

# *2017-2018 Michigan Winter Hazards Awareness*



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The Michigan Committee for Severe Weather Awareness was formed in 1991 to promote safety awareness and coordinate public information efforts regarding tornadoes, lightning, flooding and winter weather.

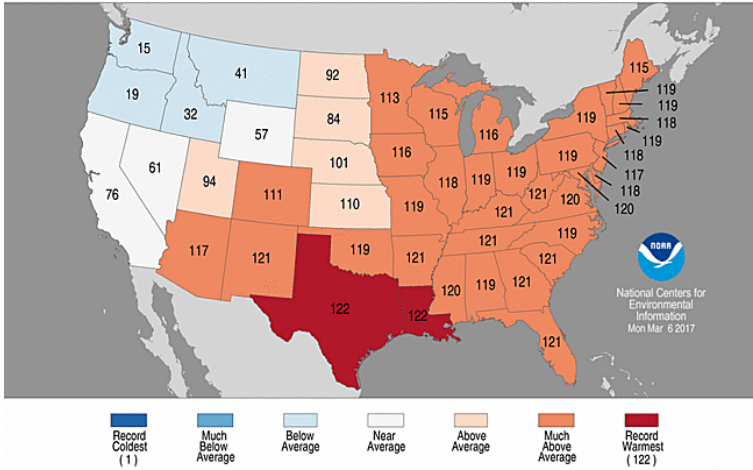
# Michigan Committee for Severe Weather Awareness

## 2016-2017 Winter Season Review

The winter of 2016-17 will be remembered for the second near record warm winter in a succession. Unlike

the winter of 2015-2016 which featured a record strong El Niño (warmer than average water temperatures in the Eastern Pacific), last winter had no such distinguishing climate forcing feature. Last winter was another very warm winter for the eastern United States, and the seventh warmest winter for the State of Michigan (see U.S. figure left). Most locations across Michigan were 3 to 5 degrees above average for the winter season (see regional figure below-right), which placed most reporting stations in their top ten warmest winters on record. It was also a very wet winter with the state recording its twelve wettest winter on record. Despite the

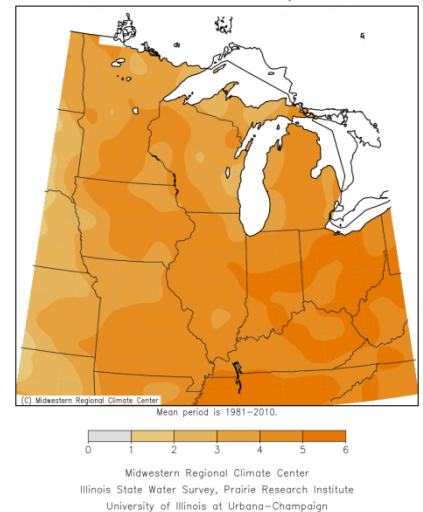
**Statewide Average Temperature Ranks**  
December 2016–February 2017  
Period: 1895–2017



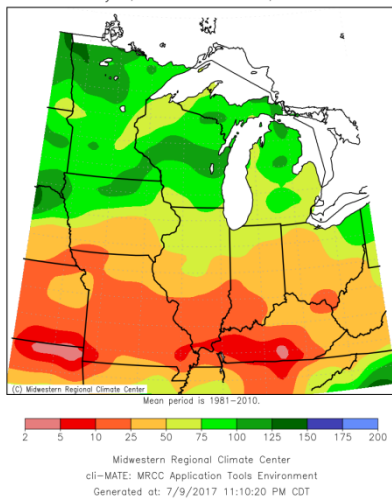
available moisture, the warmer temperatures again limited snowfall across the state. Much of the state experienced below normal snowfall with the only exception being a few locations in the Upper Peninsula and Northern Lower (see regional figure below-left) that got close to their average snowfall. In fact, most of

the significant events during last year's winter season were more typical of autumn or spring weather events with warm strong winds, rounds of severe thunderstorms and even the first recorded February tornadoes in the state's history!

Average Temperature (°F): Departure from Mean  
December 1, 2016 to February 28, 2017



Accumulated Snowfall: Percent of Mean  
July 1, 2016 to June 30, 2017



The winter season started slowly with no appreciable snowfalls for even Upper and Northern Lower Michigan through mid-November. The first significant winter storm of the season hit the state on November 18 and 19. A strong low pressure moved from Minnesota to Lake Superior. Persistent record warm weather would give way to the coldest air of the season. Ahead of the cold front severe thunderstorms broke out from Jackson northeast into the Thumb region of Lower Michigan. Lake enhanced snow and very gusty winds developed across parts of Upper and Northern Lower Michigan as the cold air flooded across the state. Wind gusts to around 60 mph were recorded near Lake Michigan and Whitefish Bay shorelines. Snow amounts were highest southeast of Grand Traverse Bay, with

Sharon picking up 11 inches of snow.

Some of the biggest winter events of the year occurred in the first half of December. First an extremely cold early season air mass produced locally very heavy lake effect snow across Upper and Western Lower Michigan.

