

NETC Supplemental Heat System

DHS

Rebuild Project



NETC Supplemental Heat History

- First used water jacket heat in 1973
 - Redirected jacket water to engine preheating circuits
 - Deflected radiator heat flow back into the power plant
 - Before this upgrade engines were hard to start in cold weather and operators wore parkas and bunny boots in the power plant
- Headquarters Building was constructed in 1976
 - Water jacket heat was directly extended through 2" copper pipe to the HQ
 - Pressure sensing automated valves protected the generator from coolant loss due to leaks in the extended system
 - This system remained in service until 1984

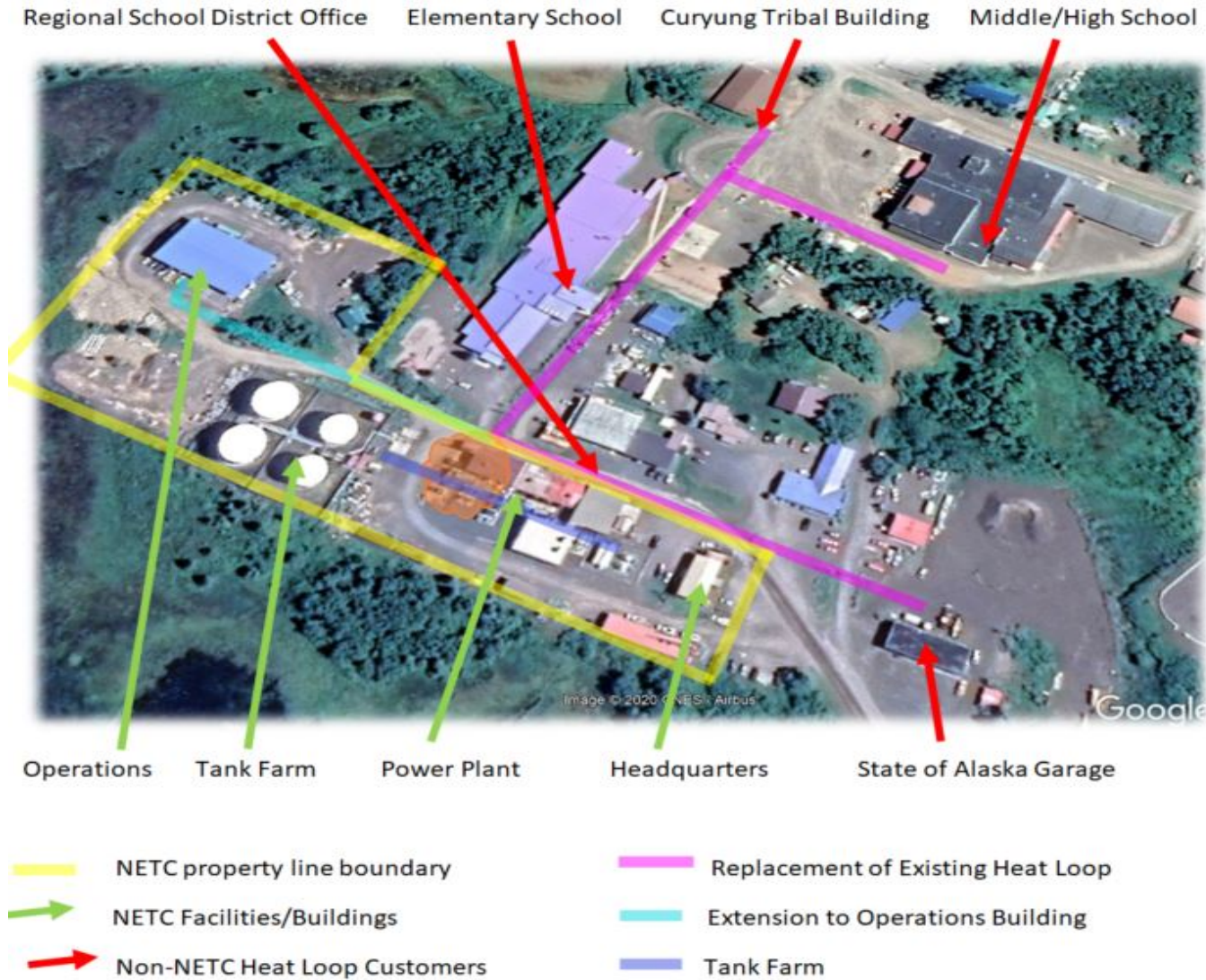
NETC Supplemental Heat History

- Elementary School was built between 1980 and 1982 (first non-NETC use)
 - Initial supplemental heat extension to the school was direct buried steel pipe
 - Grant funded by SoA, \$150K
 - Supplemental heat billing formula was developed, designed to share savings 50/50
- Heat loop was extended to High School, State Shop, SWRSD and Court House in 1983. Heat exchangers were placed between the water jacket and the waste heat system
 - SoA grant of \$539K
 - NETC funds of \$160K

Supplemental Heat System Benefits

- Provides a cost saving option for heating several NETC and Community buildings
 - High School
 - Elementary
 - SWRSD Office
 - State Shop
 - Curyung Tribal Office
 - NETC Main Office
- Provides heat for offline generators and tank farm
- Provides revenue to NETC
 - Cost of supplemental heat service derived by measuring BTU's used, computing equivalent diesel cost and splitting the savings with the recipient

System Rebuild Project



System Rebuild Project

- System components are beyond expected lifespan, many are failing or have failed
- The distribution to the State Shop and NETC Main Office have failed and are not recoverable
- The loss of this system would cripple critical functionality such as fuel pre heating
- System Rebuild Cost \$2.34M
 - \$1.75M from USDA Power Plant Upgrade Loan
 - \$590K NETC Capital

System Rebuild Project

- This project would replace all the critical components including:
 - Pumps and Heat Exchangers
 - Valves, Mixers and Air Separators
 - BTU Meters and Controls
 - Distribution piping
- Project progress to date:
 - Engineering complete
 - Most components ordered and received

System Rebuild Project

- Project timeline:
 - Spring 2021
 - Work with Schools, Tribe, State maintenance to schedule onsite system integration work
 - Organize material for phased installation work
 - Summer/Fall 2021
 - Replace Power Plant components
 - Install new distribution piping
 - Install new system at recipient sites
 - Commission the new system