# Connecticut R1965
# HP/HPWH Baseline and Potential Assessment

## Project Kickoff

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## Study Objectives

- 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**

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## Tasks

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

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## Task 1 – Literature Review

- 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

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## Task 2 – Market Characterization

- 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

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## Task 3 – Market Trends Assessment

- 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

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## Task 3 – Market Trends Assessment

- **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
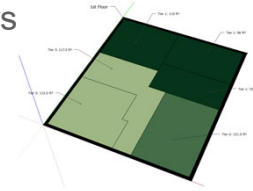
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## Task 3 – Market Trends Assessment

- **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**

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## Task 4 – Program Cost-effectiveness

- 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

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## Task 5 – Reporting and Presentation

- 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

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## Research Tasks and Study Objectives

| Objectives | Tasks | | | | | | |
|---|---|---|---|---|---|---|---|
| | Lit Review | Market Char. | Mfg. Interviews | Distributor Interviews | Installer Survey | Installer Interviews | CE Testing |
| Existing and future market for HPs and HPWHs | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | |
| Role of trade allies in equipment promotion | ✔ | | ✔ | ✔ | ✔ | ✔ | |
| Likely equipment configurations and applications | ✔ | | | | ✔ | ✔ | |
| Cost-effectiveness of configurations | | | | | ✔ | ✔ | ✔ |
| Recommendations for PSD and program planning | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |

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## Q & A

Questions?

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