For more information, visit [www.mcswa.com](http://www.mcswa.com)

November 2017-8

Snowfall totals of up to 2 feet occurred in some locations downwind of Lakes Superior and Michigan. Gusty winds created additional problems with blowing and drifting. As that cold air settle over the Great Lakes region, a low pressure system over the Central Plains moved northeast over Lower Michigan on December 11. The accumulating snowfall lasted for almost 24 hours. By the time the snow had ended, total snowfall accumulations ranged from 7 to 11 inches across most of Southern Lower Michigan.

The end of December and for most of January was highlighted by milder temperatures. There were just a couple of intrusions of cold air to kick off some lake effect snow. Only one winter storm affect the state during the month. A Plains low pressure system moving into the Great Lakes dumped moderate to heavy wet snow over much of Upper Michigan on the January 10. Behind the system moderate to heavy lake enhanced snow continued into the next day for the west to northwest snow belts of Lake Superior.

Record warm air pushed northward across much of the state for the latter half of February. Two rounds of rare February severe thunderstorm developed across Lower Michigan. The first severe weather episode occurred on February 24 with severe thunderstorm winds knocking down trees and hail as large as one and a half inches in diameter in locations such as McBain, Lucas and Comins in Northern Lower Michigan. The next round of severe weather was associated with a much stronger storm system on February 28 which produced heavy snowfall across parts of Upper Michigan and severe weather across extreme Southern Lower Michigan. The first February tornadoes in Michigan's recorded history touched down near the communities of Niles, Dowagiac, Brownsville and Wasepi. All four tornadoes were rated as EF1 (86 to 110 mph).

During the cold season, late autumn through early spring, Michigan weather risks also include damaging winds from strong areas of low pressure that traverse through the Great Lakes. One such low pressure system affected Michigan on March 8. High winds brought widespread wind gusts up to 70 mph for almost 8 hours! The high winds took out power lines and trees, along with numerous reports of structural damage to buildings. There were also reports of brush fires and tractor-trailers flipped around the state. Over 1 million homes and businesses lost power during the event. Due to the extensive damage, many areas were without power for several days. The high winds caused around \$500 million in damages statewide. These types of high wind events not only cause a disruption to everyday life, but are also life threatening. The high winds were in part the cause of the University of Michigan men's basketball team's plane to be pushed off the runway at Willow Run Airport. Fortunately, no deaths or injuries were reported. Two people were killed in Central Lower Michigan in Clare County near the Osceola and Clare County line when a large tree fell on their vehicle while they were driving on M-115 in Freeman Township.

Last winter ended as quietly as it started. The only late spring winter storm to hit the state was an ice storm across the higher elevations of Western Upper Michigan on April 26 and 27. A pair of low pressure systems moving along a stalled out frontal boundary produced the moderate to heavy freezing rain.

# Winter Safety Tips

## PREPARING FOR A WINTER STORM

### **At home:**

- Keep handy a battery-powered flashlight, National Oceanic and Atmospheric Administration (NOAA) weather radio and portable radio, extra food (canned or dried food is best), can opener, and bottled water (at least 3 gallons per person). Fully charge all mobile and home telephones.
- Make sure each member of the household has a warm coat, gloves, hat and water-resistant boots. Ensure extra blankets and heavy clothes are available.
- Keep on hand items for infant, elderly or disabled family members.
- Keep on hand items for your pets. Animals feel the effects of wind chill. Be sure to have suitable shelter with food and water.
- Be aware of potential fire and carbon monoxide hazards if you plan to use an emergency heating source such as a fireplace, wood stove or space heater. (See Heat Sources Safety page later in this packet)

### **Outside:**

- Avoid overexertion, such as shoveling heavy snow, pushing a car, or walking in deep snow. Sweating could lead to chill and hypothermia, and abnormally low body temperatures. Cold weather also puts extra strain on the heart, so the elderly and those with heart conditions should be especially cautious when out in the cold.
- Walk carefully on snowy, icy sidewalks.
- Wear loose-fitting, lightweight warm clothing in layers, with a waterproof outer layer. Wear a wool hat, mittens.
- Keep your clothes dry. Change wet socks and clothing quickly to prevent loss of body heat.
- Understand the hazards of wind chill. As wind speed increases, heat is carried away from a person's body more rapidly which could lead to severe hypothermia.

### **Automotive preparedness:**

- Be sure the vehicle is winterized by late fall. This includes having the proper mix of antifreeze and water in the cooling system, topping off the windshield washing solution, and checking the tire treads. Have a mechanic check the belts, hoses, tires, battery, and coolant.
- Keep the fuel tank near full, as low fuel levels can cause condensation to form, degrading fuel quality and possibly causing the fuel line to freeze. Additionally, gas stations may be closed during a severe winter storm, so it is wise to fill up if storm warnings are being broadcasted.
- Prepare an Auto Emergency Preparedness kit. Your car should always be equipped with emergency supplies. Keep the following items stored in a portable container:
  - A small battery powered radio (AM is sufficient) and extra batteries
  - Flashlight with extra batteries
  - Cellular phone / Phone book and phone list/Cell phone charger or spare battery pack
  - Windshield scraper
  - Jumper cables
  - Fire extinguisher
  - Maps / GPS Unit
  - Blanket and extra clothes
  - Flares
  - Bottled water and non-perishable, high energy foods.

