

Alaska Village Sanitation: Current Status and the Need for New Technology



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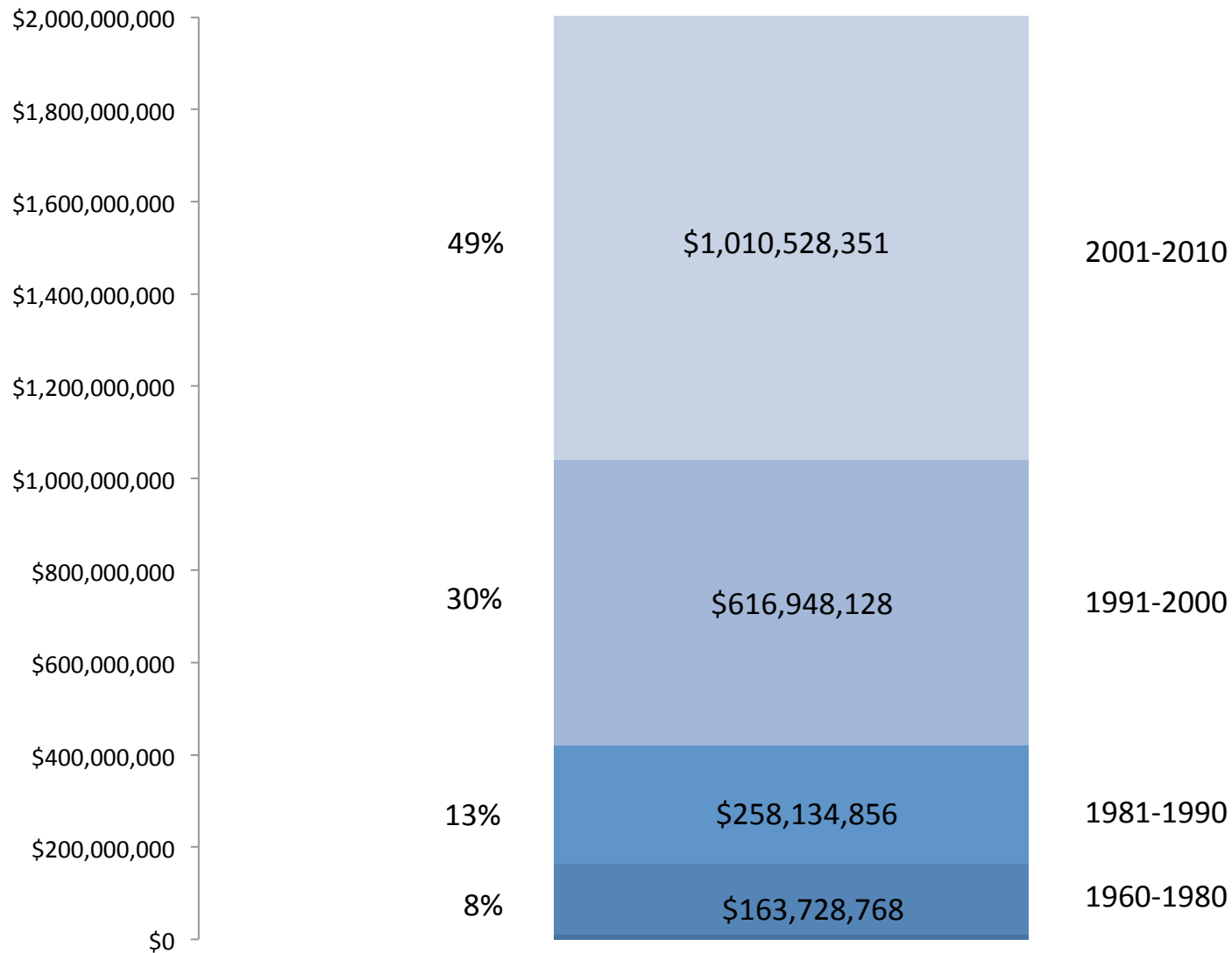
Progress in Alaska Village Sanitation

- For half a century, we've focused on "putting the honey bucket in the museum"
- Much progress has been made:
 - 30 years ago, fewer than 25% of rural Alaska households had running water and flush toilets.
 - In 1996, 55% of rural homes had piped or covered haul service.
 - Today, approximately 75% of rural homes have indoor plumbing

