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INTRODUCTION

Purpose

The purpose of this winter weather toolkit is to provide information to local governments, health departments, and citizens in Wisconsin about preparing for and responding to winter weather events. The toolkit provides background information, practical guidance and strategies, media releases and talking points, definitions, and useful reference materials on this topic.

The guides in this toolkit may be copied and printed onto local government or health agency letterhead for distribution to residents affected by winter weather. Additional documents may be found in Appendix B: Additional Resources.

In Wisconsin, winter conditions cause an average of 50,000 vehicle crashes and 45 deaths each year.²

Background

According to the National Weather Service (NWS), cold temperatures and wind chills cause an average of 28 deaths per year and winter storms cause 39 deaths per year in the United States. Winter weather creates dangerous conditions including icy, snow- and sleet-covered roads; in Wisconsin, these conditions are responsible for an average of 50,000 vehicle accidents and 45 deaths each winter. Although winter is familiar to Wisconsinites, extreme cold, snow, ice, rain, and sleet place all of us at risk; particularly susceptible populations are the elderly, young children, anyone who is socially isolated, and those with low economic status. Therefore, it is imperative that Wisconsin governmental units, citizens, and businesses prepare for the effects of winter weather.

Climate Trends

University of Wisconsin climate scientists have completed studies demonstrating that the state's climate is becoming wetter and more variable. According to the Wisconsin Initiative on Climate Change Impacts (WICCI), a 14% increase in wintertime precipitation occurred statewide from 1950 to 2006. Climate scientists suggest this trend will continue, with wintertime precipitation increasing into the mid-21st century. Trends also indicate that winter temperatures in Wisconsin are warming, increasing the likelihood that winter precipitation occurs as freezing rain rather than snow, making travel conditions more hazardous.³

Health Impacts

The dangers of winter weather require Wisconsin to prepare for freezing temperatures, life-threatening wind chills, and dangerous weather conditions that can cause health impacts including hypothermia, frostbite, trench foot, and even death. Emergency planning must consider cold-related needs such as safe usage of electrical appliances, planning for power outages, prevention of carbon monoxide poisoning, and placement of warming centers. Preparedness efforts must be made in order to maintain the health and safety of Wisconsin residents.

Wildfire Response and Recovery Guidance

Under the Wisconsin "Home Rule" principle, winter weather preparedness and response are considered local activities. The local or county emergency management office, health agency, or police and fire first responders will be the lead agency during a winter weather event. However, when requested, state resources will be provided to assist and support the local response.

DEFINITIONS

General Terms for All Types of Weather

Outlook

Conditions are possible in the next two to five days.

Advisory

Conditions are expected to cause significant inconveniences and may be hazardous.

Watch

Conditions are possible within the next 36-38 hours.

Warning

Life-threatening severe conditions have begun or will begin within 24 hours.

Winter Weather Event

A winter weather occurrence that affects public safety, transportation, and/or commerce.⁴

Wind Chill

The temperature the body feels, calculated using the actual temperature outdoors and the wind speed. The wind chill is always lower than the actual temperature (see box on next page).

Sleet

Rain that turns to ice pellets before reaching the ground. Sleet can cause dangerous and slick outdoor conditions.

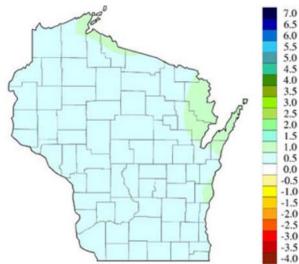
Freezing Rain

Rain that freezes when it hits the ground. Freezing rain can cause dangerous and slick outdoor conditions.

Cold-Related Fatality

Death attributed to cold weather events.

Fig 1. Projected Change in Winter Average Precipitation (inches) from 1980-2055





Winter Weather Alerts

Freezing Rain Advisory

Any accumulation of freezing rain is expected in the next 12 to 36 hours (but will remain below a half inch) for at least 50% of the zone or encompassing most of the population.

Wind Chill Advisory

Wind chill is expected to exceed local wind chill advisory criteria in the next 12 to 36 hours. Wind chill temperatures may reach or exceed -15°F. See table at bottom of page.

Winter Weather Advisory

A winter storm event (sleet, snow, freezing rain, snow and blowing snow, or a combination of events) is expected to meet or exceed local winter weather advisory criteria in the next 12 to 36 hours but stay below warning criteria. Criteria for snow is 4 inches or more in 12 hours or less covering at least 50% of the zone or encompassing most of the population. Use "midpoint" of snowfall range to trigger advisory (i.e., 2 to 5 inches of snow = advisory). Criteria for ice is any ice accumulation less than 1/2 inch over at least 50% of the zone or encompassing most of the population. Winter Weather Advisory can also be issued for black ice. This is optional.

