

The Commercial Inspector

A Monthly Newsletter From National Property Inspections

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ask the inspector

Q. How can I determine energy loss in my commercial building?

A. Energy loss in buildings can occur in many areas and through many systems. Our focus will be on the most common areas of energy loss:

Hot- and cold-air leaks from a building.

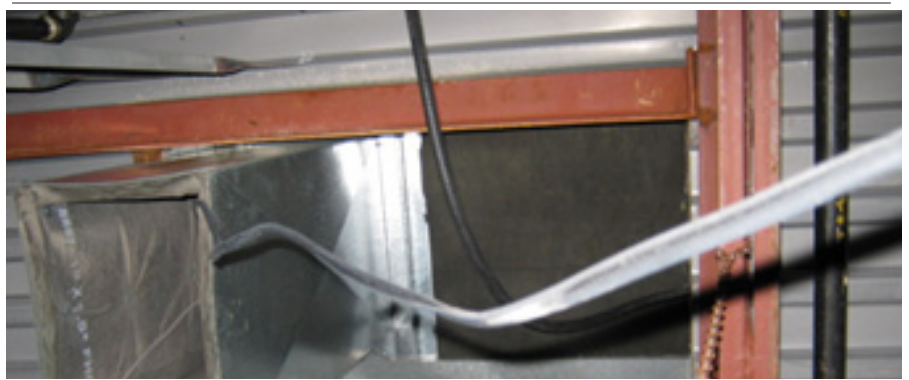
Energy is used to create conditioned air that is used to heat or cool a building. A heating, ventilation and air conditioning (HVAC) system is usually one of a building's largest energy users. In a forced-air HVAC system, the ductwork should be sealed to reduce the air escaping into an unconditioned space. Fans and blowers on these systems — and the motors driving them — must be properly maintained. Overheated and malfunctioning motors indicate mechanical or electrical problems that lead to more energy use. Sealing ductwork and regularly maintaining the motors and HVAC equipment can reduce the amount of energy used.



The building envelope. The building envelope separates the outdoor environment

snapshots from the field

What's wrong with this photo?



- A) The conduit is not secured properly.
- B) There's no insulation on the ceiling.
- C) The ductwork is not sealed.
- D) B and C

(answer on the back)

from the interior space. Areas of energy loss through the building envelope include the following:

- » **Roof.** Make sure the roof or attic area has adequate insulation. Penetrations through the roof, if not sealed properly, can enable conditioned air to escape and allow moisture into the building. If roof insulation gets wet, then the insulation value is greatly reduced and more energy is lost.
- » **Walls.** Walls between conditioned and unconditioned spaces may not have adequate insulation, or insulation may be missing. Installing insulation can reduce energy loss in walls.
- » **Doors, window frames and other**

wall penetrations. Doors and windows should fit properly and have weather-stripping installed to minimize conditioned air escape. All wall penetrations, including door and window frames, should be sealed where the frame meets the exterior wall surface in order to minimize air loss.

Electrical systems. Studies have shown that approximately 20 percent of electricity consumption is used in lighting. Commercial buildings account for an estimated 40 percent of that use. Energy consumption can be reduced by replacing older light fixtures with newer, more efficient fixtures and bulbs.

By reducing the amount of energy used in a building, the cost to operate the building is reduced. Moreover, many energy-efficient upgrades can pay for themselves over time.



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maintenance matters

Monitor Cracks in Your Building's Foundation

Cracks in poured concrete foundations can appear for many reasons. Cracks that are less than 1/8-inch with both surfaces even are generally caused by the shrinkage that occurs as concrete cures. Most of the time, these cracks will be vertical in nature and occur along the joints where the foundation forms come together. These are common and usually of no concern.



Diagonal cracks, many times starting in a corner or at a window or door opening, or horizontal cracks indicate foundation wall movement. This movement is usually

inward. These types of cracks are caused by pressure exerted inward from the soil around the foundation. Water, whether it be rain or groundwater, can cause the soil surrounding the foundation to expand and contract creating a hydraulic ram effect pushing the wall inward.

With diagonal cracks, even cracks less than 1/8-inch should be of concern, as they do indicate movement and should be monitored. Cracks larger than 1/8-inch should also be monitored, especially if there are signs of moisture intrusion. Any wall leaning in more than 2 inches from plumb is structurally unsound and should be inspected by a foundation specialist or structural engineer.

A small crack in a newer building is of more concern than a small crack in an older building. NPI commercial property inspectors discuss with commercial building owners and buyers the severity of the crack(s), such as location and type of crack, and advise them not to pass on a building specifically because of cracks. Unless there are structural or moisture issues, most cracks can just be monitored and, if needed, many repairs are not hugely expensive. However, keep in mind that foundation issues come in many forms, and, when in doubt, you should consult a specialist.

did you know?

Solar Panels Can Reduce Energy Use

With energy costs continuing to increase, many commercial building and business owners are looking at alternative sources of energy to save money on energy bills. One of these alternative sources is solar energy.

The average commercial building can save \$50 to \$70 per square foot on energy costs by installing solar panels*. And, your federal government may give you tax credits for installing a solar energy system. When your solar system generates more energy than you can use, the system can store the excess energy for use later or send the energy back to the power grid, which most utility companies will pay or credit you for.



**According to an environmental report conducted by the Lawrence Berkeley Laboratory, several California state agencies and clean-energy consultant The Capital E Group, using national data from 100 green buildings.*

Snapshots from the field

The correct answer is D) Both B and C are correct due to the lack of insulation on the ceiling and the fact that ductwork is not properly sealed.