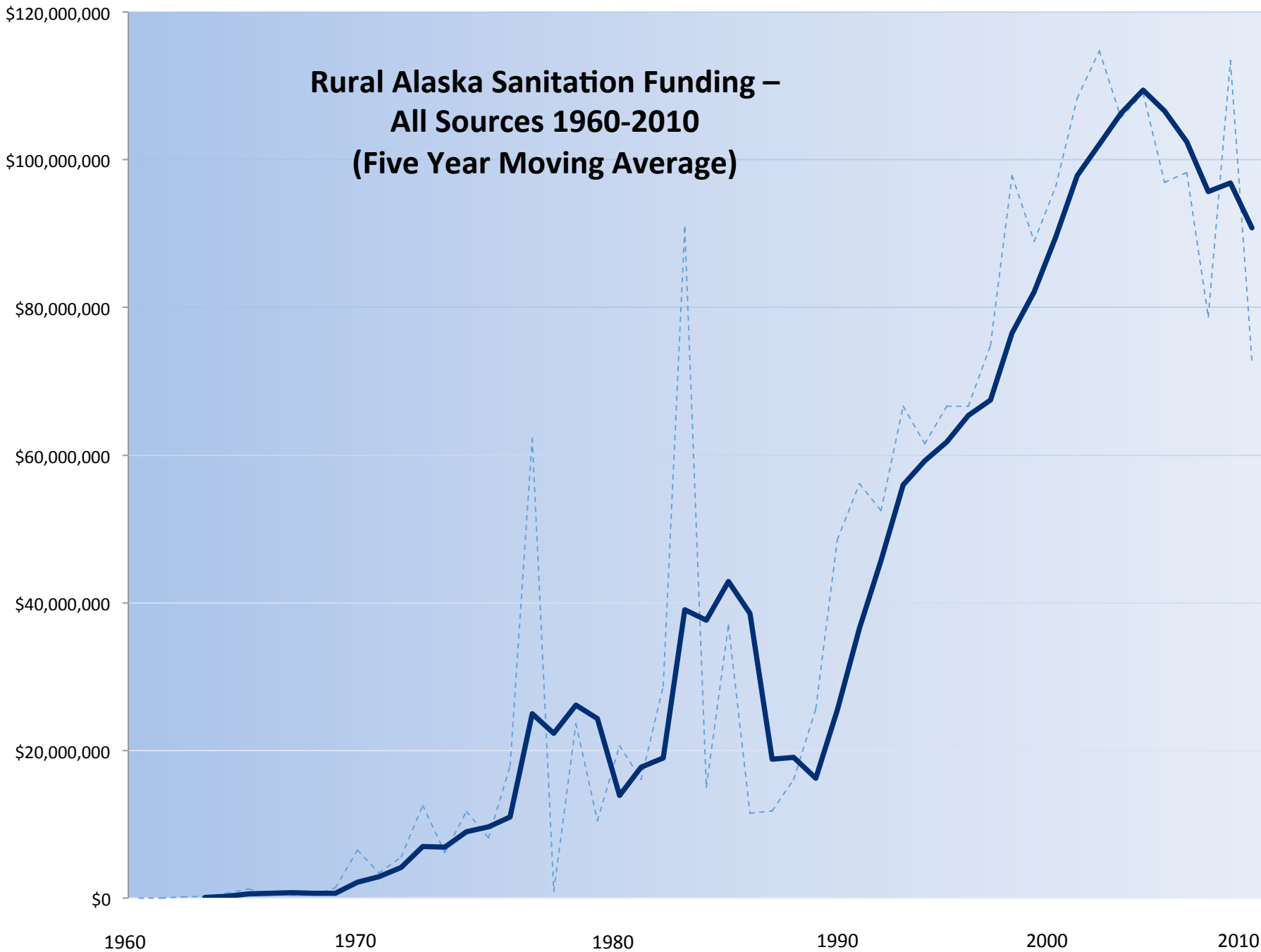
Boilerplate Approach Since 1970:

- 100% water treatment to full regulatory compliance (regardless of ultimate use)
- Storage of large quantities of water, usually requiring heat addition
- Distribution of treated water to individual homes via pipes or haul vehicle, usually requiring heat addition
- Collection of all household sewage for lagoon disposal, usually requiring heat addition

