



Seattle Public Utilities
Financial Forecast Overview &
2015-2020 Financial Baseline

*Costs Required to Continue Providing the
Current Level of Service*

April, 2014

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Section I. INTRODUCTION/EXECUTIVE SUMMARY

Seattle Public Utilities (SPU) provides City residents with safe **drinking water**; operates the City **drainage** system (which collects stormwater run-off from the streets, driveways, roofs and parking lots), and the **sewer** conveyance system; and oversees operation of the **solid waste** system—garbage, recycling, yard waste, and disposal¹. The City utilities are *publicly owned*, and fully paid for by those who use these systems: residents and businesses in Seattle.²

In order to maintain and improve service levels today and plan for the next generation of customers, SPU is developing a “Strategic Business Plan” for the 2015 to 2020 period. The Strategic Business Plan is composed of three distinct elements:

- The **baseline starting point**, which are the costs, and related financial customer impacts, of doing business at current service levels and complying with regulatory mandates, and
- Identification of ways to **reduce costs**, through efficiencies and prioritization, and
- Definition of **strategic investments** to improve and expand services to our customers, to maintain our infrastructure for future generations, and to become more effective in how we do our work.

Presentation of a detailed analysis and description of the baseline starting point is the focus of this document. The Strategic Business Plan, presented under separate cover, combines the three elements noted above, with a focus on cost reductions, strategic investments, and related customer impacts.

The **Executive Summary** provides an overview of where SPU is today, the challenges SPU faces during the next six years, the estimated impacts to SPU rate payers to meet those challenges and maintain current service levels, the primary drivers of these impacts, and specific service line implications of planned spending.

Sections II (Water Fund), III (Drainage and Wastewater Fund), and IV (Solid Waste Fund) dig deeper into each service line, providing: an overview of historical rate drivers, a close look at the composition of current (2014) and planned (2015-2020) expenses, and a detailed breakdown of the impacts on utility rates of meeting the baseline requirements.

Section V examines the issue of affordability of SPU bills, providing an overview of past studies which looked at this issue, followed by a look at national utility trends.

¹ Services primarily carried out by private firms under contract with the City.

² The City also supplies water to retail and wholesale customers in many surrounding communities—those communities pay about 31% of the total revenues needed to fund the City water system

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Appendices A, B, and C provide additional information and context for some of the more complex capital financing, financial policies, and contract elements that impact the financial baseline rate projections. Appendix D presents the detailed inflation assumption used to determine planned O&M and capital spending projections.

I.A. The Current Situation

Current SPU operations are impressive in a number of respects:

- Seattle and its wholesale customers enjoy some of the best quality drinking water in the nation. To protect the source of this water, the City owns hundreds of thousands of forested acreage in the Cascade foothills.
- SPU is pioneering new “green” approaches to treating street stormwater run-off.
- City sewer and water systems are highly reliable.
- The City partners with others to clean up contaminated sites to be sure costs are shared appropriately.

Equally impressive is the partnership between SPU and its customers in terms of conservation:

- SPU’s customers have steadily reduced their rate of water consumption. Despite the population in the city and adjacent service area growing by 15 percent in the last 20 years, Seattle residents now consume less total water than they did in 1959. This trend is expected to continue, ensuring the viability of our water supply in the long term.
- Seattle has one of the highest recycling rates in the country – nearly 56 percent (by weight) in 2012 for *all* customers. *Single family residential* customers have the highest recycling rate in the country at 71 percent. Reductions in garbage volumes reduce operating expense as well as the environmental impacts of transporting and disposing garbage in landfills.

Maintaining this system is not without challenges. Customer bills increased by 6.8 percent *a year* on average between 2004 and 2014, primarily due to federal regulatory requirements and replacement of major infrastructure.

The City’s water, sewer, drainage and solid waste systems have been in service a long time with water pipes that average 67 years old, and sewer and stormwater pipes that average 85 years old. The City’s solid waste transfer station which serves the north half of the City is 47 years old (and will be rebuilt in the next two years).³

In addition to general repair and replacement of aging systems, some specific factors contributing to these bill increases have been:

³ The South Transfer Station was rebuilt and reopened in 2013 after 48 years in use.

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- The replacement of City open water reservoirs with underground structures to protect drinking water safety;
- Construction of a new water treatment plant for the Cedar River (one of the City's two main water sources);
- Replacement of the 47-year old solid waste transfer station in South Seattle;
- Payment of a share of King County's new sewage treatment plant in southeast Snohomish County (the "Brightwater Plant")⁴;
- Implementation of new solid waste collections contracts; and
- Declining demand for service: the downside of success in water conservation is additional rate pressure on both water and sewer rates--as costs of operations go up and the units of water/sewer service purchased decline, rates must increase to recover costs. The same can be said to a certain degree for declining garbage tonnage.

I.B. Upcoming Challenges

SPU is past many of the major investment hurdles for the solid waste and water systems. However, recent **federal regulations** to protect water quality in streams, lakes and Puget Sound present costly challenges for our sewer and drainage systems. SPU has successfully negotiated with federal regulators to allow a balance between drainage and sewerage investments that is less expensive than other potential alternatives. That said, a major financial investment will still be needed in order to comply with the regulations. In addition, there are other regulatory requirements now under consideration by state and federal regulators that could require significant additional investment.

Aside from regulatory challenges, the City will continue to face the need to **repair, rehabilitate or replace aging pipes** in the systems. Intrusion of tree roots into sewer lines, cracks in pipes, and misaligned joints are continuing problems of an aging system. City water mains also experience significant build-ups of iron deposits that can affect water quality. Much of these systems is well over 50 years old: it's far less expensive to strategically repair, rehabilitate or replace pipes than to wait for them to fail. Also, some City neighborhoods face chronic surface water flooding which require expensive solutions.

From an operation standpoint, SPU is facing **rising employee costs**, including: additional employees necessary to meet new regulatory requirements and to operate and maintain new infrastructure; health care and pension costs rising more rapidly than general inflation; and a need for higher level skills overall which translates into higher wages. These cost pressures are also present in other City departments, from which SPU purchases many services.

⁴ Seattle, like all other customers of the County's regional sewage treatment system, must pay its share of that project through the payment of wastewater treatment fees to King County.

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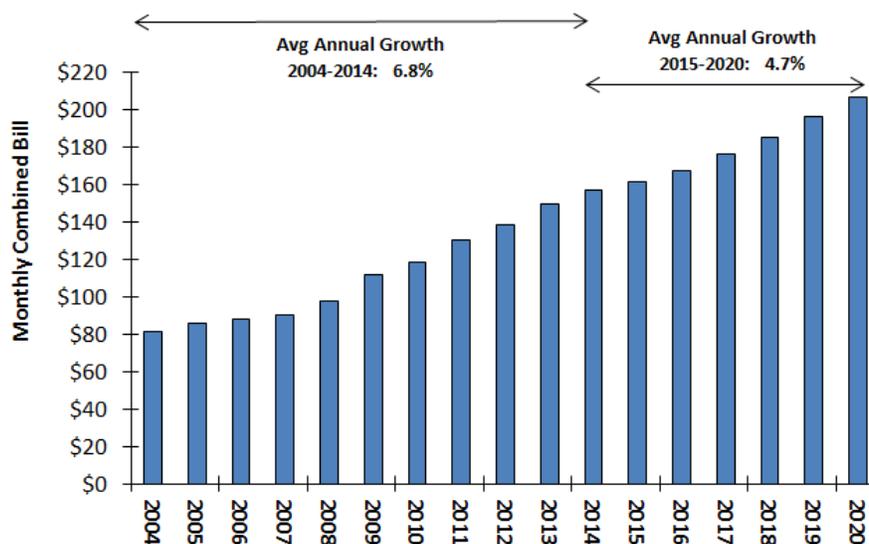
Finally, despite population growth and a rebounding economy, **demand for SPU's services is expected to decline slightly over current levels.** But, costs do not fall by as much as declining demand – the pipes and pumps still need to be maintained, the garbage trucks still need to pick up the garbage, and regulatory requirements must be met.

I.C. Customer Impacts

To address regulatory requirements and maintain our current levels of service, rates will need to go up—but by much less than in the last decade. The projected *average annual* baseline rate increase for SPU's four lines of business is *4.6 percent⁵ per year* over the six year period from 2015 through 2020, compared to a 6.8 percent per year average between 2004 and 2014.

Figure I-1 presents the growth in the nominal combined SPU utility bill between 2004 and 2020. The following table provides the projected rate increases.

Figure I-1
Growth in Typical Monthly Single Family Residential Combined Utility Bill 2004-2020



⁵ This is a weighted average rate increase and therefore differs slightly from the average residential bill increase presented in Figure I-1.

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Adopted	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2014-20 Avg</u>
Water	1.5%	5.9%	6.1%	3.6%	5.2%	3.4%	4.3%
Wastewater	0.8%	1.6%	3.8%	5.0%	6.3%	5.8%	3.9%
Drainage	9.8%	4.8%	9.8%	10.6%	10.2%	7.9%	8.8%
Solid Waste *	2.9%	2.5%	3.9%	2.8%	2.8%	4.3%	3.2%
Combined	2.7%	3.4%	5.3%	4.9%	5.8%	5.1%	4.6%

* Solid Waste bill path represents average increase assuming new rates are effective April 1 of each year.

The solid waste rate increases effective 4/1 are as follows:

<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
4.3%	3.4%	5.5%	3.7%	3.7%	5.7%

Additional details on service line rate paths are found in Section I.E.

I.D. Rate Drivers

Four factors determine the size of annual rate increases: a) annual spending levels; b) financial policy requirements; c) non-rate sources of funding; and d) demand. The first three factors combined determine how much total revenue must be generated by direct service rates, also known as the rates revenue requirement⁶. Rate increases are required to fund increases in the revenue requirement from one rate setting period to the next. Where demand is constant, the average rate increase will equal the increase in the revenue requirement. Increasing demand (e.g. customers buying more units of water) will reduce the required rate increase and declining demand will increase the rate increase relative to the change in the revenue requirement.

Increased spending is the primary driver of rate increases between 2015 and 2020 across ALL service lines. Financial policy requirements, changes in other funding sources, and demand are also determinants of rate increases, but their impact varies by service line. Sections II.D, III.D, and IV.D provide additional detail on the impacts of non-spending drivers.

Figure I-2 shows the composition of increases to the SPU spending requirement between 2015 and 2020 which is composed of inflationary adjustments to the 2014 proposed budget plus other discrete changes to costs to maintain existing service levels and meet regulatory requirements.

⁶ The **revenue requirement** is the amount of revenue required to pay for operating expenses spending and meet financial policy targets, including funding a portion of current year capital expenditures with rates and non-rates revenues. The **rates revenue requirement** is equal to the revenue requirement, less funding from sources other than rates including drawdowns of cash balances and other operating/non-operating revenues.

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Figure I-2
2015 to 2020 Increases to SPU Spending Requirement

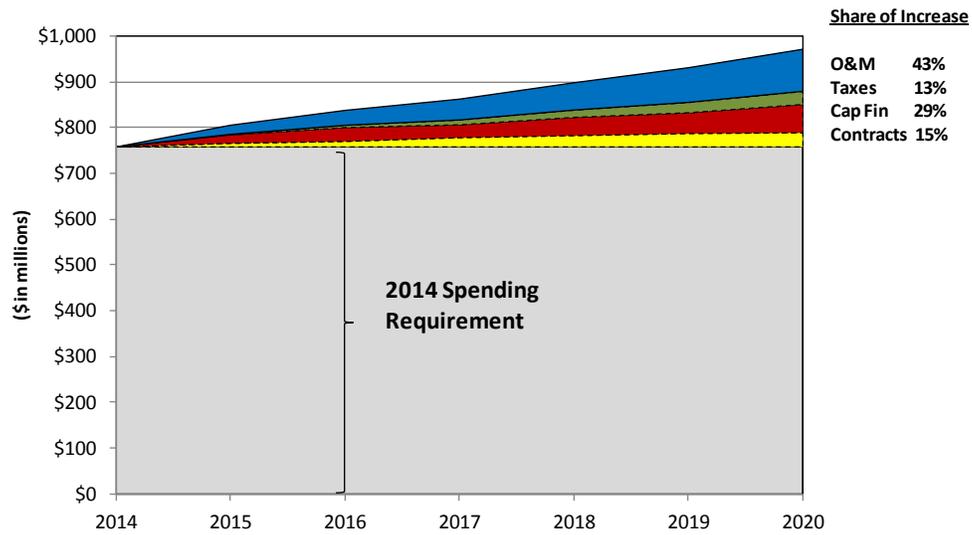
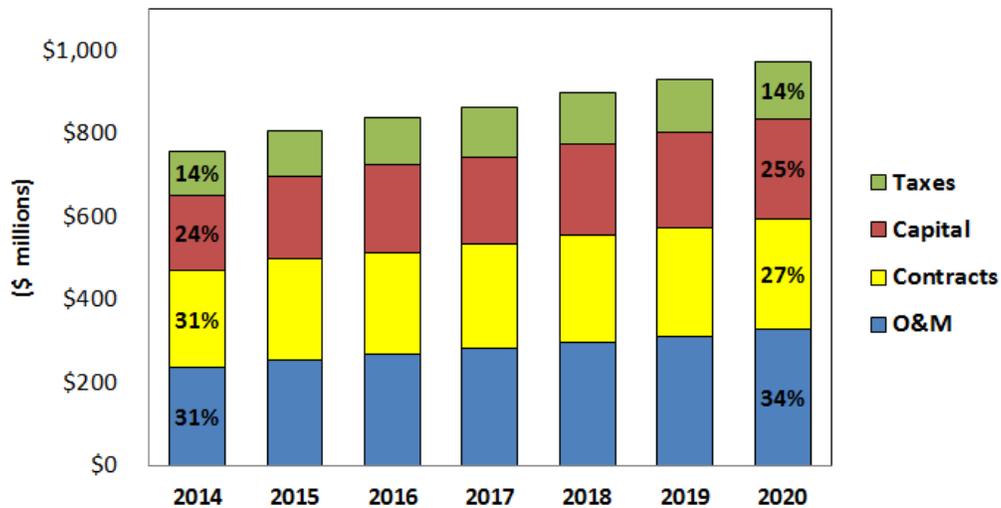


Figure I-3 provides a different look at planned SPU spending, showing the components of TOTAL expense, by year, between 2014 and 2020. This figure also shows the percentage each component represents of the base (2014) and in 2020.

Figure I-3
Components of the SPU Spending Requirement, 2014-2020
 (\$ millions)



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	2014	2020	2015-20 Increase	% of Increase	Avg annual % Increase
O&M	\$236	\$328	\$92	43%	5.7%
Contracts	\$233	\$264	\$31	15%	2.1%
Capital	\$181	\$243	\$62	29%	5.0%
Taxes	\$108	\$137	\$29	13%	4.0%
Total	\$758	\$972	\$214		4.2%

There are several the **key points** in this data. First of all, costs for SPU’s operations will continue to increase. O&M accounts for 43 percent of increased spending, adding \$91 million in expense over the six-year period and growing from 31 percent of total spending in 2014 to 34 percent in 2020. Secondly, capital investment will continue to be a major utility focus. Annual capital financing expense (debt payments plus cash-financed capital) adds \$62 million in expense, or 29 percent of total increases. Growth in contract expense will slow, although it still remains the second largest component of total expense in 2020. Finally, overall spending is rising at 4.2 percent per year, or about 1.8% faster than the projected general inflation rate of 2.4 percent for this 6-year period.

About 69 percent of the SPU 2015-2020 spending requirement is rising more quickly than the rate of inflation. Only contract expense (King County Treatment and Solid Waste Contracts) is running below inflation following more significant growth averaging 5 percent per year between 2004 and 2014. The following sections describe the major drivers of this growth.

I.D.1. O&M Growth

O&M is the fastest growing component of overall spending, projected to average 5.7 percent per year between 2015 and 2020. By far the largest component of the O&M increase is in the cost of labor. SPU is the second largest department in the City of Seattle, with 1,432 positions in 2014. Budgeted SPU Labor expense in 2014 is about \$135 million or 57 percent of total O&M expense. By 2020, labor expense is projected to grow to \$192 million or 59 percent of total O&M expense. Driving this growth are:

- Health care benefit costs are expected to inflate by seven percent per year.
- The City’s contribution to the retirement system is assumed to continue to increase.
- Real wages are rising slightly higher than the rate of inflation. The annual cost of living adjustment (COLA) is assumed to be 2.5 percent for all City employees. In addition to this, changing business needs and more automation result in needing fewer entry-level (lower paid) positions, and more and more new employees are calling for higher starting salaries as a condition of employment.
- 12.5 new employees are required to meet new regulatory requirements and to operate and maintain new infrastructure. (See Section II.C.3.a, Section III.C.3.b and Section IV.C.3.b. for more detail.)

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- Most non-labor costs assume a general inflation rate of two percent, but, based on the eight-year inflation average (2005-2012), we estimate some cost centers to rise beyond two percent per year. These include fuel, professional and technical services, and utilities. Also based on the 2005-2012 inflation average, we estimate that SPU payment for overhead services from other City departments (such as Information Technology, Law, and Finance) will rise beyond two percent per year.

See Appendix D for a complete list of Labor, Non-Labor and Services inflation assumptions.

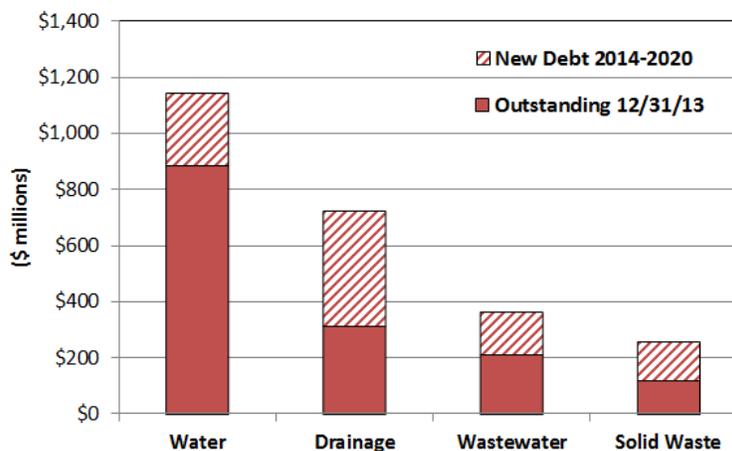
I.D.2. Capital Financing Growth.

SPU is replacing worn out infrastructure, and is building new infrastructure to meet regulatory requirements. SPU pays for these capital investments through a combination of borrowing (think home mortgage) and cash (think down payment). Therefore, annual capital financing expense includes principal and interest payments on borrowed funds (debt service), as well as cash financing of a portion of capital spending⁷.

Annual capital financing expense is the second fastest growth component of the spending requirement, projected to average 5 percent per year between 2015 and 2020. The primary driver of this rate of growth is that we are issuing new debt to pay for these projects, but must also continue to pay on existing debt for historical investments.

Figure I-4 presents current debt outstanding and projected new issuances between 2014 and 2020.⁸

Figure I-4
SPU Current Debt Outstanding and Projected New Issuances
(\$ millions)



⁷ See Appendix A for more information on the components of SPU capital financing and their impacts on expense and rates.

⁸ The outstanding and new debt are combined for illustrative purposes, to demonstrate the percentage increase over current debt. However, debt outstanding at 12/31/2020 will be lower than the totals shown for each fund above due to principal payments on current and projected debt across the period.

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The projected increases in debt are significant, with new debt representing a 63 percent increase over current debt outstanding for SPU on aggregate. Even more telling is the distribution of this debt by fund. The drainage share of DWF⁹ issuances is both the greatest in dollar terms (about \$411 million) and in terms of the percentage increase on debt outstanding (131 percent). While much smaller than drainage in dollar terms (about \$116 million), Solid Waste issuances represent a 123 percent increase over the current base. Wastewater issuances (about \$150 million) are similar to solid waste but represent a smaller increase (70 percent) due to a larger debt base. Finally, while water increases are substantial in dollar terms (about \$256 million), they represent a much smaller increase (29 percent) on a very large base.

More details on the historic drivers of current debt outstanding by fund are found in Section II.A.2 (Water), Section III.A.1 (Drainage and Wastewater), and Section IV.A.2 (Solid Waste).

So what are the major drivers of projected 2015 to 2020 capital spending?

II.D.2.a Ongoing Regulatory Requirements.

The primary regulatory issues driving capital spending between 2015 and 2020 are:

- **“Superfund” settlement** related to toxic materials in the Duwamish River and its share of a toxic sediment site in Lake Union near Gas Works Park.
- **Federal and State requirements to reduce combined sewer overflows (CSOs)** into local water bodies. About two-thirds of Seattle is served by a combined sewer system designed to carry both sewage and stormwater runoff. During dry weather, all raw sewage flows to the treatment plant. During larger storm events, the system can become overloaded with polluted stormwater and can overflow into lakes, streams and Puget Sound. The City’s Federal Consent Decree and State Wastewater Permit require the City to implement CSO Control measures by 2025 to reduce overflows (to an average of one overflow per year per outfall) to meet Clean Water Act and state regulations.
- **State permits requirements to improve the quality of stormwater runoff** by installing and maintaining filtration systems along roadways, implementing “Green” projects (such as rain gardens that capture and naturally treat run-off), and increasing street sweeping to reduce the amount of contaminated roadway sediments that would otherwise end up in our creeks, lakes and Sound.

⁹ Revenue bonds are issued jointly for the drainage and wastewater service lines under the umbrella of the Drainage and Wastewater Fund. The split of debt between drainage and wastewater presented above is based on the split of net book value of outstanding assets and is used in developing the cost of service basis for each LOB when setting rates.

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- An Agreed Order by the Washington State Department of Ecology to conduct a **Remedial Investigation and Feasibility Study of the historic South Park Landfill** site which covers investigation and eventual remediation of the landfill site to protect human health and the environment.
- **City (Ordinance 120899) and State requirements to replace open finished drinking water reservoirs** with underground structures that will improve water quality and system security. Seismic retrofits are planned for four of the buried reservoirs.

Projects which address these regulatory requirements account for 32 percent of SPU 2015 through 2020 planned capital spending. The Drainage and Wastewater Fund is the most impacted by these requirements, with 52 percent of its 2015 to 2020 capital budget directed towards projects related to Superfund, CSO, and stormwater permit requirements. The South Park Landfill project accounts for 19 percent of 2015 to 2020 Solid Waste Fund capital spending and reservoir covering five percent of Water Fund planned spending.

II.D.2.b Planned Investments in our systems to maintain and improve service levels

Between 2015 and 2020, a significant portion of total planned capital spending will be directed towards building new infrastructure, replacing existing infrastructure and addressing chronic service delivery issues. Some of the major areas of work will be:

- **Construction of new Solid Waste Facilities.** SPU has undergone a multi-year process to replace dated transfer stations. In 2013, it opened the new South Transfer Station. During the next three years, it will:
 - Demolish the old south-end transfer station, replacing it with new recycling facilities, and,
 - Replace the North Transfer Station (where garbage and recyclables come to be transferred for processing/disposal).
- **Rehabilitation and improvement of water, sewer, and stormwater system infrastructure.** Infrastructure includes:
 - Water distribution system. Water mains and appurtenances, pump stations, and other facilities that distributes treated water throughout the City of Seattle to retail customers;
 - Water transmission system. The City's large transmission pipelines that bring untreated water to the treatment facilities, and convey water from the treatment facilities to Seattle and to other local utilities that purchase a portion of SPU's supply for their customers;
 - Drainage and wastewater pipes. Identifying and correcting defective or deteriorating infrastructure before failure occurs which could result in sewer backups, roadway collapses or landslides.

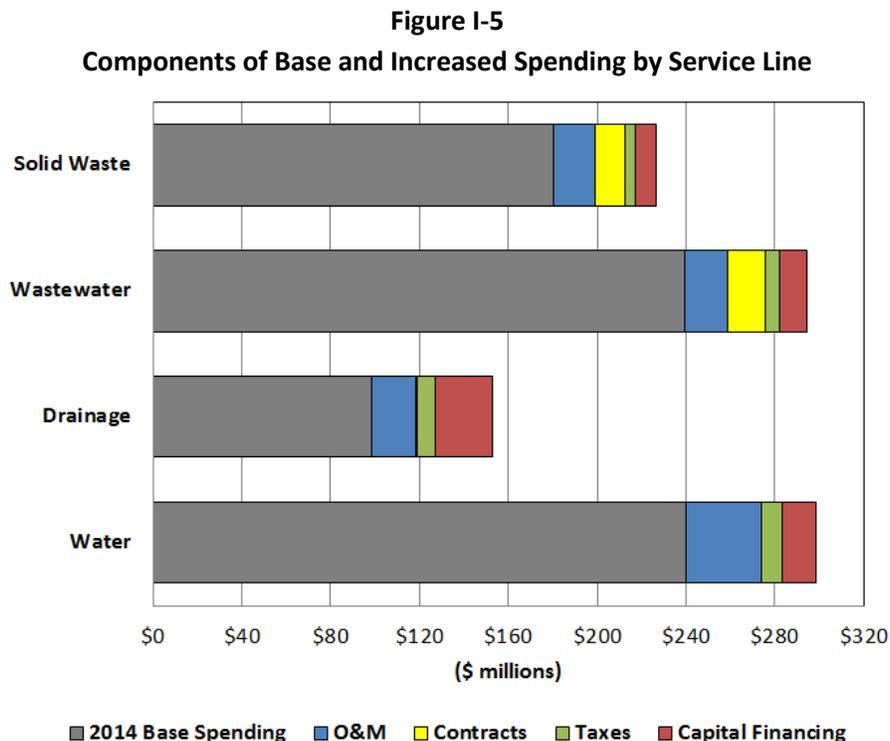
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- Preventing and alleviating flooding and sewer backups in the City of Seattle.** Planning, design, and construction of channels, pipes, roadside ditches, culverts, detention ponds, and natural drainage systems that control and/or convey storm runoff to receiving bodies. This program also involves protecting SPU drainage and wastewater infrastructure from landslides and providing drainage improvements where surface water generated from the city right-of way is contributing to landslides.

I.E. Service Line Considerations

As noted earlier, SPU rates must increase by an average of 4.6 percent per year to maintain current service levels and comply with firm regulatory requirements. However, the impact of increased spending varies between service lines, with drainage average annual increases of 8.8 percent more than double those of water (4.3 percent), wastewater (3.9 percent), and solid waste (3.2 percent). This variance is due in part to the operating and capital requirements of each service line and in part to the level of initial 2014 base spending.

Figure I-5 presents the amount of base spending and the components of increased spending for each service line.



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	Water	Drainage	Wastewater	Solid Waste	SPU-Total
	2014 Base Spending				
2014 Base Spending	\$240	\$98	\$239	\$180	\$758
	2015-2020 Additions				
O&M	\$34	\$20	\$19	\$19	\$92
Contracts	\$0	\$1	\$17	\$13	\$31
Taxes	\$9	\$8	\$7	\$5	\$29
Capital Financing	\$15	\$26	\$12	\$9	\$62
Total Additions	\$58	\$55	\$55	\$46	\$214

Total increases are similar for Water, Drainage and Wastewater, running between \$55 million and \$58 million across the 6-year period. Solid Waste increases are somewhat less at \$46 million across the same period. There are distinct differences in the composition of those increases.

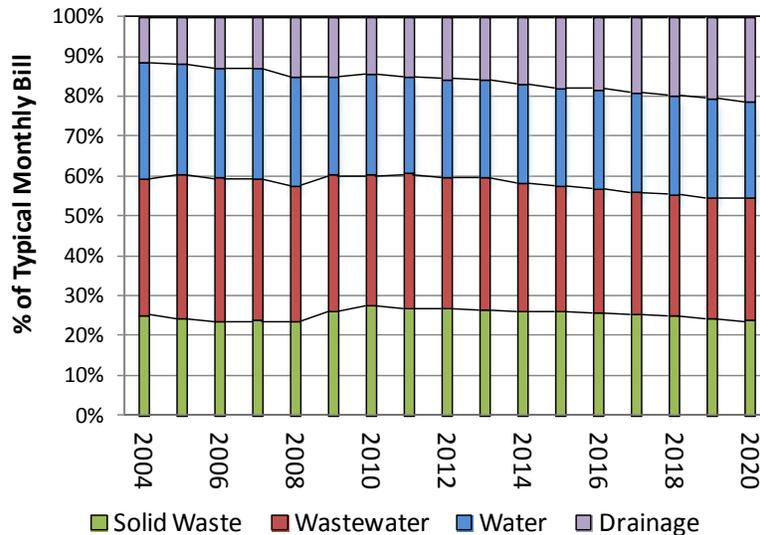
Capital financing is the dominant driver of expense for drainage, accounting for about 47 percent of total increased spending. As noted in prior sections, regulatory-driven capital investment requirements will be significant for drainage during the next six years. O&M is the dominant driver of increased Water spending, accounting for 58 percent of total increases. O&M and contract expense are the largest components of Wastewater and Solid Waste expense increases, accounting for 66 percent and 69 percent of the respective total spending increases.

As discussed earlier, all components, with the exception of contracts expense, are growing more rapidly than the general rate of inflation. In terms of rate increases, Solid Waste and Wastewater rates, which have a significant contracts component, are growing more slowly than Water and Drainage rates, which have larger capital financing and O&M components. While increased spending levels for drainage are in line with other service lines, 2014 drainage base spending is less than half of that for all of the other service lines, thus requiring much larger rate increases to recover similar levels of expense.

This prospective average growth in rates by service line follows a similar pattern to that experienced during the past 10 years. Figure I-6 presents the change in the composition of the monthly single family residential bill between 2004 and 2020.