- First aid kit
- Tire repair kit and pump
- Tow chain or rope and Shovel
- De-icer and extra antifreeze
- “Call Police” or other “Help” sign

# Winter Hazards FAQs

## Winter Hazards FAQs

On average, a major winter storm hits some part of Michigan at least once per month between October and April. In 2015, the last year that statistics were available, 35 people died in Michigan as a direct result of severe winter weather according to the Michigan Department of Community Health. This is in addition to victims of traffic crashes due to slippery roads and those who suffered heart attacks while shoveling snow.

### 1. What is Wind Chill?

The Wind Chill Temperature is how cold people and animals feel when outside exposed to cold air and wind. Wind makes it feel much colder and when combined with cold can result in frostbite and hypothermia faster than if there was no wind. More information, including a Wind Chill Temperature Chart and Times to Frostbite from exposure to cold and wind can be found at: [http://www.nws.noaa.gov/om/cold/wind\\_chill.shtml](http://www.nws.noaa.gov/om/cold/wind_chill.shtml)

### 2. What is frostbite and what can you do to treat it?

Frostbite is when your body tissue freezes. The most susceptible parts of the body are fingers, toes, ear lobes, tips of the nose and eyes. Symptoms include a loss of feeling in extremities and a white or pale appearance. To treat frostbite: Slowly rewarm the area and seek medical attention immediately. Do NOT rub the area, apply snow or plunge the affected area into very hot or cold water.

### 3. What is hypothermia and what are the warning signs?

Hypothermia occurs when the body temperature drops to 95 degrees Fahrenheit or lower and develops whenever body heat loss exceeds body heat gain. Hypothermia is often mistaken for fatigue, irritability, or irritability. Warning signs include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and exhaustion.

### 4. How do you treat hypothermia?

- Get medical attention Immediately!
- Begin warming the body slowly. Warm the body core first, NOT the extremities
- Prevent further heat loss. Get the person into a warm area and into dry clothing
- Wrap the person in a warm blanket covering the head and neck
- Do NOT give the person alcohol, drugs, coffee or any HOT beverage
- Give the person WARM broth and food

### 5. What is an Ice Storm?

An Ice Storm is prolonged period rain that freezes when it hits the ground, leaving a significant coating of ice on trees, power lines, buildings, roads, walkways, etc. An Ice Storm with ice accumulation that is more than 1 inch thick can paralyze a region for days to a week or more. Ice Storms can bring down trees, topple utility poles and communication towers, and can disrupt communications, power and travel for days or weeks. If an Ice Storm is in the forecast, be sure to stock up on at least 72 hours of food, water, medicine and other life-critical supplies.

### 6. What is Lake Effect Snow?

Lake effect snow occurs when cold air passes over a large warmer lake, such as one of the Great Lakes. The warmer lake and cold air creates an unstable atmosphere. The air that streams over the warmer lake and picks up some of the moisture and heat from the Great Lake and, in combination with unstable air, creates snow showers. Those snow showers move with the wind into areas downstream of the Great Lakes. Lake effect snow can create a local, intense, and narrow band of moderate to heavy snow that can extend inland as far east as across the entire Lower Peninsula. Lake effect snow may also be accompanied by strong, gusty winds and possibly lightning. Snowfall rates in the most intense lake effect events can reach 3 to 5 inches per hour! Areas that are most susceptible to lake effect snows are Northern Upper Michigan, Western Lower Michigan and to a lesser extent, the Thumb region of Lower Michigan.

#### **7. What is a Blizzard?**

Blizzard warnings are issued when sustained wind speeds or frequent gusts of at least 35 miles per hour are accompanied by considerable falling and/or blowing snow reducing visibilities to near zero, for a period of at least 3 hours.

#### **8. What do the various winter weather Advisories, Watches and Warnings mean?**

The National Weather Service issues Advisories, Watches and Warnings individually or for a combination of any of the following: snow, lake effect snow, blowing snow, freezing rain, sleet, and dangerous wind chills.

**Advisories:** Advisories are issued when inconvenient winter weather is expected that will pose some threat to life and property. Advisories are typically issued when mostly travel impacts and some school/business closures are expected, though some power outages and road closures may occur. Winter Advisories include *Winter Weather Advisories* and *Wind Chill Advisories*. Advisories are typically issued 12 to 48 hours before hazardous weather begins.

**Watches:** Watches are issued when life-threatening, dangerous winter weather is possible, but not yet immediate. Watches are commonly issued ahead of Warnings and provide advance notice on the potential for dangerous winter weather that may result in life-threatening conditions and major disruption to daily life for days to weeks. Typical impacts may include: Extremely dangerous or impossible travel, lengthy power outages, and widespread school/business/road closures. Winter Watches including *Winter Storm Watches* and *Wind Chill Watches*. Watches are typically issued 24 to 72 hours before hazardous weather would begin.

