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Energy Efficiency as an Affordable Housing Tool

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ENERGY EFFICIENCY AS AN AFFORDABLE HOUSING TOOL IN COLORADO

The delivery of low-income home energy efficiency assistance can serve an important affordable housing function in Colorado. According to a recent FSC analysis for the Colorado Energy Assistance Foundation (CEAF), efficiency investments can supplement other affordable housing programs in significant ways. Efficiency investments can:

1. Increase the number of low-income households that qualify for first time home ownership opportunities, holding income and purchase prices constant;

2. 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;

3. 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

4. Provide substantial economic subsidies 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.

Housing affordability presents a real problem to households of even modest incomes in Colorado. In its 2002 *Housing Colorado* report, the Colorado Division of Housing (DOH) illustrated how households are faring in the housing market by preparing an analysis of incomes and housing costs for five common job categories and for a Supplemental Security

Income (SSI) recipient. The five job categories included a retail sales person, a dental assistant, a truck driver, an elementary school teacher, and a patrol officer.

DOH found, "None can afford to purchase a home at the median price in the state."

As the DOH analysis shows, a patrol officer can afford 85% of the median price of a Colorado home, while the school teacher can afford only 73% of that median price. The retail sales person can afford 44% of the median sales price of a Colorado home.

Overall, DOH found that the supply of affordable housing units in Colorado is insufficient to meet demand. DOH reports that "the number of affordable homes is still too small to accommodate all households desiring homeownership. In August 2002, there were only 7,516 homes available for the 42,334 households earning 60 to 80 percent of HUD median income that could purchase a home."

The Impact of Considering Energy BIlls

Despite the bleak affordable housing picture painted by the State Division of Housing, adding a consideration of home utility bills makes the picture even worse. FSC, for example, examined the same five job categories evaluated by DOH. The "monthly housing allowance" reported by DOH was set equal to 30% of monthly income. Use of 30% is a commonly-accepted standard by which to measure the affordability of housing. That 30% of income, however, must support not only the mortgage payment, but the payment of property taxes, insurance, and utility bills as well. Setting property taxes and insurance equal to four percent of income, and subtracting a typical home utility bill from the monthly housing allowance, the "affordable purchase price" adjusted for home utilities is considerably lower than that reported by DOH.

Taking utility bills into account reduces the affordability of housing in Colorado as reported by DOH. FSC compared the monthly mortgage payments that persons in the five occupations studied by DOH could afford to make *before* considering utility bills to the monthly mortgage payments those persons could afford to make *after* considering home utility bills.

The reduction in purchasing power is substantial. While a retail sales person could afford a $464 monthly mortgage payment without utilities, that sales person could afford only $354 with utilities being taken into account (a reduction of 24% in purchasing power). The elementary school teacher could afford a monthly home mortgage payment of $766 without considering utilities, but could afford only $669 with utilities (a reduction of 13%). A patrol officer experienced a reduced purchasing power of 10% (from $896 per month without utilities to $804 with utilities taken into account).

This reduced monthly purchasing power significantly reduces the value of a home that people can buy. FSC translated the reduced monthly mortgage payment into an affordable purchase price. Without considering utilities, the retail sales person could afford a home valued at $70,592, while that same sales person could afford only $57,349 after considering utilities. An elementary school teacher could afford a home sold for $124,073 without considering utilities, but could afford only $108,290 once the cost of utilities is taken into account. The patrol officer experienced a lost value in home buying of $14,944 ($146,053 vs. $130,112).

This relationship between bills and affordable housing payments will have four impacts on the housing market:

- It will reduce the "affordable sales price" of single family homes. As a result, fewer units of housing will be available to Colorado households with lower incomes (80% or 60% of median).

- It will freeze some lower income households out of the housing market altogether, because they have insufficient income to pay

all homeowner cost components (principal, interest, taxes, insurance, utilities).

- It will force lower income homebuyers into less expensive homes. These houses will be less desirable, even though more affordable, because they are smaller, or lower quality, or in less desirable locations.

- It will increase the risk of default by consumers. Payments based on tightly stretched incomes are more subject to disruption due to unexpected expenses (housing or otherwise) or temporary disruptions in income.