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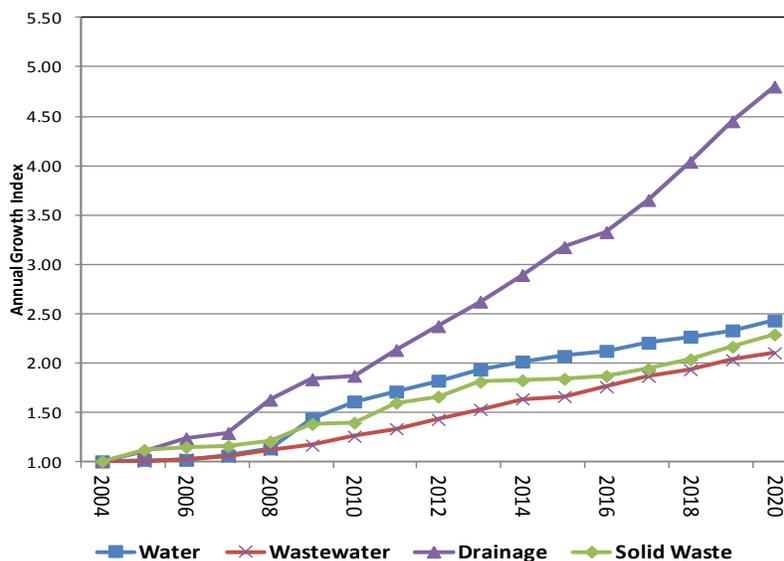
Figure I-6
Composition of Average Monthly Single Family Residential Combined Utility Bill 2004-2020 (nominal \$'s)



In 2004, water (29 percent), wastewater (34 percent), and solid waste (25 percent) bills accounted for nearly 90 percent of the total combined bill, with drainage accounting for just over 10 percent. By 2020, the variance in the size of bills between different service lines is projected to shrink considerably with drainage increasing to 21 percent, solid waste holding nearly constant at 24 percent, and water and wastewater shrinking to 24 percent and 31 percent respectively.

While drainage will still be the smallest bill in 2020, it has experienced and will continue to experience the steepest growth, as shown in Figure I-7 below.

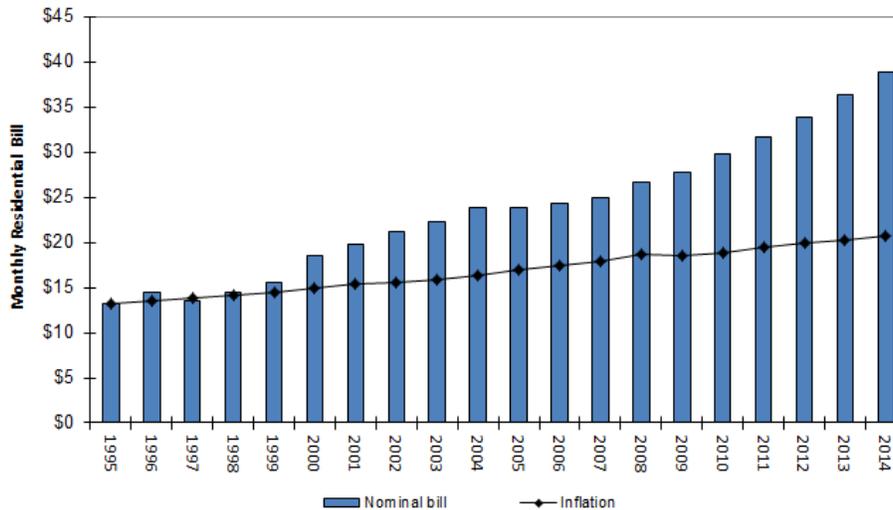
Figure I-7
Indexed Annual Growth by SPU Service Line, 2004-2020



Section II. WATER FUND

II.A. “How we got here”: Historical Rate Driver Overview

Figure II-1
Growth in Average Monthly Single Family Residential Water Bill 1995-2014



Water bills have grown more rapidly than inflation for most of the period between 1999 and 2014. Declining demand, capital investments, and financial policy requirements, driven by capital investment choices, were the primary determinants of this real growth.

- **Declines in demand** stemmed from active efforts by the Utility to encourage water conservation, consumption curtailment in response to the 2001 drought, and effects of the 2008 economic recession on water usage and number of new tap installations. Even if there was no change in expense from one year to the next, rates must increase if demand declines to achieve the same revenue as the prior year. Although declining demand increases rates, it also mitigates the impact of these increases on individual bills where ratepayers are using less water.
- The Water Utility recently concluded a two decade period of **capital investment** in major generational assets that responded to regulatory requirements and ensured a reliable supply of high quality drinking water to the region. These assets were primarily debt financed. Interest and principal expense due to new debt can grow more rapidly than the rate of inflation, even if spending increases at a slower rate.¹⁰

¹⁰ See Appendix A for further discussion.

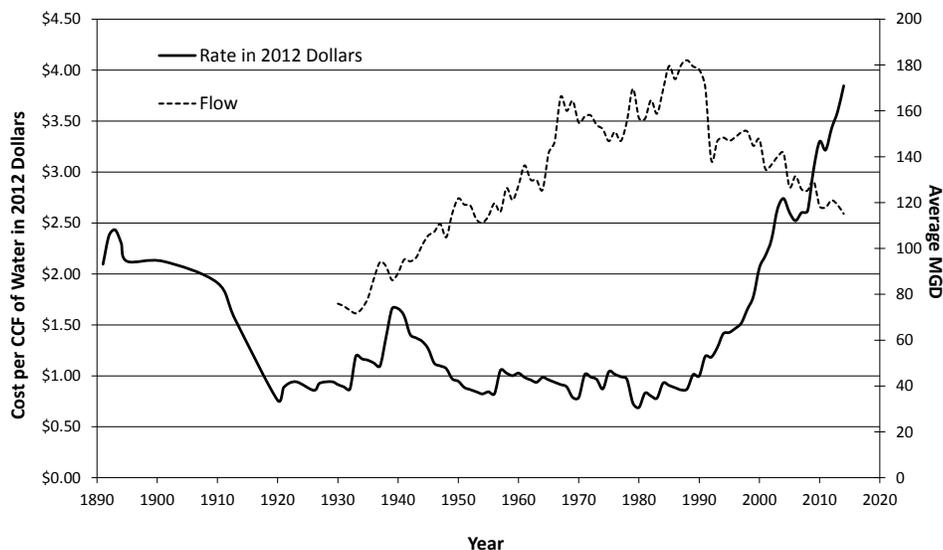
Section II: Water Fund

- Sizeable rate increases were required between 2012 and 2014 to bolster the Water Fund's **financial performance**. The combined effects of lower than projected revenues (from lower demand), a high historical debt load, and a change in the structure of certain debt financing costs driven by the 2008 financial crisis eroded the fund's debt service coverage performance. The fund could not meet its debt coverage target assuming 2011 debt service expense, necessitating a rate increase even in the absence of any new capital spending.

II.A.1. Demand Impacts

As shown in Figure II-2, sustained decline in water demand is a relatively recent trend within the overall water system history.

Figure II-2
Average Rate for 100 Cubic Feet of Water in 2012 Dollars and Average Daily Flow¹¹



Through 1989, increasing demand minimized the increases in rates that would otherwise have been necessary to support significant capital investments. A first round of investment included initial development of the Cedar River source, Cedar River pipelines and distribution reservoirs between 1890 and 1930. A second round of investment included development of the Tolt watershed source and Cedar East Side supply line in the 1950s. In the case of the former, capital costs declined after initial system development while the customer base increased in areas adjacent to the city, which are part of the water system's broader service area. The combination of new customers, decreasing costs, and increasing demand resulted in declining rates. New suburban customers funded expansion of the system in the 1950s, allowing rates to stay relatively flat during this period.

The late 1980s marked the beginning of a third intensive period of capital investment which carried through to 2010 and included construction of major distribution, supply and water quality assets

¹¹ Water supplied by the watersheds and wells.

Section II: Water Fund

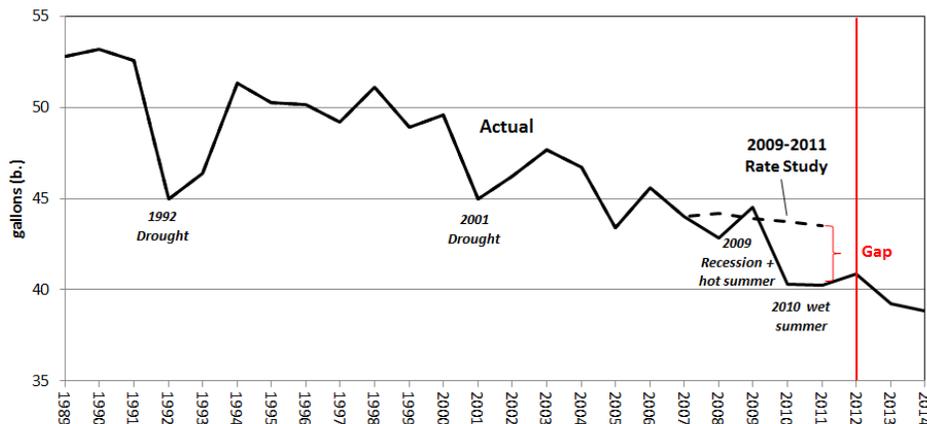
(further described under II.A.2. Capital Spending and Financing). Increased capital spending and a related increase in O&M requirements occurred at the same time as a sharp decrease in demand after the 1992 drought and a continued downward trend in demand thereafter. Rates needed to rise more sharply through this period to pay for increased expense with fewer demand units.

Several factors influence water usage including economic conditions, conservation, water use efficiencies¹², and summer weather conditions. Poor water sales during the summer have a disproportionate effect on annual revenues because more water is used during the summer and summer water rates are higher than winter rates.

In the early and mid-1990's, growth in employment offset some of the decrease in general service demand caused by efficiency gains in water use. However, the downward demand trend accelerated from 2001 forward as a result of the Saving Water Partnership (1% conservation program), slowing population growth and declining employment. Although there were some periods of recovery, consumption never returned to pre-2000 levels.

From 2003 forward, water rates were generally set to account for projected declines in demand. However, 2009 to 2011 retail water rates, developed in the first part of 2008, did not anticipate any demand declines and in fact assumed improving economic condition based on actual improvements to employment between 2004 and 2007. The subsequent demand declines associated with the impacts of the 2009 and 2010 economic downturn were a major component of the water rate increase in the next rate period (2012 to 2014) as rates were "reset" to account for considerably lower demand.¹³

**Figure II-3
1989-2014 Billed Water Consumption**



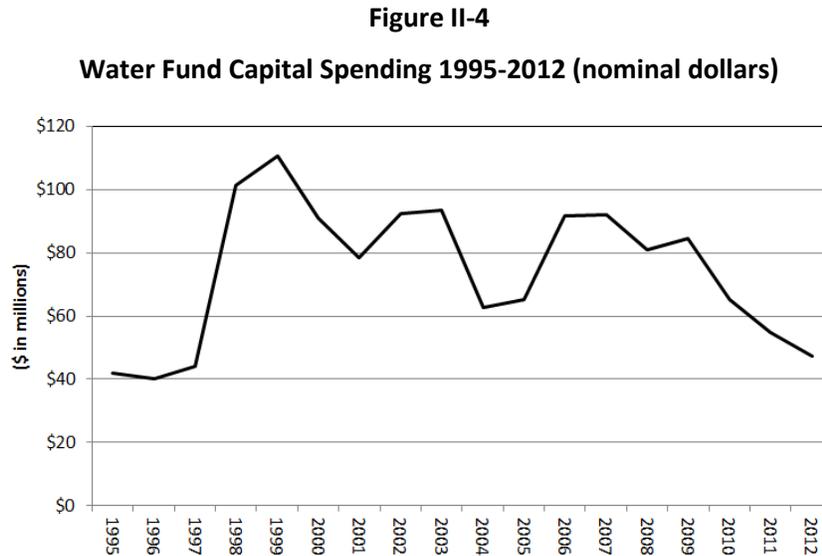
¹² Several factors influence reductions in customer demand. SPU conservation programs are one of these factors. Other examples of factors driving efficiencies include federal and state plumbing codes and transformation of the marketplace (appliances readily available at competitive prices that go beyond code and are heavily promoted through the Energy Star program).

¹³ New tap fee revenues paid by developers to connect to the water system were much lower in the 2009-2011 rate recovery period than anticipated in the rate study due to the economic slowdown as well. While not directly linked to demand, lower receipts from these fees also contributed to rate increases in the 2012-2014 rate period.

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II.A.2. Capital Spending and Financing

The Water Fund has made \$1.6 billion in capital investments since 1987, with \$1.2 billion of this being spent since 1998. Annual spending peaked in the late 1990's (\$111 million in 1999), with significant levels of annual spending generally occurring through 2010.

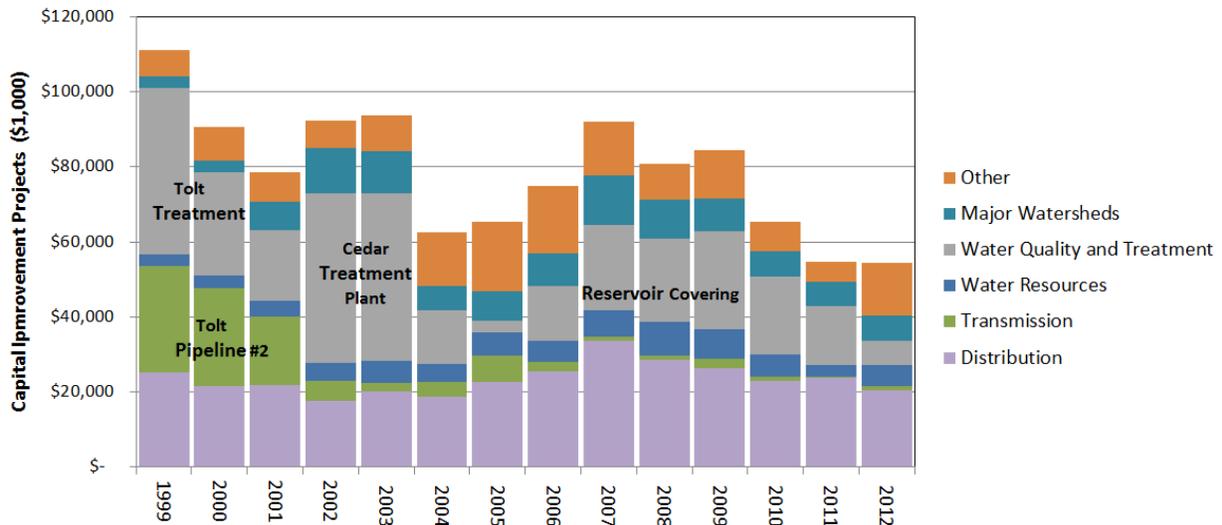


The Water Utility has concluded a two decade period of investments in major generational assets that respond to regulatory requirements and ensure reliable supply of high quality drinking water to the region. Investments included:

- New water treatment facilities for the Tolt and Cedar River sources;
- A second pipeline from the Tolt River source and improvements to the first Tolt pipeline after it burst in 1987;
- Replacement or covering of eight open reservoirs in response to federal requirements; and
- Investments to secure the supply of water by reaching an arrangement with the federal government defining the Cedar River Watershed Habitat Conservation Program.

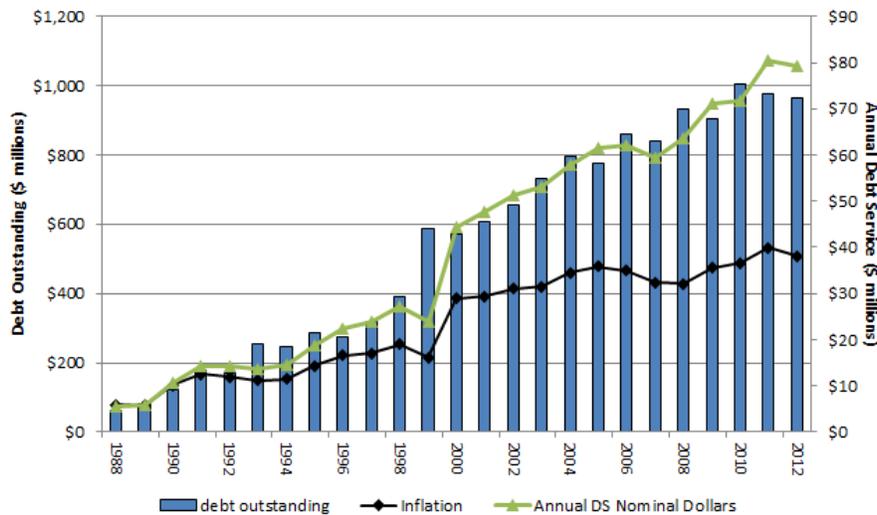
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Figure II-5
Water CIP Spending by Business Area
\$ thousands (nominal)



Servicing the debt on these large capital projects at a time of declining water consumption has presented a financial challenge to the Water Fund. Figure II-6 presents the growth in Water Fund outstanding debt and annual debt service since 1988.

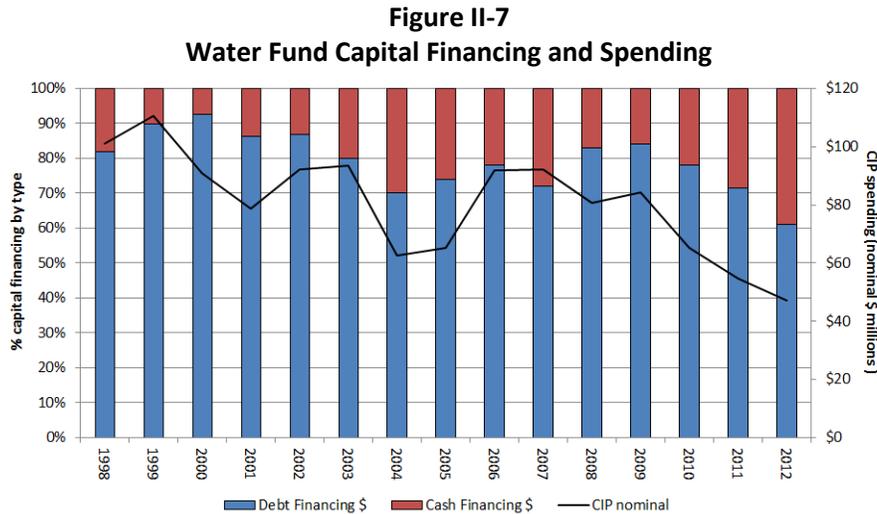
Figure II-6
WF Total Debt Outstanding and Annual Debt Service



Total debt outstanding grew from \$61 million in 1988 to \$390 million in 1998 and reached \$1 billion by 2010 in order to fund the major capital projects discussed earlier in this section.

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Total debt service rises in tandem with the increase in outstanding debt, growing in nominal terms from \$5.6 million in 1988 to \$79 million by 2012. The steepest real growth in debt service occurred after 1998, significantly outstripping inflation. This growth in debt service stemmed not only from high levels of CIP spending but also from a change in structure of a portion of the debt¹⁴ and the fact that the CIP was predominately debt financed during the highest spending periods, as shown in Figure II-7 Water Fund Capital Financing and Spending.



Prior to 2002, the Water Fund used very little cash to finance the CIP. Therefore, the record high capital spending levels at the end of the 1990s were funded almost entirely with debt. The 2002 rate study introduced an informal guideline of a 20 percent cash financing policy across a six-year average. In 2005, Council adopted a formal policy target of a 20 percent average across a rate setting period (typically two to three years). This increased cash-financing, combined with lower capital spending, slowed the growth in annual debt payments. However, debt payments on any single bond issue are typically recovered over a period of 30 years, so even as capital spending declines, debt service will increase with each new debt issuance. Consequently, capital financing has been a consistent driver of water rate increases. See Appendix A for additional detail capital funding sources and rate impacts.

II.A.3. Financial Policy Impacts

Financial policies provide a framework for setting rates and measuring financial performance by establishing targets for key operating (i.e. net income, operating liquidity) and debt management (i.e. debt service coverage, cash-financed CIP) indicators. They can also identify parameters for mechanisms, such as revenue stabilization funds, which help to prevent significant swings in funding requirements over time. Financial policies are important because they:

- Shape the financial profile the utility presents to the financial community;

¹⁴ See discussion under Financial Policy Impacts that follows.

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- Establish the utility's exposure to financial risk; and
- Allocate the utility's costs between current and future ratepayers, in particular the cost of funding capital investment.

There is not one universal metric for measuring financial performance. Each metric addresses a different (or different set of) policy objective(s). A mix of financial policies is established for each of SPU's funds that best suits its individual requirements. In 2005, Seattle's City Council passed Resolution 30742, which adopted new Water Fund financial policies, with key financial policies and objectives presented in Table II-1.

Table II-1
Water Fund Adopted Financial Policies

Policy Metric	Target/Guidance	Objective
Debt Service Coverage	1.7x on a planning basis for first lien debt	Financial certainty Debt Management
Cash Financing of CIP	No less than 20 percent over the rate proposal period. No less than 15 percent in any given year.	Debt Management
Year-End Cash	One twelfth of operating expenditures	Financial certainty Rate stability
Net Income	Generally positive	Financial certainty
Revenue Stabilization Sub fund¹⁵	Balance of \$9M maintained with exceptions	Financial certainty Rate stability
Variable Rate Debt	Not to exceed 15 percent of total outstanding debt	Financial certainty Rate stability

A mix of robust policies is particularly important for utilities such as the Water Fund with large ongoing capital programs and associated debt, significant revenue fluctuations, and longer rate cycles where rates are not actively adjusted mid-cycle to address underperformance. Further discussion of the importance of financial policy metrics and implementation considerations is found in Appendix B: Financial Policy Considerations.

Financial policies directly impact rate levels as the revenue collected from rates and fees must be sufficient to pay the total costs of the water system and meet adopted financial targets. In any future year, the optimum revenue requirement is the lowest amount of money necessary to simultaneously

¹⁵ The City Council established the Revenue Stabilization Fund (RSF) in 1993 and the current policy was established in 2005, setting a \$9 million minimum balance. Deposits to the RSF are required if actual metered water revenue exceeds the planned revenue and all financial targets are met. Withdrawals from the RSF must be approved by the City Council.

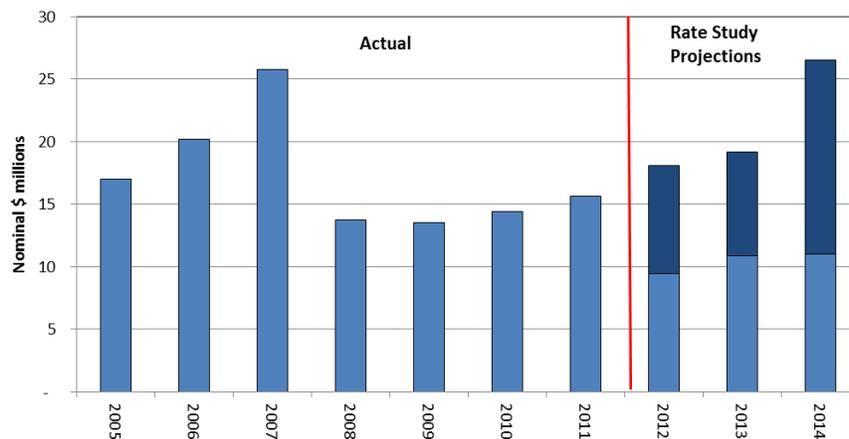
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satisfy all financial policies in that year. At this level of revenues, some financial policies may be exceeded, but none will be missed – the financial target that is exactly met is known as the binding constraint.

Through 2010, cash financing of CIP was typically the Water Fund’s binding constraint. However, over the course of any given two to three year rate cycle, this was not a significant rate driver, as there were year-to-year upward and downward fluctuations in total dollars contributed.

Unlike the case of cash-financed CIP in prior rate periods, meeting the DSC¹⁶ target was a major rate driver in the 2012-2014 rate study. Over the three-year rate period, revenues were increased by \$15.7 million to allow the Water Fund to meet its 1.7 DSC target, adding nearly seven percent to the water revenue requirement over the three-year rate period. The rate study projected using the extra revenue generated to meet the DSC requirement for additional cash financing of the CIP, thus mitigating the impact on future revenue requirements by reducing the size (and therefore debt payments) of future revenue bond issues. The rate study projected average cash financing of 41 percent of capital expenditures over 2012 and 2014, or over 20 percent above the targeted level.

Figure II-8
Water Fund Cash Financing of the CIP since Adoption of 2005 Policy Targets



Note: Darker shaded portion of columns under “Rate Study Projections” represents additional cash financing over policy target which comes from additional revenues needed to meet the DSC target.

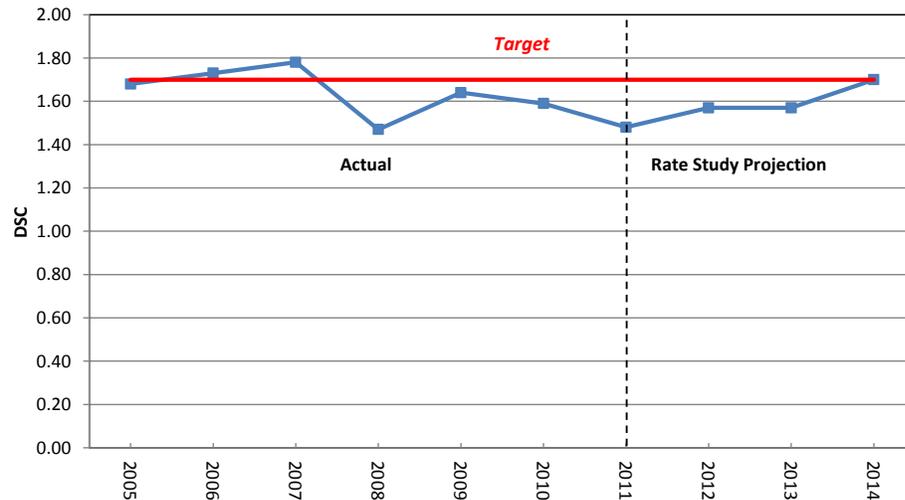
DSC became the binding constraint earlier than anticipated in long-term water planning efforts due to external factors. The Water Fund issued two sets of variable rate bonds, the 1995s (\$45 million) and the 2002s (\$66 million). These bonds were remarketed weekly. The fund benefited from interest rate savings on these bonds until the financial market collapse in 2008 when SPU was no longer able to find buyers for all these bonds. The bonds were refunded into fixed rate bonds in November 2008,

¹⁶ The DSC ratio shows how much additional revenue is available to the utility after making debt payments. A higher ratio reduces financial risk and provides more flexibility to respond to unexpected needs or revenue shortfalls and is a key metric watched by rating agencies and bondholders.

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increasing debt service expense due to higher interest rates and reducing debt service coverage below targeted levels due to an increase in senior debt lien¹⁷.

Figure II-9
Water Fund Debt Service Coverage since Adoption of 2005 Policy Targets¹⁸



Coverage declined because debt service payments on the junior lien variable rate revenue bonds did not count towards debt service coverage requirements while debt payments on the new senior lien fixed rate revenue bonds did count towards coverage requirements. Therefore, the change in the structure of these debt issuances, as well as reduced demand for water services and new taps were the factors that lead to debt service coverage becoming the binding constraint in the 2012-2014 rates.

II.B. Industry Context

Utilities throughout the U.S., including SPU, have made significant investments to protect public health, comply with federal and state regulations, and replace aging infrastructure. The federal share of investment in water infrastructure has dropped over the last several decades, which has left local governments responsible to pay for recent upgrades. Reduced federal funding and increased infrastructure needs have led to water rate increases that exceed the rate of inflation across many utilities, a trend that is expected to continue for the foreseeable future.

¹⁷ A lien is a form of security interest granted over an item of property to secure the payment of a debt or performance of some other obligation. The Water System grants a lien, or pledge, to bond holders that debt service obligations will be paid before other expense obligations out of net revenues. Senior lien debt is paid first, followed by junior lien debt. When variable rate debt was converted to fixed rate debt, the debt went from junior lien status to senior lien status.

¹⁸ The Water Fund met its coverage target in 2012 ahead of the rate study projection due to a favorable bond refinancing..

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A recent Environmental Protection Agency (EPA) report to Congress, released in June 2013, estimates that \$384 billion in national water infrastructure improvements are needed through 2030 to continue to provide safe drinking water.¹⁹ This estimate only covers infrastructure needs that are eligible for, but not necessarily financed by, Drinking Water State Revolving Fund (DWSRF) loans. These improvements are broken down into the following areas:

- \$247.5 billion for distribution and transmission to replace or refurbish aging pipes;
- \$72.5 billion to construct, expand or rehabilitate treatment infrastructure;
- \$39.5 billion for storage to construct, rehabilitate or cover finished water storage reservoirs; and
- \$20.5 billion to construct or rehabilitate intake structures, wells and spring collectors;

Another estimate of the investment needs for buried drinking water infrastructure is “more than \$1 trillion nationwide over the next 25 years, assuming pipes are replaced at the end of their service lives and systems are expanded to serve growing population.”²⁰ This estimate is significantly higher than the EPA's because it is based on a different set of assumptions about pipe replacement and investment and covers a longer period of time.

II.B.1. Industry Cost Drivers/Trends

Treatment Infrastructure

A significant portion of national water infrastructure needs is associated with the construction, expansion, and rehabilitation of infrastructure which reduces contamination through various treatment processes (e.g., filtration, disinfection, corrosion control). This category includes projects to remove contaminants that, while not a public health concern, adversely affect the taste, odor, and color of drinking water.

