

PATHways

Technology making a difference where Americans live

President Visits Oglala Lakota Housing Models

“There is no more crucial building block to a strong community and a promising future than a solid home.” With those words, President Bill Clinton opened “Shared Visions: Native American Homeownership and Economic Development Summit,” July 8 on the Oglala Lakota Pine Ridge Reservation in South Dakota.

The conference—organized by the U.S. Department of Housing and Urban Development and the Oglala Lakota Nation—prominently featured PATH advanced technologies. “Shared Visions,” the first Native American housing conference to be held on a reservation, attracted hundreds of tribal representatives, lenders, executives of major corporations, homebuilders, and housing and economic development experts from around the nation.

In his keynote address, the President announced initiatives to streamline relevant federal housing regulations and encourage housing partnerships between tribal housing authorities and federal agencies, lenders, homebuilding industry professionals, and community and faith-based groups.

The President spoke from a stage surrounded by PATH-assembled new and emerging technologies—products and systems that could be incorporated in the future homes to be built on reservations across the country. The technologies that the nation’s top tribal housing authorities examined included: lightweight, autoclaved aerated concrete; a condensing gas furnace; a heat recovery ventilator; a “Category 5” home wiring display; insulating concrete forms; a steel framing wall system; straw bale construction; structural insulated panels; and a prototype tornado-resistant “safe room.”

Prior to the keynote speech, Oglala Lakota Tribal President Harold D. Salway took President Clinton and other top federal and private-sector officials on a tour of new housing being built under the direction of the HUD-sponsored Oglala Sioux Tribal Partnership for Housing, Inc.

Oglala Lakota



In tackling its housing responsibilities, the Oglala Sioux Tribal Partnership for Housing, under the Shared Visions initiative, will provide Native American communities

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President Clinton greets Dorothy Two Bulls and her family in front of their new reservation-built modular home. Photo by Jerry Matthews.

The Pine Ridge Lesson

National pilots, demonstration projects, and technology field evaluations are an important part of the PATH goal to accelerate the creation and widespread use of advanced housing technologies. These PATH activities help to radically improve the quality, durability, energy efficiency, environmental performance, and affordability of our nation’s housing. PATH’s work with the Oglala Sioux Tribal Partnership for Housing demonstrates just how much we all can learn from each other. PATH’s Pine Ridge demonstration project offered important lessons in new training ideas for builders and construction workers, promising technologies and processes for modular and manufactured homes, and exciting, creative financing. The progress that the Oglala Lakota have made in housing in just 6 months demonstrates what can be done when roadblocks are overcome with cooperation and effort. On Pine Ridge, PATH proved once again that private-sector partners such as homebuilders, product manufacturers, insurance and financial companies, and associations working together with federal, state, and local partners can change the status quo. Our partnership is building a better and even more prosperous America with improved housing, increased homeownership, new jobs, and brighter futures for us all.



—Andrew Cuomo
Secretary of Housing and Urban Development



PATH Partners

PATH public-sector partners include the following federal agencies:

- U.S. Department of Agriculture
- U.S. Department of Commerce
- U.S. Department of Defense
- U.S. Department of Energy
- U.S. Department of Housing and Urban Development
- U.S. Department of Labor
- U.S. Department of Transportation
- U.S. Environmental Protection Agency
- Federal Emergency Management Agency
- Federal Housing Finance Board
- National Science Foundation
- White House Office of Science and Technology Policy

PATH private-sector partners include representatives from the homebuilding industry, insurance and financial companies, retailers, and professional associations. State and local officials committed to facilitating the use of new technologies in housing projects within their jurisdictions also participate in the program.

PATH is administered by HUD. For program information on the PATH initiative or to be added to the PATH mailing list, call the PATH offices at (202) 708-4277.

Visit PATH online at www.pathnet.org.

To request publications, including future issues of *PATHways*, call (800) 245-2691 or (800) 483-2209 (TDD).

For technical information call HOME-BASE at (800) 898-2842.

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across the country with the organizational, financial, and legal models to address their affordable housing needs.

With PATH support the Oglala Sioux Tribal Partnership for Housing has incorporated numerous building innovations into its new manufactured and modular housing. By the end of summer 1999, the Oglala Sioux Tribal Partnership will have completed 19 three- and four-bedroom homes and expect by 2000 to have built 50 homes.

The technologies and building processes used in the new homes advance PATH goals of housing durability, energy efficiency, and affordability. They include advanced framing techniques; optimum value engineering; air admittance vents; flexible gas piping; high-performance windows; high-efficiency water heaters; high-efficiency heating and ventilation equipment; ducts inside conditioned space; insulated headers; low-flow plumbing fixtures; low-VOC sealants, adhesives, and paints; prefinished drywall corners; unvented crawl space foundations; and xeriscaping.

