February 25, 2025

DEEP Technical Meeting

HES/HES-IE Program Redesign

EEB Technical Consultants

PROUD SPONSORS OF

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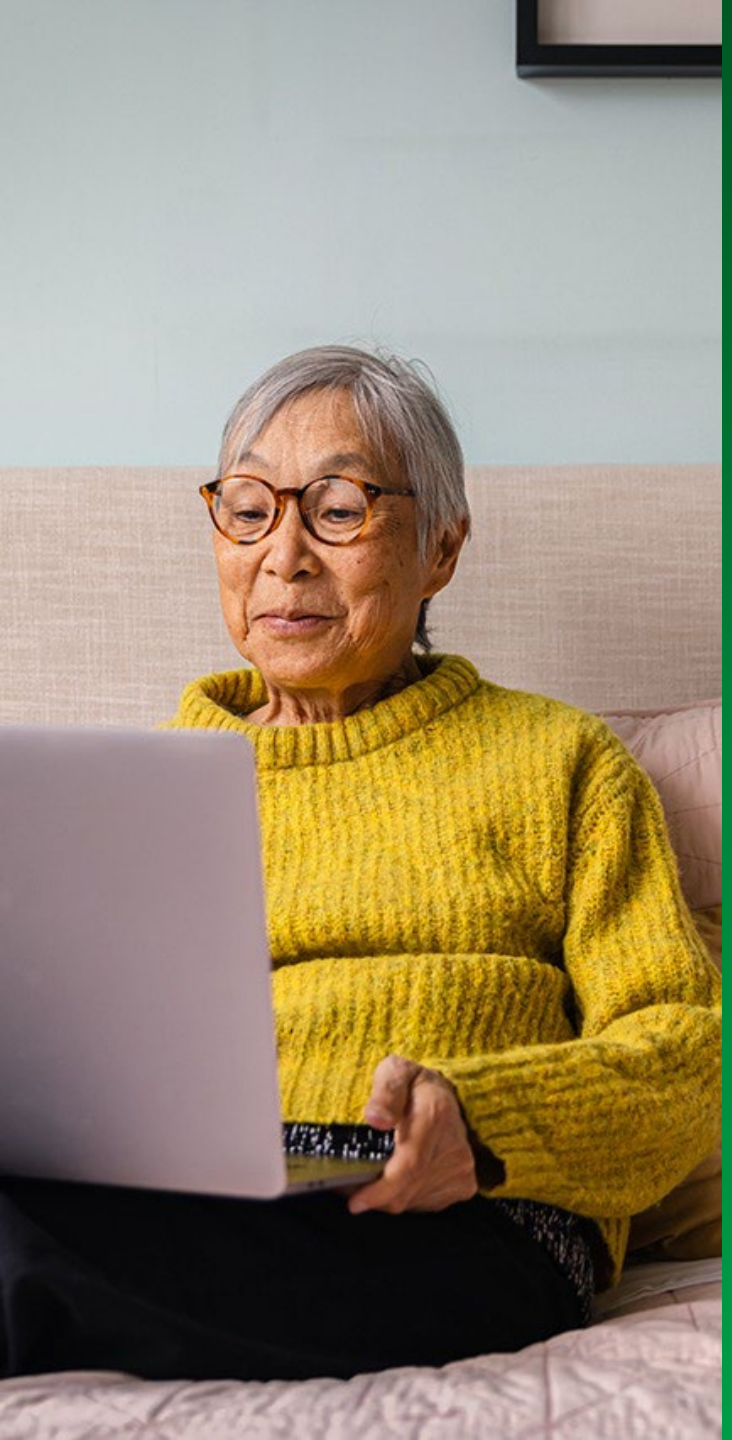
Agenda

I. Review Program Impact Studies and other issues which triggered this proposed redesign

II. Overview of working group process.

III. Review proposed program design and recommendations



I. Review Program Impact Studies and other issues which triggered this proposed redesign.

Evaluation Studies with HES/HES-IE Recommendations

R1983

HES/HES-IE Single Family Impact & Process Evaluation

- 12 Key Findings
- 23 Recommendations
- 2024 Plan Update Companies responded to each
- Suggest review of action items and commitments

R2222b

Assessing Optimal Levels of Residential Envelope and Duct Sealing

- Redefining basements for proper savings accounting
- Identified air leakage missed opportunities

R2218+

HES/HES-IE Continuous Improvement Package

- Field study of HES and HES-IE
- Real-time feedback
- Interim results

Connecticut HES / HES-IE Single Family Impact and Process Evaluation (R1983)