SPU has a comprehensive source-to-tap water quality management program. Water quality is ensured through an integrated effort of source protection, state-of-the-art treatment and ongoing monitoring throughout the water system for potential microbial and chemical contaminants.

SPU's water system includes:

- State-of-the-art water treatment facilities for the Cedar and South Fork Tolt source waters, completed in 2004 and 2001 respectively;
- Treatment and intake screening facilities at Landsburg;
- Intake screening facilities at the Tolt Regulating Basin; and
- In-town disinfection facilities at reservoirs and well sites.

¹⁹ “EPA Drinking Water Infrastructure Needs Survey and Assessment – Fifth Report to Congress”, United States Environmental Protection Agency, April 2013.

²⁰ “Buried No Longer: Confronting America's Water Infrastructure Challenge.” *American Water Works Association*, 27 Feb 2012.

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SPU operates and maintains each of these facilities to ensure that the potable water the City delivers to its customers meets high public health and aesthetic standards. Neither the Cedar nor Tolt treatment facility has experienced any treatment violations since startup.

Finished Water Storage Reservoirs

A 2006 EPA regulation, the Long Term 2 Enhanced Surface Water Treatment Rule (LT2), was developed to improve drinking water quality and provide additional protection from contaminants. The rule sought to protect the country's uncovered drinking water reservoirs from natural or man-made contamination by requiring either enclosing open air reservoirs or adding another layer of treatment before the water comes out of the faucets of end users.

SPU is now nearing completion of its reservoir covering plan. It has replaced six of its open reservoirs with underground structures that will improve the quality and security of the City's water supply. The reservoir covering program also provided 76 acres of new open space. The City has four remaining above-ground reservoirs. Floating covers were installed at the Bitter Lake and Lake Forest Park reservoirs. Security was also increased at these facilities. SPU is evaluating whether to decommission the Volunteer and Roosevelt reservoirs and is currently conducting a two-year decommissioning test at both reservoirs. To perform the tests, the reservoirs were taken out of service on April 1, 2013. While out of service, the Roosevelt reservoir will be kept drained, while the Volunteer reservoir will retain full water levels and continue to be a water feature at the park.

Projects by other cities with open, treated reservoirs to address the EPA LT2 regulation include:

1. The City of Tacoma: Covering of five open reservoirs completed in 2012 at a total cost of \$52.6 million;
2. The New York City Department of Environmental Protection: a \$41 million upgrade to the Hillview Reservoir in Yonkers;
3. New Jersey: a state-approved \$100 million plan to drain three reservoirs and replace them with concrete tanks by 2017;
4. The City of Rochester, New York: a plan to bring three open air reservoirs into LT2 compliance by 2024²¹; and
5. The City of Portland: A \$275 million project to replace its uncovered reservoirs by the end of 2020²². The Portland Water Bureau saw a 14.5 percent rate increase in 2013, largely due to the cost for the reservoir work.²³

²¹ The New York State Health Department originally called for work to be completed by the end of 2014. In 2012, the city was granted a 10-year reprieve from the new federal rules citing economic hardship. "Reprieve granted to Rochester, NY for open reservoirs", <http://bojack.org/images/rochesterwater1.pdf>. 12 October 2012.

²² In February 2013, the EPA rejected a request by Portland for an extension in order to explore alternatives. In June of 2013 the Portland officials announced plans to proceed with reservoir covering.

²³ "Utilities gun-shy on water and sewer rate hikes in 2012". American Water Intelligence. September 2012.

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Source Needs

The national need for source water infrastructure includes the construction and/or repair of surface water intake structures, wells and spring collectors.

SPU's primary tool for maintaining Seattle's source water quality is the City's extensive watershed ownership, which allows it to restrict human access and activities within the watersheds. SPU has adopted watershed protection programs for the Cedar River and South Fork Tolt River municipal watersheds, including the Lake Youngs Reservation. These programs ensure that SPU's source water is high quality and free from contamination. At present, SPU has adequate supply resources to meet regional water system demands under a wide range of weather conditions and has determined that no significant investments in new sources are needed before 2060.

Aging Infrastructure

Much of the water infrastructure in the U.S. was built in the late 19th and early 20th centuries and is now failing. Replacing and upgrading that infrastructure nationwide will cost hundreds of billions of dollars. The majority of the \$247.5 billion identified by the EPA report is for replacing or refurbishing aging or deteriorating transmission and distribution main. These mains are critical to the delivery of safe drinking water, and their repair/refurbishment is necessary to ensure compliance with many regulatory requirements.

"Without robust, urgent action, the Environmental Protection Agency estimates that nearly half the nation's pipes will fall into the 'poor, very poor or elapsed' categories by 2020, risking widespread failures and a considerable threat to public health."²⁴

SPU is not immune to aging infrastructure. With the completion of major regional facilities in recent decades, the need is now shifting to significant capital investments in the distribution system. In general, SPU's assets are in good condition, but there are some that have reached the end of their expected design life. The average age of pipe in SPU's water system is currently about 65 years (the oldest was installed in 1890). As SPU replaces less than 0.1 percent of its pipes per year, the average age will continue to grow. Seattle's water pipe leakage and breakage rates, as well as outage durations, are relatively low in comparison to other utilities and below the state minimum requirements. Overall, about 56 percent of the Water Fund's 2015 to 2020 core capital budget is for the replacement of infrastructure and facilities that have reached the end of their economic life. This spending includes programs to replace rather than continue to repair (i.e. service line renewals) assets not yet at the end of their design life when it is more economical to do so, as well as specific large projects to replace infrastructure that is already beyond or is expected to reach the end of its design life (e.g., Morse Lake pump plant, Lake Forest Park floating cover).

²⁴ David Lepeska, "Why Your Water Bills Must Go Up," *The Atlantic Cities*, 28 November 2011.

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II.C. Baseline Spending Assumptions

Baseline spending assumptions represent the level of spending required to maintain existing service levels plus meet regulatory requirements. “*Maintaining existing service levels*” means that *actual* service quality (as opposed to *targeted* service quality) neither degrades nor improves through 2020. Baseline spending assumptions DO NOT²⁵:

- Adjust for any anticipated, future efficiencies;
- Prioritize existing expenditures and eliminate or reduce lower priority projects/programs;
- Include capital projects in the six-year Capital Improvement Program that are new efforts not required by regulators or are not necessary to maintain existing service levels; and
- Include new initiatives to address gaps in meeting SPU’s strategic objectives.

Section II.C.1. discusses operating expenditures and the level of capital expenditures directly funded with baseline rates revenues and other non-rates revenue funding sources²⁶ further discussed in Section II.D. The majority of capital expenditures are directly paid for with proceeds from the sale of revenue bonds and do not impact the baseline rates revenue requirement discussed in Section II.D on a dollar-for-dollar basis. Instead, capital spending impacts the baseline rates funding requirement in two areas: a) debt service payments on revenue bond borrowing; and b) financing of a portion of current year capital expenditures with rates and non-rates revenues (“cash-financed CIP”)²⁷.

Sub-section II.C.1. includes a summary of assumed service levels used in developing baseline spending assumptions.

Sub-section II.C.2. details current (2014) operating expenditures as well as the level of capital expenditures assumed to be funded with rates and non-rates revenues. These represent spending levels required to support current service levels. **Sub-section II.C.3.** follows with the same information for 2015 through 2020, including a discussion of inflation and other assumptions underlying increases in spending over 2014 levels.

Sub-section II.C.4. provides an overview of total 2015 to 2020 baseline capital spending levels required to maintain current service levels and meet regulatory requirements. Whereas Sections II.C.2 and II.C.3 note the level of capital expense funded with rates and non-rates revenues, this section defines TOTAL projected capital spending, including the portion paid for with revenue bond issue proceeds. In addition this section provides a description of the work done under the capital improvement program.

²⁵ Increases or reductions to spending associated with the bulleted exclusions are addressed in the strategic plan rather than the financial baseline.

²⁶ This includes other current year operating and non-operating revenues, as well as prior year revenues remaining in operating cash balances.

²⁷ See Section II.C.2 and Appendix A for further information on the impact of capital spending on rates.

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II.C.1. Current Service Level

Table II-2 presents additional information on the service levels assumed in developing baseline spending.

**Table II-2
Drinking Water Current Service Level Targets and Actual Performance**

Service Levels/ Performance Measures	Target	Mandatory?	Usual Performance	Comments
1. Supply drinking water that meets or exceeds Department of Health regulations	Meet regulations	Yes	Meeting regulations	Refers to Washington Administrative Code (WAC) 246-290. There are many monthly, quarterly, annual and less frequent reports and other related activities that are required to accomplish and document this one service level.
2. Meet state requirements for drinking water system pressure	Meet requirements	Yes	Meeting requirements	New or expanded parts of the distribution system designed to deliver peak hour demand at a minimum of 30 pounds per square inch (psi). No retail customers with less than 20 psi during normal operations.
3. Meet pressure and flow requirements of wholesale drinking water contracts	Meet requirements	Yes	Meeting requirements	21 separate contracts with common language, but individual pressure and flow (at the customer tap on the transmission system) commitments.
4. Provide in stream water for fish and meet other tribal, regional, state, and federal commitments	Meet commitments	Yes	Meeting commitments	Also must meet other terms of agreements. There is a complex set of contractual and other commitments that roll up to this one service level.
5. Achieve goals for water conservation and leakage loss: - distribution leakage losses of < 10 percent - 6 mgd cumulative conservation savings 2007-2012	10% max 6 mgd	Yes	<6.5% 5.39 mgd	Leakage losses includes real losses and meter inaccuracies. Have new Water use Efficiency (WUE) Goal beginning 2013 – total average annual retail water use of members of the Saving Water Partnership is less than 105 mgd from 2013-2018 despite forecasted population growth.

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Service Levels/ Performance Measures	Target	Mandatory?	Usual Performance	Comments
6. Limit yearly drinking water outages totaling > 4 hours to less than 4 percent of retail customers	4 percent max (7,200 customers)	No	<1 percent (<<7,200)	This is the one SPU service level that the State of Washington Department of Health would not allow in SPU's 2007 Water System Plan that they would have to approve because it implies a less than 100 percent reliable system. Includes planned and unplanned outages.
7. Limit unplanned outages in the drinking water transmission system to within the maximum agreed duration	Meet requirements	No	Meeting requirements	There is a target outage duration (1, 2 or 3 days) for all transmission pipeline segments. This is not a contractual or regulatory requirement.
8. Respond to 90 percent of high priority drinking water problems within 1 hour	1 hour max	No	>90% of events responded to within an hour	High priority problems include emergency situations such as a pipe break; potential contamination of water supply; pump station failure; hydrant damage. We could explore the impacts of lowering response targets – would likely be some combination of cost reductions in first response crews, and potential increases in claims costs.

* mgd = million gallons per day

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II.C.2. Overview of 2014 Spending Requirement (Use of Water Revenues)

The majority of annual baseline rates revenues are used to fund operating expenditures. These revenues also directly fund a portion of current year capital expenditures (cash-financed CIP). As detailed in Appendix A, other than the cash-financed portion of the CIP, rates revenues do not directly fund capital expense but are used to repay debt on revenue bond proceeds used to fund both current year and prior year(s) capital expenditures. Figure II-10 depicts the sources and uses of operating and capital funding.

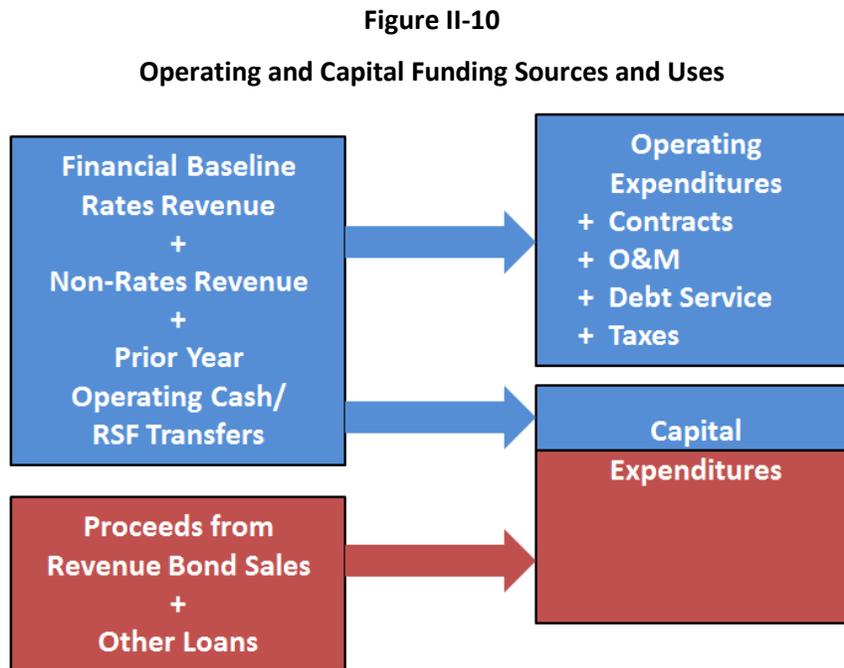
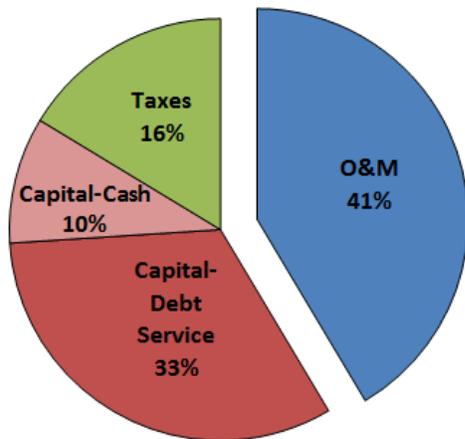


Figure II-11 presents a breakdown of the projected Water Fund 2014 Use of Revenues²⁸, represented by the blue-shaded areas in Figure II-10 above. Spending on Operations and Maintenance (41 percent) and capital financing (43 percent for cash and debt) account for nearly equal shares while taxes (16 percent) account for the remainder of total uses.

²⁸ Revenues funding 2014 expenditures include current year rates and non-rates revenues and may also include prior year revenues transferred from the Rate Stabilization Fund or otherwise carried over in operating cash balances.

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**Figure II-11
Water Fund 2014 Spending Requirement
Use of Water Fund Revenues**



	2014 (\$M)	% of Total
O&M	\$99.5	41%
Capital-Debt Service	\$78.2	33%
Capital-Cash	\$23.3	10%
Taxes	\$39.2	16%
Total Uses	\$240.2	100%

II.C.2.a. SPU O&M Expense

As Figure II-11 shows, 41 percent of the 2014 water revenues pay for operations and maintenance (O&M) expenses. The majority of these costs cover branch O&M -- the costs of running the department's operations and corporate activities (Field Operations & Maintenance, Customer Service, Utility Systems Management, Project Delivery, Human Resources & Service Equity, Finance & Administration, and Corporate Strategies & Communications). A smaller portion pays for costs outside of the branches' control, such as cost-allocated payments to other city departments, space rent, claims, and contingencies for emergencies.

Within the Water branch O&M, personnel costs (wages, benefits, overtime, temporary staffing, etc.) comprise the largest portion of expenditures at roughly 73 percent. The next largest cost center is services, which includes consultant and other outside services (e.g. financial auditing, security, printing, etc.), inter-departmental payments for direct services (e.g. customer billing system services from City Light), and payments to other government agencies and non-profits organizations (e.g. fish monitoring services from Washington Department of Fisheries & Wildlife). The remaining branch O&M costs are composed of fleet, supplies, inventory, maintenance, utility and other like expenses.

The activities performed in the Water branch O&M can also be characterized as "mandatory", "core" or "value-added". Activities that are considered mandatory or core are essential to directly or indirectly providing basic utility services and/or meeting regulatory requirements. Examples include meeting Department of Health drinking water requirements, operating and maintaining the distribution and transmission systems, meeting the Habitat Conservation Plan commitments, and operating the customer contact center. Activities that are considered "value added" are more discretionary and enable SPU to operate more effectively, efficiently, and sustainably, and/or add value to the organization and its customers. Examples include climate adaptation, education and outreach, asset management, and service equity activities.

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II.C.2.b. Capital Financing (Debt Service and Cash Financed CIP)

The Water Fund pays for current year capital expenses through a combination of Water Fund revenues (cash-financed CIP), proceeds from periodic revenue bond issues and a small amount of Washington State Public Works low-interest loans (debt-financing). Annual debt service payments of principal and interest represent the annual cost to the fund of repaying revenue bonds and other loans.

Financing a portion of the CIP with revenues provides greater flexibility to the utility by reducing the amount of debt that must be issued and associated long term debt service obligations. Debt-financing, however, is important to inter-generational equity as it assigns a portion of cost to future ratepayers who will benefit from long-lived assets.

Table II-3 presents projected funding sources for current year 2014 capital spending, as well as 2014 capital financing expense, by type, funded with rates and non-rates revenues. The CIP funding sources shows where the cash comes from to pay for invoices related to current year (2014) CIP expenses. The ratio of cash-to-revenue bond financing is established by financial policies, as described further in this section. So, the “percent of cash financed CIP” refers to the percent of total current year CIP expense that is funded with Water Fund revenues (as opposed to revenue bonds or other borrowed sources).

The capital financing expense shows annual payments made from Water Fund revenues to pay for current year capital expense (cash-financed CIP) and debt payments on current/prior year revenue bond issues. Total capital financing expense (as opposed to capital spending) is the amount that must be funded through the annual baseline funding requirement.²⁹

**Table II-3
Water Fund 2014 Capital Funding Sources and Capital Financing Expense**

2014 CIP Funding Sources			2014 Water Capital Financing Expense		
	2014 (\$M)	% of Total		2014 (\$M)	% of Total
Bond/Loan Proceeds	\$33.7	59%	Debt Service Payments	\$78.2	77%
Revenues (Cash-financed)	\$23.3	41%	Revenues (Cash-financed)	\$23.3	23%
Total 2014 CIP Spending	\$57.0	100%	Total Capital Financing	\$101.5	100%

Debt service

This is the annual principal and interest payment on ALL outstanding revenue bond debt³⁰ issued by the Water Fund. Debt payments are typically spread over 30 years. So total annual debt service expenditures are the sum of annual payments for all prior year outstanding bond issues, as well as debt service on any current year issuances, if applicable.

²⁹ Appendix A provides more detail on the general structure of capital financing and its impact on rates.

³⁰ Also includes a small amount of debt service from other funding sources such as Public Works Trust Fund loans.

Section II: Water Fund

In 2014, the Water Fund will make cumulative debt service payments of \$78.2 million on loans and revenue bond issues originally dating back to the 1980s³¹. SPU expects to issue \$84M in new revenue bonds in 2014.

Cash-Financed CIP

These are Water Fund revenues used to fund a portion of current year capital expenditures. The level of cash financing of the CIP is typically determined by adopted financial policies.

Since 2005 and the adoption of new Water Fund financial policy targets, water rates have been set to target an average of 20 percent of projected annual capital expenditures over the rate-setting period, with a minimum of 15 percent financing in a given year to provide rate-setting flexibility in years with higher CIP spending. During the 2012-2014 rate period, rates were actually set to recover more than the 20 percent target in order to generate enough revenue to meet the Fund's debt service coverage financial policy target (see Section II.A.3 Water Fund Financial Policy Impacts for detailed discussion).

In 2014, the Water Fund is expected to fund at least \$23.3 million of capital expense with current year revenues.³² This represents 41 percent of total projected CIP spending of \$57.0 million. As noted in the introduction to this section, proceeds from revenue bond sales are used to fund the remaining 59 percent of current year capital expenditures.

II.C.2.c. Taxes

The Water Fund pays three different taxes on various sources of revenue. The largest tax is the City of Seattle Utility Tax, with a rate of 15.54 percent on all retail water sale revenue and most other retail services. In 2014 this tax is projected to total \$30.0M. The State of Washington levies two taxes on various revenues, the state utility tax and state business & occupation tax. These two taxes are rarely levied on the same activity, preventing double taxation. In 2014, state taxes are projected to total \$9.2 million. The Water Fund also pays a small amount in property taxes which are included in O&M.

³¹ All bonds issued prior to 2003 have subsequently been re-financed with later issues.

³² CIP cash financing assumed for 2014 corresponds to "extra" revenues that are available after funding O&M, taxes and debt service, assuming total revenue levels sufficient to just meet the targeted debt service coverage requirement. This is the level of cash financing assumed in rate setting projections and most reflective of what the baseline revenue requirement is intended to represent, that is revenue sufficient to fund current levels of service, meet firm regulatory requirements and achieve financial policy targets. At the end of 2014, the Water Fund will likely have additional cash available, largely carried over from 2013 balances, which may remain in cash balances, be moved to the RSF, and/or used to make an additional cash contribution to 2014 CIP funding.

Section II: Water Fund

II.C.3. 2014-2020 Baseline Spending Requirement (Use of Revenues)

This section focuses on SPENDING levels underlying the baseline FUNDING requirement between 2015 and 2020. These funding levels assume:

- 2014 proposed budgetary spending, plus
- Inflationary adjustments, plus
- Other discrete changes to costs to maintain existing service levels plus meet regulatory requirements

Figure II-12 below presents the composition of increases to the Water Fund spending requirement between 2015 and 2020 which is composed of inflationary adjustments to the 2014 proposed budget plus other discrete changes to costs to maintain existing service levels and meet regulatory requirements.

Figure II-12
Water Fund Baseline Spending Requirement 2014-2020

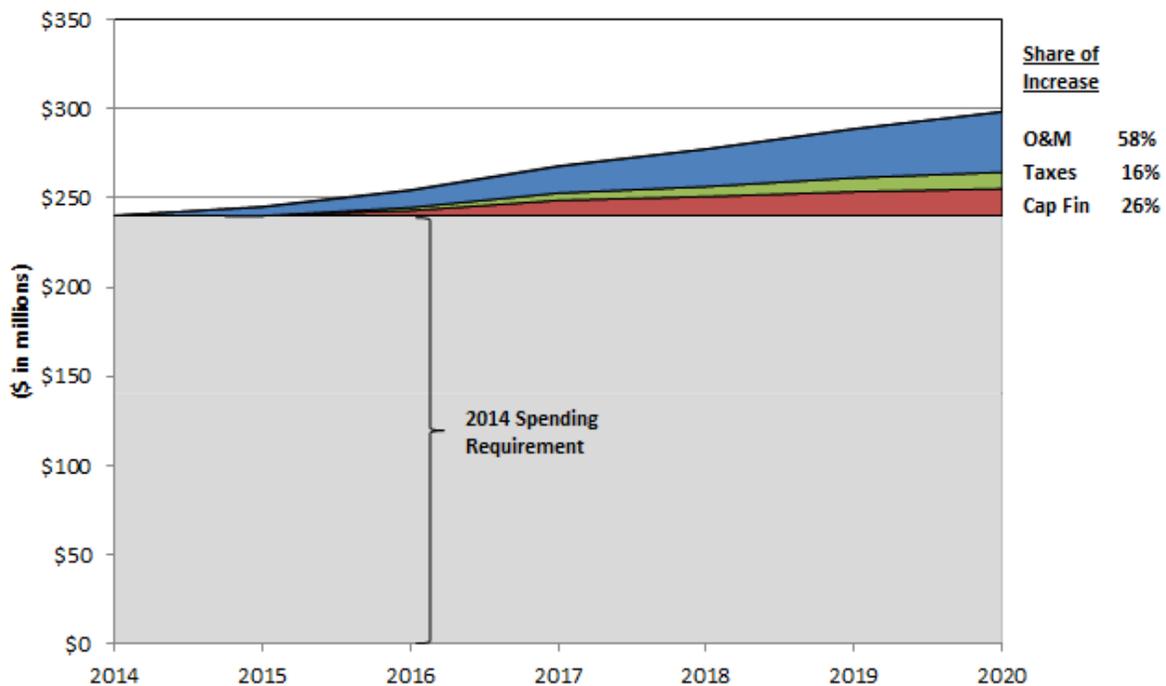
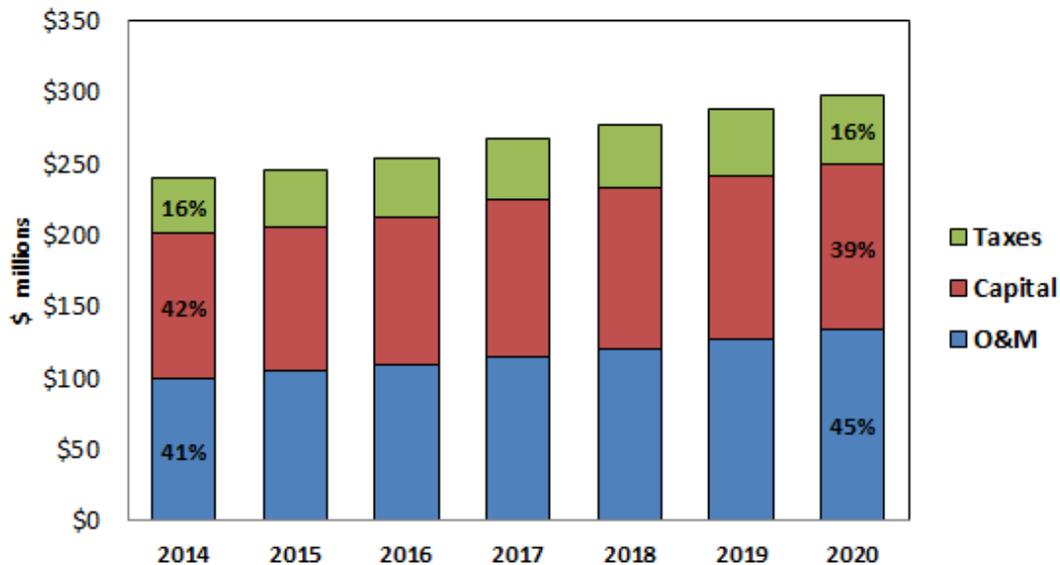


Figure II-13 provides a different look at planned Water Fund spending, showing the components of TOTAL expense, by year, between 2014 and 2020. This figure also shows the percentage each component represents of the base (2014) and in 2020.

Section II: Water Fund

Figure II-13
Components of Water Fund Spending Requirement, 2014-2020
 (\$ millions)



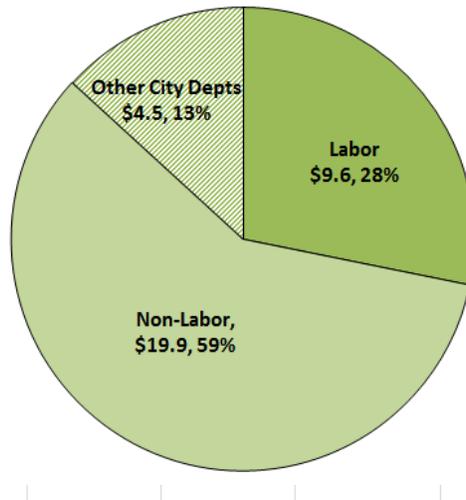
	2014	2020	2015-20 Increase	% of Increase	Avg Annual % Increase
Taxes	\$39	\$49	\$9	16%	3.6%
Capital	\$101	\$116	\$15	26%	2.3%
O&M	\$100	\$134	\$34	58%	5.0%
Total	\$240	\$298	\$58		3.7%

Total spending increases by \$58 million between 2014 and 2020. O&M expense represents the largest share of this increase (58 percent), followed by capital financing (26 percent) and taxes (16 percent). In 2014, capital financing and O&M accounted for equal shares (42 percent) of total spending. O&M, which is growing at an average annual rate of 5 percent, supplants capital financing as the largest component of spending by 2020, growing from 41 percent of spending in 2014 to 45 percent in 2020. Increases to labor expense, discussed further in Section II.C.3.a below, is the primary driver of above inflationary growth.

Section II: Water Fund

II.C.3.a. O&M

Figure II-14
Water Fund
Composition of Baseline O&M Spending 2014-2020



As Figure II-14 shows, O&M accounts for the largest portion of the 2015 to 2020 baseline increase relative to 2014 spending. The O&M baseline drivers are labor, non-labor, and City central costs (allocated costs to other City departments).

There are three major components to the labor cost increases:

- Health care benefit costs are expected to inflate by seven percent per year;
- The City's contribution to the retirement system is assumed to continue to increase; and
- Real wages are rising slightly higher than the rate of inflation. The annual cost of living adjustment (COLA) is assumed to be 2.5 percent for all City employees. In addition to this, other factors are driving SPU wages above COLA. These include the fact that changing business needs and more automation result in needing fewer entry-level (lower paid) positions, and more and more new employees are calling for higher starting salaries as a condition of employment.

Most non-labor costs assume a general inflation rate of two percent on most goods and services. However, based on the eight-year inflation average (2005-2012), we estimate some cost centers to rise beyond two percent per year. These include fuel, professional and technical services, and utilities.

