



IMPACT AREA:  
SUSTAINABILITY

# SUSTAINABLE HOME MAKEOVER

A **CITIES OF SERVICE** BLUEPRINT

**Sustainable Home Makeover** is a high-impact service strategy in which the mayor's office engages volunteers to help homeowners assess and improve their home's energy efficiency through the implementation of simple renovations.

# SUSTAINABLE HOME MAKEOVER

**BACKGROUND**

/ P3

**EXECUTING  
THE PLAN**

/ P6

**SUSTAINABLE  
HOME MAKEOVER  
IN ACTION**

/ P12

**SPECIAL  
THANKS**

/ P14

**REQUIRED  
ELEMENTS**

/ P5

**MEASURING  
IMPACT**

/ P11

**RESOURCES**

/ P13



# SUSTAINABLE HOME MAKEOVER

Sustainable Home Makeover is a high-impact service strategy in which the mayor's office engages volunteers to help homeowners assess and improve their home's energy efficiency through the implementation of simple renovations

Volunteers are trained to help homeowners install energy efficient modifications such as attic and basement insulation, sink faucet aerators, dual flush toilet levers, adjustable thermostats, and compact fluorescent lights. Additional efforts include weather stripping and caulking for windows and doors. These renovations can significantly reduce a household's carbon footprint—and its utility bills.





## BACKGROUND

Conducting home energy audits and executing basic renovations that emerge from the audits are inexpensive and easy ways to improve the environment. Research indicates that homes in the United States—more than 130 million in total—account for more than 20% of carbon dioxide emissions.<sup>1</sup> If each home reduced its energy consumption by 40%, greenhouse gas emissions would decrease by up to 160 million metric tons annually.<sup>2</sup> In addition to producing environmental benefits, investments in home sustainability can generate significant financial returns for households. Minimal residential home retrofits reduce homeowner energy bills by an average of \$160 per household per year, freeing up household income for other essential expenses.<sup>3</sup> By deploying volunteers to complete home retrofits in their communities, the mayor's office can achieve substantial environmental and economic impact at a modest cost.

<sup>1</sup> Towards a Climate-Friendly Built Environment. Prepared by Oak Ridge National Laboratory for the Pew Center on Global Climate Change, 2005.

<sup>2</sup> Recovery Through Retrofit. Vice President Biden, the Middle Class Task Force and the Council on Environmental Quality, October 2009.

<sup>3</sup> Recovery Through Retrofit.





## REQUIRED ELEMENTS

- 1 Mayor's office, with input from relevant partner organizations, selects the households that the initiative will target. Targeted homes might include those owned by low-income families or seniors, older dwellings, or homes damaged by natural disasters.
- 2 Mayor's office works with its partners to design and implement an outreach plan to recruit targeted homeowners for participation.
- 3 Mayor's office, along with its partners, determines the range of home renovation tasks volunteers will complete. Volunteer tasks should demonstrably maximize energy efficiency while fitting within the constraints of volunteers' abilities, safety considerations, and resource availability. Volunteer tasks could include weather stripping doors and windows, installing low-flow showerheads and sink aerators, and installing attic and basement insulation.
- 4 Once an interested household has been contacted and vetted, a trained volunteer or staff member from a partner organization conducts an energy audit and compiles a list of suggested renovations for the household.
- 5 Volunteers implement renovations recommended in the energy audit, under the guidance of knowledgeable and trained partners and using the safety and building supplies provided by partners.
- 6 Mayor's office works with partners to track and report the initiative's impact.





## REQUIRED METRICS INCLUDE:

- Total number of audits conducted
- Total number of homes retrofitted, including the number of homes retrofitted by category:
  - Insulation retrofits (e.g., attic or basement insulation)
  - HVAC retrofits (e.g., adjustable thermostats, tape and mastic for HVAC ducts)
  - Window and door retrofits (e.g., weather stripping, caulking)
  - Plumbing and irrigation (e.g., sink faucet aerators, dual-flush toilet levers)
  - Lighting retrofits (e.g., compact fluorescent lights)
- Percent decrease in average electricity/gas/water used per month for each household renovated
- Percent decrease in average electricity/gas/water costs per month by household





# EXECUTING THE PLAN

## RECRUITING PARTNERS

**1** Likely partners for this initiative include nonprofit organizations with an environmental and/or green building focus, for-profit businesses with home renovation expertise, and utility companies and contractors. General volunteer management organizations may also be great partners to help recruit volunteers.

**2** Mayor's office hosts an initial planning meeting with its partners in order to:

- Develop goals regarding breadth and depth of reach (i.e., number of homes, total energy impact per home);
- Establish criteria for prioritizing potential households (e.g., income level, age of homes, whether the homes have been damaged) and/or special
- Assign roles to various partners to ensure successful implementation of the initiative; and
- Design the scope of work for volunteers.