Final Presentation

Presenters:
Doug Bruchs, Cadeo
Melissa Meek, NMR

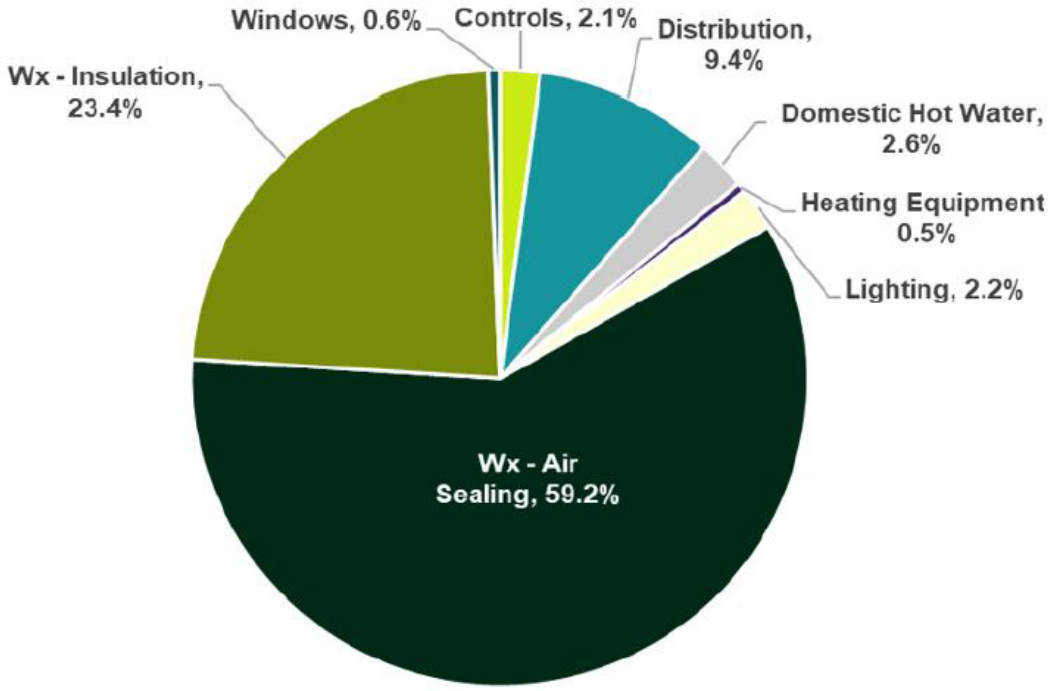
July 13, 2023

Key Finding #1

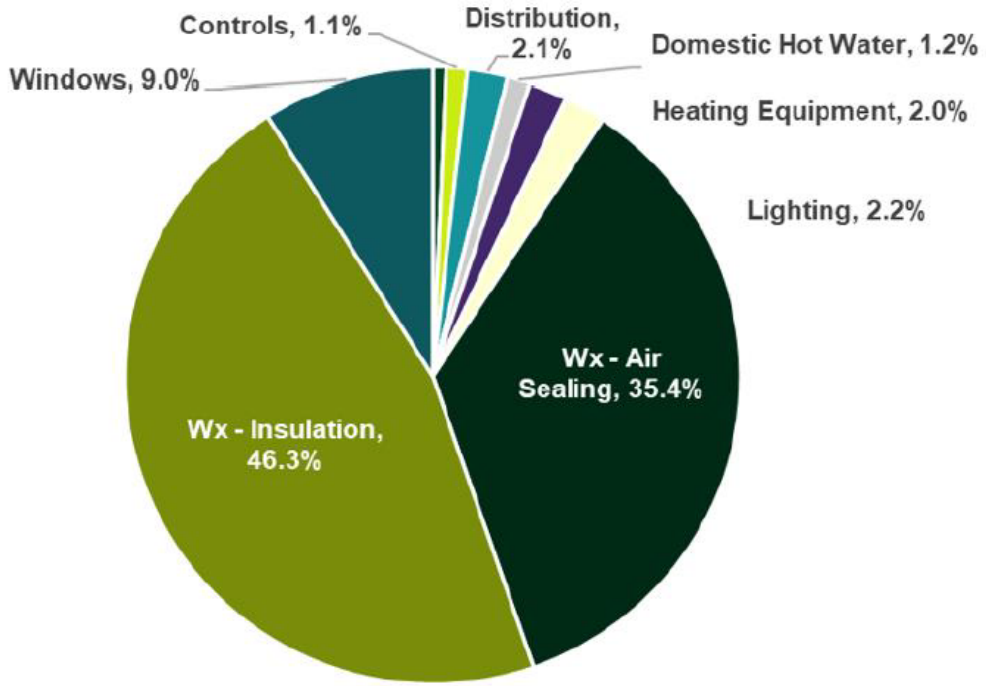
AIR SEALING AND INSULATION SAVINGS IN NATURAL GAS-HEATED HOMES ARE MUCH LOWER THAN THE PREVIOUS EVALUATION AND EX ANTE VALUES, BUT GENERALLY IN LINE WITH REGIONAL BENCHMARKS.

Key Finding #1: Why start with air sealing and insulation?

In 2019, these two measures represented more than 80% of both programs' expected lifetime savings across all fuel types.



HES



HES-IE

Figure 2

Key Finding #1: Drivers: Lower Air Sealing Savings

It's a lot to air seal while performing other assessment functions.

- According to vendors, most spend between 2-4 hours at each home and typically do two homes per day.
- That includes surveying, direct install measures, air sealing, the "kitchen table" wrap-up and, for some customers, the DOE Energy Score. That's a lot – even for two person teams.
- It's less than MA RCD average (6 hours of air sealing), which occurs during separate visit.
- Difficult to directly compare across programs, but results suggest the CT air sealing delivery model is less comprehensive.

Key Finding #1: Results

NMR Group, Inc.

Based on billing analysis of 2019 natural gas-heated participants; savings are average CCF/year reduction per participant

Program	Air Sealing				Insulation			
	Previous Eval	Ex Ante*	Ex Post	Realization Rate	Previous Eval	Ex Ante*	Ex Post	Realization Rate
HES	64	102	**17**	17%	154	119	**60**	51%
HES-IE	59	106	**11**	10%	158	211	**97**	46%

**Reported in program tracking data*

Recommendations for Key Finding #1

1A. Refine the HES incentive structure to encourage more comprehensive weatherization.

1B. Increase targeting of homes with greater savings potential (i.e., energy intensity).

1C. Consider an air sealing field assessment to assess work quality and missed opportunities

NMR Group, Inc.

