

# The Cost of Addressing Failing Septic Systems in King County - Executive Summary

*“Since the beginning of 2020, due to increased water use as people have been home during the pandemic, Public Health has seen significant increases in failures of OSS. Failures can result in direct public health hazards -- untreated sewage in homes, yards, and nearby streams, lakes, and beaches... **There is an imminent need for neighborhood or community-level planning and broadscale capital funding to support conversions to sewer in low-income, urban areas.**”*

From King County On-Site Sewage Systems and Social Vulnerability [Dashboard](#), (Emphasis Added).

## Background

Failing on-site sewage systems (OSS), commonly referred to as septic systems, impact households when sewage backs up into a home or comes up in their yard. When OSS fail, bacteria and viruses flow into the home and onto surrounding properties. Untreated waste threatens the health of people, pets, and the environment. Cost has been identified the biggest barrier to homeowners needing to replace OSS or convert aging OSS to sewer.

In King County there are an estimated 85,000 OSS, and two thirds (54,000) are more than 30 years old (which EPA identifies as the average working lifetime for a properly installed and maintained OSS). This poses a huge problem for the county, with the implication that an estimated 2,000 to 7,000 systems may need to be replaced or connected to sewer every year for the next ten to thirty years.

37,000 OSS are in King County urban areas. In many cases, affected properties and communities are disproportionately low-income and communities of color. These communities were historically left out of government and other sources of funding for sewer infrastructure. As such, these areas may need specific incentives and programs to account for this inequity. Another important consideration is that 25 percent (9,700) of urban OSS are in unincorporated King County.

State and local regulations determine what options exist to address failing OSS. Sewer connections are required within the Urban Growth Area if sewer is available within 200 feet of a property and the OSS on the property is not functioning properly. Exceptions for high connection costs can be given in individual circumstances, but an agreement to connect at a later date is often required. In Rural areas, OSS are the only option for wastewater treatment. Finally, parcels within incorporated King County must abide by city or local sewer agency rules and regulations.

In King County there are 38 sewer districts. Each district has a unique combination of parcels utilizing OSS and parcels utilizing the sewer system. As a result, each district has its own challenges when it comes to wastewater management. These challenges range from finding funds for specific sewer expansion projects to coordinating and designing sewer expansions to enticing homeowners to connect to sewer when it is available.

If we do not act soon to expand public sewers, the majority of the aging OSS located in urban areas will fail and will be replaced with new OSS. Once a neighborhood has a majority of new OSS, property owners are rarely willing to connect to public sewer. Per the King County Comprehensive Plan, properties in urban areas are to be served by public sewers. To meet this goal, we have a very short time

frame to expand public sewers. King County is at an opportunity inflection point to connect aging and failing OSS in urban areas to sewers.

## Analysis

For this analysis we characterized OSS areas within King County into four groups because the underlying conditions are similar and the strategies and costs for addressing OSS conditions will be similar. The four categories are:

- Tier 1 - Areas where there is no public sewer and conditions favor permanent use of OSS (due to geography, topography, or regulation).
- Tier 2 - Areas where sewers are available, but many properties are not connected to the sewer system.
- Tier 3 - Areas where sewer infrastructure investment is needed, and the investment costs of this infrastructure will be at least partly offset by grant funding from outside the state or county.
- Tier 4 - Areas where sewer infrastructure investment is needed, and the investment costs of this infrastructure are not offset by outside grant funding.

Using data from King County Wastewater Treatment Division, Valley View Sewer expansion examples, Craft3, and other reliable sources, the team developed estimates for average costs to address OSS failures under each scenario. Many households choose to finance these expenditures due to their high cost. They are usually paid over a period of 15 to 20 years, and a four percent interest rate was assumed for these calculations.

This analysis lacks the geographic specificity necessary to identify the exact number of parcels that are likely to remain on OSS, have mainline sewer already available, or are candidates for future sewer expansion projects. However, using simple assumptions we have been able to develop rough cost estimates that account for the variety of choices homeowners could make related to wastewater treatment with the right incentives in place.

## Results

Table ES-1 shows the estimated 20-year costs for different ways to address OSS failures under these four tiers. Table ES-2 shows the estimated cost of addressing all imminent OSS failures for OSS that are approaching the end of the average design life.

**Table ES-1: Cost Estimate for Wastewater Treatment Options in King County**

Tier	Wastewater Treatment Option	Cost if Paid up Front	Annual Cost If Financed	20-Year Total if Financed
Cost to Homeowner				
1	Maintenance	\$200	NA*	\$4,000*
1	Repair	\$6,000	\$450	\$9,000
1	Replace	\$41,000	\$3,000	\$60,000
2	Connect (mainline available)	\$25,000	\$2,000	\$37,000
3	Connect (with outside grant funding)	\$47,000	\$3,500	\$69,000
4	Connect (no outside funding)	\$84,000	\$6,000	\$124,000

**Table Note\*:** For the maintenance option, the low cost suggests homeowners would not need to finance the costs.

**Table ES-2: Estimated Total Cost to King County Homeowners with Financing\***

Long-Term Wastewater Treatment Option	Total Cost over 20 years	Estimated Share of OSS	Cost to Homeowners with OSS > 30 Years Old	Cost to Homeowners with OSS 20-30 Years Old	Total Cost for Homeowners with OSS Older Than 20 Years
Tier 1 – Maintain OSS (plus risk of failure)	\$34,500	55%	\$1 million	\$246 million	<b>\$1.28 billion</b>
Tier 2 Connect (mainline available)	\$37,000	10%	\$200 million	\$48 million	<b>\$247 million</b>
Tier 3 - Sewer Expand (with outside funding)	\$69,000	20%	\$751 million	\$179 million	<b>\$930 million</b>
Tier 4 – Sewer Expand (no outside funding)	\$124,000	15%	\$1 billion	\$240 million	<b>\$1.25 billion</b>
<b>TOTAL</b>			<b>\$2.99 billion</b>	<b>\$713 million</b>	<b>\$3.70 billion</b>

