

# 2017 ARUC Report on Activities

ALASKA NATIVE TRIBAL HEALTH CONSORTIUM



# Contents

ARUC Advisory Committee .....	1
What is ARUC? .....	2
ARUC Community Management Accomplishments .....	4
Chevak: New Administrative Position Funded with Reserves Golovin: Regulatory Compliance.....	5
Noorvik and Savoonga: Community Funded Capital Projects .....	6
Toksook Bay: Best Tasting Water in Alaska .....	7
Tyonek: Collections Success .....	8
Engineering Projects Heat Recovery Projects .....	10
Remote Monitoring .....	11
Utility Emergency Response .....	12
Service Line and Energy Efficiency Projects .....	13
ARUC Community Financial Information .....	14
Improved Energy and Operational Efficiency .....	15
ARUC Community Rates .....	16
Quyana/Taikuu to our Partners .....	17





**2017 Attendees:** Anthony Tickett, Dennis Jones, Alvin Pedersen, Johnny Lind, Agnes Moses, Carol Oliver, George Bright Sr., Connie Walker, David Walker, Laverne Turner, Nelson Walker, Herbert Cleveland, Henry Aloysius, Randall Hastings, Evelyn Trefon, Bobby Wells, Martha Wasky, Jerilyn Kelly, Sheila Minock, Joe Iya Jr., Myron Kingeekuk, Larson Hunter, Sandra Gregor, Bobbi Andrews, Cassandra Kroto and Cecilia Aloysius.

## Many thanks to the ARUC Advisory Committee

The Alaska Rural Utility Collaborative Advisory Committee serves a valuable role as the liaison between ARUC and participating communities. Each community selects a member to be on the ARUC Advisory Committee. The ARUC Advisory Committee meets four times a year, once in person and three times via teleconference, to represent their community and provide direction on water and sewer operations and rates.



## What is ARUC?

The Alaska Rural Utility Collaborative (ARUC) is an Alaska Native Tribal Health Consortium (ANTHC) program created to assist and empower its member communities to manage, operate and maintain water/sewer systems in rural Alaska. Each member community's system is operated as a stand-alone, non-profit business; money from local customers, generated from user fees and local community and regional support, must be enough to pay the system's direct expenses and build a reserve account. ARUC's services include helping set water/sewer rates in each community, billing local water and sewer customers, providing guidance to local water plant operators, and more.

Through active management, operations and maintenance support, ARUC continues to pursue its goals of maximizing the public health benefits of sanitation facilities and building local community capabilities. Through reliable sanitation, ARUC focuses on preventative health.

Communities in the ARUC program protect public health and residents' quality of life by:

- Ensuring qualified staff operate and maintain facilities to provide high-quality drinking water and safe disposal of sewage
- Providing strength in numbers and emergency response
- Extending the useful life of the system through prevention and maintenance, thereby saving millions of federal and state dollars in replacement costs
- Hiring and training water plant operators and backup staff in each community with good wages and benefits
- Setting rates with community council agreements; each community's rates are set to be self-supporting and rates vary per community
- Working with ANTHC engineers, operations and maintenance specialists, utility managers and grant specialists to support the utility at no additional cost to customers

*“I have lived in Quinhagak all my life. I love the opportunities that living in rural Alaska provides. I choose to live here because I can go into the wilderness when I feel like it. The tundra provides the foods I choose to eat. Some may see the bush as a barren place where there is nothing to do. Those people don’t see the wildlife and the miles of freedom that we see.*

*I am so used to having water available that I can’t imagine living without it. I’m able to do laundry every day, or even multiple times a day. My dishes don’t need to wait for hot water to boil. I can shower, but I choose to light up my steam house and get water with the turn of my wrist!*

*Thank you ARUC for bringing water to my community. Although we had it good before, you’ve made life easier. Maybe too easy, because I notice that my muscles have lessened because I don’t have to pack water anymore! But I’m not complaining! Quyana!”*

*Adam and Emma Petluska, Quinhagak*





## ARUC Community Management Accomplishments

The Alaska Rural Utility Collaborative partners with its member communities to use a strength-in-numbers approach and assists with the management, operations and maintenance of each community's water and wastewater system so communities don't have to manage the system on their own.

