Integrated Planning from Concept to Reality: City of Seattle—Lessons Learned

Kevin Buckley, Seattle Public Utilities

Alexander Mockos, Seattle Public Utilities

Why do an Integrated Plan?

- Significant water quality benefits over CSOs alone
  - Cost effective mass pollutant reduction
- Get in front of future stormwater regulations
- Stakeholder and public pressure to deal with stormwater

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Originally published Monday, January 2, 2012 at 8:00 PM

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Last sewer-outflow pollution worth $1B to stop?

With rising costs, diminishing returns and limited budgets, officials in King County, Washington state and around the country are questioning further work to control combined sewer overflow.

By Lynda V. Mapes
Seattle Times staff reporter

With billions of dollars at stake, local and state officials around the country are questioning the cost and benefit of continued work to control combined sewer overflow (CSO), including here in Seattle, where more than $1.2 billion in ratepayer dollars are on the table.

King County has outlines of a control plan to limit pollution from overflows of small amounts of raw sewage from some storm drains during heavy rain. CSO work has been under way in Seattle and King County for decades, and pollution from overflows already is greatly reduced.

But getting the last percentages of control is very expensive. It's so expensive that it could siphon off the region's capacity to do other environmental work, local officials say, even though study after study has shown stormwater runoff, not the remaining volume of combined sewer overflows, is the largest source of pollution to Puget Sound.

The high cost of CSO control

Bremerton's beaches were clean enough to harvest shellfish there by 2003. But the city kept spending millions of dollars on control projects to satisfy a lawsuit and the state standard.

Bremerton CSO reduction program funding sources (1992-2009)