Blizzard Watch

Conditions are favorable for a blizzard event in the next 24 to 72 hours. Sustained wind or frequent gusts greater than or equal to 35 mph will accompany falling and/or blowing snow to frequently reduce visibility to less than 1/4 mile for three or more hours.

Wind Chill Watch

Conditions are favorable for wind chill temperatures to meet or exceed local wind chill warning criteria in the next 24 to 72 hours. Wind chill temperatures may reach or exceed -25°F.

Winter Storm Watch

Conditions are favorable for a winter storm event (heavy sleet, heavy snow, ice storm, heavy snow and blowing snow, or a combination of events) to meet or exceed local winter storm warning criteria in the next 24 to 72 hours. Criteria for snow is 7 inches or more in 12 hours or less; or 9 inches or more in 24 hours covering at least 50% of

How Wind Chill Works

		Actual Temperature (°F)									
		40°	30°	20°	10°	0°	-10°	-20°	-30°	-40°	
		How Cold It Feels									
Wind Speed (mph)	10	34°	21°	9 °	-4°	-16°	-28°	-41°	-53°	-66 °	
	20	30°	17°	4°	-9°	-22°	-35°	-48°	-61°	-74°	
	30	28°	15°	1°	-12°	-26 °	-39°	-53°	-67 °	-80°	
	40	27°	13°	-1°	-15°	-29°	-43°	-57°	-71°	-84°	
	50	26°	12°	-3°	-17°	-31°	-45°	-60°	-74°	-88°	
	60	25°	10°	-4°	-19°	-33°	-48°	-62°	-76°	-91°	
Frostbite times:			30 minutes			10 minutes		5 minutes			

the zone or encompassing most of the population. Use "mid-point" of snowfall range to trigger a watch (i.e., 5 to 8 inches of snow = watch). Criteria for ice is 1/2 inch or more over at least 50% of the zone or encompassing most of the population.

Blizzard Warning

Blizzard event is imminent or expected in the next 12 to 36 hours. Sustained wind or frequent gusts greater than or equal to 35 mph will accompany falling and/or blowing snow to frequently reduce visibility to 1/4 mile for three or more hours.

Ice Storm Warning

An ice storm event is expected to meet or exceed local ice storm warning criteria in the next 12 to 36 hours. Criteria for ice is 1/2 inch or more over at least 50% of the zone or encompassing most of the population.

Wind Chill Warning

Wind chill temperatures are expected to meet or exceed local wind chill warning criteria in the next 12 to 36 hours. Temperature may reach or exceed -25°F.

Winter Storm Warning

A winter storm event (heavy sleet, heavy snow, ice storm, heavy snow and blowing snow, or a combination of events) is expected to meet or exceed local winter storm warning criteria in the next 12 to 36 hours. Criteria for snow is 7 inches or more in 12 hours or less; or 9 inches or more in 24 hours covering at least 50% of the zone or encompassing most of the population. Use "mid-point" of snowfall range to trigger warning (i.e., 5 to 8 inches of snow = warning). Criteria for ice is 1/2 inch or more over at least 50% of the zone or encompassing most of the population.



Cold-Related Health Effects

Below are conditions that are cold-related. Keep in mind the overconsumption of alcohol decreases decision-making capabilities and has been found to increase the likelihood of cold-related health effects.⁵

Medical Condition	Symptom(s)	Causes	Safety Tips
Hypothermia ⁶	 Adults Shivering, exhaustion Confusion Memory loss Slurred speech Drowsiness Infants Bright red, cold skin 	Body temperatu re that is too low	 If the body temperature is below 95°, seek immediate medical attention. Move the victim into a warm room. Remove wet clothing and keep the victim dry. Warm the center of the body first.
Frostbite ⁶	 Redness or pain White or grayish-yellow skin Numbness 	Freezing of body parts exposed to cold	 Relocate to a warm room. Do not walk; do not use frostbitten body parts. Warm the area by submerging in warm water or using body heat. Do not massage or use heating pads, lamps, stoves, or fires to
Trench Foot ⁷	 Pain, tingling sensation Swelling Cold, numbness Blisters may form after 	Feet are wet for an extended period of time	 Clean, dry, and elevate feet. Warm feet by using warm packs or by soaking in warm water. Seek medical attention.





