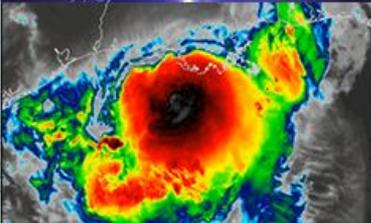
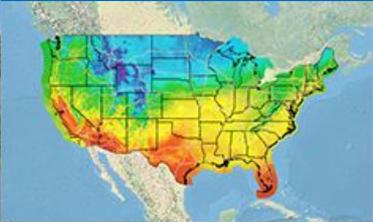




**NATIONAL  
WEATHER  
SERVICE**

# New Yorkers - Stay Safe and Prepared from Extreme Cold This Winter

Presenters: Christina Speciale  
Lead Meteorologist with National Weather Service Albany, NY





# Outline

- Review of Winter Temperatures in New York and How Cold Outbreaks Occur
  - How to Stay Warm Outdoors (Pets/Livestock too!)
  - Frostbite and Hypothermia Safety
  - How to Keep Pipes Safe During Cold Outbreaks
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# Cold Safety Content Courtesy of....

- FEMA



FEMA



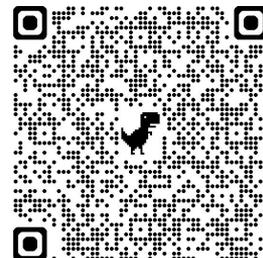
- CDC - U.S Center for Disease Control and Prevention



