

Tyonek Energy Efficiency Project

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2023 Virtual Program Review

US Department of Energy, Office of Indian Energy

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Project partners to Native Village of Tyonek



A collaboration between:

- Native Village of Tyonek
- Tyonek Tribal Conservation District, and
- Cold Climate Housing Research Center
(subcontracting with National Renewable Energy Laboratory)

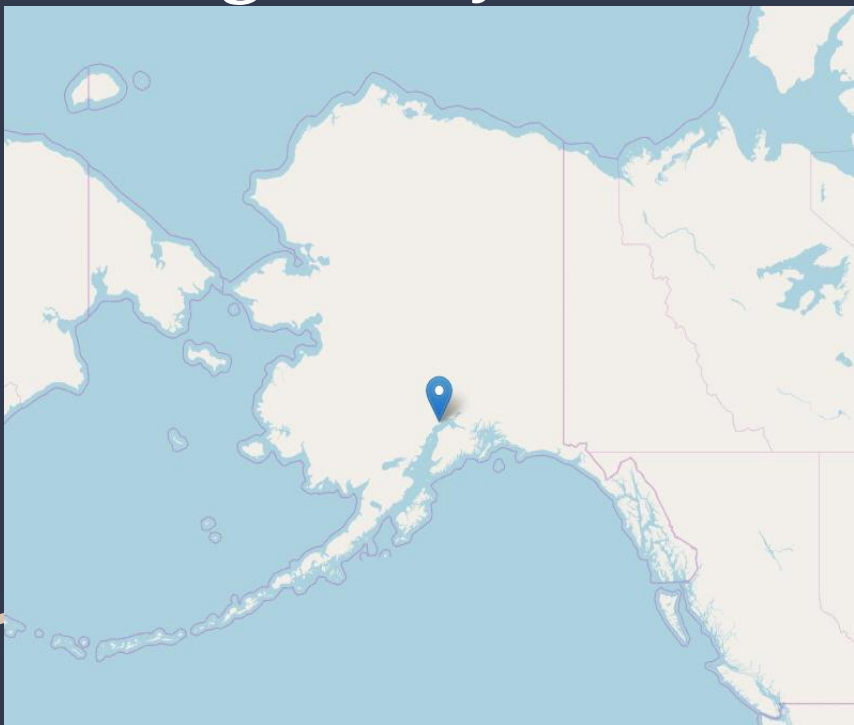


COLD CLIMATE
HOUSING RESEARCH CENTER

Parts of the Home Retrofit

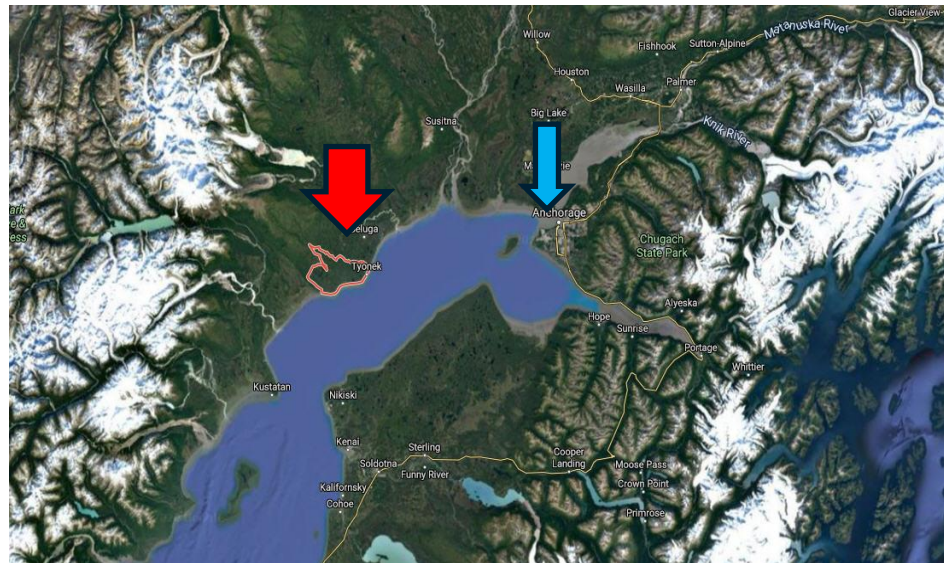
INNOVATIVE HOUSING DESIGN & RESEARCH

Location of Native Village of Tyonek



Tyonek

Anchorage



Native Village of Tyonek

- Dena'ina Athabascan village
- 43 miles southwest of Anchorage
- accessible by plane or boat
- Home to the Tebughna, or “Beach People”



Photo courtesy of Tebughna Foundation.