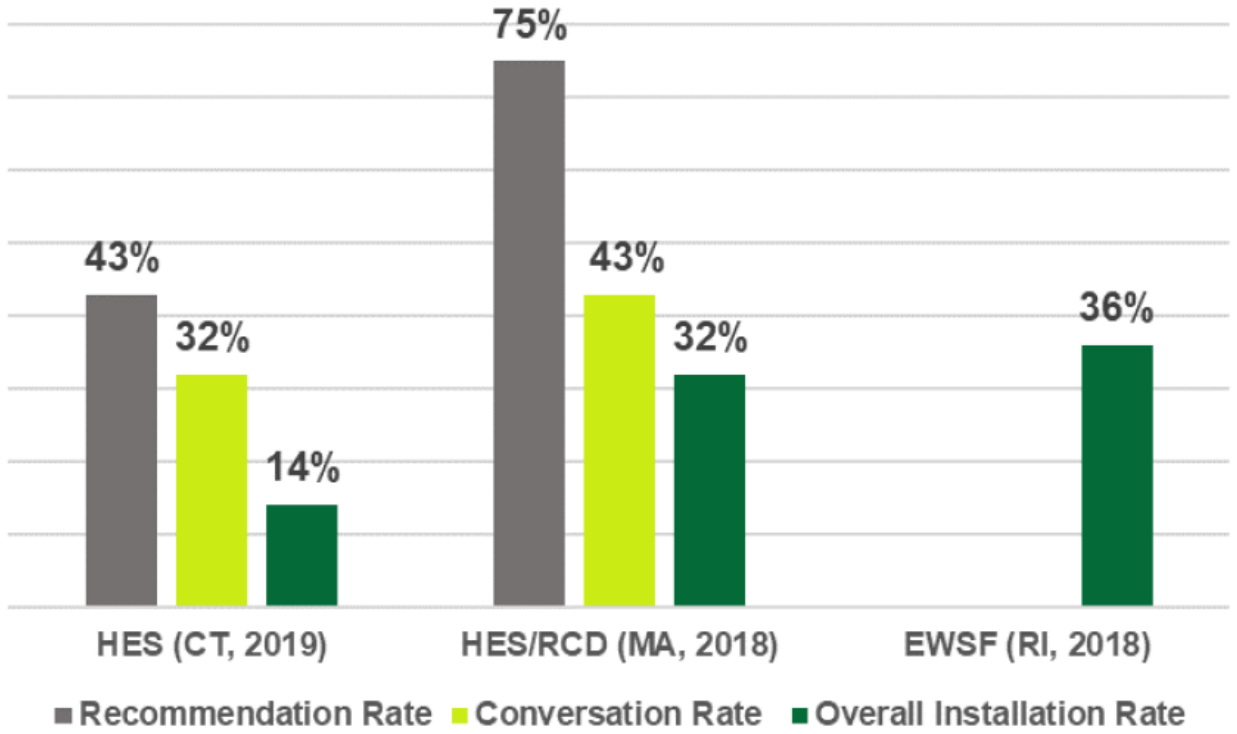
Key Finding #2

HES PARTICIPANTS INSTALL INSULATION LESS OFTEN THAN PARTICIPANTS IN SIMILAR REGIONAL PROGRAMS

Key Finding #2: HES Installation Metrics

HES trails well behind neighboring states in insulation installation

The percentage of 2019 HES participants that install insulation following their assessment is **less than half** that of programs in MA and RI.



Key Finding #2: Drivers - Low Installation Rates

Design Differences

Lower Incentives. CT has historically aimed to cover ~50% of upfront cost, which is less than MA's historical target (75%)

Stricter Eligibility Requirements. HES requires an existing R-value in attics of R-19 or less, while MA and RI will insulate any attic under R-49

Air Sealing During the Assessment Approach. It's possible HES participants think they're "done" after receiving air sealing during their assessment. Also, vendors fuller plate during assessment limits time to engage with customer

"Kitchen Table" Wrap-Ups

The survey found modest recall of "kitchen table" wrap-up discussion. ~1/3 of HES participants did not recall their vendor discussing recommendations with them at the end of their assessment, which is an influential moment in decision-making process.

Recommendations for Key Finding #2

2A. Revisit HES' current existing conditions requirements to quality for insulation.

2B. Directly incentivize HES vendors based on their insulation conversion rate, not just air sealing completions.

2C. Provide dedicated sales training

NMR Group, Inc.

Recommendations for Key Finding #2

75% off insulation incentive example

Project cost: $3,500

Incentive: $2,625

Customer payment: $875

MassSave.com

Average Initial Cost

-The average initial cost varies from home to home. This is based on the square footage and insulation needs.

EnergizeCT.com

2D. Simplify & sharpen customer-facing incentive messaging

2E. Develop a program or offer elevated incentives targeting moderate-income households and/or rental properties

NMR Group, Inc.

