C2230 Commercial Heat Pump and Electrification Study

Kickoff Meeting

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Objectives

1: Identify pathways for all-electric new construction

2: Assess existing building retrofit opportunities and compare savings and cost based on various equipment parameters

3: Refine savings estimation methods

4: Analyze attribution and baseline

5: Support the commercial HP pilot

Approach

	Program Staff Interviews & Document Review	All-Electric Program Best Practices Review	NC Market Actor Interviews	HP Supplier Interviews	HP Cost Research	Participant Survey	Project Application Review
Identify pathways for NC	✓	✓	✓	✓	*		
Assess retrofit opportunities, cost, & performance	✓		*	✓	✓		✓
Refine savings estimation methods						✓	✓
Analyze attribution & baseline		*		✓		✓	
HP pilot support	✓	*		*			

✓ = primary focus   * = secondary focus

Leveraged Data Sources

Ongoing Studies
- C2201 Commercial Baseline Study
- X2231 HP & Electrification study
- MA 2022-24 C&I heat pump study *(2022Q4 – 2024)*

Completed CT Studies
- C1902 ECB Baseline & NTG Study to characterize current new construction baselines (as available)
- X1931 PSD update for HPs and New England in-field FLH models

Other Studies & Sources
- MA NRNC Market & NTG study
- NENY HP Potential Study for cost (resi.)
- NY DPS Statewide HP Performance Study
- NYSERDA C&I HP Impact Evaluation models
- EMT C&I HP Impact and Process Evaluation and relevant evaluation models
- EMT Integrated Thermostat Pilot study
- ME, MA, NY, CA, IL and other TRMs

Interview Data Collection

Interview Group	Target	Purpose
Program Staff	ECB, EO, SBEA PMs	Develop understanding of programs incentivizing HPs and 2022-2024 plans for all-electric NC offerings
Non-CT C&I New Construction & Electrification PMs	Up to 5	1. Study best practices and lessons learned 2. Identify how other states design programs to reach the market
New Construction Market Actors*	Up to 20	1. Characterize current NC baselines 2. Identify potential pathways, obstacles, and opportunities 3. Inquire about influence to assess attribution
HP suppliers	Up to 12 (Follow-up with 8)	1. Define technology, displacement & building type combinations 2. Identify potential obstacles, opportunities, and barriers for retrofit applications: contractor workforce, technical, and customer barriers. 3. Vet results and initial normalized cost estimates for the configurations of interest

HP Cost Research

Activity

- Review various sources for cost data (if available), such as (1) program application data, (2) supplier-provided data from IDIs, (3) internal anonymized cost data from programs in other states, (4) R.S. Means, (5) prior HP cost studies, (6) TRMs from other states

Purpose

1. Compile, refine, and normalize cost estimates, including unit and soft costs
2. Enable study team to analyze savings and costs for each prototypical configuration as function of displaced fuel, equipment size, and run hours

Project Application Review

<u>Activity</u>

- Application review of CT C&I HP and HPWH participants to date **(census attempt, up to 100)**

<u>Purpose</u>

1. Identify HP and HPWH systems installed through programs
2. Assess if custom vs. prescriptive track is more appropriate
3. Explore distribution of baselines, free ridership, and participant spillover
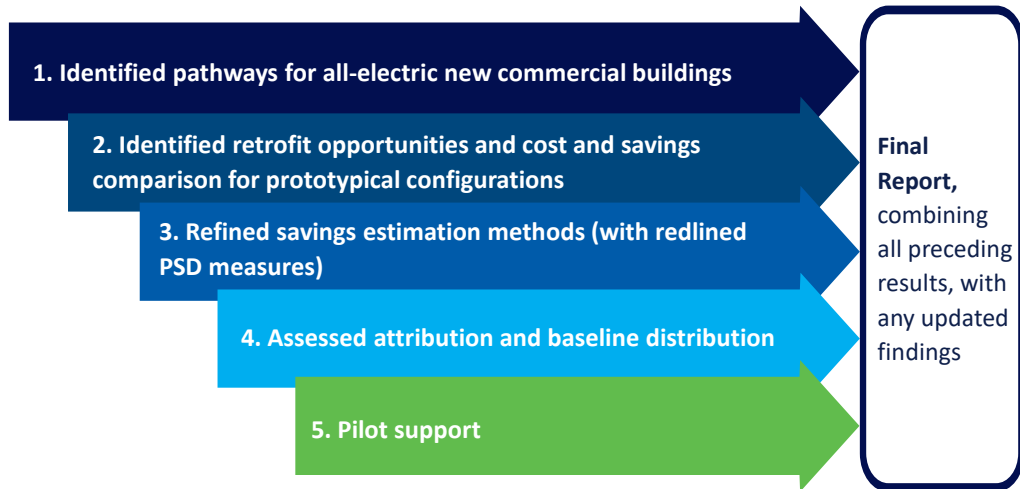
Participant Survey

<u>Activity</u>

- Participant survey of CT C&I HP and HPWH participants to date **(census attempt, up to 100)**

<u>Purpose</u>

1. Assess baseline
2. Explore program influence on fuel switching, as well as efficiency of equipment installed
3. Inquire about satisfaction and operation of installed equipment
4. Identify potential obstacles and opportunities
5. Investigate the alternative paths participants would realistically consider

Deliverables

1. Identified pathways for all-electric new commercial buildings

2. Identified retrofit opportunities and cost and savings comparison for prototypical configurations

3. Refined savings estimation methods (with redlined PSD measures)

4. Assessed attribution and baseline distribution

5. Pilot support

Final Report, combining all preceding results, with any updated findings

Schedule & Budget Overview

Schedule

Jan 2023 – Apr 2023: Program Benchmarking & Secondary Research
- Program staff interviews

Feb 2023 – Nov 2023: Primary Data Collection
- Market actor and HP supplier interviews
- HP project application review
- Participant survey
- Integrate data from C2201 Commercial Baseline and Database Study

Apr 2023 – May 2024: Analysis & Reporting
- Initial assessment of PSD structure for HPs (**Apr 2023** ahead of PSD deadline)
- Draft PSD write-ups (**Apr 2024** ahead of the PSD deadline)

May 2024 Final Deliverables and Presentation

Budget

Task	Budget
Scope Refinement & Secondary Data Collection	$69,000
Primary Data Collection	$215,000
Analysis & Reporting	$197,000
Pilot Support	$19,000
Total	**$500,000**

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Discussion

Questions? Comments?

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