# Implementation Guide

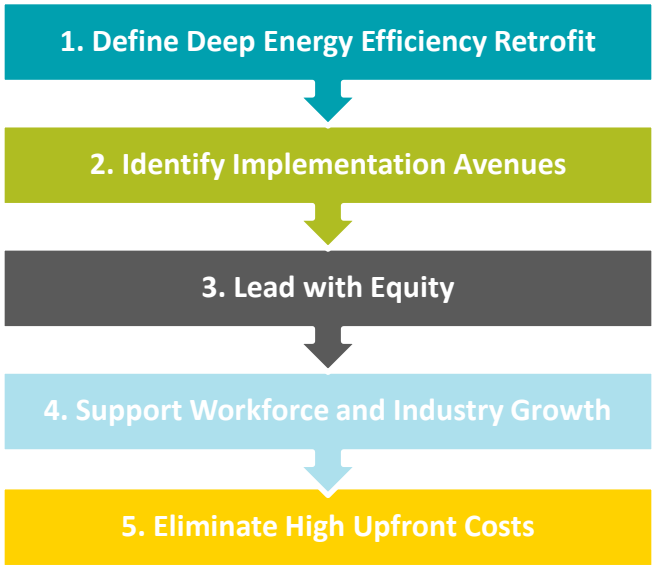
## *Statewide Deep Energy Efficiency Retrofits*

States are identifying deep energy efficiency retrofits as a key step to implement cost-effective climate and energy policy. These programs deliver benefits to both the grid and residents, including drastically lowering energy use, decarbonizing the energy supply, lowering energy bills, and improving the comfort, air quality, and durability of residents' homes. Despite recognizing these benefits, states are trying to determine how to deploy these programs on a statewide scale to achieve these goals. This implementation guide will examine **how** states can create statewide **deep energy efficiency retrofit programs** that are accessible, incorporate state energy and climate goals, and grow the clean energy workforce.

## What Are Deep Energy Efficiency Retrofits?

Deep energy efficiency retrofits offer a way to drastically reduce the energy use of existing homes. Generally, these programs aim to save 50 percent or more of energy used in the home and include measures such as building shell improvements, insulation and air sealing, and upgrades to high-efficiency heating and cooling and hot water systems. Current energy efficiency programs that offer retrofits to customers, such as Home Performance with Energy Star and the Weatherization Assistance Program, include only some measures typical to deep energy efficiency retrofits like simple building shell measures and replacing individual appliances. Due to challenges with implementation mandates and cost effectiveness testing, some of the current highest performing energy efficiency retrofit programs achieve only 10-20 percent energy savings, compared to 50 percent for deep energy efficiency retrofits.

To implement successful statewide deep energy efficiency retrofit programs, policymakers should: **1. Define Deep Energy Efficiency Retrofit** to streamline industry practices, standards, and results; **2. Identify Implementation** avenues to ensure implementation and program scaling; **3. Lead with Equity** in design to ensure access to and participation in programs in historically marginalized communities; **4. Support Workforce Growth** by designing workforce trainings and standard contracting processes, as well as providing incentives to increase contractor participation; and **5. Eliminate High Upfront Costs** by allowing innovative financing that creates incentives and new pathways to reduce initial project costs.



## *Policy Consideration: Defining Deep Energy Efficiency Retrofits*

There will likely be many actors involved in implementing deep energy efficiency retrofit policy, such as utilities, state agencies, community organizations, and small and large businesses. Establishing a single definition for ***deep energy efficiency retrofit*** will ensure that these stakeholders move towards the same goal. It will also help establish consistent near-term program expectations and standardize long-term results. To establish this definition, policymakers should define standards for two key areas (1) building shell and (2) mechanical system and appliance upgrades. For a more detailed breakdown see: Staged Approaches for Deep Energy Efficiency Retrofits in Existing Homes.

