



## Demonstration Home Incentive Program

On a limited, first come, first served basis, the Building America teams can provide a material and financial incentive to “jump start” the application of energy efficient construction technology for new houses in Greensburg.

### Why Should Greensburg Land Owners Rebuild Energy Efficiently?

The US Department of Energy’s (DOE) Building America program has demonstrated that a 40 percent reduction in total energy consumption over a comparable new home constructed to the 2003 International Energy Conservation Code (IECC). This is practical, recommended, and financially advantageous to Greensburg land owners who wish to rebuild single family homes.

The additional construction cost to achieve the 40 percent savings for a typical 1,500 ft<sup>2</sup> wood frame house with full house wrap and OSB sheathing on a concrete basement foundation in Greensburg, KS is approximately \$1,600. The cost to rate this house (i.e. an “energy rater” comes to the house and “tests” the house and provides a “rating”) in order to receive a \$2,000 Federal tax credit is approximately \$400. In other words it costs a builder \$2,000 (\$1,600 plus \$400) to receive a \$2,000 tax credit.

The monthly utility bill savings that are realized with this type of construction are approximately \$35. So it should cost the land owner “nothing” to realize a monthly savings of \$35 per month if the builder passes on the savings the builder realizes with the tax credit.

Additional utility bill savings can be achieved by using Energy Star appliances and compact fluorescent lighting. The additional cost of an Energy Star washer and Energy Star gas dryer over that of a standard washer and gas dryer is approximately \$750. There is no cost difference for purchasing an Energy Star dishwasher. In fact is almost impossible to get a non Energy Star dishwasher. There is an additional cost to purchase or install compact fluorescent light fixtures and lights above standard practice – this is typically around \$250. The extra \$1,000 for the appliances and lighting package can be financed for approximately \$7.50 per month. The energy savings associated with the use of these appliances is approximately \$10 to \$15 per month yielding a monthly savings to the land owner.

The technology and strategies to get 40% savings are proven, simple and elegant. They have been developed by the Building America Program, a joint DOE and National Renewable Energy Laboratory (NREL) initiative, over the previous decade to prepare America for what we all believe will be a challenging energy future. But the technology is “different” and different “things” are never easy to adopt or apply. Most builders, with good cause, view different things as “risky”. This is true for all new technologies. Most purchasers often view new technologies as “too good to be true”, and for good reason.

The Building America Program is designed to help both the builder and the purchaser with reliable “information”, “knowledge” and “experience” – and to act as an “honest broker” for this information and technology. Building Science Consulting (BSC) and IBACOS are working with NREL in Greensburg to support the rebuilding effort. These two Building America teams do not make money by “selling” things. Each team’s role is to provide proven information and provide vetted technical support.

The approach and technologies recommended also must make cost sense.

BSC and IBACOS are both working in Greensburg can and will provide the technical support, help, guidance, advice, training, supervisory help directly to the builder to help the builder implement the technologies outlined in the previous letter. Additionally, BSC and IBACOS can and will work with individual builders and land owners to design specific plans and develop specific specifications to implement the technology outlined in the previous letter. A full scale “mock-up” of the recommended wall assembly can be seen at the USDA trailer park just down the street from the city offices.

## **An Opportunity for the First Ten Land Owners**

On a limited, first come, first served basis, the Building America teams can provide a material and financial incentive to “jump start” the application of the technology.

The first ten land owners or builders who wish to be supported by the Building America teams can receive the following from our Building America partners:

All of the exterior foam sheathing and basement insulation (value to the builder \$1,750)  
All of the wall cavity insulation (cellulose) and roof insulation (value to the builder \$750)  
The difference in cost between standard furnaces, air conditioners and hot water heaters and the equipment recommended in the previous letter (value to the builder \$1,400).

This list totals \$3,800 in value. This is money that the builder does not have to spend to construct the type of house described in the previous letter. This offsets the extra \$1,600 the builder needs to spend (so the builder ends up ahead \$2,200).

What does the land owner get? The land owner gets a great house for no additional cost. Can a builder pass on some (or all) of the cost incentive and savings to the land owner? That is up to the land owner and builder to work out themselves.

There is a catch. There always is. The deal is that this is an all or nothing thing. The technologies can't be “cherry picked”. A builder or land owner can not come to the Building America teams and ask for only the foam sheathing and the equipment without also agreeing to the advanced framing, the simplified duct distribution system, the air sealing, the controlled ventilation, the compact fluorescent lighting and the Energy Star appliances and all the training and support. This is a “systems” thing, or “holistic” thing. The “whole” thing or package works together better than each individual piece.

