



Togiak Heat Recovery Project

Togiak Natives Limited
Alaska Native Tribal Health Consortium

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ANTHC Rural Energy Program



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Overview

- Project partnerships
 - Togiak Natives Limited
 - Alaska Native Tribal Health Consortium
- Heat recovery systems
- Project
 - Objectives
 - History
 - Current status
 - Benefits
 - Future plans



Background



Project Partners

- Togiak Natives Limited (TNL)
- City of Togiak
- Alaska Village Electric Cooperative (AVEC)
- Alaska Native Tribal Health Consortium (ANTHC)
- US Department of Energy – Office of Indian Energy (DOE-OIE)
- Alaska Energy Authority (AEA)
- State of Alaska – Department of Environmental Control



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Grantee: Togiak Natives Limited (TNL)

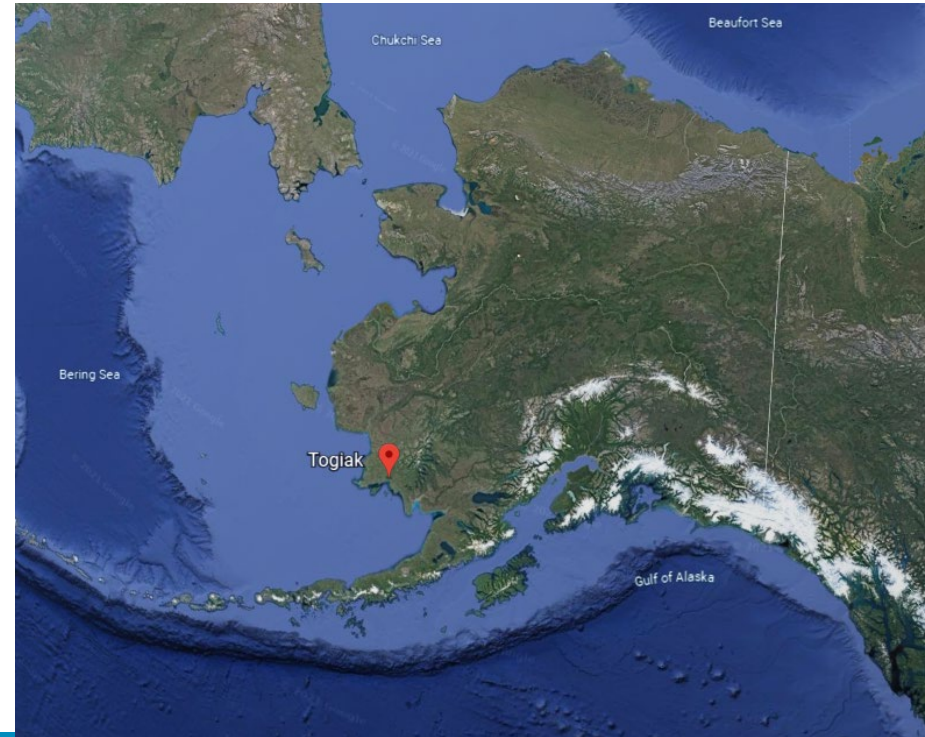
- **Togiak:**

- ~800 people, 94% Alaska Native
- Subsistence Lifestyle

- **TNL: ANCSA Village corporation**

- Serves ~1,000 shareholders
- Mission:

Togiak Natives Limited drives innovation and economic growth in our region in order to preserve our rich Yupiaq culture and language, protect our unique land, and ensure youth, elder, and shareholder well-being. We are committed to our values of respect, honesty, collaboration, and integrity.