R2222B Assessing Optimal Levels of Residential Envelope and Duct Sealing

Interim Update: Peer Program Outcomes

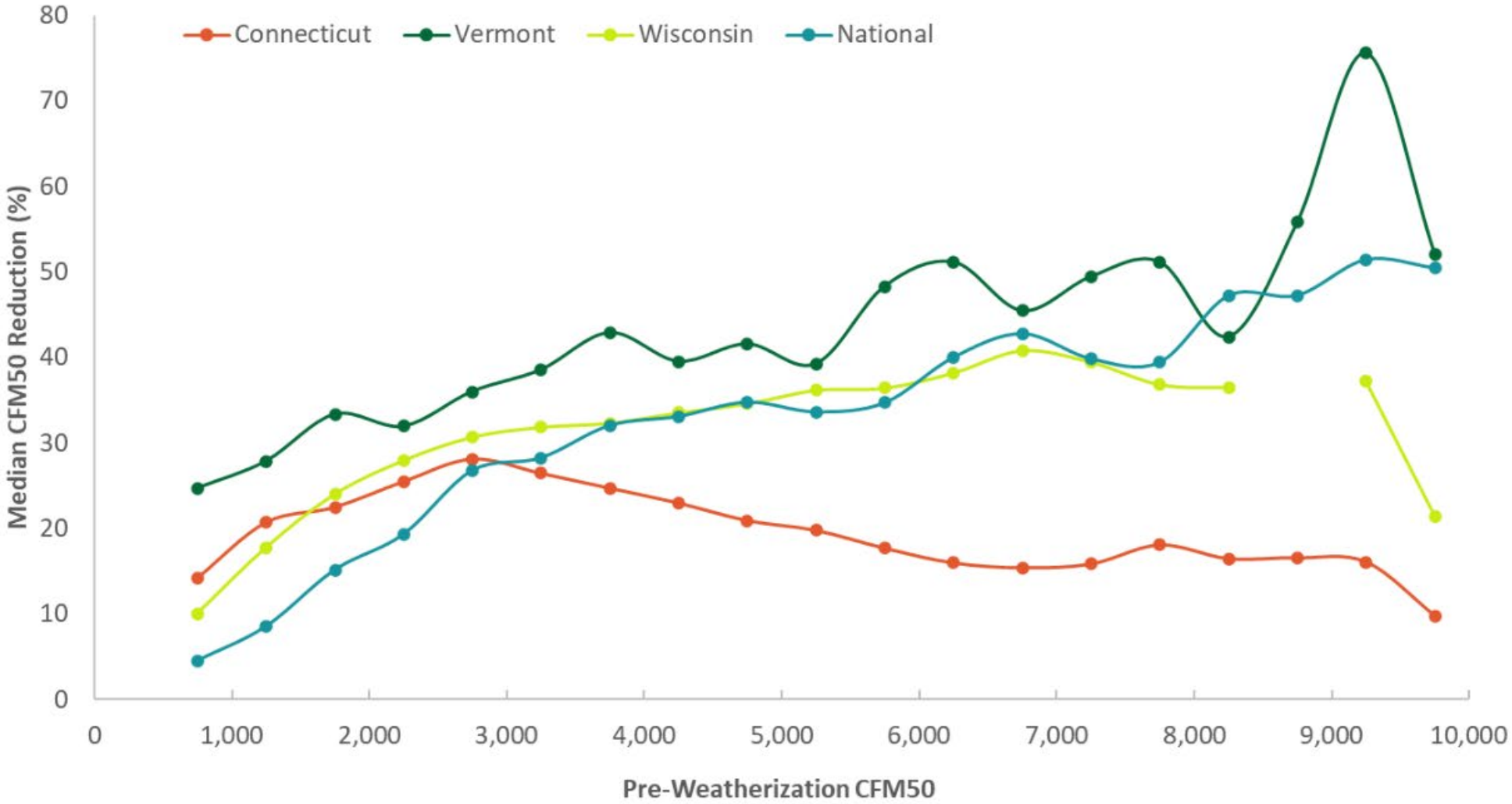
EEB Evaluation Committee Meeting

Matt Woundy, NMR

April 8, 2024

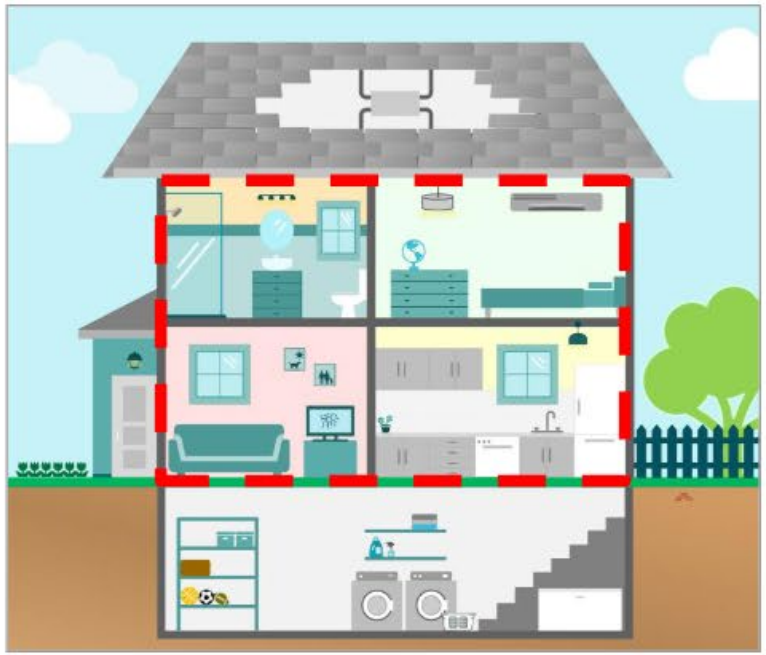
NMR Group, Inc.

Program Opportunity: CFM Reductions based on Pre-Wx Leakage



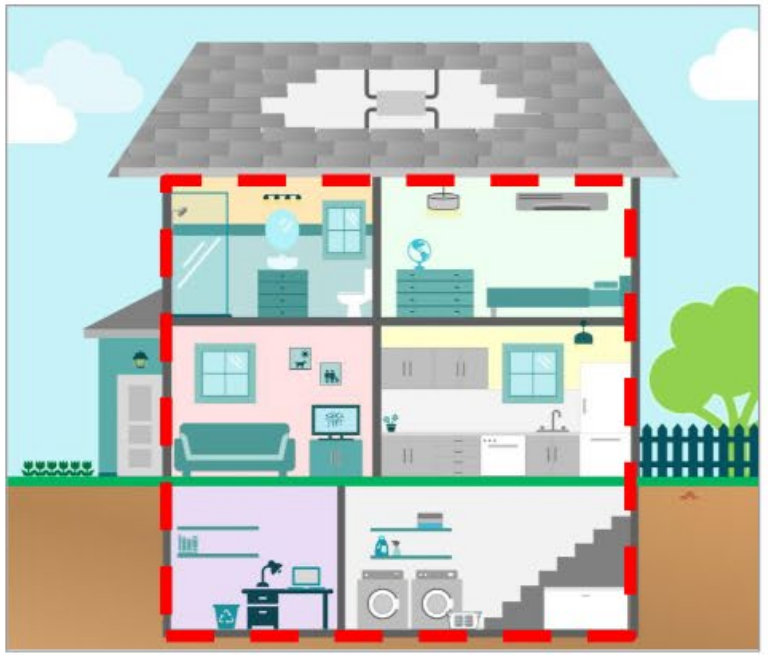
Industry Guidance and Peer Programs:

Semi-conditioned basements should be treated as INSIDE



Unconditioned

Semi-Conditioned



Conditioned

Thermal Envelope

Interim Takeaways

There is remaining potential for CFM reductions, especially in leaky homes

Prioritize high-value air sealing targets

Identify opportunities to better match work scopes with project opportunities, regardless of visit structure

HES/HES-IE Continuous Improvement Package *R2218+*

R2218A HES/HES-IE Process Evaluation

Results From the Field

Kailey Pratt, Melissa Meek, Kiersten von Trapp

February 10, 2025

NMR Group, Inc.

R2218A Fieldwork – Key Findings

Health & Safety (H&S) showstoppers are extremely common

Onsite visits identified shortfalls and opportunities, including in:

- Attics and Attic Hatches
- Basements

Duct testing can be difficult and time consuming;

- Vendors often skip duct sealing

R2218A Fieldwork – Health & Safety (H&S) Showstoppers

Health and safety issues: **extremely common**

H&S issues limit/prevent improvements *and* the ability to quantify savings

5 out of 8 (63%) QA/QC inspectors encountered H&S showstoppers **"very often."**

- *"[We see these issues] a lot, particularly mold recently.*
  We still do inspections if it is vermiculite or mold and they are still able to install some measures, but with mold you can't really do anything."

