

Risky Weather Best Practice Guide

When the Weather Turns Bad

Heavy rain, snow, ice, fog, high winds, and sleet are all conditions that can make driving extremely hazardous because they can limit traction and visibility. Risky conditions can make it hard to spot hazards, such as debris, pedestrians, and even other drivers. They can also make it difficult to respond to hazards and can lead to a dangerous skid.

When possible, driving in these conditions should be avoided, but this is not always an option, especially if risky weather develops during your journey. There are many steps you can take to improve your safety when the weather is bad, starting before you get in your vehicle.



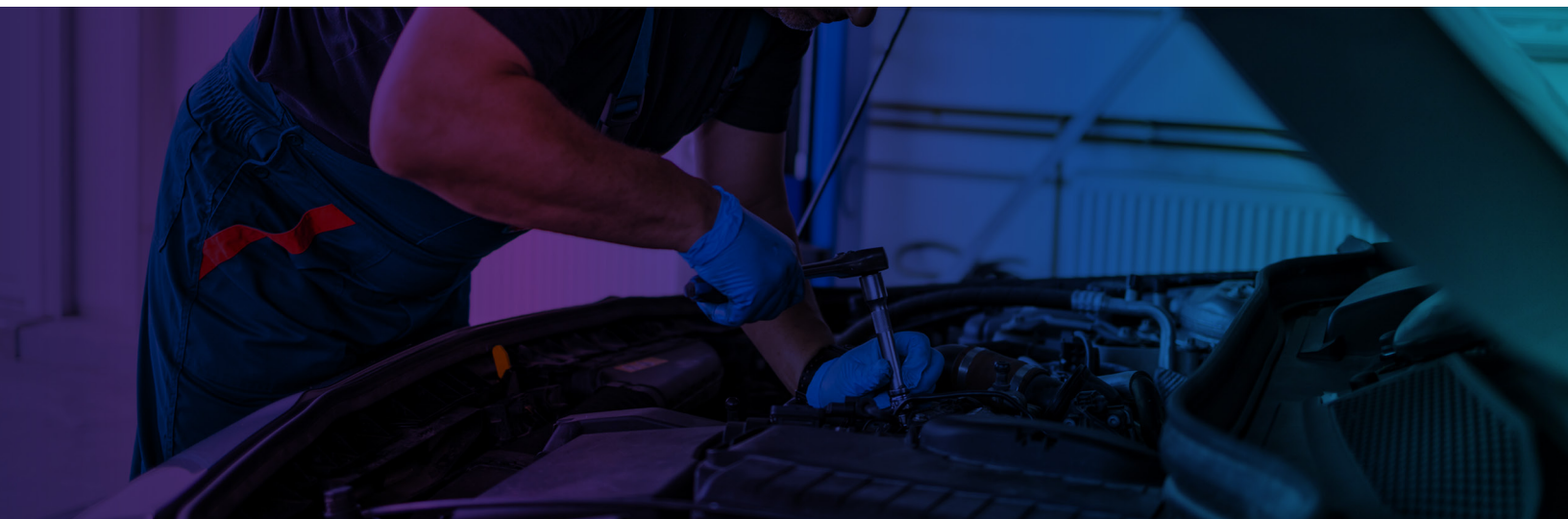
Preparing for Risky Weather

Maintenance

Performing regular maintenance improves your vehicle's safety as well as its efficiency and resale value. Establish a routine to regularly check your vehicle for issues. Consult your owner's manual and the manufacturer's guidelines for specific details.