- American Red Cross



American  
Red Cross

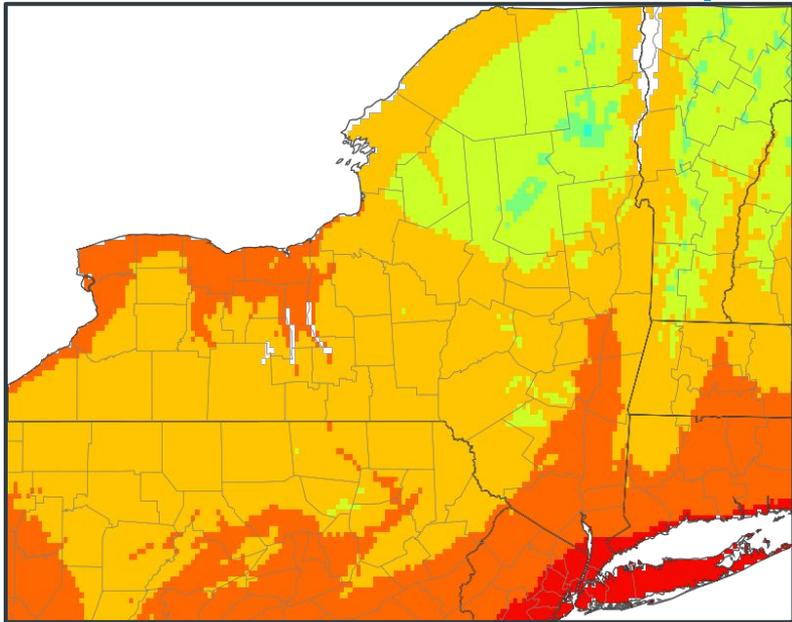




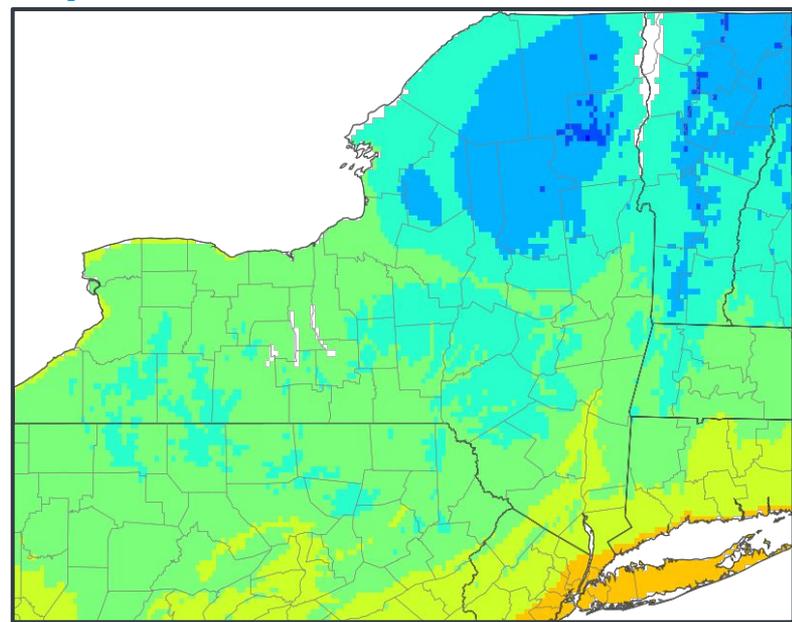
# Review of Winter Temperatures in New York and How Cold Outbreaks Occur



# Average Temperatures in New York Nov & Dec Based on 30 Year (1991-2020) Climate Normals



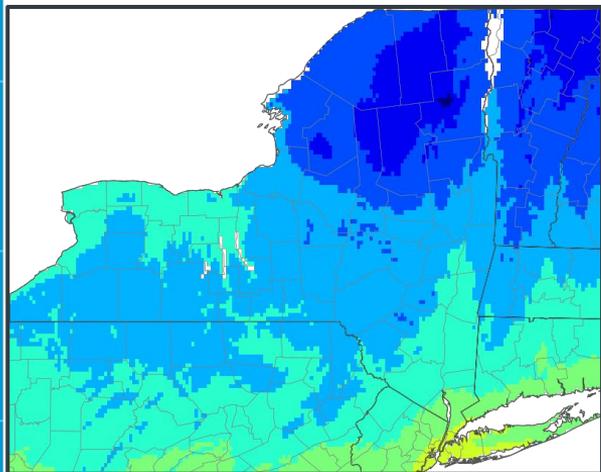
New York November Average Temperatures:  
24°F - 48°F



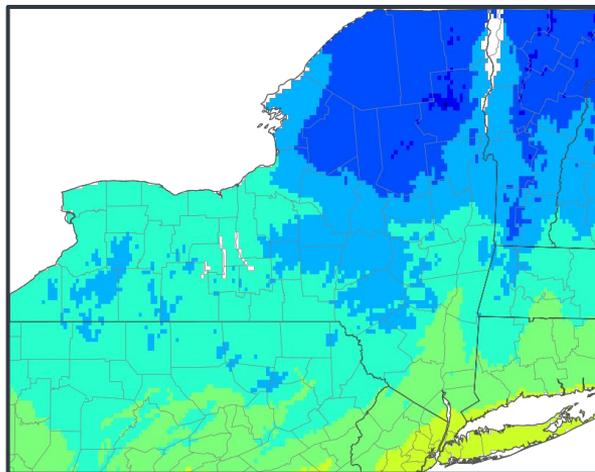
New York December Average Temperatures:  
16°F - 40°F



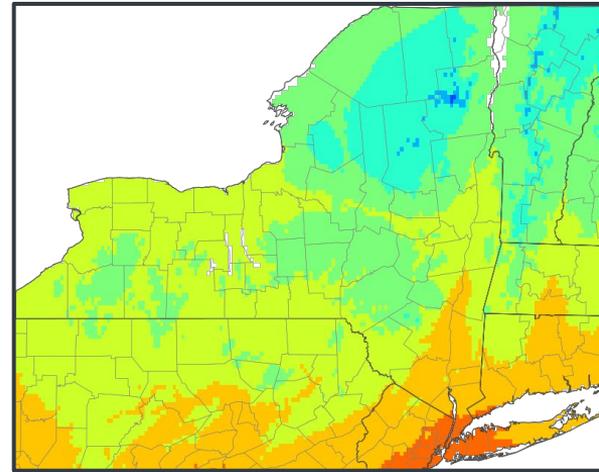
# Average Temperatures in New York Jan - Mar Based on 30 Year (1991-2020) Climate Normals



