

CLEAN ENERGY FOR LOW INCOME COMMUNITIES ACCELERATOR**Program Mission Statement**

Established by the Connecticut General Assembly on July 1, 2011 as a part of Public Act 11-80, Connecticut Green Bank supports the Governor's and Legislature's energy strategy to achieve cleaner, less expensive, and more reliable sources of energy while creating jobs and supporting local economic development. The Connecticut Green Bank evolved from the Connecticut Clean Energy Fund (CCEF) and the Clean Energy Finance and Investment Authority (CEFIA), which was given a broader mandate in 2011 to become the Connecticut Green Bank.

The purpose is to increase accessibility and uptake of energy efficiency and renewable generation source installations in Connecticut's low and moderate income communities.

Low-income Community Definition & Eligibility

Moderate income is <100% area median income. Connecticut defines <80% area median income as "affordable." Low-income is defined as 200% of federal poverty level or 60% state median income.

Measures of Program Success

The number of residential units participate in Home Energy Solutions - Income-Eligible (HES-IE) program as roughly 20,000 and a minimum of 4.5MW of solar installed on those same units.

Program Type

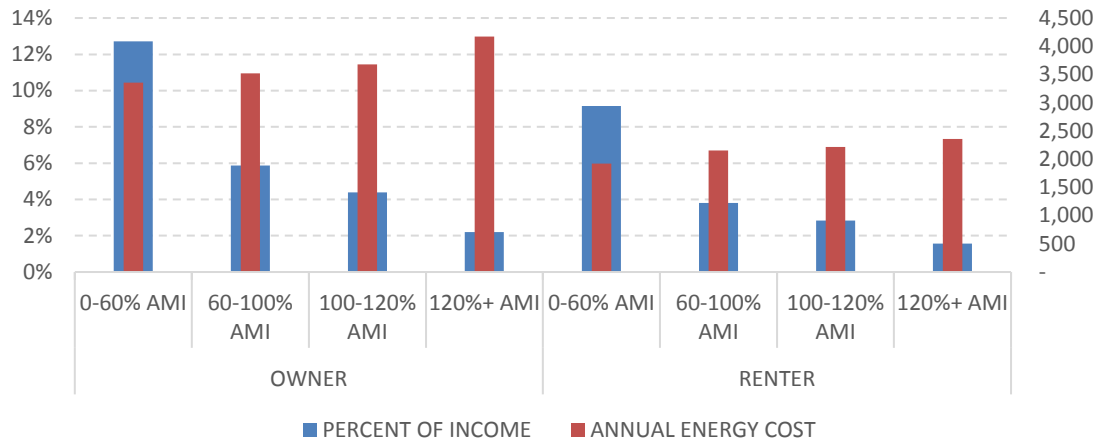
Single family (1-4 unit) homes, multifamily (5+ unit) dwellings.

Objective # 1: Reduce the energy affordability gap for low to moderate income residents, bringing their energy burden in line with upper income households

Objective Summary

Connecticut’s high energy prices have the greatest impact on our most vulnerable citizens. The energy affordability gap is the difference between how much a household actually spends on energy each year versus what is considered to be an affordable amount. National housing targets for an affordable rate of energy spend is 6% of household income. Lower-income households in Connecticut have a significantly higher energy burden than higher-income households do, ranging from an affordability gap of \$1,500 to \$2,500 per year over the past few years, dependent on the price of heating oil and natural gas in a given year.

Percent of Income Spent on Energy Annually in Connecticut
 Source: U.S. DOE’s Low-income Energy Affordability Data (LEAD) Tool



In developing strategies for the low-to-moderate income (LMI) market, Connecticut seeks solutions that will improve the financial sustainability of LMI families who are most susceptible to rising energy costs by reducing their energy consumption and assuring that implemented measures deliver on the projected performance. We aim to achieve this by better integrating planning and financing with energy efficiency and renewable generation source installations in low-income communities; and opening new opportunities for participation by low-income residents.