Winter Weather Preparation

Prepare Your Home

Step 1: Assemble an Emergency Supply Kit

- Prepare to heat your home during a power failure
 - o Do not use a gas stove, charcoal or gas grill, or electric generator inside to heat your home, as this may cause carbon monoxide poisoning.
 - o Dry firewood for a fireplace or wood stove, or
 - o Kerosene for a kerosene heater
- Furnace fuel (coal, propane, or oil)
- Electric space heater with automatic shut-off switch and non-glowing elements
- Blankets
- Matches
- Multipurpose, dry-chemical fire extinguisher
- First aid kit and instruction manual
- Flashlight or battery-powered lantern
- Battery-powered radio
- Battery-powered clock or watch
- Extra batteries
- Non-electric can opener
- Snow shovel
- Rock salt
- Special needs items (diapers, hearing aid batteries, medications, etc.)

Step 2: Stockpile Food and Water

- Stock three days worth of non-perishable food items.
- Store one gallon of water per person for three days.

Step 3: Winterize Your Home

- Install a smoke detector and a battery-operated carbon monoxide detector; before
 winter begins, test the detectors. Insulate your exterior water lines to prevent freezing
 pipes; insulate attics and walls; install storm windows and insulated doors.
- Install a thermometer in a frequently visited location and check the indoor temperature regularly.
- Have your chimney, furnace, and other heating utilities inspected by a professional before the winter season begins.

Prepare Your Car

Step 1: Have Essentials in Your Car

Assemble an emergency supplies kit and place it in your car in a plastic tote with a lid.

- First aid kit
- A can and waterproof matches (to melt snow for water)
- Windshield scraper
- Booster cables
- Road maps
- Cell phone and charger
- Toolkit
- Bag of sand or cat litter (to pour on snow for traction)
- Battery-operated radio
- Emergency flare and whistle
- Tow rope
- Tire chains (only legal when used for safety)
- Shovel
- Container of water and high-calorie canned or dried food and a can opener
- Flashlight and extra batteries
- Canned compressed air with sealant (for emergency tire repair)
- Brightly colored cloth
- Extra gas
- Emergency numbers and cash in a Ziploc bag
- Extra winter clothes or blankets

Step 2: Winterize Your Car

- Have your vehicle regularly serviced following the manufacturer's suggestions.
- Maintain high antifreeze levels and use wintertime windshield wiper fluid. These supplies can be found at your local automotive retail store.
- Replace worn tires.
- If possible, keep your gas tank close to full in order to prevent ice formation.



Indoor Safety during Winter Storms

Safely Use Alternative Sources of Heat

Alternative sources of heating produce major risks including fires and carbon monoxide poisoning. When using alternative sources of heat like fireplaces, wood stoves, and space heaters, take the following precautions.

- Never use electric generators, grills, or other gasoline, propane, natural gas, or charcoal -burning devices indoors, as this may cause carbon monoxide poisoning.
- Install a battery-operated carbon monoxide detector and a smoke detector. You can get both at hardware stores for about \$20.
- Ensure adequate ventilation for a heat source by cracking windows.
- Do not plug space heaters into extension cords.
- Do not put a space heater on anything that could catch fire. Place it on a noncombustible surface.
- Only use the designated fuel for your heat source.

Know the Signs and Symptoms of Carbon Monoxide Poisoning

- Carbon monoxide poisoning occurs when the body is in contact with carbon monoxide, an odorless, colorless gas that is given off by fuel-burning equipment.
- Signs of carbon monoxide poisoning include shortness of breath, headache, impaired coordination, nausea, dizziness, and loss of consciousness.
- If you suspect a carbon monoxide leak in your house or if your carbon monoxide alarm goes off, leave the house immediately and call 911.

Know What to Do When There is No Heat

- Seek alternative shelter by texting SHELTER and your zip code to 43362.
- Conserve body heat by not overexerting yourself.
- Eat well-balanced meals and avoid alcohol or caffeinated beverages.
- Dress warmly using hats, mittens, and scarves.
- Close off unused rooms and prevent airflow by positioning towels under doors.

Prevent Frozen Pipes

Extremely cold temperatures can damage and freeze pipes. Vulnerable pipes include those found on exterior walls, in unheated rooms, and outside supply lines.

- If possible, insulate water lines before winter begins.
- Keep an emergency water supply that will last for several days.
- Keep the temperature in your home constant, night and day.
- If you leave for vacation, keep your heat at a minimum of 55°F.