**Building Shell:** Define a ***retrofitted building shell*** by establishing technical goals or required components. Technical or performance goals can be set through industry standards such as Home Energy Score, which assesses the efficiency of a home on a scale of 1 to 10, or Energy Use Intensity Index, which measures energy use per square foot. Alternatively, or in addition, programs can be mandated to offer a prescribed package of solutions including basement/crawlspace remediation, air sealing, and insulation measures around the whole house.

**Mechanical System, Appliance and Lighting Upgrades**: Identify ***required upgrades*** including HVAC system and electronic appliance and lighting upgrades in the definition of deep energy efficiency retrofit. This is important to ensure a home is optimizing its energy usage, and it specifically addresses high energy use appliances. Deep energy efficiency retrofits can lead to lower energy usage and reduced need for high-output appliances, resulting in lower energy bills. Additionally, updating these systems as one allows for the chance to combine space and water heating appliances to increase efficiency.

Other policies to consider incorporating in the definition include: health and safety considerations, energy education for consumers, workforce training, distributed energy resources (connected appliances, storage, or EVs), and renewables.

## *Policy Consideration: Implementation Avenues*

To identify implementation avenues, policymakers should consider government agencies and outside entities that can directly deliver the services these programs provide, and indirectly aid implementation through access to funds, ability to scale, and imperative to provide reliable results. Current stakeholders in this space include building designers and contractors; businesses that offer home repairs or energy efficiency upgrades; community agencies that conduct outreach; institutions that offer training and education avenues; and state agencies that implement programs, such as utility energy efficiency programs. Implementation of these programs should seek to integrate these components and leverage existing established relationships. Two avenues to consider are:

**Utilities as Program Administrators:** Utilities are state-regulated entities that have been tasked with providing reliable energy to the residents of their territory. Deep energy efficiency retrofits align with this goal because they ensure reliable energy and provide long-term investment in home energy systems. Additionally, utility territory and prior energy efficiency program implementation experience can help scale these programs. Yet, utilities may not have experience implementing programs that have multiple components and may not have adequate community relations to ensure these programs excel. Therefore, while utilities can provide a strong administrative and financial backbone, states may seek out local organizations for education, outreach, and workforce support.

**Contractors as Program Administrators:** Contractors that interact with homeowners can also be used as a program administrator through the General Contracting Model, which uses one central contractor to organize other actors. It is important to consider that contractors do not have regulatory oversight like utilities do. If using this model, policymakers should consider additional measures to ensure quality products for customers and attract businesses and workers to this field. To ensure quality products and standard results, programs can create an implementation oversight mechanism that includes customer follow-up and post-installation quality verification. To create a retrofit industry and workforce that implements this policy, programs can offer incentives and provide free-of-charge training and verification tools so that contractors and others in the industry see the program as beneficial to their business. To see this approach in action, see NEEP's Zero Energy Now Pilot program in Vermont.

### *Policy Consideration: Lead with Equity*

Policymakers need to lead with equity when defining and creating deep energy efficiency retrofit programs because it is likely that the households least able to afford upgrades will benefit the most from them. Inequities in housing and energy policy have left communities without the tools to undo historic injustices. Enabling access to deep energy efficiency retrofits for every individual in a state can begin to uplift these communities and provide a step towards justifying past wrongs. Additionally, deep energy efficiency retrofits can create a standard of living and home comfort for every resident to enjoy.

**Alleviate Financial Barriers:** Financial barriers are magnified for historically marginalized or excluded communities. These residents are less likely to have funding for upfront costs, more likely to live in homes that will need significant initial investment, and are already overburdened by utility costs. Policymakers should identify additional financing mechanisms that can relieve these barriers. Model programs include Philadelphia Energy Authority's Built to Last, which works to integrate all available state and local funding to lower the costs required to participate. Additionally, states can use cap-and-invest funds such as the Regional Greenhous Gas Initiative to fill in needed funding gaps. In Delaware, the Pre-Weatherization Program uses RGGI funds to provide structural repairs – at no expense to homeowners – prior to weatherizing a home.

**Streamline the Application Process and Criteria**: Locating and producing documents required to participate in these programs can impose upfront costs and create unnecessary burdens for participants. Policymakers and program implementers should consider ways to alleviate paperwork needed to participate in programs by creating standard participation criteria and/or using community-based qualifiers. Additionally, it can be helpful to create one entry point so that participants do not have to separately apply for various components of the upgrade process.