Connecticut has several publicly funded programs to support low-income households weatherize their homes and make energy efficient improvements:

Home Energy Solutions- Income Eligible (HES-IE)

The HES-IE program is Connecticut's ratepayer funded weatherization program for low-income households that are at 60% or less than State Median Income (SMI). It includes the full list of services provided by the market rate Home Energy Solutions program (Air leak diagnostics, caulking and weather-stripping, HVAC safety testing, pipe insulation, faucet aerators and low-flow showerheads, LED lightbulbs, a DOE Home Energy Score, and access to rebates and instant discounts on ENERGY STAR appliances, heating and cooling equipment, insulation, etc.), but at no cost to participants. This program services about 20,000 low-income homes annually. In 2016, the total estimated energy cost savings from HES-IE projects was \$6.4, or approximately \$300 per household. Participation in this program also contributes towards Connecticut's achievement of its goal to weatherize 80% of its homes by 2030.

Weatherization Assistance Program (WAP)

Connecticut's Weatherization Assistance Program is administered with funding from the U.S. Department of Energy by the Connecticut Department of Energy and Environmental Protection (DEEP) in partnership with the statewide Community Action Agency network. Local community action agencies qualify households and coordinate services; DEEP provides overall program management and technical assistance. It uses the same eligibility criteria as the Low Income Home Energy Assistance Program (LIHEAP)-funded Connecticut Energy Assistance Program, which is set at 60% of state median income or 200% of federal poverty levels. WAP provides comprehensive weatherization services to approximately 300-500 homes annually, statewide. Connecticut uses a small portion of federal LIHEAP funds to supplement the WAP grant to address health and safety issues that would otherwise prevent weatherization services.

Energize Connecticut Heating Equipment Replacement Loan

A utility administered financing program that allows customers to finance high-efficiency heating equipment with a ten-year, low-interest loan that is paid back on the customer's electric utility bill. The only credit check required is proof that the last six consecutive months of electric bills have been fully paid.

Smart-E loan for Credit-Challenged Homeowners

In partnership with Connecticut's community banks, credit unions, and local Community Development Financial Institutions for credit-challenged customers, homeowners are offered low-interest (between 4.49% to 6.99%) and long-term (5 to 12 year terms) unsecured financing for a range of credit quality consumers (580 FICO or above) through unsecured loans backed by a second loan loss reserve from the Green Bank. Customers that "bundle" solar with energy efficiency measures can qualify for lower interest rates. Customers may also use up to 25% of the loan to finance health and safety improvements.

By better integrating and scaling up these programs to achieve comprehensive home improvements and energy savings, we can bring the gap in energy affordability down for low-income households across the state.

Key Partners and Roles

- Connecticut Green Bank (CGB)
- Utilities
- EnergizeCT
- Solar Contractors
- DEEP

Action Steps to Reach Objective

Action Step	Date Start and End	Resources Needed	Resource Provider	Status	Success Indicators
1. CGB and utilities explore additional single family solar and energy efficient strategies, including increased incentive levels when completed together, and HVAC energy savings agreement (ESA) model.	Ongoing	Program funding	Ratepayer funds Private capital partners	Unclear if this strategy will be possible post-Residential Solar Investment Program (RSIP) when solar compensation moves to tariff structure and incentive for solar no longer provided	<ul style="list-style-type: none"> • Additional incentive source identified and program structure designed/implemented • HVAC ESA services active in CT market
2. Use solar channel to target customers for energy efficiency and vice versa.	Ongoing	Strengthened relationship between energy efficiency and solar contractors.	CGB DEEP Utilities	Ongoing	<ul style="list-style-type: none"> • Number of active partnerships between solar and energy efficiency providers

