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Nate Seltenrich

Pinoleville homes have adobe-like walls and 18 inches of hay for insulation. (Nate Seltenrich)

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## Indian Country Leading Green-Building Revolution

**NATE SELTENRICH** | MAY 14, 2013

On the 108-acre Pinoleville Rancheria in Ukiah, California, two hours north of San Francisco, Nathan Rich showed me around the new home he planned to move into with his three kids. Except for the nearly identical one next door, the home was unlike any other on the reservation—or anywhere else in town,

for that matter.

Its walls were made of earthen plaster and cob (an adobe-like mixture of clay, sand, straw and water) and insulated with 18-inch-thick bales of straw. Its floors were concrete and its paints clay-based. Its roof had solar panels and a rainwater catchment system. Its indoor plumbing was designed to utilize greywater (recycled water from appliances and fixtures), and its heating comes from a ground-sourced heat-pump system, which harnesses the Earth's natural warmth.

Both of these 2,300-square-foot prototypes, each with three bedrooms and two bathrooms, were the result of more than five years of work by the Pinoleville Pomo Nation. Tribal members were integral to the process, including providing labor for construction—Rich helped build his future home, and many people lent a

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hand, either directly or indirectly.

Over the past five years, interest in sustainable design and construction has proliferated throughout Indian country, from Alaska to Arizona. Tribes that were among the United States's original green builders are now working to overcome a 100-plus-year-legacy of substandard housing on reservations through healthy, efficient, natural, climate-appropriate and culturally sensitive housing. Motivated by energy savings, indoor-air-quality improvements, tribal autonomy, sustainability and a deep connection with the Earth, many tribes have begun to view green-building as a link to their past and a key to their future.

The movement has garnered support of federal programs, including the U.S. Environmental Protection Agency's Tribal Green Building Initiative, which offers technical assistance to tribes, and the Department of Housing and Urban Development's Sustainable Construction in Indian Country Small Grant Program, which offers both guidance and funding opportunities. "Nobody wants to go back to living in a tipi," says Scott Moore of Blue Star Studio, a Native-owned architectural firm. "That's not the answer. But at the same time, we need to create space to allow indigenous populations to take a look around them and say, 'What's going to work for us now?'"

Contemporary green-building gets to the heart of Native culture writ large, he argues, as tribes transition toward permanent housing, return their attention to the Earth, reconnect with the past, insist upon defining themselves and their future, and improve their economic situation through affordable homeownership and reduced energy costs. In this sense, green-building is not an end in itself, but rather a means to revitalization.

That sentiment resonates for the Pinoleville Pomo Nation, still grappling with the fallout from the federal government's termination of the tribe in 1966, which included the loss of much of its land and an ensuing housing shortage. (Its status as a federally recognized tribe was restored in 1983.) Tribal leaders hope that the new green homes, modeled loosely on traditional roundhouses, will provide a blueprint for 15 new healthy, water- and energy-efficient residences they hope to construct 35 miles away from their reservation. Plans are also in the works to add more housing to the rancheria in Ukiah. The two prototypes, meanwhile, will finally welcome their new residents, including Rich and his children, by the end of April. Ultimately, tribal leaders hope this spurt of home-building will lure back those forced to leave the area for other towns and cities.



Apartment complex in the Puyallup Longhouse Project, left, and Thunder Valley Community Development project (Puyallup Tribal Housing Authority; Thunder Valley Community Development Corp.)

Hopes for the future are also the driving force behind an innovative green-building project on South Dakota's Pine Ridge Reservation that features net-zero-energy affordable homes. "It's not just the environment that we're trying to regenerate, but also the people and the culture," explains Nick Tilsen, executive director of the Thunder Valley Community Development Corporation, the nonprofit behind the project.

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The organization aims to build 30 to 40 single-family homes and a few apartment complexes and townhomes—all of whose energy needs would be met on-site—on a 34-acre property at Pine Ridge called the Thunder Valley Regenerative Community. The development could provide significant support to the impoverished reservation's economic recovery, Tilsen says.

With Pine Ridge's extreme climate and small per-capita incomes, reducing monthly utility bills assumes an outsize importance.

"When you reduce the utility bill, you increase their ability to pay a mortgage, which adds to economic independence," Tilsen says. In this sense, rooftop solar panels, climate-appropriate design and high-performance insulation count for much more than green-building bragging rights.

Tilsen says he hopes the project—which has been supported in part by a \$1 million regional planning grant from HUD—will provide a model for everyone, on reservations and off. "We're looking for these 34 acres to be almost like a laboratory for Indian country, for Pine Ridge and almost for the country when it comes to sustainable buildings and sustainable communities," he says.

Tribes across the country are advancing their goals as they push green-building boundaries. The Puyallup Tribe near Seattle, for example, recently completed a housing project that was granted a 2013 SEED Award for Excellence in Public Interest Design, and, even more impressively, won Project of the Year from the U.S. Green Building Council for 2012—a nationwide award not limited to Indian country.

The project involved 22 one- and two-bedroom attached townhomes designed to emulate the rectangular, shed-roofed form of a traditional Coast Salish longhouse. The homes also reflect traditional values and materials in their use of cedar, a locally available material, in each home's entryway, and the units' general orientation around central public corridors. Sustainable features of the homes include structural insulated panels in the walls for a well-insulated envelope, triple-pane windows, and ground-sourced heat pumps for both water and radiant floor heating. The work was funded by federal stimulus money.

