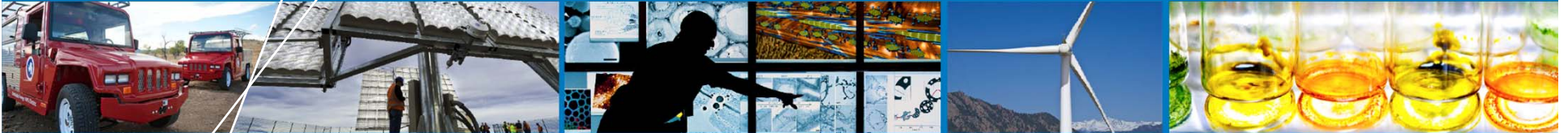


Identifying Needed Capabilities in Multifamily Models



**Building America Technical
Update Meeting**

Eric Wilson

April 30, 2013

Definitions

Current definitions for HSP/BEopt:

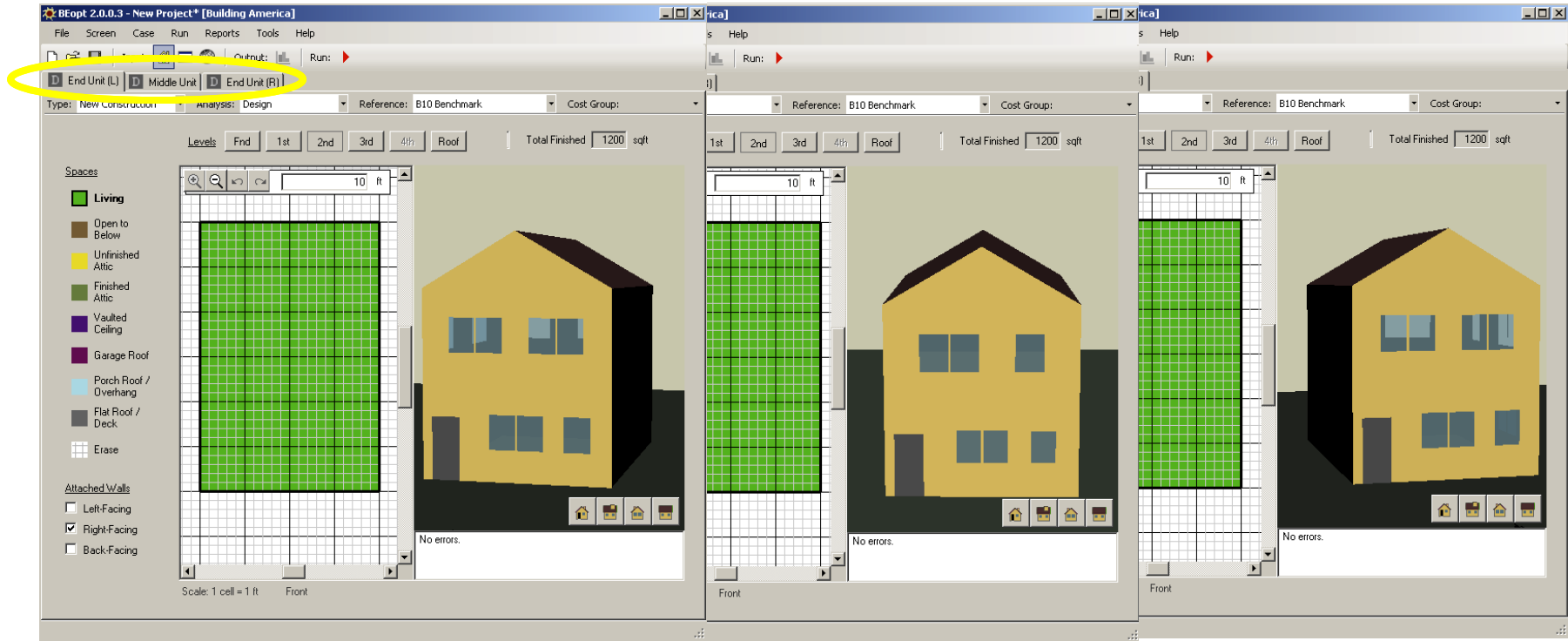
Single Family Attached