Action Step	Date Start and End	Resources Needed	Resource Provider	Status	Success Indicators
					<ul style="list-style-type: none"> Lead sharing channels established
3. Pursue all cost-effective energy efficiency in the residential sector using financing and increasing the amount of private sector capital where effective (and a simplified approval process where possible and appropriate), to leverage ratepayer funds and achieve deeper savings.	Ongoing	<p>Secure, stable funding resources to provide capital for leveraging private funding.</p> <p>Ongoing data collection to understand market gaps and underserved demographics.</p>	<p>CGB</p> <p>Utilities</p> <p>Legislation</p>	Ongoing	<ul style="list-style-type: none"> Funding leveraged Loans originated/completed Participation rates by different demographics Benefit/ cost analysis
4. Increase financing in the HES/HES-IE channel to meet needs and drive deeper energy savings and more projects and increase HES projects with completed follow-ons per the Conservation and Load Management	Ongoing	Secure, stable funding resources to support programs.	<p>CGB</p> <p>Utilities</p> <p>Local lenders and financing institutions</p>	Ongoing	<ul style="list-style-type: none"> Add-on measure participation rate Number and type of measure bundled for comprehensive energy savings Loans originated/completed

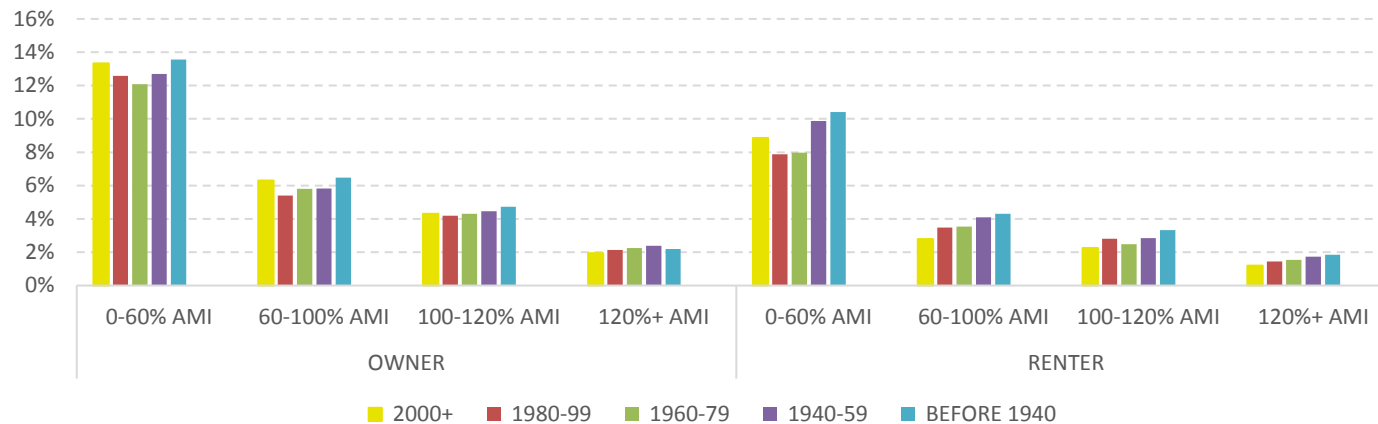
Action Step	Date Start and End	Resources Needed	Resource Provider	Status	Success Indicators
plan, using financing as a tool to increase completed follow-ons.					

Objective # 2: Scale up programs and financing to expand access to solar and energy efficiency for LMI communities

Objective Summary

Connecticut has a unique housing landscape. 30% of our low-income households live in owner occupied single family homes. 33% live in 1-4 unit rentals, and 31% live in 5+ unit multifamily properties. Our medium-large multifamily properties are often concentrated in urban cores, and many HUD properties are master-metered. To effectively bring clean energy to our low-income communities, unique approaches that meet individual market needs are critical, and scaling up of these programs and products is key.

Segmentation of Housing Type by Income for Connecticut
Source: U.S. DOE's Low-income Energy Affordability Data (LEAD) Tool



Single Family

For the single-family market, the Connecticut Green Bank and its partners have brought several products to market that sit on top of the state's energy efficiency programs, including the Energize CT Smart-E Loan and the LMI Solar PV Lease and Energy Efficiency energy savings agreement with Posigen. The Green Bank also offers a tiered LMI incentive for residential solar PV systems to qualifying contractors.