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Alaska Native Tribal Health Consortium (ANTHC)

- Non-profit tribal health organization representing 229 Federally recognized tribes in Alaska
 - Board members from each Alaska Native regional health organization
- “Compact Agreement” with the Indian Health Service to provide health services to Alaska Native people
- Customer-owners



Kimberley Strong

Chair,
SouthEast Alaska Regional Health Consortium



Walter Jim

Vice Chair
Yukon-Kuskokwim Health Corporation



Diana Zirul

Treasurer
Unaffiliated Tribes, Kenaitze Indian Tribe



Charlene Nollner

Secretary,
Copper River Native Association



Mark Snigaroff

Aleutian Pribilof Islands Association



Bernice Kaigelak

Arctic Slope Native Association



Robert Clark

Bristol Bay Area Health Corporation



Robert Henrichs

Chugachmiut, Native Village of Eyak



Loretta Nelson

Kodiak Area Native Association



Lorena Walker

Maniilaq Association



Chuck Clement

Metlakatla Indian Community



Preston Rookok

Norton Sound Health Corporation



April Kyle

Southcentral Foundation



Andrew Jimmie

Tanana Chiefs Conference



Chief Gary Harrison

Unaffiliated Tribes, Chickaloon Native Village



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OUR VISION:

Alaska Native people are the healthiest people in the world.



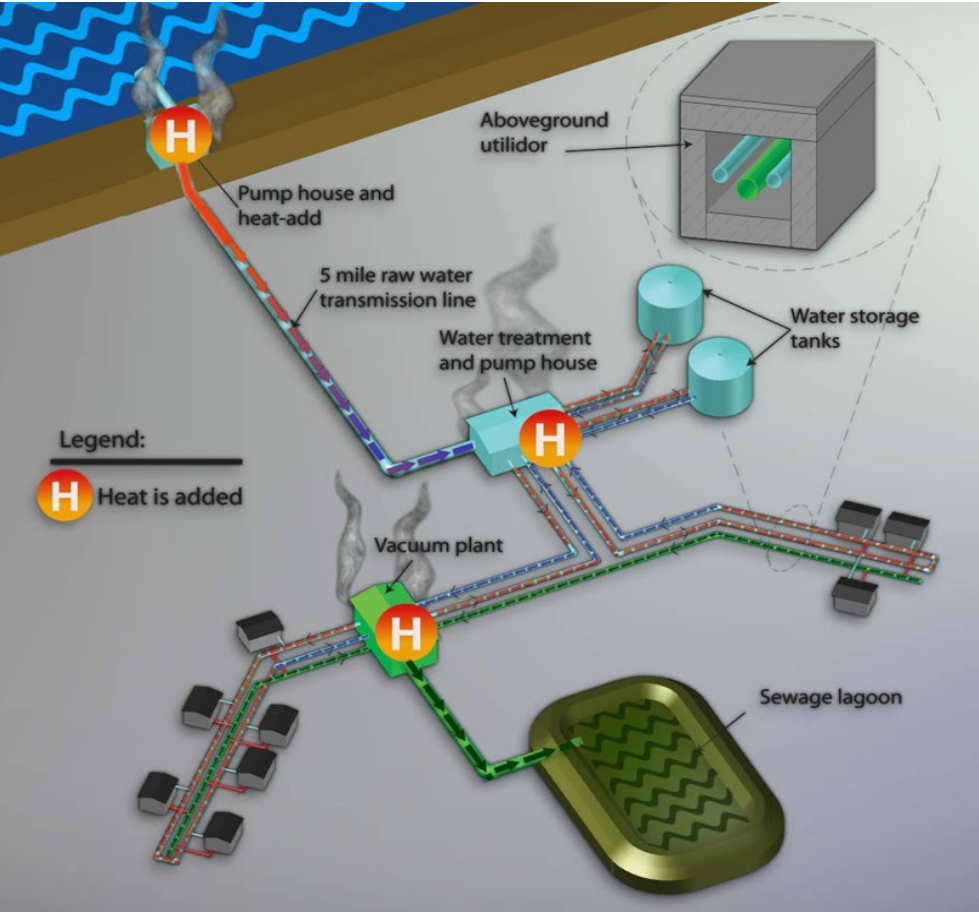
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Water Health Impacts

- **Water *Quantity*** is limited by:
 - No piped service
 - Frozen / damaged systems
 - Boil water notices
- **Infant hospitalization:** *1 out of 3 of babies will be hospitalized* with respiratory infections in the first year of life in communities where less than 10% of homes have in-home water service
- **Skin infections:** 10x higher rates in communities with lower water quantity than similar communities with mostly piped service

