

Above Code/New Technologies



RESNET/ENERGY STAR & Code
~ Field Experience

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RESNET/ENERGY STAR & Code

- Code basis of the Home Energy Rating System
 - HERS as a code compliance tool
- HERS basis of ENERGY STAR Homes
 - ENERGY STAR Homes as a code compliance tool
- Regulatory drivers for above-code standards
- Real world application
 - When code and ENERGY STAR collide
 - Performance, comfort and quality

SECTION 404 SIMULATED PERFORMANCE ALTERNATIVE (Performance)

404.1 Scope. This section establishes criteria for compliance using simulated energy performance analysis. Such analysis shall include heating, cooling, and service water heating energy only.

404.2 Mandatory requirements. Compliance with this Section requires that the criteria of Sections 401, 402.4, 402.5, 402.6 and 403 be met.

404.3 Performance-based compliance. Compliance based on simulated energy performance requires that a proposed residence (proposed design) be shown to have an annual energy cost that is less than or equal to the annual energy cost of the standard reference design. Energy prices shall be taken from a source approved by the code official, such as the Department of Energy, Energy Information Administration's *State Energy Price and Expenditure Report*. Code officials shall be permitted to require time-of-use pricing in energy cost calculations.

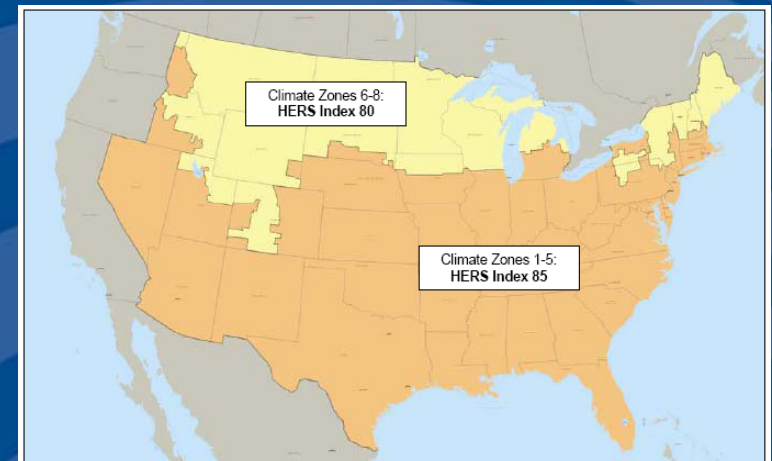
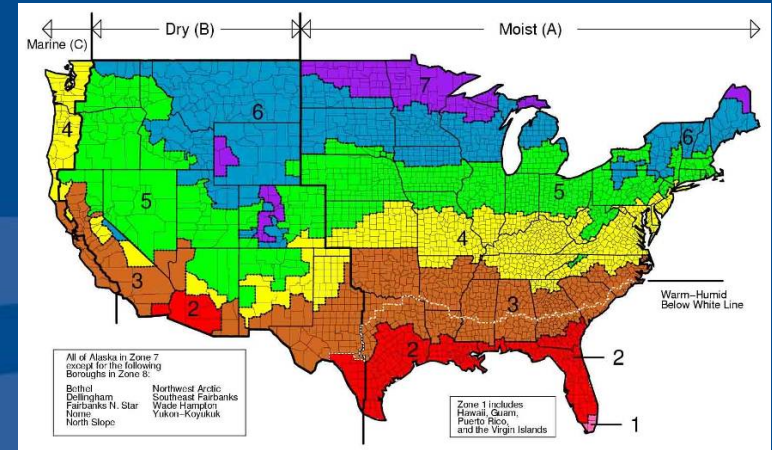
Exception: Jurisdictions that require site energy (1kWh = 3,413 Btu) rather than energy cost as the metric of comparison.

The Code Basis of HERS

- Section 404...
- RESNET verification procedure

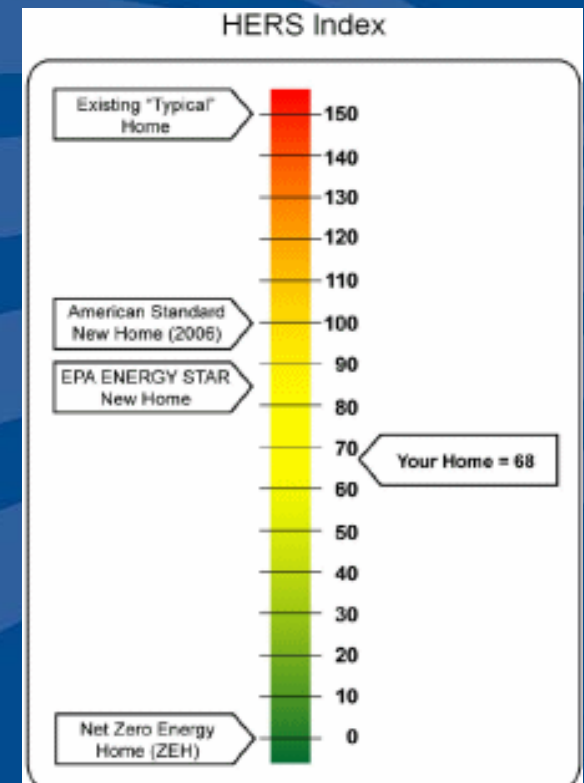
The HERS Basis of ENERGY STAR

- IECC 2004
- DOE climate zones
- HERS Index
- ENERGY STAR climate zones



The HERS Index

- HERS reference home at 100 points (IECC 2004)
 - Each 1 point = 1% energy usage (not 5%)
 - The lower the score the more efficient the home is
- Hence...
 - Zero energy home = 0
 - Energy Star Home = 85
 - 15% more energy efficient than 100 point reference home
 - Reference home = 100
 - Inefficient home > 100



Regulatory Drivers

- State/utility “market transformation” programs (may involve technical support &/or incentives)
 - NJ, NY, TX, CA, WI, FL, New England...
- Publicly funded affordable development criteria
 - NJHMFA, PHFA...
- Local codes/ordinances
 - ENERGY STAR
 - Green...

Real World Application

New Jersey example:

- ENERGY STAR documentation accepted for energy code compliance submission
- ENERGY STAR verification may substitute for local insulation inspection
- CO may be dependent on ENERGY STAR verification
- HERS 2006: More rigorous insulation installation standard “but” flexibility of a performance standard
- ESH 2006: More rigorous Thermal Bypass Checklist augments performance (and prescriptive) standards

More on Performance, Comfort & Quality

Actual Temperature

Mean Radiant Temperature

ASHRAE Comfort Zone

