

Newhouse Performance Goals | Water

Overview

The Newhouse Building replacement project provides for the demolition of the existing Newhouse Building, Press Houses and Visitor Center, replacing them with the design of a 64,765 sf, four-story, high performance building to support Senate and Caucus offices, the Senate/House Page School, Senate Page Rooms, Production & Design, LSS and Legislative Ethics Offices, Senate Administration, and shared spaces.

The project is guided by ambitious but achievable goals for building performance and sustainability. As specified by the Washington State Legislature, this project must meet at least LEED 4.0 Silver standards. Furthermore, a stakeholder workshop identified a target water-use intensity (WUI) of no more than 6 gallons per square foot per year. This memo presents an overview of the estimated baseline water consumption before discussing various strategies for further reducing water consumption within the building.

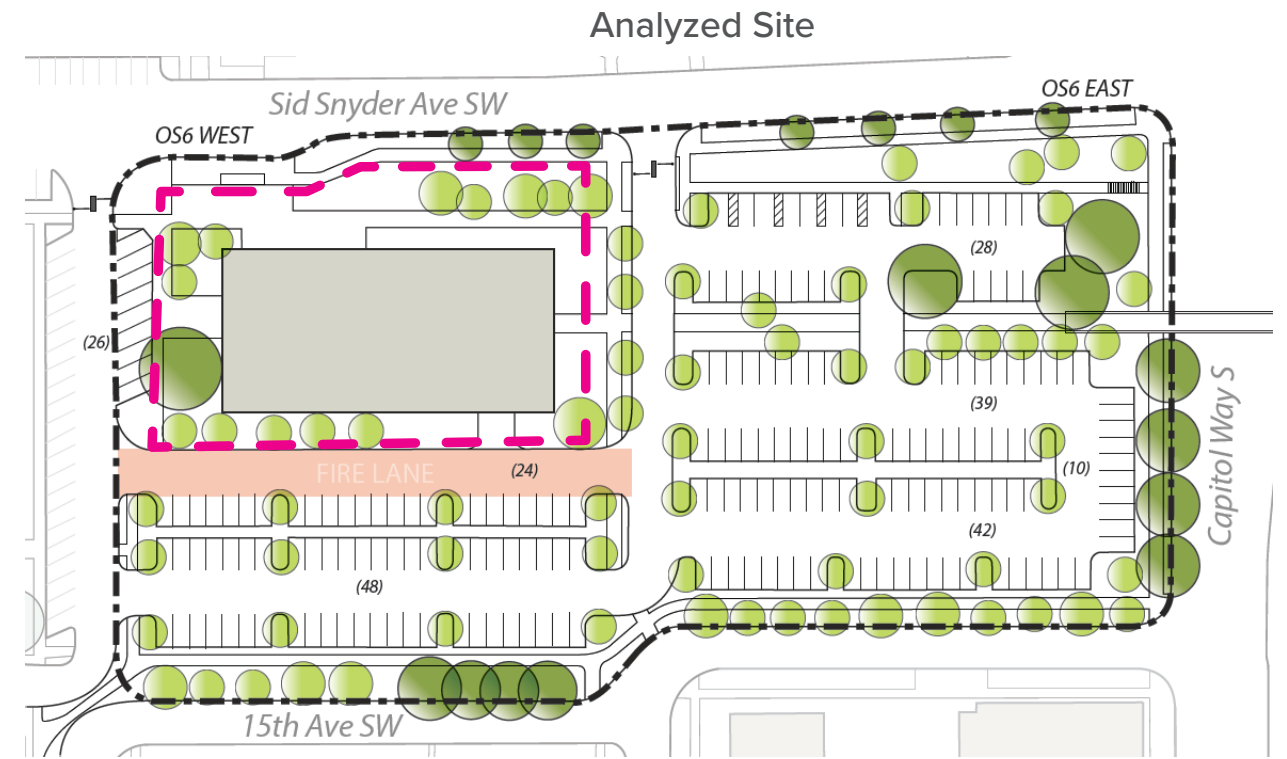
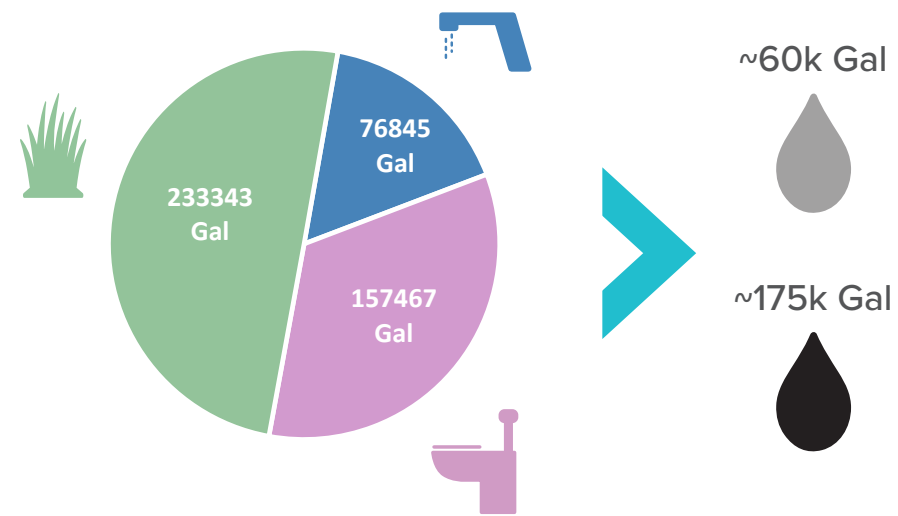
Baseline Water Consumption