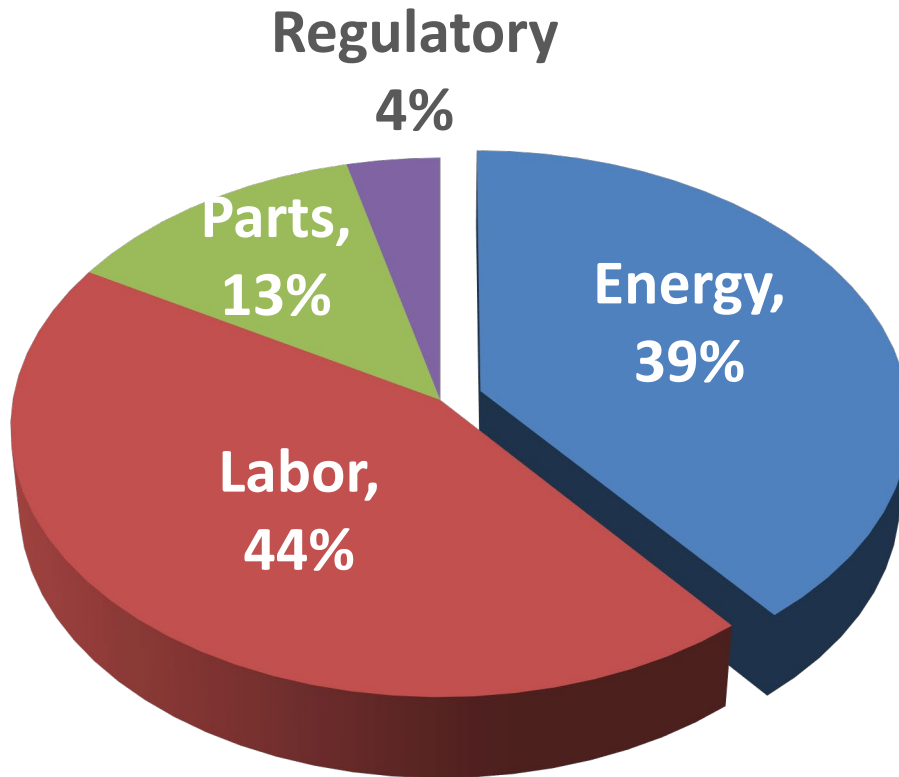


Sanitation Facilities in Rural Alaska



Water and Sewer Utilidor in Saint Michael, Alaska

Energy Costs in Rural Sanitation Facilities



- Rural sanitation can account for up to **1/3 of total community energy costs**
- 60 – 260 times higher per capita than national avg
- Sanitation energy costs can be a high percentage of household income:
 - Avg: 4 – 7% of income
 - Maximum: 16%
- Energy is 39% of the cost of water/sewer on average



