



Weatherization Barriers Toolkit

***How to Address Health and Safety Barriers
with an Income-Eligible Focus***

April, 2022

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Introduction

This “Weatherization Barriers Toolkit” provides:

- An overview of the challenges that health and safety barriers create by impeding home weatherization
- Guidance on overcoming them
- A case study of a successful program in Connecticut
- Lessons learned to help others develop and implement weatherization barrier remediation programs
- Links to resources

We hope this Toolkit will help others tackle the weatherization barrier challenge and enable the weatherization of more homes.

Terminology

- *Health and Safety Conditions*: Issues such as asbestos, unsafe electrical wiring, mold, backdrafting appliances, etc. that are potential health hazards for occupants
- *Income-Eligible*: Customers that qualify for DOE's Weatherization Assistance Program (WAP) or utility income-restricted programs
- *Weatherization*: Improving the energy performance of buildings (for any income level)
- *Pre-weatherization Repairs*: Remediation that allows weatherization measures to be installed
- *Weatherization Barriers (or "Deferrals")*: Health and safety conditions that prevent participation in weatherization programs

This Toolkit Offers Guidance for:

- Federal or state agency staff (energy, housing, health)
- Utility program administrators
- Energy, environmental and equity advocates
- Funders or administrators of weatherization/energy efficiency programs
- Weatherization/energy efficiency program implementers

Toolkit Scope

- Barriers to weatherization exist in all markets (regardless of income) and impact all housing types
 - For example, in 2017-2019, 9% of homes were barred to participating in Connecticut’s “*market rate*” Home Energy Solutions program, due to health and safety barriers
- Barriers to weatherizing homes are a challenge in *all* markets, but the focus of this Toolkit is on finding solutions for income-eligible customers

Why Focus on Income-Eligible Customers?

- Energy burdens are higher for income-eligible households
- Providing weatherization services is a priority for this population
- Lower income households tend to have more health & safety barriers to weatherization
- Income-eligible residents have a harder time affording and accessing capital to remediate barrier issues
- This Toolkit focuses on solutions for income-eligible customers

THE WEATHERIZATION BARRIER PROBLEM

Too many income-eligible weatherization clients are deferred due to health & safety issues.

- Nationally, 10-30% of potential income-eligible weatherization clients are deferred due to health and safety issues
- More recent data shows client deferrals increasing

State	Weatherization Deferral Rate
Connecticut	21% - 23% (2019, 2014-2018)
Vermont	10% (2020)
Virginia	18% (2018-19)
Washington	30-40%, higher in rural areas (2018)

Barrier: Roof Repairs or Replacement



<https://www.becn.com/beaconbits/roof-repair-vs-replacement-factors-to-consider>



<https://www.spanglerroofing.net/services/repair-replacement>

Barrier: Asbestos, Knob and Tube Electrical Wiring



Boiler wrapped in asbestos insulation
Picture from *Expanded HEAT Loan Initiative Report*, December 2015, E4TheFuture.



Close-up of typical ceramic "knob" circa 1925.

Expanded HEAT Loan Initiative Report, December 2015, E4TheFuture.

Barrier: Vermiculite (Asbestos) Attic Insulation



<https://www.zonoliteatticinsulation.com/S/Photos>

Barrier: Mold or Moisture



<https://blackmoldcontrol.com/basement>



<https://moldmanusa.com/attic-mold-causes>

Barrier: Combustion Venting, Gas Leaks



<https://www.startribune.com/water-heater-backdrafting-how-to-test-for-proper-draft/571757672>



<https://diy.stackexchange.com>



<https://www.news-medical.net/health/Carbon-Monoxide-Poisoning.aspx>

Barrier: Structural Concerns



<http://ctcoastalconstruction.com/services/sillrepair>



http://www.affordablewaterproofingllc.com/wp-content/uploads/2014/08/img_4e99f30ac5297_Foundation_Crack.jpg

Connecticut Barriers in Home Energy Solutions Income-Eligible Program

- 21% of low-income utility funded projects were deferred in 2019
- 810 households deferred in 2019
 - (8,866 between 2014-19)

