

**IN THIS ISSUE****Energy Efficiency as First Time Homebuyer Assistance****NOTE TO READERS****ON-LINE DELIVERY**

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Fisher, Sheehan & Colton  
Public Finance and General Economics  
34 Warwick Road, Belmont, MA 02478  
(voice) 617-484-0597 \*\*\* (fax) 617-484-0594  
(e-mail) [roger@fsconline.com](mailto:roger@fsconline.com)

**FIRST TIME HOME BUYER PROGRAMS CAN PROMOTE AFFORDABILITY THROUGH ENERGY EFFICIENCY PARTNERSHIPS**

Energy efficiency investments directed toward lower income households can serve an important affordable housing function in Pennsylvania. Efficiency investments can supplement other affordable housing programs in significant ways. According to a recent analysis prepared by Fisher, Sheehan & Colton (FSC) for the Public Utility Law Project (PULP), efficiency investments can:

- Increase the number of low-income households that qualify for first time home ownership opportunities, holding income and purchase prices constant;
- Increase the value of the home (and thus presumably the size or quality of the home) that a low-income first time home owner can afford to buy, holding income constant;
- Increase the safety of the financial institution's investments in first time homebuyers through increased home value, decreased default rates, and protections against price volatility; and
- Increase the economic subsidies provided to first time homebuyers not only by providing positive cash flow on a month-to-month basis, but also by effectively reducing interest rates or effectively reducing the overall purchase price of the home.

The basis for these conclusions will be considered in more detail below. First, however, a brief examination of Pennsylvania's HOME Investment Partnership Program (HOME) invest-

ments in home ownership units is presented. Pennsylvania's participating jurisdictions devote substantial public funding to the production of homebuyer housing for low-income households.

### **PENNSYLVANIA'S HOME DOLLARS AND HOMEBUYER UNITS**

Dollars directed toward low-income energy efficiency improvements may have a ready market in homebuyer units produced statewide with federal Home Investment Partnership Fund (HOME) dollars in Pennsylvania. Since the HOME program's inception in 1992, the state (in combination with local Pennsylvania jurisdictions directly receiving HOME dollars from the federal government)<sup>1</sup> has produced nearly 13,000 housing units for purchase by low-income households.

In recent years, HOME dollars in Pennsylvania have produced nearly 1,000 homeownership units each year in Pennsylvania. The number of units produced for the past several years in Pennsylvania have reached:

- 2,700 units from the first quarter of 2005 through the first quarter of 2007; and
- 1,492 units from the first quarter of 2007 through the first quarter of 2009.

HOME has the advantage of reaching into every corner of Pennsylvania. As of the first quarter of 2009, 31 participating jurisdictions in Pennsylvania received more than \$850 million to produce affordable housing. Of course, not all of those dollars go to support the production of homeownership units. Since 1992, HOME dollars have also subsidized the production of 15,970 rental units.

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<sup>1</sup> Some local jurisdictions receive HOME funding directly from the federal government. Other jurisdictions must competitively seek an allocation of the funds provided through the state government.

### **THE AFFORDABILITY IMPLICATIONS OF AN ENERGY EFFICIENCY PARTNERSHIP**

The FSC analysis for Pennsylvania examined a partnership between the energy efficiency programs of Pennsylvania's public utilities and Pennsylvania's affordable housing programs. The discussion that follows focuses on the production of homeownership units. Creating a partnership between utility energy efficiency dollars and the affordable housing subsidies of the HOME program, by targeting energy efficiency investments to households participating in public first time homebuyer programs, would yield benefits for the utility, the homebuyers and the affordable housing developers (along with the institutions that finance those developments).

### **THE PROPOSED PARTNERSHIP FOR PENNSYLVANIA**

The energy efficiency partnership used as the basis for this analysis assumes that an energy efficiency investment of \$3,500 is made in each single family home ownership units subsidized with HOME funds. To finance the energy efficiency investment, the mortgage institution takes one percent of a 5% downpayment and uses that as a household payment toward energy efficiency investments. The cost of the energy efficiency investment is further offset by a third party match<sup>2</sup> equal to one-half of the customer's payment. The amount of the energy efficiency investment not paid through these two funding sources is then financed as part of the mortgage without further underwriting.<sup>3</sup>

The impacts to the home buyers are examined for three baseline scenarios of this proposed partnership:

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<sup>2</sup> Utility energy efficiency dollars are proposed to be used for this match.

<sup>3</sup> Accordingly, if the homebuyer qualified for the underlying mortgage, the homebuyer will qualify for this energy efficiency program without further underwriting.

- A home priced at 60% of state median income (SMI),<sup>4</sup> coupled with an average energy bill,<sup>5</sup>
- A home priced at 80% of state median income (SMI), coupled with an average energy bill; and
- A home priced at 100% of state median income (SMI), coupled with an average energy bill.

