



Green & Healthy Homes Initiative Case Study

The [Green & Healthy Homes Initiative, Inc.](#) (GHHI), is a [national non-profit organization](#) committed to addressing the social determinants of health and the advancement of racial and health equity through the creation of healthy, safe and energy efficient housing. GHHI Baltimore, the original GHHI site, commenced housing intervention services in 1997 and since has been providing low-income families with the opportunity to have a healthy, safe, and efficient home, delivering both economic and social benefits to individuals and communities in need. Working with the Maryland Energy Administration's [Low-to-Moderate Income Grant Program](#) (MEA LMI) from 2009-2020, GHHI's Baltimore location has integrated energy efficiency upgrades into their "healthy housing interventions" to more than 535 MEA-funded homes throughout Baltimore City and Baltimore County.

Energy insecurity, defined as "the inability to meet basic household energy needs" affects 1 in 3 households in the United States and is "unevenly distributed, primarily affecting low-income as well as racial and ethnic minority households, especially those with children."¹ More than just the struggle to pay for utility services, energy insecurity looks at the physical deficiencies in a home that affect comfort, health, and efficiency, and how those deficiencies force behavioral strategies that often result in adverse physical and mental health outcomes. Common examples of these types of behavioral strategies include heating the household with the stove or oven, or not paying and even avoiding medical expenses to stop a utility shut-off.

For GHHI, investing in energy efficiency, weatherization, and health and safety measures provides a long-term and equitable solution to the energy insecurity facing so many American families. The GHHI integrated model links energy and health to take a comprehensive approach to identify and remediate environmental health hazards (e.g., lead-based paint, radon, asthma triggers, injury risks, volatile organic compounds, and others) providing a better place to live for low-income residents and reducing client deferral rates for weatherization programs. As a part of the comprehensive approach and using MEA funding along with other sources of funding, the GHHI "housing interventions" deliver energy upgrades that lower utility bills and improve home performance and comfort, while also providing health upgrades through indoor air quality improvements and other hazard reduction interventions that help reduce asthma episodes and prevent lead poisoning and household injury.

Under two MEA grant awards in FY 2019 totaling approximately \$295,000, GHHI conducted energy audits, provided weatherization and energy efficient upgrades, as well as health and safety measures to over 50



Figure 1: From left: Colin Choney (Housing Rehabilitation Director, GHHI), Wes Stewart (Senior Advisor and General Counsel for GHHI), Ruth Ann Norton (President & CEO, GHHI) and Dean Fisher (Program Manager, Maryland Energy Administration)

¹ Lewis, J., Hernández, D. & Geronimus, A.T. Energy efficiency as energy justice: addressing racial inequities through investments in people and places. *Energy Efficiency* 13, 419–432 (2020). <https://doi.org/10.1007/s12053-019-09820-z>

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FY2019 LMI Program

households in Baltimore County and Baltimore City. The MEA LMI Program funds have enhanced funding from other sources by providing energy audits, weatherization services, and installing cost effective energy efficient upgrades to appliances, HVAC, and lighting, enabling them to expand the energy and health benefits of their comprehensive building upgrades. Across the two grants, the completed energy efficiency measures included:

- duct and air sealing, as well as attic, roof, and wall insulation to improve the building envelope;
- installation of LED light bulbs and low flow showerheads and faucets;
- replacement of dated and inefficient HVAC equipment with high efficiency condensing furnaces, air source heat pumps, and central air conditioners;
- and high-efficiency gas water heaters and hot water pipe insulation.

In addition to the energy upgrades and weatherization services, the COVID-19 pandemic increased the importance of health and safety measures as residents were forced to stay in their homes for longer periods of time. Health and safety measures completed with LMI Program funding included the installation of smoke and carbon monoxide detectors, mechanical ventilation, and building shell improvements to address moisture prevention. As a part of the comprehensive [Building Performance Institute audit](#) process required for LMI grant awards, [combustion appliance zone safety](#) (CAZ) testing is done where there are gas appliances to ensure they are working safely. Lower bills, better indoor air, and reliable appliances all directly contribute to making the homes greener and healthier for Baltimore City and Baltimore County residents.

The 2019-2020 GHHI grant awards funded by the MEA LMI Program are helping to provide healthier, safer, and more efficient homes. The chart below shows a breakdown of project costs and savings by type and shows how such gains can be done in a cost-effective manner.

Table 1: Energy Efficiency Measures with Estimated Savings and Simple Paybacks for GHHI 2019 Awards in Baltimore City and Central Region (Baltimore County)

Energy Measures	MEA Grant	Electricity Savings (kWh/yr.)	Gas Savings (Therms/ yr.)	Annual Cost Savings	Payback (Years)
Installed Upgrade Measures					
Lighting	\$1,825	33,590	-780 ²	\$3,203	0.6
Appliances	\$600	304	0	\$40	15.1
HVAC	\$73,075	39,053	1,965	\$8,132	9.0
Water Heating	\$2,950	443	692	\$1,120	2.6
Home Envelope	\$153,553	3,720	6,440	\$10,372	14.8
Programmatic Costs					
Audits/QA-QC Cost	\$37,493				
Health & Safety Cost	\$24,525				
Totals					
Project Cost ³	\$269,495			\$22,867	11.8
Total Invoice Cost ⁴	\$294,020			\$22,867	12.9

² Some inefficient devices, like incandescent light bulbs, waste energy as heat. When these are replaced with more efficient LED light bulbs, the home heating system (e.g., a natural gas furnace) may work slightly harder to compensate. Energy savings from efficiency greatly outweigh the slight increase in heating costs.

³ Includes all costs associated with energy efficiency upgrades. Does not include Health & Safety Measures and Admin Costs.

⁴ Project Cost + Health & Safety Measures + Admin Costs