TOTAL: $50,377,000

Source: city of Bremerton

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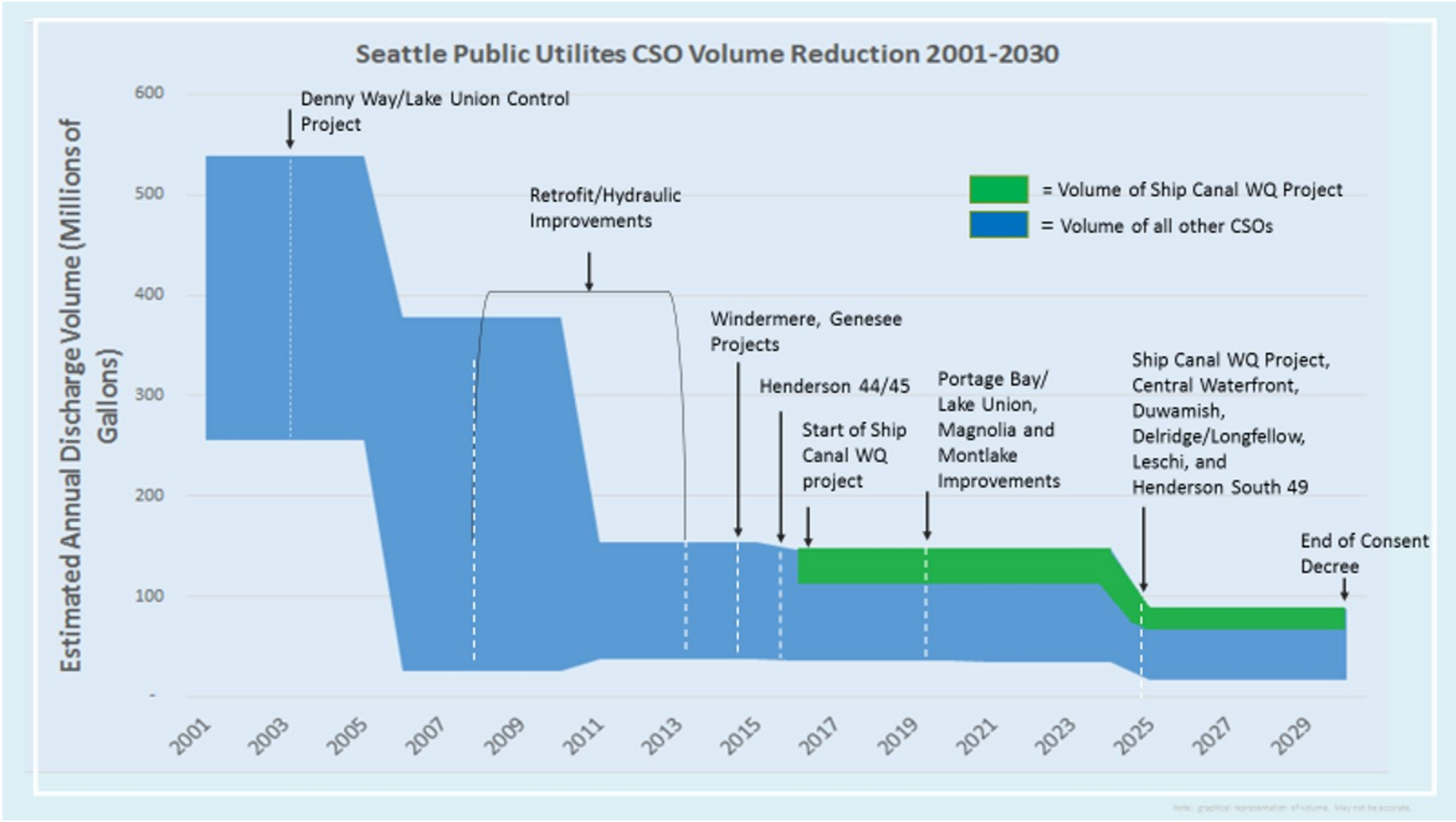
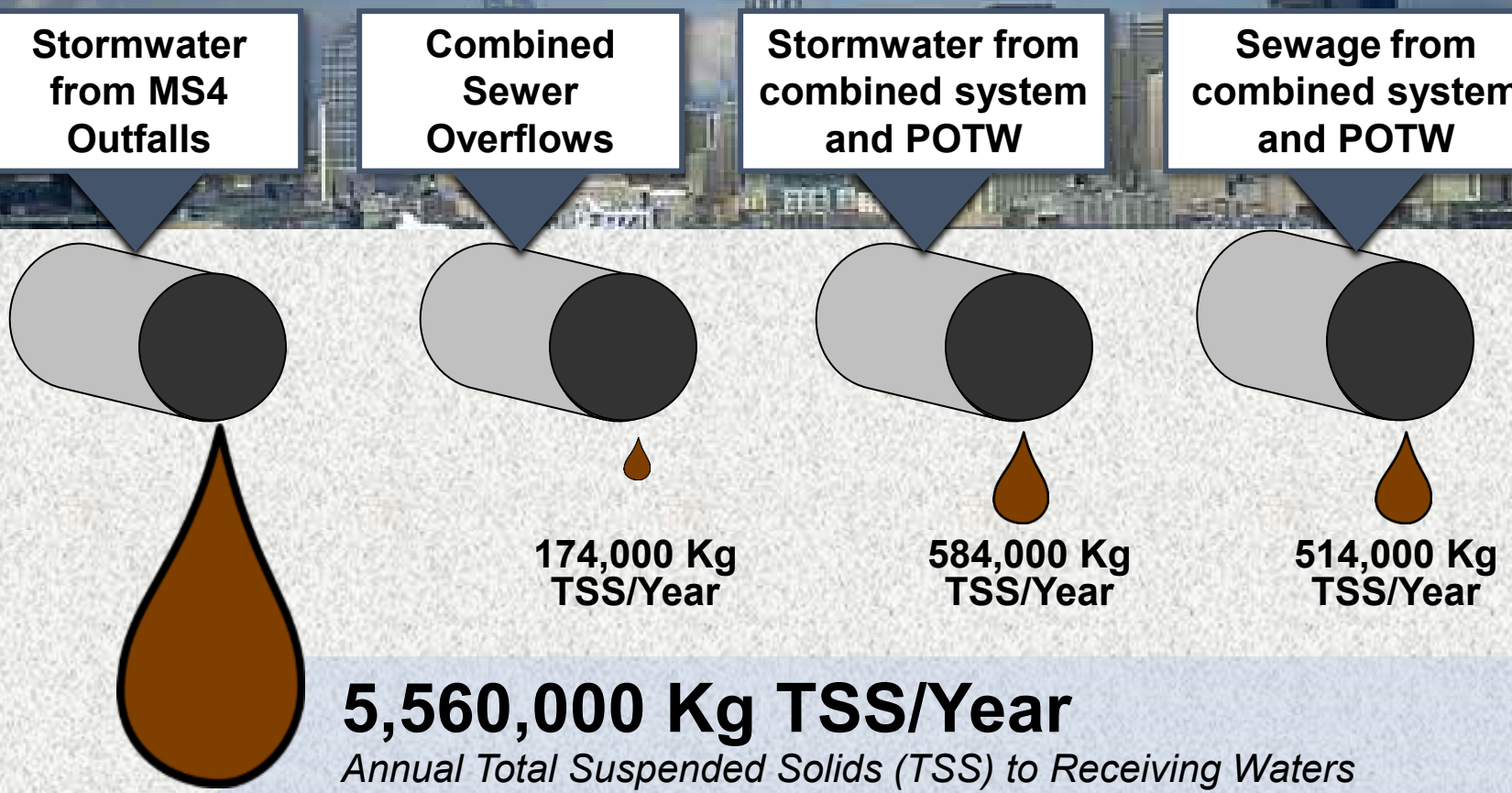
Related

