

HEATING ACCESSORY BUILDINGS



HABITABLE* ACCESSORY BUILDINGS

Energy Code requirements for heating habitable accessory buildings such as Accessory Living Areas*, pre-built sheds used for other than storage, studios, personal offices, and other detached residential spaces

Larimer County allows unheated, detached accessory buildings to be built on monolithically poured slabs that do not extend down below the frost line (30 inches in Larimer County). If the structure remains unheated, the frost force moves horizontally below the foundation causing no frost heave problems. However, once the structure is heated, the frost force moves upward on the heated structure causing frost heave damage. To protect against frost uplift, a shallow frost foundation system may be used, which calls for slab perimeter insulation protection. The Energy Code requires the slab perimeter insulation to be a minimum of R-10 from the top of slab down 30", to the top of the footings, or the bottom of the slab, whichever is greatest. If the slab itself is heated (for example with hydronic tubing) an additional R-5 insulation must be installed underneath the entire area of the slab.

When obtaining a permit to build a new habitable accessory building, or to change from a non-habitable to a habitable accessory building, information must be submitted on whether the structure is on a shallow monolithically poured slab with slab perimeter insulation being added, or the foundation extends below frost line. Other energy conservation requirements in the 2021 IRC or IECC include R-60 ceiling insulation, R-30 wall insulation, and windows with a U-value of 0.32 or less. Be aware that section M1401.3 of the 2021 International Residential Code & Section 312.1 of the 2021 International Mechanical Code require heating and cooling equipment and ducts to be sized based on heating loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies.

Definitions

***Accessory Living Area.** Finished (habitable) space attached to or part of (e.g. basement) a single-unit dwelling or a detached building that is intended and designed to be occupied as a separate living unit than that of the primary single-unit dwelling and clearly accessory to the single-unit dwelling on the lot. A single-unit dwelling that includes contiguous living space intended to be occupied by a single living unit is not considered an accessory living area.

***Habitable space.** A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces.

***Primary heat source.** Fuel gas, fuel oil or electrical energy. Non-primary heat sources include wood, wood pellets, corn cobs and waste oil.

HEATING NON-HABITABLE UTILITY BUILDINGS

Energy code requirements for heating non-habitable utility buildings such as shops, garages, and barns. (Heated or cooled habitable spaces inside non-habitable buildings must meet energy code requirements.)

Below are amendments to the 2021 IRC approved in Larimer County for non-habitable accessory buildings. When applying for a permit, indicate which method you are using to meet the energy code requirements.

Accessory buildings. Detached accessory buildings, attached garages and other non-habitable spaces which are outside the building thermal envelope may be conditioned subject to the following thermal and envelope criteria:

1. Any heating/cooling equipment installed therein is sized for a peak design load assuming a maximum Winter Indoor Design Dry-bulb Temperature of 60°F and a minimum Summer Indoor Design Dry-bulb Temperature of 80°F.
2. The walls are insulated with a minimum R-value of R-15.
3. The roof/ceiling is insulated with a minimum R-value of R-30.
4. Windows have a maximum U-factor of .40 and in total do not exceed 10% of the floor area.
5. Doors have a minimum R-value of R-3 and are sealed to prevent infiltration.

Exceptions: The following detached accessory buildings do not need to meet requirements 1-5 above.

1. Accessory/Agricultural buildings which are neither heated nor cooled by a primary heat source (non-primary heat sources include wood, wood pellets, corn cobs and waste oil).
2. Accessory/Agricultural buildings heated or cooled in their interior for short periods of time and switched with a timer of two hours or less.
3. Accessory/Agricultural buildings with restricted thermostats limiting heat to a maximum of 50° F.

Seasonal buildings. These Spring-to-Fall season buildings do not need to be heated by a primary heat source (gas or electric) and may be heated with a fireplace or woodstove; however, you need to protect plumbing lines from freezing by draining them before every winter.

