

Residential Energy Efficiency Guidebook

A Municipal Roadmap for Residential
Energy Efficiency Initiatives in Michigan



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Table of Contents

• Guidebook Purpose	1
• Program Introduction	2
• Program Timeline	4
• Program Finances	7
• Program Partners	9
• Program Impact	12
• Guidebook Team	13
• Guidebook Appendix	A1

If you click on a section listed in this Table of Contents, you will be directed to that page of this guidebook. Similarly, by clicking on one of the main section titles (as they appear above) on the following pages of the guidebook, you will be directed back to this Table of Contents.

On the following pages of this guidebook, text written in or images highlighted in [light blue](#) contain hyperlinks. By clicking on these, you will be directed to websites, files, and folders where you can find additional information or resources.

Guidebook

Purpose

This guidebook was created to help municipal authorities and local governments in Michigan seeking to establish or enhance home energy efficiency programs in their community. It consolidates foundational information, experience and resources obtained from a successful home energy program in Holland, Michigan, to provide a flexible framework for others interested in developing energy programs in their communities by sharing:

- **Foundational Knowledge:** fundamental information regarding home energy efficiency plans and potential benefits.
- **Experience and Insights:** an overview of Holland's energy program, including detailed program planning and implementation processes, as well as insights from Holland's experience, allowing other municipalities to leverage lessons learned, anticipate challenges, and implement successful strategies in establishing and managing their own home energy initiatives.
- **Resources:** information and materials to help other Michigan municipalities in successfully adapting Holland's energy program to work within their own communities, including program management tools, financial breakdowns, and materials for home energy kits and education sessions.



Program Introduction

What is a Home Energy Efficiency Program?

A home energy program aims at promoting energy efficiency, sustainability, and conservation within residential buildings. These programs are designed to help residents reduce their energy consumption, lower utility bills, and minimize environmental impact. The specific components of a home energy program can vary, but they often include:

- **Energy Education Session:** assessments of a home's energy usage to identify areas of improvement. This may involve inspecting insulation, windows, appliances, and HVAC systems.
- **Energy Efficiency Upgrades:** recommendations and incentives for implementing energy-efficient measures, such as installing energy-efficient appliances, LED lighting, smart thermostats, and better insulation.
- **Renewable Energy Integration:** information and support for the adoption of renewable energy sources to generate clean energy at the household level.
- **Financial Incentives:** subsidies, tax credits, or rebates to motivate homeowners to invest in energy-efficient technologies and improvements.
- **Education and Outreach:** informational campaigns to educate homeowners about energy-saving practices, conservation tips, and the benefits of energy efficiency.
- **Smart Home Technologies:** promotion of smart home devices and technologies that enable homeowners to monitor and control their energy usage more effectively.
- **Government Programs:** some home energy programs are sponsored or supported by government agencies, either at the local, state, or national level.

The overall goal of a home energy program is to create a more sustainable and energy-efficient living environment to increase the quality of life and resiliency within the community.

A Community Home Energy Plan in Action ~ Holland, MI

[The Holland Energy Fund \(HEF\)](#), a nonprofit (501(c)3), is helping the City of Holland achieve its long-term Community Energy Plan. HEF runs two programs, Holland Energy Fund Rebates and Home Energy 101, in partnership with the City of Holland, Holland Board of Public Works, and Michigan Saves.



[The Home Energy 101 Program](#) is an initiative designed to empower homeowners, renters, and landlords to enhance the energy efficiency of their homes while saving on utility bills. Participants in the program can undergo **a free 60-90 minute home walkthrough and education session**, receiving valuable efficiency training and tips specific to their residence. Following this session, participants are eligible to receive energy-saving supplies by mail, at no cost to them.

[The Holland Energy Fund Rebates program](#) allows participants to build on the knowledge they gain in Home Energy 101 to make comprehensive energy efficiency upgrades to their homes and save up to \$6,000 on qualified projects. The rebates, ranging from 5-20%, are applicable to various projects such as home air sealing, insulation, heat pumps, and a full home energy audit. Completion of the Home Energy 101 session is a required prerequisite for the HEF rebates. Like the Home Energy 101 visits, the rebate program aims to make energy-saving measures accessible and beneficial for the community, contributing to increased home value and reduced energy consumption.