**Table note\*:** Financing assumed at an interest rate of 4%

This analysis estimates that **the total cost to manage these soon to be failing OSS will range from \$2.5-\$8.2 billion**. This is a rough estimate assuming that all OSS corrections will have the lowest and highest individual costs (shown in Table ES-1) to give a broad range that the actual cost will fall within. Under the assumptions of the estimated share of OSS in each tier (shown in Table ES-2), the total cost to homeowners to address parcels with OSS older than 20 years with financing is estimated at \$3.7 billion. Just under three billion (\$2.99 billion) of the total costs are needed in the next 10-20 years, since this is the estimated cost to address OSS over the age of 30, most of which are near the end of their expected lifespan.

With more detailed data, this estimate could be honed to a more exact value and provide the county with realistic funding goals to address the aging septic systems in King County.

## Implications

It is clear from this analysis that the “time bomb” of expenses and costs related to sewer/septic replacement, repair and conversion is large. County, city, and special district officials will need to carefully plan and prepare for a high level of funding if the conversions specified under the Growth Management Act are to occur.

County, state, and national level funding options provide millions of dollars’ worth of grants available to support wastewater infrastructure expansions and improvements. However, King County alone needs investments totaling \$3.7 billion or likely much more to solve the OSS crisis specifically. Fifty-two million in EPA grants and a few additional million from local grants will not solve this problem.

King County should incorporate these next steps into their financial and policy planning in order to effectively manage wastewater treatment in this context.

- **Identify which areas will remain on OSS and provide OSS maintenance management**, including information about financial assistance. Homeowners can plan accordingly for OSS related costs and quickly catch and repair failing systems, thus limiting pollution exposure for their neighbors and threats to local water ways.
- **Incorporate planning for OSS to sewer conversion into sewer service planning.** Given that that the lowest cost scenario is for OSS to sewer conversions when mainlines are available at the property line, local jurisdictions should plan for, incentivize, and/or require these conversions when OSS fail.
- **Identify places where sewer expansion is a high priority and where large public investment is needed.** Sewer expansion projects and connections are not affordable for the average King County household. The County will need to leverage funds as much as possible to cover mainline sewer construction costs at a minimum. Sewer districts, King County, and other agencies need to proactively plan to increase efficiencies in construction costs and implement incentive programs to encourage timely conversion for those who can afford sewer connection.

If action and proper planning occur now, the county can avoid a guaranteed public and environmental health hazard that will result if these old OSS are not properly dealt with. Proactivity will also make future projects more affordable through coordination and ensure that high priority areas are receiving much needed sewer expansions.

**Table ES-3: King County Homeowners Options and Policy Implications**

Tier	Estimated Share of OSS	Estimated total cost with financing	Cost Implications	Challenges Facing Homeowner	Policy Ideas and Implications
<b>Tier 1 – OSS Always</b>	55%	\$1.28 billion	Assuming that for the 20 years and older category, 50% need replacements and 50% need repairs over the next 20 years, the total cost to homeowners with financing will be \$1.3 billion over 20 years.	Face challenges to pay for repairing or replacing; May not have financing available; Low incentives to comply with inspections.	Provide incentives and oversight to conduct inspections; expand financing programs for failing OSS; provide education about failure rates after 30 years.
<b>Tier 2 – Mainline Sewer Available</b>	10%	\$247 million	For homeowners who are currently on OSS and pay approximately \$200 per year for maintenance, the cost difference to pay \$1,800 per year for sewer bills is significant. An incentive program might focus on this cost difference.	Difficult if homeowner has recently repaired or replaced OSS; much more costly than simple maintenance of OSS; annual payments and monthly bills; significant increase in monthly budgets for vulnerable populations.	Expansion of the financial assistance programs for more households to assist with financing; provide incentives to switch such as rebates for conversion that cover the cost difference; education about costs and risks of OSS failure; neighborhood level planning for sewer connections when individual conversion is necessary; more stringent connection requirements in municipal and county regulations
<b>Tier 3 – Sewer Expansion with Outside Grant Funding</b>	20%	\$930 million	Estimated cost is similar to average cost to replace the OSS. Hence, homeowners who are nervous about replacement costs might prefer this option. Assuming 20% fall into this tier, the total cost to customers who switch is estimated at \$930 million over the next 20 years.	Homeowners in this tier could see their annual costs increase eightfold, or to a monthly payment of nearly \$300 compared to just \$200 per year. And this assumes that either the sewer infrastructure cost is already supported with a grant or is low cost. There is little incentive for homeowners to want this additional cost.	Additional grant funding: expansion of financial assistance programs to address vulnerable populations <sup>1</sup> ; education about the risks of failure; more stringent connection requirements in municipal and county regulations; sewer districts manage community level projects funded through public investment.
<b>Tier 4 – Sewer Expansion without Grant Funding</b>	15%	\$1.25 billion	Monthly bills over \$500; Total estimated customer cost over 20 years is \$1.25 billion	Very costly conversion.	Additional infrastructure funding; policy planning to prioritize infrastructure investments based on inequitable infrastructure access
<b>TOTAL</b>		<b>\$3.70 billion</b>			

<sup>1</sup> Current financial assistance mechanisms are directed to individual households and are not designed to address neighborhood scale projects.