Multifamily

To address the multifamily market, DEEP led a stakeholder working group that includes the state's housing agencies, investor-owned utilities, and Connecticut Green Bank that leaned state processes for funding and developed several streamlined financial products for affordable multifamily housing:

Multifamily Pre-Development Energy Loan Program

Energy loan that supports property owners in identifying high-quality technical assistance providers, and to fund the work needed to scope and secure financing for deeper, cost effective energy upgrades. This program is supported by a \$650,000 revolving loan fund for loans of 0.0% to 2.99% and up to two year terms. The affordable multifamily version of this program is housed at the Housing Development Fund, a local CDFI, and part of a \$5 million program related investment from MacArthur Foundation is being used to support the program. In addition, Connecticut Housing Finance Authority and WegoWise are working to benchmark 1,600 multifamily properties and guide building owners through an analysis to identify opportunities.

Low-Income Multifamily Energy (LIME) Loan

Through a partnership with Connecticut Housing Investment Fund, the LIME loan provides up to 20 year terms for an unsecured low interest loan product geared towards mid-stream energy improvements and serving properties where at least 60% of units serve renters at 80% or lower of Area Median Income. Projected energy savings are used to cover the debt service of the loan. The Green Bank supports LIME with a \$300,000 loan loss reserve and provided \$1 million to capitalize the initial \$3.5 million loan fund. In addition, Connecticut has C-PACE and a solar-only lease product that may be applicable to affordable multifamily properties.

Shared Clean Energy Facilities (SCEF) Pilot

To address a market gap that includes low-income renters and homeowners with properties not suitable for solar, the Connecticut legislature enabled a shared clean energy facility pilot for 6MW of shared clean energy facilities in 2015. In developing the policy to enforce this legislation, DEEP included a requirement that 20% of each SCEF project service low-income subscribers (those earning 80% of area median income or state median income, whichever is higher). To help ensure a successful pilot program and a meaningful impact on household energy burden the Green Bank is exploring providing financing to several community solar projects. With a successful, permanent, statewide policy Connecticut could be able to help a significant portion of the state's LMI renters and homeowners go solar.

With the exception of the SCEF pilot (not yet implemented), these programs and products have already demonstrated success in assisting low-income homeowners and multifamily property owners install energy efficiency and solar measures. To expand access to clean energy for all types of households in Connecticut, the team will continue to work to bring these tools to scale.

Key Partners and Roles

- CGB
- DEEP
- Utilities
- DOH
- Solar Contractors
- Low-Income Energy Advisory Board
- EnergizeCT

Action Steps to Reach Objective

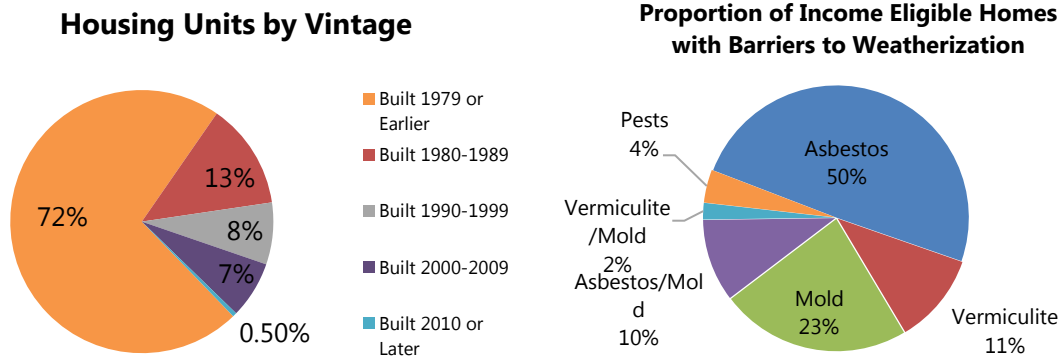
Action Step	Date Start and End	Resources Needed	Resource Provider	Status	Success Indicators
1. Calibrate incentive and buy-down levels to achieve more comprehensive projects while reducing program costs.	Ongoing	Stronger collaboration between program administrators and implementers (ie: financiers and developers)	Utilities	Ongoing	<ul style="list-style-type: none"> • Program operating with higher efficiency, lower cost and same or better result
2. Explore solutions for solar for small multifamily (investor-owned 1-9 unit properties)	Ongoing	Policies that support models for sharing benefits of PV across individually metered dwellings	CGB DEEP	Waiting on implementation of SCEF	<ul style="list-style-type: none"> • Standard program model developed for small multifamily property owners to participate
3. CGB provide debt to community solar	Ongoing	Financial partnerships	CGB	Waiting for pilot projects to develop to	<ul style="list-style-type: none"> • CGB-financed SCEF

