

Adapting Rural Alaska Sanitation Infrastructure To A Changing Climate



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Current Water and Sewer Infrastructure in Rural Alaska

- 200 communities or 81% of the 247 communities in rural Alaska have water and sewer systems
- 89% of the homes in rural Alaska are served by these systems
- 47 communities or 19% of the 247 communities are “unserved”, i.e. not served by a pipe system or closed haul system or individual wells and septic system

Current Water and Sewer System Types in Rural Alaska

- Piped – 64%
- Individual Wells and On Site Septic Systems – 30%
- Closed Haul – 6%

Several of these systems are in coastal communities that are being impacted by the effects of climate change, i.e. flooding, erosion and thawing permafrost.

History of Rural Sanitation Funding Thru SFY 09 and Current Needs Versus Funding

- Since 1960: \$1.936 billion – Total Federal and State
- Since 1989: \$1.542 billion - Total Federal and State
- In 2008, rural sanitation needs exceeds available funding by \$513 million; a 35% increase since 2005

Future Water and Sewer System Types in Rural Alaska

- Same objectives as today: provide adequate supply of potable water and safe disposal of wastewater
- Similar mix of systems as today, maybe more piped systems
- Increased sustainability of systems: new treatment technologies, alternative energy sources, more energy efficient, improved design, better building materials, etc.

How Vulnerable Is Water and Sewer Infrastructure to Climate Change?

- Water and sewer infrastructure is perhaps the most vulnerable of all types of infrastructure to climate change because of the importance of water to human health, the economy and the environment.
- Since sanitation is necessary to prevent the spread of disease, water and sewer infrastructure is one of the most critical types of infrastructure.

Climate Change Challenges for Existing and Future W&S Infrastructure

- Prevention – “prevent” damage to existing infrastructure at immediate or significant risk from climate change impacts
- Adaptation – “adapt” infrastructure to effects of a changing climate by identifying sustainable solutions that reduce or eliminate the risks

Begin Building Resiliency for the Future with Data Collection

- Create and monitor a comprehensive database by inventory existing infrastructure and document current conditions, including remaining useful life and replacement value.
- Conduct impact and vulnerability assessments
- Map current physical and environmental conditions (permafrost, topography, etc.) of the local areas

Continue Building Resiliency with Data Analysis

Develop an adaptive climate change model for rural sanitation infrastructure that will:

- Estimate future conditions
- Estimate future impacts and vulnerabilities
- Assess and implement options, including the “no-regrets” options, which provide cost-effective benefits regardless of future climate change

Adaptation Measures

- Update Alaska's existing climatic design values (e.g. update the Environmental Atlas of Alaska)
- Revise building codes and engineering practices and standards
- Require new projects address climate change impacts and adaptation

Thank You