In addition to inflation on non-labor costs, the O&M baseline is growing because of specific adjustments made to either maintain current service levels and/or meet firm regulatory requirements. In the water line of business examples of this include:

- Operation of the new sockeye hatchery;
- Increased up-front planning and preliminary engineering dollars to adequately support the capital program;

Section II: Water Fund

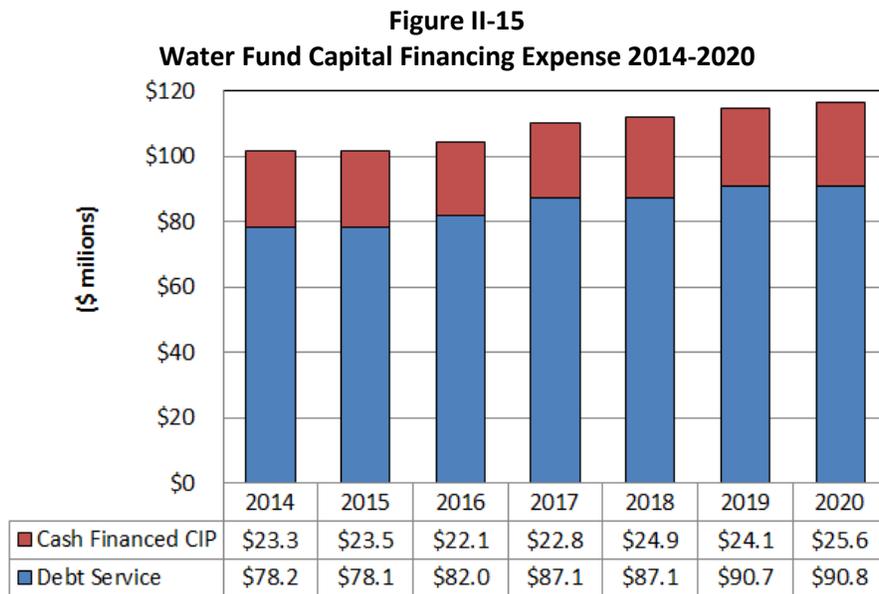
- Higher vendor costs for software maintenance and support; and
- Higher payments to City Light when the new customer billing system is launched.

Finally, the last O&M baseline driver is City central costs. These are costs that are allocated to SPU for services provided by other departments in support of general City operations. This includes payments to the Finance & Administrative Services (FAS) Department, the Department of Information Technology (DoIT), the City Auditor’s Office, the Law Department, the City Council, the City Budget Office, etc. As with non-labor costs, based on the eight-year inflation average (2005-2012), several City central costs are estimated to rise beyond two percent per year.

See Appendix D for a complete list of inflation assumptions.

II.C.3.b. Capital Financing

As discussed in Section II.C.2.b, capital expenditures in any given year are paid for with a combination of revenue bond proceeds and Water Fund operating and non-operating revenues. These revenues are also used to pay the debt service (interest and principal payments) on the current and prior revenue bond issues. Figure II-15 presents the projected components of annual Water Fund capital financing expense from 2014 through 2020.



Over the period, total capital financing expense is projected to increase by \$15 million, from \$101.5 million in 2014 to \$116.4 million in 2020. Table II-X presents the change in annual capital financing by component. The change in expense is what drives changes to rates.

Section II: Water Fund

**Table II-4
Change in Annual Water Fund Capital Financing Expense 2015-2020**

	2015	2016	2017	2018	2019	2020	Total
Debt Service	(\$0.1)	\$3.9	\$5.2	(\$0.0)	\$3.6	\$0.0	\$12.6
Cash Financed CIP	\$0.2	(\$1.3)	\$0.7	\$2.1	(\$0.9)	\$1.6	\$2.3
Total	\$0.1	\$2.6	\$5.8	\$2.1	\$2.8	\$1.6	\$15.0

Debt service accounts for \$12.6 million of the net increase in capital financing expense. The increases to debt service assume that the Water Fund will issue about \$180 million in new revenue bonds through 2018 (\$55.5 million in 2015; \$73.8 million in 2016; and \$50.7 million 2018).³³ Debt service expense increases in the table above coincide with these new debt issues, lagged by one year as the issues are projected for the latter part of the year, and first payments come due the year AFTER the bond issue.

Cash-financed CIP adds \$2.3 million in net increased expense between 2014 and 2020. For the Water Fund, cash-financed CIP must equal the greater of the financial policy target of 20 percent of capital spending across the rate period OR cash-financing sufficient to meet debt service coverage requirements (see II.A.3. and II.C.2.b for further details). Between 2014 and 2020, cash financing must exceed the 20 percent target in all years in order to meet debt service coverage requirements, although the total amount required in any given year fluctuates up and down.

**Table II-5
Financial Policies Driving Size of Annual Cash-Financed CIP**

	2014	2015	2016	2017	2018	2019	2020
20% target	\$11.4	\$14.8	\$15.5	\$10.5	\$9.4	\$9.4	\$10.0
Additional to meet DSC	\$11.9	\$8.6	\$6.7	\$12.3	\$15.6	\$14.7	\$15.6
Total	\$23.3	\$23.5	\$22.1	\$22.8	\$24.9	\$24.1	\$25.6

Table II-6 presents the breakdown between cash and revenue bond financed CIP between 2015 and 2020 assumed in the baseline forecast. The additional cash-financed CIP required to meet debt service coverage requirements presented above is the driver of the higher cash-financing percentages in the following table.

³³ The Water Fund also expect to issue \$76.3 million in 2020 but the first payments on this issuance won't come due until 2021)/.

Section II: Water Fund

**Table II-6
Percentage of Cash and Revenue Bond Financed CIP 2015-2020**

	2015	2016	2017	2018	2019	2020
Cash-Financed	32%	29%	43%	53%	51%	51%
Revenue Bond-Financed	68%	71%	57%	47%	49%	49%

II.C.3.c. Taxes

Table II-7 presents projected City and State Taxes between 2015 and 2020.

**Table II-7
Projected Water Fund Tax Expense, 2015 to 2020
(\$ millions)**

	2015	2016	2017	2018	2019	2020
City Taxes	\$29.7	\$31.4	\$33.1	\$34.2	\$35.9	\$37.1
State Taxes	\$8.8	\$9.3	\$9.8	\$10.1	\$10.6	\$11.0

Water Fund tax expense is projected to increase by \$8.5 million through 2020. These increases are directly related to increased revenues. The Water Fund pays three different taxes on various sources of revenue. The largest tax is the City of Seattle utility tax, with a rate of 15.54 percent on all retail water sale revenue and most other retail services. Outside of water sales, the largest taxed revenue sources are hydrant fees and tap installation fees. In 2015 the Seattle utility tax is projected to total \$29.7M. The State of Washington levies two taxes on various revenues, the state utility tax and B&O tax. These two taxes are rarely levied on the same activity, preventing double taxation at the state level. The In 2015 State taxes are projected to total \$8.8M.

Section II: Water Fund

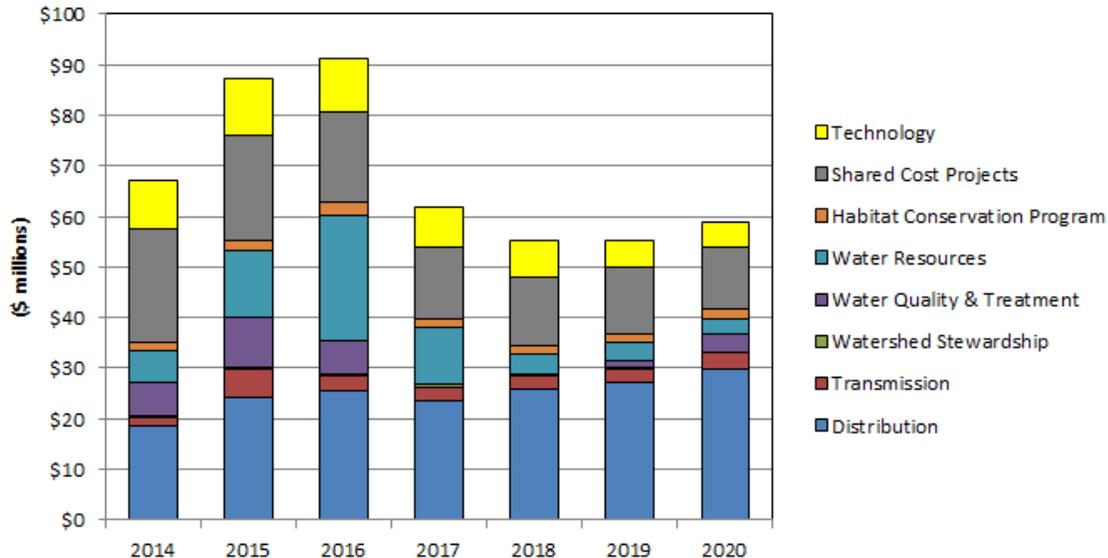
II.C.4. 2014-2020 Baseline Capital Spending

Planned spending in the water CIP is \$409 million from 2015 to 2020. This includes many on-going programs, such as improving the distribution system of water mains, valves, and pump stations, watershed stewardship and conservation projects and programs, and facilities, vehicles, heavy equipment investments, and information technology investments.

The Water Fund CIP is coming to the end of a 20-year period of investment in major infrastructure projects. These projects (e.g. the Tolt and Cedar Water Treatment Facilities and Reservoir Covering Program) have positioned SPU to meet drinking water quality and environmental regulations. There is only one remaining large project, Morse Lake Pump Plant, planned for the next six years. The Morse Lake Pump Plant project provides for reliable release of water from Morse Lake into the Cedar River. This is necessary to maintain the supply of drinking water to the region and meet regulatory minimums for the amount of “in-stream flows” in the river.

By 2018 the overall CIP will be reduced, and investments will be substantially focused on rehabilitating and replacing infrastructure (e.g. mains, valves, hydrants and meters) for delivery of clean drinking water, with continued watershed stewardship.

**Figure II-16
Planned Water Fund Capital Spending, 2014 to 2020**



The overarching goal of the Water Fund CIP is to ensure that the water system is properly maintained, upgraded and expanded to reliably deliver high-quality, safe drinking water to customers, protect the environment, and comply with regulations.

Section II: Water Fund

Major 2015-2020 water CIP projects include:

- Continuation of the Open Reservoirs Covering program to ensure water purity as required by state regulations;
- Morse Lake Pump Plant changes to improve water storage access;
- Transmission and distribution system asset management investments;
- Water system improvements associated with transportation projects (e.g. Alaskan Way Viaduct replacement, Bridging the Gap); and
- Continuation of Cedar River watershed investments mandated by the Habitat Conservation Plan (HCP).

II.D. Financial Baseline Rate Projections

The Baseline Rate Path is the series of increases to current water rates which will be required to generate revenues sufficient to maintain existing service levels plus meet firm regulatory requirements. As described in Section II.C, “*Maintaining existing service levels*” means that *actual* service quality (as opposed to *targeted* service quality) neither degrades nor improves through 2020.

Four factors determine the size of annual rate increases: a) annual spending levels; b) financial policy requirements; c) non-rates sources of funding; and d) water demand.

The first three factors combined determine how much total revenue must be generated by retail water rates, also known as the retail rates revenue requirement³⁴. Rate increases are required to fund increases in the revenue requirement from one rate setting period to the next. Where demand is constant, the average rate increase will equal the increase in the revenue requirement. Increasing demand (i.e., customers buying more units of water) will reduce the required rate increase and declining demand will increase the rate increase relative to the change in the revenue requirement.

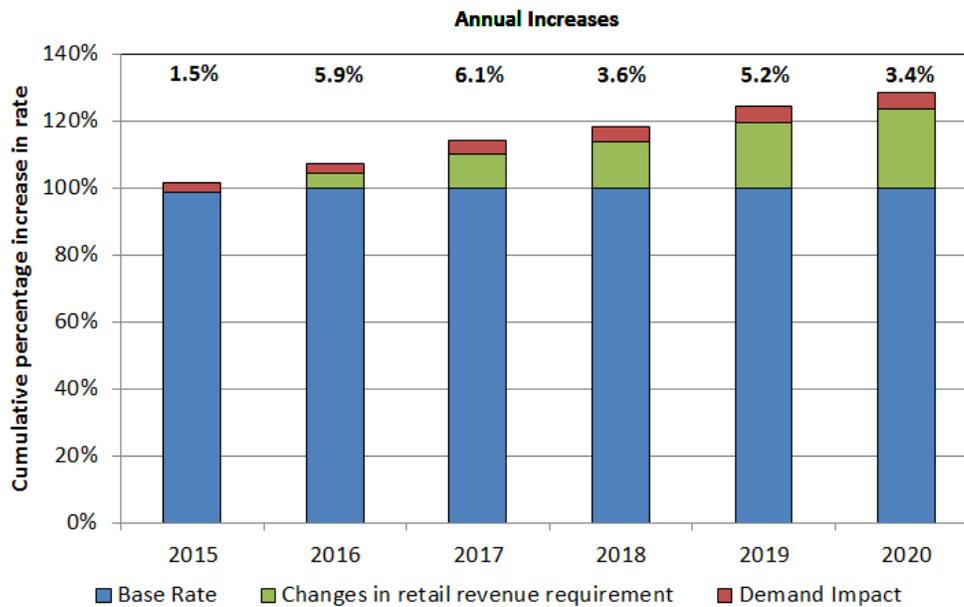
Figure II-17 presents a breakdown of projected annual and cumulative rate increase required to maintain current service level.³⁵ Section II.A discusses the drivers of historical rate increases, including adopted increases through 2014. **This section focuses on the impacts of proposed baseline spending on new rates to be adopted for 2015 through 2020.**

³⁴ The **revenue requirement** is the amount of revenue required to pay for water system operating expenses spending and meet financial policy targets, including funding a portion of current year capital expenditures with rates and non-rates revenues. The **retail rates water revenue requirement** is equal to the revenue requirement, less funding from sources other than retail rates including wholesale revenues, drawdowns of cash balances, and other operating/non-operating revenues.

³⁵ The change in the retail rates revenue requirement includes all increased costs to be funded with rates revenues that exceed the base used to set 2014 adopted rates. The demand impact shows additional year to year increases required to recover cumulative increased costs at lower levels of demand.

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Figure II-17
Projected Water Fund Rate Increase, 2015-2020



Rates must increase by nearly 29 percent, or an average of 4.3 percent³⁶ per year between 2015 and 2020, to generate RETAIL rates revenues sufficient to maintain current service levels.

Table II-8 presents the contribution of each of the components of the retail rates water requirement spending, financial policy Impacts, and non-rates funding) and demand to annual projected annual water rate increases.

Table II-8
Water Retail Rate Increase Factors

		2015	2016	2017	2018	2019	2020
SPENDING	+	-0.5%	6.1%	4.1%	3.1%	5.7%	4.0%
FINANCIAL POLICIES	+	-1.7%	-1.1%	2.9%	1.6%	-0.4%	0.4%
NON-RATES FUNDING	+	0.9%	0.6%	-1.3%	-1.5%	-0.2%	-1.1%
DEMAND IMPACT	=	2.7%	0.3%	0.4%	0.3%	0.1%	0.0%
% Rate Change		1.5%	5.9%	6.1%	3.6%	5.2%	3.4%

Although there are annual fluctuations in the contribution of each factor, spending increases are the largest driver of rate increases from 2015 through 2020. A portion of this increased spending (on cash-financed CIP) is required to meet the Water Fund's debt service coverage financial policy target,

³⁶ Cumulative rate increases divided by years does not equal the average annual rate due to the compounding effect. Should we make a footnote comment about that here or will that just confuse more?

Section II: Water Fund

included under financial policies above. Declining demand for water contributes to a lesser extent to the increase, while increased non-rates revenues somewhat offset the required retail rate increases.

The cumulative increase for the average retail rate between 2015 and 2020 is 28.5 percent. Increased spending and demand adds 31.7 percent to the rate, with increased non-rates revenue reducing by 3.2 percent the amount that must be recovered through retail rates.

Figure II-18
Increases and Offsets to Retail Water Rate, 2015 to 2020

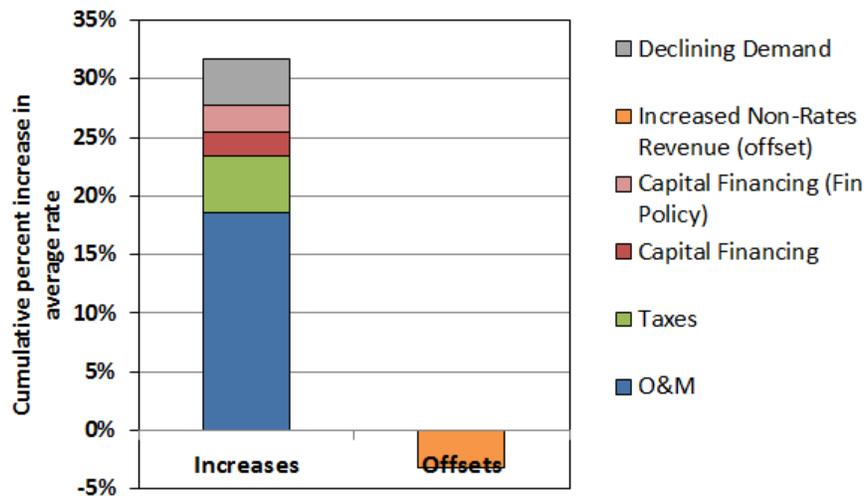
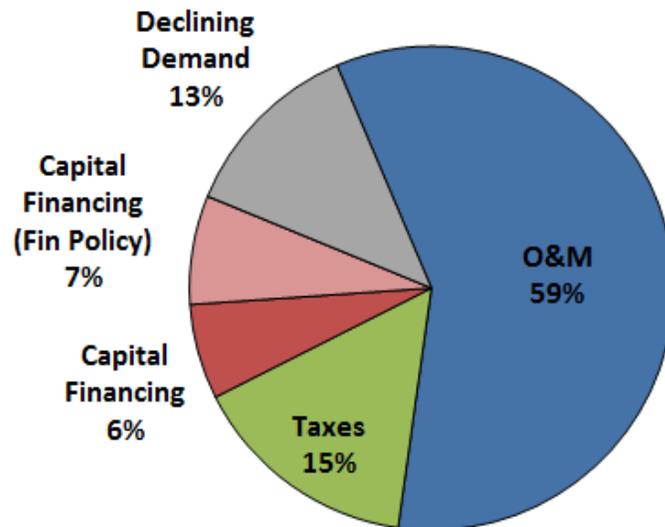


Figure II-19 presents the composition of the factors increasing the rate. Increased spending on O&M is the largest driver, accounting for almost 60 percent of increases. Taxes, capital financing, and declining demand almost equally account for the balance of the increase. Over half of the capital financing increases are driven by the requirement to meet the Water Fund's debt service coverage financial policy target.

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Figure II-19
Composition of Additions to the Retail Water Rate 2015 to 2020



Section II.C.3. provides more detail on spending increases, including those related to financial policy requirements. Section II.D.1 discusses non-rates funding sources which reduce the rates revenue requirement. Section II.D.2 presents assumptions underlying the water demand forecast used in developing the 2015 through 2020 rate path.

All 2014 spending, financial policy, non-rates revenue and demand assumptions used to determine rate drivers are based on assumptions for 2014 used to set 2014 rates, NOT the current 2014 spending assumptions presented in Section II.C. In a new rate setting year, the size of rate increase is set in relation to how rates were last set for the prior year. Differences between actual spending and revenue in a given year, and assumptions underlying rates for that year, will be reflected in revised year-end cash balances.

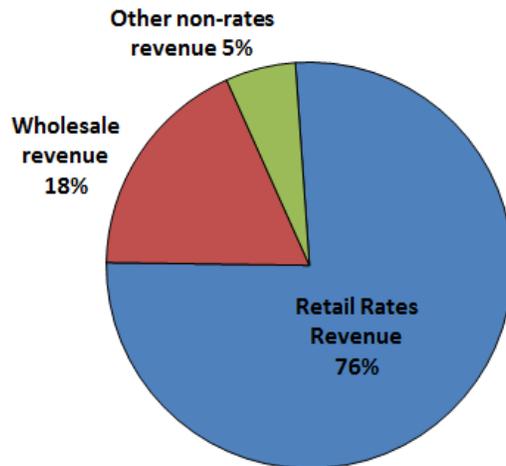
II.D.1. Non-rates funding sources

A significant portion of the total water system revenue requirement is funded through wholesale revenues, capital contributions, asset sales, and other operating and non-operating revenues. These other funding sources reduce the amount to be recovered through retail rates and therefore are reflected as reductions to the revenue requirement in each year.

Figure II-20 below presents the sources (rates and non-rates) of funding for the new rate setting periods under the proposed plan (2015-2020). Retail rates revenues fund about 76 % of the water revenue requirement on average.

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Figure II-20
Water Fund Sources of Funding, 2015-2020



II.D.1.a. Wholesale Revenues

Rates for wholesale customers are set in accordance with wholesale contracts. These contracts define cost of service methodologies that determine how much the water system charges for wholesale service. Wholesale rate studies apply these methodologies based on expenditure projections (budget). Wholesale rates may be affected by actions that raise or lower the water system O&M or CIP budget. Outside of budget changes, there is very little flexibility to alter wholesale rates and revenues.

Table II-9 presents projected wholesale revenues for 2014 through 2020, and the annual change in to those revenues during the 2015 to 2020 rate setting period.

Table II-9³⁷
Wholesale Water Revenues, 2015 to 2020
(\$ millions)

	2014	2015	2016	2017	2018	2019	2020
Revenue	\$49.9	\$46.7	\$47.6	\$48.4	\$50.5	\$50.6	\$51.8
Annual Change		-\$3.2	\$0.9	\$0.9	\$2.0	\$0.1	\$1.2

Wholesale revenues are projected to add \$1.9 million in additional funding between 2015 and 2020, helping to offset the amount of revenue recovered through retail water rates.

³⁷ The revenues above exclude a contractual payment of \$12 million from Cascade Water Alliance, currently projected to be received in 2018. The financial projections in this baseline do not consider this payment due to uncertainty around its timing and its one time nature. As a large capital contribution, these funds could be used to pay capital expenses, thus reducing debt and benefitting ratepayers across the life of the assets in use. Alternatively, the payment could be used to reduce short term rate increases, providing a larger benefit to current ratepayers. A final determination on use of these funds will likely be proposed in the 2018 rate study.

Section II: Water Fund

II.D.1.b. Non-Rate Revenues

Other non-rate water revenues (unmetered revenues) are projected to add a net of \$3.7 million in additional funding between 2015 and 2020, as presented in Table II-10 below.

Table II-10
Other Non-Rate Revenues, 2015 to 2020
(\$ millions)

	2014	2015	2016	2017	2018	2019	2020
Capital Contributions & Tap Fees	\$5.5	\$6.4	\$6.6	\$6.8	\$6.9	\$7.0	\$7.2
Operating Fund Interest Income	(\$0.0)	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2
Charges for shutoffs & others	\$2.1	\$2.3	\$2.4	\$2.4	\$2.5	\$2.5	\$2.6
Rentals & Others	\$3.4	\$3.6	\$3.6	\$3.7	\$3.8	\$3.9	\$4.0
BABS Reimbursement	\$2.1	\$2.1	\$2.1	\$2.1	\$2.1	\$2.1	\$2.1
Billing leads & lags	\$0.4	\$0.4	(\$1.9)	(\$0.6)	\$0.1	\$0.1	\$1.1
Total Non- Rate Revenue	\$13.5	\$14.9	\$12.9	\$14.6	\$15.6	\$15.9	\$17.2
Change in Non-Rates Revenue		\$1.4	(\$2.0)	\$1.7	\$1.0	\$0.3	\$1.2

The largest contribution to increased revenues is in capital contributions and tap fees, which are projected to increase by \$1.6 million across the period due to improved economic activity and an increase in housing construction in particular. The larger increase in 2015 is relative to assumptions used when setting 2014 rates (as opposed to current 2014 projections). 2014 rates were set in 2011, during a period of more stagnant economic performance and uncertainty about when a sustained recovery would occur. In 2013, capital contributions and tap fees rebounded to levels similar to that of 2007 and 2008. This was due, in part, to pent up demand from the prior three years of little or no growth being released as economic activity continued to rise and stabilize.

Charges for shutoffs and rentals add \$0.5 million and \$0.6 million respectively. The primary growth in these non-rate revenue sources comes from inflation. The demand level for these services is fairly consistent from year to year, with rising costs increasing the amount charged for these services.

Billing leads and lags are year-end cash effects that adjust for differences in when an expense (or revenue) is recorded in SPU's financial systems³⁸ versus when the associated cash is paid (or received). These lags/leads result in an impact on rates when their sum dollar amount changes from year to year. The net increase of \$0.8 million in leads/lags presented in Table II-10 is primarily associated with changes in the timing of CIP billed to SPU from year to year.

³⁸ In general, revenues are recorded when billed and expenses when invoiced.

Section II: Water Fund

II.D.2. Demand Assumptions

With retail consumption dropping an average of 1.4 percent per year over the period from 2003 to 2012, a clear pattern of declining usage has emerged. However, the decline in usage is slowing as the nation and region emerge from the recession that began at the end of 2008. For the first time in several years, overall consumption in 2012 was higher than the previous year. Still, as Seattle area residents and businesses continue to embrace conservation, the downward trend is expected to continue. Consistent with the slower consumption drop of recent years, the baseline rates assume an annual drop of 1 percent in consumption for the period 2015-2020. This is based on current consumption and conservation trends which are tempered by economic forecasts for the region that predict expanded economic activity.

Table II-11
Projected Water Demand, 2015 to 2020

(M ccf)	2014*	2015	2016	2017	2018	2019	2020
Residential Consumption	10,494	10,351	10,253	10,145	10,067	9,984	9,922
Commercial Consumption	15,033	14,894	14,911	14,904	14,927	14,939	14,986
Retail Consumption	25,528	25,245	25,164	25,049	24,994	24,924	24,908
Wholesale Consumption	29,808	29,808	28,960	28,111	28,217	28,429	28,536
Total Billed Consumption	55,336	55,054	54,124	53,161	53,211	53,353	53,444

* Rate Study

Residential consumption has seen a steep decline since 2001, with volumes decreasing 23% from 2000 levels. The conservation ethic has taken a strong hold as customers have changed summer watering habits and installed water efficient appliances in their homes. As more customers continue to develop water efficient landscaping and install water efficient appliances, residential consumption is forecast to continue in decline.

Like residential customers, commercial customers have also decreased their usage drastically since 2001. Commercial consumption in 2013 was 21% lower than in 2000. While there has been adoption of water-friendly landscaping, the majority of conservation has come from the installation of efficient appliances.

Similar to the retail sector, wholesale consumption has also declined drastically since 2001. Since 2000, wholesale water purchases have declined by 21%. A portion of this decline can be attributed to the Saving Water Partnership (1% conservation program), an area-wide program developed in conjunction with other water utilities to increase efficiency and conservation in the region.

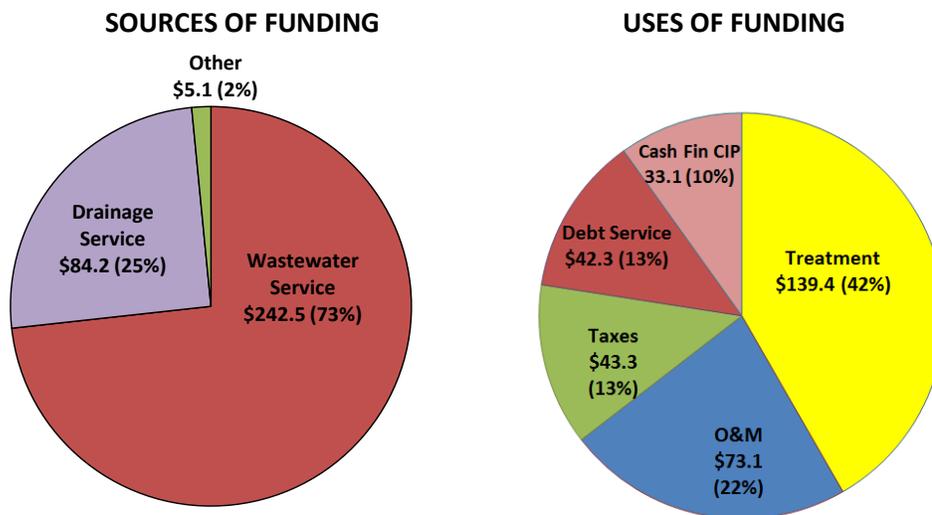
Section III. DRAINAGE AND WASTEWATER FUND

The City of Seattle operates an integrated storm and sanitary sewerage system. Prior to the creation of the Drainage and Wastewater Utility in 1989, rate payers funded wastewater services through user fees under the Seattle Sewer Utility. The City used tax revenues to fund annual drainage system operating expenses, while Local Improvement Districts (LIDs), developers, and general obligation bonds funded the development of the initial trunk drainage system. Since 1989, SPU has financed the acquisition, operation, and maintenance of Seattle’s drainage and wastewater system through the Drainage and Wastewater Enterprise Fund (DWF).

SPU jointly budgets, tracks, and reports all DWF operating and capital expenses. DWF also issues joint debt to finance drainage and wastewater capital projects. SPU funds most DWF expense through separate drainage and wastewater user charges, or “rates”. Established allocators are assigned to individual budget activities to establish separate costs of services for cost activity at the time rates are set.

The charts below present current sources and uses of funding for the drainage and wastewater system.

**Figure III-1
2013 DWF Sources and Uses
(\$ millions)**



Direct service rates account for about 98 percent of total DWF revenues. While drainage rates have grown more rapidly than wastewater rates, wastewater service revenues still account for nearly three-quarters of total fund revenues. Payments to King County for wastewater treatment are the single largest expense, accounting for 42 percent of the 2013 DWF use of operating revenues. Wastewater rates are the primary funding source for this treatment expense, although drainage rates paid for about five percent of the total cost in 2013 (see discussion of Combined System Shift below). Debt service and taxes account for about 28 percent of the revenue requirement and O&M for about 26 percent.

Section III: Drainage and Wastewater Fund

Combined System Expense

Stormwater runoff in the City is conveyed through one of three systems: (1) separate drainage pipes, also referred to as storm sewers, (2) ditches and culverts, or (3) combined stormwater and wastewater pipes. Prior to 2008, drainage rates funded the costs associated with the first and second conveyance systems, but wastewater rates entirely funded costs associated with combined pipes.