Action Step	Date Start and End	Resources Needed	Resource Provider	Status	Success Indicators
projects & assist contractor partners in marketing to LMI communities & onboarding subscribers		established between CGB and SCEF contractors		point where financing/subscribers needed. Waiting for implementation of statewide SCEF	projects in operation
4. Encourage (or establish requirement) community solar subscribers in single-family owner-occupied homes to sign up for an Energy Savings Agreement to achieve greater reductions in energy burden	Start 2019, ongoing from there	DEEP to include in SCEF program requirements	DEEP	Waiting for SCEF statewide program to be developed	<ul style="list-style-type: none"> Requirement established and operationalized
5. Evaluate impact of SCEF pilot 1 year after implementation	2020	DEEP analysis	DEEP	Waiting for pilot projects to be built	<ul style="list-style-type: none"> Analysis published
6. Expand community campaigns such as Solar for All and Solarize State Sponsored Housing Portfolio to increase access and knowledge of state programs	Ongoing	Additional communities and housing authorities willing to participate in campaigns	CGB CHFA HUD	Ongoing	<ul style="list-style-type: none"> Additional campaigns completed that result in contracted projects

Objective # 3: Address Health and Safety barriers to energy improvements in Connecticut housing stock by partnering with the public health community

Objective Summary

Connecticut’s housing stock is aging, with 83% of housing units built before 1980. Older housing stock is most prevalent in our lower income communities, and suffers from decades of deferred maintenance. Numerous health and safety challenges in our older building stock prevent energy upgrades from moving forward. These include health-related items such as the presence of asbestos, lead paint, mold from leaks, radon, carbon monoxide leaks, and safety issues such as knob and tube wiring. The state’s Home Energy Solutions program estimates that 25% of housing units can’t even pursue a blower door test due to a health or safety issue.



There is no sustainable, scalable funding source to address these health and safety issues – HUD’s lead abatement and Healthy Homes programs and the Connecticut Department of Public Health (DPH) is not funded to provide remediation services. Furthermore, even when there are limited funds available for health and safety, it is not coordinated with energy and housing funding streams. This is an environmental justice issue, as well as a preservation of affordable housing units issue, for if nonprofit multifamily developers or homeowners can’t afford holistic upgrades, then private developers or investors come in and make improvements but in the process convert the units to market rate. The siloes of funding available are illustrated below:

Funding Siloes - Energy, Housing, and Health and Safety



By linking improved, greener and healthier housing to improved health outcomes in our low-income communities, it may be possible to tap into a whole new funding source in the public health sector to address these issues. Much research has been done on the link between energy upgrades and improved indoor air quality, and improved asthma outcomes are linked to improved air quality in the home. Such improvements can also help homes become “solar-ready.” Improved health outcomes are also tied to improved income levels, and we know that energy upgrades can reduce a household energy burden, which can help stabilize household expenses.