**Warnings:** Warnings are issued when life-threatening, dangerous winter weather is imminent or expected to occur. Warnings are issued when life and property will be greatly threatened, when major disruption to daily life is expected to occur and life may not return to normal for days to weeks. Typical Impacts expected include: Extremely dangerous or impossible travel, widespread lengthy power outages, and widespread school/business/road closures. Winter Warnings include *Winter Storm Warnings*, *Ice Storm Warnings*, *Wind Chill Warnings* and *Blizzard Warnings*, and are typically issued 12 to 48 hours before hazardous weather begins.

For additional information and a Prevention Guide regarding Extreme Cold, visit <http://www.bt.cdc.gov/disasters/winter/guide.asp>.

# Preventing Frozen Pipes

Frozen pipes are not just an inconvenience. An average of a quarter-million homes are damaged and lives are disrupted each winter because of frozen water pipes.

An eighth-inch crack in a pipe can spew up to 250 gallons of water a day, destroying floors, furniture, and personal property. Both plastic (PVC) and copper pipes can burst.

## Before the cold hits:

- **INSULATE** pipes in crawl spaces and attics, the ones most susceptible to freezing. Remember: the more insulation, the better protected your pipes will be.
- **HEAT TAPE** or thermostatically-controlled heat cables can be used to wrap pipes. Use only products approved by an independent testing organization, such as Underwriters Laboratories, and only for the use intended (exterior or interior). Closely follow all manufacturer's installation and operating instructions.
- **SEAL** leaks that allow cold air inside, especially near the location of pipes. Look for air leaks around electrical wiring, dryer vents, and pipes. Use caulk or insulation to keep cold air out and heat in. With severe wind chill, a tiny opening can let enough cold air inside to cause a pipe to freeze.
- **DISCONNECT** garden hoses and, if practical, use an indoor valve to shut off and drain water from pipes leading to outside faucets. This reduces the chance of freezing in the short span of the pipe just inside the house.

## When the mercury drops:

- **A TRICKLE** of water might be all it takes to keep your pipes from freezing. Let warm water drip overnight, preferably from a faucet on an outside wall.
- **OPEN** cabinet doors to allow heat to get to uninsulated pipes under sinks and appliances near exterior walls.

## If you are away:

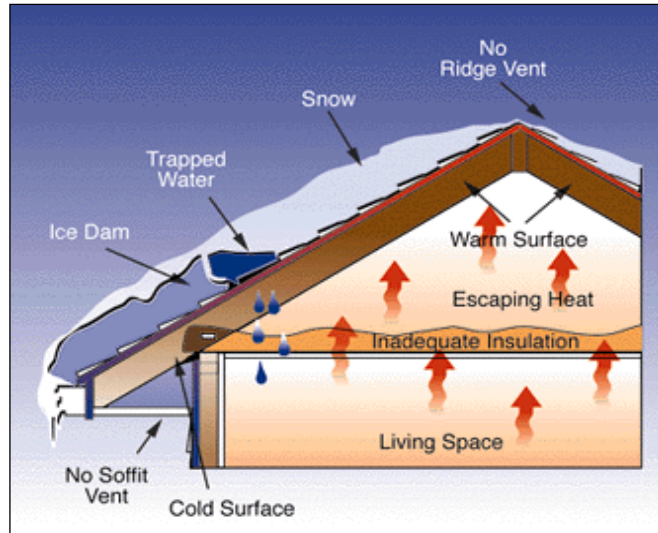
- **SET** the thermostat no lower than 55 degrees Fahrenheit.
- **ASK** a friend or neighbor to check your house daily to make sure it's warm enough to prevent freezing, or...
- **SHUT OFF** and drain the water system. Be aware that if you have a fire protection sprinkler system in your house, it will be deactivated when you shut off the water.

## If your pipes freeze:

- **DON'T TAKE CHANCES.** If you turn on your faucets and nothing comes out, leave the faucets turned on and call a plumber. If you detect your water pipes have frozen, turn off the water at the main shut-off valve in the house; leave the water faucets turned on and call a plumber.
- **NEVER** try to thaw a pipe with a torch or other open flame. Water damage is preferable to fire damage. You may be able to thaw a frozen pipe with the warm air from a hair dryer. Start by warming the pipe as close to the faucet as possible, working toward the coldest section of pipe.
- **DO NOT** use electrical appliances in areas of standing water because electrocution is possible.

# Preventing Roof Ice Dams

## Hot Tips for Preventing Cold Weather Damage



Roof ice dams occur in climates with freezing temperatures and significant snowfall. When the temperature in the attic is above freezing, snow on the roof melts and runs down the sloping roof. When the snowmelt runs down the roof and reaches the colder eaves (overhang) and gutters, it refreezes.

After several days of melting-freezing cycles, the freezing snowmelt builds up and forms a dam of ice, behind which water ponds. The ponding water can back up under the roof shingles until water enters the attic and eventually does damage to the interior ceilings, walls, and contents along the exterior walls.

Research has shown sun exposure in the winter has little effect on attic air temperature. Warm air from living spaces below penetrating into the attic is usually the culprit in the formation of roof ice dams. The presence of significant icicles along the gutters or eaves may be an indication of roof ice damming.