Community councils participate in utility rate decisions, discussions of system financial and infrastructure challenges, billing processes and collections, and develop roles for ARUC staff, operators and community representatives. Rather than ARUC making decisions for communities, it engages with community leadership to understand challenges and make decisions together to ensure long-term system sustainability and provide clean water and sanitation.

We are honored to share a few of the many successful management efforts made by our valued community leadership to effectively improve their community finances, management and operations.

## Chevak: New Administrative Position Funded with Reserves

Since 2014, Chevak has made efforts to lower expenses through energy efficiency projects and operator training, and increasing revenues through communication and collections. These efforts resulted in a substantial reserve account of more than \$500,000. Reserve accounts are essentially savings accounts used to pay for pumps, motors and needed equipment for the water plant and overages in labor and emergencies.

Utilizing these substantial reserve funds, Chevak's community leadership created an administrative position dedicated solely to water and sewer – assisting the operators in their daily administrative responsibilities. Water plant operator responsibilities don't end at the maintenance of the water plant, but also include the collections process and customer interaction. Chevak's administrative position allows water plant operators to focus more on the continual operations of the water plant by alleviating them of administrative duties.

"The administrative position has freed and allowed me to go to the field more often to do work like repair glycol leaks, summer projects, fix the damaged west loop service lines due to the ground shifting from melting permafrost, and repair the broken aluminum banded 90-degree pipe to a sweeping 90-degree service pipe to prevent future freeze-ups," said John Atchak, Chevak's water plant operator.

The administrative position was implemented in May 2017 and both brought new employment to the community and helped increase collections from 88 percent in January 2017 to 97 percent in January 2018.



## Golovin: Regulatory Compliance

Golovin's yearlong boil water notice was rescinded in January 2018 after being brought back into regulatory compliance. The compliance required operator training on the proper steps of documenting turbidity (cloudiness) levels of the water being filtered and to submit water samples to the Alaska Department of Environmental Conservation (ADEC).

Golovin's system was built to fill their two water tanks, a 1.2-million-gallon and 1.8-million-gallon tank, in the summer and fall in order to have adequate water supply year-round. During this process, water is collected from the Chinik Creek, filtered, treated and then distributed to the community. ADEC requires turbidity documentation of the water filtration to ensure all particles have been removed before water is distributed to the community.

Golovin's leadership ensured that operators had the tools necessary to document water turbidity levels accordingly and urged their operators to submit all required water samples promptly. The city has since hired another operator to cross-train, learn the water pumping process, increase communication and assist in the collection of samples to ensure continued compliance.

## Noorvik and Savoonga: Community Funded Capital Projects

In 2017, Noorvik and Savoonga voted to utilize their reserve funds for infrastructure improvements to their systems and bring both communities one step closer to self-sustainability. This is an important step and demonstrates how communities are able to fund their own projects after building substantial reserve funds.

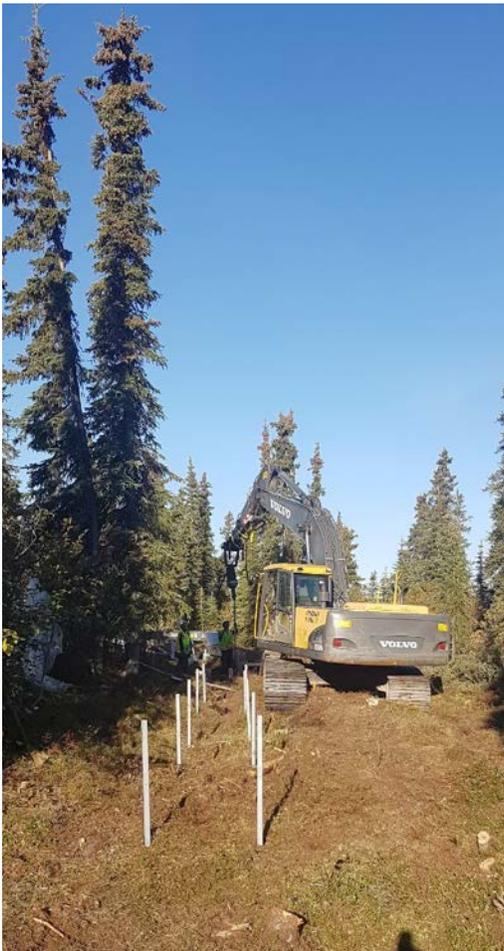
In Savoonga, the infrastructure improvements projects encompass the installation of 250 helical piles, adjustable supports and installation of flexible service connections for 15 homes.