Most vendors **(89% or 16 out of 18*)** encountered H&S issues **"often"** or **"very often."**

- *"We're finding H&S issues at so many of our jobs now and are prevented from doing anything but door kits and pipe wrap, maybe some water fixtures. We don't really make any money on those, so it's been really tough."*
- *"This year I've seen more showstoppers than ever before."*

**18 of 29 vendors estimated how often they encountered H&S issues; one said it varied week to week, and ten did not respond to this question.*

R2218A Fieldwork – Post-Weatherization Attic Sealing

Attics are high priority, but access is often challenging

Most vendors do not miss the easiest sealing opportunities, but onsites demonstrate significant opportunities often remain

- Of the 28 attics NMR observed, 39% were adequately sealed
- More than one-half (54%) of the attics were very difficult to seal (floored over, had R30+ insulation, or limited access)
  - NMR only found 2 of these difficult attics to be adequately sealed

R2218A Fieldwork – Post-Wx Attic Hatches

38% (3 of 8) attic hatches observed in post-Wx visits were **NOT adequately sealed**

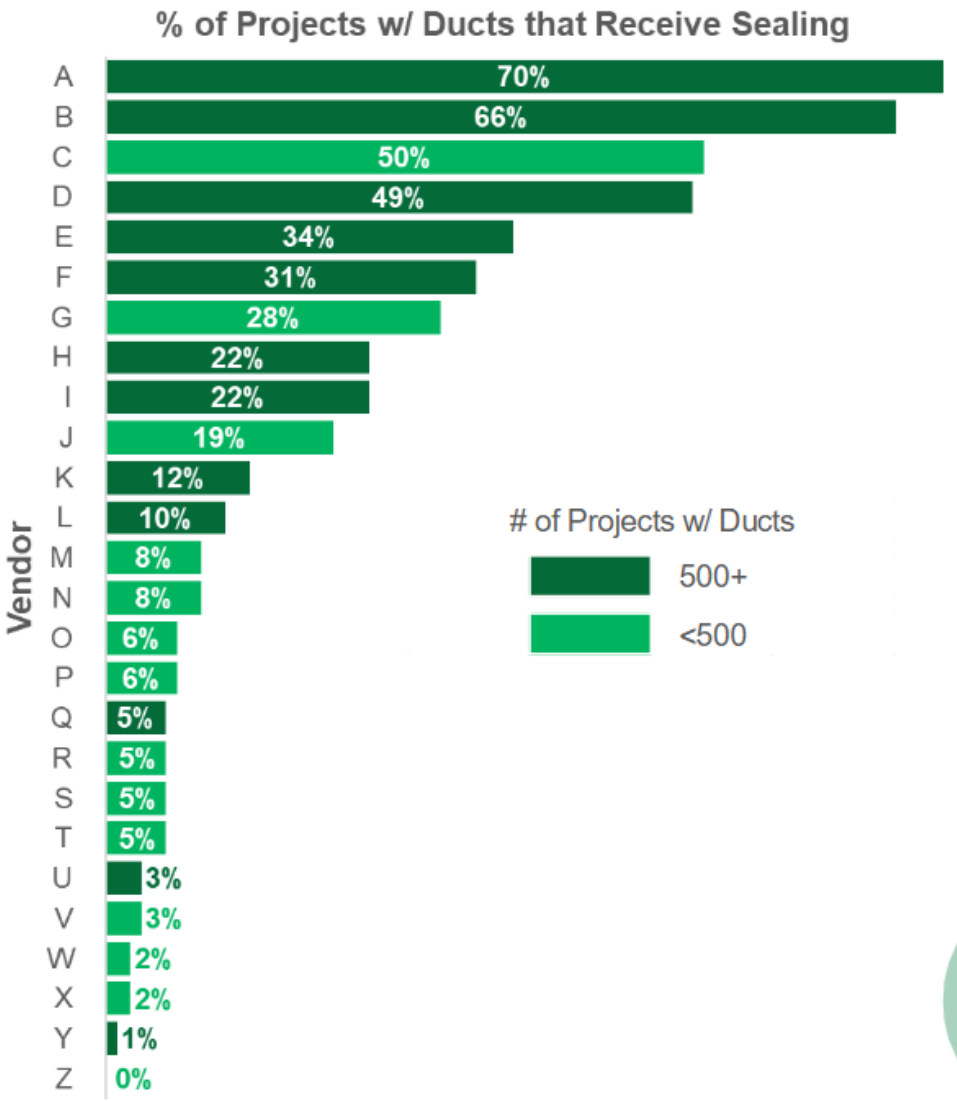
Gaps

Sloppy Existing Insulation

Some sealing

Sealed, insulated box

R2218+ / R2251 Audit Data Analysis – Duct Sealing (cont.)



Duct sealing rates **vary greatly** across vendors: **0% to 70%** of projects with ducts are sealed

Duct sealing accounts for **32%** of the average vendor payment for homes with duct sealing, or up to an **additional $800 per project** compared to homes with ducts that are not sealed:

	# of Homes	Avg (*median*) Payment to Vendor
Homes w/ duct sealing & blower door	2,954	$1,876 *($1,655)*
Homes w/ ducts (no sealing) & blower door	6,359	$1,037 *($1,020)*

Vendor: *"There is HUGE savings in duct sealing. We never call it quits because that's a lot of savings gone. I think every vendor should be pushing for more duct sealing. I wish the program paid us for fixing disconnected ducts. Before we would fix the disconnected ducts and be able to claim CFMs for that, but now we can't claim it."*

II. Overview of working group process

Working Group Timeline

December 13, 2024

- EEB TCs, Companies and Contractors Meeting #1
- Summary notes provided to DEEP

January 31, 2025

- EEB TCs, Companies and Contractor Meeting #2

February 11, 2025

- TCs provided 12/13/24 meeting #1 report to DEEP

February 24, 2025

- TCs provided 1/31/25 meeting #2 report to DEEP

Meeting #1 Participants (48)