Income-Eligible Household Remediation Costs

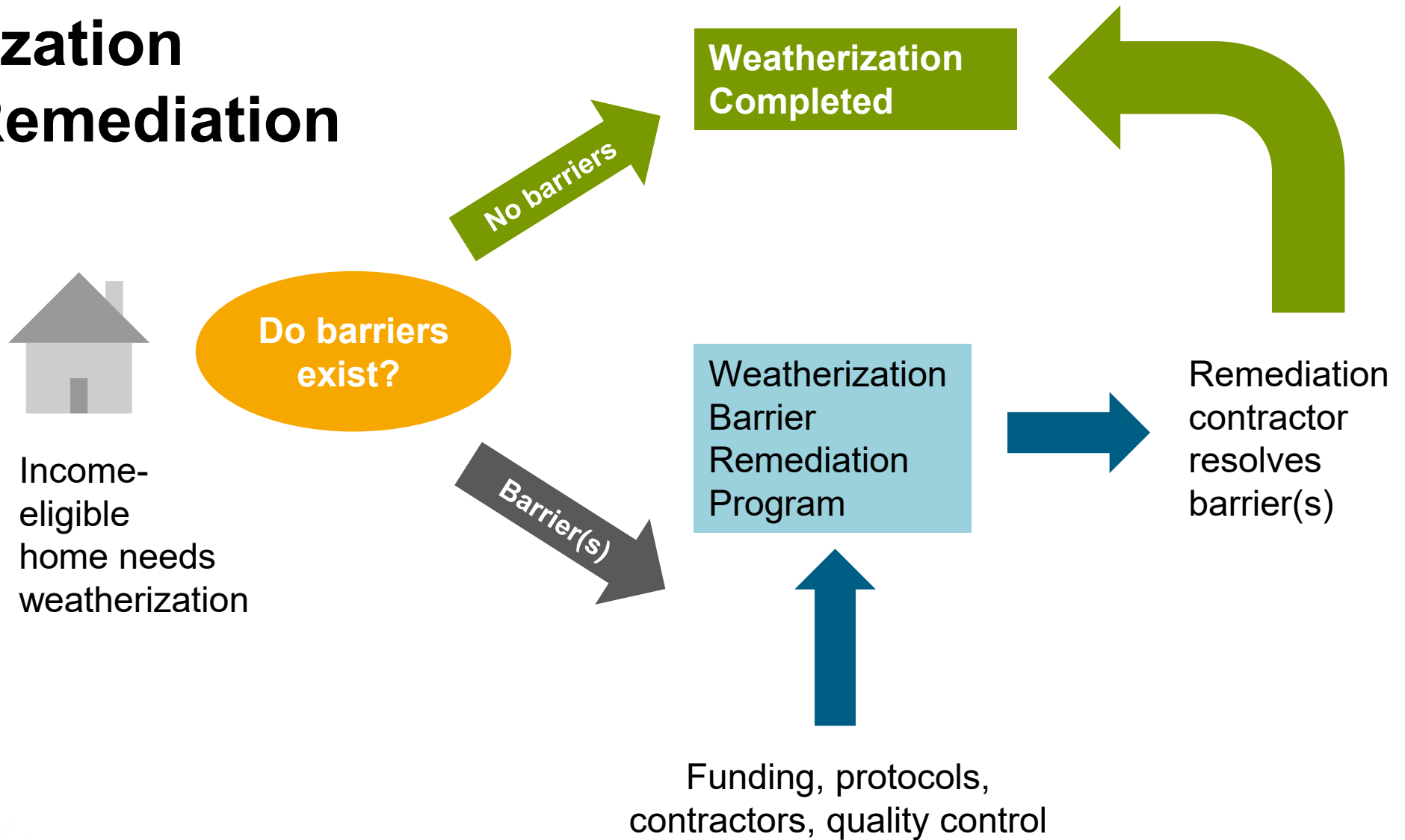
- Virginia estimates average weatherization barrier remediation costs at \$5,000-\$8,000
- Vermont barrier remediation costs:
 - Since 2020, addressed obstacles at 120 single family homes
 - Total of \$457,294 or \$3,810 average
 - Included Vermiculite, and any other obstacle

What's the problem we are trying to solve?

- Over 1 in 10 clients nationally are deferred from income-eligible weatherization programs due to health and safety concerns
- Often no funding or process exists to address barrier issues
- We need systems to quickly deliver health and safety repairs so these clients can access weatherization programs

HOW STATES, UTILITIES, AND OTHERS WORK TO SOLVE THE PROBLEM

An Effective Weatherization Barrier Remediation Program



Key Elements of an Effective Program

Coordinates with weatherization program & contractors

Funds repairs for common issues

Establishes average job costs, but offers some flexibility

Transparent process

Sustainable funding

Program Questions

- **Who does the work?** Skilled private sector contractors hired by program or customer, with QA process
- **How can it be funded?** LIHEAP (many states) or
 - ARPA, state, utility, other \$
 - potential new DOE rules
- **How can we ensure homes are weatherized?**
Provide a hand-off process, to ensure homes move on to the weatherization program

Potential Barrier Remediation Funding

Federal

- LIHEAP
- WAP – potential new funds
- ARPA
- Infrastructure (IIJA)?

State, Utility, Other

- State appropriation
- State fee on all fuels
- Philanthropic funds
- Regional energy funding (e.g., RGGI)
- Utility programs

MANY STATES ACCESS LOW-INCOME HOME ENERGY ASSISTANCE PROGRAM (LIHEAP) FOR DEFERRAL PROGRAMS

What is LIHEAP?

LIHEAP helps keep families safe and healthy through initiatives that assist families with energy costs. It provides federally funded assistance in managing costs associated with:

- Home energy bills
- Energy crises
- Weatherization and energy-related minor home repairs

LIHEAP Can Support Weatherization Work

- A LIHEAP grantee may allocate up to 15% of total LIHEAP funds to weatherization including addressing health and safety barriers
- Grantee may increase allocation **up to 25%** via waiver by US Health and Human Services (HHS) *if...*
 - grantee won't spend less than the previous year on “crisis benefits”
 - won't serve fewer households, and
 - all weatherization measures are demonstrated* to save energy

*If measures are on DOE's list of approved activities, they meet savings requirement

