



UNLV DESERT SUNRISE

DESERT SUNRISE HOME



Project Summary

Desert Sunrise is a net-zero *site* energy home that combines the culture and traditions of the Moapa Band of Paiutes of Southern Nevada with contemporary, evidence-based design practices to produce a safe, comfortable and energy efficient home in the heart of the Mojave Desert.

Relevance of Project to the Goals of the Competition

Desert Sunrise was designed using a rigorous research approach to understand how advanced building technologies fit across a spectrum of efficiency and cost. Our project uses the evidence generated from this research to create a unique home for the Moapa Band of Paiutes. Desert Sunrise showcases a design that is rich and livable, but also fits into a below-average economic bracket. Our team believes that the energy efficient future promoted by this competition must include everyone, not just typical middle and upper-class new homes.



Design Strategy and Key Points

Our design was driven by several over-arching principles: Efficiency in the use of materials and labor; harvesting the resources of our intense desert environment through passive & active solar strategies; high quality and comfort of living; and durability of a home that will uniquely be passed down through a tight and proud community.

Project Data

- Las Vegas, Nevada.
- Climate Zone 3.
- 1,387 sq. ft.
- 2 bedrooms, 2 bathrooms; 1 story.
- HERS Index w/o Renewable Energy (RE) = 33^a / HERS Index with RE = -11^a
- Monthly Energy Cost w/o RE = \$989^a / Monthly Energy Cost with RE = \$0^a

Technical Specifications

- Wall R-Value (*Isothermal Planes Calculation Method*) = R-24.1
- Foundation Insulation (*FPSF fully insulated*) = R-10
- Roof Insulation (*Isothermal Planes Calculation Method*) = R-35.5
- Area-weighted window U-Value / SHGC / VT^b = U=0.26 / SHGC=0.24 / VT=0.44
- Ductless Mini-Split Heat Pump = SEER 18 / HSPF 9.5
- Photovoltaic Array = 5.04 kWp

^a The HERS Index and Monthly Energy Costs were determined with REM Rate v.14.6

^b The area-weighted window U-Value, SHGC, and VT do not include the south glass of the Tromb  Wall.