

SUSTAINABLE CONSTRUCTION IN INDIAN COUNTRY

CHARTING A COURSE TO SUSTAINABILITY



Fond du Lac Band of Lake Superior Chippewa

“We are always seeking to increase sustainability. It’s part of who we are. It is part of our overarching goal to responsibly care for our environment and at the same time care for our tribal members.”

- Jason Holliday, Director of Planning, Fond du Lac Band of Lake Superior Chippewa



Problem

New data revealed areas of unmet need in housing and supportive services for homeless tribal members to be addressed in keeping within the community’s goal of overall sustainable development.

Solution

Developed housing that meets the needs of homeless tribal members who are veterans, and is constructed using affordable and cost-effective energy-efficient materials and technologies.

Community Snapshot

Location: Near Cloquet, Minnesota
Location type: Rural
Population: 4,121 enrolled members
Climate: The annual rainfall is around 30 inches. Proximity to Lake Superior raises snowfall to an average of 65 inches annually and lowers temperatures. The normal mean temperature from June through August is 62–64 °F and, from December through February it is 12–14 °F. (Köppen classification *Csb*)

Critical Sustainable Technologies and Strategies

- Within ½ mile of services
- Passive solar eastern orientation
- Best practice erosion management strategies
- Best practice stormwater management
- WaterSense/high-efficiency water fixtures
- Site lighting controlled by photo cells
- Low volatile organic compound finishes and sealants
- Energy-efficient interior lighting
- ENERGY STAR windows and appliances
- High-efficiency gas-fired boiler
- Highly insulated
- Light-colored roof shingles
- Formaldehyde-free composite board
- Ventilation with air exchangers

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Funding

| Source | Amount |
|--|--------------------|
| Minnesota Housing Finance Agency | \$743,000 |
| U.S. Department of Housing and Urban Development (HUD) Indian Housing Block Grant | \$653,572 |
| Federal Home Loan Bank of Des Moines | \$300,000 |
| Greater Minnesota Housing Fund | \$200,000 |
| Bureau of Indian Affairs | \$170,000 |
| Fond du Lac Band of Lake Superior Chippewa | \$43,200 |
| Enterprise Community Partners Fund | \$25,000 |
| Total | \$2,134,772 |

Map



Fond du Lac Veterans Supportive Housing, which opened in 2013, is the most recent housing development for families and single people of the Fond du Lac Band of Lake Superior Chippewa (FDL) designed to support homeless tribal members—in this case veterans—while also advancing the FDL's commitment to the environment. Participation in a survey process that included reservation lands led FDL to identify several new areas of unmet need among homeless tribal members. The band created reservationwide and department-specific housing and supportive services plans which successfully developed first the Supportive Housing Development and, later, the veterans' housing development.

Veterans Supportive Housing, a single-story development, includes 10 one-bedroom apartments, common rooms, and supportive services offices. To ensure the band's commitment to the environment would be built into the project from the start, FDL Director of Planning Jason Holliday said that the tribe selected an architecture firm with Leadership in Energy and Environmental Design (LEED®) credentials. The firm was able to recommend green options that would maximize affordability while also meeting ambitious tribal energy-efficiency goals and Minnesota funding requirements. Cost-effective technologies and strategies include site orientation to maximize both daylight exposure and winter solar gain; site planning to include erosion and stormwater management best practices; high-efficiency gas-fired boiler; ENERGY STAR windows, fixtures, and appliances; WaterSense/high-efficiency water fixtures, R-50 attic insulation; and low volatile organic compound (VOC) finishes.



In July 2013, the Reservation Business Council and Congressman Rick Nolan took part in the ribbon cutting ceremony.



Veterans Supportive Housing lounge

Here are some of the technologies and their effect on sustainability.

