PINOLEVILLE POMO | PINOLEVILLE POMO NATION HOMES

Client: Pinoleville Pomo Nation
Contractor: Pinoleville Pomo Nation Housing Authority
Consulting Engineer: Laco Associates

Partners: Community Assessment of Renewable Energy & Sustainability (CARES)
University of California Berkeley (UCB)
Development Center for Appropriate Technology (DCAT), Vital Systems (Natural Building)

TECHNOLOGY TRANSFER

In collaboration with Pinoleville Pomo Nation (PPN), the Community Assessment of Renewable Energy & Sustainability (CARES) and the Departments of Mechanical Engineering and Architecture at the University of California Berkeley (UCB) created ambitious, culturally inspired, efficient model homes featuring natural materials and integrated renewable energy systems. As the tribe continues working toward culturally-appropriate housing and facilities, these homes demonstrate ways to provide for future needs.

CORE PROJECT EMPHASES:

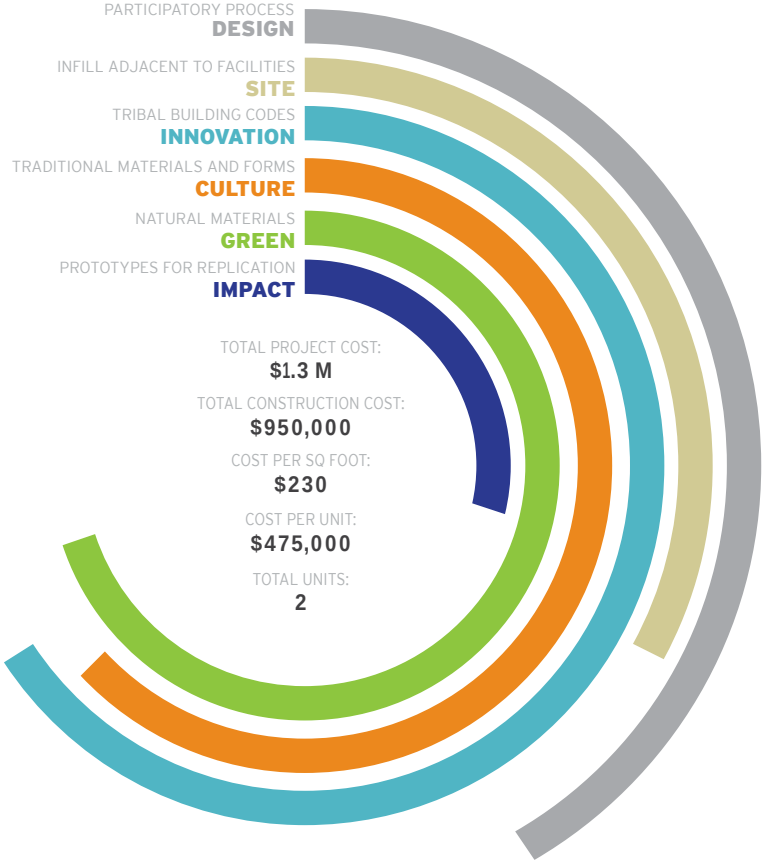
Building Codes | Natural Building | Partnership | Engagement

LESSONS LEARNED

- Tribes with access to technical assistance and control over their funding can achieve green, culturally-appropriate housing even after years of being marginalized.
- Building multiple prototype versions allows for side-by-side testing and research for future performance optimization.
- New housing projects can preserve cultural and traditional values.
- Developing a culturally informed community engagement process helped develop tribal green building codes.

BEST PRACTICES

- Renewable energy-efficient systems were co-designed and built by tribal citizens.
- Rainwater catchment and grey-water systems reduce vulnerability to water shortages and support on site plantings.



