



Low-Income Energy Efficiency

A Pathway to Clean, Affordable Energy for All

EMBARGOED

The *Low-Income Energy Efficiency Opportunities Study* was produced by Applied Public Policy Research Institute for Study and Evaluation (APPRISE) on behalf of Environmental Defense Fund. Learn more at edf.org/LIEE

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Cover photo: Man installing insulation. (Shutterstock)

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A new study of *Low-Income Energy Efficiency Opportunities* finds that increasing investments in comprehensive energy efficiency services for low-income families would benefit everyone by creating healthier and more resilient communities, saving energy, and lowering bills for customers who need it most.

As a low-carbon revolution sweeps the country, states and utilities should take steps to ensure all Americans can enjoy the energy- and cost-saving benefits of energy efficiency by implementing policies and programs tailored specifically for low-income customers.

These programs can include:

- Comprehensive weatherization services that provide air sealing, insulation, appliance upgrades, and efficient heating and cooling systems at low or no cost to the customer;
- Deployment of smart thermostats and other technologies families can use to participate in a modernized energy system;
- Innovative programs and partnerships that secure healthier homes and create jobs while delivering cleaner, more affordable energy.

The more than 36 million U.S. households with incomes below twice the federal poverty level (\$49,200 for a family of four) use more than 30 percent of U.S. residential electricity and comprise 27 percent of U.S. households.¹ Yet, the Consortium for Energy Efficiency estimates that, as of 2015, only 6 percent (\$350 million) of U.S. electric energy efficiency spending was dedicated to low-income programs.²

With the right policies in place, low-income energy efficiency can lead to more than \$7.4 billion worth of electricity savings annually.

A win-win proposition

This report finds that with the right policies in place, states and utilities can make it easier for low-income households to access opportunities to cut their energy use by 20 percent or more, saving hundreds of dollars per year on electricity bills. EDF estimates that achieving this potential would save more than \$7.4 billion worth of electricity annually and cut 48 million tons of carbon dioxide each year. That is the equivalent of taking nine million cars off the road every year.³



Roughly 15% of households nationwide may be unable to participate in energy efficiency programs due to health, structural, or safety issues in the home.

ENERGY OUTREACH COLORADO

Energy efficiency also creates jobs, with more than two million Americans currently working in the industry nationwide.⁴ Local hiring and job training programs, such as those implemented by the Energy Coordinating Agency in Philadelphia, PA, Isles, Inc. in Trenton, New Jersey, and ComEd in Chicago, IL, can help ensure low-income communities access the economic opportunities of a clean energy future.

Overcoming obstacles

In order to effectively scale up low-income energy efficiency, a range of unique barriers need to be overcome with tailored policies, investments, and program designs. These barriers include:

- **Economic barriers:** High upfront costs, creditworthiness requirements, and split incentives between renters and landlords to invest in energy efficiency upgrades can prevent lower-income customers from accessing existing energy efficiency services.
- **Social barriers:** Lack of trust between low-income communities and utilities or contractors can be a significant obstacle to reaching vulnerable households. Scheduling difficulties, language and literacy barriers, and immigration status may also create roadblocks.
- **Health and safety barriers:** Many low-income homes face issues such as mold, leaky roofs, asbestos, and other deteriorated conditions that can prevent providers from delivering energy efficiency improvements. Studies show that, nationwide, up to 15 percent of homes may be unable to access weatherization services due to these and other health and safety issues.
- **Incomplete data:** A lack of comprehensive data on demographics, energy usage, and program statistics can make it difficult to design and deliver effective programs to households that need services most.

The report finds that these and other obstacles to scaling up low-income energy efficiency can be addressed at the program level to unlock significant benefits for vulnerable families.

Creating healthier communities

For low-income families, energy efficiency and health outcomes are often intertwined. Low-income families may sacrifice nutrition, healthcare, and other necessities to avoid utility shutoffs.⁵ Many low-income homes also suffer from structural problems or health concerns such as mold, leaky roofs, or pests. These issues can exacerbate respiratory disease, heart disease, arthritis, mental illness, and more, with households with children and elderly members especially at risk.