LIHEAP Can Fund Energy Related Home Repairs

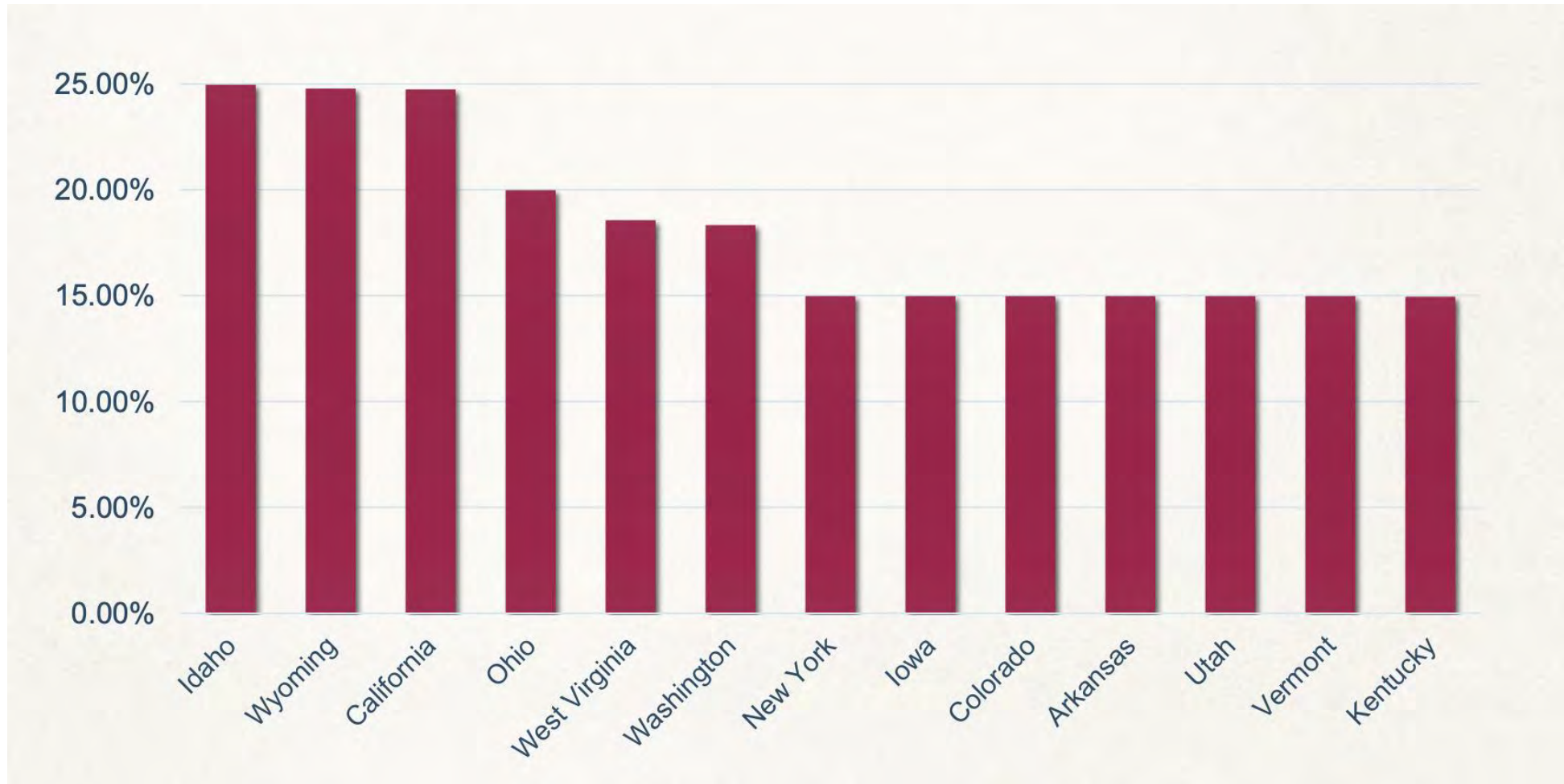
LIHEAP Grantees must submit annual LIHEAP Plan that:

... describe[s]...weatherization and other energy-related home repair the State will provide under subsection (k), **including any steps the State will take to address the weatherization and energy-related home repair needs of households that have high home energy burdens**, and describe any rules promulgated by the Department of Energy for administration of its Low Income Weatherization Assistance Program which the State...will follow...

42 USC § 8624(c)(1)(D)

Many States Used LIHEAP Funds for Weatherization in 2019

% of LIHEAP Funds Used for "Weatherization"



Many Northeastern States Use LIHEAP for Deferral Repairs*

State	Eligible Repairs	Funding Total and Source
Connecticut	Asbestos, vermiculite, moisture & mold, knob/tube, pests, others	\$6.650 MM ARPA, \$5.550 MM ARPA LIHEAP, \$150K State SEP
Massachusetts	Asbestos abatement and other measures	LIHEAP/FCM/RGGI/Utility
New Hampshire	Roof repairs, require waiver	LIHEAP
New Jersey	Structural repairs, roofs, mold, etc.	LIHEAP
New York	Roof repair	LIHEAP
Rhode Island	Knob and Tube Oil tank replacement	\$2MM – ARPA LIHEAP \$1M
Pennsylvania	Deferral issues Clean & tune, preventative maintenance	\$2MM – ARPA LIHEAP & past LIHEAP \$21MM – ARPA LIHEAP
Vermont	Roof repairs, Vermiculite, knob and tube and other obstacles	LIHEAP, ARPA, state, transmission utility dividend funds, private foundation funds



