RESNET
Residential Energy Services Network

Setting the STANDARD for QUALITY

EPA's Energy Star New Homes Program

A Proposed Friendly Amendment for The 2006 Energy Star Homes Program

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Proposal

- RESNET should fully adopt and implement EPA's proposal to add thermal and airflow bypass inspections to the Energy Star new homes criteria
- An energy use metric that includes all home energy uses rather than just heating, cooling and hot water should be employed
- The 2006 Energy Star new home qualification criteria should be set at an "Expanded" HERS score of approximately 84 (additional evaluation may be needed).

Advantages

- Maintains a single, national "figure of merit" for energy-efficient, high-quality homes
- Increases the reference energy uses that are considered in the analysis by 40-80%
- Increases the source energy savings (pollution) that are documented and achieved by Energy Star homes
- Increases the peak energy savings (pollution) that are documented and achieved by Energy Star homes
- Provides flexibility to builders to use local economies in determining cost effectiveness

Advantages

- Accurately documents energy and pollution savings from high efficiency lighting and appliances.
- Encourages better systems engineering for envelope design (advanced framing, etc.).
- Provides for fuel neutrality via the normalization method inherent in the HERS method
- Uses a “figure of merit” to which raters and builders have become accustomed – a "common language" they've come to understand
- Leverages RESNET’s software verification requirements (HERS BESTEST, reference home auto-generation, HERS score, HVAC, DSE, etc.).

Advantages

- Provides for enhanced quality assurance
  - Auto-generation of reference (required by IECC and HERS but not by proposed EPA standard)
  - Documentation of homes' energy efficiency and construction features
  - New insulation installation standards tied to analysis software and HERS scores
- Provides for consistency with other energy efficiency programs (e.g. tax credits, IECC, HERS, *Building America*, green homes, utility programs, etc.).

