



BY CLAIR ENLOW

THE BOTTOM LINE

and livability of the houses. Thanks to Frerking, the design for the homes evokes images of Wright's solid, earthbound compositions of stone and concrete in natural settings. Working within the harsh discipline the desert climate imposes, Frerking's design encompasses style, ease and comfort.

Frerking's single-story plans for each house include a high-ceiling living and dining core flanked by bedrooms. Each of the bedrooms has a private patio that opens out onto gardens of native plants, dominated by palo verde and desert acacia. Inside, the engineered concrete walls, cool to the touch, will naturally absorb heat like their historic adobe predecessors. Poured concrete floors will also reduce the heat inside. Quiet, efficient air conditioning will ventilate as well as cool. The demonstration homes are intended to show that, with smart design, it should be possible to live comfortably, affordably and energy-efficiently in 110 degree weather.

For these houses, environmentally friendly and energy efficient green features are not a set of add-on options that buyers might find in a model home but cannot afford, says Suppes.

He and his consultant team are gearing up to build hundreds of market-rate houses in which sustainability is just part of their value and their beauty. The team has been perfecting these in several northern California communities that feature variations of Clarum Homes' Enviro-Home™ model, which combines energy efficiency with photovoltaic power generation to bring net electrical bills close to zero. Suppes and Frerking are working on plans for other zero-energy housing developments in Joshua Tree, California, and Prescott, Arizona, that will use lessons to be learned from the Borrego Springs project. "The bottom line is that if you create more value, it then creates a differentiation in the market," said Suppes. "And people are going to really look for value." ■

Shading strategies: "The first thing is shade," says architect Michael Frerking. "Deep roof overhangs and close integration with the landscape [are key] so that where the roof doesn't provide shade, the plantings do."

Thermal stacking: Frerking used another desert-friendly architectural feature: the multi-story thermal stack in the form of 7-foot-high light shafts positioned above the 10-foot-high central dining space. Topped with a skylight under a small roof cap that shields it from the noon sun, these shafts flood the center of the house with natural light, while allowing hot air to rise, cooling the rooms below.

Thermal mass: Two of the homes will be built with T-Mass walls developed by Dow Chemical (dow.com/Styrofoam) that sandwich a 4-inch core of Styrofoam between two layers of concrete. The inner layer of concrete, insulated from outside air, works on the same principle as a traditional adobe structure, absorbing heat from indoor air and people during the day. At night it is re-cooled by air conditioning, which runs at lower cost during off-peak hours. Floors do double duty with cooling coils under their stained concrete surfaces.

New air conditioning technologies: The project tests two new-generation air conditioning systems: the direct/indirect evaporative cooler whose efficiency is actually improved by hotter outdoor air, and the water-chilled outdoor condenser (freus.com) that works by cooling water instead of air inside the unit, then cooling indoor air indirectly through coils in the concrete floor.

Lighting: Well-insulated and airtight fluorescent lighting consume one-quarter to one-third the electricity of incandescent lights. These fixtures can deliver light as warm in tone as incandescent light, according to engineer Rob Hammon.