

“A New Environment for Builders & Raters”

2005 RESNET Building Performance Conference
San Antonio, TX
March 1, 2005

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Change is Upon Us

- “There is nothing permanent except change”
– *Heraclitus*
- IECC – major changes in presentation – only minor change in performance-based efficiency
- NAECA – 23% increase in minimum air conditioner efficiency effective January 2006
- HERS – major changes in HERS Reference home specification
 - Aligned with DOE Residential IECC Code Change (RICC) proposal
 - Adopted by IECC 2004 Supplement and RESNET Standards (January 2006).

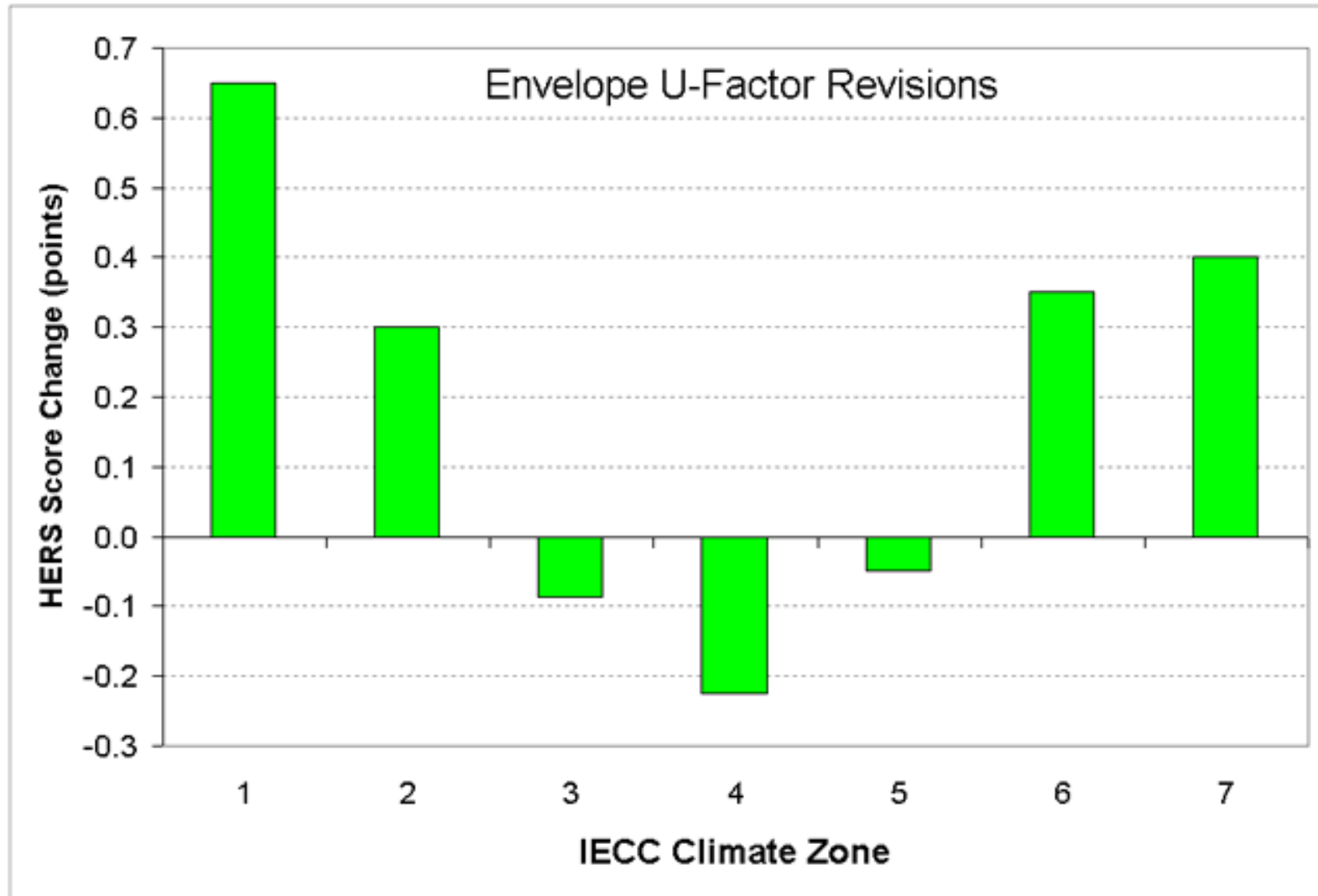
RICC Impact Analysis

- RICC Standard Reference Design compared with current (1999) HERS Reference home
- EnergyGauge[®] and Rem/Rate software
- Individual impacts are averages of all results by climate zone
- Analysis does not include impacts of NAECA air conditioner revision (SEER=13)
- Included for public comment with proposed RESNET amendment (REF: 2004-01)
 - RE: “An Analysis of the RICC Compared Against the HERS Reference Home”, P. Fairey and D. Roberts, December 2, 2003.

