

Making Energy Decisions

ACI Home Performance Conference
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Making Energy Decisions

What We Will Discuss

- The ten question for making energy decisions.
- Energy myths.
- Making energy decisions.
 - My examples.
 - Your questions.



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Energy Myths Can Be Instructive

- Although an energy myth is usually incorrect, figuring out the truth can be educational.
- How energy myths are born.
 - Faulty logic.
 - Exaggerated claims by manufacturers.
 - Changes in technology.
 - Lies.



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The Ten Questions for Making Energy Decisions (only 1/2 of twenty questions)

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1 - Will it Really Save Energy?


- Probably the most basic question.
- We can save energy by increasing efficiency or by conserving.

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Energy Efficiency vs. Energy Conservation

- Energy efficiency is doing the same work with less energy.
 - Installing compact fluorescent lamps to replace incandescent, at same lumen level.
 - Installing a more efficient furnace.
- Energy conservation is reducing the level of services.
 - Reduced levels of lighting (reduced lumen level).
 - Turning the furnace thermostat down 24/7.

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2 - Are the Savings Reasonable?

- If the claimed savings in energy don't seem reasonable, they probably aren't.
 - Some facts (thresholds of reasonableness)
 - The highest R-value per inch, without using expensive space-age materials, is 7.
 - In an uninsulated, leaky house, cutting the heating bill by as much as 50% by insulating and tightening is rare, but possible.
 - You can't save more than you use!

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Unreasonable Claims Questions

1. If we insulate and air seal your totally uninsulated and drafty house, we will cut your heating bill by 1/2. T or F?
2. You will save 1/3 of your heating energy by replacing your old windows with our new vinyl windows. T or F?

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3 - Will it Pass the Economics Test?

- Simple payback = cost/savings
- Savings-to-Investment Ratio (SIR).
 - $SIR = (savings/cost) \times life$
 - SIR must be 1.0 or greater.


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Economics Test Questions


1. Is it better to use thin plastic storm windows than to spend more money to add permanent storm windows. T or F?
2. Are the final results similar if 1) we add an R-20 to an uninsulated attic or 2) we add R-20 to an attic that already has an R-10?
 - Use the SIR = (savings/cost) x life.
 - The law of diminishing returns works here.

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4 - Will it Increase Thermal Comfort?


- Many energy improvements increase thermal comfort, but this is rarely included in any calculation of benefits.
- This benefit can also lead to improved indoor air quality and health.

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Thermal Comfort Questions


1. If I insulate the walls in my house,
 - Will I notice a decrease in heating costs?
 - Will I notice an increase in thermal comfort?

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5 - Will it Affect Durability?


- The durability and value of a home are important.
- If an energy saving measure will reduce durability, we should reconsider the measure.

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Durability Questions


- Aluminum siding with foil behind it will reduce you energy bills. T or F?
- Will this measure adversely impact the durability of the house?

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6 - Will it Affect Health and Safety?


- Some energy-saving measures can adversely affect the health or safety of the occupants. Always think this through before acting.

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Health and Safety Questions


1. If I operate a humidifier in my house during the winter, I will save money by being able to turn the thermostat down. T or F?
2. Running the bathroom exhaust fan wastes energy, so I keep it off all winter. T or F?
3. Tightening my house is always a good thing to do because it saves energy. T or F?

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7 - Does it Pass the Logic Test?

- Is the claim of saving energy logical?
- Does the claim follow the laws of physics?
- Building science can answer all the questions.


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Logic Test Questions



1. Insulating the attic will cause more heat to leak out the walls and windows. T or F?
2. Turning the furnace thermostat up higher will make the house heat faster (AC counterpart). T or F?
3. Solar covers for outdoor swimming pools only work when the sun is shining. T or F?
4. During the winter months, humidifying the air in a house makes it feel warmer, so the thermostat can be turned down to save energy. T or F?

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Logic Test Questions

5. A heating setback thermostat will not save energy because it requires just as much energy to bring a house back up to temperature as was saved when the temperature dropped. T or F?
6. Insulating the foundation in a northern climate is not worthwhile because the 8-inch concrete wall is very strong and thick. T or F?


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8 - Consider the Whole System

- Consider not only the energy use and efficiency of one component of a system, consider the entire system energy use or efficiency.





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Whole System Questions

1. Electric heat is more efficient (100%) than a gas furnace (78 - 95%). T or F?
2. Installing an efficient furnace or air conditioner will automatically reduce my energy bill. T or F?
3. When I turn my appliance off, it's off! T or F?
4. Leaving computers, lights, and other appliances on uses less energy than turning them off. T or F?



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9 - Does it Advance Sustainability?

- Increased energy efficiency and energy conservation generally advance sustainability.
- This can be a complex issue.
 - Is using a wood stove more sustainable than using a gas furnace?

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Sustainability Questions

- Heat with wood and save the environment? T or F?
- Insulate your house with cellulose to lower CO₂ emissions and save the environment. T or F?
- If we all drove electric cars, we could save the environment. T or F?



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Sustainability Issues

- Embodied energy.
- Externalities.
- Long- and short-term impacts on environment.


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10 - Is it Ethical or Would You Recommend it to Your Mother?

- The choice to save energy must be ethical.
- Stealing natural gas (theft of service) will save you money, but it is unethical.




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Ethical Questions

1. It is unethical to own an energy-wasting house when you have the means to make the house energy efficient. T or F?

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Myth or Not?

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Energy Myth or Not?

- Fluorescent lights should be left on when leaving a room because it saves energy. T or F?




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Energy Myths or Not?

- That old refrigerator is still working, so let's put it in the garage and save money by buying groceries on sale. T or F?
- Cleaning refrigerator coils will save a significant amount of energy. T or F?

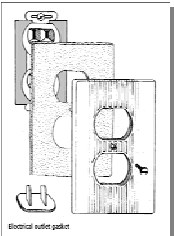


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Energy Myth or Not?

- Installing foam gaskets on electrical outlets will significantly reduce air leakage. T or F?




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Energy Myth or Not?

- Duct tape is great for sealing leaky ductwork joints. T or F?




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Energy Myth or Not?

- Use less power, take a shower. T or F?




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Energy Myth or Not?

- If a house is too tight, it can lead to moisture problems. T or F?




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Energy Myth or Not?

- We put more insulation in our attics because heat rises. T or F?




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Energy Myth or Not?

- This R-20 wallpaper that I have see advertised in magazines will save lots of energy. T or F?



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- How much insulation should I put in my attic?
- How about in my walls?

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Your Questions

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