- King County's combined sewer overflow control plan and supporting technical documents
- City of Seattle's plan

Region has made many investments and controlled 90% of CSO volumes since the 1960s



Stormwater is major source of pollutant loading to local water bodies



5,560,000 Kg TSS/Year

Annual Total Suspended Solids (TSS) to Receiving Waters

Puget Sound, Duwamish Waterway, Lake Washington, Lake Union, Ship Canal, creeks

Seattle negotiated Consent Decree to allow an Integrated Plan alternative

- Defer costly CSO projects with limited water quality benefits
- Implement stormwater projects with greater water quality benefits

What is the Integrated Plan Alternative?

- Innovated approach to addressing water quality issues
  - Allows Seattle to propose stormwater and CSO projects, prioritized and sequenced in order to achieve equal to or better benefits for water quality than would otherwise be achieved with CSO investments alone

- Achieve human health and water quality objectives of the CWA by identifying efficiencies in capital investments

- Does NOT remove requirements to comply with the CWA or lower existing standards

- Complies with the Consent Decree and NPDES Wastewater Permit to develop a Long Term Control Plan

Integrated Plan must:

- ✓Analyze pollutant reductions
- ✓Assess human and ecological exposure
- ✓Address swimming beaches, TMDLs, ESA, sediment clean-up sites
- ✓Evaluate costs and benefits
- ✓Be approved by EPA and state

CSO Only Alternative

OR

Recommended Alternative (Integrated Plan)

