

Radiant floor heating



One of the rising stars in home heating technologies is natural gas radiant floor heating. While most recent improvements to conventional heating systems, such as furnaces or boilers, have focused on increasing energy efficiency and lowering operating energy costs, radiant floor heating presents an entirely different home heating alternative.

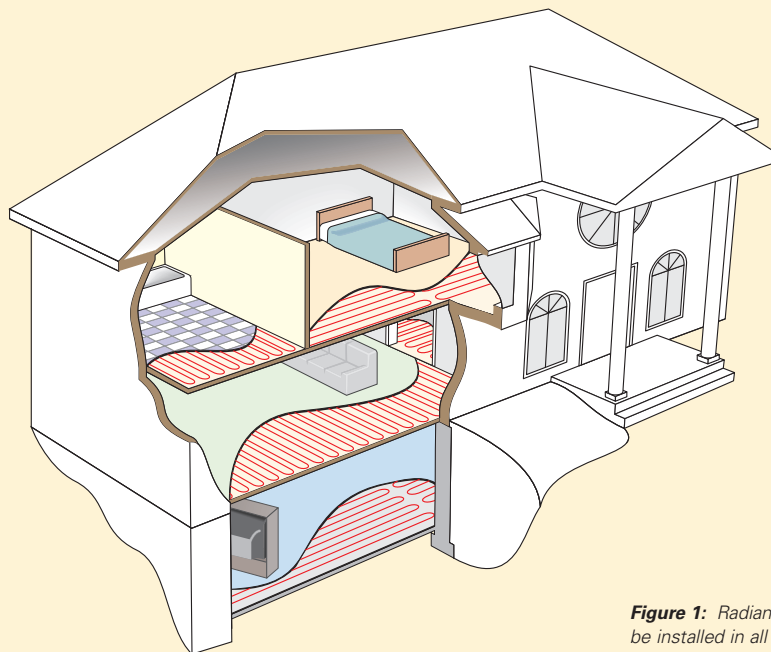


Figure 1: Radiant heating can be installed in all floors of a home.

Once considered a luxury reserved largely for the most expensive homes, radiant floor heating is growing in popularity as it becomes more affordable for the broader home market. It's a cost-effective alternative to conventional heating that adds value to your home and can significantly improve energy efficiency and home comfort.

How radiant floor heating works

Radiant floor heating includes two primary components: the tubing, which is placed beneath the floors of your home, and a heating source—a water heater or boiler. Though radiant technology works with virtually any hot water heat source or fuel, systems fueled by natural gas are the most efficient and most often used.

While conventional heating systems rely on air circulation to distribute heat, radiant heating exploits the physical properties of warm air, which rises, to provide comfortable warmth in homes and even garages. It's the same principle as solar heating, which warms people and objects

directly. Installed beneath a home's flooring, it radiates heat upward and outward, spreading warmth and comfort with greater efficiency throughout any room in which it is installed. The technology also can be used beneath walkways and driveways to melt ice and snow.

Homeowners may choose to install and use radiant floor systems for either primary home heating or supplemental space heating. In remodeling projects, radiant floor heating is generally used in particular rooms to supplement a conventional furnace or boiler. When building a new home, however, radiant floor heating may be used more extensively and can serve as the only heating source.

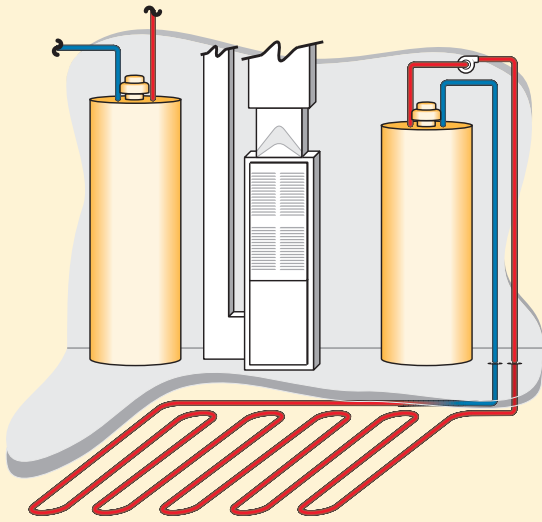


Figure 2: Some situations require two appliances: one water heater for the radiant floor system; the other for regular space and water heating.