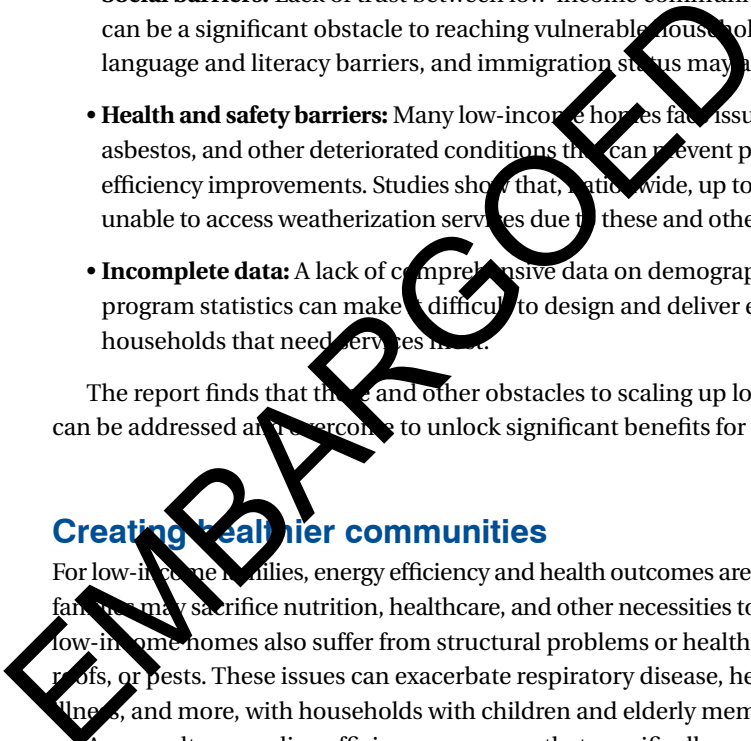
As a result, expanding efficiency programs that specifically account for the health and safety issues many low-income households face can create opportunities to provide energy savings while improving the health of vulnerable families.

Improving equity

Strategically increasing investments in energy efficiency can help mitigate disproportionate economic burdens, as low-income Americans, on average, spend a high percentage of their income on electricity. Specifically, households with incomes below 150 percent of the federal poverty level that heat with electricity spend on average 12 percent of their income on electricity—double the amount commonly considered “affordable,” and four times the average across electric-heating households of all incomes.

Programs that seek to help low-income communities can particularly benefit people of color. In 2016, one-third of both African-Americans and Hispanic Americans had incomes below 150 percent of the federal poverty level, compared to only 15 percent of white

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Americans.⁶ Additionally, in 2009 more than 11 percent of African American-headed households with incomes below 150 percent of the federal poverty level faced utility shutoffs, compared to less than six percent of white-headed households.

Targeted energy efficiency measures can reduce low-income families' economic burden—a burden that more often encumbers people of color—by reducing utility bills by hundreds of dollars each year.

EIGHT STEPS TOWARD ENERGY EFFICIENCY FOR ALL

Here are eight recommendations to realize these and other benefits:

1 States should enact policies to incentivize or require utilities to invest specifically in low-income energy efficiency.

- State energy efficiency goals, known as Energy Efficiency Resource Standards (EERS), and other requirements or incentives for utilities to invest in energy efficiency should include low-income specific requirements.
- Policies such as variable utility rates, performance incentives or penalties, cost recovery, and decoupling mechanisms that separate utility profits from energy consumption can help boost utility incentives to invest in energy efficiency.
- Compliance with energy efficiency goals should be evaluated through billing analysis of actual utility data. Evaluation methods using estimates or models, such as from technical resource manuals, may not accurately reflect realized savings.

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CASE STUDY

Scaling up low-income energy efficiency in Northern Illinois

In Illinois, the 2017 Future Energy Jobs Act transitioned management of low-income energy efficiency programs from the Department of Commerce and Economic Opportunity to utilities. The law requires investor-owned electric utilities to achieve annual energy savings targets and to surpass a minimum spending level for low-income programs. The law also includes incentives for utilities to invest in energy efficiency, including provisions for recovering costs, and penalties to the return on investment if utilities do not meet their energy savings requirements. ComEd—which serves more than three million customers in Northern Illinois—plans to exceed their requirement to spend \$25 million per year on low-income energy efficiency by 60 percent, aiming to spend \$42 million per year from 2018-2022 on six new “income-eligible” programs including single-family and multi-family weatherization, energy savings kits, and LED lighting discounts. ComEd projects its portfolio will have a lifetime cost of 8.5 cents per kilowatt, and that the benefits will surpass the costs by 12 percent.⁷

2 For low-to-moderate-income households, states should consider deploying inclusive financing mechanisms such as on-bill repayment and Pay as You Save to create avenues for participants able to cover some costs.

