

For the Professionals

Higher cost items are usually more complicated and require the aid of building professionals:

- Curing convective and conductive problems in historic buildings usually requires air sealing a wide variety of leakage areas—including ductwork—and insulating areas that may never have been insulated before. Curing leaks can not only save a great deal of energy but also raise comfort and extend the lifetime of the building.
- Replacing old boilers or furnaces with modern condensing units may save a lot. Condensing units are much more efficient and do not use the main chimney—which may allow for closing this large hole in the envelope.
- Replacing inefficient appliances can save lots of energy. Replacing refrigerators with ENERGY STAR® rated units can sometimes save over \$100 per year. New washers can save both energy and water, depending on patterns of use and the characteristics of the unit.
- Although conventional wisdom holds that windows should be the primary target for energy efficiency retrofits, the auditor usually finds a number of other energy systems that are more important (and cost effective) to deal with first. Always attempt repair of windows before replacement and consider installation of aesthetically appropriate storm windows to improve thermal performance.



Resources

National Park Service The Secretary of the Interior's Standards for The Treatment of Historic Properties
<https://www.nps.gov/tps/standards/rehabilitation.htm>

The National Park Service The Secretary of the Interior's Standards for Rehabilitation and Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings
<https://www.nps.gov/tps/standards/rehabilitation/guidelines/index.htm>

National Trust for Historic Preservation The Greenest Building: Quantifying the Environmental Value of Building Reuse
<https://savingplaces.org/preservation-green-lab>

National Trust for Historic Preservation Saving Windows, Saving Money
<https://savingplaces.org/preservation-green-lab>

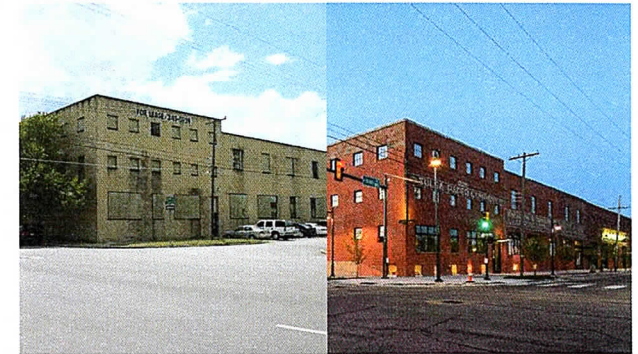
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Sustainability and Historic Preservation

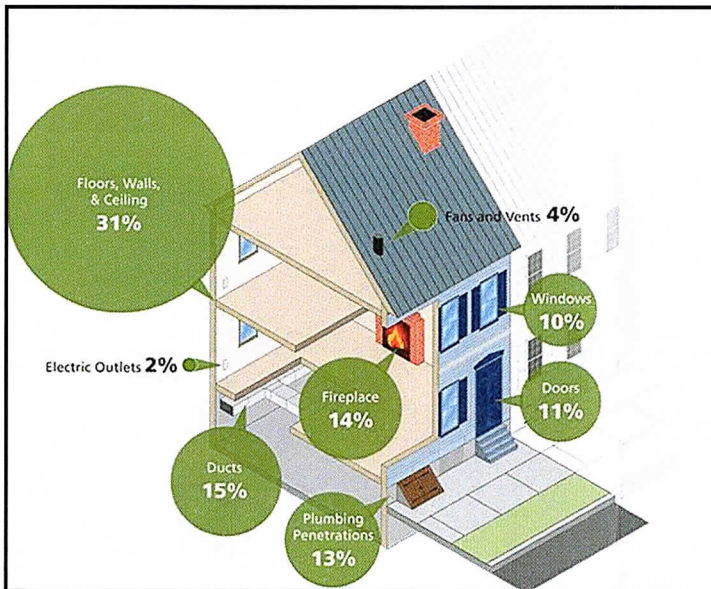


Tulsa
A New Kind of Energy.

Sustainability and Historic Buildings

While most attention on sustainability has been directed towards new construction, sustainability for the rehabilitation of historic properties has gained popularity. Sustainability is “the ecological balance that allows us to meet our needs without compromising the ability of future generation to meet theirs.” Sustainable design provides a healthy environment, whether in a residence or commercial architecture, where “green” technology and materials are selected. Sustainable design also consumes less energy and promotes the use of recycled materials.

Historic Preservation is in every sense sustainable design, since so many of Tulsa’s historic buildings were built to capture light and air as natural sources of heat, illumination, and ventilation. Historic buildings used porches, awnings, large or multiple windows, skylights, overhangs and native trees to situate the building appropriately on its site. Preservation allows us to pass our legacy to the next generation—truly a sustainable strategy!



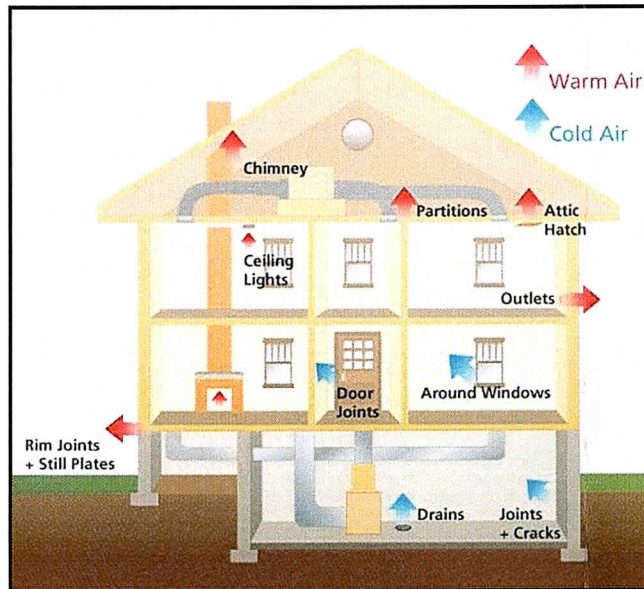
Credit: National Park Service

Systematic Approach to a Building’s Performance

To analyze options for improving a building’s energy performance, an energy auditor views its energy systems and its occupants as interrelated parts of a whole. Changes in one part can affect many of the others. Read more about it inside!

For example, often a combination of air sealing, strategic insulation, and control adjustments will cure the problem of poor heat distribution and lower bills at the same time. Or if a new furnace or cooling system is really needed, a smaller, more efficient unit along with a tighter “thermal envelope” (the insulated shell of the building) and well-sealed ducts may be the best strategy.

The energy auditor uses a number of instruments to evaluate the function, efficiency, and interactions of the energy systems in a building. Watt hour meters monitor refrigerator and freezer performance. Monometers, combustion analyzers, and gas leak detectors help in assessing heating, cooling, ventilating, and hot water systems for appropriate



Credit: National Park Service

control settings, efficiency, and safety. A calibrated, variable speed fan is temporarily mounted in a doorway and used to measure the relative tightness of the building and identify most sources of leaks. An infrared sensor helps to find insulation voids.

Simple Ways to Save

The auditor usually finds a number of opportunities to save energy without spending much money or time. Lower cost items may include:

- Adjusting thermostats that control hot water heaters, refrigerators, freezers, fans, furnaces, boilers, and air conditioners. When appropriate, installing a modern electronic thermostat may be recommended. Settings thermostats back can save lots of energy while ensuring good comfort.
- Fixing water leaks, replacing high-flow shower heads with good-quality, low-flow models, insulating water pipes and hot water heater tanks.
- Replacing incandescent lights with compact fluorescents (CFLs). New CFLs fit almost anywhere, produce excellent light, are noiseless, and outlast incandescent lightbulbs. Over their lifetimes, they pay back their initial costs by a factor of 30.