The three scenarios are then repeated (for a total of six scenarios) with an energy bill set equal to 80% of the average. A “low-bill” set of scenarios seems appropriate given the fact that the homes frequently (but not always) involve new construction or substantial rehab.

To illustrate this process, FSC assumed the purchase of a home at the affordable sales price for a household at 60% of median income (\$122,200). The \$3,500 cost of the efficiency improvement is offset by a one percent downpayment ( $\$122,200 \times 0.01 = \$1,222$ ) plus a matching third party grant ( $\$1,222 \times 0.50 = \$611$ ). The remainder ( $\$3,500 - \$1,222 - \$611 = \$1,667$ ) is then financed as part of the total mortgage. The final mortgage in this instance would thus be \$122,200 minus the four percent downpayment not devoted to energy efficiency plus the \$1,667 remaining cost of the energy efficiency improvement ( $\$122,200 - \$4,888 + \$1,667 = \$118,972$ ). Mortgage interest rates are assumed to be 5.5% on a 15-year mortgage in the discussion below.

#### **THE IMPACTS OF THE EFFICIENCY INVESTMENTS**

Energy reductions are assumed to be realized at a rate of 20% of the pre-efficiency bill. Based

<sup>4</sup> A home priced at 60% of median income means that the total mortgage costs, when coupled with utility costs, do not exceed 30% of the income utilized.

<sup>5</sup> For purposes of this analysis, “energy” bills include water and sewer bills as well.

on a review of similar low-income usage reduction programs, FSC concluded that efficiency investments could result in a 25% usage reduction. Given that these investments are often directed toward new construction, however, the percentage reduction is set somewhat lower. The life of the energy efficiency measure is assumed to be 15 years. Energy prices escalations are set equal to 2.5%. A discount rate of three percent (3%) is used. All starting energy bills are set using 2008 prices.

The impact of the efficiency investment on the home buyer is considered using the six scenarios identified above:

- Home price at 60% State Median Income with an “average” utility bill;
- Home price at 60% of SMI with a “low” utility bill;
- Home price at 80% of SMI with an average utility bill;
- Home price at 80% of SMI with a low utility bill;
- Home price at 100% of SMI with an average utility bill; and
- Home price at 100% of SMI with a low utility bill.

Within each of these scenarios, the analysis below compares the proposed partnership between energy efficiency and affordable housing providers on four different points:

1. The extent to which reductions in energy bills offset the increased mortgage payment, thus providing a positive monthly cash flow;
2. The net present value (NPV) savings/cost to the household arising from such a strategy over the life of the energy efficiency package;

3. The effective pre-tax interest rate increase or decrease represented by the nominal savings over the life of the energy efficiency package;<sup>6</sup> and
4. The effective discount on the purchase price of the house represented by the nominal savings over the life of the energy efficiency measures.<sup>7</sup>

### ***The Impact on Cash Flows***

The energy efficiency partnership proposed above will result in positive cash flows to the household beginning in Year 1 of each scenario.

A positive cash flow indicates that the extent to which energy bills decrease as a result of the delivery of energy efficiency measures will more than offset the debt service on the amount of the energy efficiency investment wrapped into the mortgage. A positive cash flow in Year One means that the customer is better off financially, from the very beginning, under a scenario in which the home buyer pursues the efficiency investment compared to a scenario in which the customer does not make the investment.

In Scenario 1 (60% SMI/Average Bill), customers experience a positive cash flow in Year 1 of \$260. Because the mortgage stays constant and fuel prices escalate, the nominal cash flow savings increase in every year. By Year 15, the positive cash flow in Scenario 1 is \$484 annually in nominal terms, with a present value of \$307.

Not surprisingly, to the extent that households have energy bills that are lower than the average, the positive cash flow is somewhat less. In Sce-

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<sup>6</sup> From the perspective of the household, what interest rate reduction would generate at least the same amount of dollar savings generated by the energy efficiency investments?

<sup>7</sup> From the perspective of the household, what reduction in the purchase price of the home would generate at least the same amount of dollar savings as are generated by the energy efficiency investment?

nario 4 (60% SMI/Low Bill), the first year cash flow savings reach \$171.

In each of the six identified scenarios, the homebuyer has more money in his or her pocket having made the energy efficiency investment than he or she would have had should he or she have paid the lower mortgage along with the higher home energy bills. This is true from the first year of the home purchase mortgage. Overall household expenditures decrease as a result of the energy efficiency partnership.

### ***Net Present Value Savings***

The accumulation of these monthly savings over a 15-year time frame provides a considerable economic advantage to the low-income first time homebuyer. In present value terms the family with an income equal to 60% of the State Median Income purchasing a home with average utility bills will save more than \$4,200 in present value terms over an assumed 15-year life of the efficiency measures installed at the time of the home purchase.