Beginning with 2008 rates, Council approved joint drainage and wastewater funding of combined system expense due to the fact that stormwater is conveyed to treatment plants in combined pipes and is also a major driver of combined sewer overflows during intense storm events. Drainage rate revenues now fund a portion of combined system capital and maintenance costs based on stormwater's share of average annual combined flows, as well as a portion of King County treatment expense³⁹. In addition to pipes, combined system infrastructure includes detention structures (to reduce combined sewer overflows) and pump stations.

To prevent a significant spike in drainage rates, the share of combined system expense funded by drainage rates was gradually increased between 2008 and 2014. Adopted 2014 rates assume that drainage pays its full allocation of 55 percent of related combined sewer overflow (CSO) CIP and O&M costs, 19 percent of combined pipe costs and six percent of treatment costs. In the 2014 rate study, the full drainage allocation of combined system expense totaled \$52.9 million, of which \$24.4 was for annual operating expense (\$8.4 million in treatment, \$2.9 million in O&M, \$13.1 in debt service) and \$28.5 million in annual capital expense.

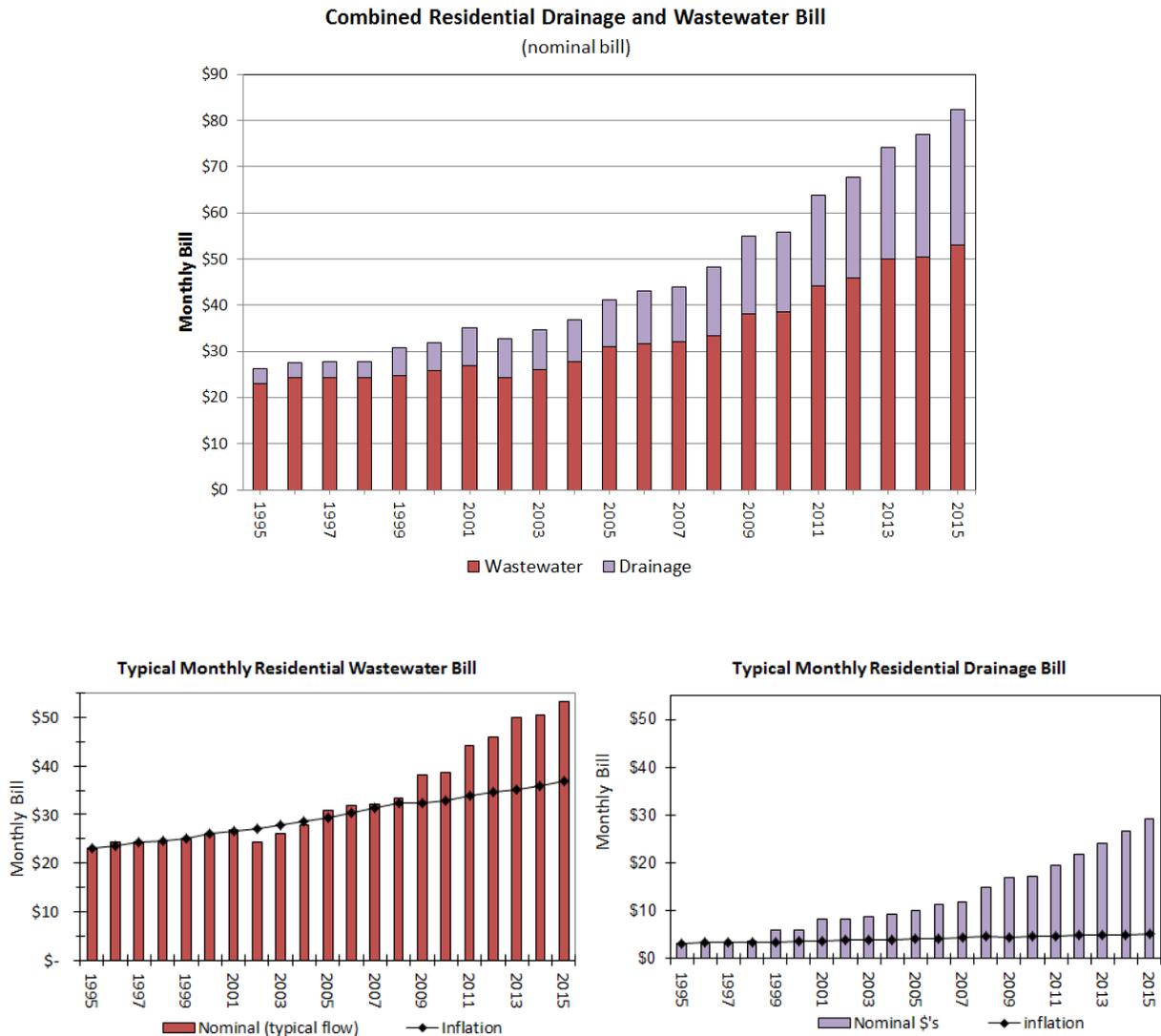
³⁹ Flows from combined pipes discharge to the King County Treatment System.

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III.A. “How we got here”: Historical Rate Driver Overview

The charts below present historical increases in both combined and separate typical residential drainage and wastewater bills since 1995.

**Figure III-2
Growth in Typical Residential Drainage and Wastewater Bills**



Although the wastewater bill is significantly larger in dollar terms, the drainage bill has grown more rapidly and exhibited consistent growth in real terms over a longer period of time for three principal reasons:

- **Smaller initial revenue base.** Larger rate increases are required to generate the same amount of revenue on a smaller versus larger revenue base. For example, in 1995 a one-percent rate increase generated \$0.1M in drainage revenues and \$1.0M in wastewater revenues. In 2015, a

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one-percent rate increase generates \$0.9M in drainage revenues and \$2.4M in wastewater revenues.

- **More growth in drainage capital requirements.** Capital spending increased significantly beginning in the late 1990s as the drainage utility expanded efforts in the areas of creek protection, landslide mitigation, water quality improvements and later, combined sewer overflows.
- **Combined system shift.** As previously described, a 2008 decision to begin to fund a portion of combined sewer system expense with drainage charges resulted in a significant expense shift from wastewater to drainage rates between 2008 and 2014⁴⁰. This shift coincided with significant increases in capital spending on CSOs.

The growth in wastewater bills has also outstripped inflation, albeit at lower levels than experienced by drainage. The increase in CSO spending, funding of improvements to aging wastewater infrastructure, declining demand and increases in King Country treatment expense contributed to real growth in the wastewater rate, particularly since 2008.

A more detailed description of drivers of both wastewater and drainage rate follows.

III.A.1. Capital Spending and Financing

III.A.1.a. Capital Program Overview

The City did not begin to make significant investments in the drainage and wastewater system until the late 1990s. Federal and environmental regulations drove much of these investments, including:

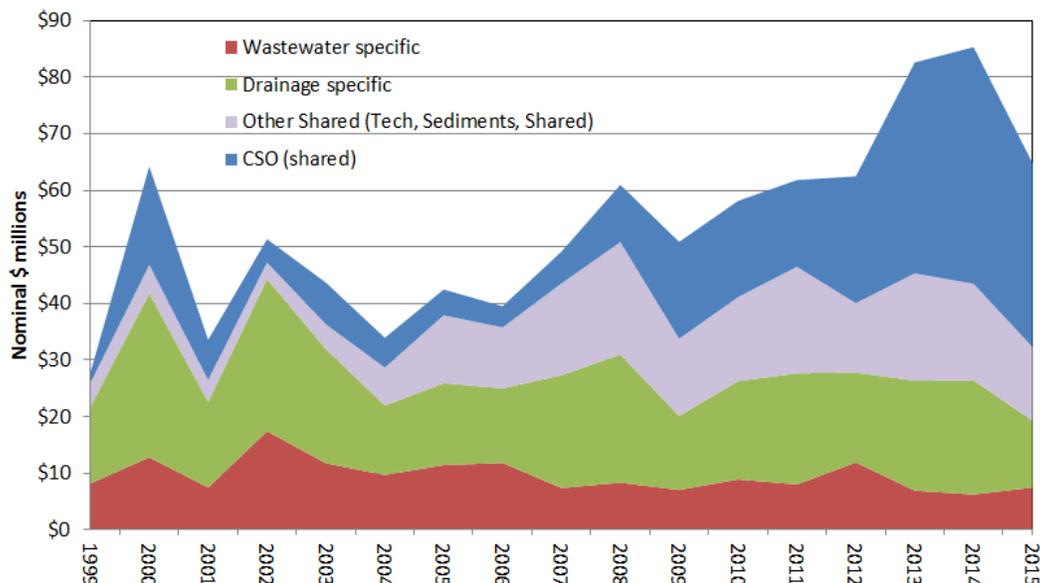
- The Clean Water Act;
- The Endangered Species Act;
- Maintenance of the City's National Pollutant Discharge Elimination System (NPDES) permit; and
- The National Oceanic and Atmospheric Administration (NOAA) Fisheries listings.

Figure III-3 provides an overview of Drainage and Wastewater Fund capital spending since 1999. A portion of capital spending is specific to each service line and a portion is shared.

⁴⁰Wastewater rates previously funded all combined sewer expense. See Combined System Expense under the introduction to Section III.

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**Figure III-3
DWF Capital Spending**



Note: 1999-2012 Actual Spending; 2013-2015 Rate Study Projected Spending

During the past 15 years, SPU has spent nearly twice as much on drainage-specific improvements as on wastewater-specific improvements. System maturity and regulation explain this trend. The wastewater system was established decades ago. Consequently, spending on **wastewater-specific** capital improvements has remained remarkably constant across the past 15 years, focusing primarily on rehabilitation of existing pipe and pump infrastructure.

Up until the mid-1990's, **drainage-specific** spending addressed insufficiencies in the trunk drainage system developed in the 1970s, focusing on alleviating major flooding problems that damaged property or affected public safety. The 1995 Comprehensive Drainage Plan expanded efforts for creek protection and water quality enhancement, areas which became even higher priorities when Chinook salmon were listed as a threatened species under the Endangered Species Act in the late 1990s. A major storm in 1996 caused extensive landslide damages to both city facilities and private properties, prompting increased spending to protect drainage infrastructure from future landslides.

Both drainage and wastewater revenues fund certain "**shared capital projects**" related to technology systems, environmental remediation of historical contamination, and other joint infrastructure projects such as updating utilities for the Alaska Way Viaduct replacement tunnel.

As previously mentioned, rates revenues for both service lines also fund improvements related to the combined sewer system. Stormwater conveyed in combined pipes is a major driver of combined sewer overflows during intense storm events. NPDES-related capital improvements for the control of combined sewer overflow discharges grew from 13 percent of DWF Capital expense in 2007 to a projected 50 percent by 2015 in the wake of a 2008 EPA consent decree to the City of Seattle.

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III.A.1.b. Financing of Capital Program

The DWF capital program is funded through a combination of current year operating revenues (cash-financing) and proceeds from periodic revenue bond issues (debt-financing). Annual debt service payments, typically spread over 30 years, represent the annual cost of repaying revenue bonds.

Prior to 2002, the DWF policy was to put “excess cash balances” towards the CIP, funding the balance of the program with debt. Growth in the DWF capital program beginning in the late 1990s, and the associated increase in debt outstanding, spurred a 2003 review of the fund’s financial policies and adoption of more conservative debt management policies, including funding 25 percent of annual capital expenditures with operating cash and 75 percent with debt.

Table III-1 presents the change in average annual CIP spending since 1999 and the associated impact on debt outstanding and annual debt service obligations. There has been a marked increase in average annual CIP spending, debt outstanding, and annual debt service since 2005, driven primarily by combined sewer overflow regulatory requirements.

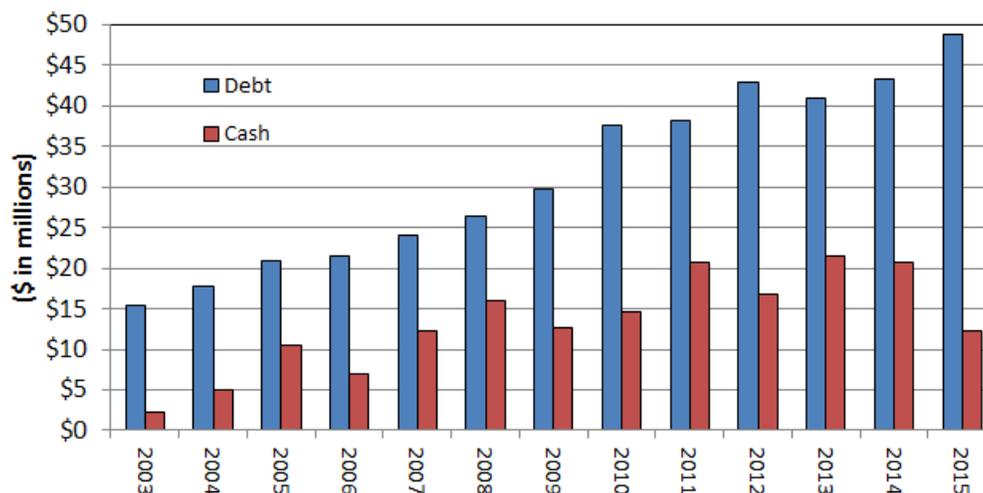
**Table III-1
DWF Actual and Projected Capital Spending and Debt Statistics
(\$ millions nominal)**

	1999-2005	2006-2012	2013-2015 (Rates Projection)
Avg Annual CIP Spending (nominal)	\$42.5	\$54.7	\$77.6
Debt outstanding end of period (nominal dollars)	\$294.9	\$540.5	\$664.8
Annual debt service end of period (nominal dollars)	\$21.0	\$43.0	\$48.9

Figures III-4 shows the incremental change since 2003 in annual debt service and cash financed CIP.

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Figure III-4
DWF Capital Financing Expense
(\$ millions)



The three-fold increase in annual debt service since 2003 combines continued payments on previous debt issues (most debt is paid over 30 years) with new debt issued to finance the ongoing and growing DWF capital program. As DWF must continue to pay on past debt until retired, with each new revenue bond issue the total annual debt service payments increases, unless certain issues are re-financed at a lower interest rate. This explains the generally steady increase in debt service which, in turn, has consistently put upward pressure on rates.

The increase in cash financing of the CIP between 2003 and 2007 reflects the 2003 change in financial policies which implemented a target of funding 25 percent of annual capital spending with operating revenues. Higher rates were required to fund annual increases in cash financing during most of this period. The higher annual levels of cash financing beginning in 2008 relate to higher capital spending during that period. Unlike debt service, annual cash financing is related only to spending in the current year. Therefore, fluctuations in annual cash financing levels typically reflect differing levels of annual capital spending. Looking at this latter period as a whole, changes in cash financing only minimally impacted rates as the net increase (sum of year-to-year increases in dollar terms) was close to zero.

Appendix A presents further examples of the inter-relationship between capital spending and rate increase.

III.A.2. Wastewater Treatment Expense

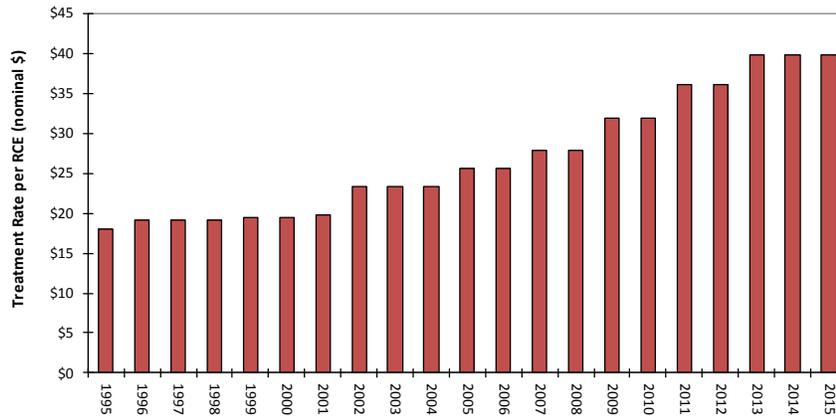
Payments to King County⁴¹ for treatment are wastewater's single largest expense component, accounting for an average of 77 percent of wastewater operations and maintenance expense since 2001. Figure III-5 presents the King County treatment rate from 1995 to 2015. King County typically

⁴¹ King County treats over 99 percent of the City's sewage. The Southwest Suburban Sewer District treats the remainder.

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increases its treatment rate once every two years, hence the stair-step profile in the figure below. Annual increases have risen significantly since 2002, largely due to costs associated with the design and construction of the County’s Brightwater Treatment Plant.

**Figure III-5
King County Treatment Rate per RCE⁴² 1995-2015**



	1996- 2000	2001- 2005	2006- 2010	2011- 2015⁴³
Annual Avg. Change in Treatment Rate	1.7 percent	5.6 percent	4.5 percent	4.5 percent

III.A.3. Demand Impacts

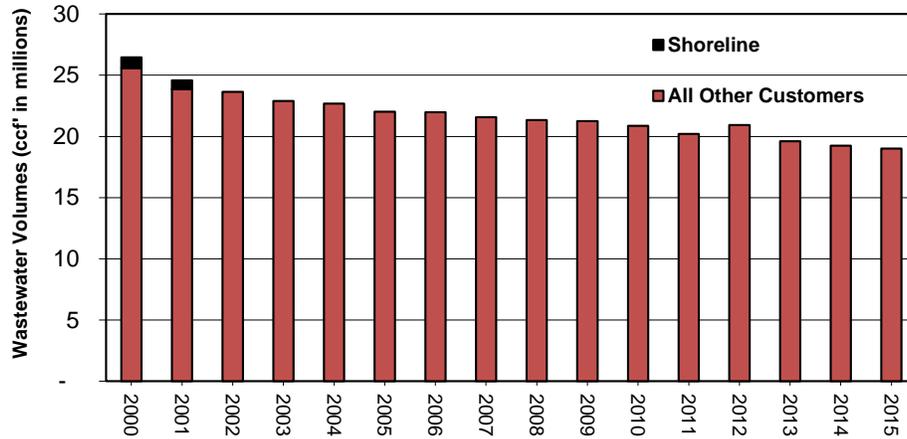
As with drinking water, a sustained decline in wastewater consumption (“units sold”) since the 2001 recession has placed upward pressure on wastewater rates. Wastewater volumes decreased by an average of 1 percent per year between 2004 and 2013. Taking into account the steeper declines between 2000 and 2003 associated with the recession and the 2001 drought, the average annual decline increases to 2.2 percent per year between 2000 and 2015 rates assumptions. Although wastewater usage is based on metered drinking water usage, the downward trend in wastewater consumption is smoother than that of water as it excludes “non-sanitary” use of residential water during peak summer usage months for purposes such as watering lawns and washing cars.

⁴² Residential Customer Equivalent

⁴³ The wastewater rate is the sum of a treatment rate and an SPU system rate component. The system component is adopted via the formal rate study process. Increases to the treatment rate component are adopted via a pass-through mechanism following the adoption of new rates by King County. King County has adopted treatment rates for 2013 and 2014 but not yet 2015. Consequently, the adopted SPU 2015 rate still assumes the treatment rate at 2014 levels. The rate may be adjusted when King County adopts a new rate through future pass through legislation. Considering an increase is likely, the 2011-2015 average presented above understates why the actual average will be but is still in sync with SPU adopted wastewater rates.

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Figure III-6
Wastewater Consumption 2000-2015⁴⁴



In order to generate required revenues, wastewater rates have to rise to offset reductions in demand since many costs do not vary with volume. There is very little expense elasticity relative to changes in wastewater volumes for several reasons, including:

- SPU system operating expenses are typically not capacity-driven, with maintenance focused on the existing network;
- SPU customer service expense is account, not demand driven;
- A large component of the rate base, existing debt service, is entirely fixed (with the exception of re-financing opportunities);
- New capital investments are typically not capacity-driven, with the exception of those related to combined sewers which are driven more by stormwater than wastewater volumes; and
- The King County treatment bill is volume-based for commercial customers but premise-based for residential customers, resulting in only about 51 percent of the total treatment bill (commercial portion) being volume-based.

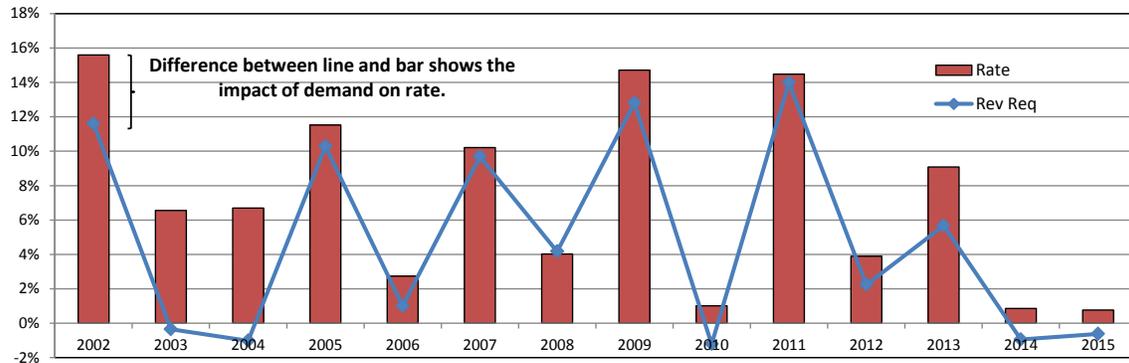
Figure III-7 shows the impact of demand on rates since 2002, the first year in which rates were set to account for the decline in demand which began with the 2000 recession. The **line** shows the percent of annual change in total expense recovered from rates that was assumed when rates were set (“rates revenue requirement”). The **bar** represents the annual change in the adopted wastewater rate. The blue line and red bar would be equal under a constant demand scenario. In the case of declining demand, rates must increase by more than the change in expense. In some years, expense

⁴⁴ In 2001, Seattle transferred various wastewater assets which serviced a group of Shoreline customers to the Ronald Wastewater District. About 3 percent of the 3.7 percent decline in demand between 2001 and 2002 is related to this transfer.

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actually declines from the prior year, but the rate needed to increase to account for lower consumption.

Figure III-7
Impact of Demand on Wastewater Rates



Although declining demand puts additional upward pressure on rates, as is also the case of water, it can also mitigate the impact of these rate increases on individual bills. If customers use less water, they will pay sewer charges on fewer units (albeit it at higher rates for each unit).

III.B. Industry Context

Wastewater and stormwater utilities face many of the same challenges as water utilities. Federal and state regulations and a lack of federal funding for required investments have resulted in local governments paying for costly improvements.

III.B.1. Industry Cost Drivers/Trends

III.B.1.a. Wastewater

In 1994, the Environmental Protection Agency (EPA) introduced a policy for controlling municipal sewer overflows from pipes that carry both stormwater and sewage. This policy has proven to be extremely expensive for cities, utilities, and their ratepayers. Utilities have spent billions of dollars to build pipelines and tanks and expand treatment capacity. In 2011, the Metropolitan St. Louis Sewer District signed a record \$4.7 billion Clean Water Act settlement to reduce the amount of raw sewage and polluted surface runoff entering local waterways. More than 40 communities have signed similar agreements with the EPA since 1998.⁴⁵

Due to the cost of these agreements and the fact that other pollution-control projects might result in greater water quality benefits, the EPA released an alternative strategy in June 2012 which provides

⁴⁵ "St. Louis Sewer District and U.S. Justice Department Reach Record \$4.7 Billion Clean Water Act Settlement ". *Circle of Blue*. 8 August 2011.

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communities with more flexibility in meeting water quality goals. The voluntary process also encourages use of green infrastructure, natural water-absorbing systems such as wetlands and grass roofs, that could reduce compliance costs in the long run. This integrated framework allows a city to choose the sequence in which it takes on projects. The City of Seattle negotiated a first-of-its-kind proposed agreement with the EPA under this alternative strategy that allows the City to use the most cost-effective and environmentally-beneficial projects to control and treat both stormwater and sewage.

III.B.1.b. Stormwater

The rate of implementation of storm-water utilities and the growth rate of stormwater user fees have coincided with three periods of regulatory pressure:

1. 1970s: The implementation of the Clean Water Act and increased focus on local floodplain management regulations.
2. Early 1990s: The issuance of Phase I NPDES stormwater permits for large cities and counties with over 100,000 people served by municipal separate storm sewer systems (MS4s).
3. Early 2000s: The issuance of NPDES MS4 permits to the smallest regulated size class, also known as Phase II jurisdictions with populations over 50,000 in urban areas.

A 2012 Black and Veatch Stormwater Utility Survey⁴⁶ outlines additional industry cost drivers and trends, including:

- **Lack of formalized structure in addressing permit requirements.** Less than 20 percent of survey respondents have any type of “integrated planning,” even though 88 percent indicate that they are required to comply with the NPDES permit requirements and 82 percent have to comply with the MS4 permit requirements.
- **Insufficient funding for basic maintenance and infrastructure.** In 2002, 53 percent of the utilities surveyed indicated that available funding met most of their needs. In the 2012 survey, only 36 percent of the utilities reported that funding is adequate to meet most of their needs. Ten percent responded that funding was not sufficient to meet even the most critical needs of maintenance and routine infrastructure replacement, flood control and capacity management.
- **Preponderance of wastewater funding for CSO mitigation costs.** In cities with combined sewer systems, 36 percent of respondents did not recover any of their CSO mitigations costs via the stormwater utility, and 45 percent recovered 20 percent or less of their CSO costs via the stormwater utility.
- **Limited credit programs.** Only 37 percent of respondents have a stormwater credit program.
- **Increasing use of Geographic Information Systems (GIS) in development of stormwater fees.** More utilities are using technology to determine stormwater fees for individual properties as the cost for acquiring impervious surface data has decreased and the quality of aerial ortho

⁴⁶ “2012 Stormwater Utility Survey”. *Black & Veatch*. 2012.

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imagery has increased. In 2005, only 42 percent of the respondents indicated using GIS and aerial ortho imagery as the principal sources of determining impervious areas, whereas more than 65 percent of the utilities now report using these technologies.

- **Legal challenges.** Nearly a quarter (24 percent) of utilities have faced a legal challenge to their stormwater fees.

Overall, SPU is ahead of the trends that many utilities are just now addressing. Formalized planning, ongoing support of infrastructure investments, and implementation of policies that more closely align rates with underlying cost of service have been drivers of drainage rates over the past several years.

Unlike the majority of survey respondents, **SPU has a well-established integrated stormwater management program that** has evolved over several decades. It is designed to protect water quality, reduce pollutant discharges, satisfy Clean Water Act requirements, and meet State requirements to use all known, available and reasonable methods to prevent and control water pollution.

The first Phase I MS4 permit issued by the Washington State Department of Ecology (“Ecology”) in July 1995 included the City of Seattle. To meet the requirements of the 1995 Permit, the City prepared a Storm Water Management Plan that was approved by Ecology in 1997. The City has provided updates on stormwater management activities to Ecology in annual reports submitted since 1996.

With the support of City Council, **SPU has not only committed significant resources to supporting the maintenance and infrastructure needs of its stormwater system but also invested in the protection of local waters impacted by the drainage system.** As previously described in section III.A.1, Capital Spending and Financing, SPU has spent nearly twice as much on drainage-specific improvements as opposed to wastewater-specific improvements over the course of the past 15 years. The 1995 Comprehensive Drainage Plan expanded drainage efforts beyond flooding problems and major drainage trunks to include creek protection and water quality enhancement.

Again, in contrast to the majority of other impacted utilities, **SPU funds a significant portion (55 percent) of CSO mitigation costs with stormwater fees.** Prior to 2008, these costs were funded entirely with wastewater fees. In its 2006 Drainage Rate and Incentive Methodologies Report, SPU recommended sharing combined wastewater system costs between drainage and wastewater based on average annual flows of wastewater and stormwater through the City system as stormwater is a major driver of overflow events. This new funding approach was gradually implemented between 2008 and 2014, with drainage rates receiving their full allocated cost share starting in 2014.

SPU is in the minority of surveyed utilities which provide credits for privately-owned systems that reduce stormwater flow and/or provide water quality treatment. Examples of stormwater systems are structures such as vaults, rain gardens, permeable pavements and infiltration systems that provide water quality treatment and/or slow down stormwater flow from impervious surfaces like rooftops, driveways or walkways. SPU continues to evaluate and expand its Stormwater Credit Program to recognize new situations that may warrant some type of reduction to a customer’s drainage bill.

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SPU implemented a new drainage rate design in 2008 to improve the equity of drainage charges. The rate structure, which introduced additional rate tiers, more accurately reflects the differences in customers' property characteristics, and therefore, their impact on the drainage system. The new rate structure utilized GIS and ortho-photo data to capture the property characteristics of parcels. **SPU continues to use GIS to evaluate and implement enhancements to its stormwater fee structure and credit program.**

To date, SPU has not experienced any major legal challenges to its rate structure. Some federal government properties did not pay their SPU drainage fees based on the argument that they are a tax, not a fee. However in January 2011, President Obama signed into law S. 3481, which required the federal government to pay its share of local stormwater management fees. As a result, the federal government is now paying nearly 100 percent of its SPU drainage fees. SPU's only other challenges to its drainage fees have been in terms of the application of the fees.

III.C. Baseline Spending Assumptions

Baseline spending assumptions represent the level of spending required to maintain existing service levels plus meet firm regulatory requirements. "*Maintaining existing service levels*" means that *actual* service quality (as opposed to *targeted* service quality) neither degrades nor improves through 2020. Baseline spending assumptions DO NOT⁴⁷:

- Adjust for any anticipated, future efficiencies;
- Prioritize existing expenditures and eliminate or reduce lower priority projects/programs;
- Include capital projects in the six-year Capital Improvement Program that are new efforts not required by regulators or are not necessary to maintain existing service levels; and
- Include new initiatives to address gaps in meeting SPU's strategic objectives.