HES & HES-IE Vendors: Amber McDonnell, Anthony Fonseca, Becky Pelton, Chan Suon, Chris Jobson, Craig Olisky, David Holmes, Denise Pankowsky, Edgardo Mejias, Jan Roman, Jane Bordeau, Jeff Gerber, Jonathan Casiano, Julie Saimininkas, Leticia Colon de Mejias, Lindsey VanLew, Lorenzo Wyatt, Martin Harisi, Melissa Clark, Michael Frownfelt, Michelle Long, Mike Jacovino, Patrick Hallstrom, Peter Callan, Ralph Valente, Rebecca Baez-Castro, Richard Olisky, Ryan Behling, Sarah Seddon, Spencer Haldeman, Spencer Hauer, Stephanie Weiner, Timothy Fabuien, Vivian Perez

Company Representatives: Alicia Demaio, Amanda Stevens, Amy McLean Salls, Brent Milardo, Damaris Velez, Diane Del Rosso, Ghani Ramdani, John Karyczak, Michael Cresta, Stephen Bruno

EEB Consultants: James Williamson, Richard Faesy, Stacy Sherwood, Zack Tyler

December 13, 2024 Agenda

1. Introduction
2. Meeting ground rules, protocols, and process
3. Meeting overview
4. Review pre-meeting survey results
5. Discuss Issues
6. Timeline and Next Steps

Breaks: 10:30 and 2:30
Lunch: 12:30-1:00

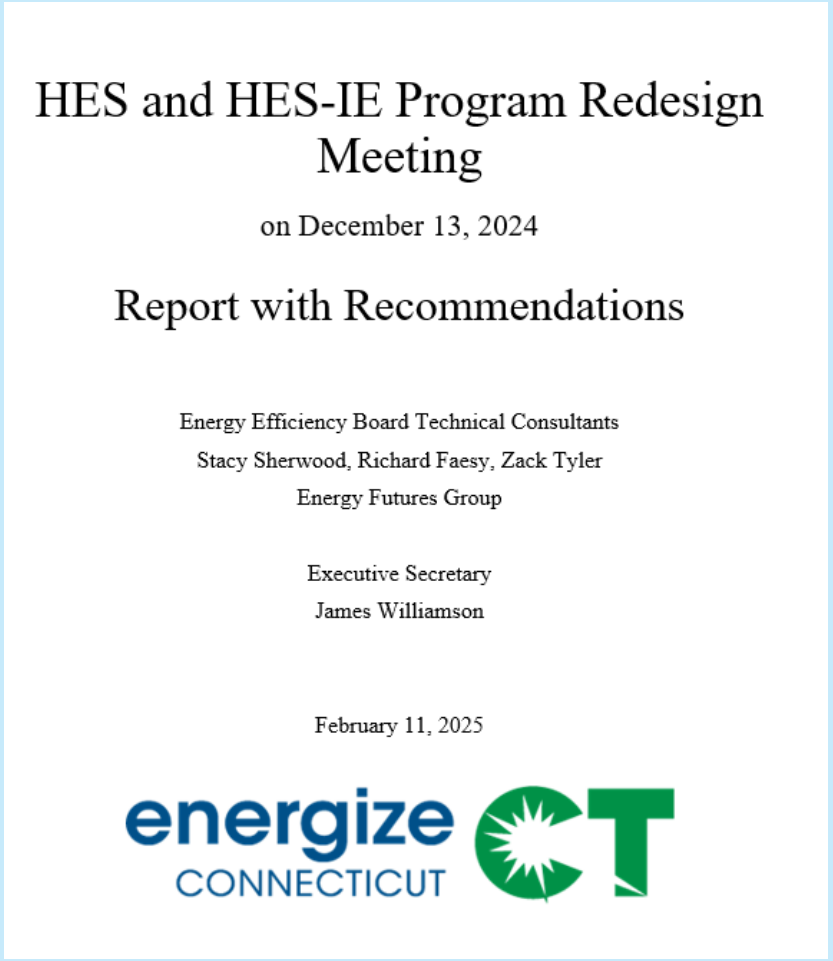
Pre-Meeting Survey - Summary & Overview

- Survey with HES/HES-IE Vendor Principals
  - Thank you to all who participated!
  - 19 respondents representing 17 companies
- Topics
  - 1 visit vs. 2+ visit model
  - 2-4 unit buildings
  - Compensation
  - Thermal boundary
  - Training
  - Suggestions
- Most respondents provided detailed comments throughout

12/13/24 Discussion Issues

- ✓ 2-4 Family Buildings
- ✓ Training Topics
- … New 1- vs. 2+ visit models
- … Compensation
- … Thermal Boundary

Meeting #1 Report & Meeting #2 Agenda



HES and HES-IE Program Redesign Meeting

on December 13, 2024

Report with Recommendations

Energy Efficiency Board Technical Consultants
Stacy Sherwood, Richard Faesy, Zack Tyler
Energy Futures Group

Executive Secretary
James Williamson

February 11, 2025

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January 31, 2025 Meeting Focus:

1. HES/HES-IE Program Redesign Proposal
2. RFI Pricing Elements
3. Thermal Boundary Implementation

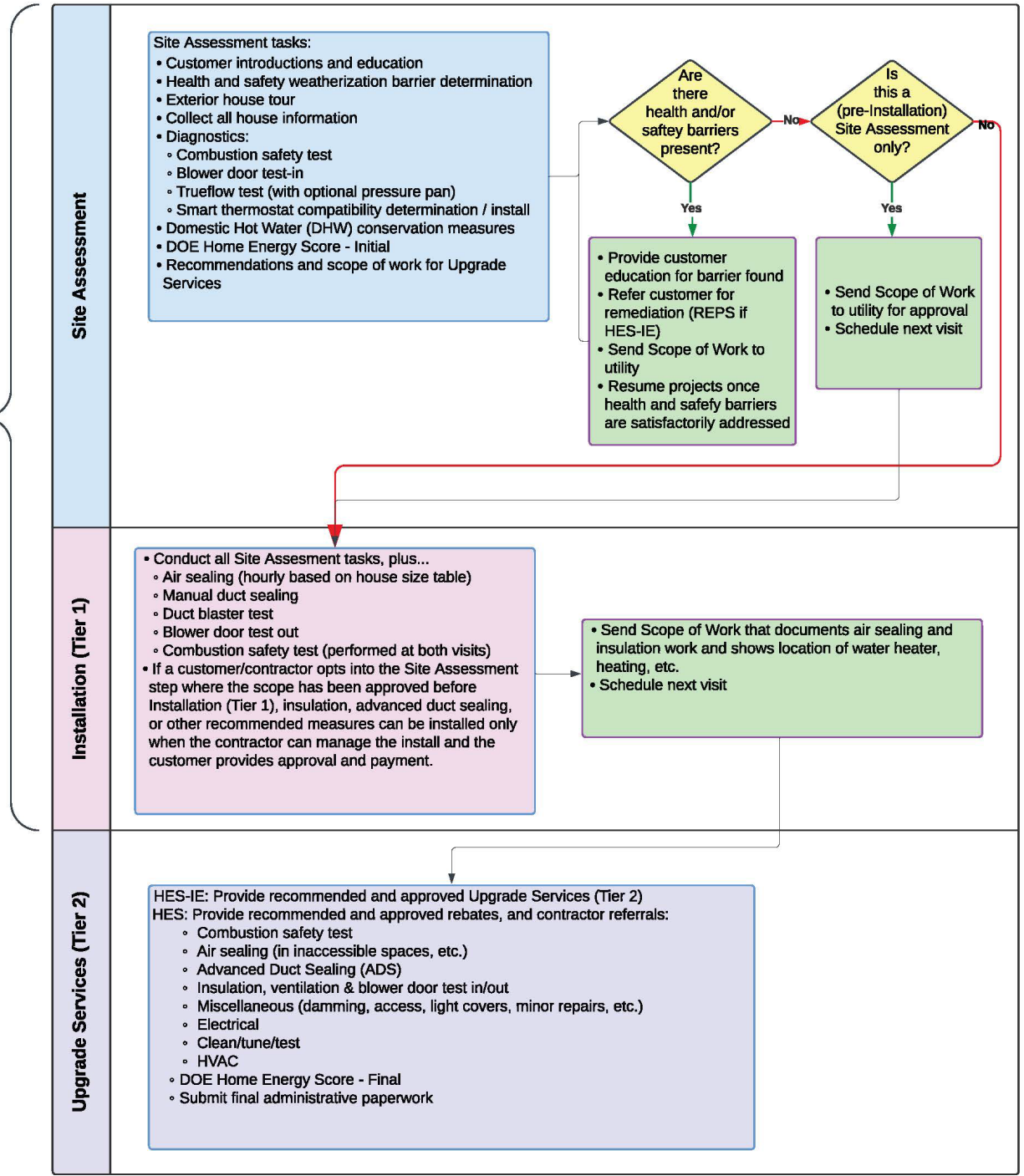
Meeting #2 Recommendations

1. **HES/HES-IE Program Redesign Model**
   - Adopt the proposed new HES/HES-IE model, while allowing the Companies to determine the implementation details.
   - Ensure that contractors spend enough time in each house to fully address air and duct sealing opportunities.
2. **RFI Pricing Process**
   - Proceed with the RFI and HES-IE RFP processes, while attempting to expedite the process.
3. **Thermal Boundary Implementation**
   - The Thermal Boundary Working Group should be encouraged to finalize the implementation approaches for defining thermal boundaries.
   - Provide a report at a future CTAC meeting.
4. **Communications and Collaboration**
   - Keep early, often, and open communication and encourage continued dialogue between the Companies and contractors.
   - Follow the communications protocols.

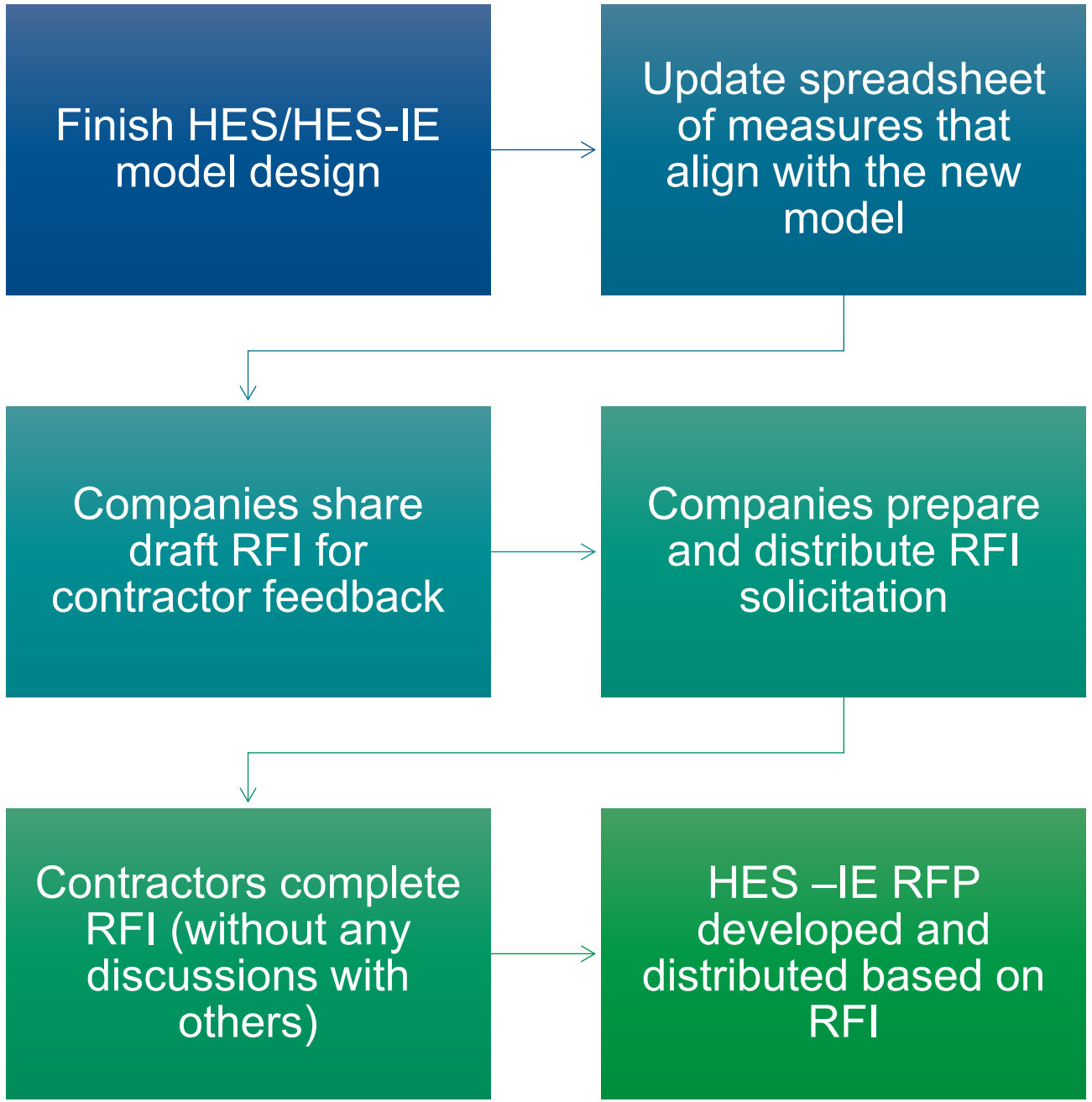
III. Review proposed program design and recommendations