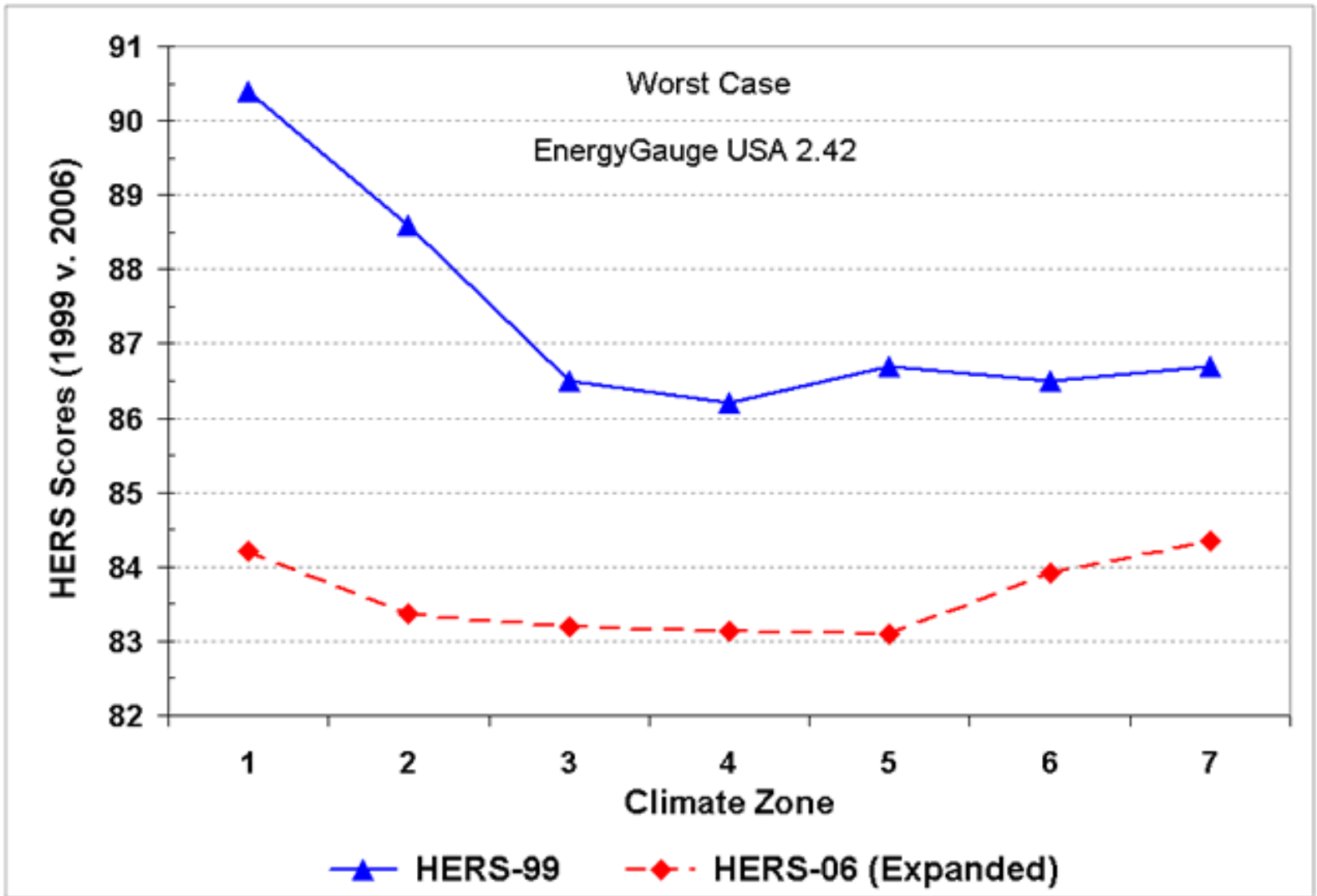
Supporting Analysis

- Revisions to the IECC and NEACA have caused a dramatic shift in the national reference standard in southern climates
- Expanded HERS score “re-levels the playing field” between north and south
  - Reduced internal gains benefit cooling more than heating
  - Lighting and appliances energy is about 80% of total energy in south but only about 40% in north
- Captures and documents greater energy use, peak demand and pollution savings.