In Noorvik, the infrastructure improvements encompass the installation of 100 helical piles, adjustable supports, replacement of 400 feet of utilidor with aluminum utilidor coupled with rigid insulation, and the installation of flexible service connections for 15 homes.

Flexible service connections offer more stability in a changing environment as global temperatures increase and permafrost thaws. Thawing permafrost shifts the ground and pipes; without flexible service, connections break and pull away from the home.

“Flexible connections are the standard for ARUC; they eliminate the use of a doghouse and allows an increased range of play between the level of the house and the connection, which helps our community reduce service line freeze-ups in the winter. Helical piers will benefit our system exponentially by having a more stable and solid platform for the level of our utilidors. This will prevent air-gaps and structural damage, thus preventing leaks and freeze-ups,” said Scott Kingeekuk, Savoonga’s water operator.

Project scopes for Noorvik and Savoonga’s infrastructure improvements were finalized in 2017 and work will begin summer of 2018.



*Chris Cox, ARUC Regional Manager, and Noorvik operators Elnio Bantatua and Jeff Gottschalk.*



*Above is an example of lumber supports that stabilize utilidors during permafrost shifting. The lumber supports will be replaced with helical piles (left,) which are metal pipes driven into the ground. Helical piles will eliminate the need for having to redo the lumber supports, which tends to rot and break down over time.*



*Toksook Bay's water operator Richard Curtis and ARWA's Executive Director Robyn Dombroski.*

## Toksook Bay: Best Tasting Water in Alaska

At the 2017 Alaska Rural Water Association (ARWA) annual training conference held in Anchorage, Toksook Bay was awarded the best tasting water in Alaska. Nine communities from around the state submitted water samples and were judged based on clarity, odor and taste.

Toksook Bay will submit another sample and represent Alaska in the Great American Water Taste Test February 2018 at the National Rural Water Association's Rural Water Rally in Washington D.C.

The city council's communication and partnership in ensuring their operators are supported in day-to-day operations leads to the highest quality water and system success, promoting community-wide health benefits for generations to come.

On top of this prestigious award, Toksook Bay also repaired their heat recovery project in the fall of 2016 resulting in a drop of total fuel usage from 313 gallons in January 2016 to 7 gallons in January 2018.

*"I remember packing water in the summertime. We did this as a family. Me and my siblings sort of raced to who will get to our water hole and our destination. I wanted to be the first to finish and if I wasn't, my hard efforts were shattered, but a silly thing I did was to pour water out to the ground. In winter time, we hauled water pushing our sled with container. When I went off to boarding school, we did the same thing when water pipes froze. This was hard labor, but had good results at the end. Something to eat, drink, and to stay clean. Water –H2O- has so much for us but now since it flows to touch of a button people take it freely and take it for granted. To some who hauled it the hard way, [we] have [a] better understand[ing] of its use and we'd rather drink it cold or hot in coffee or tea. This is my water story which is remembered well and water has so much meaning to me. It has so many uses in everyone's life and in each home. It comes in different forms: liquid, frozen, and is precious gift from above."*

*Mary Kailukiak, Toksook Bay*



*Tyonek water operator Sam Bartels.*

## Tyonek: Collections Success

Tyonek saw a significant increase in their reserve funds from \$27,000 in January 2017 to \$45,000 in January 2018, meeting their required reserve amount of \$33,000. The increase can be attributed to the tireless efforts of local leadership and operators – reminding customers to pay their bills on-time, along with the addition of customers utilizing permanent fund dividend (PFD) assignments, which allow customers to pay using their PFD.

“Officials have brought up the importance of paying water bills during council meetings and public events in order to increase awareness,” said Janelle Baker, IRA Council Secretary/Treasurer.

The water operator, Sam Bartels, has also been an advocate talking with residents and council members about the importance of paying utility bills to ensure the long-term sustainability of the system.