Section III.C. discusses operating expenditures and the level of capital expenditures directly funded with baseline rates revenues and other non-rates revenue funding sources⁴⁸ further discussed in Section III.D. The majority of capital expenditures are directly paid for with proceeds from the sale of revenue bonds and do not impact the baseline rates revenue requirement discussed in Section III.D on a dollar-for-dollar basis. Instead, capital spending impacts the baseline rates funding requirement in two areas: a) debt service payments on revenue bond borrowing, and b) financing of a portion of current year capital expenditures with rates and non-rates revenues (cash financed CIP)⁴⁹.

⁴⁷ Increases or reductions to spending associated with the bulleted exclusions are addressed in the strategic plan rather than the financial baseline.

⁴⁸ This includes other current year operating and non-operating revenues, as well as prior year revenues remaining in operating cash balances.

⁴⁹ See Section III.C.2 and Appendix A for further information on the impact of capital spending on rates.

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Sub-section III.C.1. includes a summary of assumed service levels used in developing baseline spending assumptions.

Sub-section III.C.2. details current (2014) operating expenditures as well as the level of capital expenditures assumed to be funded with rates and non-rates revenues. These represent spending levels required to support current service levels. **Sub-section III.C.3.** follows with the same information for 2015 through 2020, including a discussion of inflation and other assumptions underlying increases in spending over 2014 levels.

Sub-section III.C.4. provides an overview of total 2015 to 2020 baseline capital spending levels required to maintain current service levels and meet regulatory requirements. Whereas Sections III.C.2 and III.C.3 note the level of capital expense funded with rates and non-rates revenues, this section defines TOTAL projected capital spending, including the portion paid for with revenue bond issue proceeds. In addition this section provides a description of the work done under the capital improvement program.

III.C.1. Current Service Levels

Table III-2 and Table III-3 present information on the service levels assumed in developing baseline spending.

**Table III-2
Wastewater Current Service Level Targets and Actual Performance**

Service Levels	Target	Mandatory?	Usual Performance	Comments
1. Limit SPU-related sewer backups to no more than 4 per 100 miles of pipe per year	max 4/100 miles pipe (60 per year)	Yes	Between 2-4 backups per 100 miles pipe per year	Meeting targets. This is a CSO Consent Decree requirement. As such, there is no flexibility in the target level and little ability to reduce costs. However, we are exploring ways to increase efficiencies so that as more assets are constructed there is a reduced need to add commensurate staff.
2. Limit storm-driven sewer overflows to an average of one untreated discharge per overflow site per year	max 1/site/year (89 total per year)	Yes	355 in 2012	Working to meet target. CSO Consent Decree and Stormwater NPDES permit driven. We are regularly exploring the most cost effective means to achieve target (e.g., retrofit program).
3. Eliminate dry-weather sewer overflows by 2014.	Zero	Yes	Zero	Generally meeting target. CSO Consent Decree and Stormwater NPDES permit driven. No flexibility in target, but are regularly exploring the most cost effective means to achieve target.

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Service Levels	Target	Mandatory?	Usual Performance	Comments
4. Respond to 90% of high priority wastewater problems within 1 hour	1 hour max	No	71-98% in last 3 months of 2012 (for DWW)	Generally meeting target. Not a regulatory requirement so there is flexibility in the service level. We could explore the impacts of lowering response targets – would likely be some combination of cost reductions in first response crews, and potential increases in claims costs.
5. 80% of safety-related wastewater problems resulting in a service interruption will have service reinstated within 6 hours	80 percent min	No	100% in last 3 months of 2012 (for DWW)	Generally meeting target. Not a regulatory requirement so there is flexibility in the service level. We could explore the impacts of lowering response targets – would likely be some combination of cost reductions in DWW crews, and potential increases in claims costs.

**Table III-3
Drainage Current Service Level Targets and Actual Performance**

Service Levels	Target	Mandatory?	Usual Performance	Comments
1. Meet NPDES municipal stormwater permit requirements.	Meet requirements	Yes	Meeting requirements	Meeting the permit requirements (89 of 89 in 2011). Limited flexibility in how we achieve requirements and in our ability to reduce costs.
2. Limit SPU drainage system-related interior flooding to 0.1% of customers	0.1% max (170 customers per year)	No	< 0.1 percent	Meeting target. However, note that we are using a surrogate measure – claims. There is no regulatory requirement; and it could be changed. Unknown whether there would be cost savings from lower target levels, as there would be an increase in claims costs.
3. No critical services are inaccessible due to flooding, except during extreme storm events (i.e., events exceeding the 25-year, 24-hour design storm event)	Zero	No	Meeting target	Meeting target almost all the time, although there have been times, that a road (e.g. 1 lane of Aurora Bridge) has been closed due to flooding from a maintenance issue (inlet clogging). There is no regulatory requirement and so the service level could change, with possible potential savings.

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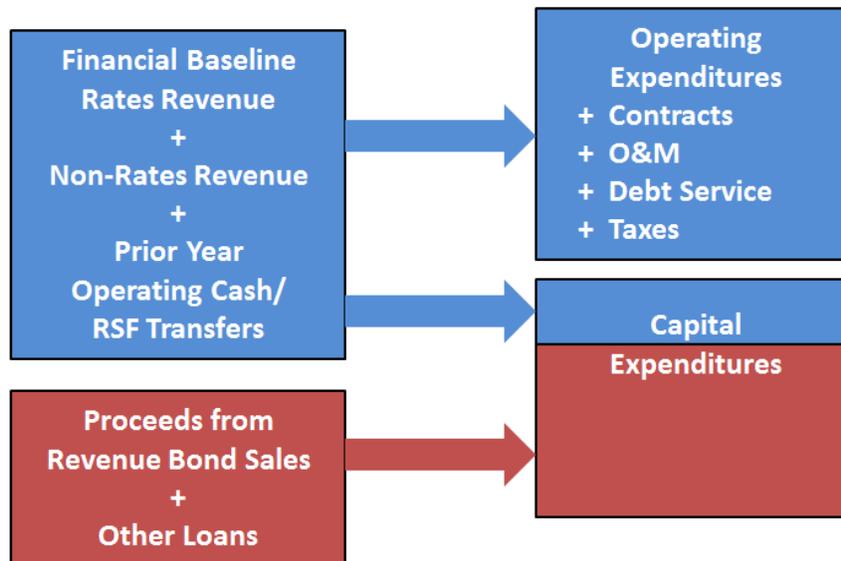
Service Levels	Target	Mandatory?	Usual Performance	Comments
4. Respond to 90% of high priority drainage problems within 1 hour	1 hour max	No	71-98% in last 3 months of 2012 (for DWW)	Generally meeting target. Not a regulatory requirement so there is flexibility in the service level. We could explore the impacts of lowering response targets – would likely be some combination of cost reductions in first response crews, and potential increases in claims costs.
5. 80% of safety-related drainage problems resulting in a service interruption will have service reinstated within 6 hours	80% min	No	100% in last 3 months of 2012 (for DWW)	Generally meeting target. Not a regulatory requirement so there is flexibility in the service level. We could explore the impacts of lowering response targets – would likely be some combination of cost reductions in DWW crews, and potential increases in claims costs.

III.C.2. Overview of 2014 Spending Requirement (Use of Drainage and Wastewater Revenues)

The majority of annual baseline drainage and wastewater rates revenues are used to fund operating expenditures. These revenues also directly fund a portion of current year capital expenditures (cash-financed CIP). As detailed in Appendix A, apart from the cash-financed portion of the CIP, rates revenues do not directly fund capital expense but are used to repay debt on revenue bond proceeds used to fund both current year and prior year(s) capital expenditures. Figure III-8 depicts the sources and uses of operating and capital funding.

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Figure III-8
Operating and Capital Funding Sources and Uses



The Drainage and Wastewater lines of business share common capital and operating budgets. However, as SPU collects separate rates for these two distinct service lines, the department must develop separate cost of service bases. The overall DWF budget is allocated between the two lines of business for rate-setting purposes using the following general tenets:

- Work entirely dedicated to one service type, such as drainage pipe cleaning, is allocated 100 percent to the applicable line of business;
- Shared administrative expense is allocated between drainage and wastewater using actual labor expense for the activities being supported or administered;
- Debt service expense is allocated based on the net book value of assets built; and
- Combined system expense is allocated based on average stormwater and sewer flows, as further described in the introduction to Section III.

Figure III-9 below presents a breakdown of the projected 2014 Drainage and Wastewater Fund's Use of Revenues⁵⁰. Payments to King County and the Southwest Suburban Sewer District⁵¹ are the single largest DWF operating expense, accounting for 41 percent of total revenue use. Operations and maintenance expense is the next largest expense (27 percent) followed by capital financing (19 percent for cash and

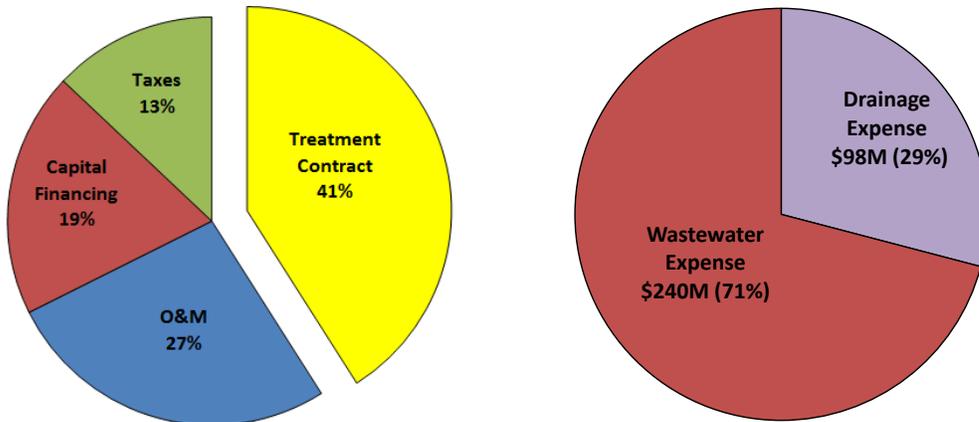
⁵⁰ Revenues funding 2014 expenditures include current year rates and non-rates revenues and may also include prior year operating revenues transferred from the Rate Stabilization Fund or otherwise carried over in operating cash balances.

⁵¹ King County treats over 99 percent of the City's sewage. The Southwest Suburban Sewer District treats the remainder.

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debt service) and tax payments (13 percent). Wastewater expense accounts for 71 percent of the total funding requirement and drainage expense for 29 percent.

Figure III-9
Drainage and Wastewater Fund 2014 Spending Requirement
Use of DWF Revenues
(\$338 Million)



Figures III-10 and III-11 present breakdown for the separate Wastewater and Drainage allocations of the combined budget which are used for rate-setting purposes.

Figure III-10
Wastewater 2014 Spending Requirement

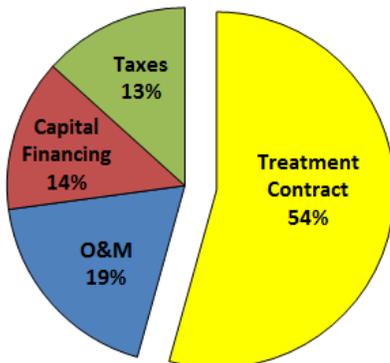
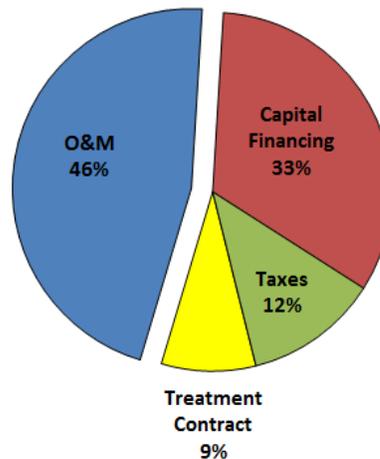


Figure III-11
Drainage 2014 Spending Requirement



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	2014 (\$M) % of Total			2014 (\$M) % of Total	
Treatment Contract	\$130.0	54%	Treatment Contract	\$8.4	9%
O&M	\$44.4	19%	O&M	\$45.5	46%
Capital Financing	\$33.1	14%	Capital Financing	\$32.5	33%
Taxes	\$31.9	13%	Taxes	\$11.9	12%
Total baseline	\$239.5	100%	Total baseline	\$98.2	100%

The figures above demonstrate two key points:

- The wastewater spending requirement is significantly larger than that of drainage, in fact 2.4 times greater in 2014.
- There are distinct differences in the composition of the two spending requirements.

Payments to King County for wastewater treatment dominate the wastewater expense base, making up about 54 percent of overall 2014 spending requirement. SPU O&M (19 percent), taxes (13 percent) and capital financing (14 percent) account for much lesser shares. SPU O&M dominates the drainage spending requirement (46 percent) while capital financing contributes a significant share (34 percent), and taxes (12 percent) and King County treatment expense (8 percent) much lesser shares.

Although capital financing and O&M represent much larger shares of the drainage spending requirement in percentage terms, in dollar terms they are nearly identical between the two service lines, totaling \$77.5M for wastewater and \$78.7M for drainage in 2014. The primary difference between the two spending requirements is the allocation of King County treatment expense for which wastewater revenues fund a share larger than the entire drainage revenue requirement.

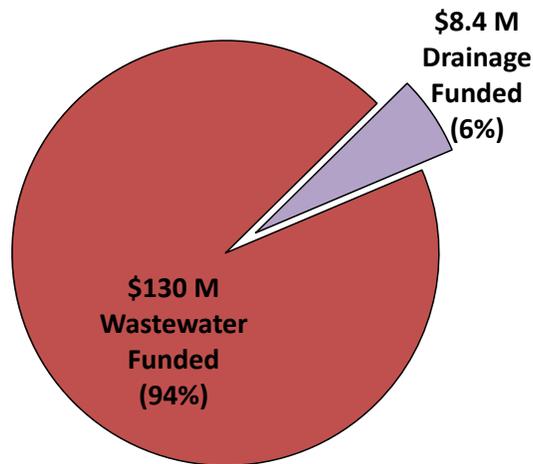
III.C.2.a. Wastewater Treatment Contract Expense

Payments for wastewater treatment, projected to be \$138.3 million in the 2014, are the single largest Drainage and Wastewater Fund expense, accounting for 41 percent of the 2014 total DWF funding requirement and 44 percent of the DWF projected operating budget⁵². Both wastewater and drainage rates fund this expense, although wastewater funds a much larger share, as presented in Figure III-12 below.

⁵² Although operating revenues are used to fund a portion of current year capital expense, cash financing of the CIP is not included in the operating budget.

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Figure III-12
2014 Baseline DWF Wastewater Treatment Expense
Funding by Line of Business



Beginning in 2008, drainage and wastewater rates began to share funding of all combined sewer expense, costs previously financed entirely by wastewater rates (see Combined System Expense in the introduction to Section III). Wastewater treatment expense is included in this funding shift as the costs associated with funding King County combined sewer overflow structures are included in the cost basis used to develop the King County treatment rate. As with other combined system costs, the shift in treatment expense from wastewater to drainage rate bases was implemented gradually over a number of rate periods. 2014 is the first year in which drainage rates pay for their full allocation of six percent of treatment expense.

III.C.2.b. SPU O&M Expense

As Figure III-9 in the introduction to Section III.C.2 shows, operations and maintenance (O&M) expenses account for 27 percent of the 2014 drainage and wastewater spending requirement. The majority of these costs cover branch O&M -- the costs of running the department's operations and corporate activities (Field Operations & Maintenance, Customer Service, Utility Systems Management, Project Delivery, Human Resources & Service Equity, Finance & Administration, and Corporate Strategies & Communications). A smaller portion pays for costs outside of the branches' control, such as cost-allocated payments to other city departments, space rent, claims, and contingencies for emergencies.

Within the drainage and wastewater branch O&M, personnel costs (wages, benefits, overtime, temporary staffing, etc.) comprise the largest portion of expenditures at roughly 72 percent. The next largest cost center is services, which includes consultant and other outside services (e.g. financial auditing, security, printing, etc.), inter-departmental payments for direct services (e.g. customer billing

Section III: Drainage and Wastewater Fund

system services from City Light), and payments to other government agencies and non-profits organizations (e.g. street sweeping services from Seattle Department of Transportation). The remaining branch O&M costs are composed of fleet, supplies, inventory, maintenance, utility and other like expenses.

The activities performed in the drainage and wastewater branch O&M can also be characterized as “mandatory”, “core” or “value-added”. Activities that are considered mandatory or core are essential to directly or indirectly providing basic utility services and/or meeting regulatory requirements. Examples include meeting the Consent Decree and stormwater NPDES requirements, operating and maintaining the drainage and wastewater systems, monitoring new assets and structures, and operating the customer contact center. Activities that are considered “value added” are more discretionary and enable us to operate more effectively, efficiently, and sustainably, and/or add value to the organization and our customers. Examples include climate adaptation, education and outreach, asset management, and service equity activities.

III.C.2.c. Capital Financing Expense (Debt Service and Cash Financed CIP)

The Drainage and Wastewater Fund pays for current year capital expenses through a combination of DWF revenues (cash-financed CIP) and proceeds from periodic revenue bond issues and a small amount of Washington State Public Works low-interest loans (debt-financing). Annual debt service payments of principal and interest represent the annual cost to the fund of issuing revenue bonds.

Financing a portion of the CIP with revenues provides greater flexibility to the utility by reducing the amount of debt that must be issued and associated long term debt service obligations. Debt-financing, however, is important to inter-generational equity as it assigns a portion of cost to future ratepayers who will benefit from long-lived assets.

Table III-4 presents projected funding sources for current year 2014 capital spending, as well as 2014 Capital Financing Expense by type. The CIP funding sources shows where the cash comes from to pay for current year (2014) CIP expenses. The ratio of cash-to-revenue bond financing is established by financial policies, as described further in this section. So, the “percent of cash financed CIP” refers to the percent of total current year CIP expense that is funded with operating revenues (as opposed to revenue bonds or other “borrowed” sources).

The capital financing expense shows annual payments made from DWF revenues to pay for current year capital expense (cash-financed CIP) and debt payments on current/prior year revenue bond issues. Total capital financing expense (as opposed to capital spending) is the amount that must be funded through the annual baseline funding requirement.

Section III: Drainage and Wastewater Fund

**Table III-4
Drainage and Wastewater Fund 2014 Capital Funding Sources and Capital Financing Expense**

<u>2014 CIP Funding Sources</u>			<u>2014 DWF Capital Financing Expense</u>		
	<u>2014 (\$M) % of Total</u>			<u>2014 (\$M) % of Total</u>	
Revenue Bond Proceeds	\$63.5	72%	Debt Service Payments	\$41.1	63%
Operating Revenues	\$24.5	28%	Cash-financed CIP	\$24.5	37%
Total 2014 CIP Spending	\$88.0	100%	Total 2014 Capital Financing	\$65.6	100%

On aggregate, 2014 baseline spending assumes that drainage and wastewater will each pay very similar shares of total capital financing expense, with wastewater revenues paying a total of \$33.1 million and drainage revenues a total of \$32.5 million.

Debt Service

Debt service is the annual principal and interest payment on ALL outstanding revenue bonds issued by the Drainage and Wastewater Fund. Debt payments for the Fund are typically spread over 30 years. So total annual debt service expenditures is the sum of annual payments for all prior year outstanding bond issues, as well as debt service on any current year issuances, if applicable.

In 2014, the Drainage and Wastewater Fund will make cumulative debt service payments of \$41.1 million on revenue bonds, the oldest issued beginning in the early 1990s⁵³. SPU expects to issue up to \$123 million in new revenue bonds in 2014.

Drainage rates will fund 63 percent of these debt service payments and wastewater rates will fund 37 percent. As noted earlier, DWF debt service expense is allocated between drainage and wastewater based on the net book value of each service line's assets. Most drainage and wastewater assets have a life in excess of the 30-year debt repayment schedule. Therefore, it is reasonable to assign lower debt costs to older assets with a lower net book value (due to depreciation). Drainage assets are generally much newer than wastewater assets, with the exception of new CSO structures whose costs are shared between drainage and wastewater.

Cash-Financed CIP

Cash-financed CIP are revenues used to fund a portion of current year capital expenditures. The planned level of cash financing of the CIP is typically determined by adopted financial policies.

DWF financial policy targets, adopted by City Council in 2003, specify that 25 percent of annual DWF capital expenditures be funded with operating cash. Each line of business may contribute a differing percentage, as long as 25 percent of total DWF capital spending is financed with cash. This target is implemented as a four-year rolling average to better address spikes in annual capital spending (i.e. DWF

⁵³ All bonds issue prior to 2006 have been subsequently re-financed with later issues.

Section III: Drainage and Wastewater Fund

may fund more than 25 percent in years where there is lower capital spending and less than 25 percent in years with higher spending to better smooth actual dollars funded from year to year).

In 2014, DWF expects to fund \$24.5 million of capital expense with current year revenues. This represents 28 percent of total projected CIP spending of \$88 million. As noted in the introduction to this section, proceeds from revenue bond sales are used to fund the remaining 72 percent of CURRENT YEAR capital expenditures.

See Appendix A for further detail on the funding flow for capital and operating expenditures.

III.C.2.d. Taxes

The Drainage and Wastewater Fund pays three different taxes on various sources of revenue. The largest tax is the City of Seattle utility tax, with rates of 12 percent on wastewater and 11.5 percent on drainage sale revenue and most other retail services. In 2014 this tax is projected to total \$39.3 million. The State of Washington levies two taxes on various revenues, the state utility tax and state B&O tax. These two taxes are rarely levied on the same activity, preventing double taxation. In 2014, State Taxes are projected to total \$4.4 million.

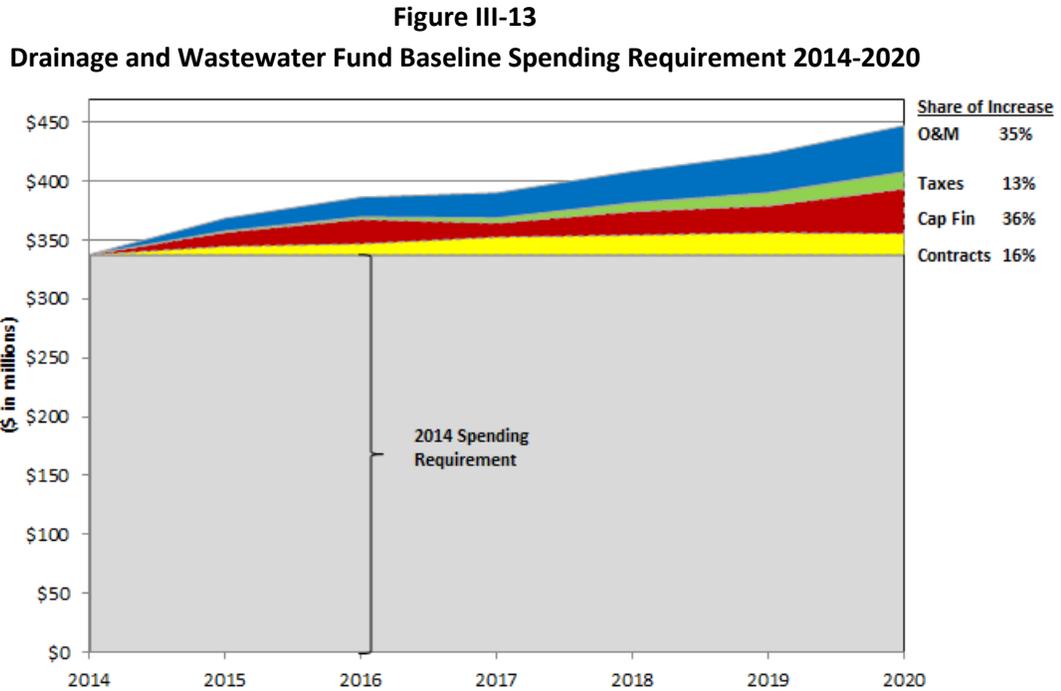
III.C.3. 2014-2020 Baseline Spending Requirement (Use of Revenues)

This section focuses on SPENDING levels underlying the baseline FUNDING requirement between 2015 and 2020. These funding levels assume:

- 2014 proposed budgetary spending, plus
- Inflationary adjustments, plus
- Other discrete changes to costs to maintain existing service levels plus meet regulatory requirements

Figure III-13 shows the composition of increases to the Drainage and Wastewater Fund spending requirement between 2015 and 2020 which is composed of inflationary adjustments to the 2014 proposed budget plus other discrete changes to costs to maintain existing service levels and meet regulatory requirements.

Section III: Drainage and Wastewater Fund

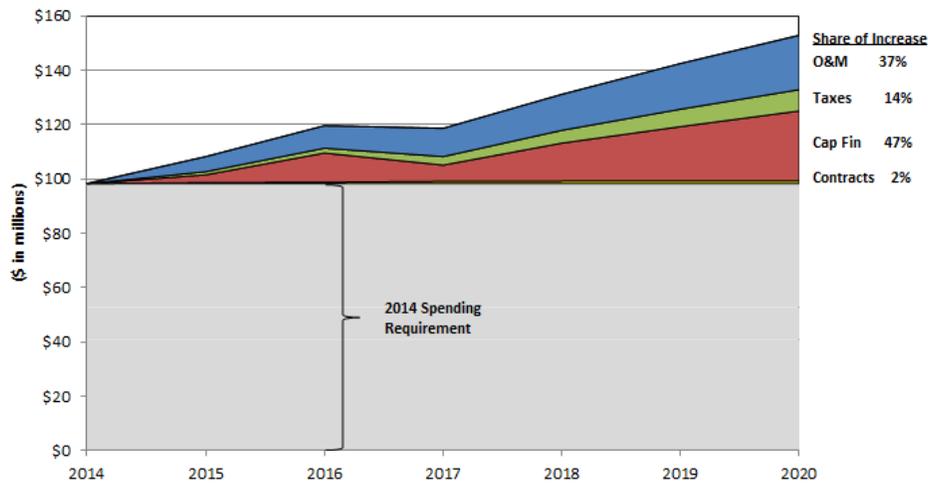


At the Fund level capital financing and O&M account for 71 percent of total spending increases. Although treatment contracts are the largest component of the spending base, spending in this area grows more slowly than other O&M, accounting for 16 percent of total increase. By 2020, while still the largest expense component, treatment contracts' share of total spending declines to 35 percent (from 41 percent). The shares of both O&M and capital financing grow, from 27 percent to 29 percent for the former and from 19 percent to 23 percent for the latter. Taxes remain constant at 13 percent of spending across the period.

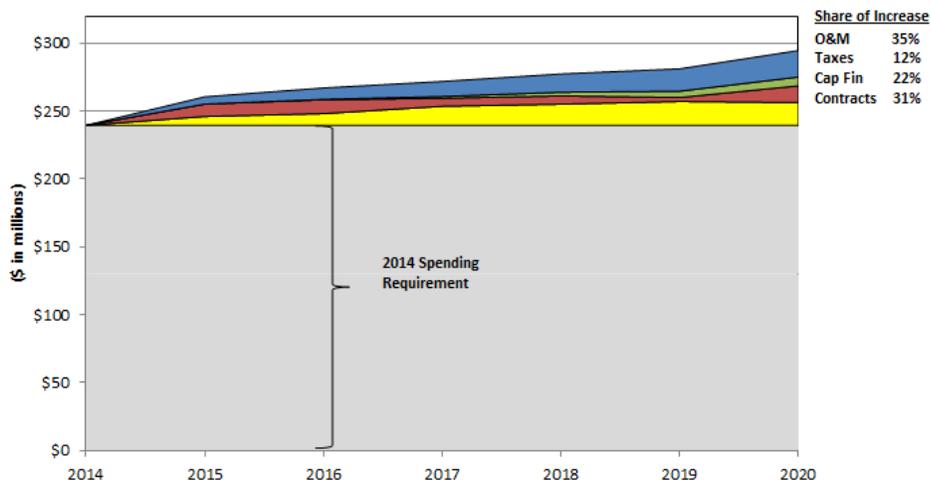
Spending increases at the line of service level show some similarities but also retain some distinct differences, as demonstrated in Figures III-14 and III-15 below.

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**Figure III-14
Drainage Spending Requirement 2014-2020**



**Figure III-15
Wastewater Spending Requirement 2014-2020**

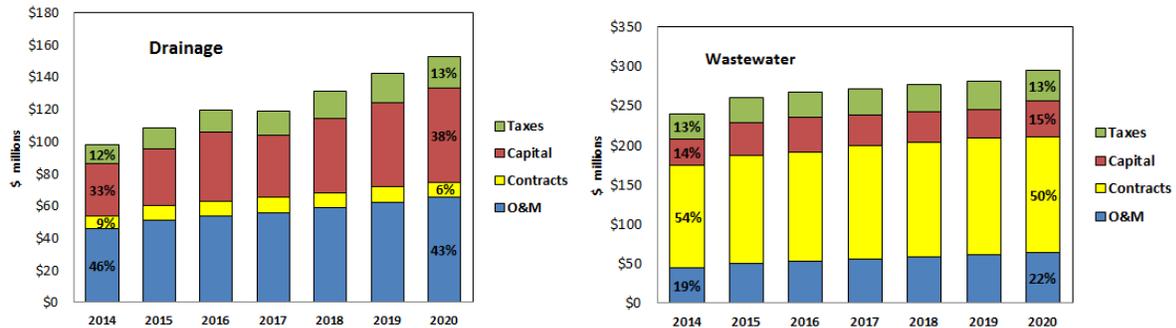


Capital financing accounts for almost half of the growth in drainage spending at 47 percent of total growth but only 22 percent of wastewater increases, primarily due to much higher drainage debt service expense. DWF debt service expense is allocated between drainage and wastewater based on net book value of the assets of the two service lines. Drainage assets are generally newer than wastewater assets (and so have a higher net book value). In addition, drainage rates fund a majority of the largest planned capital projections (including a 55 percent share of combined sewer overflow projects), further discussed in the Executive Summary. The percentage increase in total spending attributable to O&M and taxes is similar across both service lines, at 35 to 37 percent for O&M and 12 to 14 percent for taxes. Treatment contract expense is a much larger component of total wastewater increases (31 percent) than drainage increases (two percent), as drainage pays only six percent of treatment expense.