Envelope U-Factors

- IECC (2003 vs. RICC)
 - Moderate decrease in far south (CZ 1)
 - Approximate equality in other climates (CZ 2-7)
 - Anticipated impact: mild in deep south (CZ 1); little to none in other climates (CZ 2-7).
- HERS (1999 vs. RICC)
 - Decrease in south (CZ 1-2)
 - Decrease in north (CZ 6-7)
 - Increase in mid climates (CZ 3-5)
 - Anticipated impact: moderate to mild in south (CZ 1-2) and mild in north (CZ 6-7); mild & opposite in mid climates (CZ 3-5).

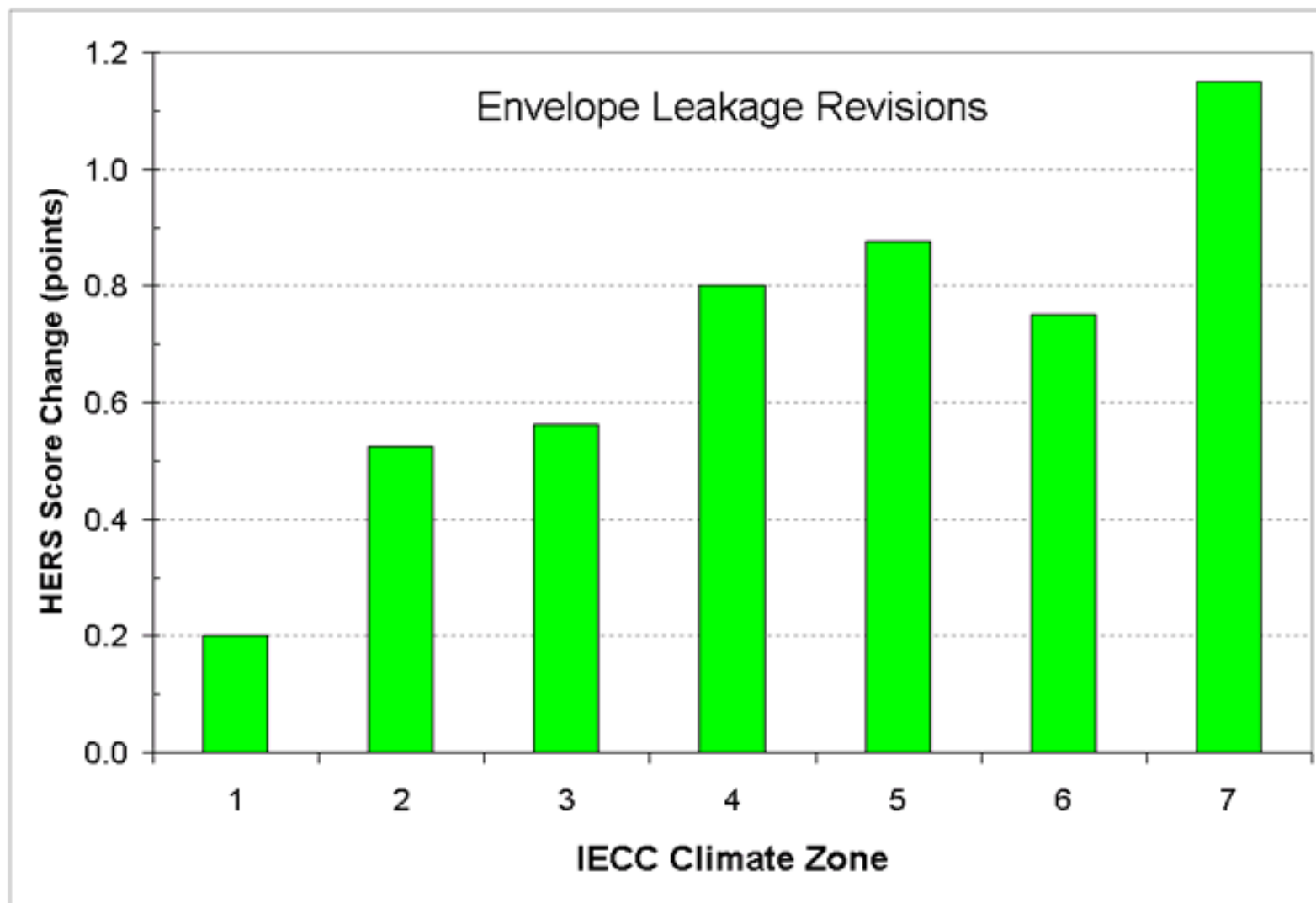
Envelope U-Factor Impacts



Envelope Leakage

- IECC (2003 vs. RICC)
 - $nL = 0.57 \gg SLA = 0.00048$
 - Reduces reference air exchange rate by approximately 16% for most homes
 - Anticipated impact: small impact in far south; significant impact in far north.
- HERS (1999 vs. RICC)
 - Same changes as above
 - Anticipated impact: same as above.