CSO Projects

Manage 50 million gallons of sewage and polluted runoff per year by 2025

Cost: $500 Million

CSO Projects + **Stormwater Projects**

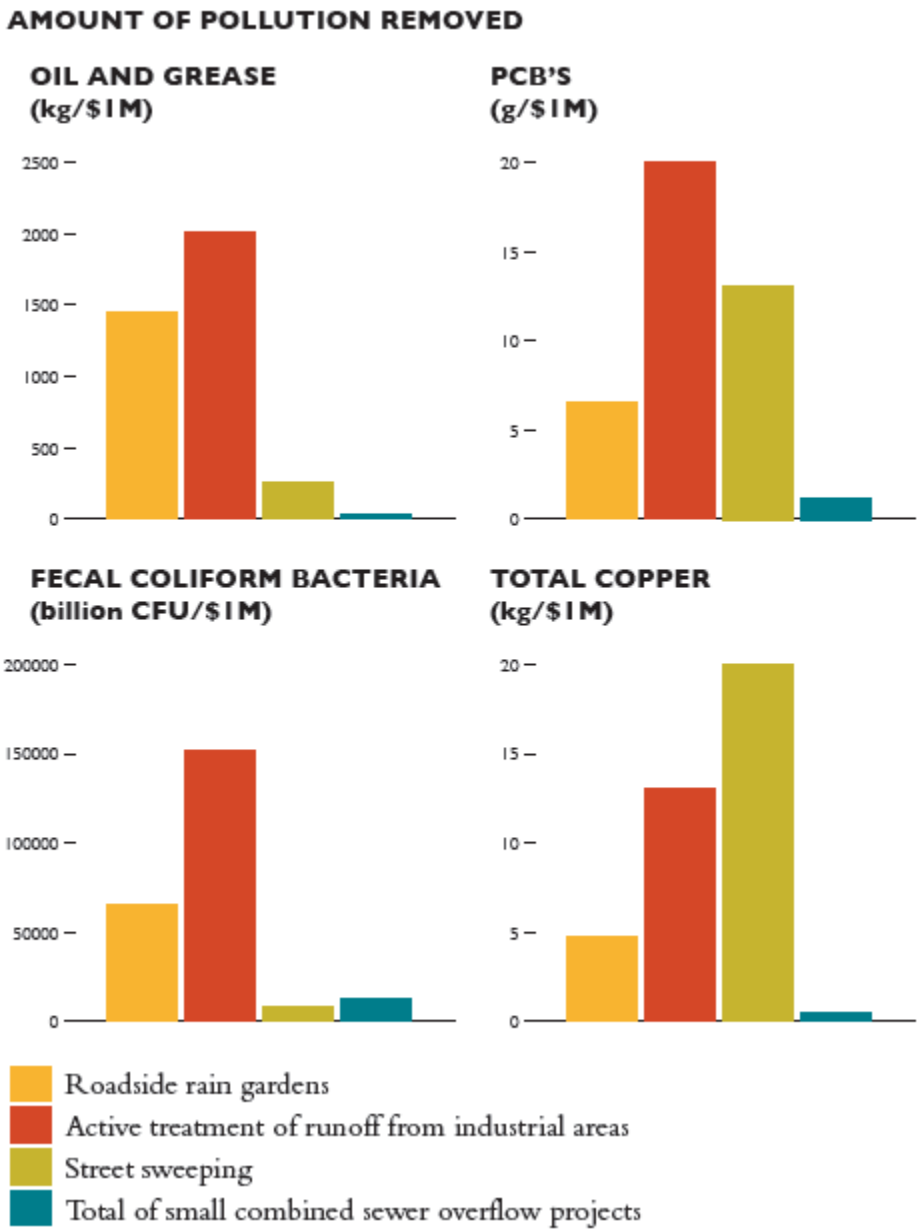
Manage 50 million gallons of sewage and polluted runoff per year by 2030

Manage 100 million gallons of polluted runoff per year by 2025

Cost: $600 Million

Protect Seattle's Waterways Final Plan

- ✓The Joint SPU/King County West Ship Canal Tunnel Option in the Long Term Control Plan constructed by 2025
- ✓Four Neighborhood CSO storage projects from the Long Term Control plan completed by 2025
- ✓Six Neighborhood CSO storage projects from the Long Term Control Plan deferred 5-years for completion by 2030
- ✓Three Stormwater Projects completed by 2025



Plan to Protect Seattle's Waterways Status

- The Joint SPU/King County West Ship Canal Tunnel is now in construction
- Natural Drainage Partnership projects have begun construction of roadside bioretention.
- Stormwater Projects are in construction
- Neighborhood CSO Projects
  - 2 are no longer required due to sewer system improvements that are projected to reduce CSOs
  - 2 are in early planning
- Projected Costs to complete the projects in the Plan have increased substantially from 600 million to over 1.2 billion

Lessons learned

- Expert panel and inclusion of regulators from beginning of process was effective in getting quick approval for Integrated Plan.
  - Regulators were fully aware of methods and results prior to receiving plan.
  - Provided a level of comfort to wastewater regulators that stormwater projects provide the benefit.

