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ask the architect

By Scott Rodwin, owner of Rodwin Architecture/Skycastle Construction



Best Energy-Efficient Winter Upgrades

If your house, condo or apartment is more than 20 years old, an energy-efficiency upgrade remodel is likely a good investment. Rebates and incentives are still plentiful through local energy-efficiency programs (i.e. EnergySmart and Xcel Energy utility programs), and equally as important as the bottom line, you will make your house more comfortable as you hunker down for the season.

Here's how to make it easy:

Top 10 upgrades:

1. Hire an energy auditor.
2. Weatherize/seal air leaks.
3. Upgrade lighting.
4. Insulate attics, walls, and crawlspaces or basements.
5. Replace older furnaces or replace with an electric heat pump.
6. Replace older water heaters or boilers (consider solar thermal panels).
7. Install a digital setback thermostat.
8. Upgrade appliances.
9. Replace windows.
10. Add Solar Photovoltaic Panels (PV).

1. Hire an Energy auditor – Go to www.energysmartyes.com for your one-stop shop for energy upgrades, and get a Boulder County subsidized Home Energy Assessment for a good price. EnergySmart will complete a Home Energy Assessment, then pair you with an expert Energy Advisor, who will:

Install FREE energy and water-saving items (LED bulbs and water aerators)

Provide and explain the Home Energy Assessment on your home's energy use

Help determine the most cost-effective home improvements

Explain results from radon, carbon monoxide and natural gas leak testing (to help keep your household safe)

Help you get and evaluate bids from qualified contractors

Help you find and apply for rebates and financial incentives.

2. Weatherization – On a typical home, stopping air-infiltration costs \$3-4,000 and will pay for itself within just a few years. It also makes the home immediately more thermally comfortable, through simple caulking, sealing and weather-stripping. More energy is lost in homes through windows, walls and by convection than it is through the roof or floor.

3. Replacing incandescent bulbs with LED (skip CFL) can have a significant reduction in both electricity and summer cooling costs. There are rebates for bulbs through Xcel and EnergySmart, making them very cost effective. If you get the ones that are 2700 Kelvin, the color is nearly identical to incandescent bulbs.

4. Insulation – If your house has an attic, there is often room to easily add more roof insulation at a reasonable cost. If the home is over 40 years old, it likely needs more insulation everywhere.

5. Replace those open combustion 70-percent efficient furnaces with closed-combustion (safer for indoor air quality) 80-96-percent efficient furnaces. Or if you're concerned about your carbon footprint and want to reduce your overall energy use, consider switching to an electric heat pump (Google "Comfort365"). There are rebates, and they pay for themselves quickly.

6. Replace old water heaters; same deal as #5. If it's not time to replace it, wrap your storage tank and pipes in insulation to reduce standing losses. Solar thermal panels are still also a good idea, and there are 30-percent federal tax credits. If you have solar Photovoltaic, look into electric water heaters.

7. Replace the thermostat. Another easy and cheap change that helps make the house more comfortable and more accurately controlled.

8. Upgrade appliances. Go ENERGY STAR™, www.energystar.gov (you still have to read the label to see the predicted energy use as there is a wide range of efficiency within the ENERGY STAR options). The fridge is the biggest energy user.

9. Replace windows. Although among the most expensive of the upgrades (\$8-80,000), if your windows are more than 40 years old, they should likely be replaced with ENERGY STAR-rated windows. Ideally, you can also take this opportunity to choose a specific Solar Heat Gain Co-efficient (SHGC), for each window that can either block or accept the sun to improve the passive solar performance (and thermal comfort) of your home.

10. Photovoltaics – The cost of PV or solar panels is still roughly 50-percent subsidized, and there are programs that allow you to put \$0 down. Panels obviously operate most efficiently when facing south, but can be put on roofs facing any direction other than north. A typical 3,000-square-foot house needs about 8kW to cover 100 percent of its electrical needs.

Remember that all rental properties (roughly half of the residential units in Boulder) needed to comply with SmartRegs, basic energy-efficiency standards by Dec. 31, 2018. If a property didn't reach compliance by the deadline, the owner's rental license expires and they can face significant fines, so get it done ASAP! If you need assistance, contact EnergySmart at 303-544-1001 or to learn more visit <https://bouldercolorado.gov/plan-develop/smartregs>.

About the author:

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