There's no way to guarantee an ice dam will not damage your home, but you can reduce the likelihood of an ice dam forming in the first place:

- Thoroughly clean all leaves, sticks, and other debris from rain gutters and down spouts. This allows melting roof snow to flow into gutters and through down spouts.
- Strive to keep snow on your roof to a minimum. Long-handled devices called "roof rakes" let you stand on the ground and pull the snow off the roof. Keeping heavy snow loads off your roof reduces the chances for both ice dam formation and roof failure due to the weight of ice and snow.
- Keep gutters and down spouts clear of snow and icicles all winter.
- Evaluate the **insulation** and **ventilation** in your attic. Most experts agree attic insulation should have an R-value of at least R-30 (R-38 is preferable in northern climates). In addition, good airflow from under the eaves or soffit area along the underside of the roof and out through the roof vents is essential. The insulation prevents heat loss from the interior of the home. The venting allows the attic air to stay cold enough to prevent or minimize the freeze/thaw cycle on the roof. Consult a reputable roofing and/or insulation contractor about these improvements.



# Ice Jams/Flooding

## **What is an ice jam?**

Pieces of floating ice carried with a stream's current can accumulate at any obstruction to the stream flow developing an ice jam. These ice jams can accumulate near river bends, mouths of tributaries, points where the river slope decreases, downstream of dams, and upstream of bridges or obstructions. The water held back can cause flooding upstream, and if the obstruction suddenly breaks, flash flooding can occur downstream.

## **When was the last time ice jam flooding occurred in Michigan?**

Ice jams occur every year in Michigan. In January 2013, significant ice jams formed on the Muskegon River near Rogers Heights, Michigan. Flooding from the ice jams on the Muskegon River near Rogers Heights impacted over 60 homes and was reported to have caused approximately 2.6 million dollars in damages. Over the past several years, ice jams have occurred on the Flat River near Smyrna, Looking Glass River near Eagle, Maple River near Maple Rapids, Chippewa River near Mt. Pleasant, Grand River near Portland, Grand River at Comstock Park, Grand River between Grand Haven and Robinson Township, Muskegon River near Evart, and the St. Joseph River near Burlington. Historically, ice jams have also caused flooding on the River Raisin, Thornapple, and Kalamazoo rivers.

## **What time of year is an ice jam likely to occur?**

In Michigan, an ice jam can occur anytime from early winter to late spring depending upon changes in temperatures that cause alternate freezing and melting of water surfaces. The most likely times are in early winter before the surfaces are completely frozen and in early spring when the ice cover begins to break up due to melting.

## **What effect does snow have on flooding potential?**

When snow melts, it adds water to the ground that drains away in the same way as water from rainfall. On average, one inch of fresh snowfall contains about a tenth of an inch of water. However, as snow accumulates and becomes compacted during the winter, the ratio of snow to water decreases. Thus, 10 inches of snow remaining on the ground into early spring may contain as much as five inches of water. A deep snowpack in late spring increases the flood potential.

## **How fast does snow and ice melt?**

Three consecutive days with the maximum temperature of about 50 degrees would create enough melting to cause ice breakup on small streams. These conditions would also melt two inches of snow.

## **What happens when rain falls on top of snow?**

Air temperature is still the most important factor in melting snow. Rain does not usually add much heat to the process. At 40 degrees, one inch of rain will only produce a tenth of an inch of added water from snow melt. At the same time, frozen ground will result in more of the available water running off directly to streams.

## **What are the main factors that contribute to snowmelt flooding?**

1. High soil moisture in the fall
2. Significant frost in the ground
3. High water content of existing snow cover
4. Rapid, continuous melting
5. Moderate to heavy rain during melting
6. Ice jams

The 2018 Hydrologic Outlooks for the spring snowmelt flood potential will be issued in February and March and can be found at [www.weather.gov](http://www.weather.gov)

# Preventing Flood Damage

Your local floodplain manager, building official, city engineer, or planning and zoning administrator can typically tell you whether you are in a flood or other hazard area. Your local community official is also a good source of information on how to protect yourself, your house, and property from flooding and other hazards.

## Ways to protect your house and property

Basement flood protection can involve a variety of changes to your house and property—changes that can vary in complexity and cost. You may be able to make some types of changes yourself. Complicated or large-scale changes or those that affect the structure of your house or its electrical wiring and plumbing should be carried out only by a professional contractor licensed to work in your state, county, or city.

