BUILDER'S UPDATE

Solutions for Better Homes

News & Information from the Minnesota Department of Commerce on Energy Conservation

Lessons for managing your subcontractors

We've always known that Minnesota's home builders are the best in the nation. And now there's a chance for us to prove it! A Federal tax credit of $2,000 is available through 2008 for homes that meet high energy efficiency standards. By fully complying with our advanced energy code, home builders can usually qualify for this credit.

This edition of Home Builders Energy Update will give you tips for working with your subs to assure energy code compliance which will improve your ability to receive the tax credit. It also provides an overview of the tax credit process, and shows how the "home-smart.org" website can help your buyers protect their most valuable investment.

Quality builders understand that to obtain maximum energy performance, the devil is in the details. For example, how the materials are installed is often more important than the type of material installed. To succeed, working with your subs is critical to assure that the job is done correctly.

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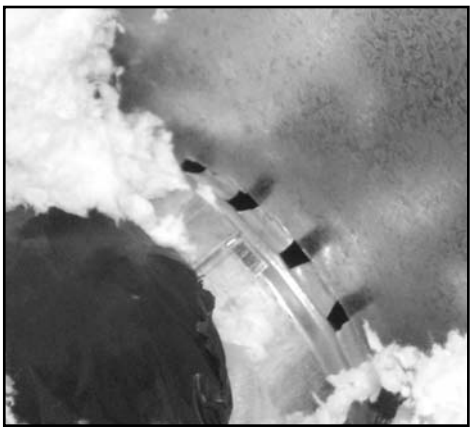
The Builders Association of Minnesota created a program to help builders qualify for the new federal tax credit. (Other raters can be found through the Resources section.) Because the program involves on-site field testing, the experience has provided invaluable lessons for home builders and remodelers to increase their quality assurance by managing the work of their subs. To date, 110 homes built by over 40 home builders have been tested. Five of these homes were not eligible for the tax credit because the test results failed to meet Minnesota industry standards for house leakage and duct leakage. The following lessons which show how to better manage subs, are based on the experience of these builders. We offer these tips to help other builders and remodelers improve the overall energy efficiency of their product and correct errors that can cause significant energy and durability problems.

Lesson 1: Seal HVAC ducts in the attic

Two of the homes did not pass the duct leakage test.

Even though the builder was paying to have the ducts in the attic sealed, as this photo shows, it was not getting done. In this case the mechanical contractor paid for the on-site testing and remedied the problem.



(Photo courtesy of Center for Energy and Environment.)

Checklist for Success:

☐ Add specific materials and methods, like sealing heating and cooling ducts in unconditioned spaces, directly in your contracts with your mechanical subcontractor.

☐ Remind your mechanical subcontractor that all ducts, boots and other connections in unconditioned spaces will be inspected before insulation is installed.

☐ Have someone—you, your job supervisor, your quality assurance manager, or your insulation subcontractor—inspect ducts in unconditioned spaces to make sure they are being sealed properly.

Lesson 2: Seal between conditioned and unconditioned space

Three of the homes had attic bypasses or leaky walls and did not pass a blower door test.

(Photo courtesy of Center for Energy and Environment.)

This mechanical room was between the garage and house but was still inside the building envelope. The house did not pass the air leakage test because the insulation contractor missed sealing these attic bypasses.

Checklist for success:

☐ Schedule a meeting with your designer, job supervisor and insulation contractor. Together inspect a plan and draw a line that separates conditioned from unconditioned space throughout the entire house. Discuss how the air barrier will stay continuous where different materials meet. Look carefully at soffits, dropped or coved ceilings, floors over garages, and other areas where the air barrier may be missed.

☐ Determine which subcontractor is responsible for "filling holes in the air barrier." Put these responsibilities directly in the appropriate subcontractor's written contract.

☐ Perform random insulation and air sealing inspections at different stages of construction to identify air barrier breaches, faulty installation or design improvements. You, your job supervisor, or quality assurance manager should give the appropriate subcontractor feedback when they are not meeting your requirements or expectations.

Lesson 3: Get the R-value you pay for

There are no magic insulation or air barrier products being used in Minnesota. Building comfortable and energy efficient homes requires getting the details right — no matter what materials are used. This means making sure the joints between different materials provide a complete air barrier.

Checklist for Success

☐ If an insulation contractor's bid is much higher than a competitor's bid, it is usually because they have better quality control — ask what they do differently. Ask insulation subcontractors to walk you through the manufacturer's installation recommendations. Make them explain why they do or don't follow them.

☐ Be wary of insulation sales people who use terms like "effective R-value" or claim that their product or system doesn't need to meet R-value code minimums. Ask how their insulation method and products will provide an effective air barrier and a vapor retarder in your walls and ceilings.

☐ Check the R-value listed for the product. If you are concerned about an advertised R-value, contact the Energy Information Center (see Resources section).

☐ Ask your insulation subcontractor if they will reimburse you for the cost of the test if your on-site air leakage test doesn't meet industry standards for Minnesota construction.