A necessary corollary to reductions in the affordable purchase price for lower-income households is that fewer units of housing will be available to these households in the marketplace. This reduction in the number of available units makes a bad situation even worse. As discussed above, even with*out* taking the reduced affordability attributable to utility bills into account, DOH reported only 7,516 homes available for the 42,334 households between 60% and 80% of area median income that wanted to purchase a home.

Taking home utility bills into account substantially reduces the number of affordable units that would be available for purchase by lower-income Colorado residents. FSC presented the number of housing units by their unit value as reported in the 2000 Census. An owner-occupied unit is considered to be "available" at a price equal to its value. The reduction in the number of affordable units available (both in gross numbers and in percentage terms) was calculated. FSC found that taking home utility bills into account reduces the availability of affordable units in Colorado by nearly 20%.

An Energy Efficiency Partnership

The proposed energy efficiency partnership used as the basis for FSC's Colorado analysis assumes that an energy efficiency investment of $3,500 is made in each single family home. To finance the energy efficiency investment, the mortgage institution takes one percent of a 3% 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 equal to one-half 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.

To illustrate this process, FSC assumed the purchase of a home at the affordable sales price for a household at 80% of median income in Adams County ($165,128). The $3,500 cost of the efficiency improvement is offset by a one percent downpayment ($165,000 x 0.01 = $1,650) plus a matching third party grant ($1,650 x 0.50 = $825). The remainder ($3,500 - $1,650 - $825 = $1,025) is then financed as part of the total mortgage. The final mortgage in this instance would thus be $165,000 minus the two percent downpayment not devoted to energy efficiency plus the $1,025 remaining cost of the energy efficiency improvement ($165,000 - $3,300 + $1,025 = $162,725). Mortgage interest rates were assumed to be 6.57%.

The analysis then compared 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; and

5. The effective discount on the purchase price of the house represented by the nominal savings over the life of the energy efficiency

measures.

Four scenarios were considered: high purchase price/high utility bill; high purchase price/average utility bill; low purchase price/high utility bill; and low purchase price/average utility bill.

FSC found that the energy efficiency partnership would 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, by pursuing the efficiency investment compared to not pursuing the investment.

The accumulation of these monthly savings over a 15-year time frame provides a considerable economic advantage to the low-income first time homebuyer. FSC calculated the aggregate discounted present value dollar savings to homebuyers over an assumed 15-year life of the efficiency investment. In present value terms the family purchasing a low-cost home with average utility bills would save more than $2,800. This 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 $2,823.

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 22 and 45 basis points. For the household buying a low cost home with an average utility bill, the efficiency investments would have the same effect as reducing interest rates by 0.31% (from 6.57% to 6.26%). The highest effective interest rate reduction occurs for the consumer buying a low cost home with utility bills at 130% of the average. In order for the customer to receive the same dollar savings, that customer would need to have an interest rate reduction of 0.45% (from 6.57% to 6.12%).

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 $3,700 and $5,500. For the household buying a low cost home with an average utility bill, the efficiency investments would have the same effect as reducing the original purchase price of the home by $3,700 (from $111,700 to $108,000). The highest effective purchase price reduction occurs for the consumer buying a high cost home with utility bills at 130% of the average. In order for this customer to receive the same dollar savings, that customer would need to have a purchase price reduction of $5,500 (from $165,100 to $159,600).

Summary

Utility costs pose a significant barrier to affordable homeownership in Colorado. 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.

Public partnerships exist, however, that can help redress the additional affordability problems posed by utility costs in Colorado. One partnership considered in this analysis involves the combined investment of the financial institution, the

homebuyer, and a third party in energy efficiency investments. 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 his or her investment in the efficiency measures back plus a "profit" on the investment—but will yield 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 energy efficiency investments. It increases business to the institution, since the homebuyer can afford to buy a higher-priced home.

A copy of the complete analysis, titled "Energy Efficiency as an Affordable Housing Tool In Colorado," including all data tables, can be obtained by sending an e-mail to:

publications@fsconline.com

Fisher, Sheehan and Colton, Public Finance and General Economics (FSC) is a research and consulting firm with offices in Belmont (MA), Scappoose (OR), and Iowa City (IA).

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