



U.S. Department of Housing and Urban Development  
**BEST PRACTICE**



*Organization Name*                      **Tagiugmiullu Nunamiullu Housing Authority**

*Location*                                      Alaska

*AIAN Population*                          2,362 (FY 2015 Formula)

*IHBG Allocation*                          \$4,316,773 (FY 2015 Adjusted)

*Project Type*                                **Sustainable Northern Shelter**

*Project Description*

The project consists of twenty-four (24) single family “next generation” Sustainable Northern Shelter (SNS) affordable single family homes in six (6) villages throughout the North Slope region. The project was specifically developed to address the need for sustainable rural housing for northern climates utilizing a simply constructed home that uses very little water or energy. The sustainable northern shelter model mitigates a number of challenges. The single level 1000 to 1300 square foot three-bedroom homes combine the time-tested method of earth banking with original ideas such as adjustable-moveable foundations, and R-60 spray on soy-based urethane foam insulated walls, which will be covered by waterproof steel siding. Materials have been customized to transport cheaply in smaller planes that can land on the short gravel runways common in most remote Alaskan villages. The strategy is to transport one house per two planeloads allowing on time delivery with a transport cost far less than would be required for traditional "stick built" construction. The steel studs and joist system for the projects are packed in cross-sections, nested into each other. Rather than time-consuming multi-seasonal piling foundation, an innovative adjustable-moveable foundation requires virtually no site preparation, earth movement, or gravel placement and allows for foundation placement within a single day.

So far, in addition to six (6) Phase I and II prototypes developed and constructed in Anaktuvuk Pass, Point Lay and Atqasuk 2010-2012, seven (7) new Phase III-V homes were recently completed, three (3) in Point Lay and four (4) in Anaktuvuk Pass. All have been energy rated have achieved a 6-star rating on BEES (Alaska Building Energy Efficiency Standard). The AKWARM software indicates the use of 140 gallons of heating fuel for the home which is much better than the average North Slope Borough usage of 1,200+ gallons annually, or 88% less fuel usage. The next set of homes, five (5) in Kaktovik and five (5) in Nuiqsut, are expected to be completed by the end of December and should receive the highest rating possible, well exceeding the 6 star standards with the improvements that have been incorporated into the design since completing the Anaktuvuk Pass homes. TNHA is also incorporating a solar hot

water system into their future home designs which should make yet another dramatic reduction in fuel consumption. The development of the super-insulated and extremely air-tight designs for these homes make domestic hot water the primary user of fuel and incorporating solar power for these systems will have a strong impact on the fuel usage of the homes.

The twenty-four (24) units have a total budget of \$9,821,818 with the bulk of those funds coming from a Title VI Guaranteed Commercial Bank Loan for \$6,672,170, with another \$1,478,468 coming from the State Supplemental Housing Grant Funds, and the remainder funded from the Indian Housing Block Grant. This computes to an average total development cost for these units of \$409,242 which is 2/3 of the established TDC for the region. So not only are these units super-energy efficient but they are cost effective to build as well.

Visit TNHA's website at: [www.tnha.info](http://www.tnha.info).

*Contact*

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*Project Photographs*



A new BEES house in Pt. Lay, Alaska