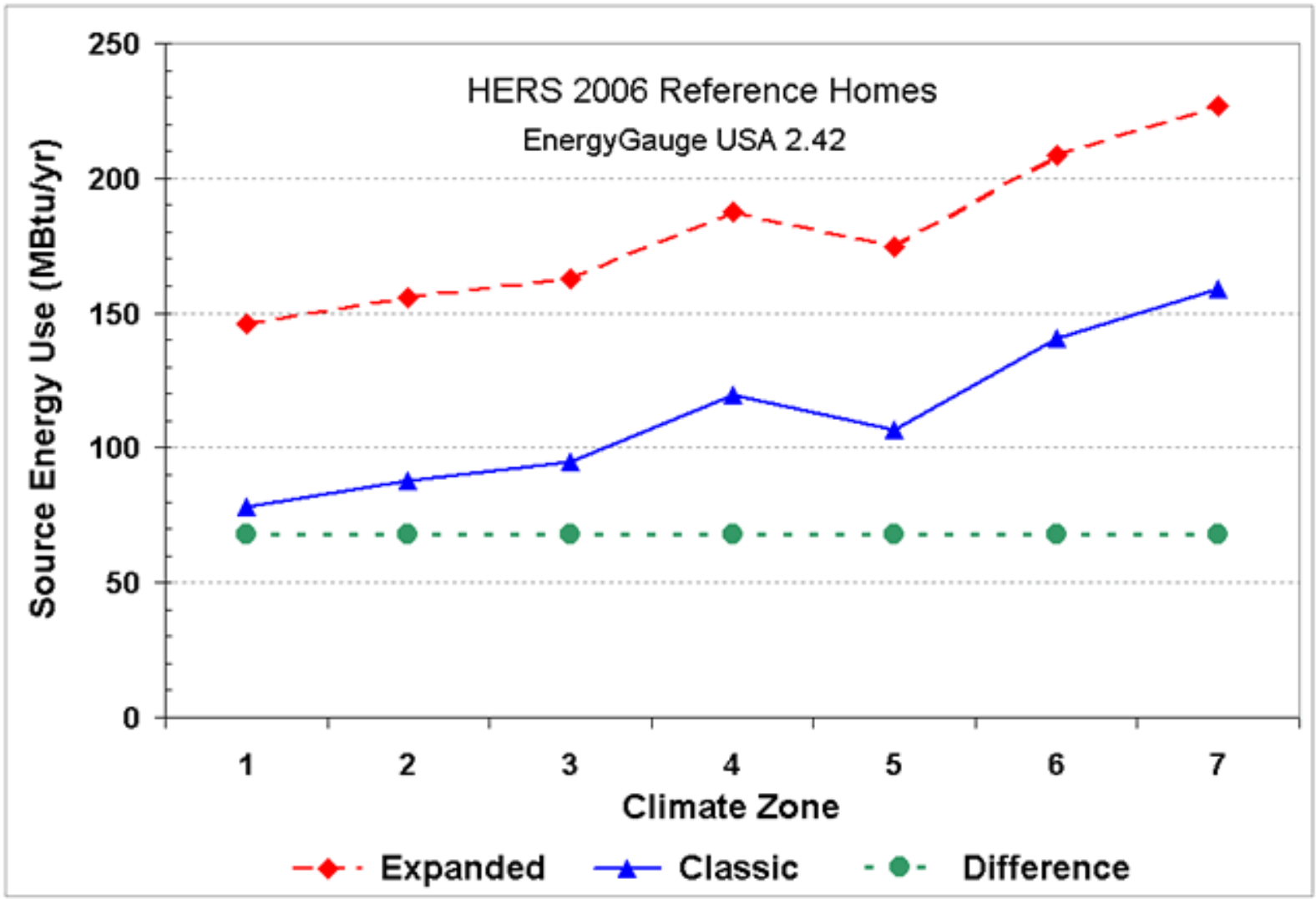
Analysis Assumptions

- EPA's "Energy Star Reference" home specifications for 2000 ft^2, 3-bedroom, single-story home on a vented crawlspace
- Seven "representative" TMY2 climates
- Natural gas space heating & hot water
- "Worst case" EPA BOP window orientation (50%–W, 25%–E, 12.5%–N, 12.5%–S)
- Homes contain Energy Star refrigerator and 60% fluorescent lighting
- Source energy for electricity = 2.5 times site electric energy (40% delivered efficiency).