## Some methods of flood protection include:

- **Install Sewer Backflow Valves.** In some flood prone areas, flooding can cause sewage from sanitary sewer lines to back up into houses through drainpipes. Sewage backup not only causes damage, but also creates health hazards. Backflow valves have a variety of designs ranging from simple to complex. This is something that only a licensed plumber or contractor should do.
- **Raise or Flood-Proof Heating, Ventilating, and Air Conditioning Equipment.** In flood prone houses, a good way to protect HVAC equipment is elevating it above the areas that flood. Another method is building a concrete or masonry block flood wall around the current location.
- **Anchor Fuel Tanks.** Unanchored fuel tanks can be easily moved by floodwaters. One way to anchor a tank is attaching it to a large concrete slab whose weight is great enough to resist the force of floodwaters. Elevate tanks to a minimum of one foot above the base flood elevation (the minimum elevation of water at your location defined by the National Weather Service as impacting property and life). " Floating and/or damaged tanks pose serious threats not only to you, your family, and your house, but also to public safety and the environment.
- **Raise Electrical System Components.** Any electrical system component, including service panels (fuse and circuit boxes), meters, switches, and outlets, can easily be damaged by floodwaters. All components of the electrical system, including the wiring, should be raised at least one foot above the base flood elevation.
- **Raise Washers and Dryers.** Washers and dryers can easily be damaged in a flood. To prevent this from happening, utilities can be placed on cinder blocks one foot above the base flood elevation.
- **Add a Sump Pump in Your Basement.** Sump pumps can help keep groundwater from entering your home's interior.
- **Cut Drywall so It's One-half to 1-inch Off the Floor.** This is especially important in basements. Concrete floors commonly absorb ground moisture—especially in winter months. The moisture can wick up the wallboard if it's touching the floor, allowing mold to grow out-of-sight within the walls. The gap can be hidden with wood or rubberized floor trim.
- **Don't Forget to Buy Flood Insurance.** Flood insurance provides year-round financial protection and improves your ability to quickly recover when severe storms strike and cause unexpected flooding. Call your local insurance agent or 1-888-379-9531 to reach National Flood Insurance Program specialists

For additional information, visit the official website of the National Flood Insurance Program, [www.floodsmart.gov](http://www.floodsmart.gov).

# Flood Insurance FAQs

## **Is flood damage covered by my homeowners insurance?**

Most homeowners and renters insurance policies do not cover flood damage. Flood insurance can be purchased as a separate policy.

## **Where can I get flood insurance?**

Any licensed property/casualty insurance agent can sell a flood insurance policy. If you experience trouble in locating an agent, contact the National Flood Insurance Program's (NFIP) agent referral program at 1-888-379-9531 or <http://www.floodsmart.gov/floodsmart/pages/purchaseinsurance.jsp>

## **Is there a waiting period before my flood insurance policy becomes effective?**

There is a 30-day waiting period before a new or modified flood insurance policy becomes effective.

## **Are all flood insurance policies the same?**

NFIP insurance coverage may be purchased separately for structures and contents. The NFIP has a "Standard Flood Insurance Policy" which includes various forms each with standard provisions for General Property, Dwelling and Residential Condominium Building Associations. The scope of flood insurance coverage under the "Standard Flood Insurance Policy" is based on federal statutes authorizing the NFIP, regulations, and written determinations/interpretive rulings by the Federal Administrator. There will be differences between individual policies as they related to dollar level of coverage for the structure and/or its contents, along with the level of deductible selected by the insured.

## **Do I need to live in a floodplain to get flood insurance?**

You do not need to live in a floodplain to purchase flood insurance – coverage is available for any building located in a community that is enrolled in the NFIP. For a listing of Michigan communities participating in the NFIP, visit <http://www.fema.gov/fema/csb.shtm>.

## **Is water back up in basements covered by a flood insurance policy?**

Coverage for water back up in basements (drains/sewers) is generally excluded from the policy.

## **Can I get coverage for water back up in basements?**

Although basement water back up is excluded under most homeowner's insurance policies, coverage can be obtained by purchasing an endorsement. Most insurance companies offer sewer and drain back up as optional coverage. Coverage and limits vary by insurance company, so check with your agent/company about specifics.

## **Are there steps I can take to minimize losses from water back up in basements?**

- Never store perishables or valuables in basements that you can't afford to lose or replace.
- Do not store any item near basement drains.
- Check storm drain lines to make sure they're clear of debris, roots, etc.
- Grade the property around your home to drain water away from it.
- Install gutters and make sure downspouts are extended away from the foundation in order to carry water away from the basement walls.

- Use shelving or store items several inches above the potential water level to prevent loss.
- If you do have some water seepage following storms, take corrective measures to alleviate problems in the future.
- Install check valves in basement drains. The community may have a program to assist in this matter. A plumber's input and assistance could be very beneficial and necessary.

# Winter Power Outage Tips

## Before an Outage

- Check flashlights and battery-powered portable radios to ensure that they are working, and you have extra batteries. A NOAA All Hazards radio is an important source for obtaining weather and emergency information during a storm.
- Have sufficient heating fuel, as regular sources may be cut off. Have emergency heating equipment and fuel (a gas fireplace, wood burning stove or fireplace) so you can keep at least one room livable. Be sure the room is well ventilated.
- Make sure your home is properly insulated. Caulk and weather-strip doors and windows to keep cold air out.
- Install storm windows or cover windows with plastic from the inside to provide insulation.
- To keep pipes from freezing, wrap them in insulation or layers of newspapers, covering the newspapers with plastic to keep out moisture.
- Let faucets drip a little to avoid freezing.
- Know how to shut off water valves.
- Never try to thaw a pipe with a torch or other open flame. Water damage is preferable to fire damage. You may be able to thaw a frozen pipe with the warm air from a hair dryer. Start by warming the pipe as close to the faucet as possible, working toward the coldest section of pipe.
- If your water supply could be affected (a well-water pump system), fill your bathtub and spare containers with water. Water in the bathtub should be used for sanitation purposes only, not as drinking water.
- Pouring a pail of water from the tub directly into the bowl can flush a toilet.
- If you have medication that requires refrigeration, check with your pharmacist for guidance on proper storage during an extended outage.
- Review the process for manually operating an electric garage door.