Check the following during your routine inspections:

- **Maintenance Records** — Make sure your vehicle is maintained and serviced correctly and that no immediate maintenance is needed.
- **Battery** — Regularly inspect your battery for corrosion and damage. Also, be sure to test your battery at least twice a year because it can be affected by extreme temperatures year-round.
- **Tires** — Make sure your tires have good tread depth and are in good condition, properly aligned, and inflated correctly.
- **Fluids** — Regularly check your fluids, including oil, coolant, and wiper fluid. Seasonal wiper fluid can help with an increase in insects and pollen in warmer months while fluid for colder months is resistant to freezing and can help clear ice from your windshield. NEVER mix dishwashing liquid into your wiper fluid because the chemicals can damage your paint and create bubbles that impair your vision. Also, check under your vehicle for leaks that may need immediate attention.
- **Body** — Look for scrapes, damage, and loose panels.
- **Visibility** — Make sure the low-beam and full-beam headlights, indicators, hazard lights, and fog lights are clean and working properly. Also, test your windshield wipers. Ensure windows, mirrors, and lights are clear of condensation, and snow before setting out.



Emergency Kit

It is important to be prepared in case of an emergency.

Pack a breakdown kit that includes the following:

- First aid kit
- Jumper cables
- Tire gauge
- Flashlight
- Emergency flares, triangles, and reflective vest
- Extra food and water
- Phone charger
- Additional emergency items required by your employer or by law in your state or country

Check the Forecast

Get into the routine of checking the weather before your trips. Anticipate possible weather conditions that could become hazardous, such as severe storms, snow, and fog. Leave earlier or adjust your expected time of arrival based on weather conditions, and update your employer (if driving for work purposes), friends, and loved ones about your location and estimated time of arrival if you do encounter adverse conditions. If severe weather is expected, consider postponing your trip.

If needed, stop for an extra break and wait for the weather to improve. If you are traveling with a passenger, they can also check the forecast, alternate routes, and service station locations on their phone. Remember to adjust your speed and following distance as weather conditions change, increasing your distance if traction or visibility is limited. Pull over in a safe, legal place away from traffic if conditions make it too dangerous to drive.



Keep in Touch

During your trips, be sure to keep in touch with your employer (if driving for work purposes), friends, and loved ones. Charge your phone in a charging cradle to keep the battery full, and park in a safe location before sending updates on your estimated time of arrival or, if applicable, ask a passenger to send the update for you.

Heavy Rain and Severe Thunderstorms

Safety Tips

If you encounter heavy rain or severe thunderstorms, here are some tips to help keep you safe:

- **Following Distance** — Two to three seconds of following distance is suggested during ideal conditions, but it can take twice as long to stop on wet roads, so increase your following distance so you can stop safely.
- **Speed** — The faster you travel, the harder it is to come to a safe stop if you encounter hazards and the more likely you are to enter a dangerous skid. Slow down to help stay safe.
- **Visibility** — Use low-beam headlights to help other drivers see you and signal your intentions before making any maneuvers. If your vehicle is fitted with automatic lights, you may need to switch to the manual setting if you are driving in wet but bright conditions. If this happens, remember to switch back to the automatic setting once the weather improves. Adjust your climate controls to help prevent your windows from fogging. Use your hazard lights if you need to dramatically reduce your speed or if you need to pull over. If visibility makes it difficult to spot hazards, find a safe place to park and wait for conditions to improve.

There can be as many as 40,000 thunderstorms each day around the world, which can produce tornadoes, floods, lightning, and damaging winds.



- **Standing Water** — Watch out for large or fast-moving vehicles driving through puddles because the spray can impair your vision. Driving too fast through puddles could inadvertently spray pedestrians, cyclists, and other motorists. Reduce your speed and maintain your space away from hazards and other vehicles. If you encounter standing water, it could be hard to gauge its depth. Turn around and find an alternate route because driving through standing water could strand your vehicle or sweep it away.
- **Cruise Control** — Reduced traction could cause cruise control to accelerate quickly, which could cause a skid, so turn off cruise control.
- **Other Adverse Weather** — Severe weather, such as tornadoes, floods, lightning, and damaging winds, can also accompany heavy rain and thunderstorms, so stay informed about changing conditions as you travel.

Hydroplaning

If you enter a skid, do not panic. First, do not brake or accelerate suddenly. Ease off the accelerator and steer in the direction you want the front of the vehicle to go. Once you regain control of your vehicle, pull over to a safe and legal place until conditions improve.