* Examples, not based on comprehensive survey

OTHER FUNDING SOURCES

Federal Funding

- DOE Weatherization Assistance Program (WAP)
 - Some deferral issues can be covered
 - Many are not allowable health and safety repairs
- USDA
 - Housing Rehab Funds (504 program)
 - Grants and loans
- American Rescue Plan Act (ARPA)
- Infrastructure Investment and Jobs Act (IIJA)
 - Under consideration by Congress

State and Regional Funding Sources

- State
 - Appropriations
 - Fuel fee or system-benefit charge
- Regional
 - States have discretion to use proceeds from energy funds they choose, without specific restrictions
 - Many use for delivered fuels customers or low-income efficiency programs, but could easily be allocated to barriers
 - Examples:
 - Forward Capacity Market (FCM)
 - Regional Greenhouse Gas Initiative (RGGI)

State & Philanthropic Funds – OR & VT

- Oregon Legislative Appropriation
 - Healthy Homes repair fund, via Healthy Homes Act, HB 2842
 - \$10MM to support home repair & safety issues not typically addressed by efficiency programs (administered by Oregon Health Authority)
- Vermont State Energy Fee & Philanthropic Funding
 - Funds portion of WAP w/ statewide charge on all fuels sold; flexibility to spend funds on health & safety issues without DOE rule mandates
 - Grants from electric transmission system (VLITE), Vermont Community Foundation

State & Philanthropic Funds - MA

- Massachusetts Regional Energy Funds & Ratepayer Funds
 - Use of Forward Capacity Market (FCM) and Regional Greenhouse Gas Initiative (RGGI) revenues
 - Mass Save Energy Efficiency Program funds
 - Starting in 2022, moderate-income barrier mitigation incentive up to \$7,000
 - Funding to Low-Income Energy Affordability Network (LEAN) for low-income barriers

Utility Programs

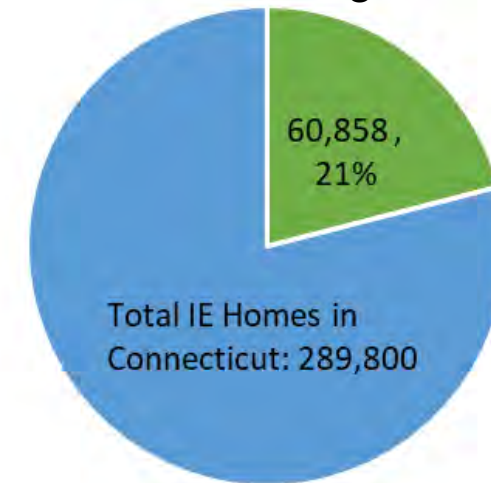
- Ratepayer funds can be used for energy efficiency programs
- Cost-effectiveness requirements may prevent fully funding barrier work that adds job costs without direct energy savings
- Some programs roll barrier costs into project costs for jobs with significant energy savings (e.g., PA Columbia Gas)
- May categorize deferral costs as overall program cost outside their cost-effectiveness test (in some instances)
 - <https://www.nationalenergyscreeningproject.org/national-standard-practice-manual>

**CASE STUDY:
CONNECTICUT WEATHERIZATION BARRIERS
REMEDIATION PROGRAM**

CT Program Sought to Address High Deferral Rates

- 289,800 homes income-eligible throughout CT
 - 21% of income eligible were deferred in 2019
 - 60,000+ IE- barriered homes statewide likely need remediation
 - CT utilities have a list of 20,000 IE deferred customers