The design and stakeholder teams have decided to use low-flow plumbing fixtures that meet WaterSense guidelines as a baseline. Current baseline water consumption has been estimated using the spatial allocations defined in the pre-design process and only considers the roughly 36,000-sf site that surrounds the building. Water usage is divided into three categories: potable water used in faucets and sinks, non-potable water (NPW) used in toilets and urinals, and water for irrigation and landscaping.

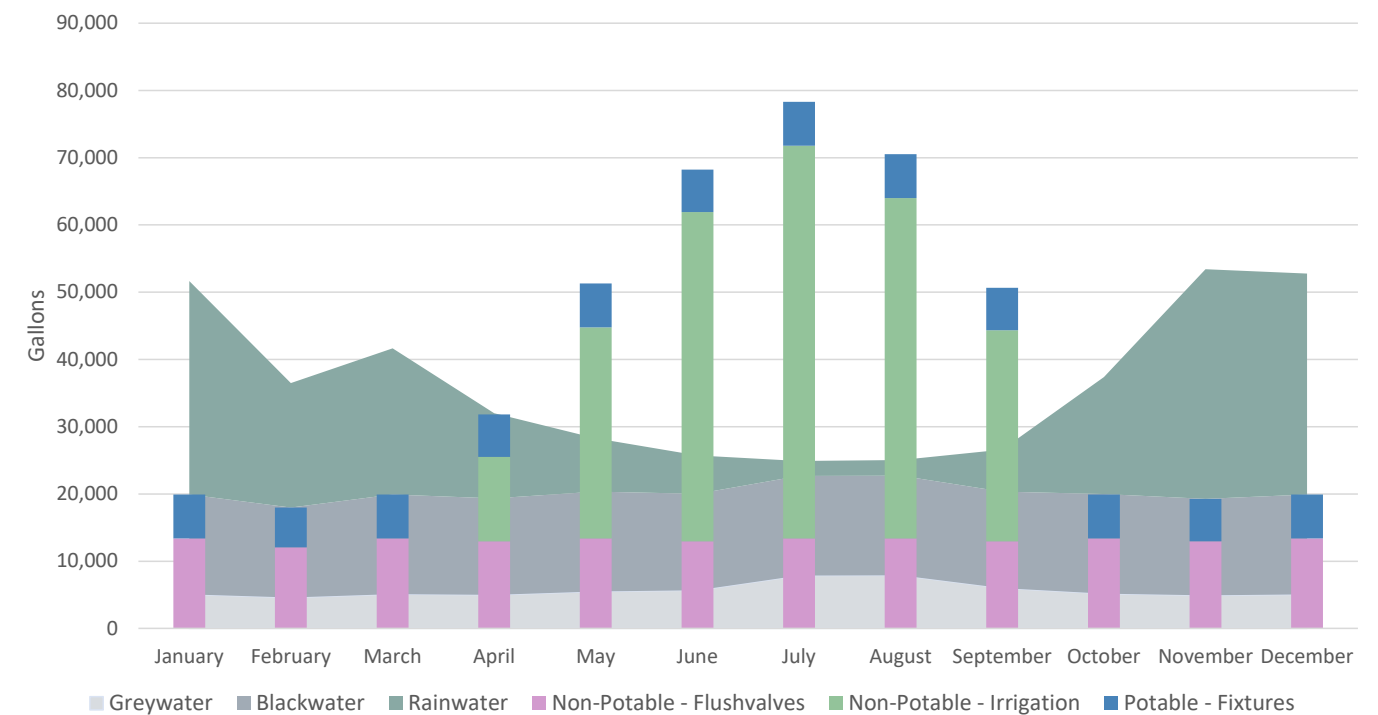
Even accounting for only the nearby site area and assuming no irrigation occurs between October and May, landscaping consumes the bulk of the annual water budget. Non-potable consumption, primarily that from flush toilets, makes up a significant portion of the remaining water usage. Potable water is primarily used in lavatory sinks and staff showers.

Of the approximately 77k gallons of estimated potable water consumption, roughly 60k would be grey water and could potentially be recycled for irrigation purposes. The remaining ~175k gallons of waste water would need to be processed as black water.

Annual Overall Baseline Consumption and Waste



Monthly Overall Balance



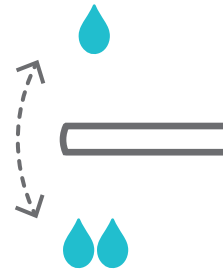
Newhouse Performance Goals | Water

Further Efficiency Measures

The team is also investigating additional strategies for reducing water consumption:

Lower-Flow Fixtures

Dual-flush toilets along with low-flow faucets and showerheads can significantly reduce water consumption within the building. These fixtures can be readily installed with minimal differences in plumbing or use compared to traditional options.



Rainwater Harvesting

Rainwater can be collected off the roof using a treatment skid and storage cistern then used for non-potable applications like toilet flushing. Assuming most of the ~15,000-sf roof is used for collection, it would be possible to harvest almost 150k gallons of rainwater per year. Fully leveraging this resource would require a large cistern, roughly on the order of 50k gallons, but even a much smaller 3k-gal cistern could yield significant benefits.



Waterless Toilets

Vacuum-assist toilets and waterless urinals can significantly reduce non-potable water consumption, but do necessitate the use of specialized waste processing equipment.