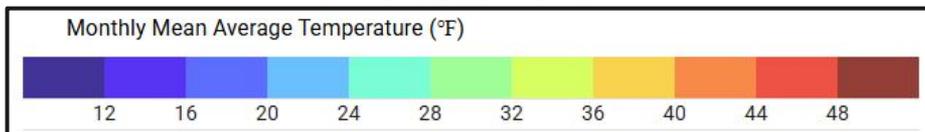
New York January Average  
Temperatures: 12°F - 36°F  
**\*\*Coldest Month\*\***



New York February Average  
Temperatures: 12°F - 36°F  
**\*\*2nd Coldest Month\*\***



New York March Average  
Temperatures: 16°F - 44°F



# Historical Cold Outbreaks in New York

Location	Longest stretch with Average Temperature at or below 10°F
New York City	7 days (Dec 1917 - Jan 1918)
Poughkeepsie	9 days (Jan 1961)
Albany	12 days (Jan 1961)
Binghamton	9 days (Jan 1961)
Syracuse	10 days (Feb 1979)
Rochester	10 days (Feb 1979)
Buffalo	10 days (Feb 1979)
Jamestown	9 days (Feb 2015)

Location	Longest stretch with Average Temperature at or below 0°F
Plattsburgh	9 days (Feb 1979)
Saranac Lake	10 days (Dec 1917 - Jan 1918)
Ogdensburg	9 days (Feb 1979)
Watertown	10 days (Feb 1979)
Glens Falls	9 days (Feb 1979)