Lesson 4: Provide the correct ventilation rates

Many HVAC contractors over ventilate homes by installing fans with cubic feet per minute (cfm) ratings that far exceed code requirements. The energy penalty from over ventilation may jeopardize your ability to earn a tax credit and will increase energy costs for your homeowners.

Checklist for Success

☐ Ask your mechanical contractor to confirm the correct design continuous and total ventilation rates by using the free Mechanical Codes Guidelines software from CenterPoint Energy (see www.guidelinesv3.com).

☐ Provide a heat recovery (HRV) or energy recovery (ERV) ventilator as an option to your homeowners.

☐ Before closing, ensure that your mechanical sub properly balances the HRV or ERV and inspects exhaust fans to make sure they meet, but do not exceed, minimum continuous ventilation rates.

☐ Explain to your homeowners how to maintain their ventilation systems and strongly recommend they sign up for free maintenance email reminders at www.home-smart.org.

Lesson 5: Make wise energy efficiency choices

One builder's mechanical contractor proposed to install a 21 SEER AC with a continuously exhausting fan. It turned out that a much better energy payback was provided by a much less expensive 13 SEER AC and an ERV (see sidebar). Builders should also learn about and consider adding other high performance equipment and features.

Checklist for Success

☐ Ask your mechanical contractor if there are any other strategies or equipment you could use to provide mechanical ventilation. Get new bids if your current sub doesn't know what an ERV is.

☐ Get a quote for upgrading to an ERV and provide this option to your homeowners.

☐ If an ERV is installed make sure the AC tonnage is downsized appropriately.

☐ When installing high efficiency furnaces using models that come with an electronically commutated motor (ECM) on the blower, can significantly reduce electric bills.

Lesson 6: Seal all ducts in conditioned spaces and reduce call backs

One homebuilder decided to begin sealing both supply and return ducts, even though all the ducts were inside conditioned space. During a walk-through on a warm summer day, the builder noticed that the southwest facing bedroom was no longer uncomfortably hot. Conditioned air was now delivered where it was needed both winter and summer. In addition he was able to downsize the air conditioner by half a ton! Plus the builder knew he had solved his most troubling call back – the homeowners wouldn't need to use a space heater in their kid's bedrooms over the garage – simply because the ducts were sealed.

Checklist for Success

☐ Ask your mechanical subcontractor how much it would cost to seal all supply and return ducts with UL 181 approved mastic or tape. Ask if this change could lead to any equipment downsizing. If your mechanical contractor doesn't offer this service, get more bids.

☐ Seal all the ducts on one house to see if there is a noticeable difference in the rooms you usually receive complaints about because they are too hot or too cold.

☐ Incorporate duct sealing as a standard practice or offer it as an upgrade for your homeowners.

Tax Credits now Available for Builders

Builders can receive a $2,000 tax credit from the Internal Revenue service for each home they sell in 2006 through 2008 that consumes 50% less energy for heating and cooling than the same home built to the 2003 International Energy Conservation Code. Remodelers may also be able to qualify homes that have had substantial reconstruction and rehabilitation which includes significant energy efficiency improvements.

The IRS requires 3rd-party verification of home performance by certified home energy raters. The rater has to use approved energy analysis software and sign a perjury statement indicating that they followed all IRS and Residential Energy Services Network (RESNET) protocols. In other words, qualifying homes costs money and can only be done by a certified rater who works under the umbrella of a RESNET-certified home energy rating (HERS) provider.

Although the process may sound daunting, the great news for Minnesota homebuilders is that the average single-family home built to the current Minnesota Energy Code will usually qualify for the tax credit without any additional changes. In fact, the home certification program being conducted by the Builders Association of Minnesota found a 96 percent success rate.

This quick checklist will help builders determine if the houses they build are a likely to qualify for a credit:

- Single-family or two-family homes that comply with the Minnesota Energy Code
- No electric resistance heating systems, or only those used to heat a bathroom
- Sealed air barrier that achieves a Minnesota industry air leakage standard

Uffda Home Building, LLC's Tax Liability for 2006 (Based on sales of 7 homes in 2006)			
Without earning any tax credits		*With tax credit for 7 homes*	
Federal Tax Liability =	$31,000	Federal Tax Liability =	$31,000
		Tax credits earned =	-$14,000
Builder writes the IRS a	**$31,000 check**	Builder writes the IRS a	**$18,000 check**

- All heating and cooling ducts outside conditioned space are sealed and insulated
- Mechanical ventilation systems (air to air exchanger or continuously exhausting fans) that do not exceed minimum ventilation rates.

Builders can receive the credit on any number of qualifying homes. A tax credit can be a valuable part of your bottom line. Check the computations in the chart above.

The Uffda Home Building Company will keep $14,000 in profits if they claim tax credits for seven qualifying homes. Although the prescriptive testing will add some cost, it should be a business write-off. If a company earns more tax credits than they can claim, the additional credits can be carried forward up to 20 years. As always, you should consult with your tax advisor about how to best apply the credit to your situation.