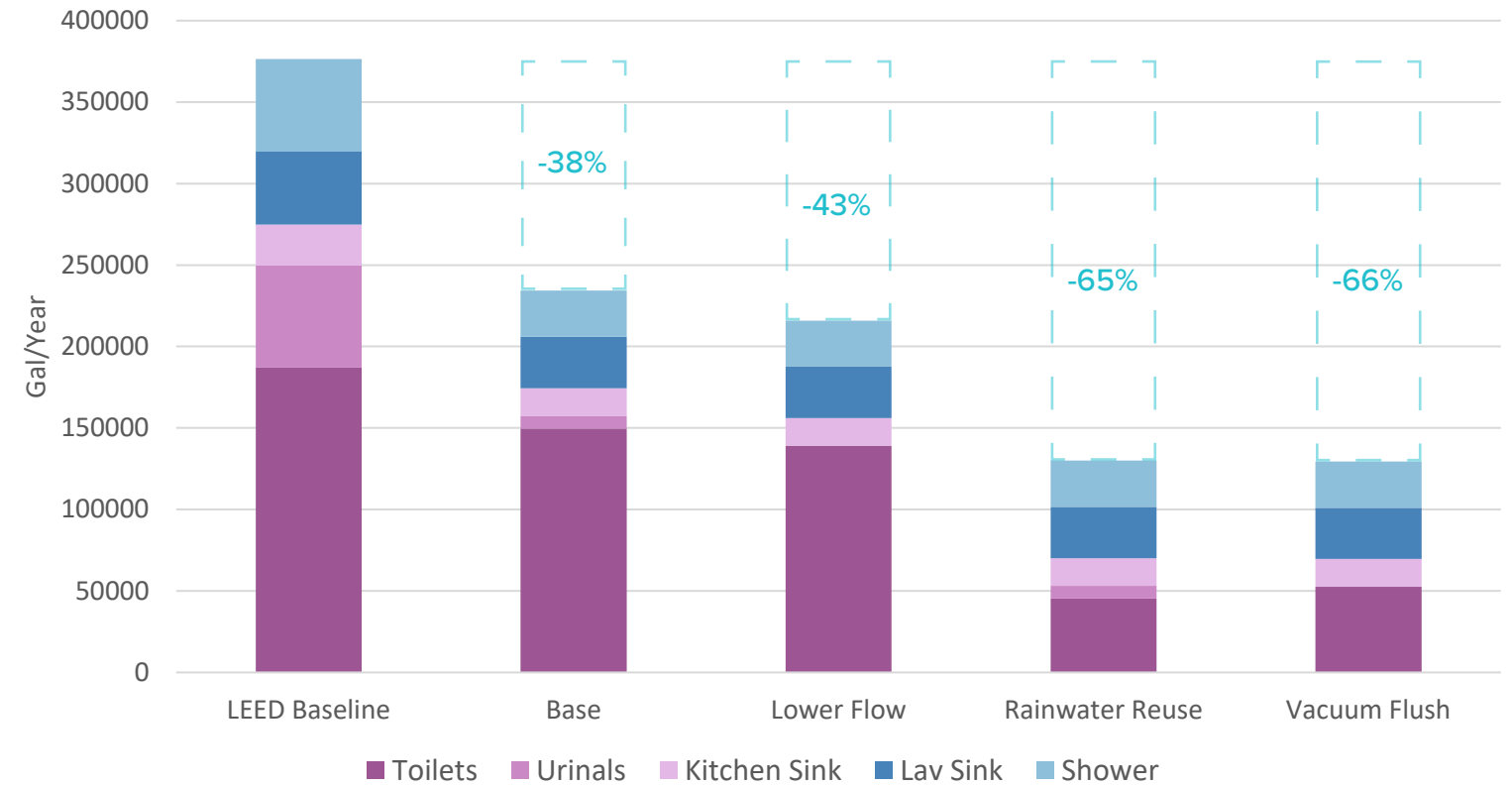


Grey Water Recycling

The baseline building produces roughly 60k gallons of grey water each year. During the summer months, this water could be directly used for irrigation purposes, reducing both demand and waste.



Indoor Water Consumption Comparison



Fixture Flow Rates [GPF/GPM]

Scenario	Toilet	Urinal	Shower	Public Lav	Kitchen Sink
LEED Baseline	1.6	1	2.5	0.5	2.2
Base	1.28	0.125	1.5	0.35	1.5
Lower Flow	1.19	0	1.25	0.35	1.5
Rainwater Reuse	Base fixtures, 15000-sf skid, 3000-gal cistern, used for flushing				
Vacuum Flush	0.45	0	1.25	0.35	1.5