This level of present value savings means that the family recoups the energy efficiency investment downpayment made at the beginning of the program, recoups the full cost of the energy efficiency investment financed through the mortgage, recoups the interest paid on the energy efficiency costs included as part of the mortgage, and receives an additional present value dollar benefit of \$4,242.

The other scenarios have similar benefits. The highest net present value cash savings is the \$4,717 achieved by the consumer in Scenario 3 (100% of SMI with average bills). The Net Present Value (NPV) savings range from a low of \$3,000 (Scenario 4: 60% SMI with Low-Bill) to a high of more than \$4,700 (Scenario 3).

### ***Effective Interest Rate Discount***

One way to view the dollar savings generated by energy efficiency measures is to translate those dollars into an effective interest rate reduction. This inquiry seeks to determine, in other words, what interest rate reduction on the underlying mortgage would be necessary to provide the same dollar savings to the consumer as the energy efficiency measures provide.

In order to achieve the same savings as generated by the proposed energy efficiency partnership, consumers would need to have interest rate reductions of between 24 and 50 basis points. For the household at 60% of SMI buying a home with an average utility bill, the efficiency investments would have the same effect as reducing interest rates by 0.50% (from 5.50% to 5.00%). In contrast, the person with an income at 100% of SMI buying a home with an average utility bill would experience an effective interest rate reduction of 0.33% (from 5.5% to 5.17%).

The highest effective interest rate reduction for the consumer buying a home with lower than average utility bills (80% of the average) is 0.36%. In order for the customer to receive the same dollar savings as he or she would receive from the investment in energy efficiency, that customer would need to have an interest rate reduction of from 5.50% to 5.14%.

### ***Effective Purchase Price Discount***

A final alternative way to view the energy efficiency savings is to determine what purchase price discount would be necessary in order to provide the same dollar savings to the consumer as the energy efficiency investments generate.

In order to achieve the same savings as generated by the proposed energy efficiency partnership, consumers would need to have a purchase price reduction of between \$2,800 and \$4,360. For the household at 60% SMI buying a home with an average utility bill, the efficiency investments would have the same effect as reducing the original pur-

chase price of the home by \$3,930 (from \$122,200 to \$118,270).

The highest effective purchase price reduction occurs for the consumer with income equal to 100% of SMI buying a home with average utility bills (Scenario 3). In order for this customer to receive the same dollar savings as are generated by the energy efficiency investment, that customer would need to have a purchase price reduction of \$4,360 (from \$203,667 to \$199,307).

Overall, the energy efficiency investment generates the same savings to the homebuyer as would have been generated by an initial reduction of from roughly 1.6% (\$3,225 for household at 100% of SMI with a low utility bill) to 3.3% (\$3,930 for household at 60% of SMI with average utility bill) in the purchase price of the home

## **SUMMARY AND CONCLUSIONS**

Utility costs pose a significant barrier to affordable homeownership in Pennsylvania. When utility costs are taken into account, low-income first time homebuyers experience both a reduction in their home purchasing power and a reduction in the number of affordable units that might otherwise be available to them.

Public partnerships exist, however, that can help redress the additional affordability problems posed by utility costs in Pennsylvania. One partnership considered in this analysis involves the combined investment of the financial institution, the homebuyer, and a third party in energy efficiency measures. The implementation of energy efficiency measures through such a combined investment will not only yield substantial long-term net present values savings—meaning the customer receives all of his or her investment in the efficiency measures back plus a “profit” on the investment—but will also yield a positive cash flow from Year 1 forward.

From a financial institution’s perspective, the pursuit of such a partnership generates several advantages. It reduces the risk of default on the part of the first time homebuyer since that

homebuyer has greater disposable income. It increases the value of the home, since increased values have been found to flow directly from the extent of bill reductions flowing from energy efficiency investments. It increases business to the institution, since the homebuyer can afford to buy a higher-priced home.

Should the third party partner involve electric and/or natural gas utilities using utility energy efficiency investments as the matching grant, the utility benefits as well. By definition, since investments would be made only in “cost-effective” efficiency measures, the utility would receive a payback in traditional regulatory terms. Moreover, the utility would receive the additional efficiency benefits from the leveraged dollars of investment made by the customer’s front-end payment and the dollars financed through the mortgage transaction. For every dollar of utility investment, in other words, an *additional* two dollars of private investment are made in efficiency measures.

An energy efficiency partnership directed toward first time homebuyers, where every stakeholder makes a contribution and every stakeholder receives a benefit, is worth pursuing in Pennsylvania.

For help in assessing the potential partnerships between utility energy efficiency programs and home buyer programs for low-income households in a particular state, contact:

roger[at]fsconline.com

Fisher, Sheehan and Colton, Public Finance and General Economics (FSC) provides economic, financial and regulatory consulting. The areas in which *FSC* has worked include energy law and economics, fair housing, affordable housing development, local planning and zoning, energy efficiency planning, community economic development, poverty and telecommunications policy, regulatory economics, and public welfare policy.