Pipe Freeze Protection

NEW YORK STATE | NYS Clean Heat

When water pipes are exposed to freezing cold air for an extended period they can freeze and burst.

Frozen pipes can cause **flooding, water damage, mold growth**, and leave the homeowner on the hook for expensive repairs.

Waste heat from a furnace or boiler can keep basement pipes from freezing. Remove that heat source, and it could expose a home to high risk of pipe burst!

Whether **decommissioning** the old system, or just **reverting it to backup**, switching to a whole-house heat pump could result in winter pipe freeze. Always assess if the home's plumbing is safe.

When is additional freeze protection needed?

If the plumbing is located **outside** the building envelope

AND

there is no dedicated heat source in that space

How to protect pipes from freezing?

If the plumbing is at risk of freezing, you can protect it with heat, insulation, or a combination of both.

Insulation and Air Sealing

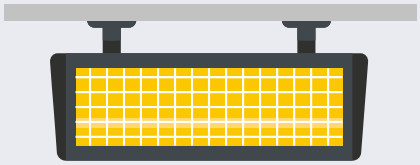
Sealing external air leaks and insulating the space prevents the cold outdoor air from entering the house and freezing the water lines.

Insulation – Keep the coldest temperatures out with insulation – rim-joist and bulkhead door insulation are the most critical, as they separate the basement from the coldest outdoor air. In some cases, removing the insulation between the basement and the first floor can help by allowing heat to transfer from the conditioned area into a basement.

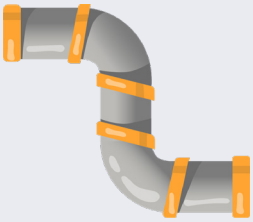
Air Sealing – Preventing cold outdoor air from entering the basement is important for keeping the space above freezing temperatures. Rim joists, bulkhead doors, utility penetrations, and around basement windows are common spots for basement air-leaks.

Acceptable Heat Sources

Heat Pump – Adding heat pump distribution to the space with the plumbing will prevent it from freezing. This can take the form of a ductless head or a supply register from a ducted system.

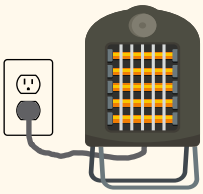


Electric Resistance Heat – Adding a hardwired space heater, such as an electric baseboard, that can keep the space above freezing temperatures without having to heat fully to the temperature of the conditioned space.



Heat Tape – A small electric heating element that is applied directly to the plumbing. These can protect the pipes from freezing without the need to heat the entire space. Be sure to follow the manufacturer's installation instructions exactly to avoid creating a fire hazard.

Unacceptable Heat Sources



Plug-in Space Heater – Space heaters can be accidentally unplugged or shut off by the occupants. They should not be left running unattended.

Hot Water Tank – A domestic water heater will not produce enough waste heat to reliably keep an unconditioned space above freezing.

Freeze Protection Strategies

Good ★

Add heat tape (and insulation if applicable) to the plumbing in the unconditioned space.

Better ★★

Add a permanent heat source that can be set to keep the space from freezing.

OR

Install the heat pump's air handler in the unconditioned space to take advantage of its waste heat.

Best ★★★

Bring plumbing fully inside the conditioned space with air sealing and insulation.

AND/OR

Add heat pump distribution to the space (ductless head, register, etc.).