$$\frac{\text{Average Temperature} = \text{High Temp} + \text{Low Temp}}{2}$$



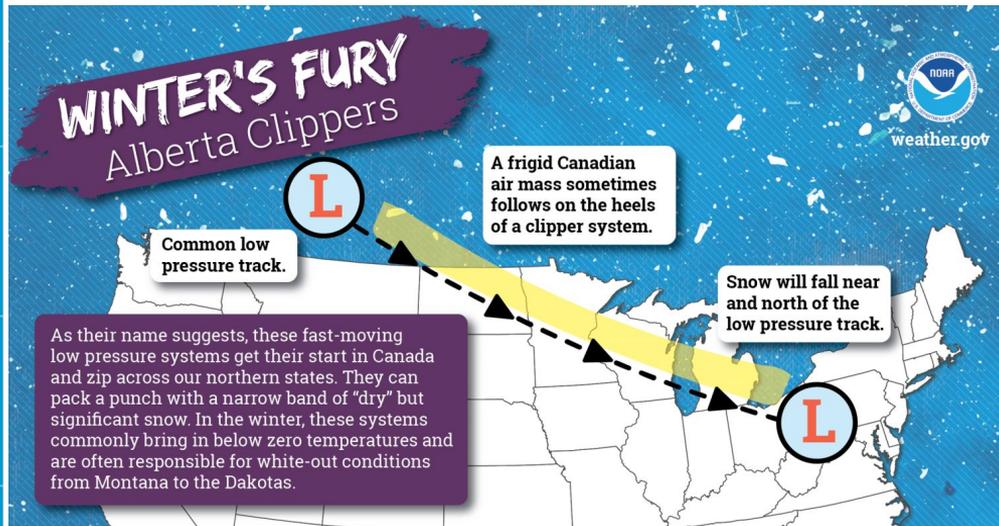
# Cold Outbreaks Can Lead To Ice Jams



Warren County, NY  
February 2018

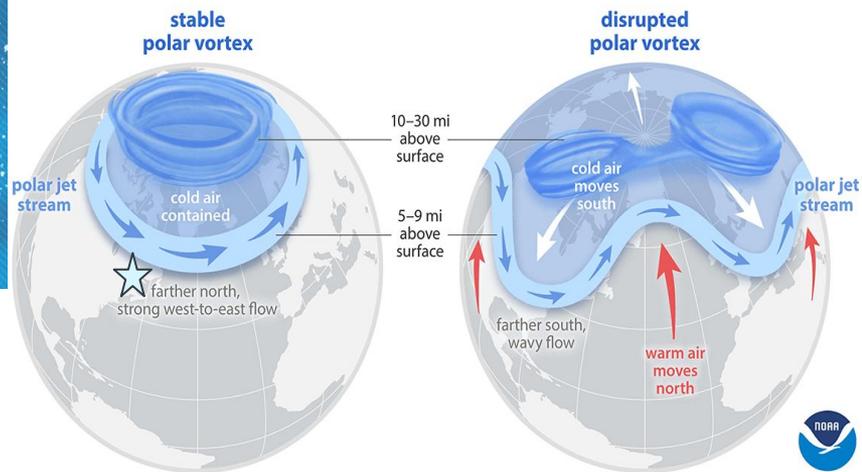


# How Cold Outbreaks Occur



## Alberta Clippers

## Polar Vortex





# NO WIND

## The Science of Wind Chill



# WINDY

98.6°F

Average temperature of the human body



Under calm conditions, the body radiates heat, creating a layer of warmth between our skin and the cold surroundings.

95°F

Hypothermia begins when our body temperature drops two to four degrees



But when it's windy, the moving air breaks up this insulating layer. It speeds up heat loss by whisking away the warmth from our skin.

Heat is moved away from our bodies.



[weather.gov/winter](http://weather.gov/winter)



# Wind Chill Chart



Temperature (°F)

Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times  30 minutes  10 minutes  5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