The task before Native American housing authorities, such as that of the Oglala Lakota, is great. More than 40 percent of the housing on tribal lands is considered substandard—six times the rate for the rest of the United States. Twenty-one percent of homes on reservations are overcrowded—nearly 10 times the proportion elsewhere.

Although more than 700,000 Native Americans live on tribal lands, fewer than 300 conventional or government-insured mortgages have been issued to date. Lenders are often reluctant to approve mortgages for the purchase of homes on land held in trust by the federal government for tribes. Federal regulations and paperwork slow down and complicate the process of obtaining a home mortgage. Tribal families lack homeownership counseling to help them with financial planning, credit, down payments, and other issues involved in the mortgage process.

Pine Ridge's housing situation mirrors that of the rest of Native America. The reservation, 120 miles southeast of Rapid City, South Dakota, covers 4,355 square miles. More than 40 percent of the Lakota families live in substandard or overcrowded conditions. The waiting list for affordable housing is 12 years long.

Since it was created last January with a \$2-million HUD seed grant, the Oglala Sioux Tribal Partnership for Housing has begun to identify Pine Ridge families ready to buy homes, to provide families with housing counseling, to serve as a liaison between families and lending institutions, to assist families in finding affordable homes for purchase or construction, and to help them locate the best lending packages. The Oglala Sioux Tribal Partnership for Housing is helping to find

or provide gap financing for families and, most important, persuade the private sector to address real estate needs, construction development, and financing on the reservation.

Pine Ridge Reservation development costs are high. Infrastructure costs—creating water, sewer, and road systems—are more than \$17,000 per home. Building homes or transporting manufactured homes is more expensive because of the remote location. Total development costs are more than \$100,000 per home.



To expand affordability, two techniques are being used to reduce interest rates—guarantees and mortgage revenue bonds. However, even with the lower interest rates, given the low incomes of tribal members, the average mortgage a buyer can afford is less than \$65,000—nearly \$40,000 short of total development costs.

To overcome this obstacle, the Oglala housing authority is working with several additional sources:

- **Federal Home Loan Bank of Des Moines Affordable Housing Program** is providing almost \$10,000 per home. The bank makes rural, affordable housing a priority.
- **Rural Development Program of the U.S. Department of Agriculture** is providing almost \$10,000 per home.
- **HUD's Rural Housing and Economic Development Program** is providing \$20,000 per home. The relatively new program provides grants to innovative projects that promote development in distressed rural communities.
- **HUD's Indian Block Grant—the Native American Housing and Self-Determination Act** is providing a \$2,000 grant to each homebuyer to cover down payment and closing costs.
- **First National Bank of Gordon**, a local bank with a long-term relationship with the tribe will provide

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Products To Change the Way Americans Live

Hot Water-On-Demand System

How long do homeowners wait for hot water once they have turned on the tap? Now, with the press of a button, an innovative home recirculation system can send hot water to a sink, shower, or bathtub in seconds, with sharp reductions in water wastage. With the hot water-on-demand system, a high-performance pump is

installed at the fixture furthest from the water heater. Recirculating pumps rapidly move water to where it is wanted, rather than relying on the slow, low pressure typical of most water lines. The system will save up to 15 percent on hot water heating costs and extend a water heater's life by about 20 percent, according to the manufacturer.

Low-VOC Paints and Finishes

The volatile organic compounds (VOC) that spread out into the air from freshly applied household paints can be a nuisance or even a health hazard. Today's generation of low-VOC paints and finishes dramatical-

ly reduces or eliminates these harmful compounds. Low-VOC paint is applied the same way as conventional products—with a brush, roller, or spray gun—and at costs comparable to good quality conventional paints.

Geothermal Heat Pumps

Geothermal heat pumps are a hot new technology that can save homeowners a cool buck. Also called ground-source heat pumps, these devices work like a refrigerator—removing heat from one location and depositing it in another to heat or cool the home relative to the temperature of the earth. Geothermal heat pumps use the nat-

ural heat storage capacity of the earth and ground water to provide energy-efficient heating, cooling, and hot water supply. Geothermal heat pumps currently cost more than conventional systems, but operating costs are lower and they have none of the draftiness problems associated with conventional heat pumps.

Tubular Skylights

Can technological ingenuity improve upon a desirable home fixture such as a skylight? The answer is yes. New, tubular skylights spread light more evenly through a room, are easier to install than standard skylights, and do not cause UV damage to carpets and furniture as their standard counterparts may do. Tubular skylights have a roof-mounted light col-

lector typically consisting of an acrylic lens set in a metal frame and generally include a reflective sun scoop. The ends of the tube point down through the roof and pierce the ceiling below, bringing into the room the equivalent of up to one 1,200-watt bulb in June and one 700-watt incandescent bulb in December.