How the Rural Energy Program Supports Communities



Identify



Analyze & Develop



Fund



Implement



Save

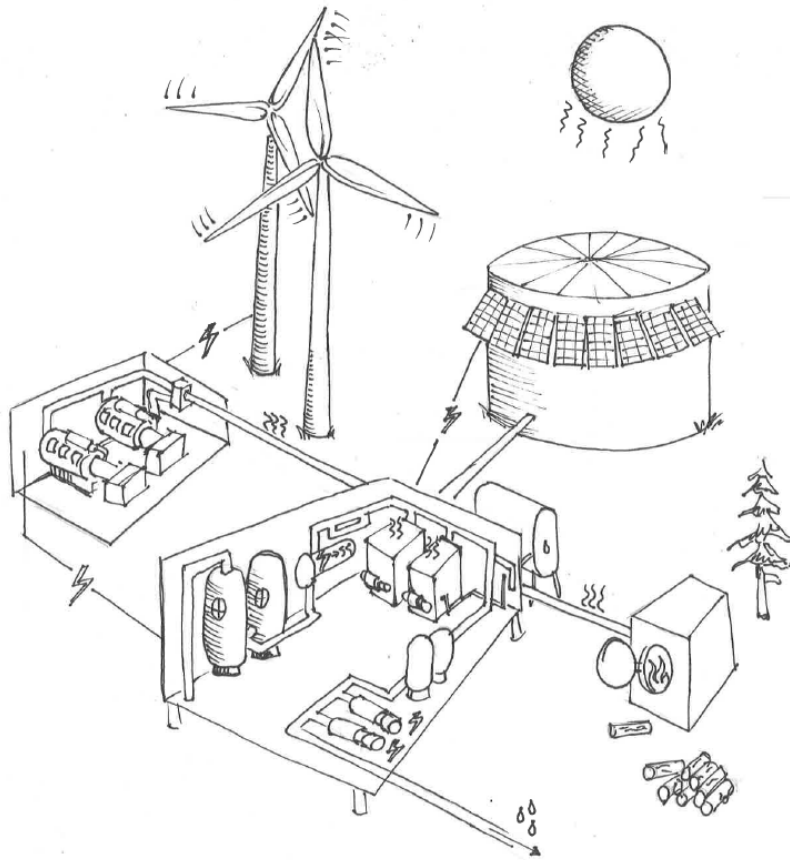


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Rural Energy Program: Project types



- Energy Efficiency:
 - Most cost-effective