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Figure III-16 provides a different look at planned Drainage and Wastewater spending, showing the components of total expense, by year, between 2014 and 2020. This figure also shows the percentage each component represents of the base (2014) and in 2020.

Figure III-16
Components of Drainage and Wastewater Spending Requirements, 2014-2020
 (\$ millions)



	2014	2020	2015-20 Increase	% of 2014 Increase	Avg Annual % Increase
Taxes	\$12	\$20	\$8	14%	8.8%
Capital	\$32	\$58	\$26	47%	10.2%
Contracts	\$8	\$9	\$1	2%	2.0%
O&M	\$45	\$65	\$20	37%	6.2%
Total	\$98	\$153	\$55		7.6%

	2014	2020	2015-20 Increase	% of 2014 Increase	Avg Annual % Increase
Taxes	\$32	\$38	\$7	12%	3.2%
Capital	\$33	\$45	\$12	22%	5.4%
Contracts	\$130	\$147	\$17	30%	2.0%
O&M	\$44	\$64	\$19	35%	6.2%
Total	\$239	\$295	\$55		3.5%

O&M remains the largest component of the drainage spending requirement throughout the period, although its share declines from 46 percent of total spending in 2014 to 43 percent in 2020. As noted earlier, capital financing expense is a major driver of drainage expense, with its share increasing from 33 percent of spending in 2014 to 38 percent by 2020. Contract expense continues to be the largest part of the wastewater spending base, although it declines from 54 percent of total spending in 2014 to 50 percent by 2020. O&M, the second largest component of wastewater spending, increases from 19 percent of total spending in 2014 to 22 percent by 2020.

With the exception of contract expense (only 9 percent of 2014 base spending), all other components of drainage spending are projected to increase at a rate significantly above the 2.4 percent projected general inflationary rate for the Seattle area.⁵⁴ Wastewater spending is projected to rise at less than half the rate of that of drainage, primarily due to the fact that the largest component of the wastewater base (contract expense) is rising at a rate lower than general inflation and because there is a much smaller increase in wastewater capital financing expense. Following is further discussion of cost drivers, including why certain cost components are increasing more rapidly than inflation.

⁵⁴Seattle CPI-U forecast by The Puget Sound Economic Forecaster, prepared by Conway Pedersen Economics, Inc.

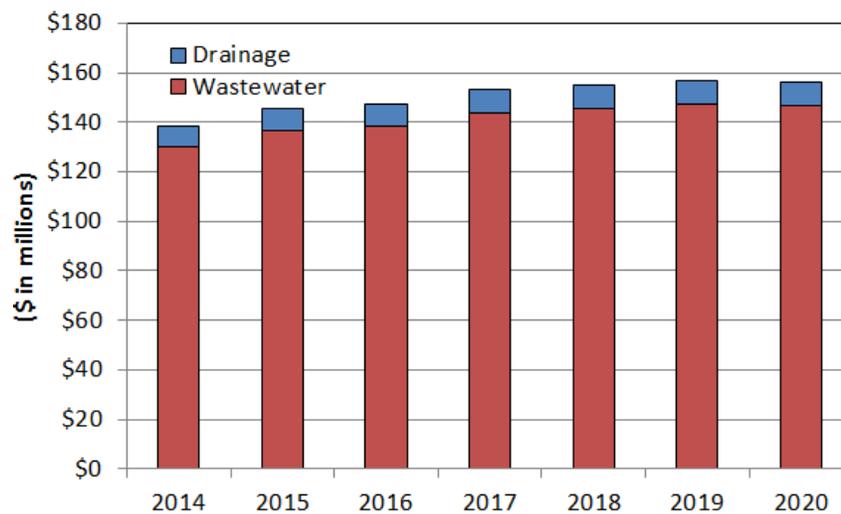
Section III: Drainage and Wastewater Fund

III.C.3.a. Contract (Treatment) Expense

Payments for wastewater treatment services are projected to grow by \$17.8 million, or a total of about 13 percent between 2014 and 2020, averaging about two percent per year. Although still the single largest DWF expense component, treatment's share of total DWF spending is projected to decrease across the period from 41 to 35 percent.

Wastewater rates pay for the bulk of the projected increase (\$16.8 million). Drainage rates fund only about \$1 million, or six percent of the total increase, which is consistent with drainage's total allocated share of six percent of treatment expense.⁵⁵

**Figure III-17
Treatment Spending Requirement 2014-2020**



Increases to treatment expense are driven by a combination of changes in demand⁵⁶ and changes in the King County treatment rate. Table III-5 presents projected changes in the King County treatment rate across the period.

**Table III-5
King County Treatment Rate per RCE⁵⁷ 2014-2020**

	2014	2015	2016	2017	2018	2019	2020
Rate per RCE	\$39.79	\$41.95	\$42.73	\$44.51	\$45.16	\$45.90	\$45.90
% Change		5.4%	1.9%	4.2%	1.5%	1.6%	0.0%

The treatment rate that SPU pays to King County is projected to increase by 15 percent between 2014 and 2020, or about 2.4 percent per year. The two percent average annual increase in SPU treatment

⁵⁵ See Introduction to Section III and Sections III.A.2 and III.C.2.a for more details on treatment expense.

⁵⁶ While treatment charges for commercial customers are based on actual usage, King County assumes constant demand for residential customers, charging a fixed rate per household. Therefore, only a portion of the expense base is demand driven.

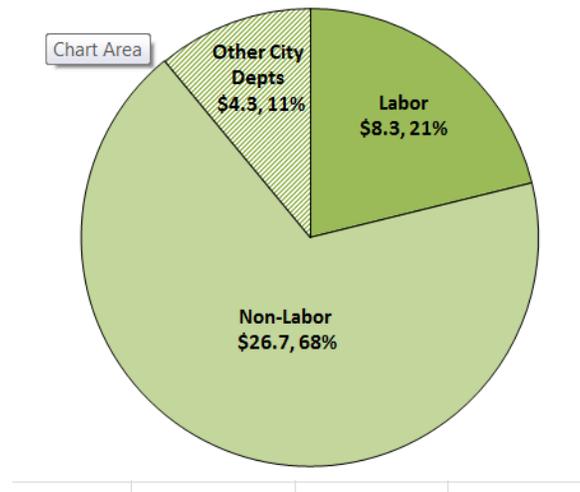
⁵⁷ Residential Customer Equivalent

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expense is lower than the increase in the treatment RATE, reflecting the impact of declining demand on the amount actually paid out annually.

III.C.3.b. O&M Expense

Figure III-18
Drainage and Wastewater Fund
2014-2020 Baseline O&M Spending



As Figure III-18 shows, O&M accounts for the largest portion of the 2015-2020 baseline increase relative to 2014 spending. The O&M baseline drivers are labor, non-labor, and City central costs (allocated costs to other City departments).

There are three major components to the labor cost increases:

- Health care benefit costs are expected to inflate by seven percent per year.
- The City's contribution to the retirement system is assumed to continue to increase.
- Real wages are rising slightly higher than the rate of inflation. The annual cost of living adjustment (COLA) is assumed to be 2.5 percent for all City employees. In addition to this, other factors are driving SPU wages above COLA. These include the fact that changing business needs and more automation result in needing fewer entry-level (lower paid) positions, and more and more new employees are calling for higher starting salaries as a condition of employment.

Most non-labor costs assume a general inflation rate of two percent on most goods and services. However, based on the eight-year inflation average (2005-2012), some cost centers are estimated to rise beyond two percent per year. These include fuel, professional and technical services, and utilities.

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In addition to inflation on non-labor costs, the O&M baseline is growing because of specific adjustments made to either maintain current service levels and/or meet firm regulatory requirements. In the drainage and wastewater line of business examples of this include:

- Additional crews and services to maintain and operate new drainage and wastewater assets and structures, including Green Stormwater Infrastructure assets;
- Updates to the stormwater code and manuals;
- Implementation of real-time controls and other measures to meet the CSO Consent Decree sewer maintenance requirements;
- Higher vendor costs for software maintenance and support; and
- Higher payments to City Light when the new customer billing system is launched.

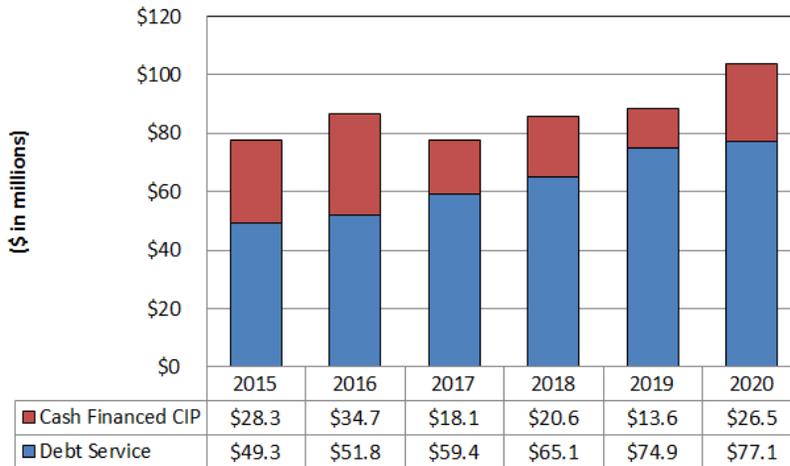
Finally, the last O&M baseline driver is City central costs. These are costs that are allocated to SPU for services provided by other departments in support of general City operations. This includes payments to the Finance & Administrative Services (FAS) Department, the Department of Information Technology (DoIT), the City Auditor's Office, the Law Department, the City Council, the City Budget Office, etc. As with non-labor costs, based on the eight-year inflation average (2005-2012), several City central costs are estimated to rise beyond two percent per year. See Appendix D for a complete list of inflation assumptions.

III.C.3.c. Capital Financing Expense

As discussed in Section III.C.2.c, capital expenditures in any given year are paid for with a combination of revenue bond proceeds and Drainage and Wastewater operating and non-operating revenues. These revenues are also used to pay the debt service (interest and principal payments) on the current and prior revenue bond issues. Figure III-19 presents the projected components of annual Drainage and Wastewater Fund capital financing expense from 2014 through 2020.

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Figure III-19
Drainage and Wastewater Fund Capital Financing Expense 2014-2020



Over the period, total capital financing expense is projected to increase by \$38 million, from \$66 million in 2014 to \$104 million in 2020. Although capital financing account for about 23 percent of the total spending requirement in 2020, it is the fastest growing expense component, accounting for 35 percent of increases to the spending requirement.

Table III-6 presents the change in annual capital financing by component. The change in expense is what drives changes to rates.

Table III-6
Change in DWF Capital Financing Expense, 2014 to 2020

	2015	2016	2017	2018	2019	2020	Total
Debt Service	\$8.2	\$2.5	\$7.6	\$5.7	\$9.8	\$2.2	\$36.0
Cash Financed CIP	\$3.8	\$6.4	-\$16.6	\$2.5	-\$7.0	\$12.9	\$2.0
Total	\$12.0	\$8.9	-\$9.0	\$8.2	\$2.8	\$15.1	\$38.0

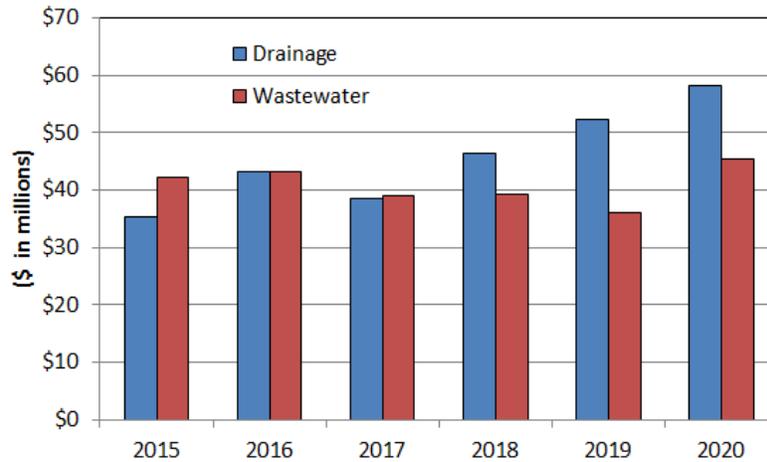
Debt service is the predominant driver of the increase, accounting for \$36 million of the net increase in capital financing expense. The increases in debt service assume that the Drainage and Wastewater Fund will issue about \$560 million in new revenue bonds through 2020 (\$122 million in 2014; \$85 million in 2016; and \$137 million in 2017 ; \$139 million in 2018; and \$77 million in 2020). Significant new debt is required during this period to fund regulatory requirements related to combined sewer overflows and superfund orders, regular investments in system infrastructure and in projects specifically addressing areas with chronic flooding and/or sewer back-up issues, and investment in green stormwater solutions to reduce flooding and improve water quality. See Section III.C.4 for more details.

Cash-financed CIP adds \$2 million in net increased expense between 2014 and 2020. Rates are set to fund 25 percent of capital expense with rates and non-rates revenues over a rolling four year period. The percentage contributed on an annual basis may fluctuate away from this 25 percent target, generally for rate smoothing purposes, as long as the four-year average target is generally met.

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Figure III-20 presents the amount of capital financing expense funded by drainage and wastewater rates.

Figure III-20
Drainage and Wastewater Capital Financing Expense, by LOB, 2014 to 2020



Drainage rates fund about 68 percent (\$26 million) of the \$ 38 million increase in DWF capital financing expense between 2015 and 2020. Drainage capital projects account for about 61 percent of total DWF capital spending across the period.

III.C.3.d. Taxes

Table III-7 presents projected city and state taxes between 2015 and 2020.

Table III-7
Projected Drainage and Wastewater Fund Tax Expense, 2015 to 2020
(\$ in millions)

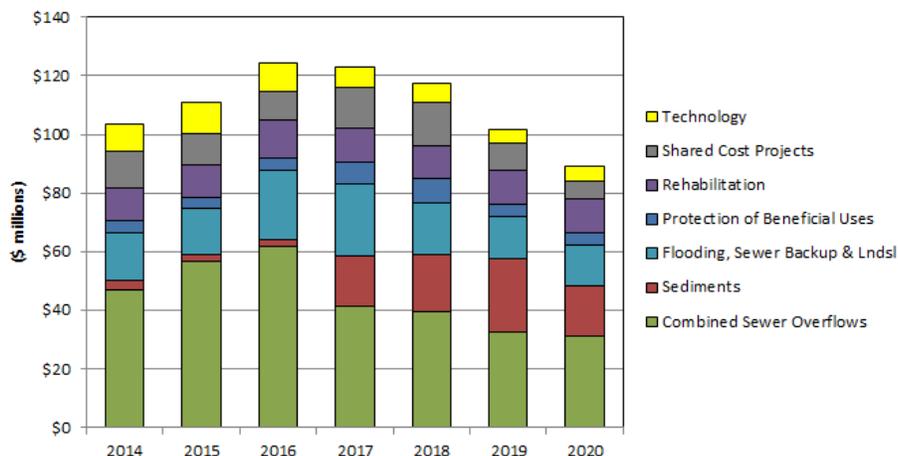
	2015	2016	2017	2018	2019	2020
City Taxes	\$40.5	\$41.3	\$43.5	\$46.0	\$49.1	\$51.9
States Taxes	\$4.4	\$4.5	\$4.7	\$5.1	\$5.7	\$6.2
Total	\$44.9	\$45.7	\$48.1	\$51.2	\$54.7	\$58.1

III.C.4. 2014-2020 Baseline Capital Spending

Planned spending in the drainage and wastewater CIP is \$666 over the 2015-2020 period. Over the next six years, a challenge for the drainage and wastewater CIP is ensuring basic service level programs, such as flood control and system capacity, are not stripped of funding as regulatory requirements continue to grow. The CSO Reduction program is the largest driver of the growing drainage and wastewater capital program.

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Figure III-21
Drainage and Wastewater Fund Planned Capital Expense, 2014 to 2020
(\$ in millions)



The overriding goal of the drainage and wastewater CIP is to construct facilities that reduce the frequency of flooding and sewer backups and improve water quality and habitat by reducing sewage overflows and the impacts of stormwater pollution.

Major 2015-2020 drainage and wastewater CIP projects include:

- Significant investments in the CSO program, including Green Stormwater Infrastructure projects, the Long-Term Control Plan, the South Henderson CSO storage project, and CSO Facility Retrofits projects;
- The South Park Pump Station project which allows for future projects to expand the collection system to address flooding complaints and address water quality issues;
- The Broadview Sewer and Stormwater Improvements project that aims to reduce sewer backups and stormwater flooding in the Broadview basin;
- The Sediments program which funds preliminary studies and analysis for cleanup of contaminated sediment sites in which the City is a participant, for actual cleanup of the contaminated sites, for preliminary engineering for future cleanup efforts, and for liability allocation negotiations; and
- Drainage and wastewater system improvements associated with transportation projects (e.g. Alaskan Way Viaduct replacement).

III.D. Financial Baseline Rate Projections

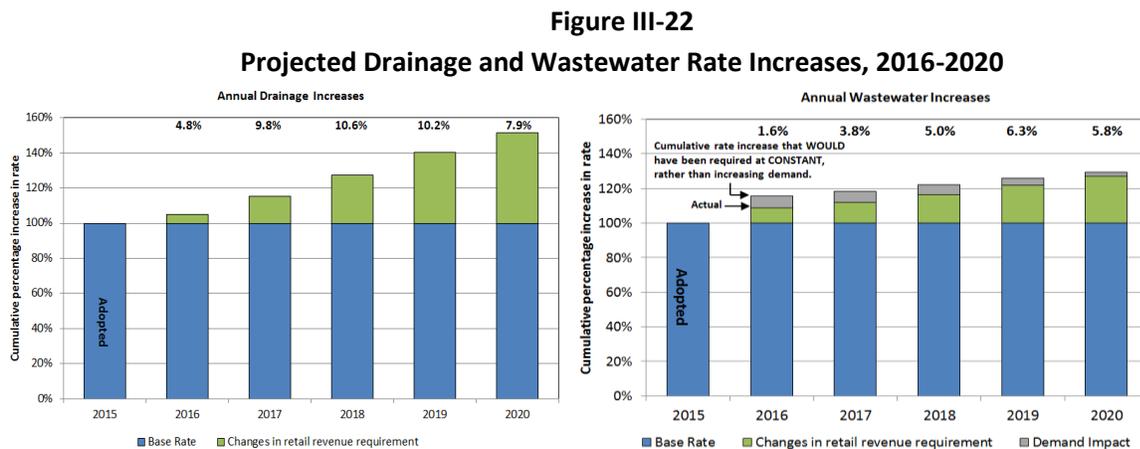
The Baseline rate path is the series of increases to current water rates which will be required to generate revenues sufficient to maintain existing service levels plus meet firm regulatory requirements. As described in Section II.C, “*Maintaining existing service levels*” means that *actual* service quality (as opposed to *targeted* service quality) neither degrades nor improves through 2020.

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Four factors determine the size of annual rate increases: a) annual spending levels; b) financial policy requirements; c) non-rates sources of funding; and d) demand.

The first three factors combined determine how much total revenue must be generated by drainage and wastewater rates, also known as the rates revenue requirement⁵⁸. Rate increases are required to fund increases in the revenue requirement from one rate setting period to the next. Where demand is constant, the average rate increase will equal the increase in the revenue requirement. Increasing demand (i.e., customers buying more units of water) will reduce the required rate increase and declining demand will increase the rate increase relative to the change in the revenue requirement.

Figure III-22 presents a breakdown of projected annual and cumulative rate increase required to maintain current service level. Section III.A. discusses the drivers of historical rate increases, including adopted increases through 2015. This section focuses on the impacts of proposed baseline spending on new rates to be adopted for 2016 through 2020. Following Figure III-22 is an analysis of drainage rate increase factors followed by a discussion of wastewater rate increase factors.



Note: In the chart presenting annual wastewater increase, a net increase in demand across the period reduces the required rate increase. The white areas on the top of each column represent the additional increase which would have been required, without the increase in demand. Actual increases are represented by the combination of the base rate and changes in revenue requirement sections.

Between 2016 and 2020, drainage rates must increase by 51 percent, or an average of 8.6 percent per year to generate revenues sufficient to maintain current service levels.⁵⁹ The average annual increase across the 2015-2020 plan period is 8.8 percent, including adopted rate increases for 2015.

⁵⁸ The **revenue requirement** is the amount of revenue required to pay for operating expenses spending and meet financial policy targets, including funding a portion of current year capital expenditures with rates and non-rates revenues. The **rates revenue requirement** is equal to the revenue requirement, less funding from sources other than rates including drawdowns of cash balances and other operating/non-operating revenues.

⁵⁹ The average annual increase across the 2015-2020 plan period is 8.8 percent, including adopted rate increases for 2015.

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Tables III-8 presents the contribution of each of the components of the DRAINAGE rates revenue requirement (Spending, Financial Policy Impacts, and Non-rates Funding) and of demand to annual projected annual rate increases.

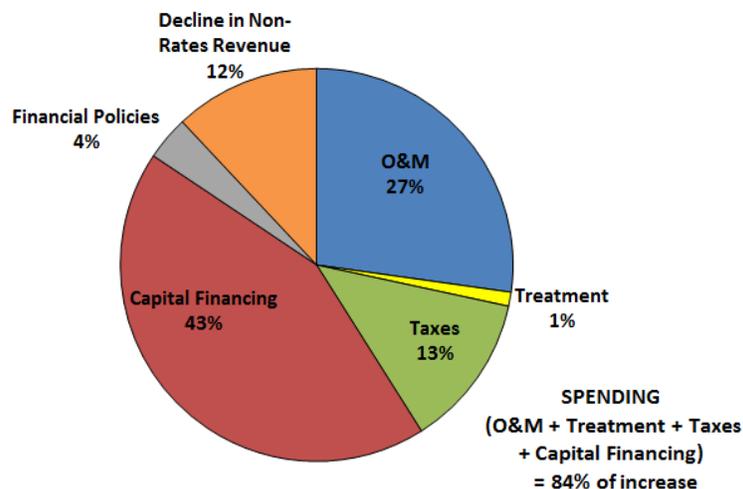
**Table III-8
Drainage Rate Increase Factors by Year**

		2016	2017	2018	2019	2020
SPENDING	+	11.5%	-0.9%	10.9%	8.8%	7.3%
FINANCIAL POLICIES	+	0.0%	0.6%	0.3%	0.5%	0.2%
NON-RATES FUNDING	+	-6.7%	10.1%	-0.6%	0.8%	0.4%
DEMAND IMPACT	=	0.0%	0.0%	0.0%	0.0%	0.0%
% Rate Change		4.8%	9.8%	10.6%	10.2%	7.9%

Although there are annual fluctuations in the contribution of each factor, spending increases are the largest driver of rate increases from 2016 through 2020. Use of cash balances (non-rates funding) significantly reduces the rates funding requirement at the beginning of the period, but then result in an increase in required rate funding to make up the void when the cash is exhausted. Demand is typically not a driver of drainage rates, as further described later in this section.

Figure III-23 presents the composition of the factors increasing the drainage rate.

**Figure III-23
Composition of Additions to Drainage Rate, 2016 to 2020**



Spending accounts for about 85 percent of the total increase in the rate between 2016 and 2020, with capital financing being the largest driver, accounting for 43 percent of increased spending. O&M is also a major component of the increase, account for 27 percent of the total. Taxes (14 percent) and treatment

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(one percent) are much smaller components of the increase. Financial policy requirements to maintain targeted operating cash balances as well as a decline in non-rates revenue account for 16 percent of the overall increase.

Additional information on spending increases is found in Section III.C.3. Section III.D.1 discusses the impact of changes in non-rates funding sources on drainage rates. Section II.D.2 discusses the impact of financial policy requirements.

Between 2016 and 2020, wastewater rates must increase by 25 percent, or an average of 4.5 percent per year to generate rates revenues sufficient to maintain current service levels.⁶⁰

Tables III-9 presents the contribution of each of the components of the wastewater rates revenue requirement (Spending, Financial Policy Impacts, and Non-rates Funding) and of demand to annual projected annual rate increases.

**Table III-9
Wastewater Rate Increase Factors by Year**

		2016	2017	2018	2019	2020
SPENDING	+	17.3%	2.0%	2.2%	1.5%	5.0%
FINANCIAL POLICIES	+	0.0%	0.0%	0.0%	0.0%	0.0%
NON-RATES FUNDING	+	-8.7%	1.0%	1.8%	3.2%	-0.7%
DEMAND IMPACT	=	-7.1%	0.8%	1.0%	1.6%	1.6%
% Rate Change		1.6%	3.8%	5.0%	6.3%	5.8%

Although there are annual fluctuations in the contribution of each factor, spending increases are the largest driver of rate increases from 2016 through 2020. Although reductions in non-rates funding and demand increase the rate for most of the period from 2017 to 2020, projected increases to these factors in 2016 relative to rate setting assumptions for 2015 result in them cumulatively offsetting the rate increase across the entire period (see below).

Figure III-24 presents the breakdown of components increasing the rate and those offsetting the size of the increase. The cumulative increase for the average rate between 2016 and 2020 is 24 percent. Increased spending adds 29 percent to the rate, with increased non-rates revenue and a net increase in demand reducing by five percent the required rate increase.

**Figure III-24
Increases and Offsets to Wastewater Rate, 2016 to 2020**

⁶⁰ The average annual increase across the 2015-2020 plan period is 3.9 percent, including adopted rate increases for 2015.

Section III: Drainage and Wastewater Fund

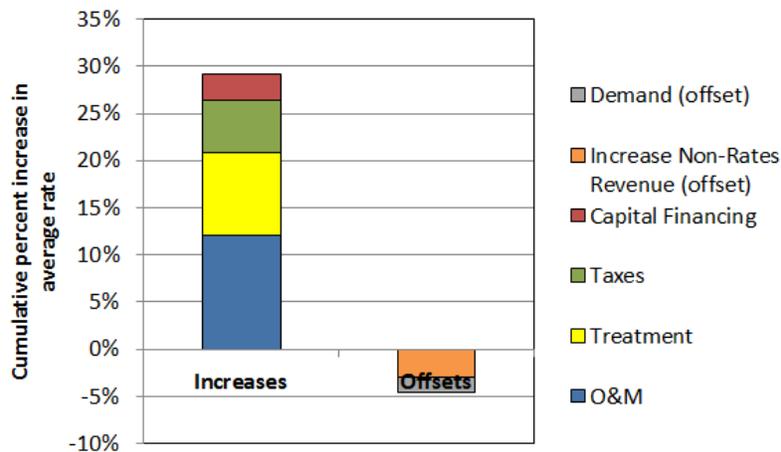
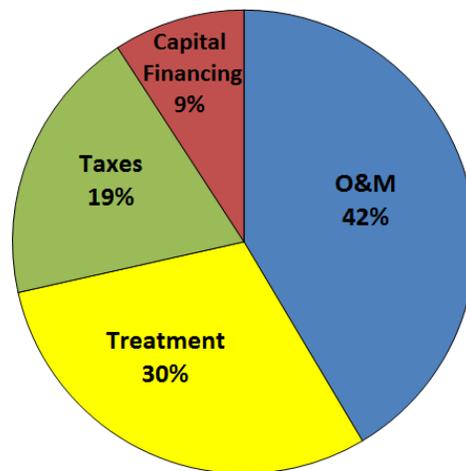


Figure III-25 presents the composition of the factors increasing the rate. Increased spending on O&M is the largest driver, accounting for 42 percent of increases followed by treatment accounting for 30 percent of the increase, and taxes 19 percent of the increase. Capital financing is a significantly smaller component of the wastewater increase (nine percent) than for drainage. This is in part due to higher drainage capital expense and in part due to wastewater’s larger revenue base.

**Figure III-25
Composition of Additions to Wastewater Rate, 2016 to 2020**



Additional information on spending increases is found in Section III.C.3. Section III.D.1 discusses the impact of changes in non-rates funding sources on wastewater rates. Section II.D.3 presents assumptions underlying the wastewater demand forecast used in developing the 2016 through 2020 rate path.

All 2015 spending, financial policy, non-rates revenue and demand assumptions used to determine rate drivers are based on assumptions for 2015 used to set 2015 rates, NOT the current 2015 spending

Section III: Drainage and Wastewater Fund

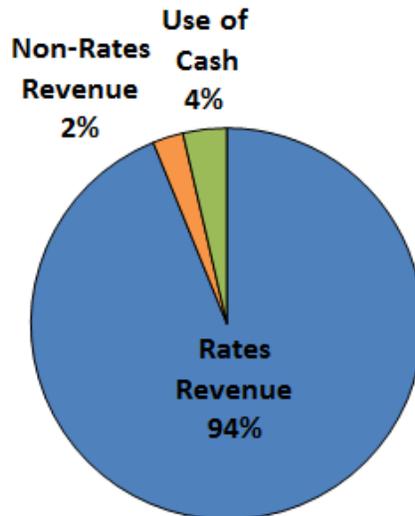
projections presented in Section III.C. In a new rate setting year, the size of rate increase is set in relation to how rates were last set for the prior year. Differences between actual spending and revenue in a given year, and assumptions underlying rates for that year, will be reflected in revised year-end cash balances.

