June 2021

Projects that Reduce Residential Wood Smoke Emissions

Description: Hoonah Indian Association Community Indoor Air Assessment and Wood Stove Repair, Changeout, and Education Project

Title	**Community Wood Stove Assessment & Change Out Project**
Location (City, Counties, Region)	Hoonah Indian Association, Hoonah, Southeast Alaska
Population/Number of homes covered by project	Project participation: ○ 125 surveys completed ▪ Year 1: 47 households ▪ Year 2: 78 households ○ 67 indoor air assessments (monitoring) completed ▪ Year 1: 31 homes ▪ Year 2: 36 homes ○ 8 homes received stove interventions, selected using need-based criteria (elders, income, medical concerns, PM2.5 levels indoors) ▪ 5 homes had new wood stoves installed ▪ 3 homes received stove repairs
Objectives (NAAQS attainment/maintenance, indoor air, visibility, air toxics, public education)	Most Hoonah homes were built in the 1940s and use wood, given its abundance. Some homes also use diesel heaters. Goals: • Understand community air quality needs and priorities. • Assess indoor air quality metrics: PM2.5, CO, and temperature. • Assess wood moisture content. • Improve safety and efficacy of home heating device in highest need homes (8). Conduct pre/post monitoring in homes. • Provide education on stove maintenance and operation.
Milestones (Project time frame, number of changeouts, air quality goals, number of low-income homes targeted if applicable)	• Attended Alaska Native Tribal Health Consortium's 7th Generation Environmental Planning workshop. • Conducted Environmental Planning Survey and, with Hoonah Stewardship Council, created environmental plan. • Monitored indoor air quality (PM2.5 using a DustTrak & CO using a Lascar monitor). • Developed criteria for wood stove interventions (repairs or replacement). • Conducted stove removal and replacement and stove repairs.
Budget (projected/actual cost)	• Approximately $25,000 (IGAP) + $5,000 (ANTHC) = $30,000 • Contractor costs amounted to $15,000 (contractor time, supplies, shipping)
Funding Sources (Government funds, grants, Supplemental Environmental Project, fees, etc.)	• Region 10 EPA Indian General Assistance Program (IGAP) grant Note: HIA received special approval for an IGAP demonstration project that would test and evaluate this particular program model

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	and share the project's lessons learned through educational presentations. • Alaska Native Tribal Health Consortium subaward ($5,000) and equipment loan via CAA 103 cooperative agreement from EPA R10
Partners (government/private organizations involved)	• Local contractor: A-1 Hearth & Stove in Juneau, Alaska • EPA Region 10 • Alaska Native Tribal Health Consortium • Institute for Tribal Environmental Professionals • Hoonah Stewardship Council
Incentives Offered (rebates, discounts, vouchers, incentives for low income homes, etc.)	• Home health and safety assessment • Stove removal, new stove and chimney installation or stove/chimney repair • Best burning practices education using Burn Wise outreach materials • Indoor air monitoring pre/post upgrades
Ordinances/Regulations (mandates for cleaner-burning hearth devices)	N/A
Project Yardstick (Number of woodsheds constructed, number of stoves replaced with new stoves or other technology, etc.)	• 3-year project • 125 paper surveys conducted • 67 households monitored for indoor air quality • Pre-bid inspections conducted in 8 homes • 8 homes received stove interventions • 5 uncertified wood stoves removed • 5 new stoves installed • 3 wood stoves repaired • 8 homes monitored pre/post stove intervention
Outreach/Marketing (radio/TV public service announcements, workshops, woodstoves expo, flyers, mailouts, social media)	• Originally selected 100 homes using address database • Then followed with door to door engagement • Paper flyers and surveys • Social media, e.g. Facebook
Air Quality Data/Other Results (Current project area's air quality status and is improving indoor air quality part of project)	• 51% of residents reported mold issues. • 20% of homes don't have an exhaust vent over their kitchen stoves. • 35% of homes with a range vent say they do not vent outdoors. • 15% did not have a bathroom fan, and 12% of those with a fan had inoperable fans. • Homes with stoves more than 20 years old had indoor PM2.5 levels 1.5x higher than other study homes. • 13 of 65 stoves were older than 20 years. • Many homes had disabled ventilation and covered windows and doors to maintain warmth. • Wood moisture content was an average of 25%, likely due to lack of woodsheds, wood sitting in snow and rain, and/or wood piles covered

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	with tarps without adequate air flow. More than 50% of study participants did not have a shed or tarp for wood coverage. • In homes with stove replacements/repairs, post-intervention monitoring showed that some homes experienced increased levels of PM2.5 while others decreased. Smoking in the home contributed to the increased PM2.5 in some homes. • CO was not found to be of a concern in homes. The maximum value measured was 18 PPM. • Next steps include exploring resources for programs that address weatherization, smoking cessation, and seasoning wood fuel.
Lessons Learned (What worked? What didn't? Tips? How can project be improved?)	• Change requires real connection – empathy and a genuine interest in each homeowners' situation were key to continued participation in the project. • Each home receiving a stove had to be brought up to code – cannot just look at a stove in isolation, need to consider health and safety of building overall. • Many of the homes were from WWII and built for the tropical climate of Guam, then modified by residents to fit the climate. Each home had a unique challenge to overcome for removal and installation, such as chimney placement, hearth installations, and creating custom angled chimney fittings. • Pre-bid inspections were helpful for cost estimation and informing the homeowner of exactly what work would be done. • Time of year greatly affected success in scheduling and maintaining appointments. Weather is the biggest challenge to planning in Southeast Alaska. Long winters leave very little spring and summer time to be productive with building or conducting outside work. The team had to plan around rain, subsistence activities, and the ferry schedule to provide a safe work environment for the contractors. Weather can complicate projects – e.g. slippery roofs. • You can't please everyone. Bias or perceived bias is always an issue. The project team was committed to helping the community and it was challenging to observe that some community members were upset that they were not selected to receive a stove or a stove repair. • Working with a local contractor was critical to managing costs. Finding a contractor who wanted to build a longer-term partnership was beneficial. • Share the project concept with a potential contractor first. • Understand needs of the contractor – what policies do they have to follow, do they need local housing during the work (e.g. in a more remote location).
Project Contact (Name, organization, phone number, email address, web link to project)	• Jeromy Grant, IGAP Program Manager, Hoonah Indian Association PO Box 602 Hoonah, Alaska 99829 (907) 945-3545 ext. 132 jeromy.grant@hiatribe.org

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	• Air quality report: https://www.hia-env.org/wp-content/uploads/2020/02/HIA-Air-Quality-Report.pdf • IAQ report: https://www.hia-env.org/wp-content/uploads/2017/09/IAQ-Final-Report-FINAL.pdf • Conference presentation: https://www.atcemak.com/wp-content/uploads/2019/02/2.5-A.-Wood-Stove-Demo-ATCEM-2018.pdf