Tyonek, AK

*“I am very thankful for the running water that you guys provide for our community. Before, we had to dump honey-buckets and pack our own water from the creek.*

*A lot of us didn't have a vehicle to use to haul/pack our water. During the winter [it] was harder to go pack water, especially when we had a cold spell. And sometimes, the spot where we packed water would be about a foot to maybe a little over three feet deep. We would tie a rope on our bucket so we could reach the water. And sometimes, I used to just go right back home, when it was frozen over, or the snow was too deep to deal with.*

*I would like to add that when we had to pack water, I used to go and check my grandparent's homes to see if they needed water. And if they did, I would go pack for them. Not just me, but my siblings did too. Thank you again for your service.”*

*Jennifer Small, Goodnews Bay*



# Engineering Projects

The projects highlighted in this report are from ARUC member communities and took place in 2017.



St. Michael, AK

## Heat Recovery Projects

Energy reduction is an area ARUC and our member communities are looking for ways to improve. One energy reduction method is through heat recovery – the process of transferring excess heat that otherwise evaporates into the atmosphere. Heat recovery decreases heating fuel usage, lowering fuel costs and thus lowering the monthly water and sewer rates. To install a community heat recovery system, ANTHC’s Energy Initiative department conducts a feasibility study and then secures funding for the project.

In Russian Mission, a heat recovery project was completed in the summer of 2017. Local operators and ARUC engineers teamed to install a pipeline between the power plant and water plant, which now transfers excess heat generated from the power plant to the water treatment plant. Teacher housing was later integrated into the recovered heat loop. This project reduces fuel usage by 2,200 gallons annually.

Chevak is undergoing a heat recovery project installation. Infrastructure installation began in the fall of 2017 with an estimated completion of October 2018. Chevak uses on average 15,000 gallons of fuel per year, and through the heat recovery installation an estimated 12,500 gallons would be saved annually.

## Remote Monitoring

Remote monitoring helped several of our communities in 2017. Remote monitoring provides easily readable data to operators and engineers while they're away from the water plant. If a problem is likely to occur, such as an increase in temperature, operators are sent an alert of the issue via email or text.

In Shungnak, remote monitoring alerted our engineers and operators of a potential situation involving low water levels. Operators corrected the issue before it became a problem, saving the community thousands of dollars in labor and repair costs.

In St. Michael, data from remote monitoring helped pinpoint the cause of the system-wide freeze-up. Thanks to remote monitoring data, local operators provided evidence of a system problem and the community received grant funding to fix the issue.

Remote monitoring allowed Chevak to collect hard data and helped turn their debt into a tremendous positive reserve. After monitoring fuel usage, operators lowered the amount of fuel used over the course of the year. The more data that is collected, the easier it becomes for a community to figure out the exact amount of fuel needed for each system.

Newhalen and New Stuyahok saw improvements to their water monitoring systems, which helped reduce energy costs. In Newhalen, the water pressure system and interior piping were replaced in the water plant. A controller was installed on the water storage tank to indicate how much water is remaining. These controllers will help prevent future issues and assist local operators properly maintain water levels.

New Stuyahok upgraded their heat add controllers, which will help prevent system freeze-ups during winter months. A new tank level sensor was installed to help monitor water storage levels to prevent water shortages and low pressure to customers.



Russian Mission, AK

*“Waste heat recovery from the power plant have helped with water treatment because they make water treatment chemicals more effective and eliminate the need for the plant to use backup boilers.”*

*Wilber Tonuchuk, Kotlik Water Plant Operator*



## Utility Emergency Response

It's imperative to be prepared, communicate and quickly respond during a utility emergency situation, such as a freeze-up of a community's water source. Communication between community members, customers and ARUC is paramount to utility emergency response and the prevention of future issues to water and sewer systems.

### AMBLER

In Ambler, an emergency arose when the raw water line froze between the water intake well and the water treatment plant. Previously, in 2016, ARUC installed heat trace in the well and a new pipe connection to the well drop pipe. The local operators were able to utilize the new well heat trace to thaw the well. If the operators did not respond in a timely manner, more of the line would have frozen and required a large thawing effort.

### UPPER KALSKAG

Upper Kalskag installed an innovative thawing facility for the community's sewer force main line. This thawing facility was installed in a remote location without a permanent heating source and electrical service. Because the thawing capabilities are only needed during a rare freeze event, it is not prudent to install a full-time facility. A permanent facility would require electricity and fuel storage for heating and would have been very costly for the community.