Barriered Income-Eligible Homes in CT

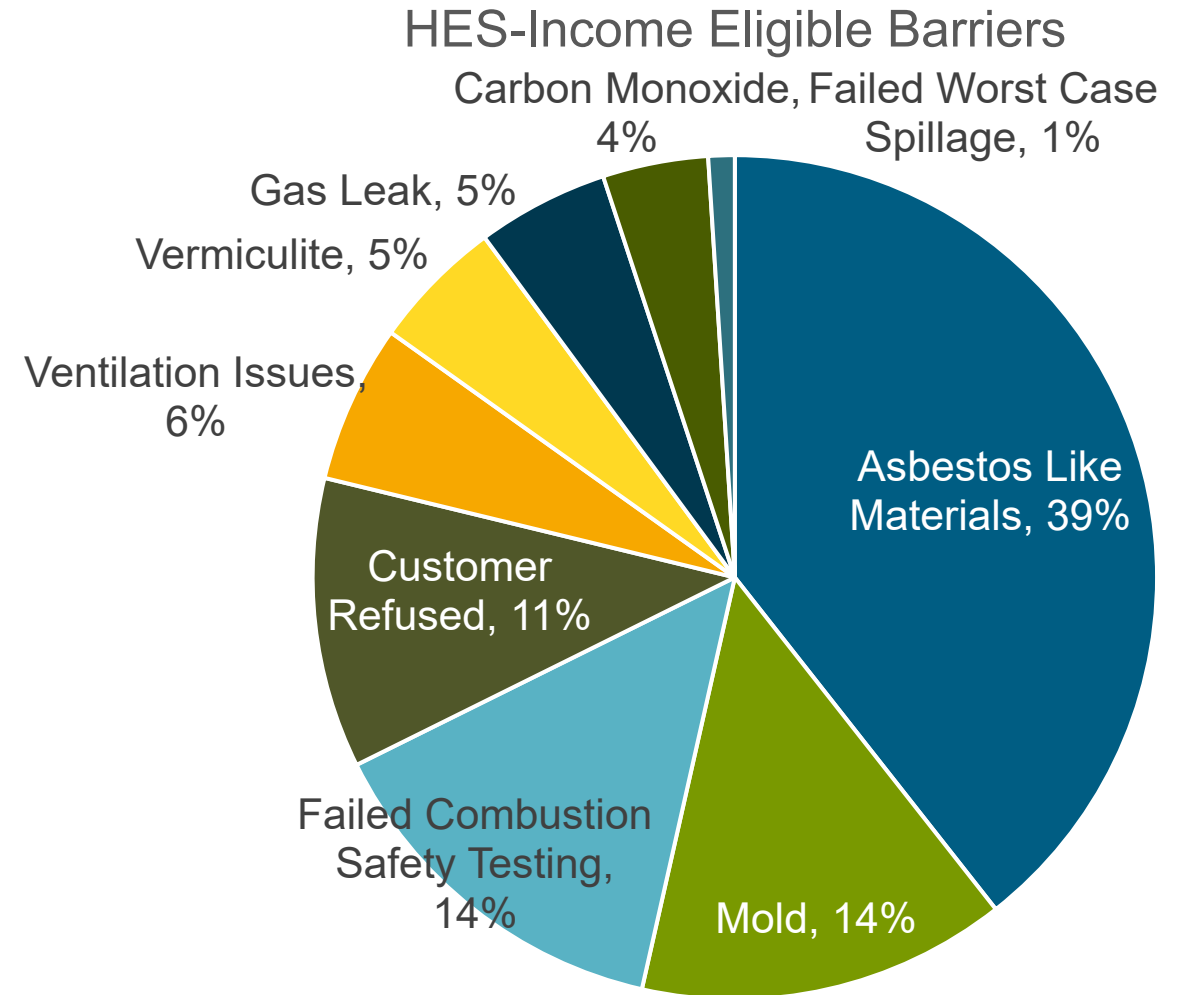


■ Barriered IE homes

What Triggered CT Low-Income Deferrals

Deferrals between 2014-2019

- 39% asbestos like materials
- 14% mold
- 14% failed combustion safety testing
- 11% customer refused (not a health & safety barrier)
- 6% ventilation issues
- 5% vermiculite
- 5% gas leak
- 4% carbon monoxide
- 1% failed worst case spillage



Key CT Stakeholders

Governor
Lamont
Administration

CT
Legislators

Connecticut Energy
Efficiency Board (EEB):
oversees utility-
administered programs

CT Department of Energy
and Environmental
Protection (DEEP):
Regulator, policy
development

Low-Income Energy
Advisory Board (LIEAB)
advises DSS on LIHEAP
annual plan

CT Dept. of Social
Services (DSS)
administers LIHEAP
funds

Advocates: Acadia
Center, Operation Fuel,
Efficiency for All,
Program contractors,
others

Utilities:
Eversource and
Avangrid/United
Illuminating

Home Energy
Solutions –
Income Eligible
(HES-IE)
vendors

Key Stakeholders Drove Process

- DEEP, Bureau of Energy and Technology Policy
 - Recognized need for \$ to address deferrals, allocated staff resources
 - Energy Efficiency Board (EEB)
 - Elevated issue, kept conversation going
- Utilities
 - Gathered and shared data, supported new program design
- Advocates
 - Environmental, energy, and social justice stakeholders stayed involved
- Important Allies
 - Governor, program contractors supported solutions

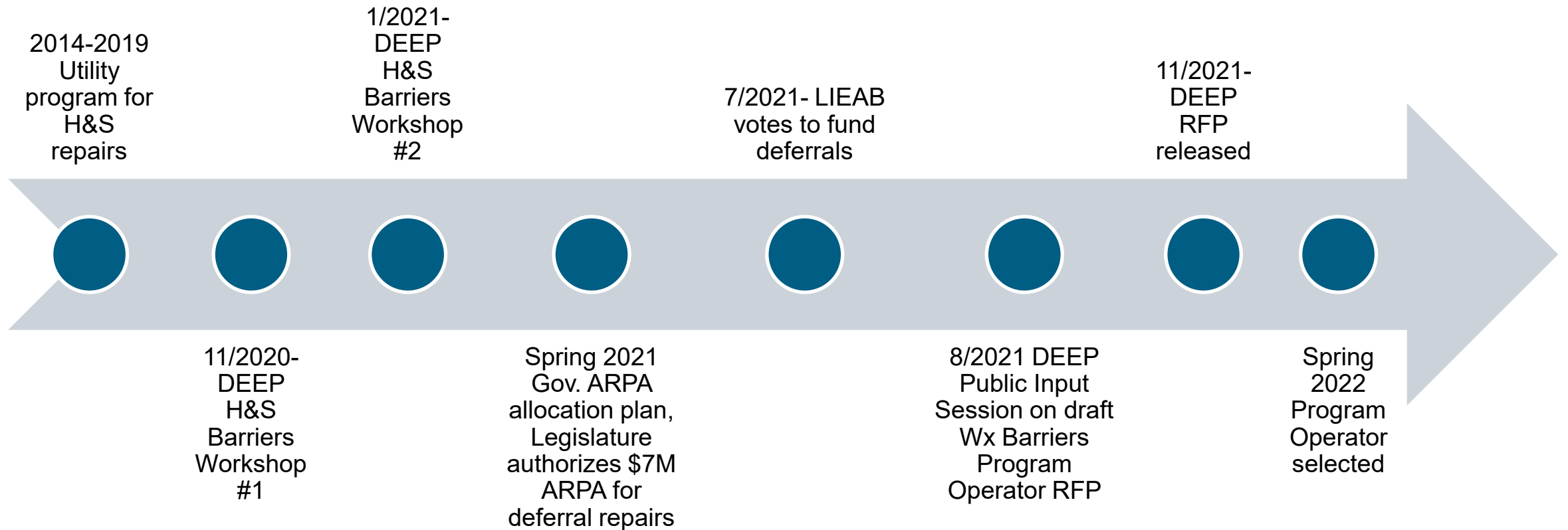
CT Process Detail (1)

