Energy Efficiency Upgrades for Sanitation Facilities in Selawik, Alaska

DOE Workshop: Tribal Energy Program

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ANTHC, DEHE Overview

Services Provided:

- Design/Build
- Project Management
- Environmental Health
- Tribal Utility Support
- Regional Health Facilities
- National Tribal Water Center
- Alaska Rural Utility Collaborative

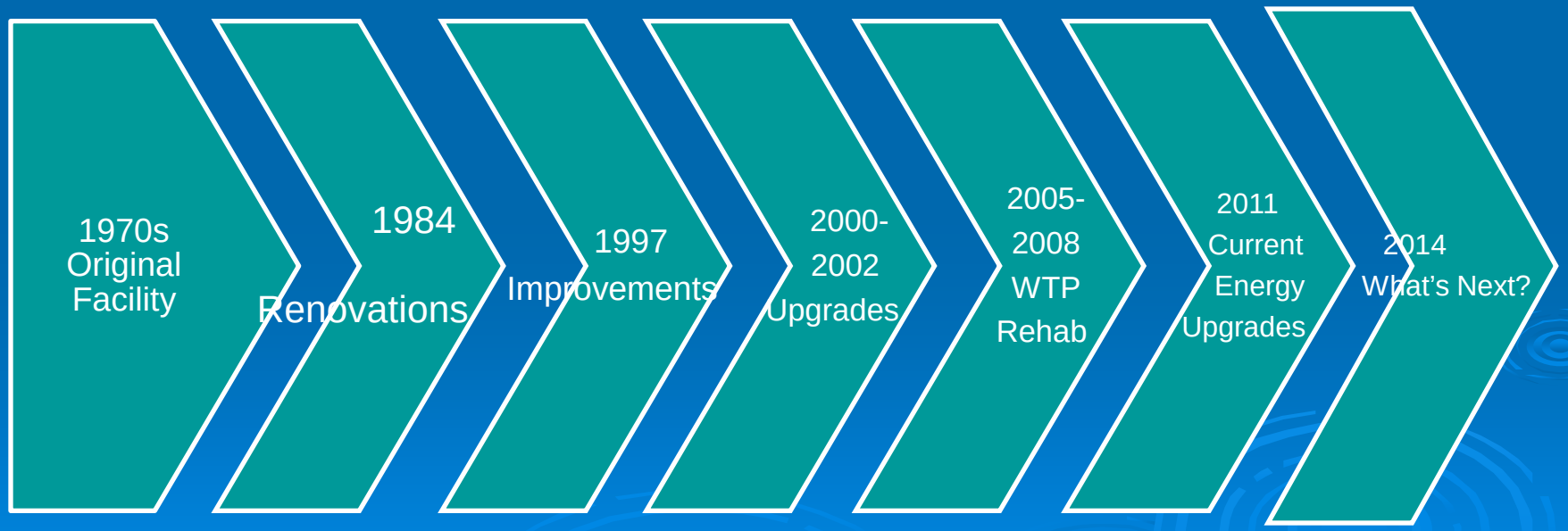
Selawik Overview

Selawik Sanitation Facilities

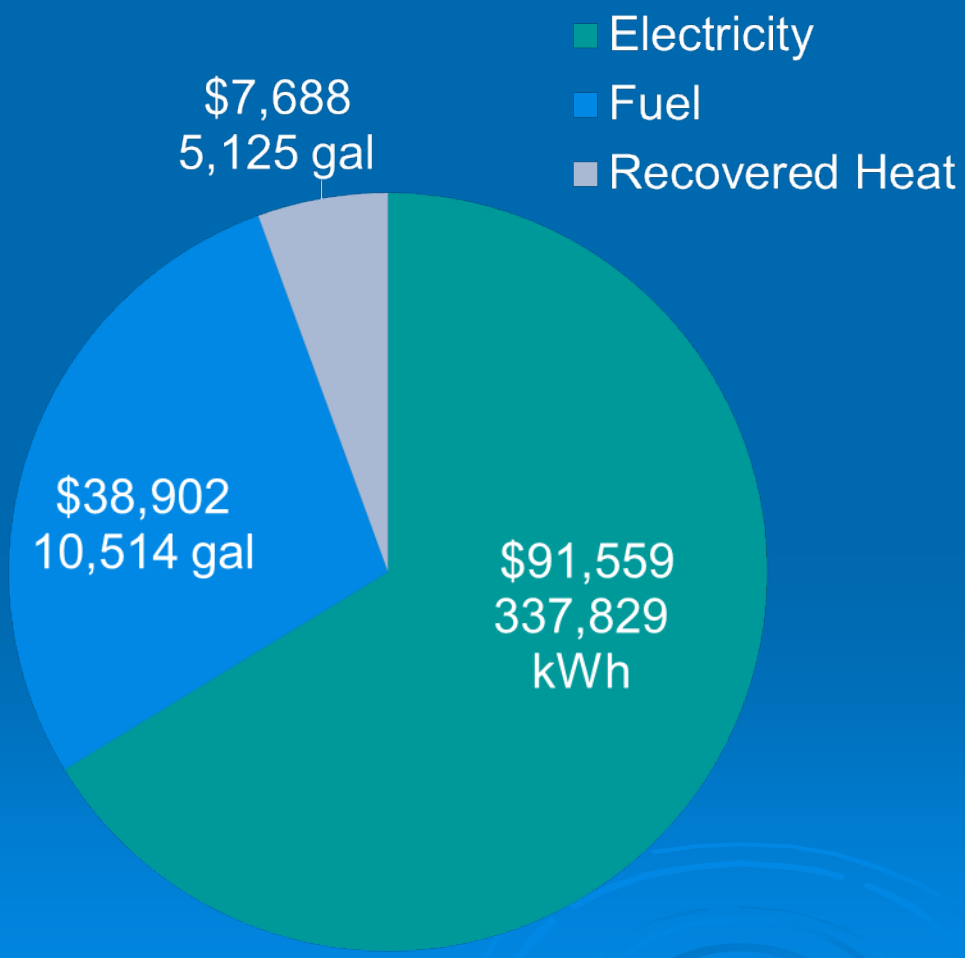
Above ground circulating water & vacuum sewer

Selawik Sanitation Facilities

System Development Timeline



Selawik Energy Use & Costs



Challenges in Selawik

- Annual freeze-ups to mains and services
- Vacuum sewer system is expensive to operate
- Damage due to freeze/thaw cycle of permafrost

Project Objectives

Utility	Scope of Work
Water Treatment/Vacuum Sewer Plant (Interior)	1. Modify heat recovery system 2. Upgrade glycol heat-add system (sewer) 3. Upgrade hydronic heat-add system (water) 4. Replace interior lighting with LED lamps 5. Re-commission vacuum sewer pumps
Vacuum Sewer Collection System (Exterior)	1. Repair leaks in vacuum sewer mains & service lines 2. Repair and re-insulate junction & arctic boxes 3. Label heat trace breaker boxes