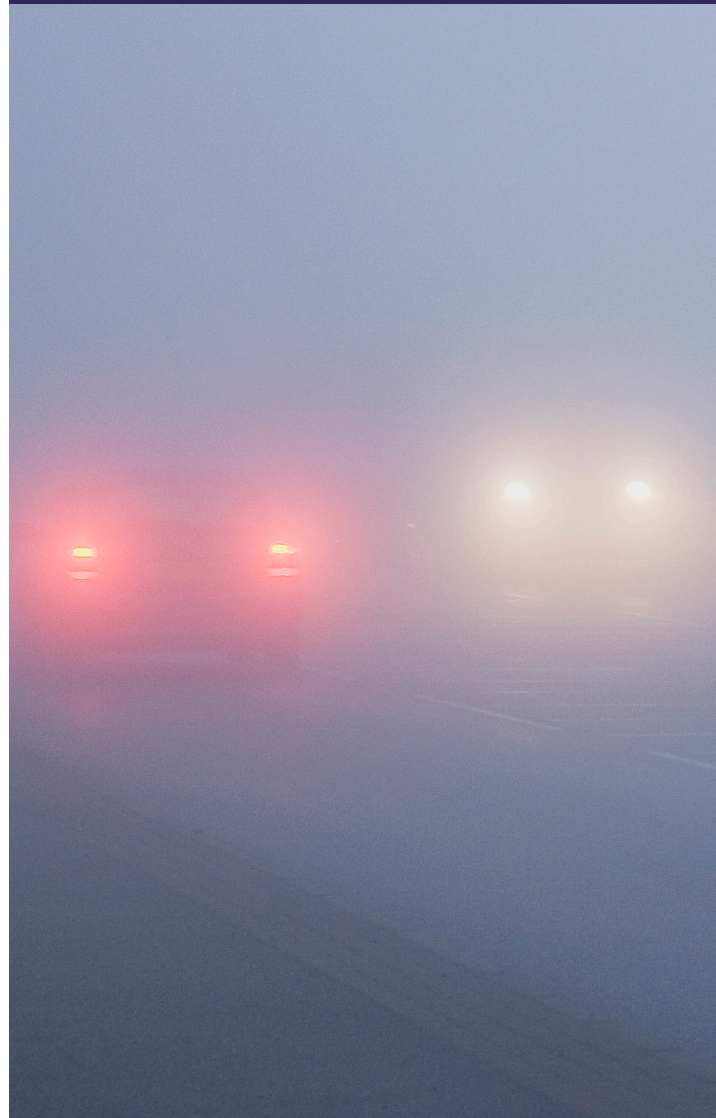


Fog

These best practices can help you stay safe when visibility is low:

- Increase your following distance. Leave plenty of space between yourself and the vehicle in front of you to account for sudden stops or changes in traffic patterns.
- Since fog reduces visibility, reduce your speed so you have time to react to hazards. Leave a little earlier or adjust your estimated time of arrival to give yourself more time to reach your destination.
- Use low-beam headlights and fog lights, if you have them. Never use your full-beam headlights because the fog will reflect the light back at you, making it more difficult to identify hazards. Also, remember to switch off the fog lights when conditions improve to avoid blinding other drivers and so any rear fog lights do not obscure your brake lights.
- Do not use the vehicle's rear lights in front of you as a guide. This can mean you are following too closely. Instead, increase your following distance and use the lane lines or roadside reflectors to help you maintain your lane positioning.
- Minimize distractions. Keep your phone in a charging cradle to keep it secure and maintain its charge in case of an emergency. Do not respond to calls or messages while driving because even hands-free calls can take your attention from the road and cause you to miss hazards.

Fog can make it extremely difficult to drive because it reduces visibility. In fact, fog is most common near bodies of water and in areas with high elevation changes. Be aware that smoke from wildfires can also impair visibility.