- Utility program administrators gathered data on deferral rates, shared with regulators and EEB
- Advocates identified barriers and equity issues related to weatherization deferrals; elevated and promoted at state level by EEB members, other advocates
- DEEP sponsored two stakeholder meetings
 - Examined program models in other states, program needs

CT Process Detail (2)

- DEEP identified eligible funding source through LIHEAP
- Advocates and DEEP engaged with LIHEAP Board (LIEAB)
- Gov. and legislature aligned to allocate ARPA funds for health and safety barriers
- DEEP issued Program Operator RFP (draft for comments, then final)

Timeline: Developing Connecticut's Program



Summary of Connecticut Program

- January 1, 2022 – December 31, 2024
- Program will be funded by LIHEAP and ARPA funds w/supplemental US DOE State Energy Program (SEP)
 - **Up to \$5,500,000** over FY22-24 (Oct. 1, 2022 – Sept. 30, 2024) from LIHEAP
 - **Up to \$6,650,000** in supplemental funding from 2021 American Rescue Plan Act (ARPA) to support Health and Safety Barriers to Housing Remediation over 2022-2024 (Jan. 1, 2022 – Dec. 31, 2024)
 - **Up to \$150,000** supplemental from U.S. Department of Energy's SEP through FY22 (January 2021 - June 30, 2022)
- See Resources for detail

Key Lessons Learned from CT (1)

- **Collect and organize data**

- Data from weatherization barriers program is necessary to make case
- Track deferral types to structure the response; identify types of remediation contractors needed

- **Make the case**

- Use data to show key decision makers, funders, utilities, program managers *who is missing out* on program participation
- Emphasize the equity implications; those who most need the program are likely denied weatherization services

Key Lessons Learned from CT (2)

- **Engage stakeholders**
 - Provide forums to share data, solicit information from contractors and programs, hear from advocates and build argument for funding
 - A large coalition of interested players helps build momentum
- **Enlist the support of key decisionmakers**
 - Educate and support people in power (state agencies overseeing energy efficiency, housing, social services – including fuel assistance)
 - Engage those in high places (e.g., Gov. Lamont)
 - Support allies on state legislative committees
 - Ensure utilities are supportive, see as a way to meet their goals

Key Lessons Learned from CT (3)

- **Find support and allies within state government and utilities**
 - Federal funds flow most easily through existing government channels
 - Utilize existing funding streams, not create new ones
 - Engage with LIHEAP decision-making board and agency overseeing LIHEAP
- **Understand and support the interests of key agencies, utilities and their staff**
 - Provide information and tools that create solutions to address deferrals and advance their goals and interests (e.g., equity)
 - Be upfront and clear that deferral solutions advance equity within energy programs and services; equity an important driver for state agencies
- **Coordinate closely with the program administrators**
 - Aim for seamless customer experience to address barrier(s), transfer homes from remediation contractor back to weatherization program
 - Link utility and WAP funding

Key Lessons Learned from CT (4)

- **It takes time**
 - Funding/establishing a barrier remediation program may take years from concept to implementation; moves “at the pace of government”
 - Anticipate a protracted planning process
- **Reframe what is possible, even if a new approach**
 - LIHEAP advocates, agencies may perceive less access to funds for needy constituents
 - But: Addressing deferrals will reduce demand for LIHEAP over time as households lower their energy usage, freeing up funds for more clients
- **Persevere**

RESOURCES

Connecticut Program Development Resources

- Slides from CT DEEP workshops:
 - [Workshop 1 on 11/18/20](#)
 - [Workshop 2 on 1/20/21](#)
- [Slides from LIHEAP Board presentation from DEEP](#)
- [RFP for Statewide Weatherization Barrier Remediation Program Operator](#)
- [Eversource “Home Energy Solutions Market Rate/Income Eligible presentation” November 2020](#)