## During an Outage

- Dress for the season, wearing several layers of loose fitting, light-weight, warm clothing, rather than one layer of heavy clothing. The outer garments should be tightly woven and water repellent.
- Mittens are better than gloves.
- Wear a hat; most body heat is lost through the top of the head.
- Cover your mouth with a scarf to protect your lungs.
- Watch for signs of frostbite: loss of feeling and white or pale appearance in the extremities such as fingers, toes, ear lobes or the tip of the nose. If symptoms are detected, seek medical help immediately.
- Watch for signs of hypothermia: uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and apparent exhaustion. If symptoms are detected, get the victim to a warm location, remove any wet clothing, warm the center of the body first and give warm, non-alcoholic beverages, if the victim is conscious. Get medical help as soon as possible.
- Snowdrifts can be used as a makeshift freezer for food. (Be aware of attracting animals).
- Snow can be melted for an additional water source.
- Turn off or disconnect appliances and other equipment in case of a momentary power “surge” that can damage computers and other devices. Consider adding surge protectors.

## After an Outage

- Be extra cautious if you go outside to inspect for damage after a storm. Downed or hanging electrical wires can be hidden by snowdrifts, trees or debris, and could be live. Never attempt to touch or move downed lines. Keep children and pets away from them.

- Check with/help neighbors.
- Continue to stay off streets.
- Do not touch anything power lines are touching, such as tree branches or fences. Always assume a downed line is a live line. Call your utility company to report any outage-related problem.

## Heat Sources Safety

Each year, fire claim the lives of 4,000 Americans, injures tens of thousands, and cause billions of dollars of damage. People living in rural areas are more than twice as likely to die in a fire as those living in mid-sized cities or suburban areas. The misuse of wood stoves, fireplaces, portable space heaters, and kerosene heaters is especially common in rural areas.

The United States Fire Administration (USFA) believes rural fire problems can be reduced by teaching people to recognize potential hazards.

The following precautionary steps can greatly reduce an individual's chances of becoming a fire casualty:

### **Wood Stoves**

Wood stoves cause over 9,000 residential fires every year. Carefully follow the manufacturer's installation and maintenance instructions. Check for cracks and inspect legs, hinges, and door seals for smooth joints and seams. Use only seasoned wood for fuel, not green wood, artificial logs, or trash. Inspect and clean your pipes and chimneys annually, and check monthly for damage or obstructions. Be sure to keep combustible objects at least three feet away from your wood stove.

### **Electric Space Heaters**

Only buy heaters with the Underwriter's Laboratory (UL) safety listing. Check to make sure it has a thermostat control mechanism, and will switch off automatically if the heater tips over. "Space" heaters need their space. They are not dryers or tables; don't dry clothes or store objects on top of your heater. Keep combustibles at least three feet away. Never use an extension cord and always unplug your electric space heater when it is not in use.

### **Kerosene Heaters**

Buy only UL-approved heaters, and check with your local fire department on the legality of using a kerosene heater in your community. Never fill your heater with gasoline or camp stove fuel; both flare up easily. Only use crystal clear K-1 kerosene. Never overfill any portable heater or fill when it is still hot. Only use the kerosene heater in a well ventilated room.

### **Wood Burning Fireplaces**

Fireplaces regularly build up creosote in their chimneys. Fireplaces need to be cleaned out frequently and chimneys should be inspected for obstructions and cracks to prevent deadly chimney and roof fires. Check to make sure the damper is open before starting any fire. Never burn trash, paper, or green wood in your fireplace. These materials cause heavy creosote build-up and are difficult to control. Use a screen heavy enough to stop rolling logs and big enough to cover the entire opening of the fireplace to prevent sparks from igniting carpet, furniture or other combustible items. Don't wear loose-fitting clothes near any open flame. Make sure the fire is completely out before leaving the house or going to bed. Store cooled ashes in a tightly sealed metal container outside the home.

Having a working smoke alarm and carbon monoxide detector (with battery backup) dramatically increases your chances of surviving a fire. Remember to practice a home escape plan frequently with your family.

Portable generators are useful when temporary or remote electric power is needed, but they can be hazardous. The most common dangers associated with portable generators are carbon monoxide poisoning, electrical shock or electrocution, and fire.

The United States Fire Administration (USFA) provides simple steps you can take to prevent the loss of life and property resulting from improper use of portable generators.