- To combat moisture or ice on your windshield, take advantage of your windshield wipers and defroster.
- Turn off cruise control. Foggy conditions can hide hazards, so it is best to maintain complete control of your vehicle.
- Roll down your window to listen for other vehicles that may be hidden in the fog, especially at intersections.
- In extremely dense fog, turn on your hazard lights, reduce your speed, and pull into a safe location, such as a parking lot, if it is safe and legal to do so. If there is no parking lot to pull into, pull your vehicle off to the side of the road as far as possible. Once you come to a stop, make sure your hazard lights are still illuminated and set the emergency brake. Do not resume your drive until conditions improve.



Winter Storms – Ice, Snow, Slush, and Freezing Rain

The following best practices can help you stay safe in snowy and icy conditions:

- Check the weather before you leave so you are not surprised by a sudden snow or ice storm. Conditions can change quickly, so stay aware and postpone your drive if the weather makes your journey unsafe.
- Allow extra room to slow down and stop for sudden hazards. Travel at a speed that will allow you to stop within the distance you can see to be clear, and give yourself a wide safety cushion around your vehicle.
- Since traction can be reduced, use slow, smooth, and steady maneuvers whenever you accelerate, brake, or turn. Use the highest gear possible to avoid wheel spin. If your vehicle is equipped with stability control or traction control, keep an eye on your dashboard for warnings that can alert you to slick conditions that might not otherwise be noticed. Many modern vehicles are fitted with a snow mode that can be activated to increase traction. If your vehicle does not have a snow mode, you may find that eco-mode helps increase traction by reducing the sensitivity of the throttle. If you get stuck, it may be helpful to temporarily turn off traction control until you get moving again, but remember to turn it back on once you resume your drive.

In the US, 24% of weather-related crashes occur on snowy, slushy, and icy roads and 15% happen during snowfall or sleet. Winter weather can reduce traction and visibility, which can be extremely dangerous because it can make it hard to see and respond to hazards.



- Four-wheel drive and all-wheel drive vehicles may need to activate or adjust their drive and traction settings to maximize performance in slick conditions. Refer to the manufacturer's guidelines for more details.
- Be careful on hills. Do not power up inclines because accelerating rapidly can cause the tires to spin. Instead, use inertia and slowly accelerate up the hill. Do not stop on an incline if you can help it because you may have trouble gaining enough traction to continue uphill from a complete stop. Slow down as you reach the crest of a hill, scan for hazards, and use caution when braking as you head downhill.
- It can take 10 times longer to stop on ice than on a dry road, so increase your following distance. Scan the road far ahead to give yourself enough time to react to sudden hazards, and adjust your speed gradually well in advance. To brake on ice and snow without locking your wheels, move into a low gear earlier than normal or use traction control and ease off the accelerator, allowing your speed to fall. Use the brake pedal gently to avoid losing control of your vehicle.
- Be aware that there might be stranded vehicles blocking the road, so scan ahead for hazards and hazard lights. Give a wide safety cushion when overtaking other vehicles stopped on the shoulder or in the road, when safe and legal to do so.
- Remember that bridges and overpasses freeze before other road surfaces, so reduce your speed and drive carefully when traveling over bridges. Also, remember that precipitation in freezing temperatures can produce freezing rain, which can be hard to spot, so reduce your speed and increase your following distance if moisture is present.
- If you begin to skid, ease off the accelerator but do not brake suddenly. Steer where you want the front of the vehicle to go. After you have regained traction, drive to a safe location to stop and wait for conditions to improve. Only resume your drive when it is safe. If a skid leaves you stranded or in a collision, do not panic. Assess any injuries and call emergency services. Stay inside your vehicle until help arrives.