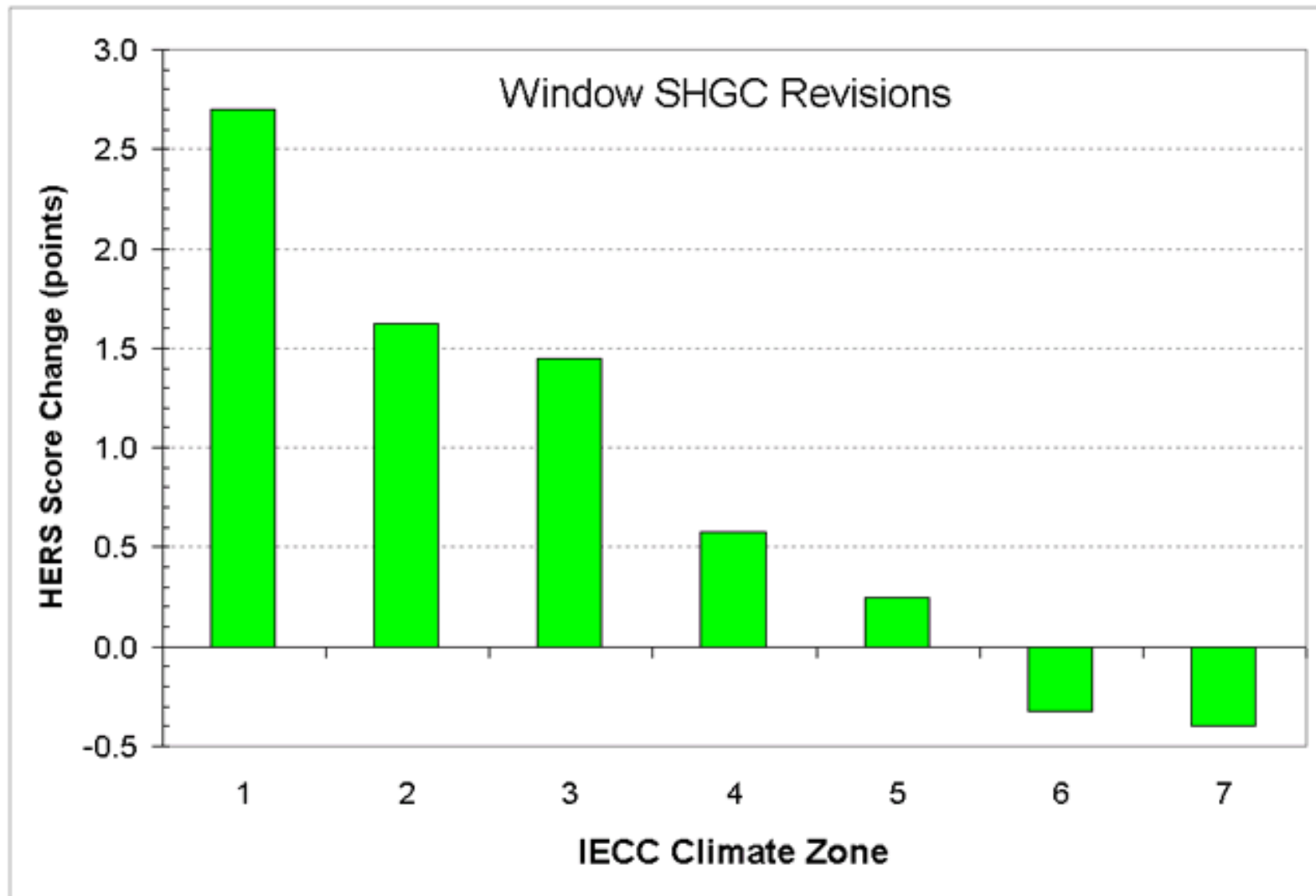
Envelope Leakage Impacts



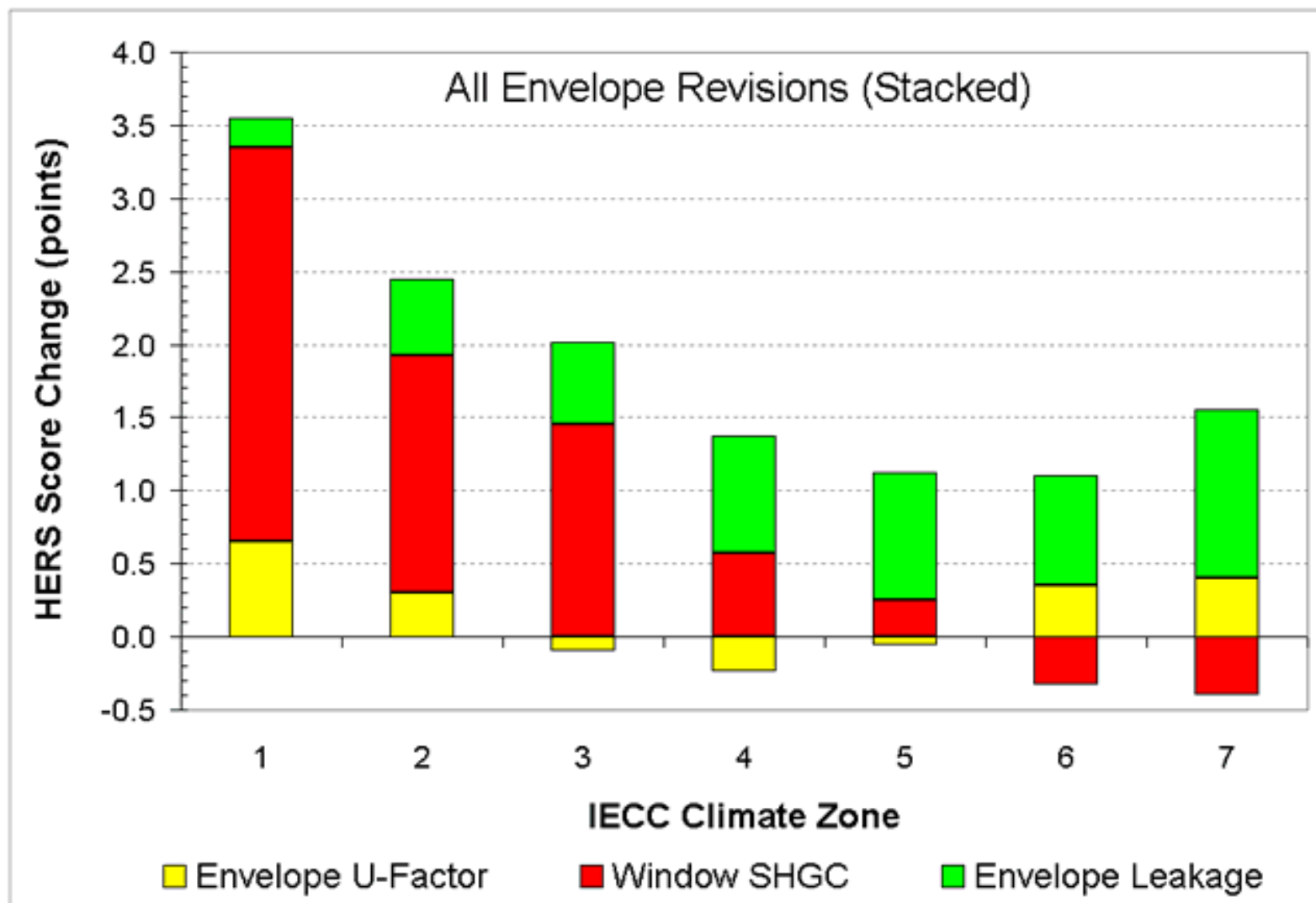
Window SHGC

- IECC (2003 vs. RICC)
 - CZ 1-3 – no change
 - CZ 4-8 – SHGC = 0.68 >> 0.55
 - Anticipated impact: Increase in Reference home heating energy use in northern climates; no impact in southern climates.
- HERS (1999 vs. RICC)
 - CZ 1-3 – SHGC ~ 0.65 >> 0.40
 - CZ 4-8 – SHGC ~ 0.65 >> 0.55
 - Anticipated impact: Large decrease in Reference home energy use in southern climates changing to small increase in Reference home energy in far north.

