ARWSWG

Alaska Rural Water and Sanitation Working Group

The Working Group's mission is to maximize the health benefits of in-home water and sanitation services in rural Alaska.

Within Alaska there are significant health disparities related to the lack of access to in-home water and sewer services. This inequity is particularly felt in remote villages. Alaska ranks last among U.S. states for the proportion of homes with running water and sewer service; approximately 22% of rural Alaskan households lack in-home water and sewer service.[1] There is strong evidence that in-home water and sewer service is linked to better health. Research in Alaska has shown that infection rates are higher among persons living without running water for respiratory, skin, invasive bacterial, intestinal infections, and dental disease. New research shows that installing in-home running water service reduces rates of these infections (Figure 1).[2,3] **This research demonstrates that having in-home running water is directly linked to the improved health of rural Alaskans, especially young children and the elderly.**

The US Arctic Research Commission coordinates the Alaska Rural Water and Sanitation Working Group (ARWSWG), which is composed of representatives from federal, state, local, and tribal entities. The group focuses on water and sanitation in rural Alaska, its connection to health, and the impacts of climate change on water and sanitation infrastructure.

The ARWSWG promotes research on water security and the nexus of water, food, and energy security and climate change. The United Nations defines water security as the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socioeconomic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability.[4] A report recently released by the Inuit Circumpolar Council highlights water as an integral part of food security for indigenous populations in the Arctic.[5] Across the Arctic, lack of reliable and affordable access to water often results in extreme water conservation behavior and low use of water, leading to suboptimal health. Additionally, thawing permafrost and changes in the quality of water from lakes and rivers is affecting the water and sanitation infrastructure in communities.

ARWSWG MEMBERSHIP

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[1] Healthy Alaskans 2020 Project, http://hss.state.ak.us/ha2020.

[2] Centers for Disease Control. 2011. Dental caries in rural Alaska Native children–Alaska 2008. *Morbidity and Mortality Weekly Report* 60(37):1,275–1,278.

[3] Thomas, T., T. Ritter, D. Bruden, M. Bruce, K. Byrd, and others. 2015. Impact of providing in-home water service on the rates of infectious diseases: results from four communities in Western Alaska. *Water and Health* 14(1):132–141, http://dx.doi.org/10.2166/wh.2015.110.

[4] UN-Water Task Force on Water Security. 2013. *UN-Water Analytical Brief on Water Security and the Global Water Agenda*. United Nations University, Hamilton, Ontario, Canada, 37 pp.

[5] Inuit Circumpolar Council-Alaska. 2015. *Alaskan Inuit Food Security Conceptual Framework: How to assess the Arctic from an Inuit perspective: Summary and recommendations report*. Anchorage, AK, 28 pp.

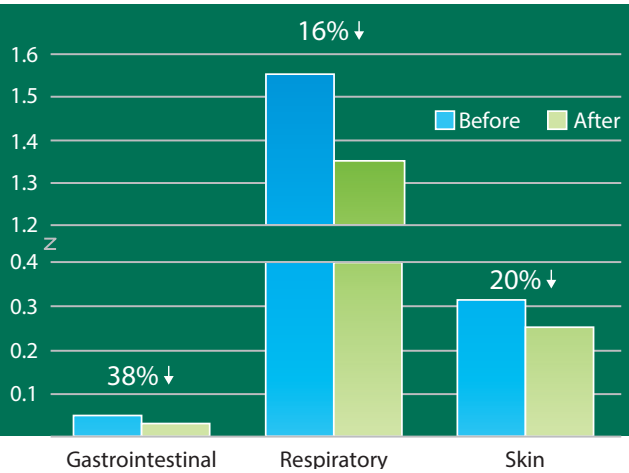


FIGURE 1. Clinic visits for water-related infections before and after Installation of in-home running water in four villages in Southwest Alaska, 2007–2013.[3]

The ARWSWG works cooperatively to develop water-related project ideas that improve the health of rural Alaskans and further address water and sanitation issues. The Alaska Department of Environmental Conservation, in coordination with tribal, state, and federal agencies, is spearheading two of these efforts. The first is a research and development effort, called the **Alaska Water and Sewer Challenge**, to find better and more affordable ways to deliver drinking water and sewage disposal services to rural Alaska. This effort focuses on decentralized water and wastewater treatment, recycling, and water use efficiency. These methodologies may prove useful in individual homes and in housing clusters. The second effort is the **Water Innovations for Healthy Arctic Homes Conference** (WIHAH, http://wihah2016.com), which was held in September 2016. This conference brought together U.S. and international engineers, health experts, researchers, community members, policymakers, and innovators to discuss the challenges and opportunities associated with making running water and sewer services in remote northern communities safe, affordable, and sustainable. A conference-related publication is expected in early 2017.

