Water Efficiency Innovations: How to get credit in the Water Rating Index and HERSH2O?

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Ryan Meres, Program Director
RESNET
Agenda

• Background on HERS$_{H2O}$
• Components of a water rating
• Need for innovative design requests
• Process for requests
Key Objectives for HERS$_{H2O}$

- Nationwide applicability
- Suitable for both new and existing homes
- Encompasses both indoor and outdoor water efficiency
- Practical and affordable to administer
- Scores usable for quantitative comparison
Technical Guidelines serve as the basis for the Water Rating Index Standard (BSR/RESNET/ICC 1101-201x).
This Standard will provide a uniform methodology for evaluating, rating and labeling the indoor and outdoor water use performance of one- and two-family dwellings.
Rating Calculation Methodology

- Grounded in water use data as much as possible
- Indoor reference home based primarily on HERS
  - Original analysis for Addendum A (Domestic Hot Water)
    - Residential Energy Consumption Survey (RECS)
    - DOE Engineering Analysis for Rulemakings
  - Some additional data from REUWS I & II
- Outdoor reference home based on REUWS II
  - Detailed landscape and outdoor use analysis for 838 homes
Components of a Water Rating

- Shower Heads
- Kitchen Faucet
- Lavatory Faucets
- Toilet Flush Volume
- Irrigation
- Pool or Spa
Components of a Water Rating

- Clothes Washer
- Water Softener
-Leaks/Other Water Use
- Excess Pressure
- Dishwasher
Other Factors Included in the Rating

- House Size
- Geographic Location
- Number of Bedrooms
- Lot & Landscape Size
- Hot Water Distribution Layout
- Hot Water Pipe Insulation
Indoor model will respond to:
• More efficient plumbing products
• Efficient Appliances
• More efficient plumbing distribution

Outdoor model will respond to:
• Smaller landscapes (the reference landscape is fixed based on lot size)
• More efficient irrigation technology
  o Smart controllers
  o More efficient emitters, as expressed by the Residential Irrigation Capacity Index (RICI)
Calculation Spreadsheet-Local Climate

Local Data Used for the Following:

- Evapotranspiration (ET) for landscape irrigation
  - Based on Water and Climate Atlas dataset
  - Processed at the zip code level

- Hardness of water (Water softener water use)
  - USGS hardness map
  - Processed at the zip code level

- Mains water temperature (impacts hot water use wasted)
• HERS$_{H2O}$ takes this into account at the city level.
• Variations as high as 13 gallons per day from warm to cold climates
Water Rating providers can petition for adjustment to the Water Rating Index for a Rated Home with features or technologies not addressed by Approved Software Rating Tools or the Standard.
Why Innovative Design Requests?

- Significant increases in water prices spurring investment in water efficiency technologies

**Water cost increases from 2000-2012:**

1. Atlanta: 233%
2. San Francisco: 211%
3. Wilmington: 200%
4. Philadelphia: 164%
5. Portland: 161%
6. Wichita: 153%
7. New York: 151%
8. Waterloo, IA: 145%
9. Binghamton, NY: 143%
10. San Diego and Augusta: 141%
Submitting an Innovative Design Request

Requests must include the following:

• A Rating generated from Approved Software Rating Tool for the Rated Home without feature(s) that cannot be modeled in the software tool.

• Written description of feature(s) not included in Rating generated from software.

• Manufacturer’s technical and/or performance specifications for feature(s) not included in the Rating generated from the Approved Software Rating Tool.

• Estimated water use impact with documentation to support

• Estimated adjustment to the Water Rating Index. Calculations shall follow procedures of Sections 4.1 and 4.2.
Innovative Design Requests:

- Work with a provider
- Provider submits request to Calculations Subcommittee
- Subcommittee approves or denies request
- Subcommittee may request additional information
- Has been done for Drain Water Heat Recovery systems for HERS
- If approved, can be incorporated into approved software
Potential Areas for Innovation Credits

Alternative to traditional water softener systems
Potential Areas for Innovation Credits

Leak Detection
Potential Areas for Innovation Credits

Rainwater Harvesting
Potential Areas for Innovation Credits

Grey Water Re-use
Thank you!

Ryan Meres, Program Director
RESNET
ryan@resnet.us
760-681-2391