- 5 extra years was not enough time for effort – should have explored with regulators a longer schedule.

- Affordability – SPU used EPA guidance, which is not accurate for all customers. Newer methods should be explored.

Lessons learned

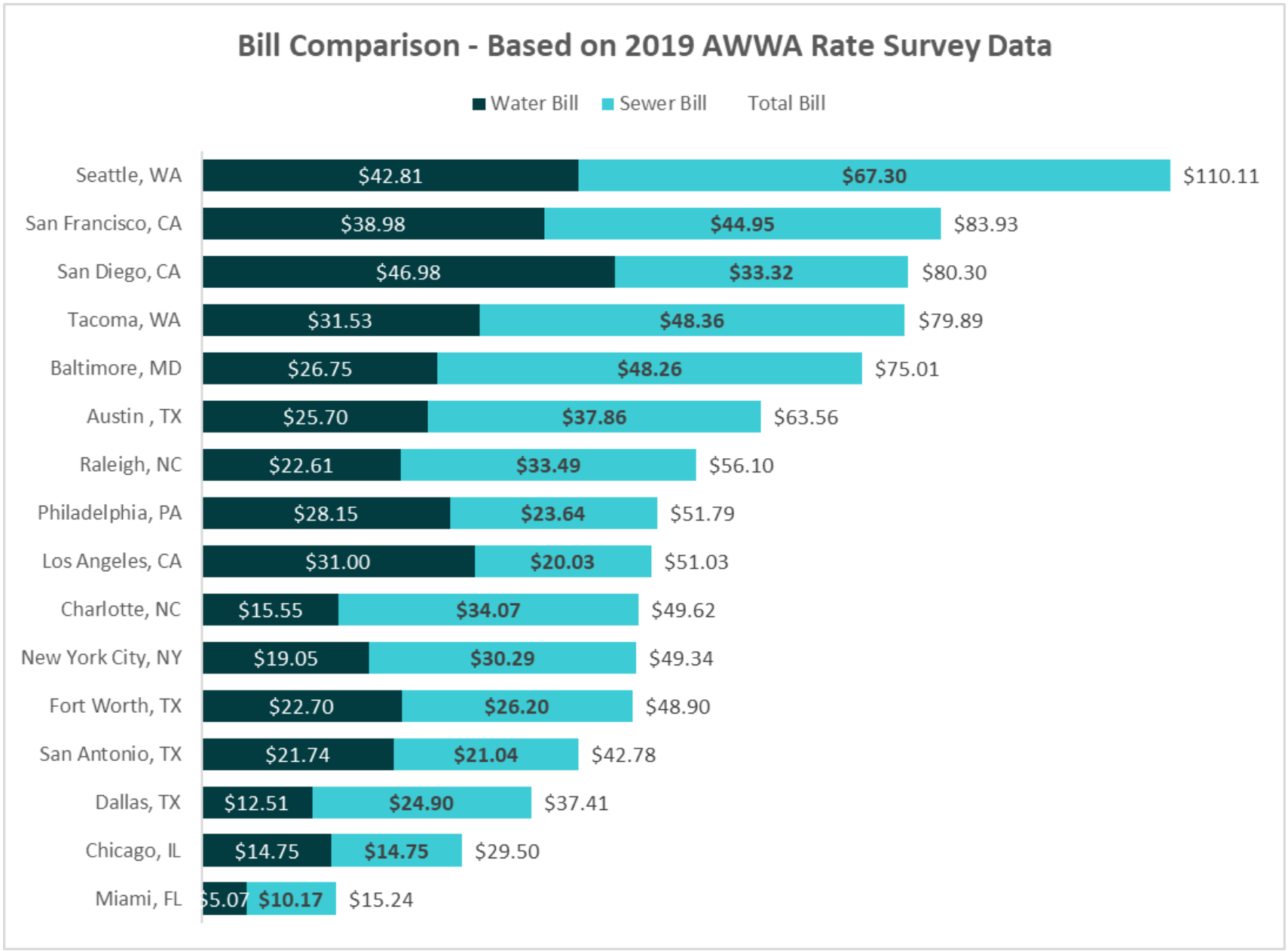
- Always be sure to talk about your IP program costs in terms that clearly express the uncertainty associated with them (for example: 600 million dollars with 70% certainty)
  - It is the most honest representation that can be provided
  - Encourages stakeholders to learn more about the program
  - Sets expectations that costs are based on assumptions and if those assumptions change so can the cost or schedule