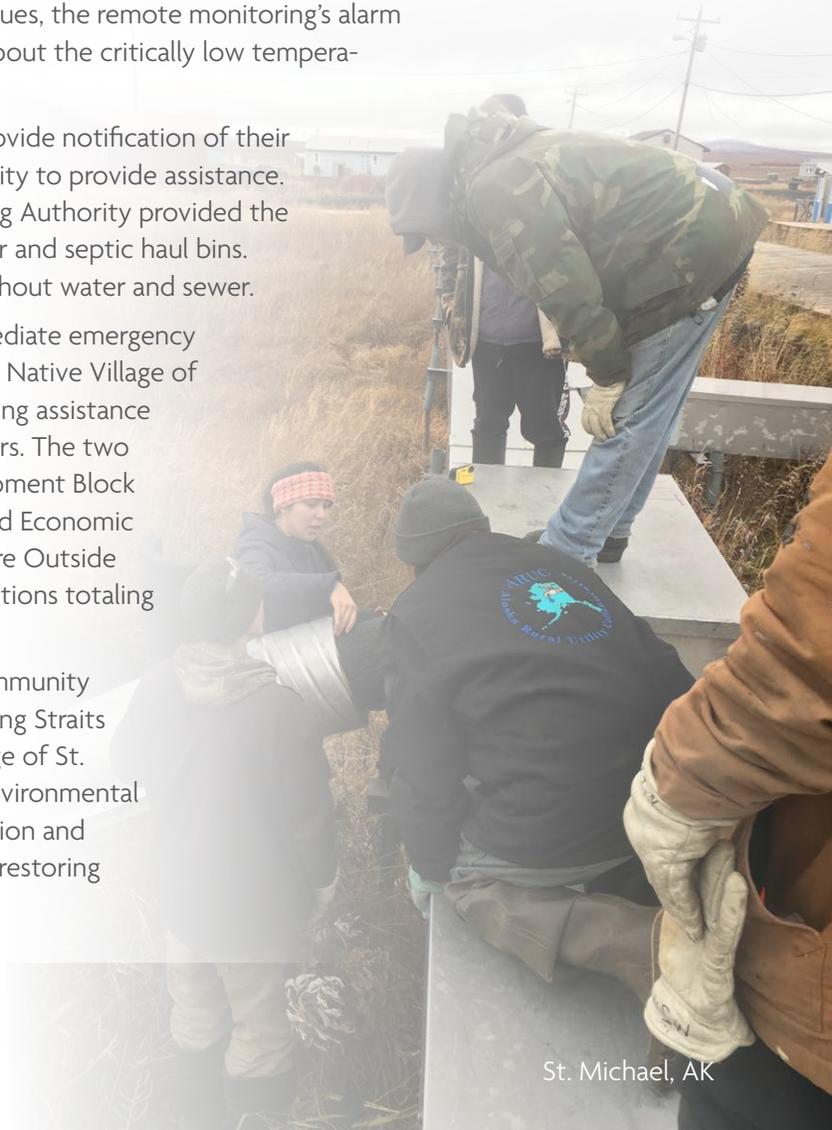
### ST. MICHAEL

Winter 2017 was unlike the previous three winters. Wind gusts, coupled with extended below zero temperatures, blew off utilidor and other piping insulation, which accelerated the freezing of St. Michael's pipes. Compounding these issues, the remote monitoring's alarm system stopped working and didn't signal operators about the critically low temperatures within the system.

In January 2017, local operators contacted ARUC to provide notification of their freezing system. ARUC engineers flew to the community to provide assistance. While the pipes were frozen, the Bering Straits Housing Authority provided the community with 100 five-gallon buckets, hand sanitizer and septic haul bins. This assistance provided temporary relief to those without water and sewer.

St. Michael's reserve funds were used to provide immediate emergency assistance and temporary repairs. During this time, the Native Village of St. Michael submitted two grant applications for funding assistance because of the enormity and amount of needed repairs. The two grant applications – to the Indian Community Development Block Grant Imminent Threat program and the Norton Sound Economic Development Corporation (NSEDC) Large Infrastructure Outside Entity Funding – were successful and secured contributions totaling \$750,000 to help pay for permanent repairs.

Thanks go out to the St. Michael's local operators, community members, and other organizations – including the Bering Straits Regional Housing Authority, Kawarek, the Native Village of St. Michael, the city of St. Michael, the Department of Environmental Conservation, NSEDC, Norton Sound Health Corporation and State Emergency Services – all played a pivotal role in restoring service back to the community.