Challenges to Providing Clean Water and Sanitation

Current approaches to addressing rural Alaska water and sewer needs are not achievable or sustainable for all communities. Specifically:

- In many instances, rural sanitation facilities are increasingly unaffordable to build and maintain.
- Upgrades are necessary in some communities to address climate change impacts on water and wastewater infrastructure.
- Current funding is not adequate to serve remaining homes or to make the improvements required for healthy living.
- New technologies are needed to address health problems associated with water and sewer system deficiencies.

HEALTHY ALASKANS 2020

Healthy Alaskans 2020 is a framework of 25 health priorities. Each priority has target indicator goals for the level of improvement sought by 2020. The framework, which is based on scientific evidence and statewide community input, includes a health indicator specific to water: **increase the proportion of Alaskans with access to in-home water and wastewater services**. The target indicator goal is to increase the percentage of rural community housing units with water and sewer services to 87% in 2020, from the current level of 78%.[1]

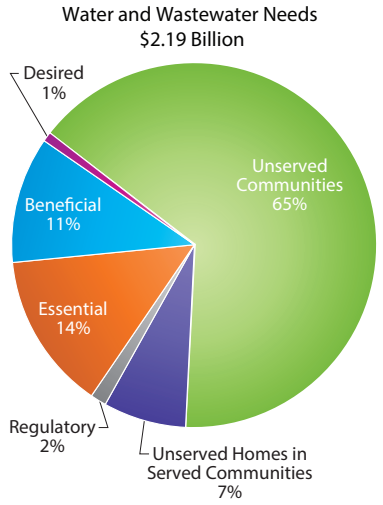
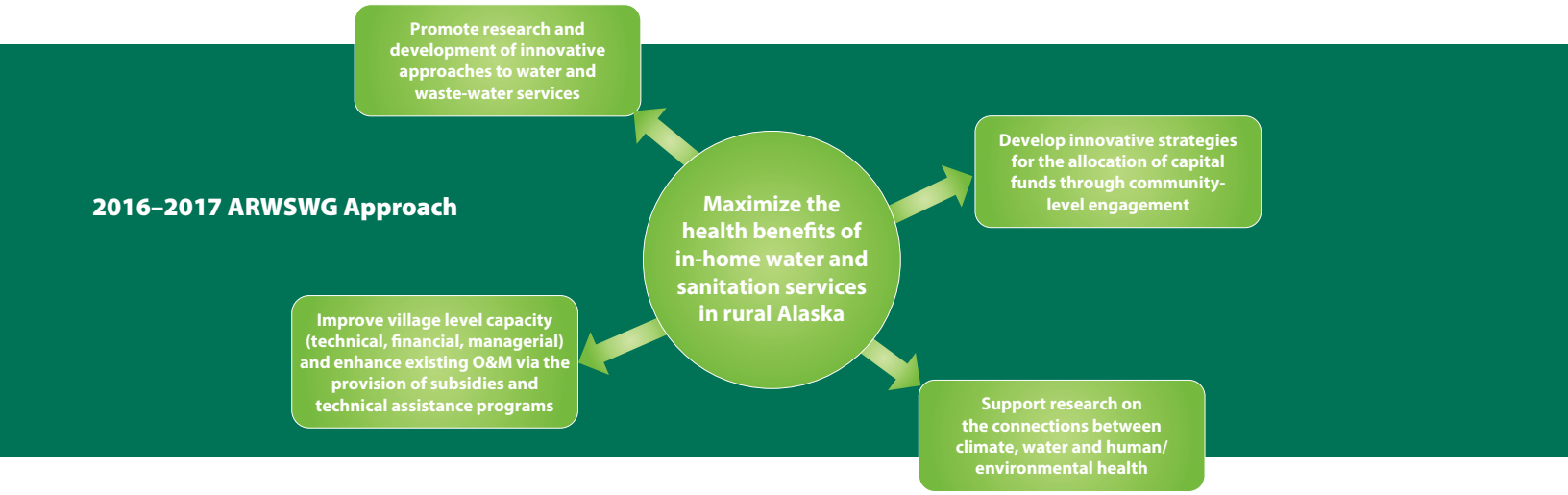


FIGURE 2. Types of Rural Alaska Funding Needs, 2016.[6]



2016–2017 ARWSWG Activities

- The WIHAH Conference (September 18–21, 2016)
- The Alaska Water and Sewer Challenge (in progress)
- Water and Sanitation Session at the Alaska Public Health Association's Annual Meeting (January, 2017)
- The 7th Annual Water and Sanitation Innovations for the Arctic Conference: Climate Change, Water and Health (January 2017)
- A two-day workshop focused on community-level technical, financial, and managerial capacity in water and sanitation (to be held jointly with renewable energy experts) (Alaska Forum on the Environment, February 2017)

[6] September 2016 estimates, Indian Health Services, Sanitation Deficiency System. Definitions: Unserved: homes without running water and wastewater service within the home; Essential: required to assure system operation/performance; Beneficial: code or safety issue-related, increases system efficiency; Desired: wanted, but non-essential and not code/safety-related; and Regulatory: pertaining to Safe Drinking Water Act violations.