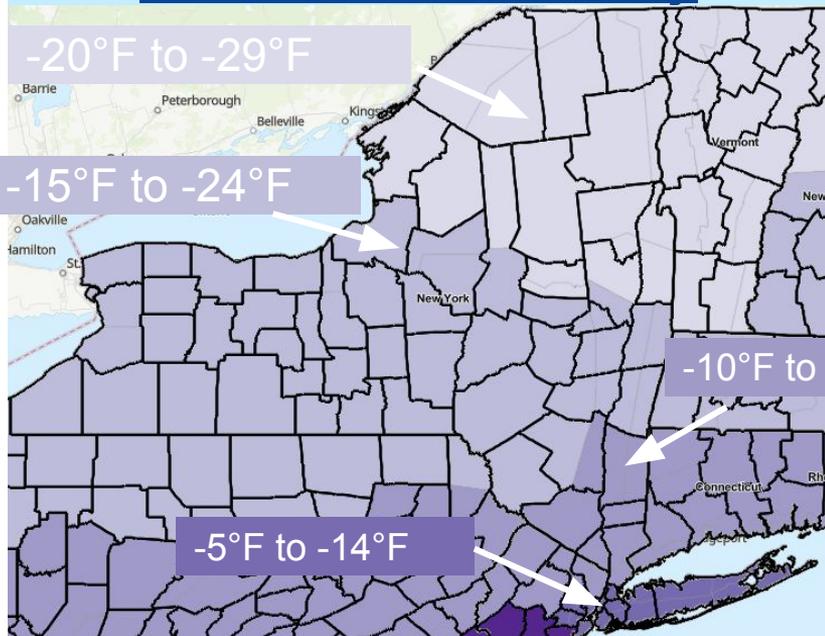
weather.gov



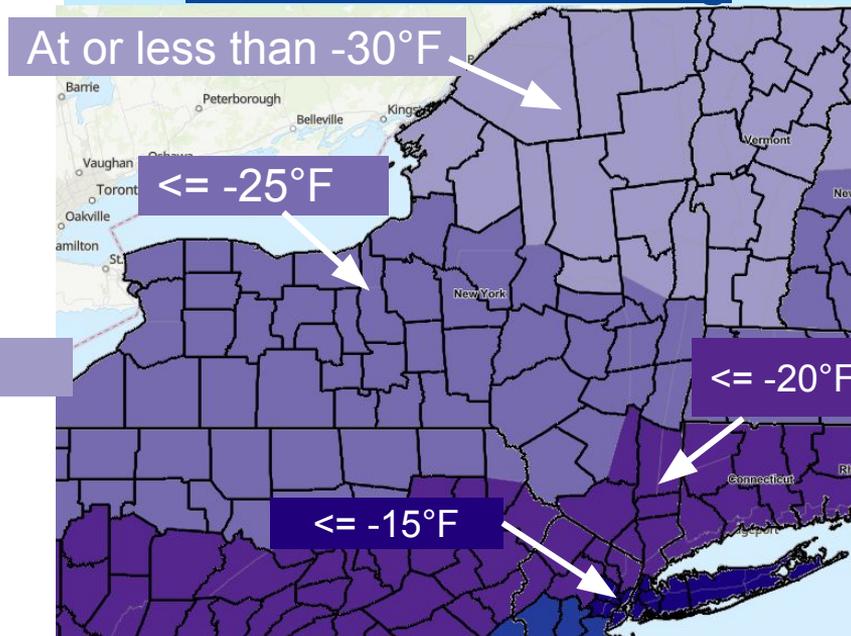
# Cold Criteria

Wind Chill Temperatures (“feel-like” temperature given combination of cold temperature and wind)...

## Cold Weather Advisory



## Extreme Cold Warning





# EXTREME COLD WATCH

---

An Extreme Cold Watch is issued when dangerously cold air, with or without wind, is **possible**.

Check the forecast, and be prepared in case a Warning is issued.

---

## Be Prepared

# EXTREME COLD WARNING

---

An Extreme Cold Warning is issued when dangerously cold air, with or without wind, is **expected**.

Conditions could lead to frostbite or hypothermia. Limit time outside, dress in layers, and cover up exposed skin.

---

## Take Action!

weather.gov





# How to Stay Warm Outdoors (Pets/ Livestock too!)



# DRESSING FOR COLD WEATHER



adding layers will help keep you warm as the temperature drops

## CHILLY



[weather.gov/safety](http://weather.gov/safety)

## COLD



## EXTREME COLD



# Pet/Livestock Safety During Cold Weather

## DON'T FORGET YOUR PETS



Even with a natural fur coat, **winter can be deadly** for your pets unless proper care is given.



**Keep them warm and dry,** and indoors whenever possible.



**Provide plenty of food and water.** Dehydration is especially dangerous in winter.



**When outside, keep them bundled up.** Limit outside time, and thoroughly clean (including paws) when bringing them in



- ✓ Make sure access to food and water is not blocked by snow drifts or ice.
- ✓ If you cannot bring animals indoors, ensure they are protected by a dry/draft-free enclosure facing away from the wind.
- ✓ Cover door with waterproof burlap or heavy plastic. Raise floor a few inches off the ground & cover with cedar shavings/straw.





Carbon Monoxide  
Detector

## Indoor Winter Safety

Check your smoke/carbon monoxide (CO) detectors. The danger of CO poisoning is greater during winter storms when doors and windows stay closed and fireplaces and gas heaters are in use. You can also be exposed to deadly CO levels when “warming up” your car in the garage or when snow covers your tail pipe.



[weather.gov](https://www.weather.gov)





FEMA

Ready



# Heat your home safely.

Keep anything that can burn **3 feet away** from a fireplace, wood stove or space heater.