- Inclusive financing programs should include safeguards to maximize energy efficiency savings, minimize risk for customers, and avoid adverse bill impacts, including not requiring credit checks to qualify, providing loan terms matching the payback period for energy efficiency measures, ensuring customers receive positive cost reductions, and preventing utility disconnections.

CASE STUDY

Financing clean energy for all with PosiGen Solar + Efficiency

Connecticut's Green Bank has collaborated with PosiGen, a private company, to deliver clean energy to low-to-moderate-income customers. It does so by leveraging public funds from rate surcharges, Regional Greenhouse Gas Initiative auctions, and other sources to attract private capital for accessible clean energy deployment.⁸ It then works with PosiGen, which provides 20-year solar leases combined with energy efficiency upgrades. The Green Bank helps PosiGen generate capital for these projects and connect with community organizations—such as a statewide network of churches—to reach potential customers. To make its services accessible to low-to-moderate-income customers, PosiGen does not use credit checks and provides a universal flat fee with no deposit.⁹

Low-income energy efficiency program providers should partner with trusted community organizations to help reach customers.

3 States and utilities should also aim to maximize the use of federal funds and other funding streams to support expanded low-income energy efficiency.

- States should coordinate implementation of the federally funded Weatherization Assistance Program (WAP) with state- and utility-managed low-income energy efficiency services. In Colorado, for example, the non-profit Energy Outreach Colorado partners with utilities to coordinate funding for low-income energy efficiency programs including the WAP, which is administered by the Colorado Energy Office.
- States should consider utilizing funds from the Low Income Home Energy Assistance Program (LIHEAP) to provide energy efficiency services. States can transfer up to 15 percent of LIHEAP grants to their own budget (25 percent with a waiver from the federal government), coordinate LIHEAP energy crisis programs with WAP to replace unsafe heating and cooling equipment, and dedicate up to five percent of state LIHEAP grants for Assurance 16 programs, which provide needs assessments and energy education for low-income families.¹⁰
- Public utilities and rural cooperatives represent roughly 25 percent of U.S. electricity sales, but are often exempted from state energy efficiency policies. Rural utilities can tap into federal programs such as the Rural Utilities Service, Rural Energy Savings Program, and the Energy Efficiency and Conservation Loan Program to support low-income energy efficiency services.

4 If states require cost-effectiveness tests in evaluating low-income energy efficiency programs, the tests should incorporate non-energy benefits.

- Non-energy benefits, including health, environmental, and economic benefits, should be included in cost benefit analyses through an “adder” or other quantification. Several jurisdictions, including Colorado, Washington D.C., New Mexico, and Vermont, employ non-energy benefit adders of up to 30 percent for low-income efficiency programs.
- Low-income energy efficiency should be evaluated using the current state of the home as a baseline, rather than prevailing building codes. This will allow progress to be accurately measured for low-income households whose homes are not up to code.

5 Low-income energy efficiency services should be focused on high-energy users and vulnerable households in order to maximize energy and cost savings and deliver equitable benefits.

- Using utility data to identify and target high-energy users allows energy efficiency providers to achieve greater energy savings. Because households with high energy use often bear greater energy cost burdens, targeting these households may also increase affordability.



Low income energy efficiency upgrades can include installing air sealing, insulation, and efficient HVAC systems.

SHUTTERSTOCK

Low-income households use more than 30 percent of U.S. residential electricity, but only 6 percent of energy efficiency spending is dedicated to low-income programs.

- To increase equity and improve public health, program providers should focus on bringing energy efficiency to vulnerable households, including those with children or elderly members, very low incomes, or greater risks of adverse health impacts.
- Programs should aim to provide comprehensive cost-effective energy saving measures such as air sealing, insulation, and heating system replacement to achieve higher levels of savings. For example, in New Jersey, low-income electric-heating homes receiving both refrigerator replacements and heating system upgrades saved more electricity than homes receiving only one or neither improvement.¹¹

6 Low-income energy efficiency program providers should always consult with trusted community organizations and partner with them to reach customers.