Additional Funding for Additional Scope of Work

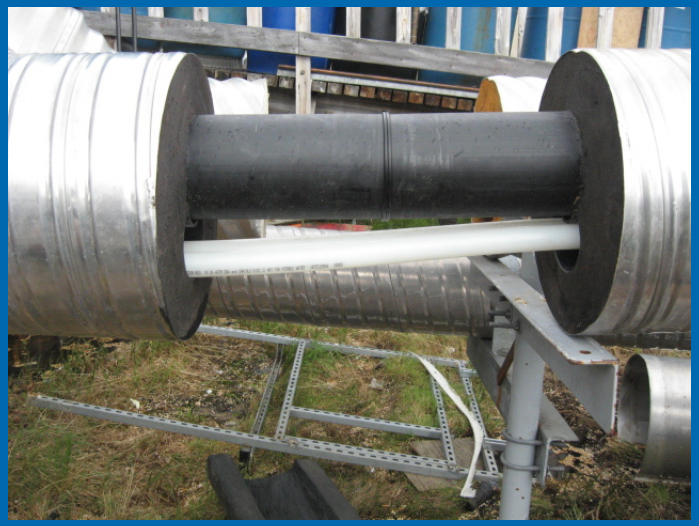
Utility	Scope of Work
Water Treatment Plant	1. Replace circulation pumps 2. Replace single wall with double wall heat exchangers
Sewer & Water System	1. Replace glycol heat-add lines in utilidors 2. Re-level vacuum sewer utilidors 3. Replace vertical bends & elbows in water loops
Individual Services	1. Repair up to 100 damaged arctic boxes 2. Replace up to 100 non-functioning water service circulation pumps

Phased Approach

Scope of Work	Year
1. Upgrade glycol heat-add system in vacuum sewer plant 2. Upgrade hydronic heat-add system in water treatment plant 3. Re-commission vacuum sewer pumps 4. Repair and re-insulate junction & arctic boxes 5. Label heat trace breaker boxes 6. Replace circulation pumps 7. Replace glycol heat-add lines in utilidors (about 35% complete) 8. Repair up to 100 damaged arctic boxes (30 completed) 9. Replace up to 100 non-functioning water service circulation pumps	2012
1. Modify heat recovery system 2. Replace interior lighting with LED lamps 3. Repair leaks in vacuum sewer mains & service lines 4. Replace single wall with double wall heat exchangers 5. Re-level vacuum sewer utilidors 6. Replace vertical bends & elbows in water loops	2013

Progress to Date

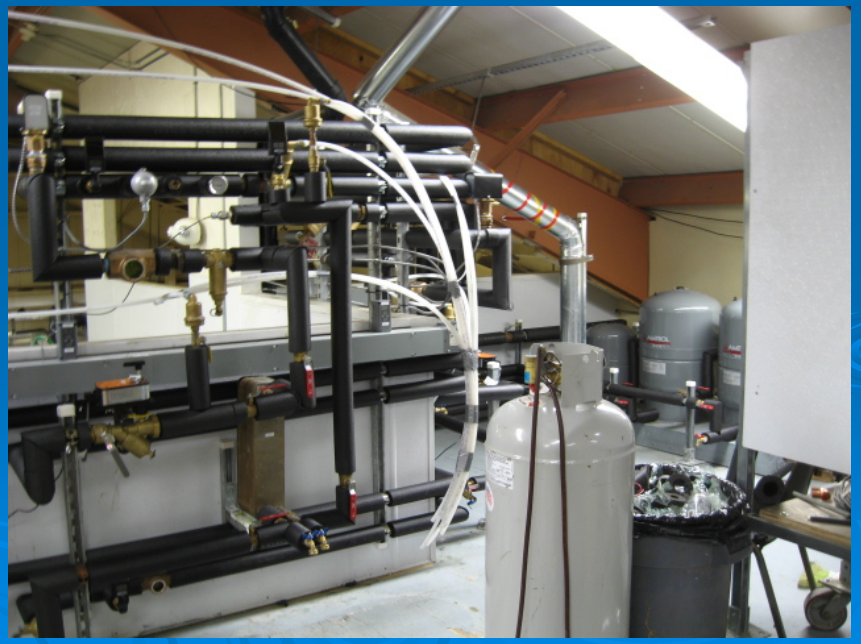
- Project is complete
- In closeout phase
- Focusing on the future



New Circulating Pumps

Recovered Heat Module

Hydronic Piping



Challenges

- Freight

Technical Issues Are Addressed, Now What?

- Technical issues only part of the problem
- Change user behavior and perception
- Climate change ongoing impact
- Utility ordinance driving behavior
- ARUC looking to the future

A Healthy Future for Rural Alaska