Program Timeline

Holland's home energy program was developed and implemented over the course of approximately one year. Their timeline has been divided into three phases.

Phase One ~ 4 Months

Phase One of the project spanned approximately four months. During this time, the following four steps were completed:

- **Define Objectives:** Identify what you want to accomplish through this program, including city energy goals, residential knowledge, residential energy savings, and community knowledge.
- **Program Assessment:** Review existing energy-saving programs to potentially integrate them into the initiative, considering budgets and resource allocation.
- **Engage Energy Suppliers:** Identify and meet with local energy suppliers to discuss their community-saving objectives. Explore collaboration possibilities, discuss combined budget resources, evaluate potential free energy measures, and assess expertise contributions to the program.
- **Budget Development:** Create a comprehensive budget using combined resources, taking into account various elements such as energy measures, distribution and packaging, training and materials, payment for energy education sessions, website development, promotional materials, and internal labor costs.

Phase Two ~ 6 Months

Phase Two spanned approximately six months, consisting of the following steps:

- **Nonprofit Partners:** Identify and connect with local nonprofit organizations. Provide program information and initiate preliminary meetings to assess interest in collaboration and bandwidth.
- **Process Development:** Establish [processes and responsibilities for program support](#) and management, including scheduling and report creation.
- **Partner Processes:** Create processes to guide partner organizations in assisting participants.
- **Training Development:** Develop training programs for partners, leveraging expertise from energy suppliers, nonprofits, and external experts. Local colleges may also be a resource to help create materials.
- **Informational Materials:** Prepare [folders and informational materials for residents](#), including details on available rebates, local and federal programs, and relevant nonprofit initiatives. Create marketing materials to share with residents to raise program awareness.
- **Report Creation:** Develop a [customizable report to send to residents](#) after completing an home energy education session.
- **Free Energy Measure Kit:** Design and implement a kit of free energy measures to be distributed after education sessions. Outline the creation and distribution process.
- **Website Development:** Create a [website with a sign-up feature for residents](#) interested in the program. It's recommended to also offer [a hard copy of the registration form](#) as well as [translation in multiple languages](#), if needed, to ensure accessibility for all residents.
- **Metrics Establishment:** Identify desired metrics to track program progress and report success. Insights can be drawn from forms completed by partners and participants.
- **Onboarding and Training:** Establish an onboarding process and training day for partners. Identify a suitable space for training, and implement a mentoring process to help onboard future partners over the lifetime of the program.
- **Program Kickoff Date:** Set a kickoff date to implement the program.



HOME ENERGY 101

REGISTRATION

Please complete and return to City Hall, 270 S. River Avenue, 3rd floor, Holland, MI 49423 616.355.1355 or lstein@cityofholland.com

You must be a Holland BPW residential electric customer to qualify for the Home Energy 101 program

Client(s) Name: _____
 Client(s) Address: _____ City/State/Zip: _____
 Phone: _____ Evening Phone: _____
 Email: _____
 Method of contact (Email, cell phone, etc.): _____
 SEMCO Account #: _____

Home Energy 101 Partner

- Home Energy 101 Partner Agency
- Latin Americans United for Progress (LAUP)
- Home Energy 101 Partner Agency
- Outdoor Discovery Center
- Home Energy 101 Partner Agency
- Westcore Neighbors
- Home Energy 101 Partner Agency
- 3Sixty
- Home Energy 101 Partner Agency
- Renew Therapeutic Riding Center

Phase Three ~ 2-3 Months

Phase Three spanned approximately two to three months, consisting of the following steps:

- **Residential Outreach:** Communicate program benefits and registration process to eligible residents. If sending out mailers, it is recommended to divide them into stages to keep logistics manageable for the program managers and partners assisting participants throughout the process.
- **Program Initiation:** Launch the program as developed during the previous two phases.
- **Quarterly Meetings:** Establish quarterly meetings with nonprofit partners to review progress, discuss any challenges, and ensure alignment with objectives.
- **Program Refinement:** Tweak and revise the program based on feedback received from participants and partners to ensure continuous improvement and responsiveness to evolving needs and challenges.