- Heat Recovery
 - Biggest \$ savings + resiliency
- Biomass heating
 - Local jobs / resources + resiliency
- Solar PV
- Wind-to-heat
- Hydroelectric



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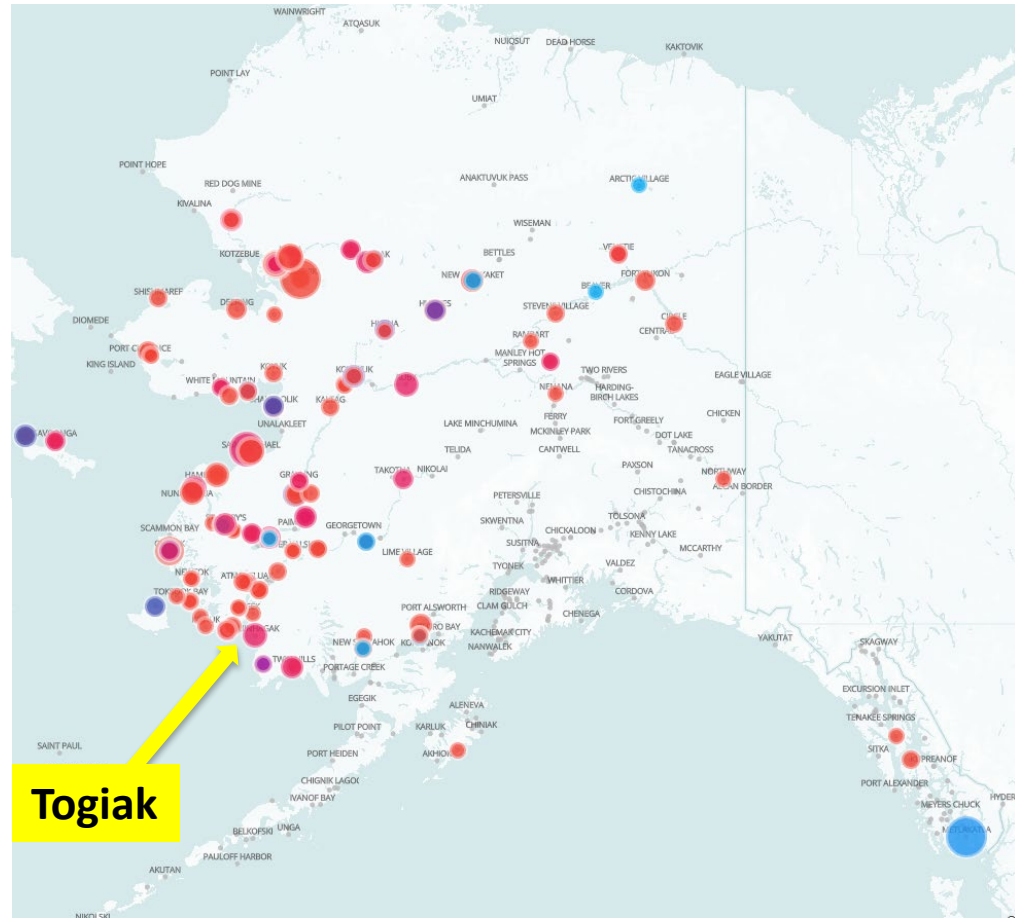
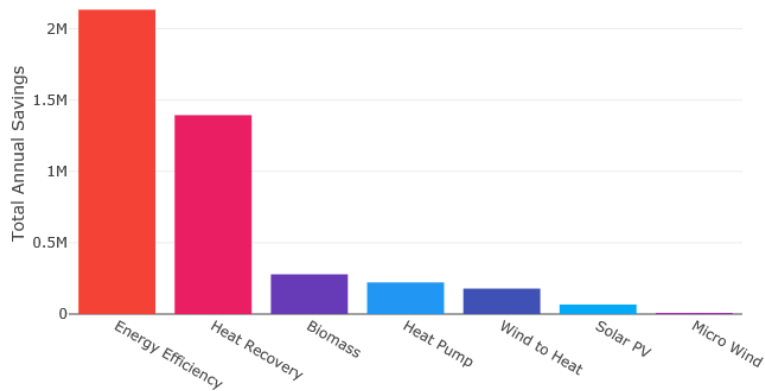