| Sustainable Technologies | What Is It? | Effect |
|---|---|---|
| Building orientation | The choice of how to situate a proposed building on a location is an early and critical decision. Intelligent building orientation can enhance energy savings, comfort, and erosion and water management designs. | Orientation to take advantage of winter sun for increased daylight exposure can reduce indoor lighting requirements. |
| WaterSense/high-efficiency water fixtures | U.S. Environmental Protection Agency (EPA) WaterSense-labeled products are independently certified to be at least 20 percent more efficient than average products without sacrificing performance: toilets use less than 1.28 gallons per minute (gpm), bathroom faucets less than 1.5 gpm, and showerheads at 2.0 gpm. | The average family can save 16,600 gallons per year by installing WaterSense showerheads, bathroom faucets, and toilets (or products with the same standards) and hundreds of dollars. They can also save in heating costs since less water needs to be heated. |
| Energy-efficient lights | Compact fluorescent lamp (CFL) bulbs are made of glass tubes filled with gas and a small amount of mercury (100 times less than a glass thermometer). The mercury emits an invisible ultraviolet light that becomes visible when it hits the white coating inside the CFL bulb. | ENERGY STAR-qualified fluorescent lighting uses 75 percent less energy and lasts up to 10 times longer than normal incandescent bulbs. |
| Stormwater best management practices (BMPs) | BMPs refer to environmental strategies that prevent or reduce pollution. Stormwater BMPs can include bioswales (an alternative to storm sewers that uses natural landscaping and native plants to drain and move stormwater), rain gardens, green roofs, permeable pavements, and more. | Effective stormwater management reduces landscaping maintenance, increases plant survival, improves water quality, and decreases or eliminates need for lawn chemicals and fertilizer. |
| ENERGY STAR appliances | ENERGY STAR appliances are independently certified through a program of the EPA and the U.S. Department of Energy. Appliances include refrigerators, bathroom fans, dishwashers, and washing machines | ENERGY STAR products save money and protect the environment. For example, replacing a 1980s model refrigerator with an ENERGY STAR version could save \$100 a year in total energy costs. Replacing a clothes washer could save as much as \$110 a year. |

Committed to Sustainable Development

The Fond du Lac Band of Lake Superior Chippewa had embraced sustainable development as part of a master plan even before the tribe adopted the Kyoto Protocol in 2007, pledging to reduce its emissions and obtain 20 percent of electricity from renewable energy resources by 2020. The band began collecting data on energy consumption in all tribally owned buildings in 2011 and sought opportunities to increase energy efficiency and add renewable energy where appropriate and cost effective. In addition to the Veterans Supportive Housing Development, examples of FDL's sustainable construction projects include the LEED-certified Natural Resources building; a planned solar project to support energy use at the Black Bear Casino; and the senior assisted-living facility and the Supportive Housing Development, both built to Minnesota Housing Finance Agency (MHFA) Green Communities Standards.



New Data Spurs Development

The State of Minnesota conducts point-in-time homeless studies, but reservation lands were not included until 2006. Even when reservation lands are included, the Housing Assistance Council and others note that Native Americans, especially in rural areas, may lack access to emergency shelters and may be less likely to sleep in locations not intended for human habitation, thereby resulting in an undercounting of homelessness among Native Americans.

After a series of discussions, FDL and 10 other Minnesota tribes participated in an enlarged study to increase their own knowledge of the issue and help bring the needs of tribal members in extreme housing instability into the larger state discussion. FDL also participated in homeless studies that included tribes in 2009 and 2012. All three of these studies found that a majority of respondents were living in doubled-up situations, which often indicates overcrowding. Between 2009 and 2012, the number of respondents who had been living with others temporarily for more than a year (usually in more than one location) increased from 48 to 75 percent of respondents. FDL has used these data to help develop long-term plans for addressing homelessness, leading first to the construction of the Supportive Housing Development, a 24-unit development housing homeless families and single people that opened in 2010.



24-unit Supportive Housing Development

Honoring Those Who Serve

The homelessness studies in 2009 and 2012 asked additional questions that explored the military status of homeless individuals. According to a report from the U.S. Department of Veterans Affairs, American Indians and Alaska Natives (AIAN) serve in the military at a high rate, and their numbers include a higher concentration of female service members than all other races. AIAN veterans tend to be younger as a group; more likely to have suffered a disability, service-connected or otherwise; and more likely to lack health insurance than veterans of all other races.

The 2009 reservation study determined that 8 percent of male Native American respondents were veterans, and that 12 percent of these veterans had served in combat. Of Native American veterans, 24 percent reported a service-related health concern. The 2012 study found that 4 percent of respondents were military veterans, with 20 percent of this group serving in combat and 30 percent having service-related health problems. Acting on this information, the FDL's governing body, the Reservation Business Council (RBC), made developing housing for veterans a priority and charged the Planning Department with looking for funding opportunities aligned with this goal.



Embracing Green Requirements

The Planning Department assembled a seven-partner funding team for the Veterans Supportive Housing development. One of these partners was the MHFA. Multifamily and single-family housing funded by the MHFA must participate in the MHFA Green Communities program. A partnership between the Greater Minnesota Housing Fund, the Family Housing Fund, and Enterprise Green Communities, MHFA Green Communities has become the largest green building program in Minnesota. The program was adapted from criteria developed by Enterprise Green Communities, and, while participants are encouraged to

certify under the Enterprise Green Communities program, they are not required to. FDL became certified under the MHFA program using the 2011 requirements. Holliday said, “The Veterans Housing would have included sustainable elements anyway, but the MHFA guidelines helped us increase the scale of these elements.”



