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The Hybrid Solar Adobe Homes by Mark Chalom.

As Dr J. D. Balcomb mentions in the September 06 issue of Solar Today Magazine Passive Solar Design has become overlooked as the best application of Solar Energy we now have. This presentation will highlight 2 hybrid Passive Solar Adobe Homes. These homes incorporate more than Adobe, they are designed to maximize the passive solar potentials and utilize as little back up energy as possible. Many other sustainable systems are integrated in these homes. Both homes will be utilizing the PNM wind program to supply clean renewable electricity. Natural daylighting, compact florescent bulbs, Energy Star Appliances, and water based sealers will be utilized in these homes adding to efficiencies and indoor air quality. Water conserving fixtures, water harvesting and water re use will minimize the use water in these homes.

The Leinhart home integrates Rastra block for insulated exterior walls and the adobe is used on the interior for thermal mass. The plan is a split level to integrate with the natural terrain. The 2 story atrium and the 2 story stair well serve to set up a natural thermosyphon to move heat well into the home. Local timbers, local made cabinets, locally supplied adobes and local labor adds to the local economy. The back up system is a ground source heat pump supplying clean renewable energy as a back up to the passive solar and all the hot water needs. The electricity for the home will be supplied by the PNM wind program making this house carbon neutral to operate and will add no CO2 to the atmosphere unless they burn some wood in the fireplace for ambiance. All the rainwater falling on the roof will be collected and utilized for landscaping and irrigation.

The Bechtold home will utilize 2x4 frame walls insulated with breathable Icynene spray insulation, a clean, non outgasing water based blown foam. This will also seal any air gaps around windows and doors making the house very tight. We may need an air to air heat exchanger. The interior walls and veneered exterior walls will put the adobe where it needs to be. The Passive Solar designs incorporate combinations of Direct Gain and Adobe Trombe Walls balanced for each room. All roof water will be collected and utilized in toilets, utility sinks a car washing hose bib and an exterior fountain. All grey and black water will be processed through an anaerobic digester, and utilized for landscaping grown to modify the climate around the home affecting the cooling and heating needs of the home. No nitrates will leave the digester. The cement utilizes a percentage of flyash, cutting back on the amount of cement needed. The timbers will be coming from a sustainable harvested local forest. Up to 70% of the heating and 95% of the cooling will be naturally supplied by the design of the home. The cooling will not be backed up. All hot water will be supplied by a solar hot water system backed up by renewable, clean wind generated electricity.

The presentation will incorporate slides of architectural plans, 3D models, schematic diagrams, calculation results, construction photos and finished homes.