Program Finances

The set up and management expenses for the first year of Holland’s program totaled **\$73,533** in 2022-2023. Participation is growing during the program’s second year, so program management expenses for 2023-2024 are expected to be **\$90,702**. These costs are detailed below:

	First Year	Second Year
Program Website	\$8,500	\$500 (maintenance)
Marketing (flyers, information packets & rack cards)	\$3,000	\$1,000
Full-Time Employee	\$61,533 (\$19.14/hr with benefits)	\$61,533 (\$19.14/hr with benefits)
Part-Time Employee	-	\$28,669 (\$19.14/hr)

Beyond these program management costs, the Holland Energy Fund also incurs expenses per Home Energy 101 participant and trained educator.

Participants

For Home Energy 101, **the cost per participant is \$660-680**. This includes an average rebate incentive of \$480 as well as an average of \$180-\$200 for the energy supplies kit, all at no cost to the resident. The [energy kit is customized to the resident’s needs](#) following their completion of a home energy education session with one of the program’s trained educators. **During the first year, approximately 250 residents participated** in Home Energy 101. A breakdown of the materials that participants can receive in their free energy supplies kit has been included in the Guidebook Appendix.

Educators

Each program educator must go through the proper training before they can conduct home energy education sessions for the Home Energy 101 program. The initial [one-day training](#) costs **\$1,000 for up to five people. The cost for each additional trainee beyond that is \$200**. Each trained educator is provided with a name tag, sample bag of energy kit supplies, a FLIR thermal camera (one iPhone compatible model and one Android compatible model) to utilize during the home energy education sessions as well as Dropbox and Google memberships to access critical program files and forms. These supplies cost the program **\$820 per educator**. As of December 2023, the program had **16 trained educators**.

Since the program’s launch, Home Energy 101's training has been expanded to address additional community needs. They now also provide access to an additional [two-day training focused on mobile home weatherization](#). The cost for this training is **\$2,475 for up to 9 people**.

The financial demand to implement and manage a home energy program can pose a substantial obstacle for communities interested in undertaking such initiatives. However, there are numerous strategies available to mitigate costs and secure additional funding sources to support such programs in your community.

Optimize Program Costs

One approach to establishing a sustainable home energy program is to optimize program costs. This can include streamlining the types of educator trainings, memberships for file sharing and storage, and materials provided in home energy kits to best fit the needs of your community. Additionally, releasing program materials in phases, addressing specific aspects like home envelope improvements one year and LED lighting in another, can spread out the financial commitment. Instead of investing in a professionally made, standalone website, integrating the home energy program as a section on the municipality's existing website is a viable option. It's also worthwhile to evaluate existing community programs, exploring the potential to combine and expand them to incorporate home energy efficiency education and incentives.

Leverage Resources: Partnerships and Financial Opportunities

It's important to recognize that a municipality doesn't necessarily need to cover the entire cost of a home energy program on their own. To ensure long-term success, consider forming partnerships with other organizations and programs, such as Michigan Saves, that possess valuable experience, expertise, and resources to contribute to the program.

There is a growing number of funding opportunities available for communities aiming to develop, implement, and sustain energy programs. Notably, the Inflation Reduction Act, passed last year, presents a new funding source. It's advisable to leverage these resources as much as possible to secure funding now as well as facilitate sustainable growth in the future. By establishing a nonprofit organization to manage the home energy program could also open it up to additional financial benefits.

Program Partners

Program partners play a critical role in the success of a community-wide home energy program. These partners can vary based on the unique needs and resources of each community, but regardless of the partner type, they must be trusted by community members. This is an essential component for effectively communicating program opportunities and recommendations to benefit residents. Potential partners can include but are not limited to local utility companies, governmental agencies, energy experts, sustainability consultants, community action networks, and nonprofit organizations.

Neighbors–Helping–Neighbors Model

Holland's Home Energy 101 program has achieved remarkable success through a neighbors-helping-neighbors model, fostering partnerships with trusted local organizations. These organizations can be viewed in the Guidebook Appendix. A key element of this approach involves collaborating with various respected nonprofit organizations whose members serve as community educators.

These educators play a vital role in conducting the home energy education sessions with participating residents. Their responsibilities include identifying opportunities to increase energy efficiency in the home, demonstrating the proper use of available energy efficiency supplies, and submitting a request for the resident to receive a free energy efficiency kit.

