

OPERATION FUEL
power for good

Unlocking The Potential of Energy Efficiency for Healthy Communities in New Haven

A Community Report



Introduction to Project

Operation Fuel has been providing utility assistance to CT families since 1977. In recent years, the organization has evolved to meet the growing demand from low- to moderate-income residents for energy efficiency guidance and resources. This work is completed through the Better Homes and Buildings Program (BHBP) across the state. In October 2022, Operation Fuel received a grant from the Environmental Protection Agency to work with Neighborhood Housing Services (NHS) of New Haven. We focused on increasing the number of households who receive home energy counseling in “distressed communities” in the Greater New Haven area. The CT Department of Economic and Community Development identifies a distressed community by levels of unemployment, education, poverty, aging housing stock, and low or declining rates of growth in job creation, population, and per capita income. Throughout the year, residents received materials with helpful information and one-on-one education on the benefits of removing health and safety hazards, weatherization, and switching to air source heat pumps as the primary source of heating and cooling. For households that made energy efficiency upgrades, they received help with accessing incentives and rebates from the state’s Home Energy Solutions program.

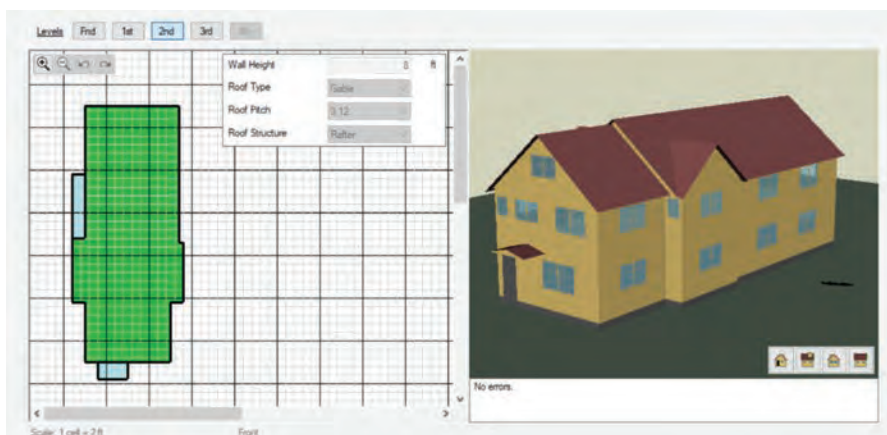
Implementation

Collaboratively, Operation Fuel and NHS conducted an outreach and education campaign, reaching around 6000 individuals digitally, and approximately 260 New Haven area residents through in-person education and events. The outreach efforts identified 131 residents eligible for the I Heart My Home CT (IHMH) program, which helps renters, owner-occupants, and landlords to make their buildings more energy-efficient and to deploy clean energy solutions at those properties. Increasing access to these services is a crucial step towards an equitable, energy transition. More than 40 residents expressed interest in enrolling and were contacted to provide additional education about the program’s energy and health benefits. Once enrolled in IHMH, 12 residents were selected for participation in the New Haven BHBP. The NHS energy coach met with residents individually to discuss their living environment and desired energy improvements. A Home Energy Improvement Plan was created for each client. The BHBP project manager coordinated contractors and managed the budget for each project. The team provided residents with contacts for ongoing education and technical assistance to maximize the value of their home energy upgrades.

Outcomes

Energy usage data comparing approximately six-months before and after the upgrades showed that each of the participating seven homes (eight units) in New Haven used less energy after removing health and safety barriers to weatherization and installing heat pumps. Five of the seven homes reduced electricity consumption compared to the previous year. The remaining two homes increased electricity usage by replacing oil and gas with heat pumps, which lead to an overall net energy reduction. Combining energy efficiency upgrades with heat pumps helped to reduce bills and contribute to a safer home health environment. A digital version of each home was created using a 3D computer model - see one example in the image below. These digital copies were designed to look and function like the original homes, allowing for the prediction of likely energy bills.

These digital replicas averaged 84 MMBTU/yr of energy savings, with homes ranging in savings from 37-189 MMBTU/yr. Overall, the homes were predicted to save 56% on average, with some homes saving as little as 34% and others saving 70% of total energy use."



Conclusion

The project resulted in increased energy efficiency upgrades, thereby decreasing the energy burden, carbon footprint, and negative health impacts on participating households. Even with a minimal cost savings in any given month, the cumulative effect of these home energy upgrades will decrease the household's energy burden. Mental and physical health improvements cannot be underestimated. The stress of paying multiple utility bills is reduced by having only an electric bill (except where delivered fuel is used for cooking/water heating). For households with medical protection for electricity service, switching to a heat pump from oil or gas ensures they won't lose heat or air conditioning, which can contribute to health challenges for vulnerable populations. While indoor air quality was not measured due to the scope of this project, research shows that households in distressed communities use nebulizers and other medical breathing devices at a much higher rate than others due to poor quality of housing stock. Consistent indoor air quality and temperature means families do not have to resort to using open ovens or other unsafe methods for heat, which increases exposure to nitric oxide and other harmful toxins. Addressing health and safety concerns as a first step in the Home Energy Improvement Plan is crucial for improved energy efficiency and perhaps more importantly for resident and community health.

For the 2023-2024 project year, the Better Homes and Buildings Program is focused on implementing this project in Bridgeport. If you are interested in enrolling, please visit the I Heart My Home website: <https://nhsofnewhaven.org/homeownership/i-heart-my-home-ct/>