



ENERGY STAR® Home Energy Rating System (HERS) Scale

Poor Energy Performance



Typical Existing Home

130

Typical New Home

100

Net Zero Energy Home

0

Best Energy Performance

2,783 SF | Completed 2007  
5,600' Elevation | Boulder, Colorado

### Projected HERS Performance Rating



#### Electricity

Grid-tied 6.02 kW roof-mounted PV array, producing 8,300 kWh per year with expected household consumption at 7,600 kWh per year

#### Heating

- Solar thermal hot water feeding radiant floor heat systems in basement slab, and staple-up in new addition
- 8 kW Thermolec electric boiler booster in the solar storage tanks
- 180 evacuated tubes as primary water source

- Two 168-gallon stainless steel tanks insulated with 12" open-cell foam on all sides as solar thermal storage

#### Advanced Energy Design

- Exterior walls on existing structure - (Outside to inside) 1/2" OSB over 2x4 stud wall, set off from existing wall by 1/4", filled with 3.25" Icynene insulation, separated from interior 2x4 stud wall filled with 3.5" cellulose insulation by 1 layer Tyvek. Thermally broken R-28
- Exterior walls on new addition - 2x4 stud wall with 1.5" resilient channel on

interior, 7" Icynene insulation in cavity. Thermally broken R-27

- Roof at existing structure: 8" Icynene + 8" blown cellulose between ceiling joists. Estimated R-70.
- Roof at addition: 6" SIPS with 3.5" Icynene sprayed on underside at dropped ceiling. Estimated R-55
- Duxton fiber glass frames with 2 layers Heat Mirror TC88. Average whole-unit U-value: U-0.15 (R-6.7); Center of glass (COG) U-value: U-0.07 (R-14.3)