## Service Line Projects

During 2017, six service line projects were completed in the communities of Holy Cross, Chignik Lagoon and Scammon Bay. These lines not only help with expansion of service, but also with efficiency, as system expansion exemplifies the continued growth of communities and their capabilities to provide service to more members.



## Energy Efficiency Projects

Noorvik and Kotlik saw upgrades to their systems to improve energy efficiency. In both communities, the vacuum pumps were upgraded and control schemes were installed for the vacuum sewer system. Heat add controllers were replaced for both the water and glycol loops. In Noorvik, local operators located and repaired a vacuum leak in the main, which also helps with energy efficiency and improves the vacuum pump's productivity.

# ARUC Community Financial Information

2017 was another good year financially for our ARUC communities. As seen on the chart for FY17, revenues were \$875,947 higher than expenses, meaning a majority of our communities put over \$875,000 into their community parts replacements, fuel and emergency reserve accounts.

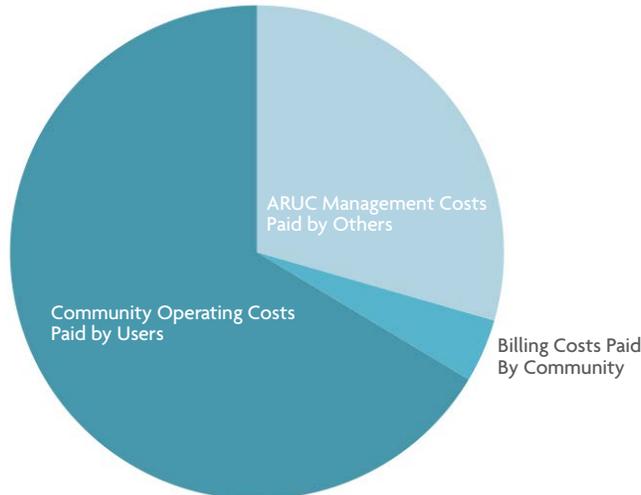
Having a fully funded reserve account available to fund critical replacement parts, annual bulk fuel purchases and potential emergencies such as freeze-ups and overages in labor is vital in keeping rates low for our customers. For communities with a traditional piped system (gravity, low pressure, buried or surface pipes) our goal is to ensure an additional \$70,000 on top of the adequate reserve amount to fund bigger system emergencies. For communities with a vacuum system our goal is an additional \$170,000 on top of their adequate parts reserve to ensure sufficient funds are available in the case of an emergency.

Of the 27 ARUC communities: 67 percent have fully funded cash reserves; 11 percent have positive but unmet cash reserves; and 22 percent have no cash reserves. ARUC works to improve finances in our member communities by ensuring each community's revenue meets expenses and builds reserves for emergencies. Ultimately, this ensures users have access to clean and sustainable water and wastewater for the life of the system.

## ARUC FY17 Operating Revenue and Expenses

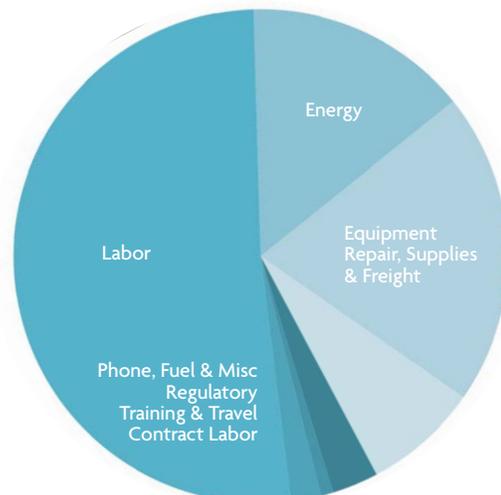
Revenues collected from each community are used to pay that community's system expenses only. Some included expenses are water plant operator labor, electricity, fuel, parts, supplies, regulatory testing, billing service fees and much more. ARUC management staff costs are funded by ANTHC and federal funds only.