Participants in the MHFA Green Communities program begin by submitting an MHFA worksheet outlining how they intend to address program criteria. Program criteria and requirements have changed somewhat over time. If project teams choose to certify with Enterprise Green Communities, the Enterprise process

is used in lieu of completing the MHFA Green Communities worksheet. FDL's project team included the DSGW Architects, a member of the U.S. Green Building Council; the DSGW architect ensured that the worksheets were successfully completed and, given the non-urban nature of the site, that a density waiver was filed, and oversaw the energy-efficiency measures. The MHFA Green Communities required a design charrette with the project architect, members of the Department of Housing and Urban Development (HUD), the FDL construction project manager, and other FDL staff. At the end of the construction process, the architect and construction team signed off on the final cost development and compliance worksheets, which the MHFA architect also reviewed.

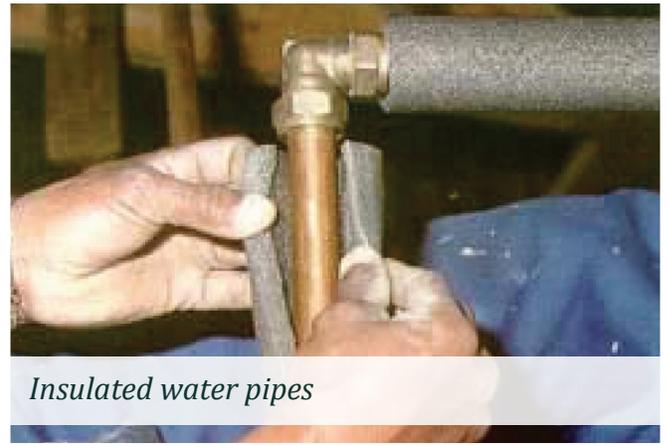


Breaking ground at the Veterans Supportive Housing development site

Sustainable and Affordable

“We follow environmental principles, but our funding guides the specific choices and methods,” Holliday said. Therefore Veterans Supportive Housing was designed with energy-efficiency and sustainability measures that Holliday said “focus on affordability but make for a comfortable, efficient building.”

Inside, the 10 one-bedroom units include ENERGY STAR bathroom fans with timers (vented outside the house because that is most effective), regionally rated ENERGY STAR windows, insulated cold water pipes, low VOC sealants and finishes, R-50 insulation in the attic (substantially exceeding code), ENERGY STAR fixtures and appliances, and high efficiency gas-fired boilers. The water fixtures and toilets are also high efficiency, aligned with WaterSense-labeling which is rated more efficient than federal guidelines.



Stormwater is collected and infiltrated at the site. Gutters and downspouts discharge water away from the building perimeter. The building orientation and layout were configured to let in natural light and warmth with winter sun as much as is feasible, while overhangs were sized to limit overheating during the summer. Light-colored roof shingles absorb less heat and harmonize with nearby buildings. The development has a Home Energy Rating System (HERS) score of 84, meaning that it uses 16 percent less energy than standard construction. When residents move in, they receive manuals that highlight building features and provide additional green living strategies.



Project Summary

LOCATION: Cloquet, Minnesota

DESIGN/PLAN TEAM: Fond du Lac Band of Lake Superior Chippewa, DSGW Architects

TIMELINE: 2011 through July 2013

PROJECT TYPE: A multifamily building with 10 one-bedroom units and common areas

Project Key Features

- Affordability
- Americans with Disabilities Act (ADA) compliant
- Community space
- Support staff offices
- In-building laundry
- Slab-on-grade construction
- Radon and carbon monoxide detectors