**Have chimneys  
and vents cleaned  
and inspected by  
a qualified  
professional at  
least once a year.**



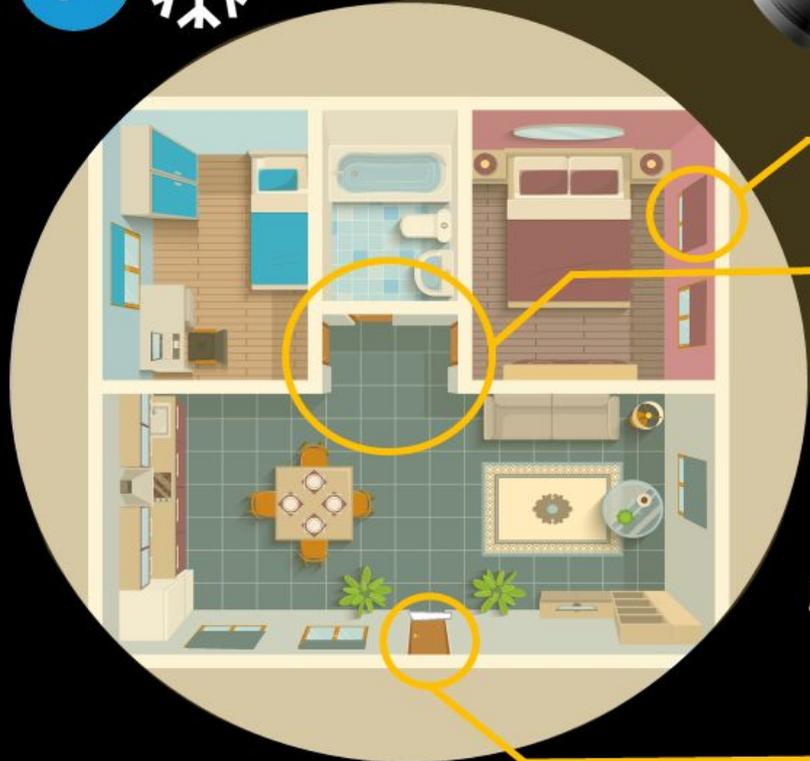
FEMA

Ready





# Staying **warm** when the power is out



Close blinds or curtains to keep in some heat.

Close off rooms to avoid wasting heat.

Wear layers of loose-fitting, lightweight, warm clothing.

Eat and drink. Food provides energy to warm the body. Avoid caffeine and alcohol.

Stuff towels or rags in cracks under doors.





# Frostbite and Hypothermia Safety



## FROSTBITE

A victim is often unaware of frostbite because frozen tissue is numb.



When going outside in winter make sure body parts most often affected by frostbite are covered in warm, dry clothing.

NOSE

EARS

TOES

CHEEKS

CHIN

FINGERS

### Signs & Symptoms

- Redness or pain in any skin area may be the first sign of frostbite.

### Other signs include:

- a white or grayish-yellow skin area
- skin that feels unusually firm or waxy
- numbness

## HYPOTHERMIA

Hypothermia often occurs at very cold temperatures, but can occur at cool temperatures (above 40°F), if a person is wet (from rain, sweat or cold water) and becomes chilled.



### Signs & Symptoms

#### Adults:

- shivering
- exhaustion
- confusion
- fumbling hands
- memory loss
- slurred speech
- drowsiness

#### Infants:

- bright red, cold skin
- very low energy

If a person's temperature is below 95° get medical attention immediately.

# Frostbite - What Do I Do?

- ✓ Move person to a warm place
- ✓ Warm affected area by gently soaking in warm water (100-105°F). If not available, warm with body heat. For example, use the warmth of your armpit to warm frostbitten fingers.
- ✓ Avoid breaking any blisters. If fingers or toes are frostbitten, place dry, sterile gauze between limbs to keep separated.
- ✓ Seek medical attention

**FROSTBITE CAUTION**

Since skin may be numb, victims of frostbite can harm themselves further. Use caution when treating frostbite and:

-   
UNLESS NECESSARY, DO NOT WALK ON FEET OR TOES WITH FROSTBITE
-   
DO NOT USE A FIREPLACE, HEAT LAMP, RADIATOR, OR STOVE FOR WARMING
-   
DO NOT USE A HEATING PAD OR ELECTRIC BLANKET FOR WARMING
-   
DO NOT RUB OR MASSAGE AREAS WITH FROSTBITE

<http://emergency.cdc.gov/disasters/winter/staysafe/index.asp>

 U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention

# Hypothermia - What Do I Do?

- ✓ Call 9-1-1
- ✓ Move person to a warm place.
- ✓ Remove any wet clothing. Warm person SLOWLY by wrapping in blankets.
- ✓ Warm core first (chest, neck, head, groin) before fingers/toes. Do not immerse person in warm water as rapid warming can lead to heart arrhythmias.





# How to Keep Pipes Safe During Cold Outbreaks





# Why frozen water will burst your pipe

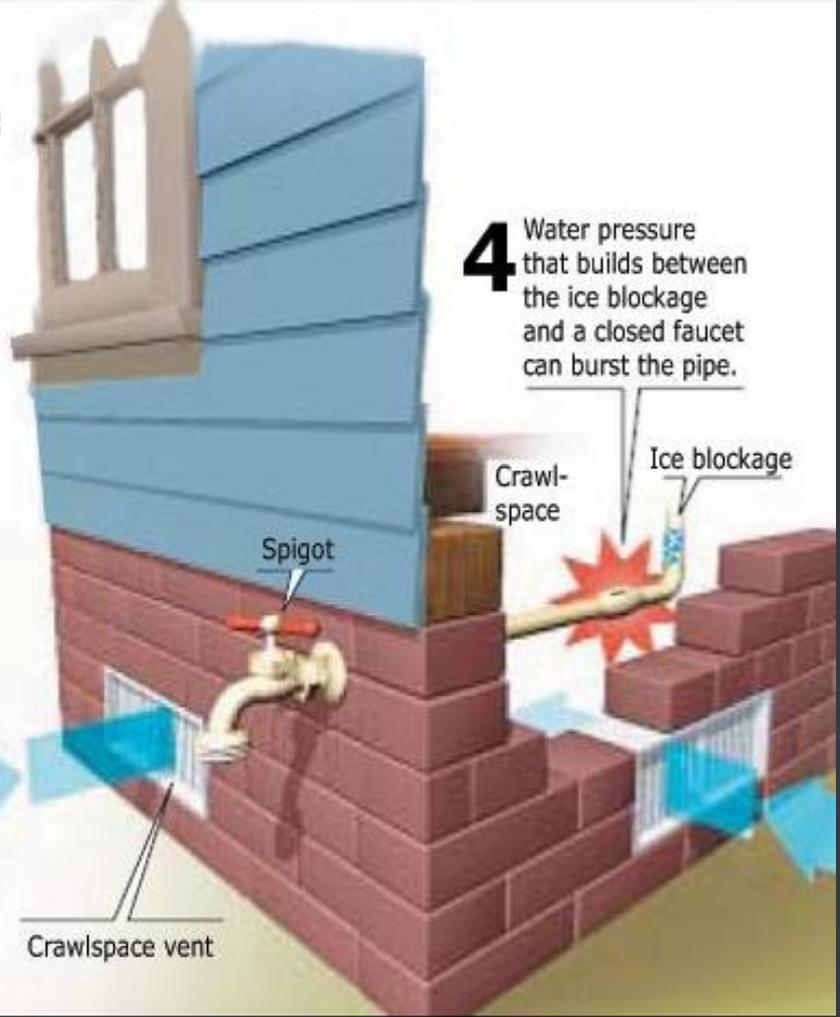
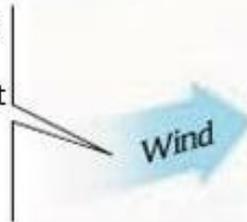
Unprotected pipes are susceptible to cold temperatures because water expands when it goes from liquid to solid form.