When enrolling in the program, residents have the opportunity to choose the nonprofit organization they prefer for their home energy educational session. This allows them to collaborate with an organization they are familiar with and trust, simultaneously contributing to the nonprofit's mission. Importantly, residents incur no costs, as the educator's compensation is covered by the Home Energy 101 program.

Onboarding Process

Once an organization has committed to partnering in the home energy plan, it's important to clearly define their role and responsibilities while also equipping them with the essential information and materials. For program educators, [comprehensive training](#) is imperative to ensure their ability to conduct home energy education sessions effectively with interested residents. This includes the knowledge and confidence to identify residential energy efficiency opportunities, demonstrate the proper use of appropriate energy kit materials, and request a free energy kit for the resident after the education session.

Members of the nonprofit organizations collaborating with the Holland program underwent two distinct training sessions with a contractor to acquire the necessary technical knowledge and skills to conduct energy education sessions. Additionally, each educator received a kit containing materials to utilize during these education sessions, including a thermal camera, energy kit supplies, and folders with program information for the participants. This comprehensive approach ensures that educators are well-prepared and equipped to deliver effective home energy education sessions.





Mentorship Model for Educators

Since the initial launch of the Home Energy 101 program in the fall of 2022, Holland has strengthened its community collaborations and provided training to additional educators joining this initiative. The introduction of a mentorship program has been pivotal in facilitating the onboarding of new members as the program continues to grow.

Under this mentorship initiative, each new educator is paired with an experienced mentor for their initial home energy education sessions. This structured approach enables the new educators to shadow their experienced counterparts, actively participating in sessions with their guidance. This collaborative learning experience helps them gain confidence, ensuring a smoother transition into their independent roles.

Holland has recognized the benefit of this mentorship model on the program and has found it to be far more effective to assign pairs and facilitate connections rather than leaving the educators to navigate this process on their own. The adoption of this strategic approach has demonstrated increased success in establishing a supportive and empowering environment for all educators engaged in the initiative. This has led to the expansion of knowledgeable and trusted energy experts that can assist more residents interested in participating in the Home Energy 101 program.

Program Impact

A home energy efficiency program can provide tremendous benefit to a community, as demonstrated by the success of the Holland Energy Fund's program. After they analyzed the data from the first participants to pass the one-year mark with the program, the following stats were shared in December 2023:



80% of Home Energy 101 participants **reduced their electric use.**

\$131

Average combined utility
bill cost savings

\$907

Highest individual
home's savings

36 therms

Median annual
gas savings

393 kWh

Median annual electric
savings for **participants**

vs

168 kWh

Median annual electric
savings for
non-participants

Empower your community by initiating a local energy efficiency program! Utilize the information and resources provided in this guidebook to get started.

If you have any questions, contact info for the Guidebook Team is listed on the next page.

Guidebook Team



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This guidebook was researched and developed over the course of her master's capstone project in energy systems engineering with the goal of increasing accessibility of reliable, affordable, and efficient energy systems for communities throughout Michigan.

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Guidebook Appendix

Nonprofit training partners for Holland's Home Energy 101 program:



Materials that can be provided in the Home Energy 101 supplies kit for residents:

Item	Max Quantity
LED Light Bulbs	36
Spray Foam (Expanding)	1 can
Spray Foam (Non-Expanding)	1 can
Rope Caulk (Paintable)	3 rolls
Heat-Shrink Window Insulation Kit	1
Window Weather Stripping (Rubber Tape)	2 rolls
Window Weather Stripping (Sponge/Closed-Cell Tape)	2 rolls
Window Weather Strip Backer Rod	1 roll
Window A/C Weather Stripping	2
Window A/C Cover	1
Outlet Insulator Plate	10
Switch Insulator Plate	10
Programmable Thermostat	1
Furnace Slot Sealer	1
Aluminum Duct Sealing Tape	1 roll
Pipe Wrap (1/2" pipe diameter ~ 12 feet max)	5
Pipe Wrap (3/4" pipe diameter ~ 12 feet max)	5
Water Sense Shower Head	2
Bathroom Aerator	3
Kitchen Aerator	1
Laser Infrared Temp Scanner	1
Plug-In Power Meter	1