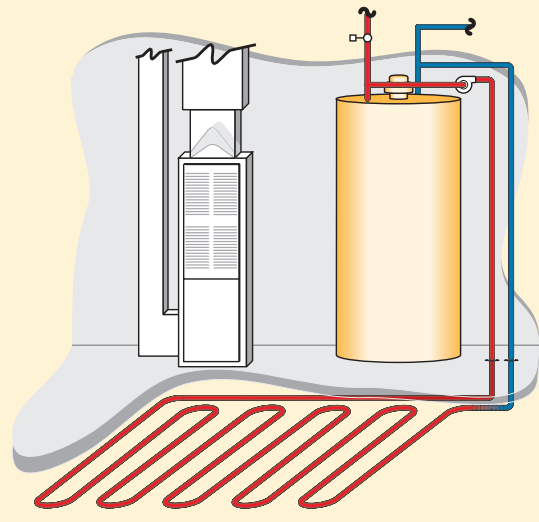


Figure 3: A single unit can supply both radiant floor energy and energy for household water.

Equipment options in radiant floor heating

There are many different ways to configure components in radiant floor heating systems. It is important to remember, however, that water heaters used for any of these applications must be rated for radiant floor heating—not all units meet specifications. Consult your dealer for more information. Basic radiant floor system configurations are:

Single purpose system: A separate water heater or boiler provides heated water for the radiant floor system, while a conventional furnace or boiler and water heater handle regular household space and water heating needs. In this arrangement, individual appliances perform only one function. See Figure 2.

Dual purpose system: For this application, a single unit performs two functions in one, supplying energy for both the radiant floor system and household hot water. In some cases, a conventional furnace or boiler may be installed to handle primary home heating with the radiant floor heating providing selected space heating. There also are several “hybrid” configurations of dual-purpose systems. See Figure 3.

Contained system: In this arrangement, water supplies for the radiant floor heating system and household drinking water are isolated by separate coils within the tank.

When the tubing is filled with glycol rather than water, it will not freeze in seasonal or outdoor installations. With the radiant floor system and household water completely separated, the radiant floor fluid never needs to be flushed or changed.

Benefits of radiant floor heating

The rise in popularity of radiant floor heating lies chiefly in the significant improvements it offers for both comfort and efficiency, but there are many advantages:

- Radiant floor heating provides superior comfort, spreading heat more evenly around the room, eliminating cold spots and cold blasts of air from registers.
- Cold floors are virtually eliminated, whether the surface is wood, tile, marble, concrete or carpeting.
- Radiant floor systems can be substantially more efficient than standard space and water heating systems. The unique combination of radiant technology and natural gas energy helps lower operating costs for budget-conscious homeowners.
- Heating can be directed to specific zones, even separate rooms, equipped with individual thermostat controls for added efficiency.

- Homeowners can count on it as a steady, even source of heat.
- Radiant systems have no blower fans, so they’re quiet.
- Dual purpose units that provide space as well as water heating offer equipment cost savings.
- Rooms with vaulted ceilings are easier to heat, and homeowners have more flexibility in room arrangements without concern for blocking vents.
- Radiant heating systems increase the value of your home.
- Systems with glycol-filled tubing will not freeze, so they can be installed in cabins or other seasonal facilities, or beneath driveways and walkways to melt snow. They don’t need to be drained when weather turns cold.

Applications for radiant floor heating

Almost any home can be equipped with natural gas radiant floor heating. Installing systems in new homes at the time of construction is generally easier and less expensive, but most remodeling projects in existing homes can be designed to accommodate radiant floor heating. Tubing can even be installed during construction, with the full system completed later. It’s an investment in comfort that adds little to the cost of a poured floor.

Existing homes: Room additions or remodeling projects often include radiant floor heating in these areas:

- Lower level or basement
- Master suite and bath
- Kitchen
- Family room
- Bedrooms
- Bathrooms

New home construction: Radiant floor systems can be used to provide whole house heating or targeted to heat any of the rooms listed above.

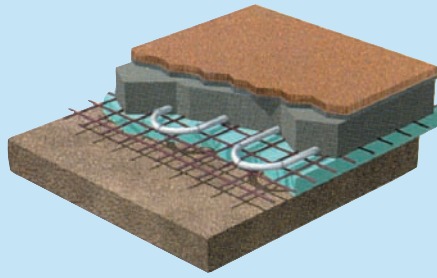
Radiant technology is so versatile it can even be installed in garages or along walkways and driveways. It offers a great low-maintenance solution for cabins or other seasonal facilities as well.