## CONDUCTING OUTREACH AND IDENTIFYING HOMES FOR RENOVATION

Once households within the targeted areas have been identified as candidates for this initiative, the mayor's office or its partners will need to design and execute a communication strategy to recruit beneficiaries (e.g., door-to-door canvassing, newspaper ads). If a homeowner expresses interest in participating, a partner staff member should meet with him or her and assess the dwelling to ensure that the home is appropriate for the program.

For example, does the house look to be structurally sound? Does the house have pre-existing structural damage that might reduce the effectiveness of the energy efficient improvements (e.g., a hole in the roof)? Is there any indication of mold/asbestos that could endanger volunteers? The homeowner should also be willing to share current and future energy and water bills so that the energy saving metrics for this initiative can be tracked. These bills may also be accessed through the local utility provider if waived for viewing by the homeowner. Once initial required documents (i.e., safety waiver, energy bills) are submitted, the partner staff member will schedule a date for a home energy audit.

## ASSESSING AND RETROFITTING HOMES

There are several key steps the mayor's office and its partners should follow to help volunteers assess and retrofit the targeted homes.

**1 Determine the activities that volunteers will do versus those that will be completed by staff from partner organizations (with partner staff assuming roles that require specific skills or training). For example, a potential allocation of activities could be:**

- Door-to-door canvassing to gauge homeowner interest: volunteers
- Initial meeting/safety screening: partner staff
- Energy audit: partner staff or volunteers who have completed an extensive training program (often offered at community colleges, power providers, or other institutions) . But, there are times when it might be necessary to divide the coating between two days.
- Training of volunteers: partner staff or volunteers who have received training
- Home renovations: volunteers under guidance of partner staff







## 2

### **Train volunteers in accordance with the activities they'll conduct.**

- Renovations: Prior to deploying volunteers to conduct renovations, the volunteers must receive training on safety procedures, an overview of the tasks included in their scope of work, advice on appropriate attire, instructions on how to interface with the homeowner, and how to use any necessary equipment
- Energy audits: If volunteers will help with audits, partners should arrange for them to complete a training program at an accredited institution, although it's not necessary for volunteers to conduct energy audits in addition to doing renovations. Many community colleges and energy power providers offer trainings that will enable volunteers to gain the fundamental knowledge needed to: evaluate how energy is being used and where and how energy consumption can be reduced in a building.

## 3

### **Determine and provide all equipment and supplies needed. This can include:**

- Renovation supplies: energy efficient light bulbs, caulking, air filters, sink faucet aerators, attic insulation, dual-flush toilet levers, insulated water heaterblankets, insulators for hot water pipes, adjustable thermostats, tape and mastic for HVAC ducts, carbon monoxide detectors, fire detectors
- Safety supplies: glasses, gloves, masks, attic suits
- Volunteer/participant supplies: bottled water, lunch, snacks, event/sponsorship t-shirts

## 4

**Dispatch a staff member from a partner organization, or a trained volunteer, to perform energy audits of screened households. The audits will note the home's age and square footage, and evaluate the condition of the home's walls, insulation, and internal and external doors and windows. The staff member or volunteer will also conduct a "blower door test" to identify where air may be entering the home – thus revealing leaks, holes, and gaps in need of repair (this is important because unidentified leaks in doors and windows, as well as thin insulation, make it difficult to maintain a home's internal temperature and contribute to increased energy bills). Based on the results of the audit, the staff member or volunteer will schedule a date for the retrofit and develop a list of renovations for volunteers to complete.**





- 5 Volunteers arrive on the date of the scheduled retrofit and receive an overview from staff members on the work they will be doing. They also receive a refresher on safety procedures and sign a safety waiver from the lead partner organization. Volunteers then perform the renovations under the guidance of a partner staff member.
- 6 Upon completion of the renovations, volunteers review all work that was completed with the homeowner.

## FUNDING SUSTAINABLE HOME MAKEOVER

Sustainable Home Makeover is a compelling fundraising opportunity for mayors' offices to solicit support from utility companies, foundations, and corporations with a commitment to conservation. Private support may be supplemented with state and federal government grants geared toward energy efficiency programs. If seeking philanthropic or governmental grant funding, the mayor's office or nonprofit partners may choose to develop a short proposal that describes the opportunity for support and how the funds would be used. Elements would likely include:

- Description of the Sustainable Home Makeover initiative
- How this initiative would positively impact the city and the environment (e.g., potential reductions in: energy demand, electricity costs, greenhouse emissions, and smog)
- City's impact targets for the initiative and the metrics that would be collected to track progress
- Amount of funding requested, proposed breakdown of grants and how funds would be used
- Information on **Cities of Service** (this is especially helpful for national organizations)
- Recognition plan for the donor (e.g., logo on volunteer t-shirts, branding on the city's service website)