And there is more. We want the folks who participate to talk about this. Make the home available for the neighbors to see. Not all the time, but a couple of weekends at the end of construction – say two weekends. The Building America teams will come and be on hand to answer questions and bring coffee and donuts and a smile. And the builder will take his bows and be justifiably proud. And the land owner? A grin from ear to ear. And we hope that this will encourage others to do the same thing because it all makes sense on the merits without incentives – it just makes sense period.

### **Incentive Specification: What Features are Used to Achieve These Savings?**

The \$1,600 additional builder construction cost that was stated in the beginning of this letter is broken down as follows:

#### **Advanced Framing versus Standard Framing**

2x6 construction @ 24 inch centers, single plates, no jack studs, no cripple studs, no headers in non load bearing walls, two stud corners, stack framing in place of standard 2x4 framing @ 16 inch centers, double plates, three stud corners, jack studs, cripple studs, headers costs approximately \$500 less in materials and approximately \$500 less in labor. However, the labor savings is not realized until each framing crew has constructed several houses due to the learning curve. As such, the \$500 credit for labor is not included in this cost breakdown.

**( \$500 less)**

#### **Simplified Ductwork**

Single hard ducted central return in place of panned floor joists, and multiple stud cavity returns. The efficiency of the building enclosure allows for a much simpler air distribution system.

**( \$500 less)**

#### **Insulating Sheathing versus OSB and Housewrap**

1.5 inch foam sheathing with taped joints replaces 5/8 inch OSB and Housewrap. The savings on not installing the OSB and Housewrap cover the cost of purchasing and installing the insulating sheathing.

**( wash )**

**Full Height Basement Insulation**

Foil faced foam insulation extending from the top of the basement slab to the top of the concrete foundation wall is an additional cost

**( \$750 more)**

**Additional Cavity Wall Insulation and Roof Insulation**

The wall cavity is now 5.5 inches wide rather than 3.5 inches wide and therefore the cavity insulation thickness is increased. The wall cavity goes from R-13 to R-20. Additional ceiling insulation is added – the standard R-40 attic insulation is increased to R-50. The added wall cavity insulation and roof insulation is an added cost

**( \$250 more)**

**Low E Spectrally Selective Windows**

These types of windows are already standard practice. For reference purposes they should have an SHGE of less than 0.35 and a U-value of less than 0.3.

**( no change )**

**Air Sealing**

Rim joist critical seal spray foam.

**( \$200 more)**

**90 plus Condensing Gas Furnace**

A standard 80% AFUE gas furnace, 70 kbtu/h input, 56 kbtu/h output, 3-ton coil, single stage, 3-ton coil multi-speed blower (Goodman GMS80703AN) is replaced with a 92.1% AFUE gas furnace, 46 kbtu/h input, 42.8 kbtu/h output, single-stage, 3-ton coil, multi-speed blower (Goodman GKS90453BX). Cost is based on contractor pricing.

**( \$200 more)**

**2.0 Ton, 16 SEER AC Condensing Unit, R410a**

A standard 2.5 ton, 13 SEER AC condensing unit, R22 (Goodman GSC130301) is replaced with a 2.0 ton, 16 SEER AC condensing unit, R410a (Goodman SSX160241). Cost is based on contractor pricing.

**( \$475 more)**

**Tankless Water Heater**

A standard natural draft water heater, EF=.56, 40 kbtu/h input, 40 gal (A.O. Smith BFG6140S403NOV) is replaced with an on-demand tankless water heater, EF=.82, 180 kbtu/h input (Rinnai REU-V2520FFUD-91-NG). Cost is based on contractor pricing

**( \$575 more)**

**Controlled Ventilation System**

Outside air duct with motorized damper and controlled connected to return side of furnace/air conditioner air handler.

**( \$150 more)**

**Summary: Table 1 – Total Energy Efficiency Package Cost**

<b>Efficiency Upgrade</b>	<b>Estimated Incremental Cost</b>
Energy Star Appliances	+\$750
Compact Fluorescent Lighting	+\$250
Total Incremental Cost	\$1000

**Summary: Table 2 – Builder Incremental Cost With Tax Credit**

	<b>Estimated Incremental Cost</b>
Builder Incremental cost (Excluding Appliances and Lighting)	+\$1600
Rating for Tax credit certification	+400
Builder Tax Credit	-\$2000
Total Incremental Builder Cost	-0-

**Contact Information**

For information about this incentive, please contact:

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