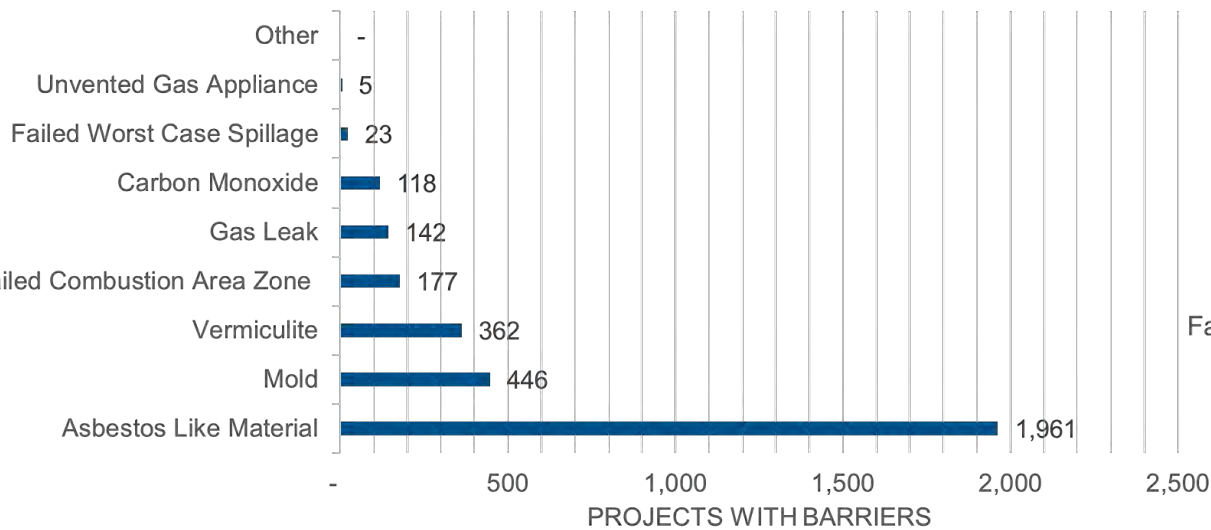
CT Program Implementer Qualifications

- 1. Program management and implementation experience working at a statewide or large scale**
- 2. Experience working with utility energy efficiency programs (Ideally CT) and Weatherization Assistance Program**
- 3. Experience overseeing contractors and providing quality control of home health and safety repairs or remediation**
- 4. Demonstrate knowledge of relevant contractor or quality control inspector certifications and/or training (e.g., CT licensing, asbestos, BPI Healthy Homes Evaluator, etc.)**
- 5. Experience recruiting and managing contractors**, including minority and women owned businesses. Expertise ensuring quality control of health and safety barrier issues
- 6. Expertise developing and supporting data systems** that align with energy programs.
- 7. Demonstrated experience managing workflow in low-income housing programs**, preference for those with energy and healthy homes expertise
- 8. Experience creating and implementing an accessible data portal to track key metrics**
- 9. Experience generating reports with key progress indicators, results, and implementation challenges**

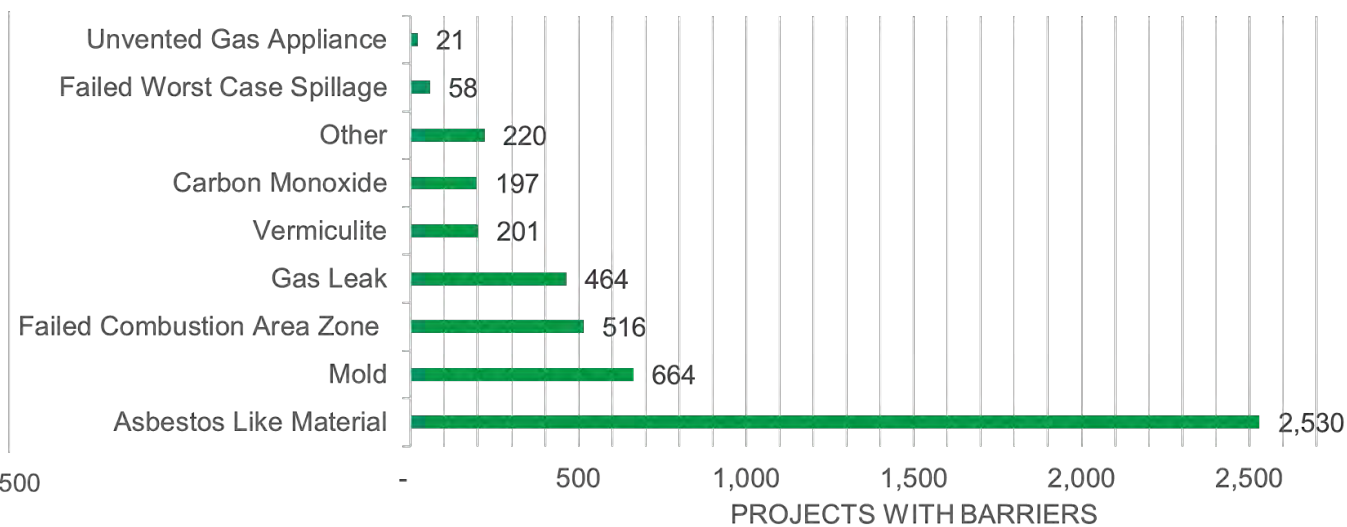
Barriered Homes in CT (2017-2019)

- 9% of Home Energy Solutions (HES) Homes (market rate customers)
- 23% of HES-Income Eligible (IE) Homes

