The Net Zero Heroes, a team of engineers, architects, energy modelers, and designers, have joined to design the Denver Riverfront Museum. The energy modeling tool of choice was OpenStudio and, together with other tools like AGI32, Autodesk CFD, and System Advisor Model, the Heroes designed a net zero museum with an EUI of 13.7 kBtuh/sf, less than one third the energy consumption of a typical museum.

**Model Description**

The Net Zero Heroes began with the end in mind; a target EUI of 13.98 kBtuh/sf as determined by the power generated by 10,000 sf of PV. Passive architectural strategies, such as burying half the building, north-facing top-lighting, and rammed earth walls helped reduce the energy needs. Dedicated outdoor air systems tied to displacement ventilation distribution meet the ventilation and humidification requirements of the spaces using indirect evaporative cooling, sensible air-to-air heat exchangers, and ultrasonic duct humidifiers. A vertical ground loop heat pump system supplies radiant ceiling heating and zone level water-air heat pumps to handle the sensible loads. Service hot water needs are entirely met by using hybrid PVT panels instead of plain PV panels. To engage and educate visitors, the surfaces of the light wells are covered with an interactive art display powered by energy-generating floor tiles.

**Energy Savings Strategies**

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