Floods

Floods can occur during periods of heavy rain or rapid snowmelt. Water on the road can reduce your vehicle's traction and make it unsafe to drive. In Asia, as many as 1.2 billion people, or around a third of the world's population, face the risk of flood damage. Use these tips to help stay safe on wet roads:

- If you encounter floodwaters, find an alternate route that avoids areas that could flood, such as valleys, riversides, and canyons.
- Slow down and give yourself a wide safety cushion so you have time to respond to hazards.
- NEVER drive through floodwaters, especially moving water. It can be difficult to gauge the depth and speed of moving water, so do not attempt to cross flowing streams or flooded roads. A passenger vehicle can be swept away by as little as 3 inches (in) / 8 centimeters (cm) of moving water. Keep in mind that some roads or roadsides, especially those made of dirt or gravel, can wash away with little notice.
- If you must drive through standing water, avoid curbs and drains where the water could be deeper. Drive slowly and carefully and keep in mind that 6 in / 15 cm of water will reach the bottom of most passenger vehicles, potentially causing a loss of control and engine stalling. Remember, water can damage your engine and your vehicle's electronics, so avoid crossing flooded areas whenever possible.



- If you drive through water, test your brakes afterward to make sure they are still functioning properly. Water can reduce the efficiency of your brakes and your tires.
- If you need to pull off to the side of the road, find a safe and legal area to do so, illuminate your hazard lights, and move as far away from traffic as possible. Only resume your drive after the floodwaters recede.
- If conditions worsen and you just abandon your vehicle, do NOT walk through moving water. Just 6 in / 15 cm of moving water can knock you down. Move to higher ground and use a stick or similar gauge to judge the depth of the water in front of you. Look out for slipping and tripping hazards, such as curbs, manhole covers, and washed-out roads. Keep in mind that water levels can change quickly, and you should assume that floodwater is contaminated by bacteria from wastewater.

Postpone your drive if you receive flood warnings. Update your employer (if driving for work purposes), friends, and loved ones about your plans and new estimated arrival time.



Wildfires

Over the past few decades, the frequency, duration, and intensity of wildfires has increased worldwide. Wildfires can occur almost anywhere, especially in dry, hot conditions. If you drive in fire-prone areas, use the following tips to help stay safe:

- **Be Prepared** — Before your drive, check for drought conditions, high temperature warnings, and high wind warnings. Familiarize yourself with evacuation zones and emergency shelters. Follow posted road closure signs and evacuation routes and stay informed about conditions by tuning in to your local traffic station.
- **Emergency Kit** — Make sure you have extra food and water in your emergency kit. Consider adding a fire blanket as well. Also, make sure your phone is charged and that you keep in touch with coworkers or loved ones on your status and estimated time of arrival as you make stops to rest, refuel or recharge, and check on changing wildfire conditions.
- **Slow Down** — Reduce your speed if you encounter smoke, traffic, or other hazards during your drive. Increase your following distance to give yourself extra time to respond to hazards. Do not stop in active fire zones. Instead, use slow, steady, and safe maneuvers while following evacuation routes and avoiding hazards.



- **Watch for Smoke** — Wildfires can impair your visibility and can make it difficult to breathe. Turn on your lights to help see hazards and to help other drivers see you. Drive with the windows up to block any particulate matter from entering your vehicle. Do not use the recirculation setting because doing so could allow carbon dioxide to accumulate as you drive, especially in newer vehicles. Consider replacing your air filters if you have been driving through smoky areas. If low visibility makes it difficult to identify hazards, move to a safe place and only resume your drive when conditions improve.
- **Livestock and Animals** — Be aware that livestock and animals may act irrationally when fires are present. Some animals may try to cross the road to escape fires so slow down and scan the sides of the road for potential hazards as you drive. Slow down and do not sound your horn at animals in the road because doing so could scare the animal and make them act even more irrationally.
- **Emergency Vehicles** — Watch for emergency vehicles that may be responding to wildfires in the area. Pull over or slow down to allow emergency vehicles to overtake you safely. Listen to all directions given by emergency personnel and follow evacuation traffic patterns when necessary.
- **Avoid Added Hazards** — Avoid driving over dry grass and plant material. Do not smoke or throw out matches that could spark a wildfire. Do not allow chains or other objects on your vehicle to touch the road's surface, and maintain your vehicle — especially the brakes, tires, fuel lines, and brake lines — to prevent sparks that may cause an additional fire. Avoid downed power lines and debris and monitor any health conditions that could be made worse by particulate matter in the air.