Proposed CT Model

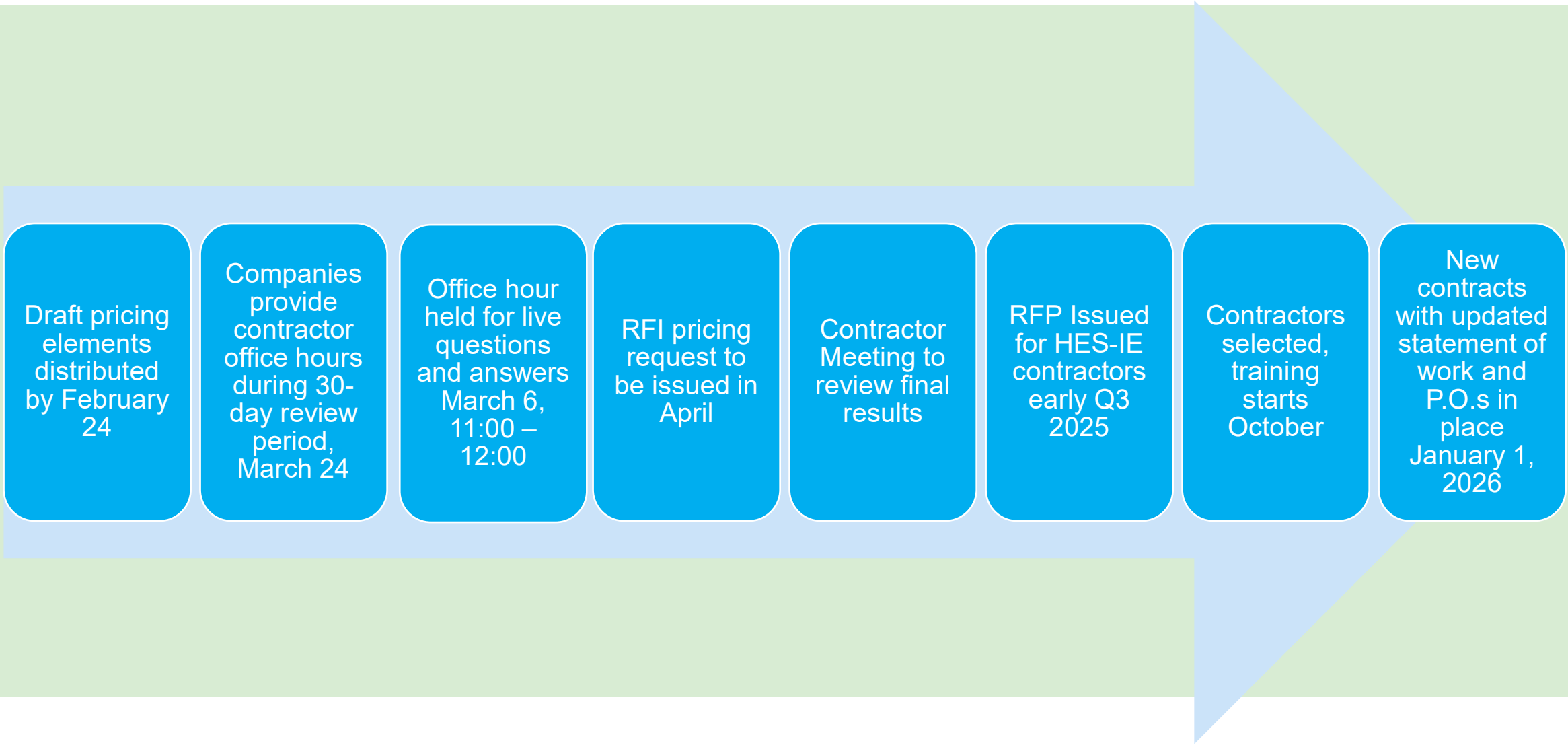
- Site Assessment
- Installation (Tier 1)
- …or combined
- Upgrade Service(s) (Tier 2)



RFI Next Steps



RFI Timeline



February 12, 2025 Thermal Boundary Meeting

- Contractors from meeting #2 volunteered to meet to discuss implementation approaches for semi-conditioned basements
- Report from the Companies:
  - The meeting went well, and they reportedly made significant progress
  - Agreed on an approach for various diagnostic testing procedures such as blower door guiding air sealing and duct sealing.
  - Discussed key elements of the basement decision tree that allow for a basement to be defined as unconditioned due to its characteristics.
  - The Utility Representatives that were in the meeting agreed to review action items and schedule a follow up meeting with the contractor group to iron out final details.
- It doesn’t sound like they will need any further involvement or guidance from DEEP at this point on the thermal boundary implementation.

Questions?