**The United States Fire Administration  
National Fire Protection Division  
16825 South Seton Avenue  
Emmitsburg, MD 21727  
[www.usfa.dhs.gov](http://www.usfa.dhs.gov)**

**To avoid carbon monoxide hazards:**

- Always use generators outdoors and away from doors, windows, and vents.
- NEVER use generators in homes, garages, basements, crawl spaces, or other enclosed or partially enclosed areas, even with ventilation.
- Follow manufacturer's instructions.
- Install battery-operated or plug-in (with battery backup) carbon monoxide alarms in your home, following manufacturer's instructions.
- Test carbon monoxide alarms often, and replace batteries when needed.
- NEVER cook inside or heat your house with a gas, wood, or charcoal grill.
- PAY attention to flu-like symptoms, especially if more than one person has them. Headache, dizziness, confusion, fatigue and nausea are all common symptoms of carbon monoxide exposure.
- MOVE outside to fresh air immediately if a carbon monoxide leak is suspected. Go to the emergency room or call 911 if you suspect carbon monoxide poisoning.

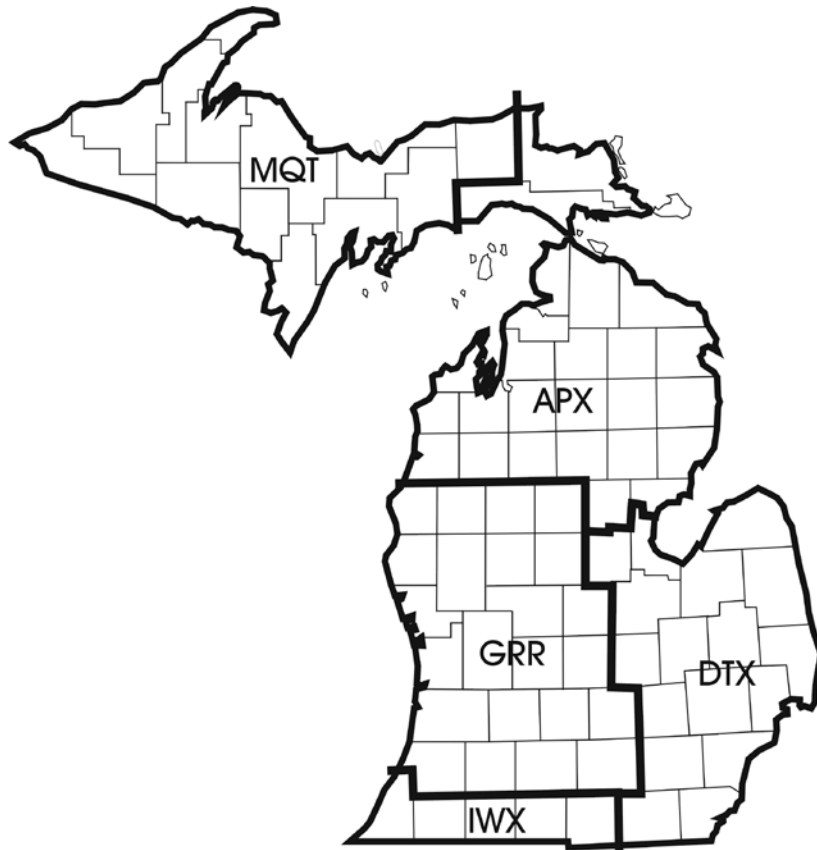
**To avoid generator electrical hazards:**

- Keep the generator dry. Operate on a dry surface under an open, canopy-like structure.
- Dry your hands before touching the generator.
- Plug appliances directly into generator or use a heavy-duty outdoor-rated extension cord. Make sure entire extension cord is free of cuts or tears, and the plug has all three prongs, especially a grounding pin.
- NEVER plug the generator into a wall outlet. This practice, known as back-feeding, can cause an electrocution risk to utility workers and others served by the same utility transformer.
- If it's necessary to connect the generator to house wiring in order to power appliances, have a qualified electrician install appropriate equipment, your utility company may be able to install an appropriate transfer switch.

**To Avoid Fire Hazards:**

- Before refueling the generator, turn it off and let it cool. Fuel spilled on hot engine parts could ignite.
- Always store fuel outside of living areas in properly labeled, non-glass containers.
- Store fuel away from any fuel-burning appliance.

# National Weather Service Offices



## **Detroit/Pontiac - DTX**

NWS Office, NOAA  
9200 White Lake Road  
White Lake, MI 48386-1126  
(248) 625-3309, Ext. 726  
Contact: Rich Pollman  
[www.weather.gov/dtx](http://www.weather.gov/dtx)  
[Richard.Pollman@noaa.gov](mailto:Richard.Pollman@noaa.gov)

## **Gaylord - APX**

NWS Office, NOAA  
8800 Passenheim Road  
Gaylord, MI 49735-9454  
(989) 731-3384, Ext. 726  
Contact: Jim Keysor  
[www.weather.gov/apx](http://www.weather.gov/apx)  
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## **Grand Rapids - GRR**

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4899 South Complex Drive, SE  
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## **Marquette - MQT**

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## **Northern Indiana - IWX**

NWS Office, NOAA  
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