There are several certified raters in Minnesota ready to provide the process for qualifying homes for the tax credit (see the Resources section). Builders should also check with their local utilities to see if there are any rebate programs that may help them earn a tax credit.

Here are some steps followed by many raters for qualifying homes in Minnesota. Other raters and other states may require more or less steps to qualify homes.

Initial Plan Review

Builders will be asked to fill-out a short checklist to provide the following:

- R- and U-values of building components
- HVAC and mechanical ventilation equipment specifications
- Specific energy efficient construction features

This information is entered into software by the home energy rater to assure compliance with the Minnesota Energy Code and the RESNET/IRS tax requirements. The software provides a report that shows if the house will qualify for the credit.

On-Site Testing & Verification

Right before closing or after the homeowner has moved into the home, the rater performs a series of on-site tests to verify compliance:

- Attic insulation inspection
- Envelope leakage test
- Duct leakage test
- HVAC equipment verification

Final Certification

The on-site testing and visual inspection results are added into the energy analysis software and a final Home Energy Tax Credit report is generated and sent to the HERS rating provider. After it is verified, the rater signs the report and sends it to the builder for his or her tax records.

A duct blaster is used to measure any leakage from the ducts to the outside. This test is especially important when any ducts are run in exterior walls, attics, rooms over garages, or below the slab.

(Photo courtsesy of The Energy Conservatory.)

Do Your Homeowners Know How To Change a Furnace Filter… or Even Find Their Furnace?

The home-smart.org Website Can Help!

As you all know we "build 'em tight and ventilate 'em right" in Minnesota. This strategy only works great and saves energy when homeowners maintain their ventilation systems and their relative indoor humidity. The home-smart.org website was launched by the Minnesota Building Industry Foundation in May 2005 to help homeowners better understand how to maintain and operate their high efficiency homes. Tell your homeowners about this free service and you could save yourself a call back.

Homeowners can choose from the following sections:

Basic Care:
Teaches homeowners how to maintain their homes with simple tips, instructions, and user-friendly pictures and videos.

How Your Home Works:
Helps homeowners understand the forces at work in and around their homes by explaining some basic scientific concepts.

Troubleshooting:
Allows homeowners to quickly find solutions to common house maintenance problems.

Monthly Maintenance Checklists:
Provides manageable seasonal to-do lists for homeowners. Over 900 homeowners have signed up for the free monthly e-mail service.

Home-smart.org is Minnesota-specific. All of the advice and solutions comply with and reflect Minnesota's state building codes and climate. You can order home-smart.org brochures, magnets and other materials to share with your customers by contacting Katie Liberko at katiel@bamn.org or 651-646-7959.

Should you upgrade to an Energy Recovery Ventilator?

Homeowners sometimes complain that homes with heat recovery ventilators (HRV) and exhaust-only systems tend to dry out in the winter and be overly humid in the summer. And that means a big boost on the electric bill for the humidification, dehumidification, and air conditioning load to maintain comfort levels.

An energy recovery ventilator (ERV) is a different type of air-to-air heat exchanger that offers a solution. In the winter it recovers humidity from the exhausting airstream and transfers it back into the home. In the summer it pulls humidity directly from the incoming airstream and exhausts it back outside. And it does all this with no energy penalty.

One of many models of energy recovery ventilators available in the marketplace. (Photo courtesy Venmar.)

Although ERVs cost more than HRVs they are worth considering as a standard feature or addition to your options list because they save significantly more energy. You and your buyers can learn more about the benefits of ERVs from the Energy Information Center's New Homes Home Energy Guide (see Resources section).

Special thanks to the Builders Association of Minnesota for assistance with this edition of the Update

Mention of any specific product does not indicate an endorsement by the Minnesota Department of Commerce.

Resources:

Energy Information Center
www.commerce.state.mn.us

For the Home Energy Guides click on "Energy Info Center," e-mail energy.info@state.mn.us, or call 651-296 5175 or 1-800-657-3710.

Tax incentives
www.energytaxincentives.org

Click on "Builders/Manufacturers," then "New Homes."

Home energy raters via RESNET
www.natresnet.org

Click on tax credit information; note that not all home energy raters are able to certify a home for the tax credit

Minnesota Building Performance Association
www.mbpa.us

Members include home testing consultants in Minnesota.

Builder's Association of Minnesota
www.bamn.org

ENERGY STAR
www.energystar.gov

Complete information on ENERGY STAR labeled products, home improvement and new home programs. For tax credit information go to "New Homes" then to the tax credit link.

Home-smart
www.home-smart.org

Contact Katie Liberko at katiel@bamn.org or 651-646-7959 or 800-654-7783 for promotional materials.

Mechanical code guidelines
www.guidelinesv3.com

Free software to calculate mechanical code ventilation rates.

Electric and Gas Utilities
Ask if rebates are available for efficient new homes or components; for links to many utility websites, visit the Energy Information Center and click on "links to utilities."

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85 7th Place East, Suite 500
St. Paul, MN 55101-2198

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