R1707 Net-to-Gross (NTG) Study of Residential New Construction
Study Kickoff for Connecticut Energy Efficiency Board, Eversource, United Illuminating, and Stakeholders

Presenter: Jared Powell
NMR Team: Jared Powell, Zack Tyler, Ari Stern, Matt Woundy
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Background
- RNC program
  - Builder-focused
  - Driving efficient construction
  - Tiered incentives
- Rich data from recent studies
  - 2011 RNC baseline
  - 2016 R1602
  - Baseline, process, billing

Goals
1. Calculate program impacts
2. Develop NTG ratios for the PSD
   - “What would have happened in 2016 if the program hadn’t existed after 2011?”
   - Free-ridership, spillover
3. Estimate NTG values for:
   - Multifamily
   - Solar PV
   - Net Zero
Key Tasks
1. Kickoff
2. Research plan
   - Work plan
   - Data request
3. Data collection
   - Conversations w/ RNC staff
   - Background research
   - Delphi Panel (2 rounds)
4. Analysis
   - Delphi responses
   - Energy modeling
   - NTG calculations
5. Reporting

Data Request
- From companies:
  - 2011 Program REM/Rate files
  - Program application forms (gaps between 2011 and 2017)
  - # of Net Zero homes annually
- Leverage R1602, additional research for remainder

The Delphi Panel
- 15 experts
- $500 incentive
- ID’d by NMR + EA team
- NMR recruits, provides background info, analyzes responses
- Participant goals
  - HERS raters / EE consultants (6)
  - National evaluation experts (4)
  - Non-CT program managers (2)
  - Code officials (2)
  - Regulators (1)

Delphi Panel Questionnaire – Round 1
- Measure-level data from baseline studies
  - Participant vs. Non-Participant
  - Key measures from R1602 baseline
    - Air/duct leakage, insulation, lighting, windows, mechanicals
  - Most efficient 25%, middle 50%, least efficient 25%
  - Average efficiency in each tier
- Without the program:
  - How many in low, middle, high tiers?
  - Average efficiency in each tier?
Delphi Panel Questionnaire – Round 2

- Customized for each panelist
- Panelists review others’ responses, revise as needed
- Analyze Round 2 results
  - Outliers removed
- Use results for modeling effort
  - How would homes have been built without the program?

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<thead>
<tr>
<th>Task</th>
<th>Round 1 Response</th>
<th>Round 2 Response (Final Round)</th>
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<tbody>
<tr>
<td>Task 1</td>
<td>Kickoff</td>
<td>Data request</td>
<td>Finalize workplan</td>
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<tr>
<td>Task 2</td>
<td>Research plan</td>
<td>IDs, analyze RDM/Rate data, develop second Delphi instrument</td>
<td>Identify and recruit panelists</td>
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<td>Task 3</td>
<td>Data collection</td>
<td>First round data collection</td>
<td>Second round instrument development, data collection</td>
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<td>Task 4</td>
<td>Analysis</td>
<td>Modeling, analysis of models and panel responses</td>
<td>Finalize report</td>
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<td>Task 5</td>
<td>Reporting</td>
<td>Submit draft report</td>
<td>Revisions, public review</td>
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Reporting Approach

- Concise abstract, executive summary
- Recommendations for PSD
- Methodology
- Delphi Panel findings
  - Measure-level results
  - Key panelist comments
- Counterfactual energy model results
- NTG results
  - Overall, by fuel, MF, Solar PV, Net Zero
  
Table: 90% confidence intervals
- Results by fuel type
- Appendices
  - Delphi instruments
  - Detailed methodology

NTG Calcs

3. Calculate Net to Gross Ratio

\[ \text{NTG} = \frac{\text{Net} - \text{Free Rider}}{\text{Gross}} \]

Study Timing

- Task 1: Kickoff
- Task 2: Research plan
- Task 3: Data collection
- Task 4: Analysis
- Task 5: Reporting

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Thank you
Jared Powell
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617-284-6230

RNC NTG Study Budget

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