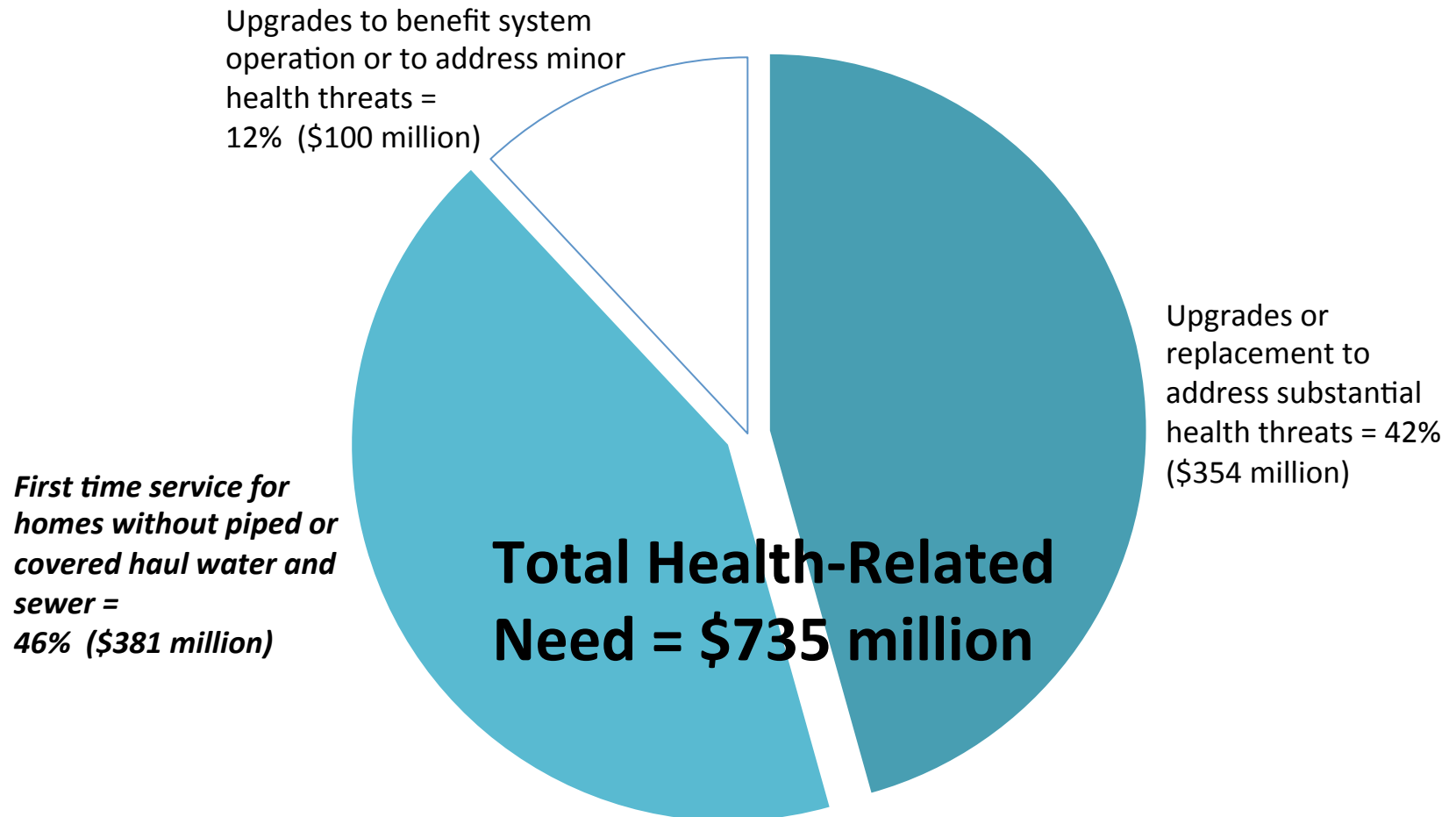
Historical Pace of Rural Alaska Sanitation Funding 1960 - 2010