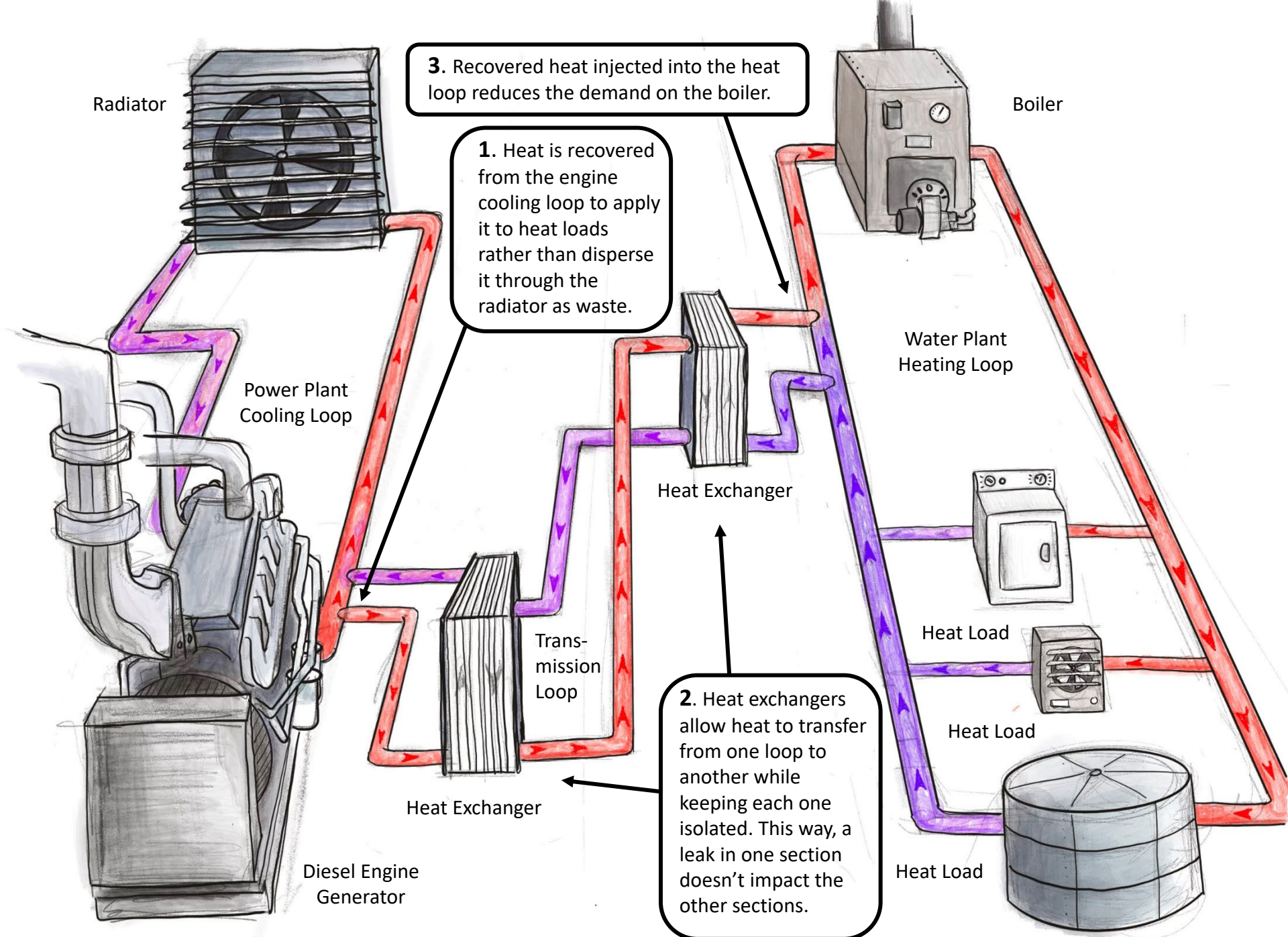
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Rural Energy Program Savings