Connecticut Department of Public Health’s Healthy Homes Initiative published the Connecticut Healthy Homes Data Book in 2012 shedding light on the most pressing health concerns tied to our homes:

- Asthma is costly to the state and concentrated:
 - We spend \$112 million for acute asthma care each year, 41% of this in our 5 largest cities, where the majority of our low-income residents live (Bridgeport, Hartford, New Haven, Stamford, Waterbury)
 - We spend another \$80 million on hospitalizations and \$32 million on emergency room visits
 - 75% of each of those occurs in our 5 largest cities and is paid for by Medicaid or Medicare
- Connecticut is among the top 10 states in the country for housing at risk for lead exposure due to its high proportion of rental housing in urban areas coupled with the extremely high proportion of housing stock built before 1950:

- While the overall prevalence of lead in children is trending down in the state, significant disparities exist
 - Black and Hispanic children in urban areas in the state represent the population at highest risk, with elevated blood lead levels two times greater than the rate of elevated levels for White and Non-Hispanic children
- Falls, which are largely in the elderly population, caused 8,800 hospitalizations and 96,000 ER visits.

Regional Greenhouse Gas Initiative (RGGI) Fund

The Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort by Northeastern and Mid-Atlantic states to reduce carbon dioxide (CO₂) emissions through the nation's first multi-state, market-based, CO₂ cap and trade program for the electrical generation sector. Participating states auction the allowances and use the proceeds for consumer benefit programs. In Connecticut, 70% are used for energy efficiency programs administered by our electric distribution companies and municipal electric utilities, and 23% are used to deploy Class I renewable resources.

In the past, Connecticut has used RGGI funds to support efficiency programs for oil-heated households as there is presently no bill charge on fuel oil (like there is for electric and natural gas customers) for funding such programs. Investigating how we can similarly employ these funds to address health and safety barriers to energy efficiency projects is a relevant and equitable application, and can continue to support Connecticut's prioritization of fuel-blind, cost-effective energy efficiency. Connecticut DEEP and Connecticut Green Bank will explore using RGGI funds to establish a revolving loan fund to finance the removal of barriers that present health and safety concerns at homes installing efficiency measures and/or solar generating equipment.

By pursuing strategic partnerships and leveraging multiple potential funding streams, we may be able to holistically address home conditions, energy burdens and improve overall public health.

Key Partners and Roles

- DEEP
- Utilities
- CGB

Action Steps to Reach Objective

Action Step	Date Start and End	Resources Needed	Resource Provider	Status	Success Indicators
<p>1. DEEP and utilities build out documentation of barriers to energy efficiency to further identify most common health & safety barriers in housing stock</p>	<p>Began tracking number and type of barrier to energy efficiency retrofits through the Clean Energy & Healthy Homes Initiative in 2017</p> <p>Ongoing, near full expenditure</p>	<p>Funding to conduct data collection</p>	<p>DEEP allocated \$1.5M of merger funds from the NStar/ Northeast Utilities merger</p> <p>Utilities/ contractors perform data collection</p>	<p>On Track</p>	<ul style="list-style-type: none"> • Ongoing sampling of barriers in households through the Home Energy Solutions program. • Expenditure of funding for remediation.
<p>2. Investigate funding and program opportunities within the Affordable Care Act including: Medicaid waivers, Medicaid Healthy Home and Accountable Care Organizations. Other potential areas of research include whether HUD programs could be leveraged, health foundations, other federal, state or local funding sources, and Pay for Success social impact bond models. Green Bank will pursue foundation funding to assist in this initiative.</p>	<p>Started in 2018, pilot program design and implementation to be completed by 2020</p>	<p>Funding to support research and pilot program design</p>	<p>Philanthropic foundations and state agencies</p>	<p>On Track</p>	<ul style="list-style-type: none"> • Analysis complete, pilot program design and implementation underway.

Action Step	Date Start and End	Resources Needed	Resource Provider	Status	Success Indicators
<p>3. Investigating how we can similarly employ RGGI funds to address health and safety barriers to energy efficiency projects is a relevant and equitable application, and can continue to support Connecticut's prioritization of fuel-blind, cost-effective energy efficiency.</p>	<p>Not Started</p>	<p>Security of RGGI revenues in the future.</p> <p>Consideration of how RGGI dollars create the most impact for participants.</p> <p>Creating fuel blind H&S resources.</p> <p>Engagement of the HVAC industry</p>	<p>TBD</p>	<p>Not Started</p>	<ul style="list-style-type: none"> • Enable access to remediation services through HES/HES-IE for oil and propane customers.