2008 Request for services

FALL 2008 UCB design collaboration

Spring 2010 Design phase completed

SEPT 2012 Substantial completion

2013 Anticipated completion

Single-Family

North West

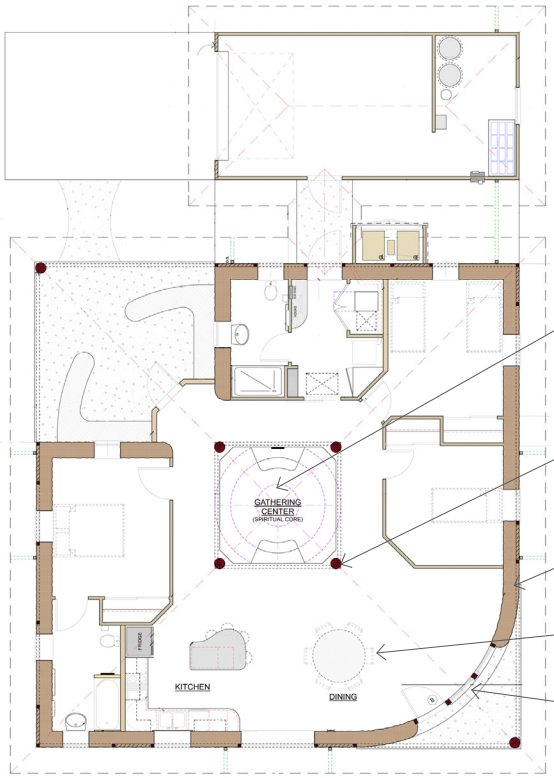
PINOLEVILLE POMO NATION HOMES

INNOVATION

Several key partnerships made this project unique and helped to assure its success. A collaborative design approach allowed for technology transfer in many areas: education about passive solar, water harvesting, cob, earth plasters, and stone masonry. The culturally-informed design of the houses reflect a Pinoleville Pomo Nation (PPN) preference for traditional curving and nonlinear forms in their structures. The use of straw-bale and natural materials and finishes enhanced this preference. The design went through several phases of revision by local builders and natural-building facilitators. In a parallel process, the PPN collaborated with the Development Center for Appropriate Technology (DCAT) to produce a tribal green building code framework in 2011.

PROCESS

Community engagement was important throughout the design/build process. The co-design approach developed after a request from PPN for University of California Berkley technical assistance. PPN was most knowledgeable about their Nation and needs, and the University of California Berkley had specific technical skills to add to achieve goals. One challenge in the process was to determine the tribe's goals. UCB/CARES researched methods of engagement to arrive at a framework for collaboration while helping to define what sustainability means to Pinoleville Pomo Nation community citizens. Working with the DCAT and others, the tribe has developed a framework of tribal green building codes to assert cultural sovereignty, address tribal priorities, and build capacity.



3 Bedrooms | 1 Story | Floor Plan

Drawing: Pinoleville Pomo Nation Housing Authority

> "Putting in the straw-bale brought a lot of people together: tribal, nation, university. People coming together to build homes."
>
> - Nathan Rich, PPN resident

- A lowered floor area centers each traditional home and allows for ceremony.
- Four wood columns support a clerestory vault and emphasize the importance of. the cardinal directions.
- Natural materials stand out, including: earth plaster, straw-bales, stone, and abalone shell.
- Open plan allows for diverse gatherings and flexible use.
- Curved walls reference traditional Pomo architecture.

GREEN

These unique houses feature energy-efficient systems, straw-bale walls, earthen plasters, no-to-low volatile organic compound paints and stains, ground-source heat pumps, solar photovoltaic arrays, solar hot water collectors, grey-water irrigation, composting toilets, and rain-catchment systems. Efficient and renewable energy systems reduce dependence on outside service providers and demonstrate a tribal preference for clean energy. These homes are designed to conserve resources with passive heating and cooling considerations, mold- and pest-resistant wall sections, and emissions-free heating and cooling system. Rainwater-catchment and grey-water systems reduce vulnerability to water shortages and support on-site gardens and landscaping.

Photo: SNCC