- Program began in 2010
- \$4.7M ongoing annual savings
- \$30.0M cumulative savings
- Total homes in 86 served villages: 7,745
- Annual energy savings per family: \$609

Total Annual Savings by Project Category





Radiator

3. Recovered heat injected into the heat loop reduces the demand on the boiler.

Boiler

1. Heat is recovered from the engine cooling loop to apply it to heat loads rather than disperse it through the radiator as waste.

Water Plant Heating Loop

Power Plant Cooling Loop

Heat Exchanger

Heat Load

Transmission Loop

Heat Load

Heat Exchanger

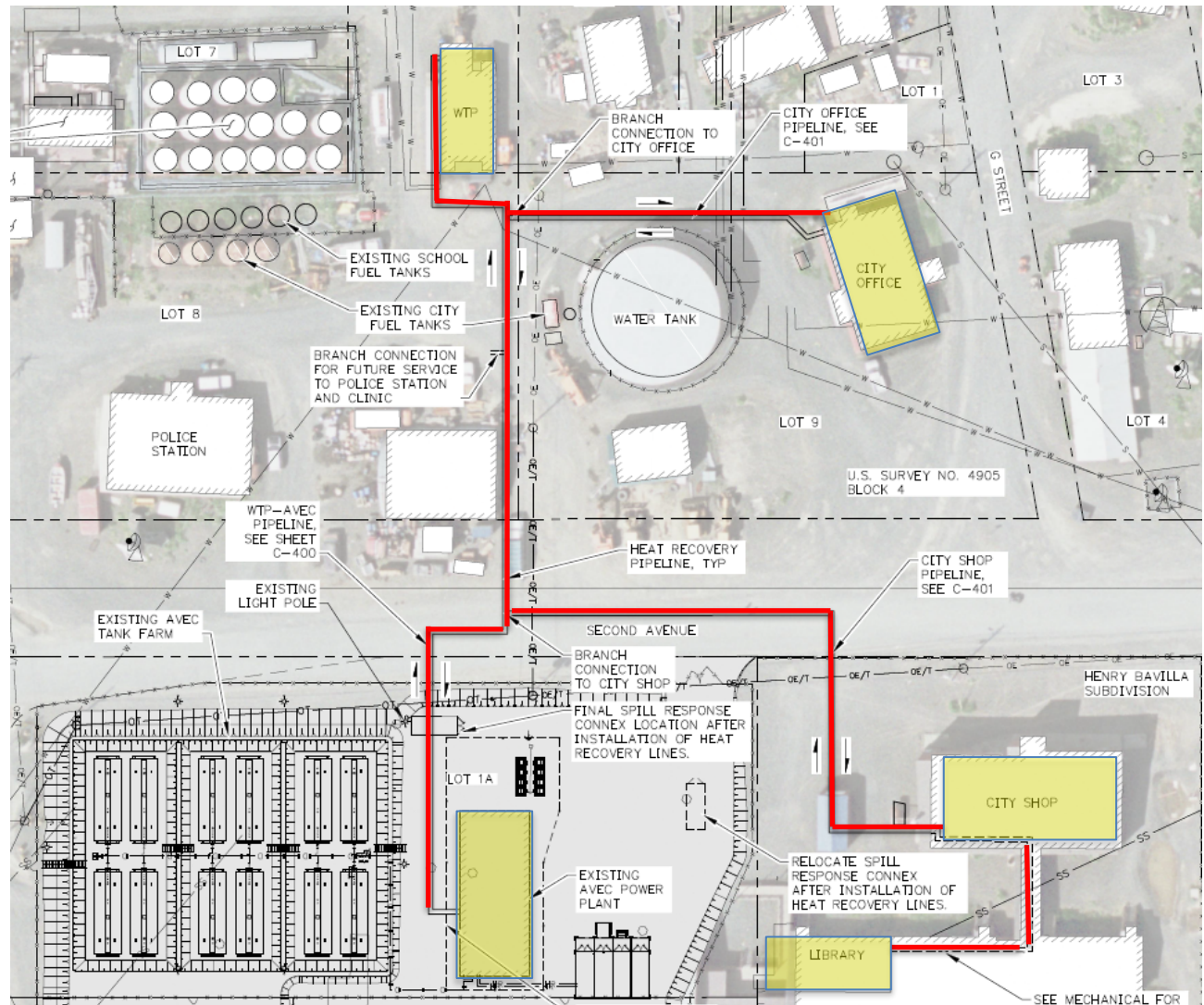
2. Heat exchangers allow heat to transfer from one loop to another while keeping each one isolated. This way, a leak in one section doesn't impact the other sections.

Diesel Engine Generator

Heat Load

Togiak Heat Recovery Project: Objectives

- Replace 14,000+ gallons of fuel oil barged into the community each year
- Save \$52,000+ in fuel oil costs annually
- Retain a significant part of the \$52,000 in the community
- **Update:** Heating fuel price increased to \$5.59 per gallon → \$78k annual savings



Togiak Heat Recovery Project: End-Users



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Project History

- Originally explored heat recovery feasibility in 2010
- Applied for AEA Renewable Energy Fund (REF) in 2011
- REF grant awarded in 2012, \$443,030
- Project delays
 - Design and construction bids were much higher than estimates in feasibility study
 - AVEC built new power plant in new loc.
- Design completed March 2019
- Additional funding sources secured in fall of 2019
 - ***DOE-OIE Energy Infrastructure Deployment on Tribal Lands Grant***
 - Commitment from State of Alaska DEC revolving loan fund



Project History and Current Status

History (continued):

- COVID-19 Pandemic delayed project timeline; first mobilization September 2020
- Setbacks including:
 - Travel restrictions
 - Changes in power plant requirements



Current status:

- System commissioned in January 2022; currently operating
- Controls and integration issues are preventing full utilization in some end-users:
 - Troubleshooting and optimization in process
- Currently in M&V phase



System benefits

- **Energy cost savings:**
 - ~14,000 gallons annually (est)
 - \$78k at current retail fuel prices
- **Community Resiliency:**
 - Heat recovery system serves as secondary heating system for piped water system and community facilities
 - Keeps money in local economy
 - Insulates community from global oil price fluctuations



Future Plans

- **Proposed Expansion:**
 - Health Clinic
 - Village Public Safety Office
- **Funding:**
 - City of Togiak requested Congressionally Delegated Spending from Sen. Murkowski
 - ANTHC working to help secure match funding



Questions? Comments?

Thank You!

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