PATH's website (www.pathnet.org) has contact phone numbers, product descriptions, and information on the benefits, limitations, costs, and availability of more than 130 innovative products and technologies for the home.

Durability R&D Seeks Answers for Builders/Homeowners

Failures in the 1980s and 1990s associated with fire retardant-treated plywood, OSB siding, hardboard siding, and exterior insulated finishing systems have made durability an important concern of builders and consumers. This summer industry and government building experts will begin PATH-sponsored research to more accurately predict the service life of housing components.

The multiyear PATH Durability Research Program, called PATH-D, will enable manufacturers and suppliers to provide information on the service life of materials and components to designers and builders as well as allow consumers to evaluate housing plans from a durability perspective. The National Institute of Standards and Technology's (NIST's) Building and Fire Laboratory will coordinate the private and public laboratory research effort to achieve the PATH goal of improving durability and reducing maintenance costs by 50 percent by 2010.

Builders, trade contractors, manufacturers, insurers, and federal agency researchers laid the groundwork for the PATH-D program at the March 31, 1999, "Durability Summit" and at a follow-up planning session May 20, sponsored by NIST and hosted by the NAHB Research Center in Upper Marlboro, Maryland. A detailed, durability research action plan is expected by early fall.

The tentative PATH-D agenda calls for researchers to begin to develop an industrywide consensus on what constitutes durable materials or products, how durability should be measured, and how products should be rated. Researchers will look at the durability of roof and wall components themselves and at how well they attach to one another. The service life of sealants, the main line of defense in preventing moisture penetration around window and doorframes, will

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half of the construction loan at a 7-percent interest rate with no points or fees.

- **The Enterprise Foundation**, a national nonprofit financial intermediary that works with nonprofit agencies and Tribal entities to develop affordable housing, is providing the other half of the construction loan at a 6-percent interest rate with no points or fees.

also be considered. The durability evaluation work will include such aspects of home exteriors as paint and joint sealants, roof coverings, concrete slabs, wooden components, window seals, and steel ties in masonry walls. They are particularly interested in developing a method for evaluating the service life of steep roof coverings.

NAHB Research Center President Liza Bowles said, "It is critically important that the housing industry find ways to lower maintenance and repair costs and give builders and homeowners a basis for making educated judgments about choosing products. The active participation of all sectors of the housing community in the PATH-D program bodes well for the creation of an industry-approved durability rating system that is both practical and beneficial to all."

NAHB Research Center will work with the housing sector to collect, analyze, and summarize data on the durability of selected key products used in residential construction.

NIST will use the data to develop durability evaluation tools, methods of analysis, and finally a computer integrated knowledge system (CIKS) for the housing components. Demonstration projects will showcase the results of the program.

Eventually people will be able to use CIKS to evaluate different housing components. Designers and builders will be able to make better informed decisions concerning different products. It will allow the selection of the best set of components to get the longest life for a house.

The NAHB Research Center plans to disseminate durability information through its HOME-BASE website (www.nahbrc.org).

- **First Nations Development Corporation**, a nonprofit Native American corporation active in increasing economic activity on Tribal land, has agreed to provide a 20-percent guarantee for financing for those not yet ready for mortgage financing to move into new homes while they improve their credit.

PATH Goals

By 2010 PATH goals are to use new technology:

- *To reduce the monthly cost of new housing by 20 percent or more.*
- *To cut the environmental impact and energy use of new housing by 50 percent or more and by 30 percent in 15 million existing homes.*
- *To improve housing durability and reduce maintenance costs by 50 percent.*
- *To reduce the risk of loss of life, injury, and property destruction from natural hazards by at least 10 percent.*
- *To decrease residential construction work illnesses and injuries by at least 20 percent.*

Focus on PATH's Federal Partners

Department of Agriculture

The United States Department of Agriculture (USDA) is a valuable federal PATH partner. Three USDA agencies are especially active in housing: the Forest Service; the Cooperative State Research, Education, and Extension Service (CSREES); and the Rural Housing Service (RHS).

USDA Forest Service

The Forest Service's Forest Products Laboratory (FPL) (www.fpl.fs.fed.us) in Madison, Wisconsin, serves the public as the nation's leading wood research institute. Research concentrates on pulp and paper products, housing and structural uses of wood, wood preservation, wood and fungi identification, and the finishing and restoration of wood products.

A multiyear interagency agreement between PATH and FPL calls for the development of a national durability conference and implementation of three residential construction research projects over the next 4 years. The 1999 Forest Products Research Conference, "Durability and Disaster Mitigation in Wood Frame Housing," will be held November 1-3, 1999, at the Monona Terrace Convention Center, Madison, Wisconsin.