**Rural Alaska Sanitation Funding –
All Sources 1960-2010
(Five Year Moving Average)**



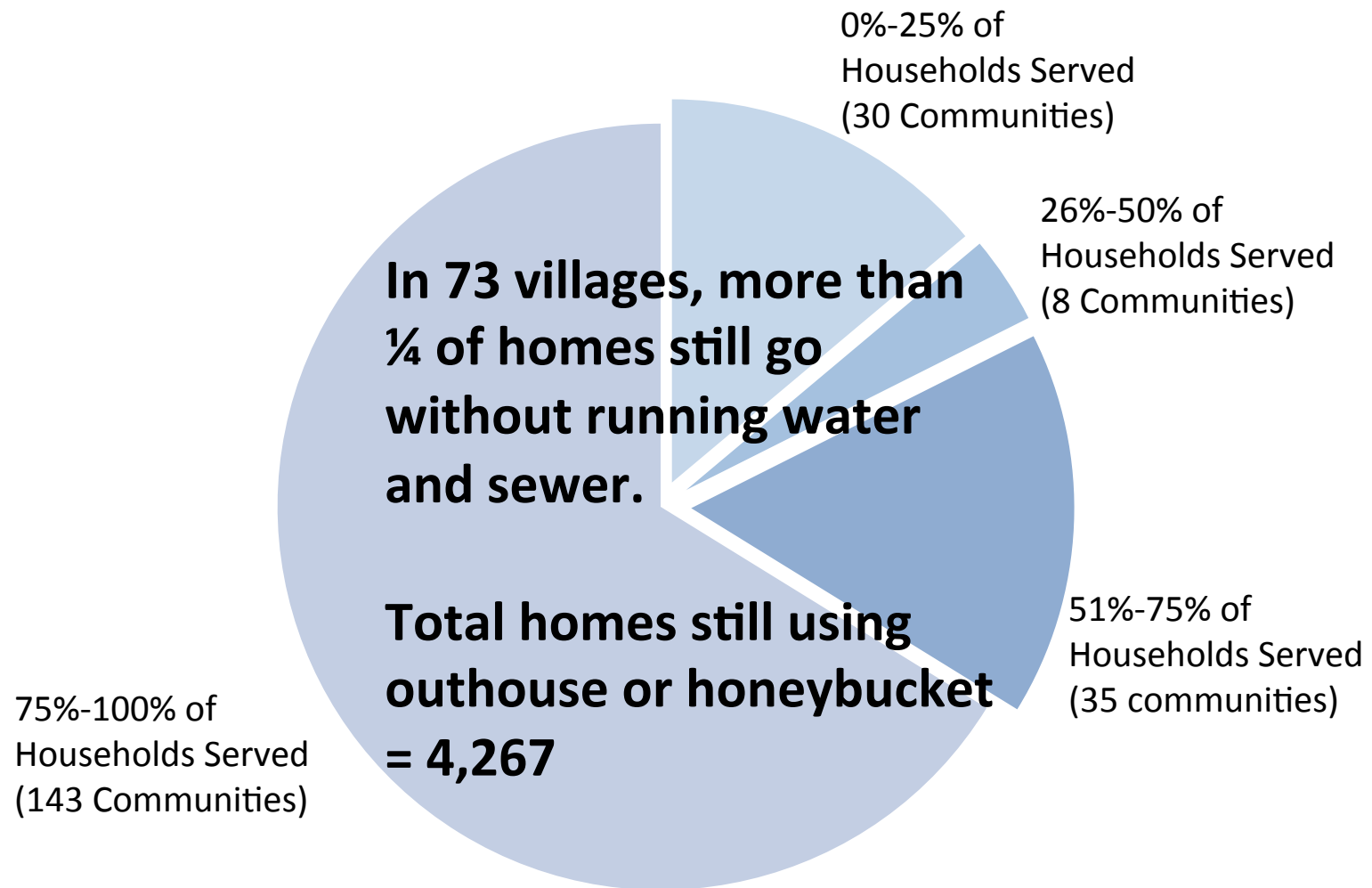
Rural Alaska Water and Sewer Needs: Much Work Remains



Note: The first time service category and the upgrades to address substantial health risks category are often combined and referred to as "critical health related needs".