**1** A gallon of water, when frozen, will expand to a volume 9% greater than the original gallon.



**2** Ice blockage becomes more likely when outside temperatures drop to below freezing.

**3** A cold wind reaching unprotected pipes quickly removes heat and increases the chance of ice formation.



**4** Water pressure that builds between the ice blockage and a closed faucet can burst the pipe.

Image Credit:  
City of  
Somerville, MA



# Which Pipes Burst/Freeze in the Winter



- \* Pipes exposed to the cold including...
  - Outdoor hose bibs
  - Water sprinkler lines
  - Water supply lines in unheated areas such as basements, crawl spaces, attics, garages, kitchen cabinets.
  
- \* Pipes that run against the exterior walls of a home/building and have little if any insulation.



# How To Prevent Pipes from Bursting/Freezing



✓ Drain water from water sprinkler supply lines.



✓ Remove, drain, and store outdoor hoses before cold weather strikes. Close inside valves supplying outdoor bibs. Open the outside hose bibs to allow water to drain.



✓ Add insulation to attics, basements, and crawl spaces.



✓ Consider insulating water pipes with pipe sleeves or installing UL-listed heat-tape, heat cable or similar materials on exposed water pipes.



# How To Prevent Pipes from Bursting/Freezing

- ✓ Keep garage doors closed where there are water supply lines
- ✓ Open kitchen/bathroom cabinets where there are water supply lines to allow warmer air to reach plumbing. Remove any harmful cleaners/chemicals out of reach of children.
- ✓ Allow a trickle of water to drip from faucets during expected cold outbreaks.
- ✓ If you will be away during expected or potential cold weather, keep you home thermostat to at least 55°F

Image Credit: City of Findlay, OH

**3 WAYS TO PREVENT FROZEN PIPES**

As temperatures drop, your pipes run the risk of freezing and cracking. Consider these 3 easy things you can do now to prevent frozen pipes.

- 1 Insulate**  
Insulation can take various forms, including foam sleeves, pipe "tape," batt insulation, and expanding foam. Insulation slows heat loss from pipes, as long as water is flowing frequently during periods of freezing temperatures.
- 2 Let it Drip**  
Letting a faucet drip during extreme cold weather can prevent a pipe from bursting. Only pipes vulnerable to freezing (ones that run through an unheated or unprotected space) should be left with the water flowing.
- 3 Heat it up**  
The use of space heaters, electric heating tapes and cables in areas that have exposed water lines can regulate the temperature and prevent freezing. However, these methods must be used with extreme caution to avoid the risk of fire.





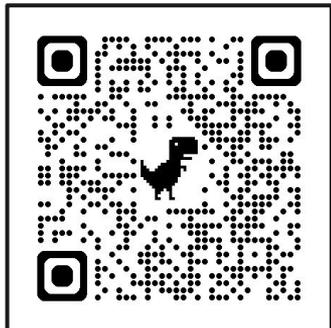
# How To Thaw Frozen Pipes

- ✓ If you turn your faucet on and only a trickle comes out, suspect a frozen pipe. Keep faucet open and allow water to trickle. This will help melt any ice in pipe.
- ✓ Apply heat to the section of pipe that is frozen by using an electric heating pad, a hair dryer, a space heater (kept away from flammable materials), or by wrapping pipes in a towel soaked in hot water.
- ✓ Apply heat until full water pressure is restored. Check additional pipes in your home. If one pipe froze, others may have frozen as well.
- ✓ Call a licensed plumber if you cannot locate the frozen section of pipe.

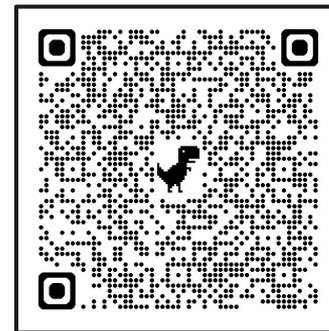


# Thank You!

## More Resources on Cold Weather Safety



**American  
Red Cross**



**FEMA**

