



Renovating an Older Home

The Value of Older Homes

Older homes have many green values that are hard to match in new homes. They are most often close to amenities, so occupants do a lot less driving, thus saving occupants money on gas and reducing pollution for the community. They usually have mature trees that provide cooling shade and reduce energy bills. Cost-effective improvements can easily be made to reduce utility bills further and enhance occupant comfort without sacrificing beauty. Older homes are typically made of high-quality, solid materials (not “products”) that have already lasted a long time and are likely to last longer than new replacements. If the home’s interior arrangement doesn’t suit a modern lifestyle, it can be modified and materials saved for reuse elsewhere.

Begin Your Renovation with an Energy Audit

Have your home assessed by a home performance testing company so you know what improvements your home needs. (Free visual audits are available to Austin Energy customers, as well as rebates for testing. www.austinenergy.com Find a Participating Contractor) Assessment may include evaluation of insulation, ductwork, testing for duct leakage, correct static pressure, back-drafting of gas appliances, room-by-room air-flow balancing, and air leakage to the outside through the thermal envelope.

Energy Improvements You May Need

Radiant barriers, insulation, and related

- Cool down your attic with a radiant barrier under the roof decking (shiny side down, tack to rafters). If the attic is not easily accessed, it can be sprayed with low-emissivity paint (0.25 or lower).
- Attic insulation matters most in a hot climate. Aim for R-30—R-38. Wall and floor insulation won't lower your utility bill much but you may want them to reduce drafts and improve comfort.
- Caulk windows and baseboards; weather-strip doors; install foam covers at light switches and outlets.
- Insulate and weather-strip the hatch to your attic.
- Install a whole house fan--requires a well-ventilated attic and sensible operation (sealed when not in use).

Windows

- Most window replacement isn't worth doing for *energy* reasons. Fix old wood windows--caulk and weather-strip. Change out poor-quality windows, especially steel casement or jalousie types.
- If you need to bring natural light into a dark interior space, a sun-tunnel works well. If you must have a sky light, keep it very small (not over 4'x4', not facing west) and make sure the SHGC and U-value are very low (<0.35 and < 0.55 respectively).
- Shade windows that receive a lot of direct sun. Add solar screens, window films, awnings; build a pergola or trellis; plant long-lived shade trees.

Lighting, Ceiling Fans and Appliances

- Consider what you need the light for, then choose the kind (placement, fixture, bulb) that will do the job.
- Choose high-efficacy lighting: fluorescent or LED. Try out different color temperature and color rendition in your home to see what looks good. Don't buy the cheapest. It won't last and you won't like it.
- Avoid can lights or use minimally for specific purposes (valuable with wall-washer or spot light trim kits).
- Install ceiling fans in rooms you occupy the most, even baths and kitchens (not near gas stoves).
- If you're replacing appliances, choose Energy Star models. If your refrigerator is over ten years old, the new models are twice as efficient. For the most efficient appliance models, see www.aceee.org

Heating and Cooling System

- Replace aged ductwork that is beyond repair. New ducts should be short, taut and straight as possible.
- Add “pressure-relief” to bedrooms where possible (“jump-ducts”, vents through wall, transoms over doors).
- If equipment is very old and inefficient, or the air handler or condenser break down, replace both at once. Be sure they are an ARI match to assure correct efficiency. (If a gas furnace breaks down, it's okay to replace it by itself.)
- When replacing equipment, be sure it is correctly sized using a **Manual J calculation** for the design, construction and orientation of your home. (*Don't go by the size of the existing equipment. Even if it is correct, it probably won't be if you make other energy upgrades.*) *If equipment is oversized, it won't stay on long enough per cycle to run efficiently and won't have time to dehumidify the air. Moist cool air feels like a meat locker; moist warm air feels hot and sticky and promotes mold growth.*
- Get high-efficiency equipment (minimum 14.0 SEER). A variable-speed air handler and a variable-capacity compressor provide better humidity-control and much better comfort at greater efficiency.

- Change old pressed ceiling registers to curved-blade type. They throw and mix air better. Side wall grills should be installed and adjusted to throw air upward. Do not install stamped grills.
- If ducts were replaced or if leakage test results were poor, have repairs made and test again. Aim for duct leakage below 10%, good air-flow to each room, correct static pressure and no back-drafting.

Reduce Moisture

Moisture equals rot, mold, allergies and discomfort.

- Get a hygrometer to find out the temperature and relative humidity in your house (about \$15—25).
- Having a right-sized cooling system is the best way to control humidity but that only works when it's hot enough to turn on. You can use a variable-speed unit like a dehumidifier, however, because it dehumidifies at the beginning of the cycle, unlike standard cooling equipment (run it briefly, then turn off). Or get a stand-alone unit (be sure it's Energy Star). They are very noisy, but can be kept in an out-of-the way place or run when you're not home or at night—anything to help when the humidity is extremely high and the temperature isn't.
- Install exhaust fans, vented to the outside in high-humidity areas. Install a humidistat or timer switch. The timer should run about half an hour after the end of a shower. Choose a quiet model—under 1.0 sone—so it won't be too annoying to use.
- Don't put vinyl wallpaper anywhere. It traps moisture and guarantees mold growth.

Re-roofing

Consider a metal roof. It's ideal in a hot, humid climate. Be sure it is concealed-fastener type. Metal costs about three times more than composition shingles initially, but really pays off in energy savings and replacement costs in the long run. Metal should last a lifetime and makes a good surface for collecting rainwater. If you can't afford metal, be sure to install a roof radiant barrier.

Re-painting

- Choose paints with minimal nasty fumes (water-based paints with VOC levels as close to zero as you can find. You won't feel like you have to move out of the house for a week. Such paints are available in all major brands and in all colors. Stick to major brands for good coverage and workability.
- Pick light, reflective colors, inside and out, for a cooler house that will need less cooling and lighting.

Flooring

Reduce carpeted areas as much as possible. Choose ceramic tile, wood, cork or real linoleum instead. They won't harbor mold, dust, dust mites and other allergens. They are durable and easier to clean.

Indoor Water Efficiency

- Choose WaterSense plumbing fixtures, faucets and showerheads. See <http://www.epa.gov/watersense/>
- If you need a new washing machine, choose a horizontal-axis model to save water and energy. For City of Austin water customers, check www.ci.austin.tx.us/watercon/sfwasher.htm for rebate information.

Adding Space

- Be sure you really need to. Remember—you'll have to heat and cool, furnish and clean more space.
- Respect the scale, era and style of your neighborhood and home in design and materials.

Landscaping

- Plant some site-appropriate, long-lived shade trees in strategic locations (focus on West, East, and South).
- Bring in plenty of topsoil (about 6") containing 25% compost (such as Dillo Dirt)—the key to less water use.
- Choose plants that are native or well-adapted to our area (see City of Austin Grow Green info).
- Mulch plant beds generously to block out weeds and maintain soil moisture around the roots.
- Plant turf-grass varieties that require the least water and are suited for the amount of sun they will get. Don't plant more turf-grass than you need.
- Don't over-fertilize. See the latest Guidelines from Texas A&M (2003). www.growgreen.org

More good websites (Be sure what you read applies to a hot-humid climate)

www.fsec.ucf.edu Florida Solar Energy Center—well-researched info for a similar climate

www.eere.energy.gov/buildings/design/wholebuilding

www.energystar.gov Information about energy-efficient products; federal tax credits

www.h2ouse.com All about water use in a home

www.buildingscience.com For building professionals but lots of interesting stuff

www.ntsobighouse.com Good ideas for right-sizing your home