Low-income households may not trust government agencies, utilities, or energy efficiency contractors, so program providers should work with community organizations to identify unique barriers and conduct outreach to hard-to-reach households. For example, in Illinois, an Economically Disadvantaged Energy Efficiency Stakeholder Advisory Committee convenes community leaders from across the state to advise utilities on program design and customer outreach plans.¹²

7 Alongside resources deployed for low-income energy efficiency, policymakers should strive to dedicate resources to address health and structural issues in the home.

- Up to 15 percent of households nationwide may be unable to participate in energy efficiency programs due to health and safety issues in the home, such as mold or leaky roofs that prevent contractors from installing insulation or replacing appliances. This percentage may be as high as 30 percent in Minneapolis, 42 percent in Baltimore, and 64 percent in Atlanta. Rather than leaving these households behind, states, utilities, and providers should dedicate resources to address underlying health and structural issues alongside energy efficiency improvements.

CASE STUDY

Creating healthy homes and saving energy in Philadelphia

Since 2013, EnergyFIT Philly, a program of Philadelphia's Energy Coordinating Agency, has leveraged foundation, municipal, state, and utility funding to provide comprehensive home repair and energy efficiency services to affordable housing units with high rates of physical deterioration. As many as 65 percent of low-income, high-energy-usage households in Philadelphia may have deterioration that prevents them from being weatherized.¹³ In addition to energy efficiency improvements such as air sealing, insulation, heating system replacement, programmable thermostats, and energy education, EnergyFIT Philly provides structural repairs to these homes, including new roofs, plumbing, carpentry, and masonry, thereby improving health as well as energy outcomes.¹⁴

Obstacles to scaling up low-income energy efficiency can be addressed and overcome to unlock significant benefits for vulnerable families.

8 In order to fully understand and act on the potential for low-income energy efficiency, states, utilities and other stakeholders should work to close the data and research gap.

- In many programs, more comprehensive data on participant characteristics—including demographic, energy usage, and housing information—and evaluation results should be provided to develop a better understanding of best practices.

Notes

- 1 Low-income share of U.S. residential electricity consumption based on EDF analysis of 2009 Residential Energy Consumption Survey data for the share of electricity consumption among households with incomes less than \$40,000 per year (38%) and among households with incomes below 200% of the federal poverty level (30%). Low-income household percentage calculated from 2016 American Community Survey Data.
- 2 *2016 State of the Efficiency Program Industry*, Consortium for Energy Efficiency, March 2017, available at: <https://library.cee1.org/content/cee-2016-state-of-efficiency-program-industry>
- 3 Assumes electric heating households can reduce electricity usage by 20%, non-electric-heating households can reduce electricity usage by 10%. Estimates bill reduction potential by multiplying number of households with direct bill pay by average electricity expenditures across single-family, multi-family, and mobile homes for electric-heating and non-electric-heating households using APPRISE analysis of 2015 ACS data (see pp. 69–70). Estimated kWh saved using 2015 national average electricity of 12.65 cents/kWh (source: EIA). Estimates CO₂ reduction potential and comparisons using EPA GHG Equivalencies Calculator.
- 4 *2017 U.S. Energy and Employment Report*, Department of Energy, January 2017, available at: <https://energy.gov/downloads/2017-us-energy-and-employment-report>
- 5 Ariel Dreihobl and Lauren Ross, *Lifting the High Energy Burden in America's Largest Cities*, ACEEE, April 2016, available at: <http://aceee.org/research-report/u1602>
- 6 *Income and Poverty in the United States: 2016*, United States Census Bureau, report, September 2017, available at: <https://www.census.gov/library/publications/2017/demo/p60-259.html>
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- 9 "Connecticut Program Makes Solar Affordable for Low-Income Families," InsideClimateNews, Feb. 25, 2016, available at: <https://insideclimatenews.org/news/25022016/connecticut-program-solar-power-low-income-families-freedom>
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- 13 "EnergyFIT," *Energy Coordinating Agency*, n.d, available at: <https://www.ecasavesenergy.org/energyfit>
- 14 "Council President Clarke Hails Progress Of Energy Fit-Low Income Housing Preservation Program," *University City Review*, August 12, 2015, available at: <http://ucreview.com/council-president-clarke-hails-progress-of-energy-fit-low-income-housing-pr-p5859-1.htm>