= Townhouses, row houses, duplexes

Multifamily Buildings

= 5+ units; shared floors/ceilings

Single Family Attached - Rowhouses



Attached Walls

- Left-Facing
- Right-Facing
- Back-Facing

Attached Walls

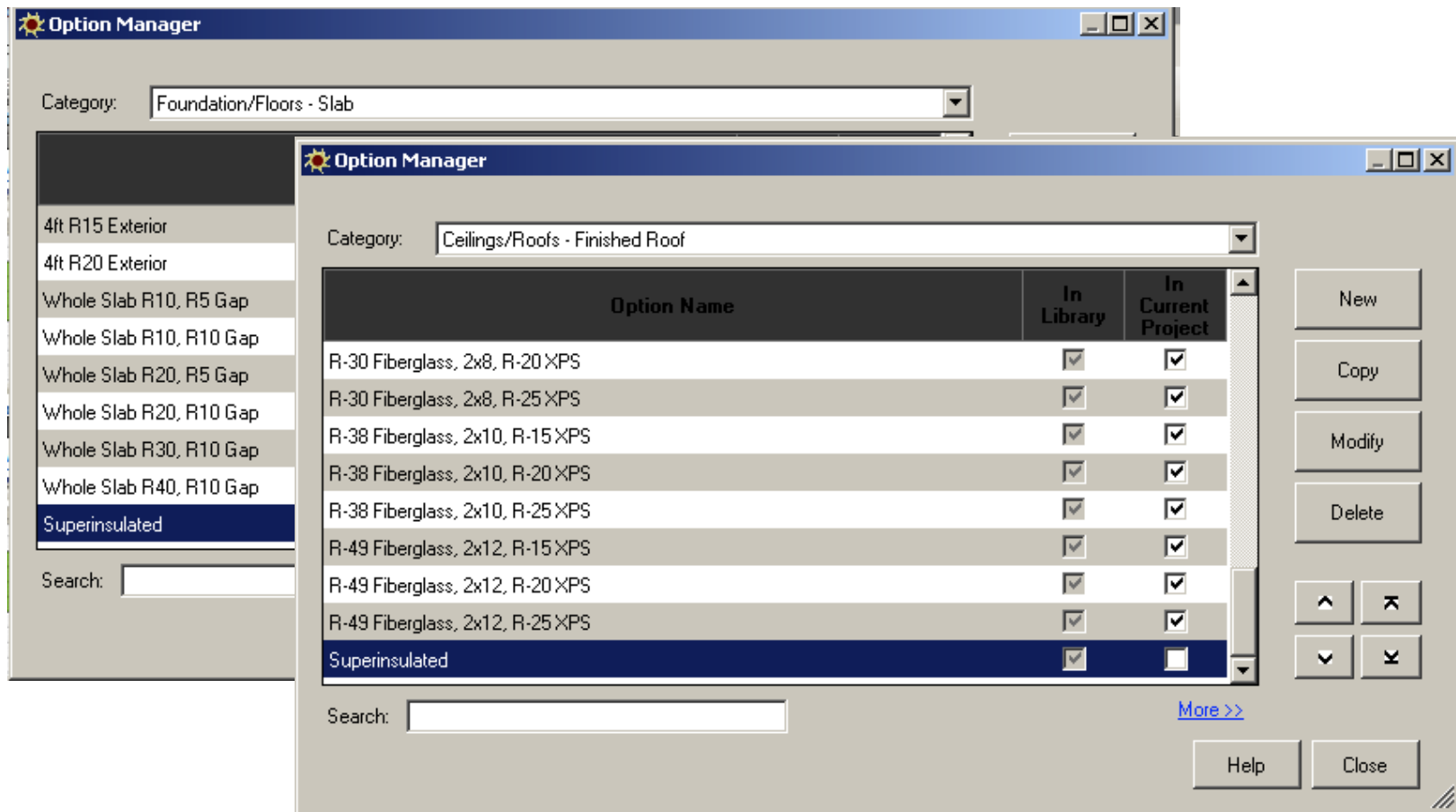
- Left-Facing
- Right-Facing
- Back-Facing