### ARUC FY 2017 Operating Costs



Community Operating Costs Paid by Users	66%	\$2,995,235
ARUC Management Costs Paid by Others	30%	\$1,329,044
Billing Costs Paid By Community	4%	\$187,200
<b>Total:</b>		<b>\$4,511,480</b>

### ARUC FY 2017 Expenses

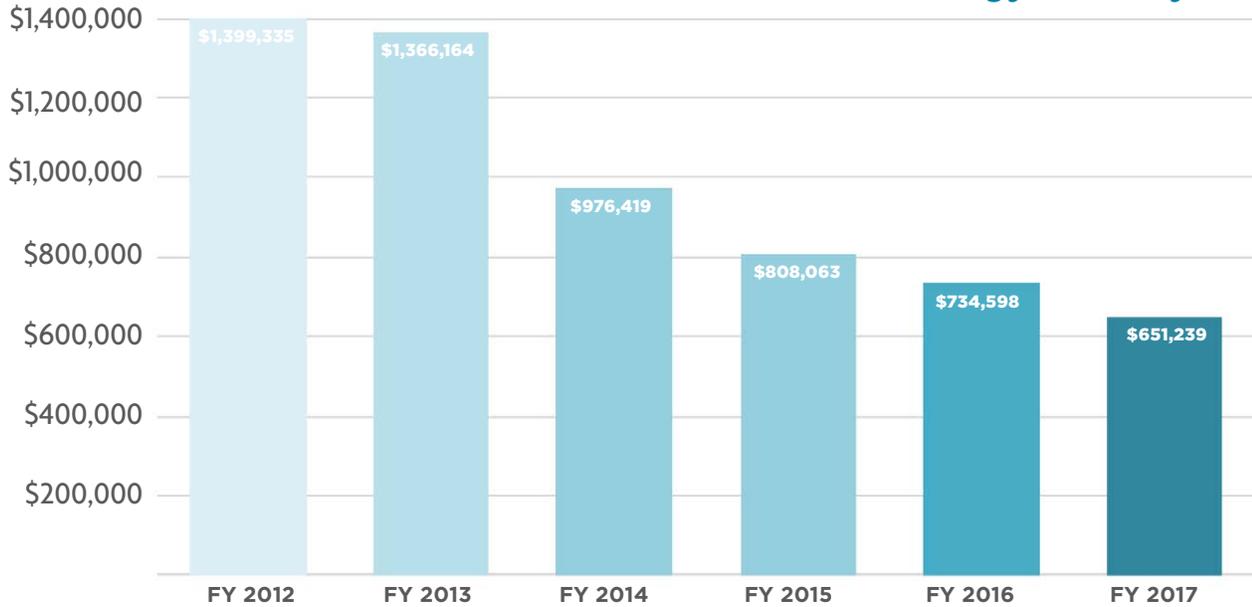


Labor	51%	\$1,639,255
Energy	20%	\$651,239
Equipment Repair, Supplies & Freight	15%	\$466,865
Contract Labor	8%	\$240,425
Training & Travel	5%	\$96,610
Phone, Fuel & Misc	2%	\$62,448
Regulatory	1%	\$25,594
<b>Total:</b>		<b>\$3,182,435</b>

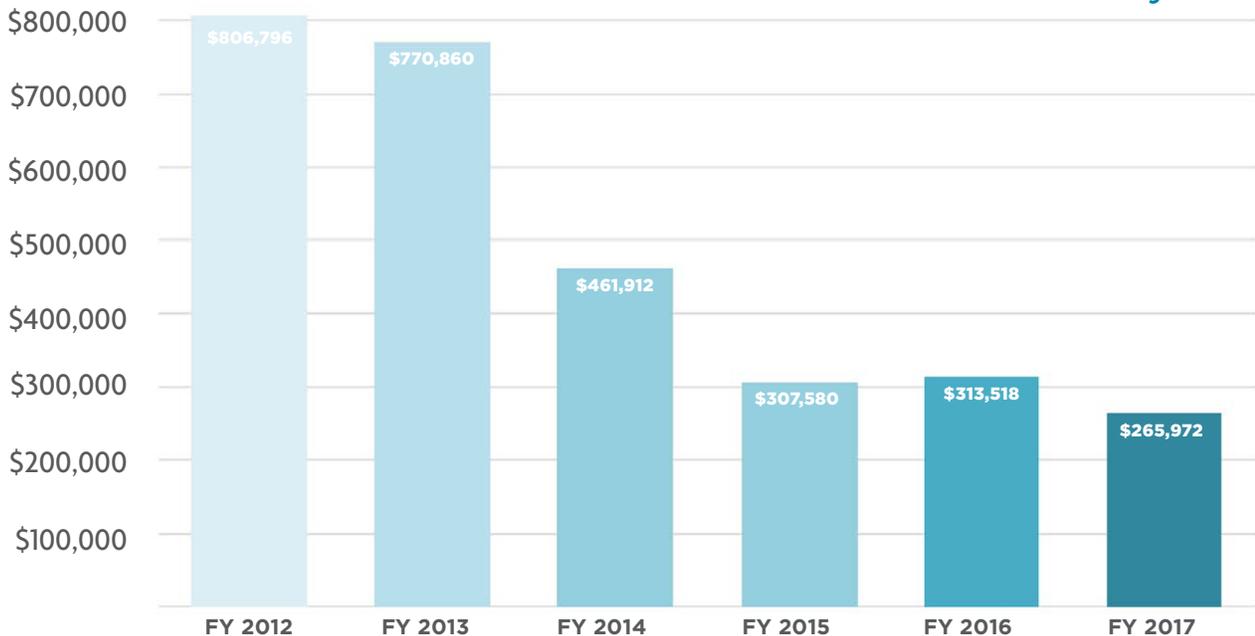
# Improved Energy and Operational Efficiency