Key Sustainable Elements

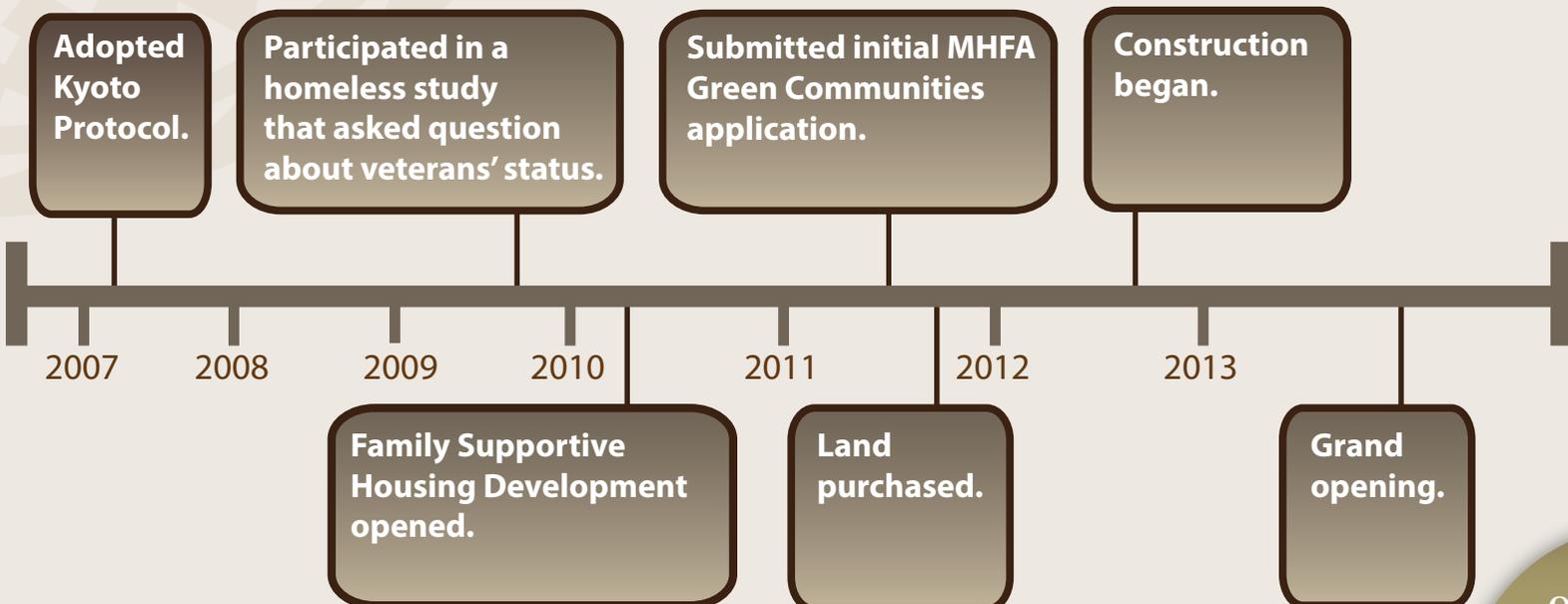
- Within ½ mile of services
- Passive solar eastern orientation
- Best practice erosion management strategies
- Best practice stormwater management
- WaterSense/high-efficiency water fixtures
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- Low VOC finishes and sealants
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- Formaldehyde-free composite board
- Ventilation with air exchanger



Residents moved in August 2013



ENERGY STAR appliances



A Growing Sense of Community

To connect the housing to the community and culture, Veterans Supportive Housing is specifically located on the same lot of land as the FDL Supportive Housing Development. Architects integrated walkways and public use spaces like the barbeque and picnic shelter to support the development of community, but the proximity of the buildings also allows for shared staff resources.

Both developments have offices on site for supportive services staff, partially supported by HUD Supportive Housing Program Grant funds through the American Indian Community Housing Organization. The two buildings share three case managers, an events manager, and a homeless-resource worker. The latter provides referrals and information for applicants who do not qualify for either housing development. The events manager sets up joint cultural events such as the beading class, holiday parties, and weekly veterans' night out. In 2014, tenants held a crafts bazaar, where they sold handicrafts and baked goods to supplement their Christmas spending money.

Despite need, however, the development has not been at full capacity since it opened. Resident turnover has been low, but staff cites certain housing and income requirements as restricting the potential population. Applicants must be FDL Band members and veterans, meet state and HUD requirements for homelessness, and pass a background check. Veterans who have longer service terms and those with significant disability pension have sometimes had too much income to qualify. Staff may work with the HUD Office of Native American Programs to examine possibilities for building greater flexibility into the program.

The Metro Plains Management handles management and marketing. Staff members work hard to expand the pool of applicants. They advertise in local, regional, and Minneapolis newspapers; talk up the building at community events, such as the annual Veterans' Powwow; conduct tours; and distribute applications to homeless shelters and homeless people in Duluth and elsewhere. Residents of the new housing development talk it up too, sharing their enthusiasm with building staff, visitors, and the community. Veterans Housing Case Manager Dawn Ammesmaki says that the residents want to make sure that others know just how great this housing is. An example of their growing sense of community, although residents have individual kitchens, is that they have chosen to eat together once a week or so. Ammesmaki also says that if someone is going through a difficult time, the other residents check in on that person.

