Building the High Performance House

Beyond Code Programs That Give You and Your Customer The Edge

Part Four

Developing a Path Forward

- In accordance with the Department of Labor and Industry's statute 326.0981, Subd. 11,

- "This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying **1.5 hours** of credit toward **Building Officials and Residential Contractors** continuing education requirements."

- For additional continuing education approvals, please see your credit tracking card.

Learning Objectives

1. Using experience from presenters and the audience, define what constitutes a standard code house compared with a house that goes beyond code.
2. Attendees will gain a good understanding of the content of programs presented.
3. Understand how the programs differ.
4. Enhance critical thinking skills to allow builders to determine which programs will further their goals.
5. Understand what overall components are necessary to achieve a high performance home.
6. Understand the overall importance of building high performance and low energy use homes.
7. Attendees will be able to define for themselves the five most important items that must be done to build a very efficient house.
8. Attendees will be able to identify upgrades that are consistent with building science principles.

Presenters

- Mike Resech
  - Residential Science Resources
- Pat Huelman
  - University of Minnesota Cold Climate Housing
- Rachel Wagner
  - Wagner Zaun Architecture

- Moderator: Marilou Cheple

Let's Talk

- What program or method of building would you choose and why?
- What does it take to build this way?
- How can we advance the progress to design and build better homes?
- How can we educate the buyer about the importance of building a better house?

Mike’s Approach

What it Takes

- To create a successful home we have to remember that the building works as a whole
  - A silo approach can lead us down the wrong path

- A HERS Rating is a start, but programs such as ENRGY STAR and ZERH provide a better structure for assessing the building as a system

What it Takes

- Success takes buy-in from the top down
  - One trade not pulling in the same direction can have a drastic impact on a buildings final performance
- Understand and address ‘Scope Holes’
  - Review critical details with trades and determine who is responsible
- Get what you pay for
  - Know your specifications and ensure they are being executed

Advancing the Process

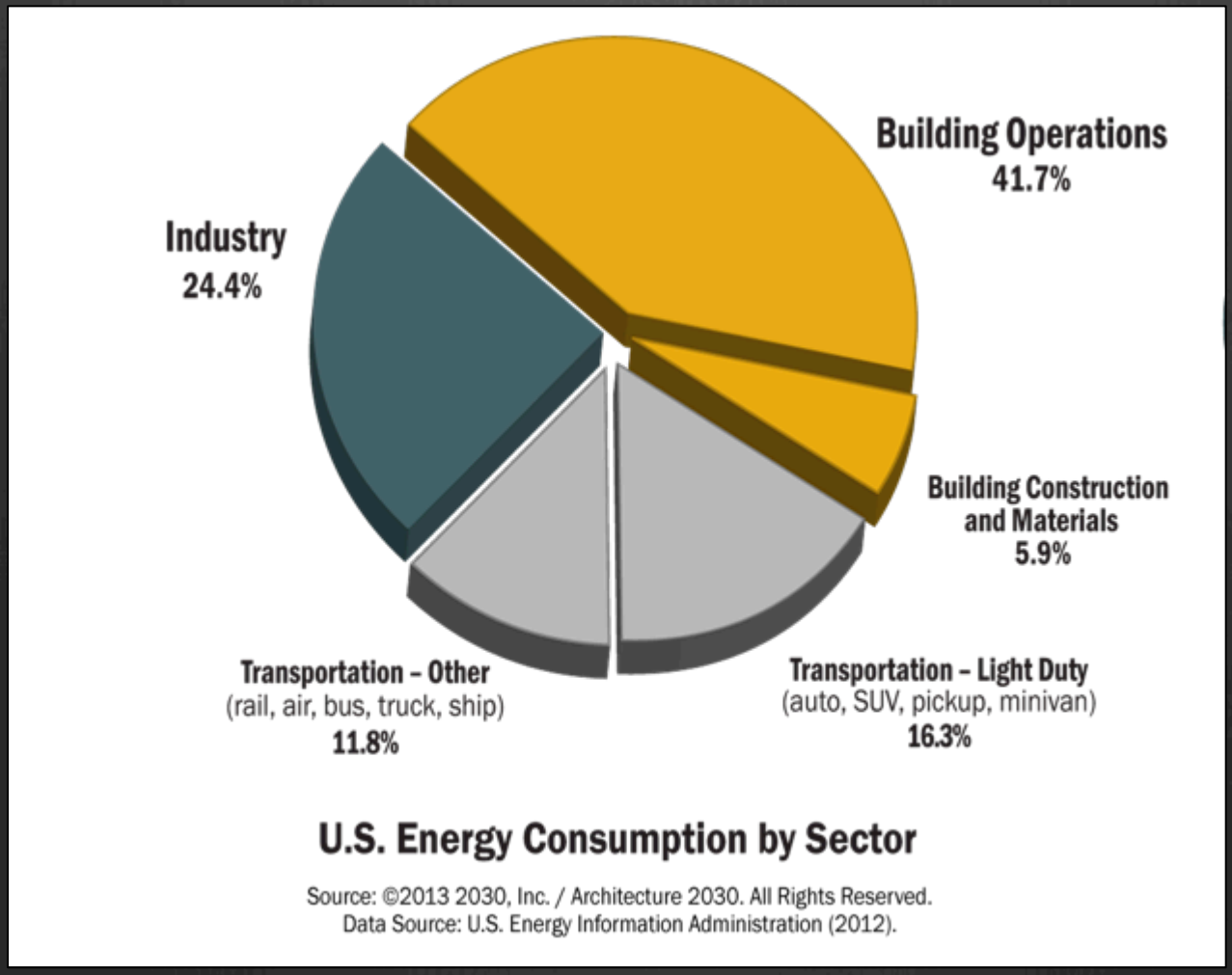
- Design the whole not the parts
- Optimize the current paradigm
  - Pay attention and get it right
- Make your Rater a part of the team
  - Bring them in during design
  - Listen to what they bring to the table
- Don’t be afraid to try something new
  - Do the front-end work and follow the plan