Native Village of Tyonek



- Tyonek is a closed and isolated community
- Airfare roundtrip from Anchorage
 - \$280
 - last year: \$260
 - previous year: \$240
- There is no regular marine transportation in place.
- Gas per gallon:
 - last year \$7.25,
 - year before \$5.25
- Wood last year \$150-\$200 per small pick-up truck load.
- Electricity comes from Chugach Electric, so same cost as "south" Anchorage, \$0.214/kWh

Photo courtesy of Tebughna Foundation.

Native Village of Tyonek

Population:

- 957 Tribal members
- 124 in Tyonek

The area encompassed by the Tribal village is 22.3 square miles of land and 3.3 square miles of water.

Temperatures:

- winter 4 to 22 °F
- summer 46 to 65 °F
- extremes -27 to 91 °F.

Average precipitation is 23 inches with 82 inches of snow.

Project:

Energy efficiency improvements on two Tribal buildings

- Tyonek Tribal Center (lower left)
- Tyonek Native Corporation Satellite Office (red roof)



Image from mapper.dnr.alaska.gov > layers > AK RGB high resolution

Tyonek Tribal Center



The building is occupied

- from 9:00 am to 5:00 pm M – F
- on weekends and during some evenings for community gatherings.

Tyonek Native Corporation Satellite Office



The building is occupied

- 9:00 am to 4:00 pm M – F
- The bedroom is used on occasion when guests are staying in the building.

2017 audits

Audits were completed in 2017 by staff from Alaska Native Tribal Health Consortium.

Main recommended improvements from audits include

- replacing lights with LED lights
- installation of set-back thermostats
- maintenance of boilers and insulation of pipes
- air tightening
- addition of insulation

Project objectives

- To reduce energy use in the rural village of Tyonek for better efficiency
- To reduce the impacts on climate change
- To keep the subsistence lifestyle
- To retrofit and update older buildings into current standards
- To better secure buildings for food security

Project impacts

To reduce energy use of :

- the Satellite Office by 21%
- the Tribal Center by 18%

Projected annual energy savings:

- \$2,859 for the Satellite Office and
- \$2,500 for the Tribal Center.

Projected annual reduction in fuel oil #1

- 518 gallons for the Satellite Office and
- 280 gallons for the Tribal Center.

Projected annual reduction in electricity:

- 2,499 kWh for the Satellite Office and
- 7,310 kWh for the Tribal Center.

Project status

Done:

- Current audit was done in February 2022
- Learned of another project which is improving the tribal center with ARPA funding
- Coordination started: some impacts to this project, including timeline
- The auditor also included a pre-feasibility study about partially replacing source of heat, baseboard, with air source heat pump for one wing
- NVT requested that change – the rest of scope stayed very similar
- DOE approved it this summer



Image courtesy of Tonya Kaloa.

Project status

Doing:

- Outreach
- Continuing to collect electricity and fuel data
- Ready to send out RFPs

Communication challenges



Image courtesy of Tonya Kaloa.

Next steps

Re-establish regular contact with NVT

Apply for no-cost-extension

Send scope out for bids

Evaluate bids, hire electrician

Retrofit work

Analyze savings

Report

Lessons learned

- The helpline for fedconnect is very useful if the website has an old email address for you that no longer exists
- In small communities, people wear many hats
- Communication is important
- Life interferes with projects, especially in a small community, and takes precedence

Chin'an!
Thank you!

Dena'ina

Chin'an gheli.

Thank you very much.

Q'uch'a.

That's all.