Through energy efficiency projects in partnership with ANTHC's Rural Energy Initiative, we continue to see a decline in energy expenses, such as fuel and electricity. Energy costs are the second highest expense for water and wastewater facilities. Energy projects include heat recovery, wind-to-heat and biomass systems. These projects utilize local energy sources to offset fuel and electricity consumption.

### ARUC Energy Costs by Year



### Cost of Fuel by Year



# ARUC Community Rates

Community	Residential Rates
Ambler	\$ 175.00
Anchorage**	\$ 97.37
Bethel**	\$ 234.46
Chevak	\$ 85.00
Chignik Lagoon	\$ 97.75
Chignik Lake	\$ 85.00
Deering (wastewater only)	\$ 105.00
Dillingham**	\$120.89
Golovin	\$ 180.00
Goodnews Bay	\$ 85.00
Holy Cross	\$ 150.00
Kiana	\$ 154.50
Kobuk	\$ 200.00
Kotlik	\$ 104.50
Kotzebue**	\$145.00
Lower Kalskag	\$ 156.00
New Stuyahok	\$ 93.75
Newhalen	\$ 175.00
Nome**	\$ 107.82
Noorvik	\$ 157.50
Pitkas Point	\$ 120.00*
Quinhagak	\$ 125.00
Russian Mission	\$ 60.00*
St. Michael	\$ 250.00
Savoonga	\$ 85.00
Scammon Bay	\$ 105.00
Shungnak	\$ 140.00
Sleetmute	\$ 125.00
South Naknek	\$ 90.00
Toksook Bay	\$ 65.00
Tyonek	\$ 128.25
Upper Kalskag (wastewater only)	\$ 157.39

\*Subsidized \*\*Non-ARUC community

## Quyana/Taikuu to our Partners!

Alaska Energy Authority  
Alaska Rural Water Association  
Alaska Vocational Technical Center  
Bristol Bay Area Health Corporation  
Bristol Bay Borough  
Chignik Lake Traditional Village Council  
City of Ambler  
City of Chevak  
City of Deering  
City of Golovin  
City of Holy Cross  
City of Kiana  
City of Kobuk  
City of Kotlik  
City of Lower Kalskag  
City of New Stuyahok  
City of Newhalen  
City of Noorvik  
City of Quinhagak  
City of Russian Mission  
City of Saint Michael  
City of Savoonga  
City of Scammon Bay  
City of Shungnak  
City of Toksook Bay  
City of Upper Kalskag  
Department of Environmental Conservation  
The Harvard Project on American Indian  
Economic Development  
Indian Health Service  
Lake & Peninsula Borough  
Maniilaq Association  
NANA Regional Corporation  
The National Tribal Water Center  
Native Village of Chignik Lagoon  
Native Village of South Naknek  
Native Village of Tyonek  
Northwest Arctic Borough  
Norton Sound Health Corporation  
Pitkas Point Village Council  
Sleetmute Traditional Council  
United States Department of Agriculture  
Village of Goodnews Bay  
Yukon-Kuskokwim Health Corporation

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