Ammesmaki meets prospective residents to determine needs as part of the application process, but participation in all services is voluntary. "Their input is more important than my assessment," she said. She is required only to "lay eyes on" each apartment once a month. She helps residents access services on the reservation and elsewhere, ensures that they have transportation to appointments (sometimes two to three trips in her car a week), helps with applications for services, and provides some food or small containers of dish soap. Metro Plains Management Community Manager Nicole Ammesmaki says, "When they move in, the residents really have nothing with them."

Best Practices

FDL's adoption of the Kyoto Protocol is one indication of how seriously the tribe is committed to addressing climate change head on. The band has built in several straightforward administrative best practices that facilitate continued successful sustainable and affordable planning and building processes. First, the RBC approves strategic planning goals for the tribe as a whole and also for each department. The Planning Department, for example, knows early on what goals are highest on RBC's list; they have an automatic go-ahead to start an



Supportive Housing Development

application when they see available funding, rather than having to use precious application development time gaining approval to proceed. Second, when sustainable materials or techniques are desired for a construction or rehabilitation project, the request for funding is specifically written to ask for competitors who have the needed skill sets or relationships with vendors. The project request for proposal, for example, requested a LEED-certified architect. Through trial and error, FDL has learned lessons about sustainable materials and about problems that a LEED-certified or similarly experienced architect could help another tribe avoid. An experienced architect will have industry contacts and know which specialized materials are not available in a particular market. To avoid construction delays and find the best price, these materials would need to be ordered as soon as possible. Also, not every material works in every climate or house.

FDL regularly inspects new construction and rehab projects to ensure that materials are properly installed, the requested materials have been used, and the materials are performing up to standards. Another key to successful development is having a good relationship with a local contractor—one the tribe has worked with before. In the case of a problem, the contractor could be on site in 10 minutes—and was. This approach built trust and made the whole process work better.

Next Steps

FDL plans to develop additional housing intended for tribal members who are military veterans and homeless, perhaps doubling the number of units currently available in the development. A critical element of the future plan would be meeting with HUD to review new guidance or explore current funding sources for waiver or use strategies. For example, the Indian Housing Block Grant program allows grantees to devote up to 10 percent of the annual allocation to assist tribal members at 80 to 100 percent of the annual median income without HUD approval.

Even while FDL increased its building inventory, it decreased its overall electricity consumption 20 percent between 2011 and 2013. FDL has been selected as a recipient of Minnesota's Guaranteed Energy Savings Program, which will help the band take an even bigger bite out of costs. This program will provide FDL with technical assistance, including helping the tribe connect with and work with an Energy Service Company (ESCO) to receive an investment grade audit, developing a project proposal to incorporate Energy Conservation Reduction Measures, and following a Savings Measurement & Verification plan to ensure that guaranteed energy savings are met. Partnering with an ESCO enables tribes and others to finance large renewable energy and energy-efficiency projects with little or no upfront capital costs. The utility or ESCO partner is repaid with efficiency savings over time.

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How To Get Started

To learn more about the energy-efficiency strategies and construction techniques highlighted above, check out these resources.

Fond du Lac Band of Lake Superior Chippewa, Environmental Department:

<http://www.fdlrez.com/newnr/environ/airmain.htm>

EPA ENERGY STAR Program:

<http://www.energystar.gov>

EPA WaterSense Program:

<http://www.epa.gov/watersense>

Minnesota Guaranteed Energy Savings Program:

<http://mn.gov/commerce/energy/topics/financial/Energy-Savings-Program/>

Optimizing Site Potential:

http://www.wbdg.org/design/site_potential.php

EPA Stormwater BMPs:

<http://www.epa.gov/nrmrl/wswrd/wq/stormwater/bmp.html>

EPA Erosion BMPs:

<http://water.epa.gov/polwaste/npdes/swbmp/Construction-Site-Stormwater-Run-Off-Control.cfm>

This best practice case study is one in a series that examines how Native American and Alaska Native communities have incorporated sustainable technologies and strategies into their housing development.

The Sustainable Construction in Indian Country initiative was created to support and increase sustainable construction practices in Native American communities. It is administered through the U.S. Department of Housing and Urban Development's Office of Policy Development and Research in partnership with the Office of Native American Programs.

Photos courtesy of Fond du Lac Band of Lake Superior Chippewa and DSGW Architects.

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