- Several projects included in IP were early in planning phase when IP was accepted. The level of definition was too low to truly know what we were committing to.

- Uncertainties such as climate change and hydraulic modelling should be front a center with regulatory agencies when considering an IP because it could lead to identify clear triggers in your programs to adaptively manage these uncertainties

- Build time in adequate time your IP Programs to optimize and monitor the performance of your improvements after they have been built/implemented

Affordability Impact of Consent Decree Implementation



Alternative Measures of Customer Affordability

AR_{20}

2020

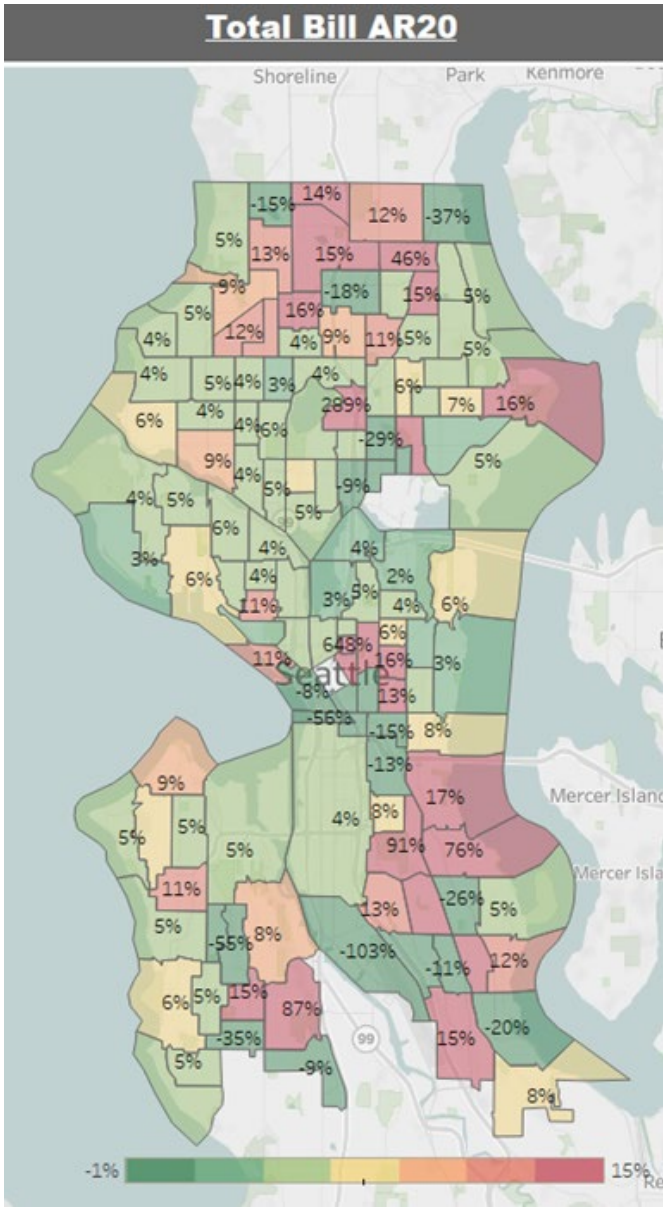
21.1%

2031

46.8%

The AR_{20} Ratio was developed by Professor Manny Teodoro.

Measures the percent of discretionary income being spent to pay for total annual stormwater, wastewater and water costs for a household at the Lowest Quintile Income level.



Questions?