R1707 Net-to-Gross Study Connecticut Residential New Construction

Final Presentation for Connecticut Energy Efficiency Board, Eversource, United Illuminating and Stakeholders

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Evaluation Methodology

1. Collect data from past baseline studies
2. Company conversations and data request:
   - Old energy models
   - Program background
3. Delphi panel (2 rounds)
   - What would have happened in 2016 if the program hadn’t existed after 2010?
4. Analysis:
   - Delphi responses
   - Energy models
   - Savings calculations

Delphi Panel Process

1. Complete background research
2. NMR sends questionnaire
3. Panel responds, sends back
4. NMR: “Are you sure?” analyze Round 1 responses
5. Panel responds, sends back; NMR analyzes Round 2 responses

Goals

1. Calculate program impacts
2. Develop NTU ratios for the PSD
3. Program impacts for:
   - MultiFamily
   - Solar PV
   - Net Zero

Introduction

- RNC program
  - Builder-focused
  - Driving efficient construction
  - Tiered incentives
- Rich data from recent studies
  - 2011 RNC baseline
  - 2006-2007 baseline, process, billing

Expert Type

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<td>National evaluation experts</td>
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<td>Non-CT RNC program managers</td>
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Key Measures Affected

- Duct leakage, air infiltration, and insulation installation quality less efficient
- Insulation R-values modestly impacted

Duct Leakage

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Air Infiltration

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Insulation Installation

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Average Energy Use

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Measures Less Affected

- Mechanical systems and windows slightly affected
- PV impact limited; Net zero designs stayed same
- Some impact on efficient lighting
- Similar effects for multi-family

HVAC & Water Heating

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Windows

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PV & Net Zero Designs

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Efficient Lighting

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NTG Ratio Calculation

1. Calculate Net Savings
2. Calculate Spillover and Free-Ridership
3. Calculate Net to Gross Ratio

1 - ( □ ) + ( □ ) = NTG

Net Savings By Fuel & End Use

- Program net savings: over 1/2 from lighting; rest from space heating
- Non-program net savings: nearly 3/4 from space heating; rest from lighting

Overall Net Impacts

Program Savings (MMBtu)
- Gross: 40,007
- Net: 4,452
- Net: Non-program: 45,456

Free Ridership & Spillover
- Moderate FR: 0.69
- High FR: 1.25
- Est. penetration rates: SF ~ 42%
- MF: ~ 50%

Whole Program NTG
- Overall program NTG ratio of 1.54
What We Recommend

STAY AHEAD

- Use retrospective NRG value of 1.5x
- Value could drop
- Program efforts to stay ahead of new program baselines

PROMOTE PV

- Promote solar PV and net zero design
- Update lowest program for efficiency requirements

CODE COMPLIANCE

- Continue to include code compliance in the PNC program
- Carefully track the outcomes to claim impacts

Thank You!

NMR Group, Inc.

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