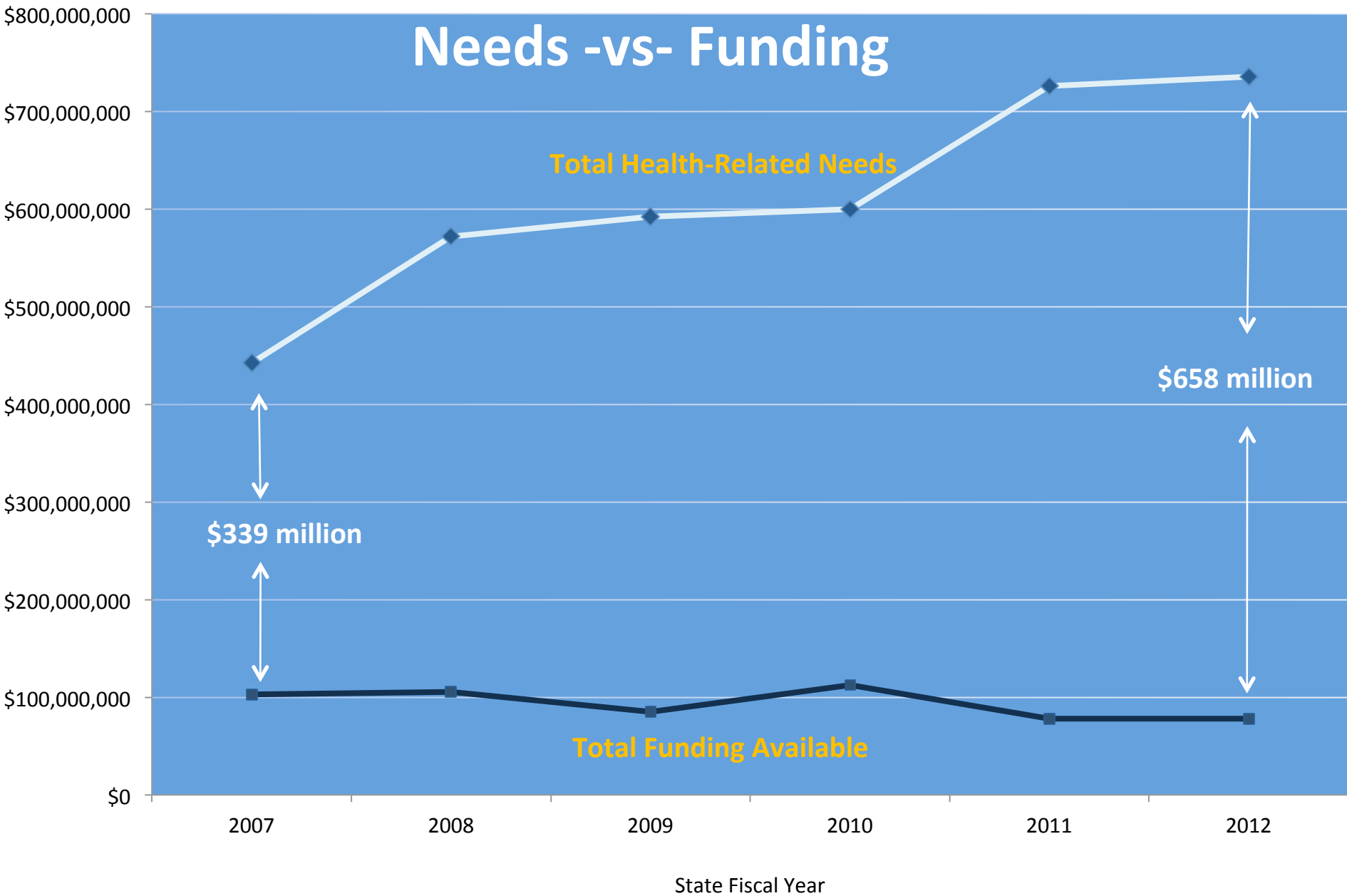
Breakdown by Community:

Percent of homes served by pipes or covered haul



Rural Alaska Sanitation

Needs -vs- Funding



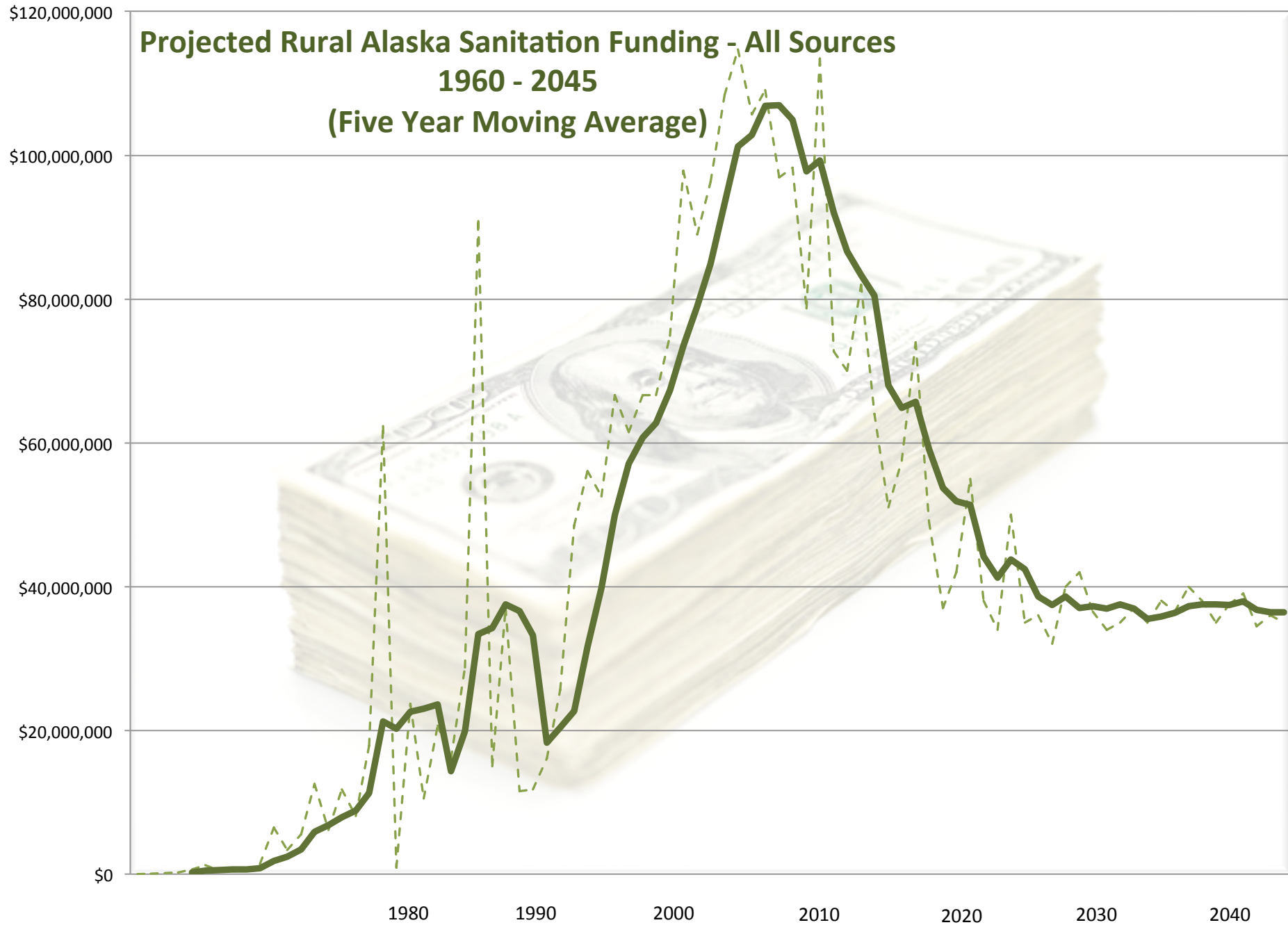
Cost to Complete New, Ongoing Piped Water & Sewer Systems

- There are 11 ongoing construction projects in Alaska villages to provide first-time piped water and sewer services.
- Most of these projects have been ongoing for several years, some for more than a decade.
- Estimated cost to complete these projects is \$150 million.
- Once these projects are done, there will still be 35 villages with no water and sewer services to individual homes.