Educating the Buyer

- To have an educated buyer you need an educated sales team
  - They can't sell the benefits of a high-performance house if they don't know what they are!
- Benchmark the performance
  - Make it tangible
- Provide visual aids
  - Its easier to engage a buyer when they have something to hold

Rachel’s Approach

Building Impact



Stay Hungry, Stay Foolish

1. Think in Systems
2. Own your Mistakes
3. Learn from Others
4. Teach Others
5. Acknowledge Impact
6. Consider the Future

I wish everyone would …

1. Care.
2. Spend some time in a high performance house.
3. Learn how much energy a building uses.
4. Use integrated thinking.
5. Offer higher performance as the new normal.
6. Burn your Thermal Bridges. (thank you David White)

Therefore, when we build, let us think that we build for ever. Let it not be for present delight, nor for present use alone; let it be such work as our descendants will thank us for …

John Ruskin, The Lamp of Memory, 1885

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Pat’s Approach

The Big Picture

- 1. Set Performance Goals
- 2. Follow an Integrated Design Process
- 3. Use a Program to Ensure Results

Goals (Performance Criteria)

- Ensure robust systems (design, analysis, & specs)
- Building efficiency (design & construction)
  - Enclosure
  - HVAC
  - Solar Ready
- Indoor environmental quality (design, specs & construction)
  - Minimize pollutant sources
  - High-end ventilation, filtration, dehumidification

Process Guidance

- Use an integrated design process
  - Select key players early
  - Develop strong construction documents
    - Design
    - Specifications
    - QA/QC procedures
  - Clear process for changes
- Provide ongoing site verification

Program Selection

- Use DOE ZERH as a baseline
- Plus …
  - Extra analysis at the design stage
  - Focus on robust solutions
  - Plan for strong systems commissioning

Final Thoughts

- You can design or specify whatever you want …
- But if the general contractor (or any one of their subs) are shaking their head (explicitly or implicitly), you have the wrong team for execution!!!

Final Thoughts

- Be reasonable and know the boundaries that matter …

  perfection is the enemy of good

- Be willing to pay for that which actually costs more …

  good design

  better materials

  quality labor

  enhanced commissioning

Final Thoughts

There is hardly anything in this world that some man cannot make a little worse and sell a little cheaper….

and the people who consider price only are this man's lawful prey.

Final Thoughts

It is unwise to pay too much, but it's more unwise to pay to little.

> When you pay too much you lose a little money, that is all.
>
> When you pay too little, you sometimes lose everything, because…

the thing you bought is incapable of doing the very thing you bought it to do.

- John Ruskin (1819-1900)

Discussion

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Resources

Utilities with Programs

Minnesota Power – *mnpower.com*

CenterPoint Energy - *www.centerpointenergy.com/*

WI Focus on Energy - www.**focusonenergy**.com/

Resources

National Programs

Energy Star - www.energystar.gov/

LEED - www.usgbc.org/leed

PHIUS - www.phius.org/

ZERH - https://energy.gov/eere/buildings/zero-energy-ready-home/

Resources

General Building Science/Energy

Building Science Corporation - buildingscience.com/

Green Building Advisor - greenbuildingadvisor.com/

Minnesota Building Performance Association - **mbpa**.us/

UMN Cold Climate Housing - bbe.umn.edu/research/building-systems/cold-climate-housing