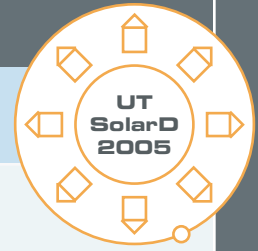


daylighting



the SNAP House

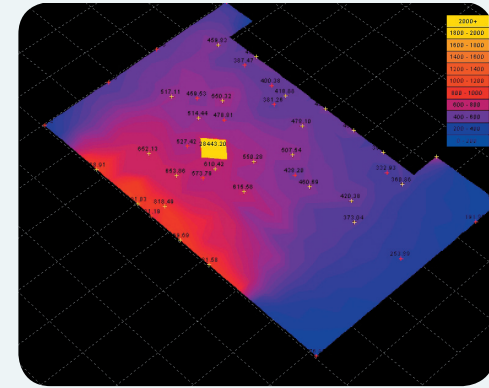
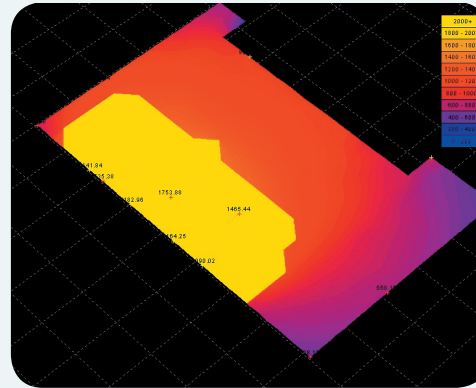
The UT SolarD SNAP House daylighting scheme relies on strategic placement, composition and versatility of openings to maximize natural light distribution and minimize unwanted heat gain, heat loss and glare.

Placement

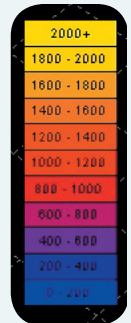
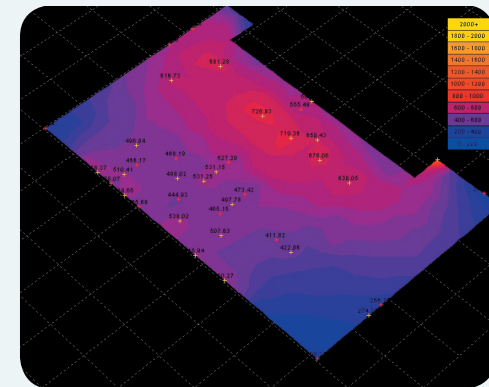
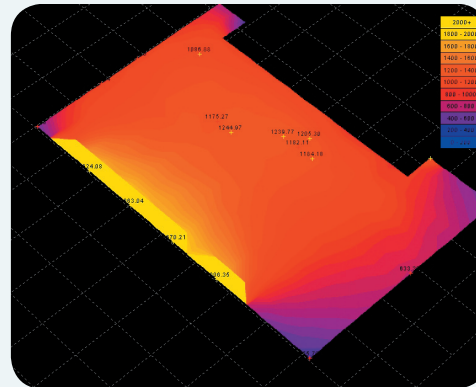
To reduce morning and afternoon heat gain, a crucial consideration during Austin's spring, summer, and fall months, we have placed window and door openings only on the north and south faces of the SNAP House. The south-facing sliding doors are shaded from the summer sun by an overhang of spaced-cell photovoltaic panels (allowing approximately 20% light transmittance) and by sliding sunshades made of reclaimed redwood. Clerestory strip windows face north to provide consistent interior daylighting with a minimum of solar gain. Glazing in the north ends of the Kitchen, Bedroom and Office SNAPS provides additional daylighting and opportunities for cross-ventilation. Finally, the skylight in the bathroom introduces additional daylight into the house's private spaces.

Composition

Almost all of our doors and windows are triple-glazed, double low-e, and warm-edge spaced, preventing excessive heat gain and glare. The north-facing bedroom window is the only exception; in this case, the window's orientation and position behind a wooden rainscreen lent itself to more light transmittance, requiring only double-glazing with a single low-e coating.



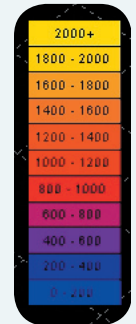
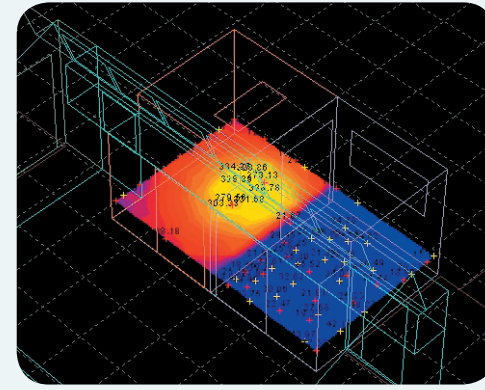
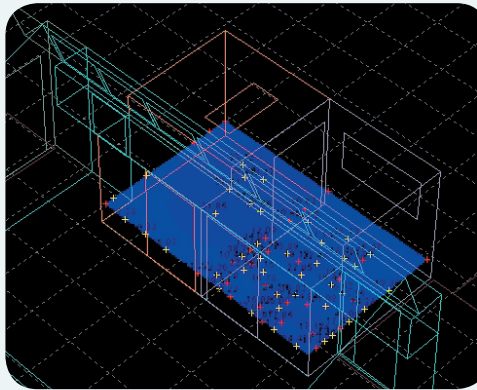
Living room lighting level in winter with sunshade off (left) and with sunshade on (right).



Living room lighting level in summer with sunshade off (left) and with sunshade on (right).

Versatility

The external sliding wooden sunshades, aesthetically integrated with the rainscreen facade, shelter the south-facing sliding doors from overwhelming heat gain and glare, yet can be moved aside to allow some passive heating during the winter. Transmittance-transformable electrochromic glass in the skylight gives the user control over excessive insolation with the turn of a switch. The same technology, installed in the front-door sidelight, offers a mechanism by which the inhabitants may instantly switch between visual privacy and openness.



Bathroom lighting level with translucent window (left) and with clear window (right) in overcast sky.