Installation methods

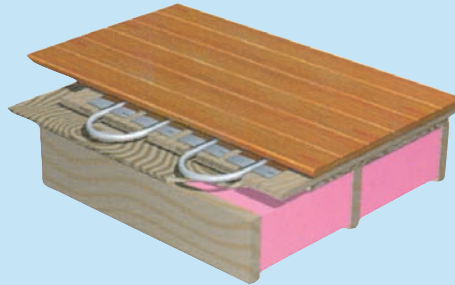
There are several methods of installing radiant floor heating systems; the method you choose will depend on the application and whether the project is new construction or renovation. Prices vary according to building conditions and installation methods.

Tubing for radiant floor heating is extremely versatile and can be installed under almost any type of finished floor material – ceramic, wood, tile, marble, concrete or carpeting. Your best choices may be ceramic or wood, as they tend to conduct the heat more effectively.

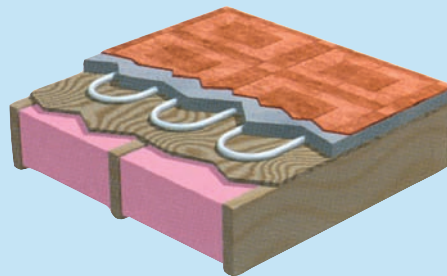
It's important to work with a professional installer experienced in radiant floor heating systems. They offer expertise in helping you select the proper equipment for your particular application, correct system sizing, and appropriate, coordinated methods for installation and insulation.



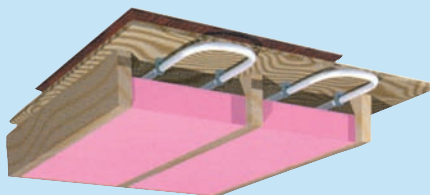
Concrete floors: An easy and cost-effective method for lower levels, basements and garages. Tubing is tied to reinforcing mesh before the slab is poured.



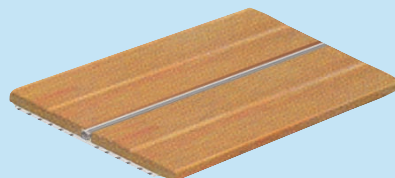
Suspended floors: Placed over the sub-floor, the tubing rests in heat transfer plates. An alternative to lightweight concrete and great for remodeling projects or additions.



Poured floor underlay: Tubing is installed over suspended wood floors and covered with poured floor underlay.



Between joists: The perfect alternative for remodeling projects, additions and upper floors of a new home. Tubing is installed between the floor joists.



Track method: Tubing fixed in channels between wooden slats with metal backing is one of the quickest new installation methods for existing homes. Panel sections fit between rafters and snap in place for fast, easy first-floor installations with an unfinished basement, or under ceramic tile in a new bathroom. In this case, the metal backing reflects the heat to the floor above, whereas in poured floors, concrete or gypsum conducts the heat.



Radiant floor heating is a comfortable, efficient option for both new construction and remodels.

Installation and operating costs

As the cost of installing radiant floor heating systems has dropped, this option comes within the reach of a wider range of homeowners.

The overall cost of installing a radiant floor system in your home varies with each application. Consider three primary factors in making your decision:

- Equipment price
- Installation costs
- Operating costs over time

Equipment price and installation costs vary, depending on the unit or system you select, the number and size of rooms to be covered, the complexity of the installation and other related factors.

Homeowners who select a dual purpose unit will save the expense of installing a separate water heater. Products that provide both home heating and cooling offer other equipment savings, and, though not customary, those who choose not to install a conventional furnace or boiler avoid the expense of installing two types of heating systems. One tradeoff, however, is if the unit should fail, the home will temporarily lose both hot water and home heating.

Operating costs also vary based on the cost of natural gas and your natural gas provider. Natural gas is one of the most efficient, economical fuels available. When combined with an energy-saving radiant floor system, they work together to provide a cost-effective way to warm your home.

Care and maintenance of radiant floor systems

For safety, reliability and efficiency, CenterPoint Energy recommends an annual check of your radiant floor heating system's heat source (boiler or water heater) as we do for other conventional heating systems. We also suggest you check with the manufacturer of your system for their recommendations on installation, care and periodic maintenance.

Ask the manufacturer about warranties for their product and its various elements. These will vary by system, component and manufacturer. Some systems carry as much as a 25-year limited warranty when installed by an authorized service provider.

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