Little/None	Limited	Limited	Little/None	Significant	Significant	Extreme	Extreme	Extreme	Extreme	Extreme

Impact Level	Little/None	Limited	Elevated	Significant	Extreme
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Pattern Shift by Year's End

December 21, 2022
5:48 AM

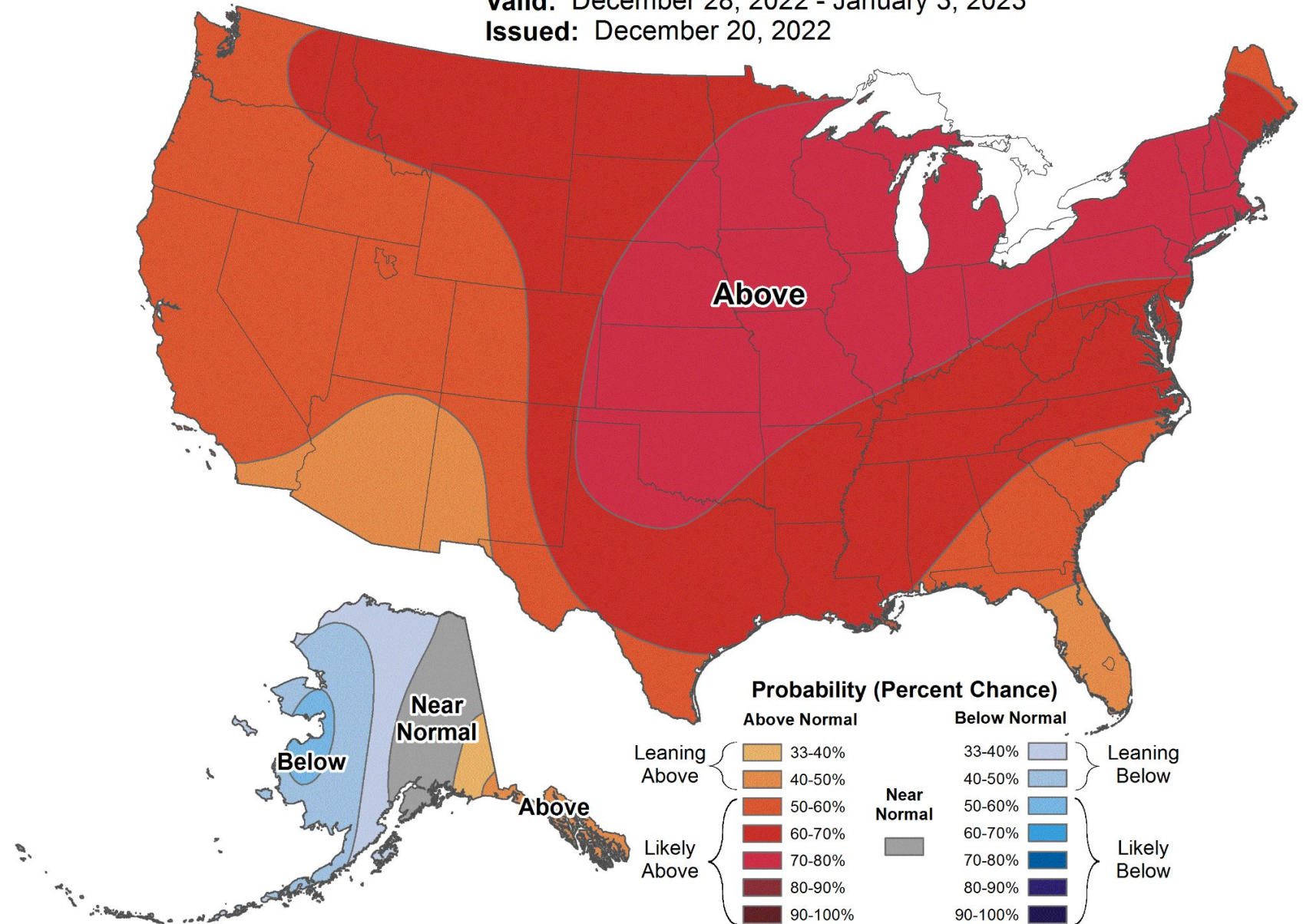
Temperature Outlook valid Dec 28 - Jan 3



8-14 Day Temperature Outlook



Valid: December 28, 2022 - January 3, 2023
Issued: December 20, 2022



What/Where/When

- Warmer than normal conditions look to arrive near the end of the year.
- The pattern which brought significant snow and cold has been pushed out by this new pattern, which has the potential to persist through the middle of January.
- Precipitation is trending above normal as well, however only slightly such that near or below normal precipitation is still possible.



- High winds will lead to blizzard conditions with near-zero visibilities and dangerous wind chills.
- If you must be outdoors during the extreme cold, even for a few minutes, make sure to dress in several layers to avoid hypothermia and frostbite.
- Make sure pets have a warm, dry place with plenty of food and water.
- Have a plan in place to keep warm if the power goes out during the storm.

WHAT'S A BLIZZARD?

BLOWING SNOW

35+ MPH WINDS

≤ 1/4 MI VISIBILITY

FOR 3+ HOURS

WEATHER.GOV/WINTER

DID YOU KNOW THAT FALLING SNOW ISN'T NECESSARY FOR A BLIZZARD?

A BLIZZARD THAT RESULTS FROM SNOW THAT HAS PREVIOUSLY FALLEN IS CALLED A GROUND BLIZZARD.

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE



Key Messages

- Please don't travel. If absolutely necessary, charge your phone and have a full tank of gas. Put a spare pair of boots and winter gear in car.
- If you must travel, share with friends, family, or a neighbor when you anticipate to arrive.
- For a more detailed and localized forecast, visit: www.weather.gov/winter
- MNDOT Road Conditions: <http://www.511mn.org>
- WIDOT Road Conditions: <http://www.511wi.gov>

Blizzard Warning

Severe winter weather is expected within the next **12 to 36 hours** or is occurring -- including whiteout conditions.

Do not travel.

take action.

Winter Storm Warning

Dangerous winter weather is expected within the next **12 to 36 hours** or is occurring. **Considerable travel problems** are expected.

take action.