The conference agenda features presentations and panel discussions on national trends; moisture; codes, standards, and regulatory issues; new technologies and products; and builder practices. For more information on the conference, please contact Karen Martinson ((608) 231-9450, kmartinson@fpl.fs.fed.us).

FPL-PATH research projects are designed to develop:

- Improved design of wood frame houses subjected to high winds and severe storms.
- A grading standard for lumber from existing buildings to increase its marketability and reuse by the construction industry.
- Greater understanding of the susceptibility of wood products to decay when subjected to repeated wetting and drying.

USDA Cooperative State Research, Education, and Extension Service

CSREES (www.reeusda.gov) works with land-grant universities and their county extension

services to improve economic, environmental, and social conditions throughout the United States. CSREES helps direct the research, higher education, and extension expertise of its university and extension service partners toward meeting the needs of both rural and urban citizens. The land-grant educators convert good research into language that consumers can understand. They deliver the information through local county agents who are employees of the university or of local governments. State and county staff provide consumers with information on indoor



Under the PATH Roof

Protecting Your Home in Severe Winds—Tips from FEMA

There are many relatively low-cost steps you can take to protect your home and family from the brutal winds of tornadoes and hurricanes. Homeowners can perform some tasks for themselves, but others are jobs for a skilled contractor. Note that all of these preparations are best undertaken well in advance of any storm threat.

- *Install permanent storm shutters or protect windows and sliding glass or French doors with temporary plywood covers. Cut the plywood pieces to match each window. Drill holes through plywood and window, penetrating to wall studs. Store mounting screws or lag bolts with the covers in a readily accessible place. Use a numbering or lettering system that quickly shows which cover goes with which window.*
- *Double entry doors—composed of an active door, adequate for most use, and a door that usually remains closed—can be a weak link against severe winds. Homeowners can install a heavy-duty deadbolt lock, longer hinge attachments at doorframes, and slide bolts at the top and bottom of the inactive door.*
- *Garage doors can be reinforced by adding girts across the back of the door and by strengthening glider wheel tracks or replaced with a new, stronger door.*
- *Outdoors, anchor garden sheds to a permanent foundation or with straps and ground anchors. Bolt furniture and trash cans to decks or patios, secure with ground anchors or chains, or move indoors. Tie lids to secured trash cans. Clear away any debris, such as fallen tree branches.*
- *Have a skilled contractor remove trees that are dangerously close to the house.*
- *Protect vulnerable gable roofs by adding bracing with the aid of a licensed contractor.*

For more information, visit PATH's website at www.pathnet.org. Or, visit FEMA's Mitigation How-to Series at <http://www.fema.gov/MIT/how2.htm>.

air quality, pollution prevention in and around the home, disaster mitigation, and the role of housing in rural community vitality. These CSREES partners carry out extensive homebuyer education and counseling activities often in conjunction with others such as HUD, the Federal Reserve, USDA's Rural Housing Service, Fannie Mae, the National Association of Home Builders, the Consumer Information Center, and state and local agencies and groups. CSREES

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Federal Partners

also conducts wood products research and extension programs aimed at transferring technology to builders and producers of building materials.

CSREES's Cooperative Extension Service, with offices the land-grant universities, every state and territory, and many counties, maintains one of the country's most extensive research and educational networks. The agency's network is expected to become a key outlet for PATH's findings on housing quality, affordability, durability, and energy efficiency.

USDA Rural Housing Service

The Rural Housing Service (www.rurdev.usda.gov) in Washington, D.C., is primarily a housing finance agency for rural areas. It also carries out demonstrations of innovative housing technologies. The agency's current demonstrations include a steel-frame envelope house in New Mexico; a super-insulated house in Minnesota; a zero-lot line unit development in North Carolina; and a low-cost house (with smaller foundations and a truss roof) in Massachusetts.

Calendar of Events

November 1-3

Durability and Disaster Mitigation in Wood Frame Housing Conference
Monona Terrace Convention Center, Madison, WI

Presentations and panel discussions on national trends, moisture issues, codes, standards and regulatory issues, new technologies and products, and builder practices. Sponsored by PATH and Wood Frame Construction Consortium. For more information, contact Karen Martinson at (608) 231-9450, kmartinson/fpl@fsfed.us.

November 5-7

Remodelers' Show
Pennsylvania Convention Center, Philadelphia, PA

A chance to network with more than 12,000 industry peers, benefit from more than 60 educational programs and seminars, and visit more than 250 exhibitors displaying the latest products and services. For more information, check out the website (www.RemodelersShow.com).

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