HES: Eversource + UI Total

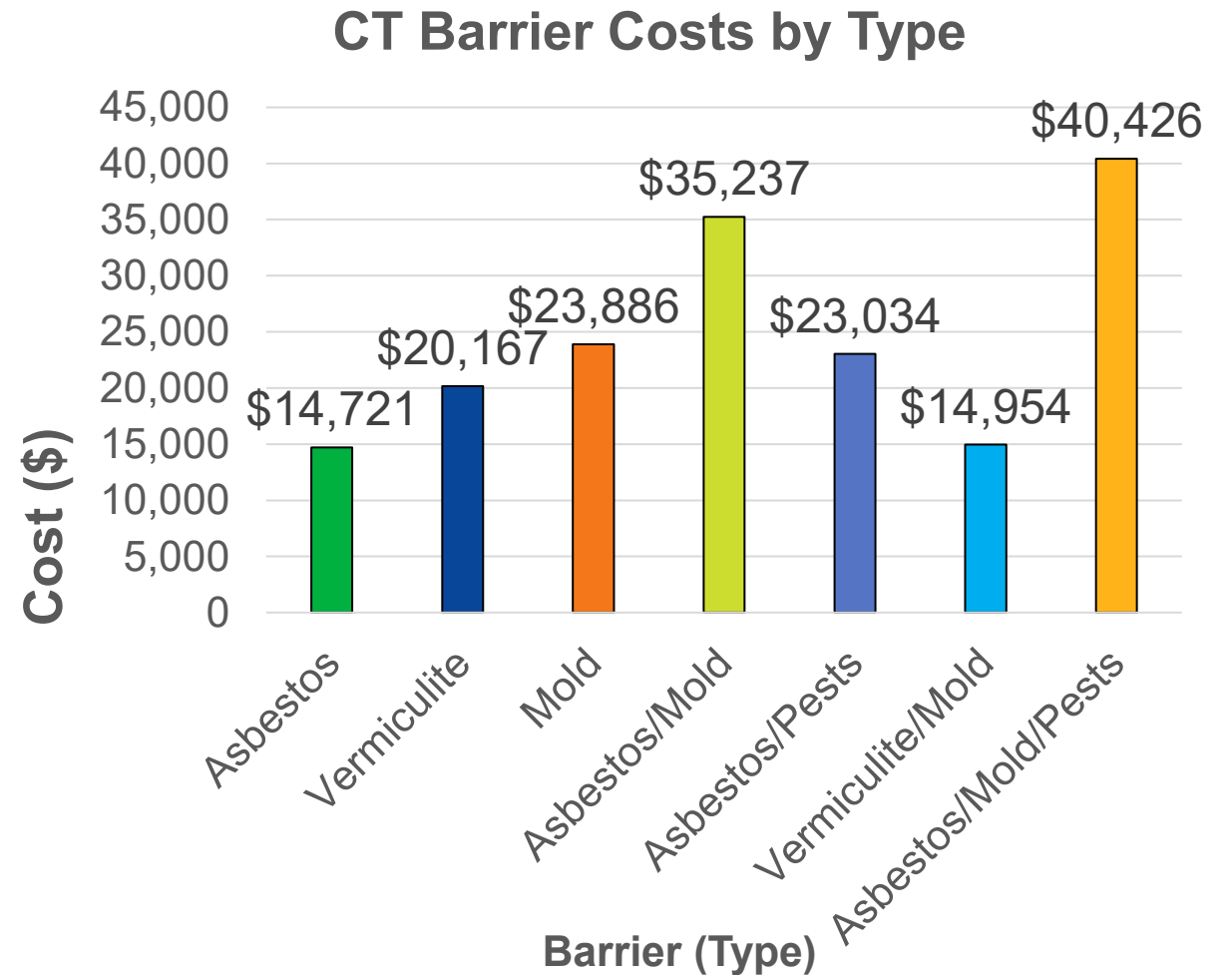


HES-IE: Eversource + UI Total



Income Eligible Household Deferral Costs

- VA estimates average deferral costs at \$5,000-\$8,000
- CT remediated 50 homes in 2014-18, at ~\$20,000 per completed job
 - 20% of jobs = more than one barrier



Timeline: Developing Connecticut Program

2015-17 CT Energy & Healthy Homes Initiative Program

CT Children's Medical Center managed, with utilities

Nov. 2020 DEEP Weatherization Barriers Workshop #1

Jan. 2021 DEEP Weatherization Barriers Workshop #2

March 2021 State allocated of \$7MM ARPA for deferral repairs

April 2021 LIEAB meeting(s)

Aug. 2021 DEEP Public Input Session on potential deferral program

Sept. 2021 Submit comments to DEEP Program Operator RFP

Nov. 2021 Final Program Operator RFP released, DEEP RFP Conference

Spring 2022 Program Operator selected

Key CT Program Design Elements in RFP

1. **Data system to track activities and outcomes, which aligns and integrates with existing utility and WAP data systems**
2. **Eligibility and prioritization criteria for jobs needing repairs**, define eligible repairs, funding ceilings, prioritization into account equity
3. **Contractor recruitment process to provide priority services across the state** (e.g., asbestos; knob and tube; moisture/mold, etc.) **and advance equity** by prioritizing minority- and women-owned businesses
4. **Process to negotiate remediation prices** to ensure value and align with program priorities
5. **Quality control of contractor work**, including training or certifications, developing scopes of work, final independent quality control inspection, and feedback loops to contractors
6. **Process and staff to manage workflows including accessible data portal**, including sending deferrals to the program and back to energy contractor once homes are repaired
7. **Report results, progress, and implementation challenges**

Credits

- E4TheFuture funded research and development of the toolkit
- Content developed by:
 - Ellen Tohn, Tohn Environmental Strategies
 - Elizabeth Bourguet, Energy Futures Group
 - Richard Faesy, Energy Futures Group
- Review and guidance provided by:
 - Steve Cowell E4TheFuture
 - Carol Harley, E4TheFuture
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