Know When to STOP
— Remember, **NEVER**
drive through fire.
Obey road closures
and evacuation
traffic patterns and
keep informed by
listening to traffic
updates on your
vehicle's radio, if
possible.

High Winds

The following tips can help you stay safe during high winds:

- Check the weather and available routes before you leave for high-wind advisories, watches, and warnings. When there are high-wind warnings, some routes may be closed to large or high-sided vehicles. Give yourself extra time because you will need to drive slower than normal. Listen to the radio to stay updated.
- Use extra caution when driving on exposed routes, such as bridges, overpasses, and high open roads.
- Slow down. Driving slower than the posted speed limit helps lessen the dangers of wind and improves your control over your vehicle.
- Increase your following distance. Maintain a safe distance from other road users to give yourself and others time and space to avoid sudden hazards.
- If overtaking another vehicle, avoid driving alongside the other motorist for a long period of time because doing so increases your risk of being sideswiped. Be prepared for strong or sudden gusts when overtaking high-sided vehicles. Large commercial vehicles, vans, buses, and those towing trailers are vulnerable to losing control and tipping over in high winds. They can also create turbulence for two-wheelers and other small vehicles.

High winds can be extremely dangerous because they can make it difficult to control your vehicle and harder to anticipate hazards. In fact, high winds are a common cause of traffic collisions.




- Reduce distractions. Use a charging cradle for your phone to secure it and maintain its charge. You should pay extra attention to the road and anticipate gusts in windy conditions.
- Watch out for hazards ahead, including debris or objects that have been blown into the road. Tree limbs may break or other debris may come loose during strong winds.
- NEVER drive over downed power lines and avoid anything that could be touching downed lines, including other vehicles and tree branches. Report downed lines once you are safely stopped away from traffic.
- Keep both hands on the steering wheel because high winds can make it more difficult to steer. The wind may suddenly move your vehicle, especially when moving from protected to unprotected areas, so anticipate steering corrections. If you do not feel comfortable driving, pull over to a safe place until the wind dies down.
- High winds can kick up dust, dirt, snow, and other debris, so turn on your headlights to increase visibility, if needed.
- When arriving at your destination, avoid parking near trees, telephone poles, and unstable structures to reduce the chance of objects falling onto your vehicle.
- If high winds are severe enough to prevent safe driving, find a safe area to park, making sure you are away from trees, power lines, or other tall objects that could be blown over.



Extreme Heat

Use these helpful tips when traveling in the heat:

- Monitor the weather before you leave so you are aware of advisories, watches, and warnings that could affect your drive.
- Inspect your tires. For every 10°F / 5.6°C increase in temperature, your tire pressure can increase by about 1–2 pounds per square inch (PSI) / 3.4–6.9 kilopascal (kPa). Be aware that extremely hot road surfaces can also increase your tire pressure. Check your tires' pressure, wear, and tread and remember to also check your spare tire, if you have one, to make sure it is properly inflated.
- Before you leave, check these fluids to make sure you are prepared to travel in hot conditions:
 - » Coolant
 - » Oil
 - » Transmission fluid
 - » Brake fluid
 - » Power-steering fluid
 - » Wiper fluid
- Test your air conditioning and get it serviced if it is not cooling the interior of your vehicle.
- Inspect your vehicle's belts and hoses to make sure no further service is required.
- Clean and check the battery. Extreme heat can cause additional wear on your vehicle's battery, so be sure to check the battery at least twice a year.
- Update your emergency kit with extra water, snacks, and sunscreen, and keep your phone in a charging cradle to secure it and maintain its charge for emergency calls.
- Make sure your vehicle always has at least half a tank of fuel — or for electric vehicles (EVs), that the battery is at least half full — in case you become stranded and need to cool the interior for an extended period of time.
- Know that your vehicle may perform differently in extreme heat. Cooling the cabin in high temperatures can increase the load on your engine; this is also true for EVs. Extreme heat can also affect EV charging time. Be sure to familiarize yourself with your particular vehicle before your trip.