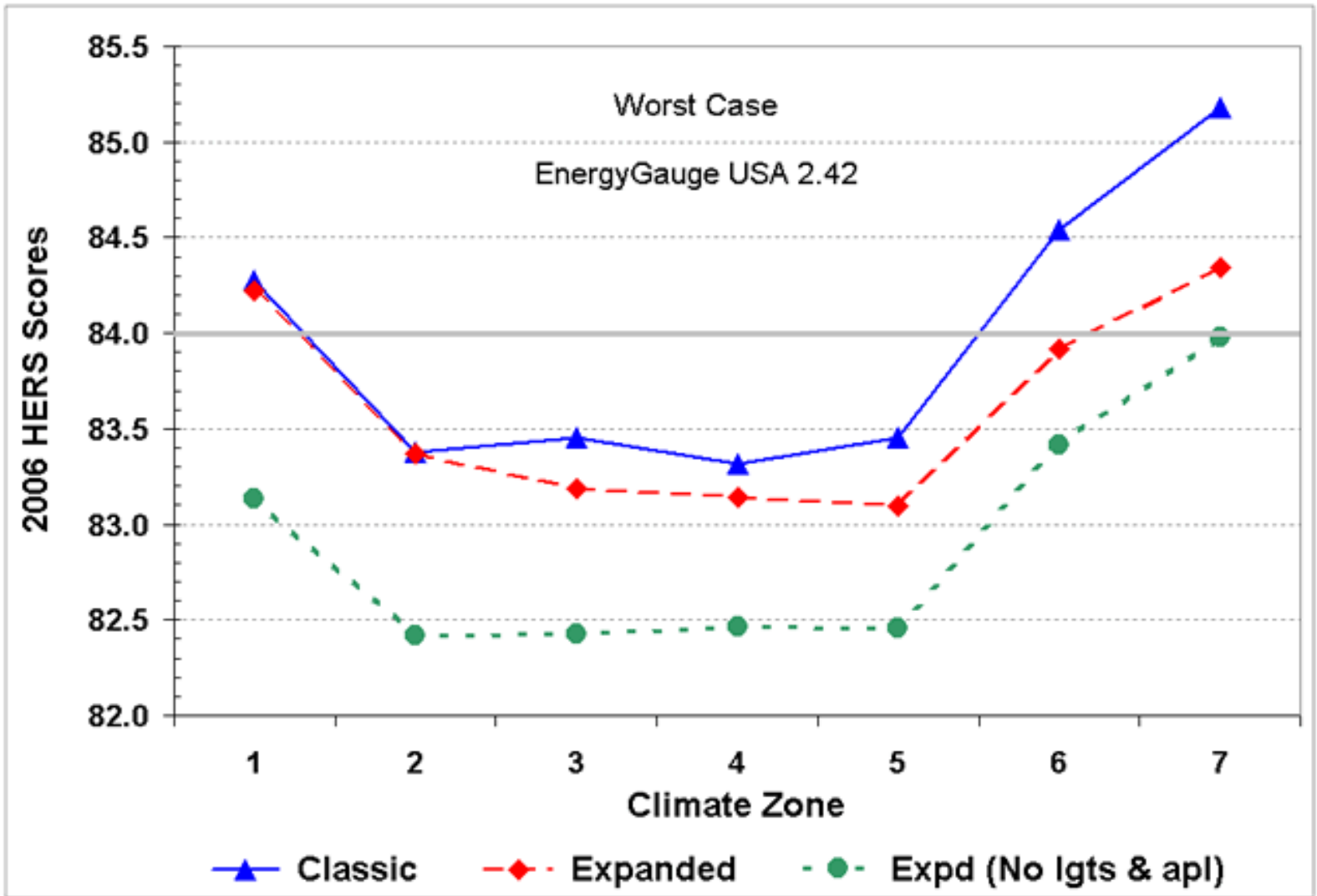
HERS-99 vs. HERS-06



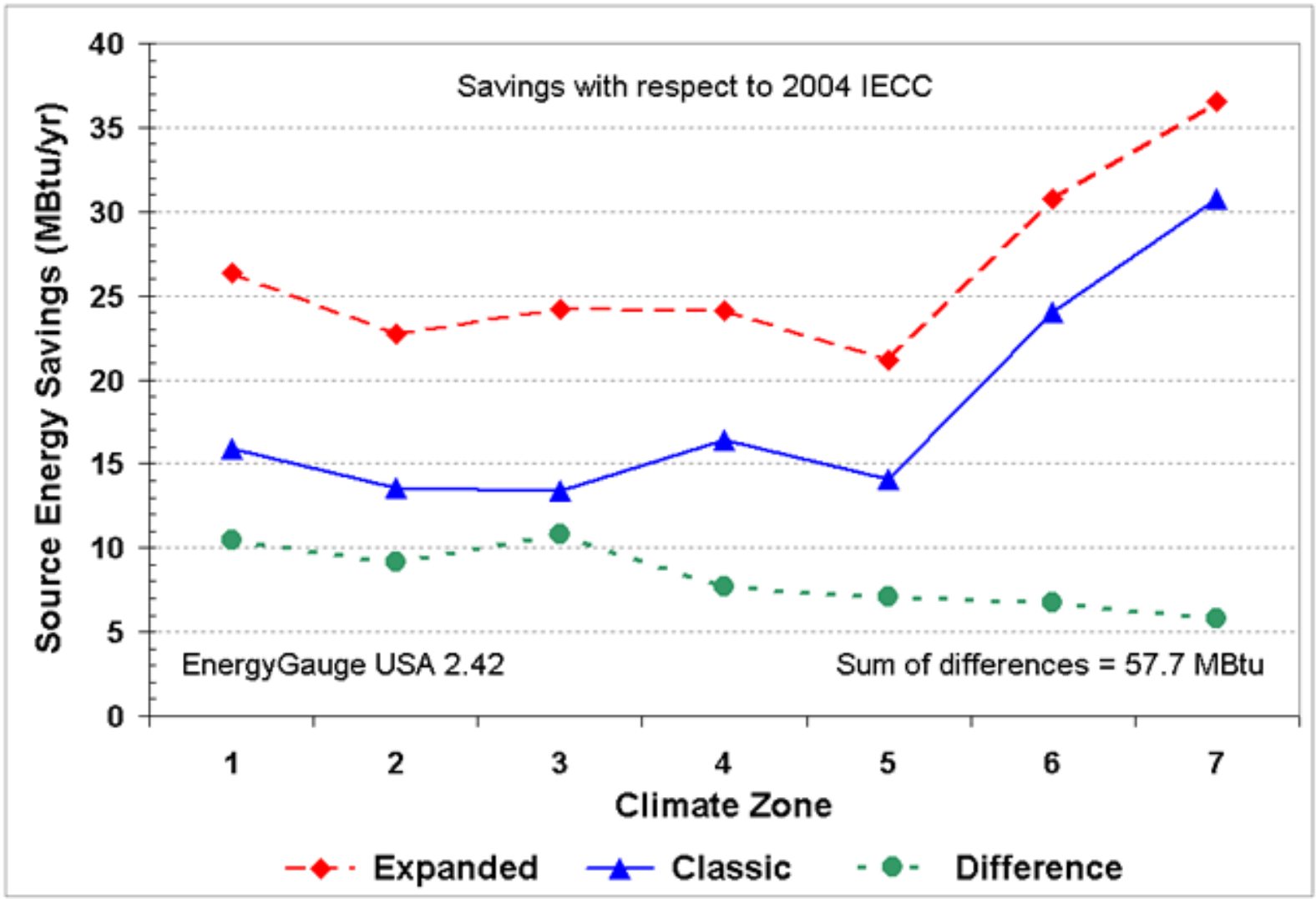
Expanded Reference Energy



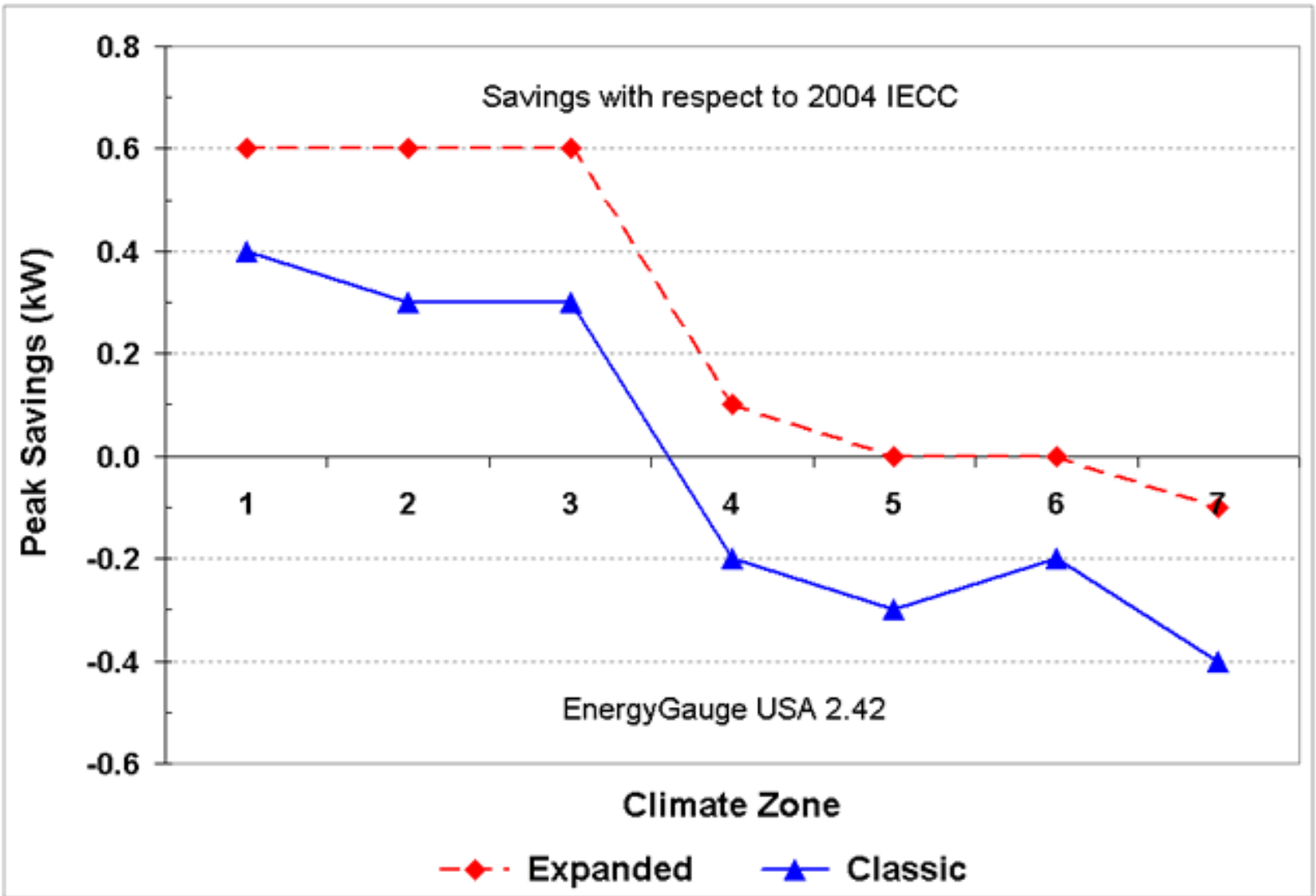
Classic vs. Expanded Score



Source Energy Savings



Peak Electricity Savings



Conclusions

- Expanded HERS score ameliorates the climatic “change impacts” of recent IECC and NAECA standard updates
- Expanded HERS score for Energy Star home qualification will substantially increase penetration of Energy Star products and the documented energy, peak demand and pollution savings
- Performance-based “figure of merit” provides for enhanced design flexibility, market competitiveness, product innovation, and quality assurance.

Other Considerations

- RESNET seeks to promote market competition and innovation through a performance-based approach to home energy efficiency
- RESNET's goal is to provide comprehensive performance-based energy services, including energy design services – not just inspection and testing services
- RESNET created the Expanded HERS score specifically to address the needs of programs desiring to "measure" all home energy uses.

Additional Analysis

- Additional analysis is needed to evaluate expanded score and savings trends using additional climatic conditions and home types
- Additional analysis should include:
  - Creation of a set of “near 84” (expanded score) homes of various sizes and foundation types for various climates
  - Analysis of energy, peak electricity demand and pollution savings as compared with the 2004 IECC Standard Reference Design and the current HERS Reference home standards.

Thank You for Your Attention

Any Questions?