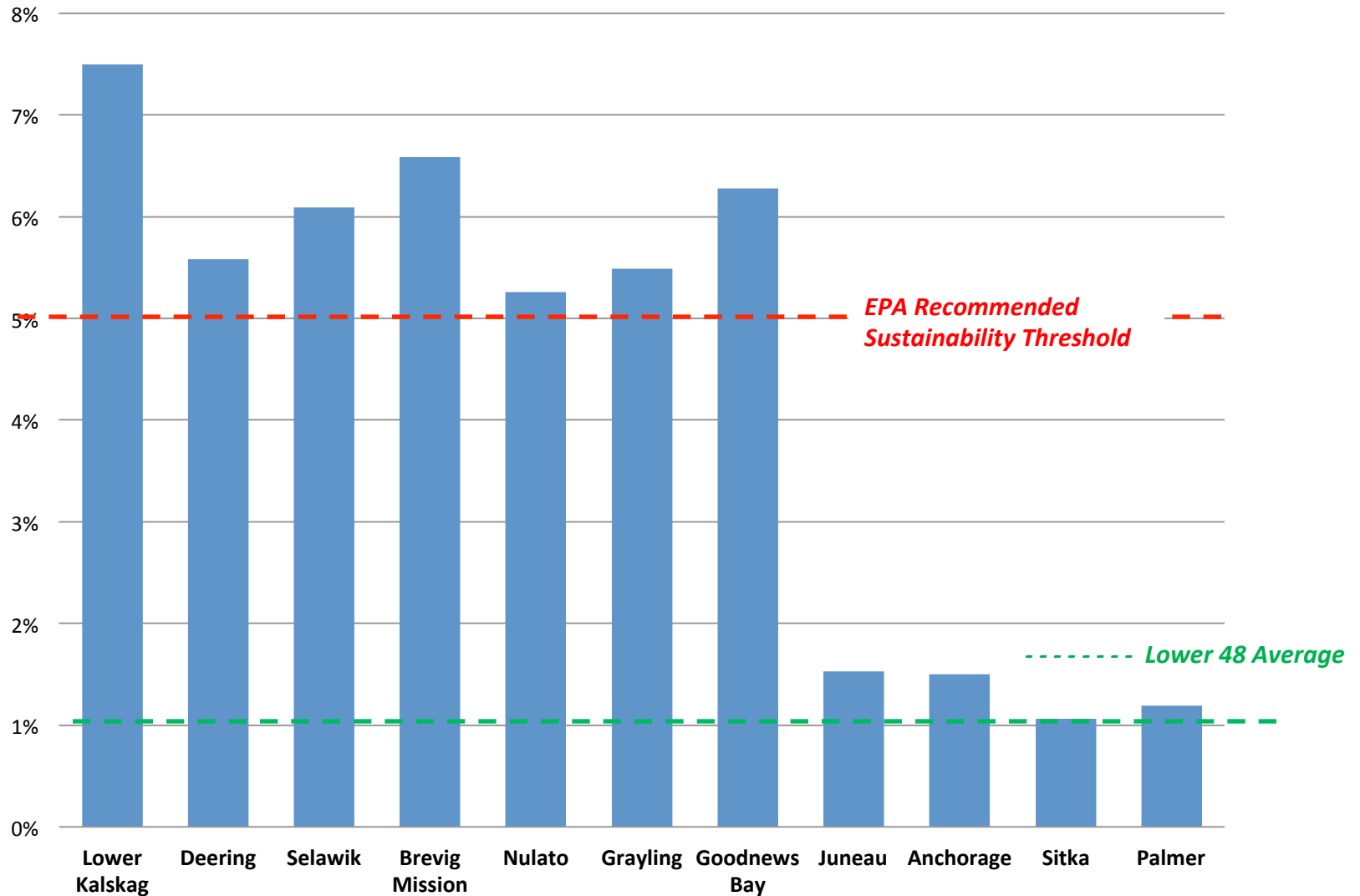
Projected Rural Alaska Sanitation Funding - All Sources

1960 - 2045

(Five Year Moving Average)



Water and Sewer User Fees as a Percentage of Median Household Income



Bottom Line:

- Boilerplate system used for the past 50 years is increasingly unaffordable to build and maintain.
- Available funding will not be adequate to serve remaining homes and make needed improvements.
- New technologies are needed now in order to address health problems associated with water and sewer system deficiencies.

The need for technological improvements exists at every service level:



Thousands of people will continue to handle honey buckets for years to come



Water and sewer haul systems will continue to
rely on transportation infrastructure



Washeterias will remain the most sustainable level of service for many villages



Many existing piped systems are at the end of their useful life or require major upgrades



Upgrades to water plants and other buildings will improve energy efficiency and monitoring capability



“Our way of life has been influenced by the way technology has developed. In the future, it seems to me, we ought to try to reverse this and so develop our technology that it meets the needs of the sort of life we wish to lead.”

HRH the Duke of Edinburgh, *Men, Machines and Sacred Cows*, 1984