Extreme heat can be deadly, and each year, millions of motorists are stranded during the hot months.

- Act quickly if your vehicle starts to overheat. If you notice that the temperature gauge has moved above the halfway mark, turn off the air conditioning, open the windows, and turn on the heat to give the engine a break. Pull over if it is safe and legal to do so.
- If you see smoke coming from your vehicle, pull over to a safe place and call roadside assistance or emergency services, where appropriate. Do NOT open the hood of an overheated vehicle if you see smoke and do NOT add coolant or water until the vehicle has cooled.
- Since extreme heat can affect your tires, you should know what to do in the event of a tire blowout. First, monitor your tire pressure and avoid driving over rough surfaces, such as cracks, potholes, and gravel, that can damage your tires. If you do experience a blowout, remain calm and steer to the side of the road. Illuminate your hazard lights and call roadside assistance.
- Keep an eye on any passengers. In 90°F / 32°C, the interior of your vehicle can reach 110°F / 43°C within just 10 minutes of parking and turning off the air conditioning. Do NOT leave children or pets in a parked vehicle, even for just a few minutes, and bring plenty of water for the trip.
- Postpone your trip or adjust your arrival time if conditions become unsafe. Update your employer (if driving for work purposes), friends, and loved ones about your travel plans. Remember, it is always better to avoid taking unnecessary risks when possible.



Extreme Cold

Extreme cold can worsen road conditions, leading to ice and slushy roads. Keep these best practices in mind when traveling during colder months:

- Monitor the weather before you leave so you are aware of advisories, watches, and warnings that could affect your drive.
- Inspect your tires. For every 10°F / 5.6°C decrease in temperature, your tire pressure can decrease by about 1–2 PSI / 3.4–6.9 kPa. Be aware that extremely cold road surfaces can also decrease your tires' pressure and traction. Check your tires' pressure, wear, and tread and remember to also check your spare tire, if you have one, to make sure it is properly inflated.
- Before you leave, check these fluids to make sure you are prepared to travel in cold conditions:
 - » Coolant
 - » Oil
 - » Transmission fluid
 - » Brake fluid
 - » Power-steering fluid
 - » Wiper fluid
- Test your heating system and get it serviced if it is not warming the interior of your vehicle.
- Inspect your vehicle's belts and hoses to make sure no further service is required.
- Clean and check your battery. Extreme cold can cause additional wear on your vehicle's battery, so be sure to check the battery at least twice a year.
- Update your emergency kit with extra food and water, warm clothes, blankets, an ice scraper, and a shovel. Keep your phone in a charging cradle to secure it and maintain its charge for emergency calls.



- Make sure your vehicle always has at least half a tank of fuel — or for EVs, that the battery is at least half full — in case you become stranded and need to heat the interior for an extended period of time.
- Know that EVs may perform differently in extreme cold. Chargers and batteries are less efficient in the cold, which can result in longer than normal charging times and queues at charging stations. Using temperature controls also lowers your battery's charge — sometimes by as much as 40% — especially if the heating system is not equipped with a heat pump. Use seat heaters instead, if possible, and plan extra stops to recharge when needed.
- Drive slowly and increase your following distance since cold temperatures can freeze moisture on the road, especially over bridges and exposed areas. Be aware that black ice can be difficult to spot and is extremely dangerous.
- Focus on slow, smooth, and steady maneuvers to avoid a dangerous skid. Minimize the need to come to a sudden or complete stop by scanning the road well ahead of your vehicle and adjusting your speed.
- If conditions make it dangerous to continue your drive or if you become stranded, keep these tips in mind:
 - » Stay with your vehicle to make it easier for emergency personnel to locate you.
 - » Stay warm by using jackets, blankets, and other materials to insulate your body.
 - » Conserve fuel or EV battery charge by running the engine and the heater in short spurts.
 - » Clear the exhaust pipe on conventional vehicles to reduce the risk of carbon monoxide poisoning.
 - » Tie a brightly colored cloth to your vehicle's door handle to signal distress.
 - » Use your phone to call for help and remain calm.