- Do not turn faucets completely off; let faucets drip continuously.
- Open cabinet doors and inside doors so that pipes are in contact with warm air.
- If pipes are frozen, completely open all faucets.
- Thaw frozen pipes with a hairdryer or by pouring hot water on the pipes. Do not thaw pipes with open flames.
- If a pipe bursts, close your main water valve immediately.

POWER OUTAGES

Keep Food as Safe as Possible

- Keep refrigerator and freezer doors closed as much as possible. Eat perishable foods from the refrigerator first.
- Use freezer food after refrigerator food.
- Use your non-perishable foods after using food from the refrigerator and freezer.
- If it looks like the power outage will last more than a day, prepare a cooler with ice for your freezer items.
- Keep food in a dry, cool spot and keep it covered at all times.

Monitor Electrical Equipment

- Turn off and unplug all unnecessary electrical equipment.
- Turn off or disconnect any appliances, equipment, or electronics you were using when the power went out. When the power comes back on, surges or spikes can damage equipment.
- Leave one light on so you'll know when the power comes back on.
- Eliminate unnecessary travel, especially by car. Travel lights will be out and roads will be congested.

Use Generators Safely

- Keep the generator outside, at least 20 feet from windows, people, or homes.
- When using a portable generator, connect the equipment you want to power directly to the outlets on the generator. Do not connect a portable generator to a home's electrical system.
- If you are considering getting a generator, get advice from a professional, such as an electrician. Make sure that the generator you purchase is rated for the power you think you need.
- Never use a generator, grill, camp stove, or other gas or fuel-powered device inside a home, garage, basement, crawlspace, or partially enclosed area.
- Install carbon monoxide alarms in central locations in your home.
- If the carbon monoxide alarm sounds, move to fresh air and call 911.



How you can help people in need in the winter weather

Elderly

Elderly adults may live alone. The elderly have slower metabolism and often do not create as much body heat as middle-aged adults. Also, the elderly do not sense air temperature as well as middle-aged adults; therefore, temperature drops in their homes can go unnoticed. For these reasons, it is necessary to check on elderly neighbors and family often in order to ensure their heating source is working and they maintain a healthy body temperature.

Young

Infants cannot produce enough body heat by shivering and lose heat easier than adults.

- Make sure that infants sleep in a heated room.
- Dress infants in warm clothing.
- In an emergency, hold your baby close, as your body heat can keep the baby warm.
- Do not put your infant in bed with you, as rolling onto infants is a risk.
- If you are without heat for a long time, go to a shelter or someone's home that has heat.

Socially Isolated

Check often on neighbors and family that live in an isolated setting. If the heat supply stops, this population will be at extreme risk for indoor and outdoor hazards.

Low Socioeconomic Status

Wisconsin residents that live at or below 60% of the state median income may qualify for the Wisconsin Home Energy Assistance Program (homeenergyplus.wi.gov). Homeless populations are particularly at risk during winter storms and extreme cold. Warming centers are available throughout Wisconsin.



Winter Travel and Outdoor Safety

Driving in a Winter Storm

- · Travel only if necessary.
- Always dress as if you were going to get stranded. Wear a hat, mittens, scarf, winter coat, and boots.
- Keep an emergency kit in your car at all times.
- Call 511 for traffic updates and highway closures due to winter weather.
- Avoid driving at night and avoid driving alone.
- If possible, drive only on main highways and avoid country roads.
- Avoid driving in low-visibility conditions and on icy or snow-covered roads, bridges, and overpasses.
- Notify a friend or family member of your destination and expected time of arrival and return.
- If conditions become too hazardous, pull off the road and turn your hazard lights on. Notify emergency services of your location.

What to Do When Stranded

- Stay inside your vehicle, turn your hazard lights on, tie a bright cloth to your antenna, and notify emergency services of your location.
- Remove snow from around your tail pipe to prevent carbon monoxide buildup.
- Run your heat for 10 minutes every hour. Crack your window for ventilation.
- Wrap yourself in extra clothes and blankets.
- Stay awake and move your arms and legs routinely to keep blood flowing.

What to Wear

Staying dry is essential to safety during winter weather. If you must work outside, dress properly, change into dry clothes often, and if you get wet, change into dry clothes when you return indoors. Winter clothing suggestions include:

- Scarf, mittens, and a hat
- Several layers of loose-fitting clothing that cover legs and arms
- Outerwear that is wind and water resistant
- Water resistant boots

Avoiding Exertion

Do not overexert yourself outdoors during extreme cold or a winter storm. Sweating will cool your body.

