How to Live in a Better Building: Home Energy Evaluations and Energy Efficiency Upgrades
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www.SolarDecathlon.gov
Did you know?

- Americans spend 90% of their time indoors.
- Households spend nearly $2,000 per year on energy, but $200 to $400 of that could be wasted.
- Only 20% of homes built before 1980 are well-insulated.
- Homes can lose up to 60% of heated air as it travels through leaky ducts before it hits a register.
- Large icicles on your roof in winter are evidence that your home is wasting energy.
Definitions:

Home energy evaluation = energy assessment
= energy audit = energy inspection
= energy efficiency check-up
= Examination of the whole house and all its systems to identify problem areas

Home energy upgrade = retrofit
= energy efficiency improvements
= energy efficiency measures
= Work to improve the functioning of your home’s systems
Preview: There Are Programs In Your Area
Better Buildings Neighborhood Program video:

Why Energy Efficiency Upgrades?

Get Inspired!
Why should YOU consider a home energy evaluation & upgrade?

• Is the room over the garage cold in the winter?
• Are there areas in your home that are drafty?
• Is the basement always cold?
• Is the room at the far end of the house often uncomfortable?
• Is your upstairs hotter than downstairs?

There is a solution!
Your home energy evaluation will:

• Identify and measure your home’s energy and comfort issues
• Determine how leaky your house is and show you where the leaks are
• Figure out if your home's heating and cooling systems and appliances are operating properly
• Provide a list of recommendations for cost-effective improvements

Duct leakage tester
Infrared (IR) camera
Your home energy assessment:

What to expect
Typical home before energy upgrades

- Air leaks
- Insulation
- Duct Repair
- Old, Inefficient Furnace
- A/C
- Hot Water
- Venting
- Appliances
- Lighting
What happens next?

Your energy audit report may include:

- Air leakage (blower door) results
- Duct leakage analysis
- Infrared (IR) photos and house pictures
- Recommended home energy upgrades
- Cost effectiveness and/or payback
- List of contractors to perform your energy upgrades
# Top 5: Prioritizing Home Energy Upgrades

<table>
<thead>
<tr>
<th>Upgrade</th>
<th>Payback*</th>
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<tr>
<td>#1 Lighting</td>
<td>&lt;2 yrs</td>
</tr>
<tr>
<td>#2 Duct sealing, replacement, and/or insulation</td>
<td>&lt;2 yrs</td>
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<td>#3 Whole-house air sealing</td>
<td>&lt;5 yrs</td>
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<tr>
<td>#4 Insulation of the attic, crawl space, and basement</td>
<td>&lt;10 yrs</td>
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<tr>
<td>#5 Equipment and appliance replacement with ENERGY STAR</td>
<td>&lt;10 yrs</td>
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#1: Replace inefficient and costly lighting

- Switch to LEDs or CFLs
- ENERGY STAR-qualified LEDs last up to **25 times** longer than incandescent bulbs
- ENERGY STAR-qualified CFLs last **10 times** longer than a comparable incandescent bulb that puts out the *same* amount of light.
- ENERGY STAR lighting fixtures can save you even more!

*Do it yourself!*
#2: Seal ducts in the attic or crawlspace

**Before**
- Broken and open duct
- No tape or sealant at duct connections

**After**
- Gray mastic seals gaps.
- Gray mastic seals the connection
#3: Air seal your whole house

Attic floor duct

Hole in attic floor

Before

Attic floor duct

Hole in attic floor

After

Orange = Sealant (caulk, spray foam, and insulation)
#4: Insulate your attic, crawlspace, and basement

Before

After
#5: Replace inefficient equipment

old

new
Now what?

GET STARTED!
Questions to ask a home energy improvement contractor:

– How many energy improvement jobs have you done?
  – What types of improvements?
– Do you hold a building science certification?
  – Building Performance Institute (BPI)
  – Residential Energy Services Network (RESNET)
  – North American Technician Excellence (NATE)
– What type of quality assurance or inspection process do you practice?
– Do you have references from other homeowners?
Contact Your Local Program

energystar.gov/hpwes
betterbuildings.energy.gov/neighborhoods
Local energy upgrade programs

**Maryland:**
**Home Performance with ENERGY STAR**
- Energy audits ($250- $700)
- Rebates for upgrades up to 50%
- Quality assurance

[mdhomeperformance.org](http://mdhomeperformance.org)

**Be SMART Home**
- Loans up to $15,000
- Interest rate as low as 4.99%

[mdhousing.org/besmart](http://mdhousing.org/besmart)

**STEP UP, University Park**
- Additional incentives of up to $400
- Access an Energy Coach to help

[mystep-up.org](http://mystep-up.org)

**Virginia:**
**Home Performance with ENERGY STAR**
- List of approved contractors
- Rebates for appliances and upgrades

[novahomeperformance.org](http://novahomeperformance.org)

**LEAP, Charlottesville**
- Rebates up to $2,200
- Home energy score
- Low interest loans

[leap-va.org](http://leap-va.org)

**DC:**
**Sustainable Energy Utility**
- Basic retrofit for $100 in some areas

[dcseu.com](http://dcseu.com)

**DDOE**
- Free home energy audit & rating

[d doe.dc.gov](http://d doe.dc.gov)
Rebates & incentives: dsireusa.org

Energy tips: energysavers.gov
Thank you!

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To view this presentation online, visit:

www.SolarDecathlon.gov
Resources I

- Solar Decathlon
  www.SolarDecathlon.gov

- YouTube Energy 101: Energy assessment
  www.youtube.com/watch?v=YolBP0-vkBU

- Home Performance with ENERGY STAR (National)
  www.energystar.gov/hpwes

- Maryland Home Performance with ENERGY STAR
  www.mdhomeperformance.org

- Northern Virginia Home Performance
  www.novahomeperformance.com

- DC Sustainable Energy Utility
  dcseu.org
Resources II

- U.S. Department of Energy: Energy Savers Website
  Various resources for homeowners & apartment dwellers
  www.energysavers.gov

- U.S. Department of Energy: Better Buildings Program
  www.betterbuildings.energy.gov/neighborhoods

- Database of State Incentives for Renewables and Efficiency
  www.dsireusa.org