Annette Bryan, executive director of the Puyallup Tribal Housing Authority, says the homes could be an anchor for the tribe's next generation. "They mean so much more to us as Indian people than the technical aspects," she explains. "We're very urban, and we're really trying to revitalize our culture. This project fits in with the whole tribal goal. It's really beautiful."

The tribe has a second longhouse project that should be complete this spring. It won't be LEED-certified due to the extra cost and time required, but the hope is that the new units will be able to operate on a net-zero-energy basis. "Our value system all the way back is to value mother earth, and to interact with nature in a way that protects it," Bryan says. "That's the important thing to me, and that's the passion that's behind it."

Washington-based architect Daniel Glenn, a member of Montana's Crow Tribe, helped design the Puyallup longhouse and has emerged in recent years as one of Indian country's leading architects specializing in culturally and environmental responsive design. He has also helped develop innovative homes suited to local climates, customs, and materials for the Nez Perce tribe in Idaho and the Navajo Nation in Arizona, among others.

One of Glenn's aims is to replace and improve upon the HUD-funded cookie-cutter homes built on reservations nationwide throughout the latter half of the 20th century. "There was no thought to culture, climate or place," Glenn explains. "People would freeze in them in Montana and overheat in them in Arizona." After the passage of the Native American Housing Assistance and Self-Determination Act in 1996, however, tribes were granted more control over how HUD funds

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could be spent. “A big part of the message of HUD now is to say, ‘You’ve got this freedom to build whatever you want to build,’ he says. “So we’re going back to get them to build homes that are more appropriate and sustainable.”

The Santa Fe, New Mexico–based Sustainable Native Communities Collaborative, of which Glenn is a member, also provides outreach and assistance to tribes interested in green building. The collaborative recently received a grant from the HUD Office of Policy Development and Research to compile case studies of green homes throughout Indian country, which could prove a valuable teaching tool. “There’s some really amazing projects out there,” says founder Jamie Blosser. “It’s one thing to understand the mechanics of green building, but a lot of times, without seeing what other people have done, it’s hard to imagine what’s really, truly possible.”

The spirit of sharing among tribes has likely contributed to the emerging popularity of passive solar design, which is perhaps even more in-demand on tribal lands than it is off. David Grimes, an architect who has worked on green buildings since 1999, estimated that at least 75 percent of his recent projects have employed passive solar, where a home’s overhangs, orientation, and layout are designed to take full advantage of the sun’s path across the sky to help heat and cool the interior. “It’s more like sailing versus using a motorboat,” Grimes says. “You’re working with the sun, rather than fighting with it.”

Making full use of the sun’s warmth—and efficiently fending off the bitter cold—is a matter of survival in the tiny village of Anaktuvuk Pass, 100 miles north of the Arctic Circle on Alaska’s North Slope. There, the Tagiugmiullu Nunamiullu Housing Authority led the design and construction of one of Indian country’s most intriguing prototype homes—and a model for green construction in extremely cold climates worldwide. Based on Native communities’ traditional sod igloos, the home was constructed of modern materials—steel frame, plywood walls, soy-based spray-foam insulation—then capped with a sod roof and bermed into a man-made hillside to retain heat and block wind.

Native technologies incorporated into the home include a passive ventilation system known as a qingok, which uses vents in the ceiling to draw out warm, moist air, and a cold-air trap called a qanitchaq, or “Arctic entryway” in the Inupiaq language, a sort of foyer that seals off cold air from the main living space.

Lessons that were learned from the prototype have since been integrated into a series of new sod-igloo homes throughout the region, and funding is being sought for dozens more. “We’re constantly adjusting the design based on what we’ve learned, based on what we like,” says Daryl Kooley, executive director of the authority. “I think it’s a wonderful opportunity to offer housing for the long term that will be healthier, all across the North Slope region.”

The Anaktuvuk Pass home also highlights one of the most fascinating features of sustainable, healthy and environmentally friendly housing in Indian country: the merging of traditional shelters that respond to and respect the Earth with the vanguard of contemporary home building. The result is often innovative, sustainable designs that don’t exist anywhere else. “We’re looking not just at green technologies, but indigenous technologies,” says Bob Gough of the Intertribal Council on Utility Policy. “These are tried-and-true methods. These designs have been developed over millennia.”

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**Lee Ann TallBear**

And special thanks to Dr. David Edmunds, former Director of Environmental Programs at Pinoleville for guiding the process and to the Engineering Students at UC Berkeley for their donation of time as well.

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Tue, 05/14/2013 - 13:39

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**Ranley Berry**

Very Awesome I was just talking about this style of building.

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Tue, 05/14/2013 - 22:22

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**David J.**

Great article! It's good to not only see the progress of green building, but how it supports tribes and native people in an integrated way.

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Wed, 05/15/2013 - 15:28

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**Lou McKenzie**

This is wonderful. I'm so impressed with the work that is going on in Native American communities. I send you the Love Energy that comes from my heart. Next, I would love to see the women on the reservations start keeping honeybees. Not only are bees healing, they could provide the community with food, medicine and imagination. I know honeybees are not part of the tradition, but they are heart centered elemental Beings that can make that important connection back to the Earth. JaiBaba

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**George Hawirko**

This is a great opportunity for young aspiring architects to get the hands-on experience for life and careers.

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