Connecticut R1965
HP/HPWH Baseline and Potential Assessment

Project Kickoff

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• What is the existing and future market for residential HPs and HPWHs in CT?
• What role do trade allies play in promoting equipment?
• What are likely equipment configurations and applications?
• What is the cost-effectiveness of each configuration?
• Recommendations for PSD and program planning
1. Literature Review and Data Gathering
2. Preliminary Market Characterization
3. Market Trends Assessment
4. Cost-Effectiveness of Heat Pump Programs
5. Reporting and Recommendations

**Tasks**

- Compile data and literature to describe market and understand program efforts
  - CT planning materials and past studies
  - CT program tracking data
  - Relevant market characterizations and baseline studies
  - Sales volume data
    - AHRI, DOE, EIA, HARDI, etc.

- Coordination with / leveraging Cadmus' RI literature review
  - Cadmus leads research on ASHPs
  - NMR supplements ASHP research, leads research on GSHPs and HPWHs
  - Leverage shared learnings and produce time/budget efficiencies
• Market size and segments
  ➢ Triangulate market size using multiple sources
  ➢ National and regional data pro-rated to service territories
  ➢ For HVAC: focus on ASHPs (ducted and ductless)
  ➢ Estimate sales in RNC and retrofit market
  ➢ Program data and HARDI provide most granular system info

• Program penetration
  ➢ Overall program penetration rate
  ➢ Program penetration relative to high-efficiency market

Task 2 – Market Characterization

• Refine preliminary market characterization
  ➢ Market size
  ➢ Market actors and end user behavior
  ➢ New HVAC technology development and distribution

• Distributor interviews
  ➢ n=15 (10 HP, 5 HPWH)
  ➢ 30 minutes; incentive

• Research questions
  ➢ Sales volumes
  ➢ Market trends
  ➢ Frame interviews as a precursor to establishing a panel

• Coordinate with RI on guides and interviews

Task 3 – Market Trends Assessment
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• Installer web survey with home schematics
  ➢ n=100 (at least 25 plumbers)
  ➢ Sample from web scraping, distributors, Utilities
  ➢ Coordinated with R1959 (single-family renovations and additions potential analysis)
  ➢ 20 minutes; incentive

• Research questions
  ➢ Insights about system configuration and installation considerations
  ➢ Recommended HPs and influencing factors
    ➢ Floor plans
    ➢ Customer types

Task 3 – Market Trends Assessment

• Installer Interviews
  ➢ n=10 (6 HP, 4 HPWH)
  ➢ Sample from previous survey
  ➢ 30 minutes; incentive

• Research questions
  ➢ Deeper insight behind survey responses
  ➢ Motivations behind recommendations
  ➢ Installer perceptions of heat pumps

• Manufacturer Interviews
  ➢ n=5 (3 HP, 2 HPWH)
  ➢ Sample from prior contacts; no incentive

• Research questions
  ➢ Direction of the market
  ➢ Future technological improvements

• Coordinate with RI on guides and interviews
• Explore different configurations informed by
  ➢ Prior tasks of current study
  ➢ R1617: observations from ductless heat pump study
  ➢ R1982: study of residential HVAC and DHW (if available)

• Analytic approach
  ➢ Vetting of cost-effectiveness tool used
    (Utility, Modified Utility, Total Resource)
  ➢ Populate tool and test with previous/current cost-effectiveness results
  ➢ Key consideration: ensure costs and benefits used are aligned with the measures and configurations being tested for cost effectiveness

• Reporting timeline
  ➢ Issue interim memos for RI coordination, as needed
  ➢ Draft to EA Team in October 2020
  ➢ Draft for public review in November 2020
  ➢ Report finalization in December 2020
  ➢ Final presentation in December 2020

*Report may be accelerated if R1982 results not included
## Research Tasks and Study Objectives

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<thead>
<tr>
<th>Objectives</th>
<th>Tasks</th>
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<td>Existing and future market for HPs and HPWHs</td>
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### Questions?

(Q & A)

(Question marks)