- If you are shoveling snow or doing other outdoor chores, take frequent breaks indoors and work slowly.
- Do not shovel if you have heart disease or high blood pressure, as the cold puts more stress on your cardiovascular system.
- Shivering is the first sign it is time to return indoors. Listen to your body and go inside.

Winter Weather Talking Points and Key Messages

If you are approached by the media regarding a reported winter weather-related fatality in your jurisdiction, the following talking points may be used. Start with message A1 or A2, then follow the instructions within that box.

A1

We were notified by the medical examiner/coroner about a fatality possibly due to winter weather conditions. Our condolences go out to the family.

Go to message B1 or B2.

A2

We have <u>not</u> been notified of any recent fatalities linked to winter weather conditions.

Go to message C.

B1

Out of respect for the family, we are unable to share any details.

Go to message C.

B2

On [insert date], a [gender] ["_____ years old" or "between the ages of ____ and ____"] died during winter weather conditions.

Go to message C.

Hypothermia can be rapid and fatal. People should remain warm and safe by:

- a. Keeping dry, staying indoors, and wearing appropriate winter clothing.
- b. Making outdoor trips as short as possible.

Check in on family, friends, and neighbors who do not have heat, who spend much of their time alone, or who are more likely to be affected by the cold.

For more information, visit [insert relevant website].

Message mapping is one of the most important risk communication tools that public health agencies can employ. The goal of a message map is to convey important information in a concise and easy to understand fashion.



General Guidelines for Completing a Message Map

- Stick to three key messages or one key message with three parts for each underlying concern or specific question.
- Keep key messages brief. The reader should ideally spend less than 10 seconds per line.
- Develop messages that are easily understood by the target audience. (For communications with the general public, use a 6th to 8th grade readability level.)
- Place messages within a message set. The most important messages should occupy the first and last positions.
- Develop key messages that cite credible third parties.
- Use graphics and other visual aids to enhance key messages.
- Keep a positive tone. Messages should be solution-oriented and constructive. Try to balance negative messages with positive ones.
- Avoid unnecessary use of "absolute" words such as no, not, never, nothing, and none.

The following is a message map that could be used when addressing the general public regarding winter weather-related safety.

Main Message

"Since [November/December/January/February], there have been _____ winter weather-related fatalities in Wisconsin. To help you and your loved ones stay safe this winter..."

Key Messages Three key messages	Supporting Information Three pieces of supporting information for each key message
Message 1 Check on your neighbors to make sure they are okay, especially the elderly and those living alone.	Supporting Info 1 The elderly are less likely to sense and respond to low temperatures. Supporting Info 2 Those living alone can be isolated and unaware of the dangers posed by winter weather. Supporting Info 3 When regularly checking with your neighbors, look for signs of cold-related illness.
Message 2 If you must be outside during a winter storm, be alert for signs of hypothermia.	Supporting Info 1 Symptoms include shivering, exhaustion, confusion, memory loss, and slurred speech. Supporting Info 2 Protect yourself by wearing several layers of loose-fitting clothes underneath a wind and water resistant outer layer. Supporting Info 3 Call 911 or seek medical attention if you or someone you know develops hypothermia.
Message 3 Warming centers and shelters are available throughout Wisconsin.	Supporting Info 1 Warming centers are designated buildings with heat where the public can seek relief from the cold. Supporting Info 2 Call 211 to find the warming center closest to you. Supporting Info 3 Text SHELTER and your zip code to 43362 to find the nearest shelter.

References and Resources

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Resources

DHS Winter Weather: www.dhs.wisconsin.gov/climate/weather/winterweather.htm

 $\textbf{List of Wisconsin Tribal Health Directors:} \ https://www.dhs.wisconsin.gov/lh-depts/contacts/tribal-health-directors.pdf$

List of Wisconsin Local Health Departments: https://www.dhs.wisconsin.gov/lh-depts/counties.htm

Wisconsin Emergency Management: 608-242-3232 www.ready.wi.gov/winter/winter_weather_facts.asp

Centers for Disease Control and Prevention: www.emergency.cdc.gov/disasters/winter/

American Red Cross: 1-877-618-6628 www.redcross.org/prepare/disaster/winter-storm

Federal Emergency Management Agency: www.fema.gov

Spanish Language Portal: www.fema.gov/es/

Wisconsin Home Energy Assistance Program: www.homeenergyplus.wi.gov