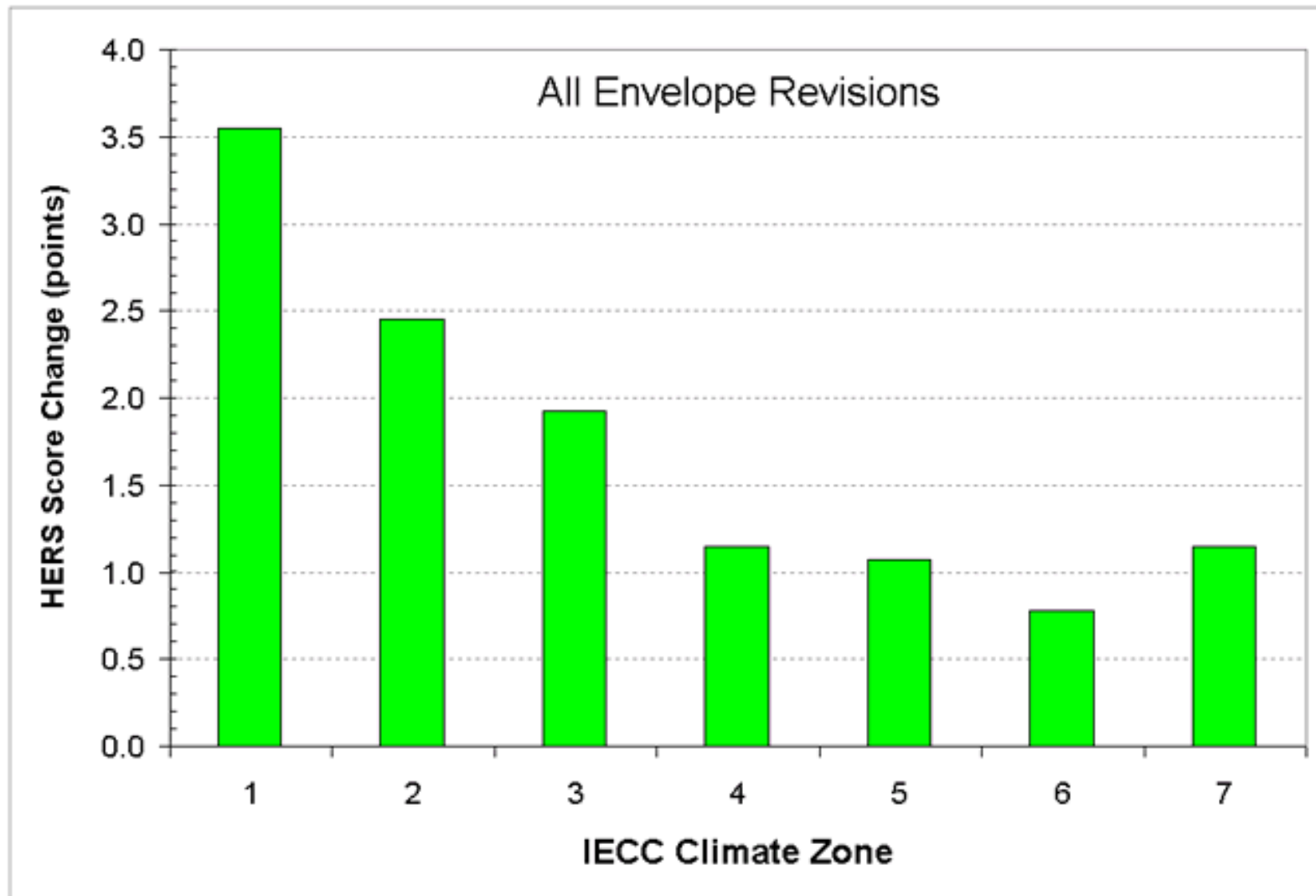
Window SHGC Impacts



Combined RICC Impacts



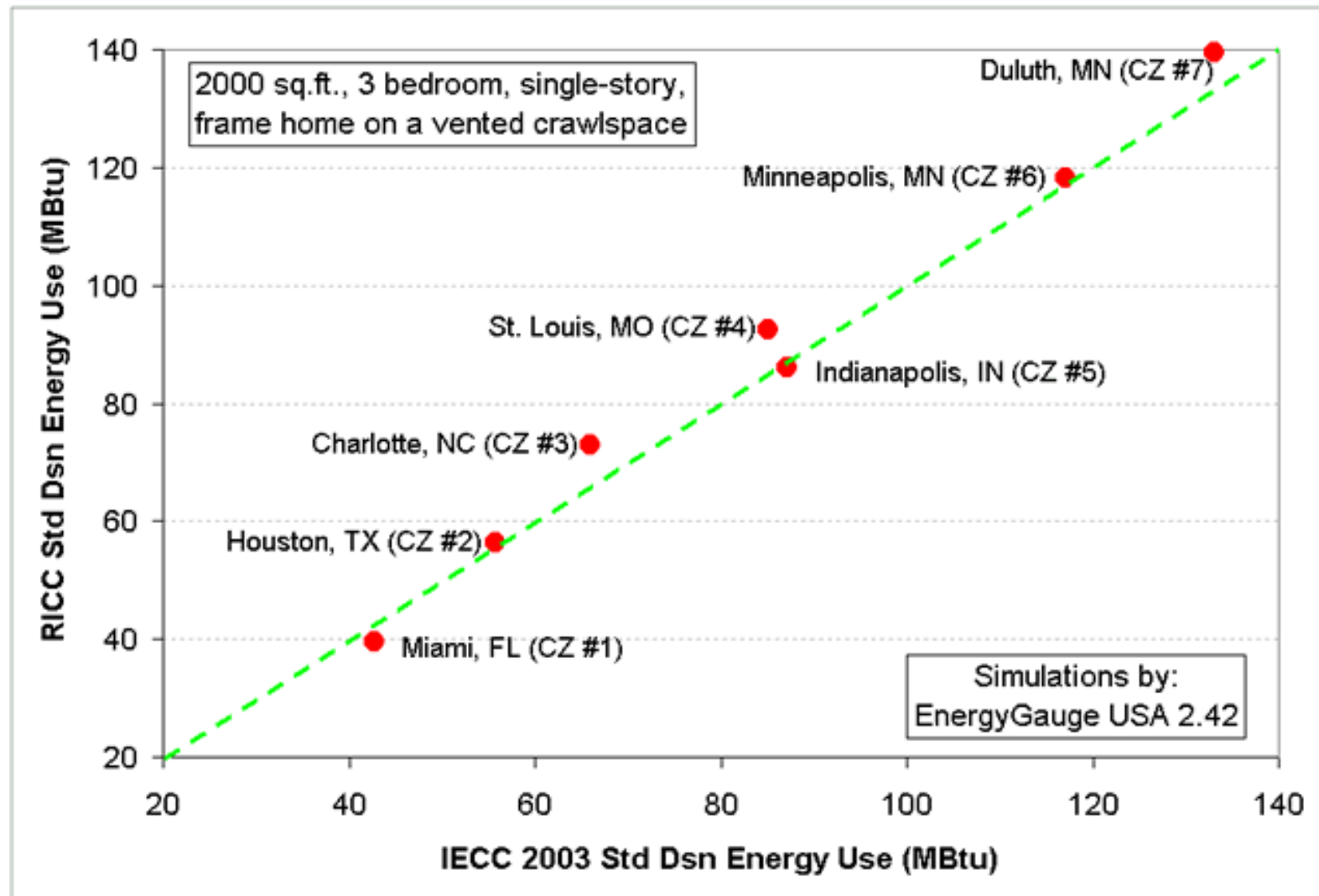
Net RICC Impacts



Other Revisions

- Interior Shading Factor (IECC & HERS)
 - Heating ISF = 0.90 >> ISF = 0.85
 - Cooling ISF – no change = 0.70
 - Anticipated Impact: increase in heating energy use, impacting northern climates more than southern climates.
- Internal Gains (HERS)
 - No change for IECC – significant change for HERS
 - 72,000 Btu/day >> function of floor area and Nbr
 - Anticipated Impact: Internal gains increase for homes >~1600 ft², reducing heating energy use and increasing cooling energy use. Internal gains decrease for small homes.

RICC versus IECC 2003



Bottom Line – Including SEER