**Put Communities and Residents Front and Center:** Historically marginalized or excluded communities face different needs and concerns that program administrators and regulators may not be attuned to. Policymakers should be cognizant of this when designing programs and identify key points in the process where community needs should be prioritized. To promote community and residential concerns, policymakers can ensure these programs are open to public feedback, transparent about their implementation process, and clear in goals and outcomes. To invest in these communities as these programs are implemented, states can prioritize a community based approach and create programs designed to work with local community organizations or train and hire locally.

**Monitor Indoor Air Quality**: Indoor and outdoor air pollutant impacts that are not currently accounted for cause numerous public health issues that are magnified in historically marginalized communities. This is especially important when a home is retrofitted as it exposes residents to more concentrated indoor air toxins as the building envelope improves. Monitoring indoor air quality and designing programs that are cognizant of these issues can begin to stop such disproportionate harms.

### *Policy Consideration: Support Workforce and Industry Growth*

For programs to be successful, a deep energy efficiency retrofit workforce must be identified, established, and maintained. Implementing deep energy efficiency retrofits will require a large workforce of contractors and construction personnel as well as designers, engineers, and code officials that come together to complete projects across a state. This group should include training contractors and attracting businesses to invest and grow in this space.

**Workforce Training:** Deep energy efficiency retrofits call for several different types of contractors that must be coordinated and work at various times, including but not limited to HVAC, sealing and insulation, electric, and plumbing. Policymakers can ready and maintain this workforce by creating statewide accessible training programs that introduce workers to the field and offer continuing education programs. This will require additional action by states or others to identify

these workers, train them, and monitor the success of the programs. While this is an initial upfront cost, workforce training helps to reduce cost and expand program deployment by creating the foundation for a long-term independent clean energy workforce.

**Business Initiatives:** Program design should consider how to support contractors or other businesses in implementing programs statewide. In the energy efficiency industry, energy consultant/assessor businesses have developed. They create and coordinate teams to accomplish comprehensive projects. States can encourage these businesses to implement deep energy efficiency retrofits through proper business incentives and ensuring equal access in the market. Investing in these businesses now can lead to their independent growth and success in the future.

### *Policy Consideration: Eliminate High Upfront Costs*

Deep energy efficiency retrofits require a large upfront cost that most homeowners cannot afford. Costs for these projects can range from $30,000 to $50,000. To ensure successful programs, policymakers can use innovative financing tools to fill this gap for both customers and program implementers.

**For Implementers**: Policymakers should be sure to value the appropriate costs and benefits when implementing these programs. Research shows that the current piecemeal approach to evaluating energy efficiency programs makes it difficult to allow for deeper, comprehensive energy saving projects, even though this work can result in more savings. Barriers often appear around cost-benefit calculations because benefits of policies like deep energy retrofits are often not accounted for in these tests, creating asymmetry. For more information on updating practices around cost-benefits tests to better reflect climate and energy policy, see NEEP's Implementation Guide on Cost-Benefit Tests.

**For Customers**: Policymakers should find a way to lower initial upfront costs through incentives and by embedding project costs in customer utility bills. Incentives have an important marketing role to play in encouraging customer participation. Additionally, these projects result in real-time energy bill savings that can be replaced with a long-term payment plan. The Zero Energy Now Pilot program in Vermont found that the substantial avoided energy costs upon project completion makes these projects feasible for most homeowners. These programs, when designed properly, can be paid for by savings on energy bills. This changes the cost from $50,000 upfront to a monthly utility bill for 20-30 years.

## Implementing Deep Energy Efficiency Retrofits Now

Deep energy efficiency retrofits are necessary to achieve state climate and equity goals because they can greatly reduce energy usage in the power sector and empower residents and communities by lowering bills for consumers and direct investments in communities. Now is the time for policymakers to take steps to grow and expand access to deep energy efficiency retrofits and the clean energy workforce.