4 Cooling
Whole-House Fan

How It Works

During the summer, ambient air temperature commonly varies 20 F° or more in a 24-hour period, peaking in mid-afternoon and reaching its low point just before sunrise. Using a low-tech, low-energy whole-house fan, you can take advantage of this natural temperature swing to pump heat out of the house.

Here is how it works. As soon as the outside air temperature rises to the indoor temperature, close the house up tight, relying on the building's mass and insulation to slow the interior temperature rise.

After sunset, as soon as the outside temperature drops to the now-higher inside temperature, open screened windows and doors throughout the house, and switch on the powerful whole-house fan.

The volume of air in a typical 2,000-sq. ft. home with 8-foot ceilings is 2,000 × 8 = 16,000 cubic feet. A typical $^1/_2$-horsepower (375-watt) fan removes 4,000 cubic feet of air per minute (cfm). Such a fan would replace the hot inside air with cooler outside air fifteen times per hour.

Note that normal attic ventilation is not sufficient for the large volumes of air a whole house fan moves. The rule of thumb is 1 square foot of net free opening for every 750 cfm of fan rating.