

Lowering Oberlin Residents' Energy Bills and Improving Homes: Proposal to use REC Dollars for Residential Weatherization

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Introduction:

Each year, Oberlin households conservatively spend \$3.5 million for heat and electricity in their homes. On average, that is over \$1,300 for each household with energy costs projected to rise. Low-income households pay a higher percentage of their income toward energy and are often less able to make energy efficiency improvements to their homes, either due to renting, competing bills, or low or no access to traditional sources of financing. This situation is known as “energy poverty.”

Currently, Columbia Gas of Ohio offers residential weatherization programs for Oberlin households that heat with natural gas. Approximately 85% of Oberlin households heat with gas. These limited-time programs offer generous instant rebates for home weatherization (air sealing and insulation) that will permanently reduce energy costs for participating Oberlin households. Columbia Gas has reported that the average annual energy savings for its programs is approximately \$200/year for each home at current natural gas prices, equaling a 15% savings in annual energy costs based on the Oberlin average. In Oberlin, these energy efficiency improvements cost (on average) \$2350 per home. Depending on the recommended improvements, the Columbia Gas program pays about half of that cost, leaving between \$900-\$1,300 in improvement costs to the homeowner. Local nonprofit POWER (Providing Oberlin With Efficiency Responsibly) has had increasing success each year in helping local residents access these and other efficiency programs but barriers to entry still exist, especially for households in energy poverty. Per the City's 2013 Climate Action Plan (p.21), POWER estimated approximately 1,000 Oberlin homes required energy efficiency upgrades. To date, about 100 homes have made improvements, leaving an estimated 900 homes in need of energy efficiency.

The Proposal:

REC dollars would pay the cost of residential home energy audits in Oberlin. Those home energy audits cost \$50 and are a \$500 value/home. The energy audit delivers an itemized list of improvements, known as “Energy Conservation Measures” (ECM), the estimated cost per improvement, Columbia Gas incentive (instant rebate) per improvement, and estimated annual savings per improvement, along with simple payback calculations and savings to investment ratios for each improvement.

REC dollars would then be available in the form of an instant rebate at the completion of qualified ECMs. These dollars would operate in a fashion similar to Oberlin's current “Super Rebate Program” for energy efficient appliances, but coupled with Columbia Gas's “Home Performance Solutions” program instead of EfficiencySmart.

100% of the remaining ECM costs (after Columbia Gas instant rebates) would be paid with REC dollars. That cost per home is estimated at approximately \$1,200.

Program Costs:

Item	Cost/Unit	Units	Subtotal
Home Energy Audit	\$50/audit	1500 homes	\$75,000
(Balance) Home Weatherization	\$1,200/home	900 homes	\$1,080,000
Additional Administrative Cost (Annual)	\$25/hour + 35% benefits	2 FTE	\$140,400
Total (1-Year Program)			\$1,295,400
Total (5-Year Program)			\$1,857,000

Program Savings:

Annual natural gas savings (CCF): 297,000 (330/home x 900 homes)

Investment Cost (5-year program): \$1,857,000

Estimated Useful Life (years): 25

Net Present Value Projected Savings¹: \$3,572,993

Investment Cost (high): \$1,857,000

Savings to Investment Ratio: 1.92 (not including Columbia Gas investment or increased home value)

Annual Carbon Emissions Reduction: 1,578 MT² or about 3% of Oberlin’s current GHG emissions

Additionally, approximately \$1,035,000 of Columbia Gas investment and \$675,000 of home energy audit value would be delivered to Oberlin residents. If included, these numbers bring the NPV to a projected \$5,283,000. Furthermore, weatherization should be expected to yield additional electricity savings not necessarily detailed in Columbia Gas’s programs (presumably all natural gas account holders in Oberlin are also served by OMLPS).

¹ Net Present Value Assumptions:

2.5% – annual gas cost escalation rate

5.65% – discount rate

\$0.573 – year 1 natural gas rate

\$200/year – Current Columbia Gas Weatherization Program Avg. Annual Savings

² 53.12 kg/thousand cubic feet natural gas

Electricity savings from reduced HVAC fan, pump, and air conditioning run time is expected but is not detailed in this projection. Beyond lower electricity usage costs, these electricity reductions would reduce summer peak loads, benefitting the utility and all ratepayers.

Advantages:

Each REC dollar spent on approved weatherization brings in a dollar from Columbia Gas, doubling its value. The average annual residential energy savings for households participating in Columbia Gas programs is \$200. Those annual savings from energy efficiency are **permanent and will increase as energy costs rise**. This program creates job opportunities, improves home values, and delivers increased savings and comfort for Oberlin residents most in need by breaking the cycle of energy poverty.

Natural gas accounts for 52% of Oberlin's current greenhouse gas emissions and 40% of Oberlin's natural gas consumption is attributable to residential homes. This program is the most cost-effective way to reduce residential gas consumption. It also prepares homes for future fuel-switching opportunities (e.g. from natural gas heating to heat pumps) as is detailed in the City's 2013 Climate Action Plan.

This program leverages a preexisting program's administration and oversight, minimizing staffing needs. Columbia Gas already vets auditors and contractors along with vetting energy and financial modeling.

A grant program requires lower operational and administrative costs than a loan program.

Drawbacks:

This proposed program prioritizes and delivers residential savings over savings to other rate classes.

This proposed program prioritizes and delivers social benefits over potentially higher carbon reductions (though it delivers both at a cost savings).

A grant program only allows dollars to be spent once.

Additional Considerations:

Columbia Gas programs are available only to customers who heat with natural gas. All-electric households will not be able to take advantage of these rebates. The full cost of weatherization for all-electric homes would need to be borne by this program. This may be 15% of homes in need of weatherization, which would increase program costs. It should be noted, however, that Columbia Gas offers income-qualified programs at no cost to ratepayers below 150% of the federal poverty guidelines. Given Oberlin's 19.8% poverty level (2010 Census), it is a reasonable assumption that the number of free weatherization programs should offset the number of all-electric homes.

Home weatherization in some homes may not be possible until a preexisting condition is resolved (e.g. knob & tube wiring, carbon monoxide leak, etc). Contingency plans should be developed to deal with these obstacles.

This program is cost-effective even at the current low price of natural gas. Should the price of gas increase in the future, annual savings would increase accordingly. Energy efficiency and home weatherization shield residents from price volatility of finite resources like natural gas and increase the feasibility of fuel switching to renewable electricity for home heating as proposed in Oberlin's 2013 Climate Action Plan.

For the sake of simplicity and to maximize the investment from Columbia Gas programs, this program pays for 100% of the balance of home weatherization after Columbia Gas incentives. A sliding scale could be developed. Such a scale would likely add to administrative costs while decreasing home weatherization rebates.

The proposed instant rebate program could also be structured as a low- or no-interest loan program if on-bill or PACE financing were utilized. In that case, the majority of REC dollars would be available for reuse on future projects. This would add additional administrative costs and complexity.

A marketing and advertising budget may be necessary and is not included.