Attached Walls

- Left-Facing
- Right-Facing
- Back-Facing

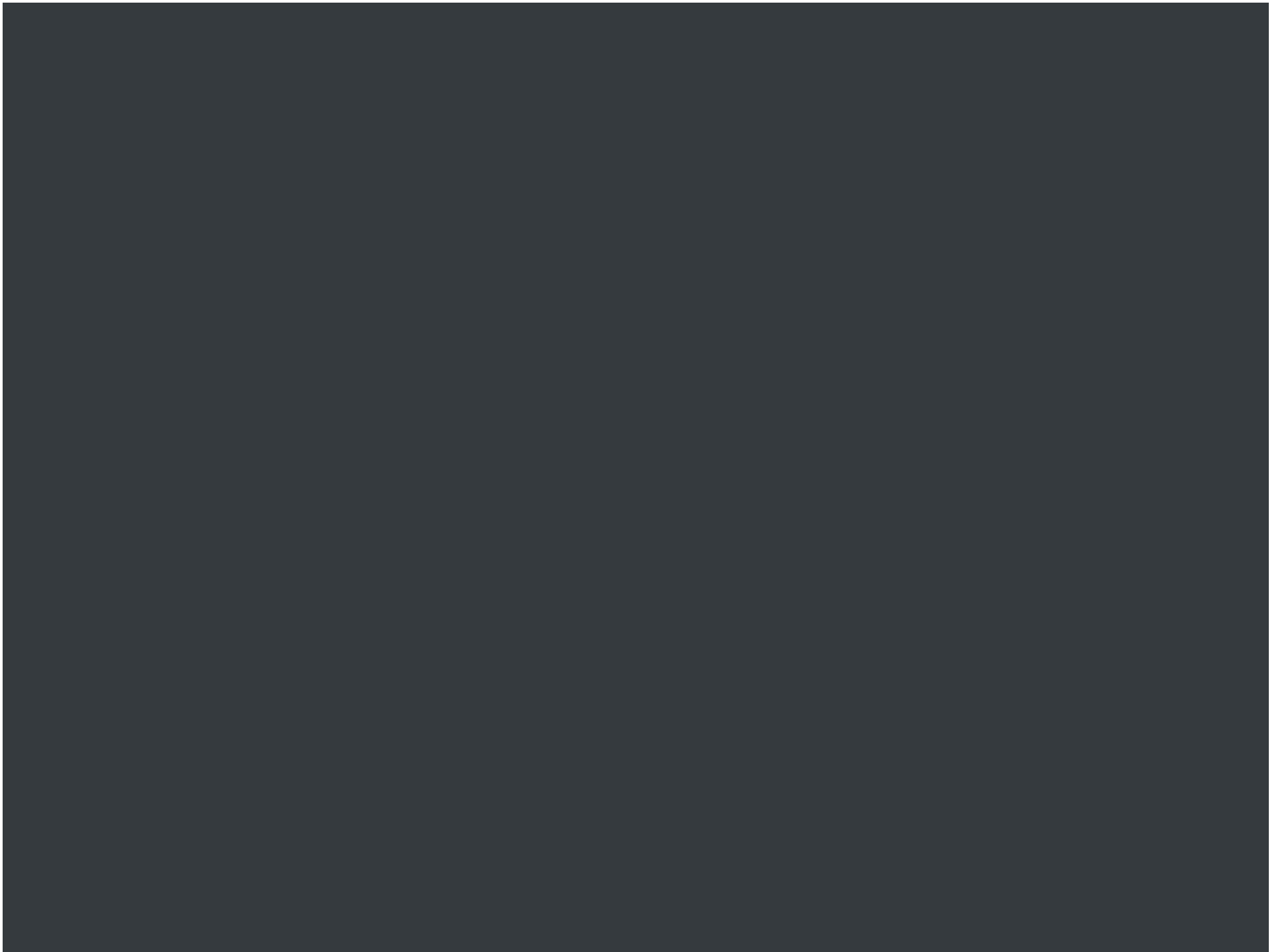
Multifamily – Stacked Units

- Enable Superinsulated Slab and Roof options in Option Manager



Multifamily Modeling Needs

- Adiabatic shared walls, floors, and ceilings
- Unit multipliers → Whole-Building Model
- Corridors
- Common Areas
- Operating Conditions (Benchmark)
- Central HVAC Systems/Controls
- Central DHW Systems
- ???



Zero Window Area on Attached Walls

The screenshot displays the BEopt 2.0.0.3 software interface for a project named 'Building America'. The main window shows a tree view on the left with 'Windows & Doors' expanded to 'Window Areas'. A table on the right lists 10 window area options with their total area and distribution. A blue arrow points from the 'Attached Walls' section in the bottom-left panel to option 9 in the table.

Option	Total Window Area [sqft]	F/B/L/R Window
1) None		
2) 18.0% F25 B25 L25 R25	158	40, 40,
3) 18.0% F20 B40 L20 R20	158	32, 63,
4) 15.0% F25 B25 L25 R25	132	33, 33,
5) 15.0% F20 B40 L20 R20	132	26, 53,
6) 12.0% F25 B25 L25 R25	106	26, 26,
7) 12.0% F20 B40 L20 R20	106	21, 42,
8) 15.0% F33 B33 L0 R33 (attached L)	132	44, 44
9) 15.0% F33 B33 L33 R0 (attached R)	132	44, 44
10) 15.0% F50 B0 L0 R0 (attached L,R)	132	66, 66

Attached Walls

- Left-Facing
- Right-Facing
- Back-Facing

Scale: 1 cell = 2 ft Front

Click to switch levels. Additional levels become available as you draw.

Window Area options specify total window area as a percent of exterior wall area, followed by the percentage distribution of window areas (Front, Back, Left, and Right) with Front facing the street. Window areas include both glazing and frame. Window areas (and net wall areas) are multiplied times the costs (per square foot) specified in the Window Type and Walls categories.

The 'attached' example options are compatible with the 'Attached Walls' options on the geometry screen used for modeling attached homes (e.g. duplex or rowhouse). Note that attached wall area is not included in the exterior wall area used for calculating window area.

Perimeter/Area ratios are used to adjust the U-values and SHGCs based on frame and glazing areas for various types and sizes of window assembly.