Postpone your trip or adjust your arrival time if conditions become unsafe. Update your employer (if driving for work purposes), friends, and loved ones about your travel plans. Remember, it is better to arrive late than to take unnecessary risks and not arrive at all.



Other Natural Disasters

Natural disasters are severe weather events that have the potential to threaten human safety, property, and public infrastructure. Natural disasters include winter storms, floods, tornadoes, hurricanes, wildfires, and earthquakes. They can occur seasonally and without warning, so it is important to be prepared in case of an emergency.

- **Know Your Zone** —Familiarize yourself with your area and identify evacuation routes in case of an emergency. Have a plan for emergency shelter-in-place and evacuation orders and discuss protocols with loved ones.
- **Stay Informed** — Keep a weather radio nearby to receive warnings about conditions that could affect visibility or traction on your drive.
- **Emergency Kit** — Keep your vehicle's emergency kit stocked and secured in a safe, accessible place.
- **Emergency Guidance** — Never enter a closed area because it could put you and emergency personnel at risk. Always follow emergency messaging, including road closures, emergency traffic patterns, and evacuation orders.

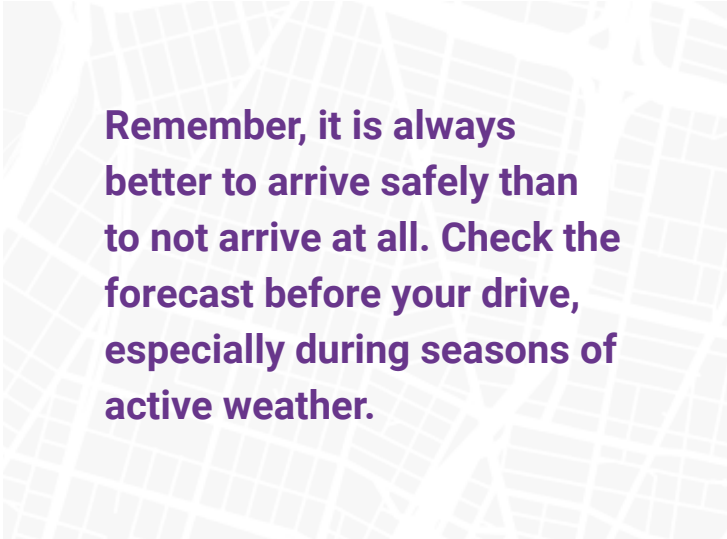


If You Get in Trouble

Although vehicle maintenance and safe driving can help eliminate most weather-related issues, emergency situations can still arise.

If you break down or become stranded, keep these best practices in mind:

- Stay calm and do not panic.
- Turn on your hazard lights and find a safe place far away from traffic to park your vehicle.
- Turn your wheels away from the road and engage the emergency brake so if your vehicle slips out of gear, it will not roll into traffic.
- Use emergency flares or reflective triangles to make your vehicle more visible.
- Note your location using your phone. If your phone is not working, locate route markers, signs, and landmarks to pinpoint your location.
- Contact roadside assistance or emergency services and give them your location.
- Stay with your vehicle, if possible, until help arrives. This will make it easier for them to locate you and your vehicle will shelter you from the elements.
- Lock your doors to remain safe while waiting for assistance. Do NOT attempt to flag down other drivers for help.
- If it is raining or snowing, do not leave the hood open as you wait. Water can damage your vehicle's electrical components, which can affect the lights, wipers, and climate controls and can make it difficult to restart your vehicle.
- Use your emergency kit's first aid kit, food, water, and other supplies as needed.
- Hang a white or brightly colored cloth on your window or door handle to signal that you are in distress.
- If you must leave your vehicle, park safely away from the road and exit on the side away from traffic. Make yourself visible to others and move to higher ground away from the flow of traffic.



Remember, it is always better to arrive safely than to not arrive at all. Check the forecast before your drive, especially during seasons of active weather.