LEED for Homes, ENERGY STAR, and WaterSense

Carissa Sawyer, PE, CEM
Energy Engineer
EnergyLogic, Inc.
Agenda

- WaterSense
- LEED for Homes
- ENERGY STAR v3
- Additional resources
- Q&A
## WaterSense Homes vs. Multifamily

<table>
<thead>
<tr>
<th>Single Family Homes</th>
<th>Low-rise Multifamily</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Detached</td>
<td>• 1-3 stories</td>
</tr>
<tr>
<td>• Attached side-by-side</td>
<td>• Stacked homes</td>
</tr>
</tbody>
</table>

### All Other Multifamily (including mixed-use)

- 4+ stories stacked homes
- Independent heating, cooling, and water heating OR
- Central hot water system with 50% of the needs provided by alternative energies
Why Multifamily?

- Multifamily housing is growing tremendously
- Denver: 10th highest metro area for multifamily permitting (6/13-6/14) – Multifamily Executive
- Job growth
- Vacancy rate decline
WaterSense Specifics

- Fixtures
  - WS labeled: toilets, flushing urinals, bathroom sink
  - Kitchen faucet: max 2.2 gpm
  - Showers: WS labeled and restrictions if multiple showerheads in one compartment

- Documentation: spec sheets
WaterSense Specifics

- Hot water delivery: no more than 0.5 gallons of water in piping
- Recirc: demand-initiated only

Determining Volume of Piping Systems

Internal Volume of Various Water Distribution Tubing

<table>
<thead>
<tr>
<th>Nominal Size (Inches)</th>
<th>Copper M</th>
<th>Copper L</th>
<th>Copper K</th>
<th>CPVC CTS SDR 11</th>
<th>CPVC SCH 40</th>
<th>PEX-Al-PEX ASTM F 1281</th>
<th>PE-AL-PE</th>
<th>PEX CTS SDR 9</th>
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</thead>
<tbody>
<tr>
<td>1/2</td>
<td>1.69</td>
<td>1.55</td>
<td>1.45</td>
<td>1.25</td>
<td>1.89</td>
<td>1.31</td>
<td>1.31</td>
<td>1.18</td>
</tr>
<tr>
<td>3/4</td>
<td>3.43</td>
<td>3.22</td>
<td>2.90</td>
<td>2.67</td>
<td>3.38</td>
<td>3.39</td>
<td>3.39</td>
<td>2.35</td>
</tr>
<tr>
<td>1</td>
<td>5.81</td>
<td>5.49</td>
<td>5.17</td>
<td>4.43</td>
<td>5.53</td>
<td>5.56</td>
<td>5.56</td>
<td>3.91</td>
</tr>
<tr>
<td>1 1/4</td>
<td>8.70</td>
<td>8.36</td>
<td>8.09</td>
<td>6.61</td>
<td>9.66</td>
<td>8.49</td>
<td>8.49</td>
<td>5.81</td>
</tr>
<tr>
<td>1 1/2</td>
<td>12.18</td>
<td>11.83</td>
<td>11.45</td>
<td>9.22</td>
<td>13.20</td>
<td>13.88</td>
<td>13.88</td>
<td>8.09</td>
</tr>
</tbody>
</table>

Conversions: 1.0 gallon (3.8 liters) = 128.0 ounces
1.0 ounce = 0.00781 gallons (0.0296 liters)
0.5 gallons (1.9 liters) = 64.0 ounces
0.6 gallons (2.3 liters) = 76.8 ounces
WaterSense: Other Specifics

- No leaks
- Service pressure: max 60 psi
- Clothes washer and dishwasher must be ENERGY STAR labeled
- Multifamily: units individually metered
- Optional: drinking water treatment systems and water softeners with specs
WaterSense: Homeowner Manual

- Operation and maintenance information for:
  - PRVs
  - Hot water delivery system
  - Toilets, faucets, showerheads
  - Dishwasher, clothes washer, water softener, drinking water treatment system
WaterSense Help

- Website: [http://www.epa.gov/watersense/new_homes/homes_final.html](http://www.epa.gov/watersense/new_homes/homes_final.html)
- E-mail: watersense@epa.gov
- Helpline: (866) WTR-SENS (987-7367)
- Alicia or Jonah
LEED for Homes v2008

- **Durability**
  - Drain and drain pan for
    - tank water heaters
    - clothes washers
    - condensing dryers

- **Water Efficiency**
  - Lavatory faucets, showerheads, toilets
  - Spec sheets
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- Hot Water Distribution
  - Pipe insulation, R-4 on all domestic hot water lines, including elbows

Figure 5(a): Sample Schematic of a Structured Plumbing System

- Recirculation loop must be insulated (≥R-4), and limited in length (see credit).
- All branches from the recirculation loop to the fixture must be ≤10 feet and max 1/2” diameter.
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- Hot Water Distribution (cont.)

*Figure 5(b): Sample Schematic of a Central Manifold Distribution System*

- Trunk must be ≤6 feet from water heater and insulated to ≥R4
- Home must have a tight plumbing core, with branches that are limited in length (see credit) and max 1/2” diameter
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- Hot Water Distribution (cont.)

Figure 5(c): Sample Schematic of a Compact Design

Home must have a tight plumbing core, with branches that are limited in length (see credit) and max 1/2” diameter.
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- Efficient hot water heater
- High efficiency appliances
- Materials
  - PEX water piping
- Homeowner manual
  - Operations manual for all installed water equipment
LEED for Homes v4

- Same as WaterSense plus (from v2008):
  - Pipe insulation
  - Efficient hot water heater
  - Durability
LEED for Homes Help

- Website: www.usgbc.org
- Email: homes@usgbc.org
**ENERGY STAR v3**

- Efficient hot water heater

<table>
<thead>
<tr>
<th>Type</th>
<th>30 Gal</th>
<th>40 Gal</th>
<th>50 Gal</th>
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<tbody>
<tr>
<td>Gas:</td>
<td>0.63 EF</td>
<td>0.61 EF</td>
<td>0.59 EF</td>
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<tr>
<td>Electric:</td>
<td>0.94 EF</td>
<td>0.93 EF</td>
<td>0.92 EF</td>
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<tr>
<td>Oil:</td>
<td>0.55 EF</td>
<td>0.53 EF</td>
<td>0.51 EF</td>
</tr>
<tr>
<td></td>
<td>0.57 EF</td>
<td>0.55 EF</td>
<td>0.53 EF</td>
</tr>
<tr>
<td></td>
<td>0.91 EF</td>
<td>0.90 EF</td>
<td>0.89 EF</td>
</tr>
<tr>
<td></td>
<td>0.49 EF</td>
<td>0.47 EF</td>
<td>0.45 EF</td>
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</tbody>
</table>

- Help:
  - Hotline: 1-888-STAR-YES (1-888-782-7937)
Question and Answer
Thank you!

Contact Information

Carissa Sawyer

carissa@nrglogic.com

303.598.6626

www.nrglogic.com