**In some cases, private funders may not want to provide funding directly to city governments. If those instances, the mayor's office should identify and appropriate nonprofit partner to receive the funds and coordinate disbursements.**





## RECOGNIZING AND THANKING VOLUNTEERS

There are numerous ways to recognize volunteer participants who contribute to making Sustainable Home Makeover a success in your city. Consider sending volunteers a thank you card or letter with the details from the day a volunteer participated in a home makeover (e.g., list of upgrades performed and reduction in home energy costs). Before and after pictures of homes and a summary of overall energy savings from the initiative may also be included. Additional quarterly or semi-annual progress reports are also encouraged and help volunteers understand how their efforts contributed to the initiative's overall success.





# MEASURING IMPACT


Collecting data on the impact of each Sustainable Home Makeover initiative is critical. The following metrics should be collected:

- Total number of audits conducted
- Total number of homes retrofitted, including the number of homes retrofitted by category:
  - Insulation retrofits (e.g., attic or basement insulation)
  - HVAC retrofits (e.g., adjustable thermostats, tape and mastic for HVAC ducts)
  - Window and door retrofits (e.g., weather stripping, caulking)
  - Plumbing and irrigation (e.g., sink faucet aerators, dual-flush toilet levers)
  - Lighting retrofits (e.g., compact fluorescent lights)
- Percent decrease in average electricity/gas/water used per month for each household renovated
- Percent decrease in average electricity/gas/water costs per month by household





# SUSTAINABLE HOME MAKEOVER IN ACTION

 In **Nashville**, the Mayor's office is partnering with HandsOn Nashville to improve the energy efficiency of low-income homes using HandsOn Nashville's Home Energy Savings Program. This program supports the Mayor's efforts to reduce the city's greenhouse gas emissions by 20% by 2020 and actively engage citizens to help with this goal. Other program partners currently include Tennessee State University, Nashville Electric Service, Conservation Services Group, and local businesses. In 2013, with a Cities of Service Impact Volunteering Fund grant, 111 homes in low-income communities received energy-efficiency upgrades provided by volunteers. This led to an average air leakage reduction of 20% per home and a cooling / heating load reduction of up to 10%.

Renovations include installing attic and basement insulation, weather stripping doors and windows, installing low-flow showerheads and sink aerators, and other upgrades to make the homes more efficient and comfortable during weather extremes.

By concentrating its efforts within a confined geographic footprint, the program maximizes emissions impact and achieves service delivery efficiency.

## Below are some key lessons learned from Nashville:

- Select a lead partner with sufficient capacity to oversee the program in conjunction with the mayor's office, and recruit a strong consortium to execute it. Concentrate renovations on a targeted area of households, but use the program as a platform to stimulate demand for home retrofits across all populations by communicating successes broadly.
- Consider leveraging the program to stimulate green job growth and enhance workforce development efforts in this area (Nashville is currently working to make this happen in the city).
- Assess whether state or federal programs might provide additional financial incentives for homeowners who participate in retrofit programs or complete energy upgrades on their homes (e.g., tax credits for installing energy efficient windows or tankless water heaters).





## RESOURCES

Website for the **Home Energy Savings (HES) Program** in Nashville, Tennessee, implemented by HandsOn Nashville as part of Mayor Karl Dean's high-impact service plan Impact Nashville, which includes a list of innovation and safety supplies: <http://www.hon.org/hes>

Website for grant opportunities through the **U.S. Department of Energy's Weatherization and Intergovernmental Program**: <http://1.usa.gov/cMhyPS>

Website for **US Department of Energy's Energy Savers** page that links homeowners to resources to help them use less energy and lower their carbon footprint: <http://www.energysavers.gov/>





# SPECIAL THANKS

We'd like to thank the following city and organization for their support:

- City of Nashville, Tennessee for their long lasting support in the development of this blueprint.
- HandsOn Nashville for their technical expertise and support



**Cities of Service** is a national nonprofit that designs and supports the implementation of high-impact service strategies that can be widely replicated in cities worldwide. We provide technical assistance, programmatic support, planning resources, and funding opportunities. Cities of Service supports a coalition of nearly 200 cities whose mayors are committed to using citizen volunteers to solve local pressing challenges, from engaging mentors to help decrease high school dropout rates to increasing energy efficiency in buildings. We help coalition cities share solutions, best practices, and lessons learned, as well as spread awareness about their great work.

Join us at [citiesofservice.org](https://citiesofservice.org)  
or on Twitter [@citiesofservice](https://twitter.com/citiesofservice).