III.D.1 Non-Rates Funding Sources

Between 2016 and 2020, SPU projects that about six percent of the total funding requirement will be funded from cash reserves and other non-rates revenues, including capital contributions, grants, permit fees, interest income and other miscellaneous revenues. The use of cash and other funding sources reduces the amount to be recovered through direct service and rates and therefore are reflected as reductions to the total revenue requirement in each year.

Figure III-26 below presents the sources (rates and non-rates) of funding for the new rate setting periods between 2016 and 2020. Rates revenues are projected to fund about 94 percent of the drainage and wastewater revenue requirement on average.

Figure III-26
Drainage and Wastewater Sources of Funding, 2016-2020



Section III: Drainage and Wastewater Fund

A net decline in non-rates funding sources in 2016 through 2020 increases the drainage rate while a net increase in these funding sources reduces wastewater rates during the same period. The differing impacts on drainage and wastewater rates is largely due to the availability of cash balances to use instead of rates revenues. Table III-10 presents the annual changes non-rates revenues and cash drawdowns used to fund DWF expenditures as well as the annual change in these funding sources which will impact 2016 to 2020 rates.

**Table III-10
Drainage and Wastewater Non-Rates Funding Sources, 2016 to 2020**

DRAINAGE	2016	2017	2018	2019	2020	Total
Non-Rates Funding						
CY Non-Rates Revenues	\$4.1	\$4.0	\$4.6	\$3.6	\$3.1	\$23.7
Cash Drawdown	\$10.5	\$0.0	\$0.0	\$0.0	\$0.0	\$14.1
Total	\$14.6	\$4.0	\$4.6	\$3.6	\$3.1	\$37.7
Annual Change						
CY Non-Rates Revenues	-\$0.3	-\$0.1	\$0.6	-\$1.1	-\$0.5	-\$1.3
Cash Drawdown	\$7.0	-\$10.5	\$0.0	\$0.0	\$0.0	-\$3.5
Total change	\$6.7	-\$10.6	\$0.6	-\$1.1	-\$0.5	-\$4.8
WASTEWATER						
2016	2017	2018	2019	2020	Total	
Non-Rates Funding						
CY Non-Rates Revenues	\$7.4	\$7.4	\$7.5	\$6.8	\$6.2	\$35.3
Cash drawdown	\$17.3	\$14.8	\$10.3	\$2.6	\$5.2	\$50.1
Total	\$24.7	\$22.3	\$17.7	\$9.4	\$11.3	\$85.4
Annual Change						
CY Non-Rates Revenues	\$1.6	\$0.0	\$0.0	-\$0.6	-\$0.6	\$0.4
Cash Drawdown	\$17.7	-\$2.5	-\$4.6	-\$7.7	\$2.6	\$5.6
Total change	\$19.4	-\$2.5	-\$4.5	-\$8.4	\$2.0	\$6.0

For **drainage**, a general reduction⁶¹ in non-rates revenues reduces other funding sources by \$1.3 million on net across the period. Cash balances built up during the previous rate period⁶² are a significant 2016 drainage funding source in 2016. However, once this cash is exhausted, drainage rates revenues must be increased to fund expenditures previously funded with cash balances.

⁶¹ With the exception of a projected one-time reimbursement in 2018 from Parks and the General Fund for sediment-related work.

⁶² Higher cash balances derived from higher revenues and lower expenses than were anticipated when rates were set.

Section III: Drainage and Wastewater Fund

For **wastewater**, non-rates revenues increase by \$0.4 million on net across the period, slightly offsetting the size of the wastewater increase. A much larger offset is the use of significant cash balances built up during the prior rate period⁶³ which are slowly drawn down across the period.

III.D.2. Financial Policy Impacts

Financial policy requirements to maintain targeted operating cash balance drive about four percent of the drainage rate increase between 2016 and 2020. This is not a factor in the wastewater increase as wastewater starts the period with significantly higher balances and remains above targeted balances while using cash balances to fund expenditures, as further discussed in the prior section.

Table III-11 shows the use of cash by drainage between 2016 and 2020. In the first year of the new rate period (2016), drainage draws down cash balances by \$10.5 million to fund expenditures and reduce the required rate increase in that year.⁶⁴ Between 2017 and 2020, drainage rates are set to rebuild cash balances, adding \$5.1 million to the revenue requirement over four years.

Table III-11
Drainage Change in Cash Balances,, 2016 to 2020
(\$ in millions)

	2016	2017	2018	2019	2020
Change in cash balance	-\$10.5	\$0.6	\$1.0	\$1.6	\$1.9

III.D.3. Demand Assumptions

III.D.3.a. Drainage

Unlike water or wastewater, it is not possible to meter actual stormwater flow entering the City's drainage system from an individual property. To calculate "Demand" (i.e. system impact), SPU estimates the fraction of rainfall that becomes "runoff" from a parcel using standard runoff coefficients utilized in hydrological modeling. These runoff coefficients vary depending on how pervious (permeable) a surface is. More stormwater will run off of hard or impervious surfaces while pervious or permeable surfaces will absorb more water. Therefore, the amount of stormwater that will run off of a property depends on the type of surface covering the property and its size. The SPU rate categories incorporate both of these factors in the development of their respective rates.

As demand is linked to property characteristics, there is a change in demand only if property characteristics change. Drainage rates reflect the latest property data available at the time rates are set

⁶³ Like drainage, wastewater experienced lower expenditures and higher revenues than anticipated at the time 2013-2015 rates were set. However, increased demand associated with improved economic performance had a much larger impact on wastewater revenues than drainage.

⁶⁴ The 2016 use of cash presented in Table III-11 is consistent with the cash drawdowns presented in Table III-10 previously. It is presented here for information purposes only as it is not an increase to expense but rather a source of funding.

Section III: Drainage and Wastewater Fund

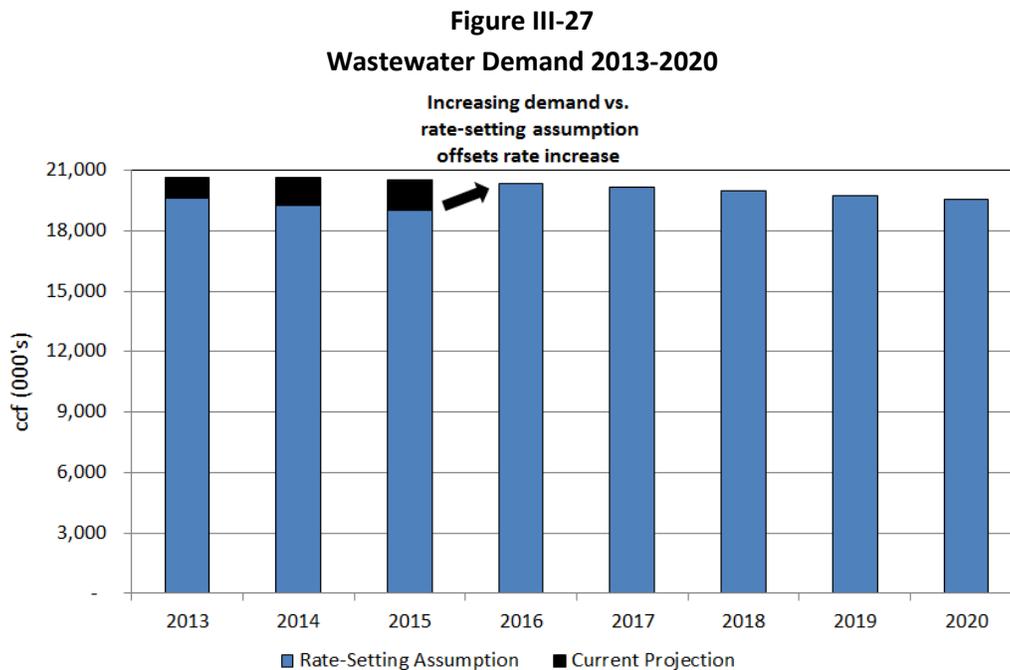
for a given period of time. SPU updates these property records using King County reported changes to parcel boundaries and SPU review of aerial photos related to these changed boundaries. While rates are “re-set” each rate-setting period for updated “demand” (property characteristics) assumptions, there is not a robust methodology (nor supporting data) for estimating future changes to the City’s property characteristics. Consequently, constant demand is assumed in forecasting future rates.

III.D.3.b. Wastewater

Similar to water, wastewater consumption has seen annual average declines of nearly one percent per year over the period from 2004 to 2013, as further discussed in Section III.A.1. While this pattern of decline can primarily be attributed to conservation, annual consumption is also impacted by changes in the economic health of the region. Indeed, the rapid decline witnessed in 2010 and 2011 was reversed by strong growth in consumption in 2012, in tandem with the improved economic climate. In 2013, growth flattened, decreasing a tepid 0.6 percent as construction growth stabilized compared with the surge witnessed in 2012.

The near term wastewater demand forecast reflects the expected continued trend of conservation, but also takes into account expected growth in the region. This results in an annual average decline of 0.9 percent between 2014 and 2020. It should be noted that 2013 to 2015 rates, adopted in 2012, were set based on lower consumption assumptions given the decreases witnessed in 2010 and 2011. The unexpected surge in 2012 resulted in higher-than-anticipated consumption in 2013, a trend that is expected to continue into 2014 and 2015 compared with estimates used when setting rates.

Figure III-27 presents actual (2013) and projected wastewater demand from 2014 through 2020.



Section III: Drainage and Wastewater Fund

The light bars represent the demand assumptions used in setting rates. The darker increment between 2013 and 2015 represent the increment to the rate setting assumptions associated with current demand projections.

The higher-than-anticipated consumption between 2013 and 2015 has two primary effects on 2016 through 2020 rates:

- Although a decline in consumption is currently projected between 2015 and 2016, projected 2016 demand INCREASES relative to the demand assumed in setting 2015 rates. Therefore, in 2016, the current demand projection acts as an OFFSET to increased expenditures, allowing the rate to increase by less than the increase in the rate revenue requirement.
- Higher-than-projected consumption in 2013 through 2015 has resulted in increased revenues. These higher revenues have allowed the Fund to increase its operating cash balances. These cash balances are used as an additional funding source in 2016, therefore reducing the amount of increased expenditures that must be recovered through rates revenues.

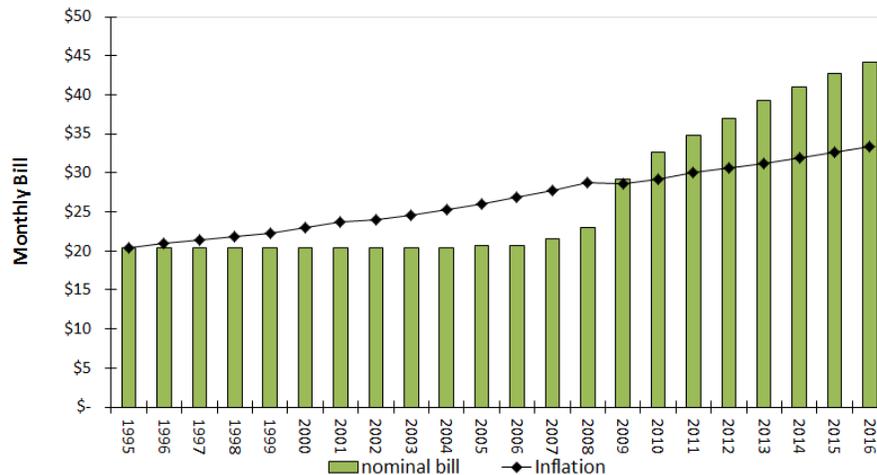
Section IV. SOLID WASTE

The Solid Waste Fund provides curbside garbage, food and yard waste (compost or organics), and recycling services to Seattle residents and businesses through contracts with private haulers. In addition, SPU owns major capital facilities including two recycling and disposal stations, also known as transfer stations, two household hazardous waste facilities, and a fleet of trucks and heavy equipment. Solid Waste Fund (SWF) revenues also support post-closure projects on two landfills previously used by the City.

IV.A. “How we got here”: Historical Rate Driver Overview

Figure IV-1

Growth in Average Monthly Single Family Residential Solid Waste Bill 1995-2014



Between 1995 and 2008, typical single family residential solid waste bills grew more slowly than the rate of inflation due to favorable contract terms and minimal capital investments. Bills grew sharply between 2008 and 2010, averaging 13 percent per year in real terms, before leveling off at more modest average real growth rates of 3 percent between 2010 and 2016. New collections contracts, service enhancements, the rebuilding of major solid waste capital facilities, and a decline in tons disposed were the primary determinants of real growth in bills since 2007.

- Annual contract payments increased by more than 40 percent under **new collections contracts** which took effect in 2009. These contracts reflected increased costs of fuel and labor since 2000 when contracts were last signed, as well as the service enhancements described above.
- Numerous **service enhancements** took effect in 2009 with the new contracts, including: expansion of items accepted for food, yard waste and recycling service, increased frequency of food/yard waste collection, new container size options, one-cart recycling collection, special

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collection services for electronics, used motor oil and bulky items, and reduced noise and pollution from new fuel-efficient collection trucks.

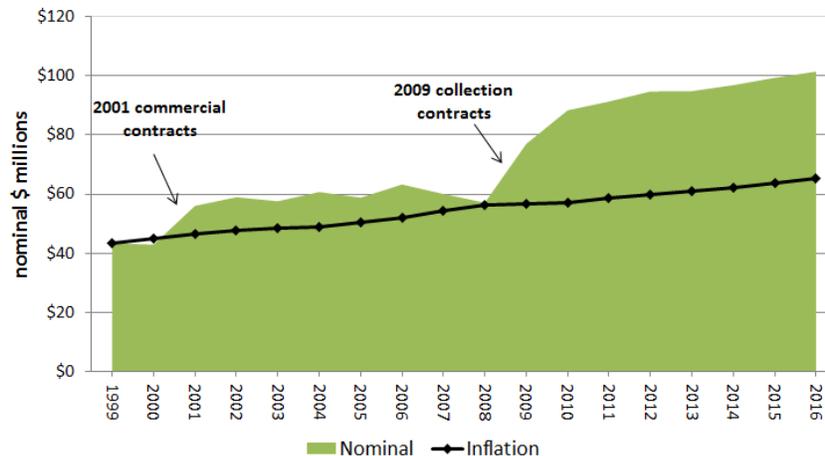
- Capital investment increased substantially from 2007 forward due to the **design and construction of two new transfer stations**, with \$228.1 million in actual and projected⁶⁵ capital spending in the nine-year period between 2008 and 2016 compared to \$61.4 million in the prior 13 years.
- **Decline in tonnage and subscription size.** Economic conditions in 2008 and 2009 accelerated a long term declining trend in total waste generation. Decreased tonnage has been most pronounced in commercial and self-haul sectors. While total residential tonnage has seen much smaller declines, there has been a clear shift to smaller (and lower cost) can sizes since 2011 as customers gain more comfort in recycling and composting.

IV.A.1. New Collections Contracts

SPU's contracts with private haulers for the collection, transfer and disposal or processing of garbage, recyclables, and organics. Contract payments are the single largest expense component of the SWF revenue requirement, representing over 70 percent of total operating and maintenance expense. Collections contracts account for about 80 percent of total contract expense.

The City has contracted with private companies for waste collection for almost a century, and has contracted for commercial collection since 2001. As presented in Figure IV-2, with the exception of the 2001 increase for commercial collection, solid waste contract payments remained remarkably stable, and in fact declined in real terms until 2009 with the implementation of new collections contracts.

Figure IV-2
Solid Waste Contract Expense



Annual contract payments increased by more than 40 percent with the implementation of the new contracts. Most of the increase was due to higher costs for fuel and labor that had not been taken into

⁶⁵ 2013-2016 projections per 2013-2016 SWF Rate Study

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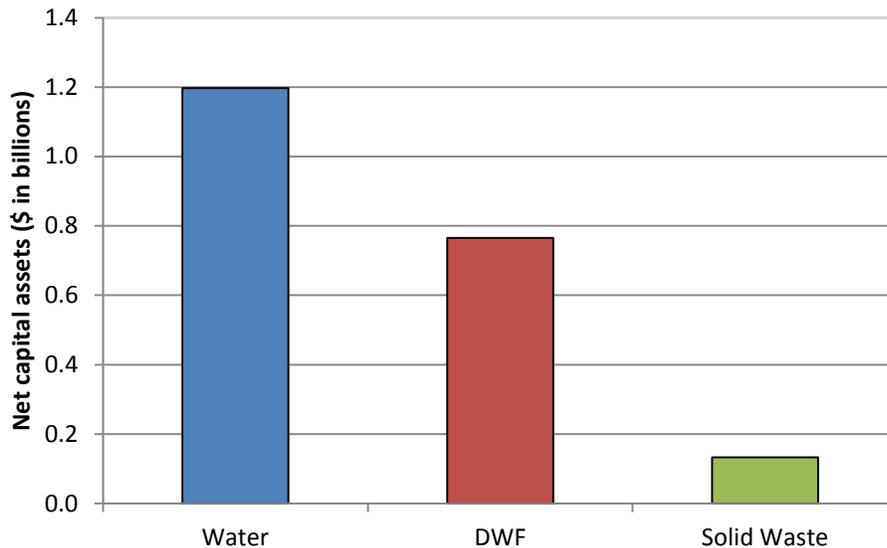
account under the old contract terms. Contract costs are now adjusted annually based on inflation terms which include fuel, labor and consumer price indices, so it is unlikely that there will be such a big one-time adjustment in the future.

IV.A.2. Capital Spending and Financing

IV.A.2.a. Capital Program Overview

The Solid Waste line of business is less infrastructure intensive than water, wastewater, and drainage, with net capital assets totaling only \$129 million at the end of 2012 compared to \$700 million for drainage and wastewater and \$1.2 billion for water. Historically, operational rather than capital spending has driven solid waste rates.

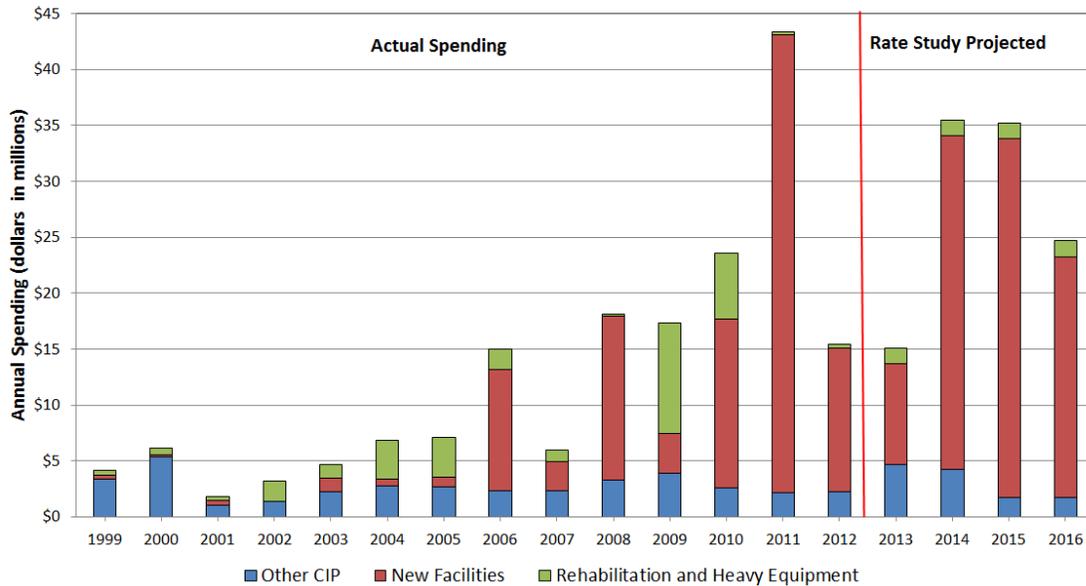
Figure IV-3
Net Capital Assets at December 31, 2013



However, capital spending has become a much more significant solid waste rate driver during the past few rate cycles and will continue to impact rates in the near term with the replacement of the existing transfer stations. Figure IV-4 shows the composition of Solid Waste Fund capital since 1999 as well as projected spending assumed in current 2013-2016 adopted rates.

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**Figure IV-4
Solid Waste Fund Capital Spending**



The Solid Waste Facilities Master Plan, completed in 2003, recommended that the City’s North and South Transfer Stations be demolished and rebuilt, with the purchase of additional property at each station to improve customer service, reduce adverse environmental impacts, and expand efforts to recycle and recover reusable materials. While transfer stations typically have a life cycle of about 30 years, Seattle’s transfer stations, built in the mid-1960’s, had experienced close to half-a-century of heavy industrial use. The aged stations are not designed to withstand likely future earthquakes, are overcrowded given the size of Seattle’s current population, and have limited space for recycling.

The investments in the new transfer stations has caused the Solid Waste CIP, which only averaged about \$4.8 million between 1999 and 2006 to increase materially since the initial phases of master plan implementation. The first phase of the transfer station re-builds was completed in 2013 with the opening of the new South Transfer Station. The rebuild of the North Transfer Station is scheduled between 2014 and 2016 and the construction of a recycling/re-use facility at the South Transfer Station location is planned between 2016 and 2017.

IV.A.2.b. Capital Financing

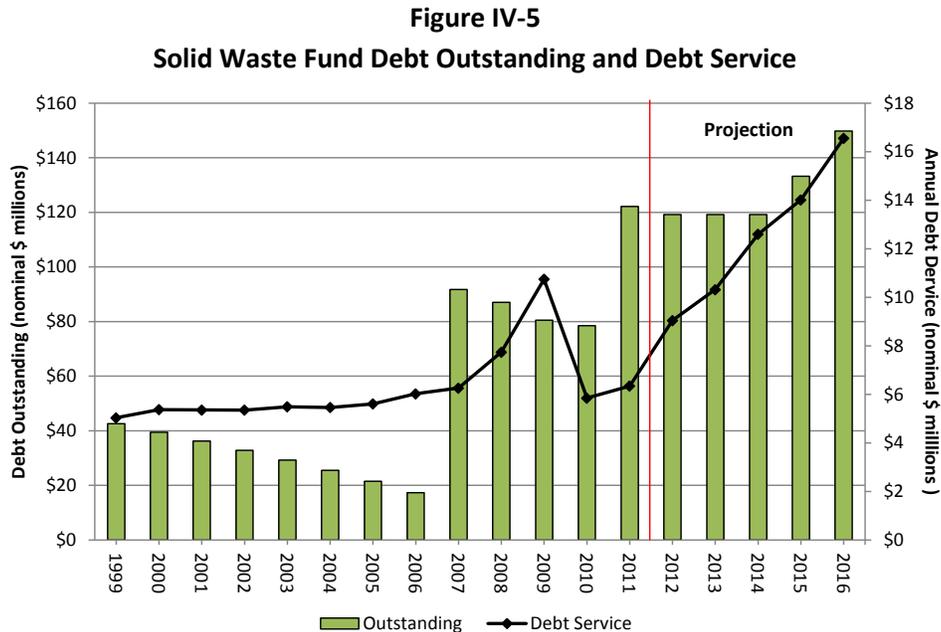
As with Water and Drainage & Wastewater, the Solid Waste capital program is funded through a combination of current year operating revenues (cash-financing) and proceeds from periodic revenue bond issues (debt-financing). Annual debt service payments, typically spread over 25 years, represent the annual cost to the fund of issuing revenue bonds.

Unlike the other SPU lines of business, the Solid Waste line of business does not have a significant ongoing capital program and so, has historically only issued debt to fund large one-time multi-year capital requirements. These include the Midway and Kent landfill closures (bonds issued in the late

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1980's) and the transfer station rebuilds (bonds issued in 2007, 2011 and projected for 2013 and 2015 in adopted rates).

Figure IV-5 presents SWF debt outstanding and debt service since 1999.



Note: Projected debt outstanding for 2013-2016 is the rate study assumption and assumes impact of new debt issues but not the retirement of any existing debt.

Through 2006, solid waste rates paid down landfill closure debt and debt service remained constant, with virtually no impact on rates. Between 2007 and 2011, the SWF issued \$129 million⁶⁶ in new money revenue bonds to begin funding implementation of the Solid Waste Facilities Master Plan, with 2013-2016 adopted rates assuming the issuance of an additional \$103 million of debt by 2015 to substantially complete the transfer station rebuilds.

The increase in debt service associated with the 2007 bond issue was mitigated by a bond refunding with the same issue, and the retirement of debt on the 1999 bond issue in 2010. With the 2011 issue, annual debt service increased by \$3.2 million to \$9.0 million in 2012. By 2016, adopted rates assume debt service to increase by another \$7.5 million to \$16.5 million, making capital financing a significant cost driver during the current rate cycle.

Prior to 2004, there was no formal policy target for cash financing of the CIP. In between major cycles of capital investment, the SWF financed a significant portion of the capital program with operating cash as annual spending typically came in under \$5 million. Resolution 30695 (2004) established a formal policy target of a \$2.5 million annual cash financing minimum, expressed in 2003 dollars. A flat target was

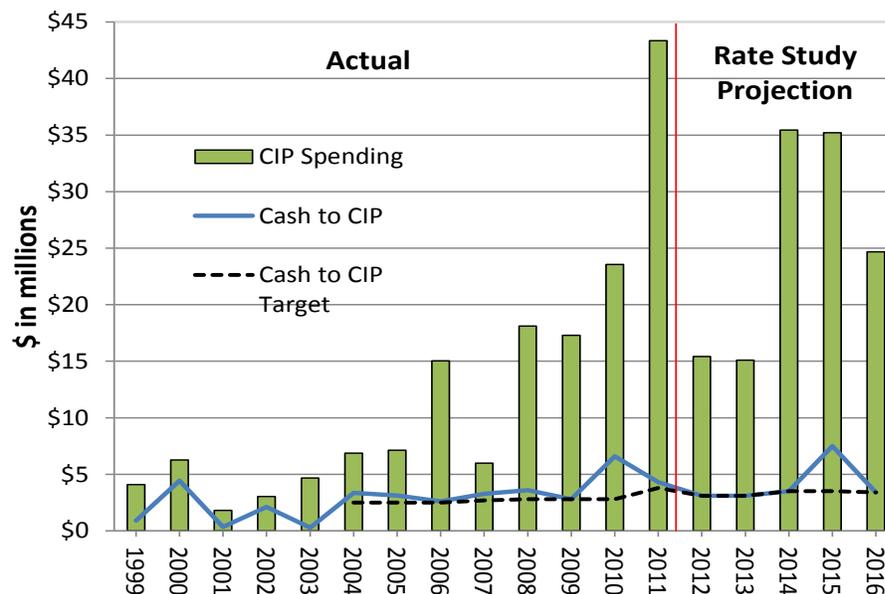
⁶⁶ \$24 million of new money issued in 2007 went to pay off a temporary line of credit used to fund capital system improvements between 2003 and 2007.

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adopted to avoid rate spikes associated with uneven CIP spending. However, in recognition of the debt impacts of the significant increase in capital costs associated with Solid Waste Facilities Plan implementation, the 2009-2010 rate study refined this target to an informal guideline of the greater of \$2.5 million in 2003 dollars or 10 percent of annual CIP spending. The formal policy was not modified as capital spending is expected to decline significantly after completion of the transfer stations.

Figure IV-6 presents total annual SWF capital expenditures, the level of annual cash financing of these expenditures and targeted cash financing of CIP from 2004 forward. This figure demonstrates that operating cash was used extensively to fund capital expenditures prior to 2006. Since expenditures increased with the implementation of the Solid Waste Facilities Master Plan, annual spending has been primarily debt financed.

Figure IV-6
Solid Waste Fund Cash Financing

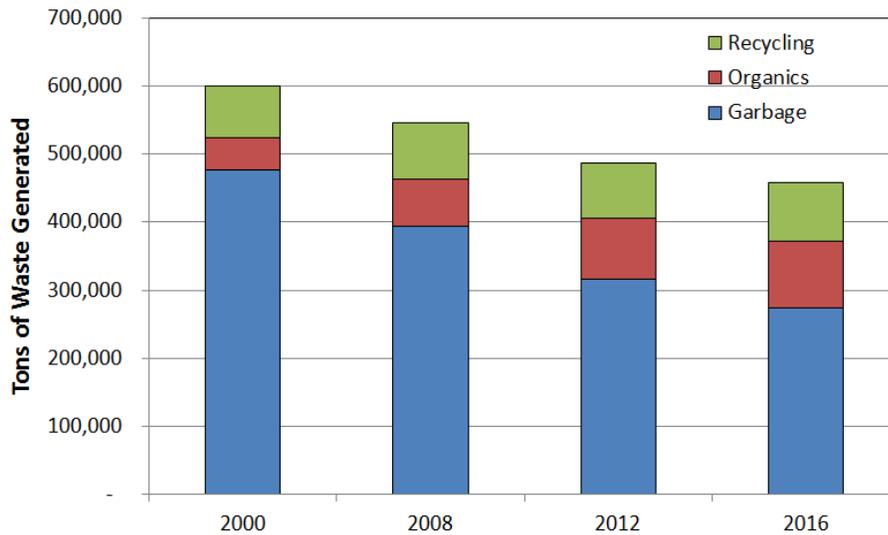


IV.A.3. Demand Impacts

A long term trend of decreasing total waste generation was accelerated in 2008 and 2009 by the declining economy. While garbage tons fell significantly during 2008 and 2009, recycling only fell slightly, and food and yard waste increased. Figure IV-7 presents the historical and projected (rate study assumptions) generated tonnages by commodity stream.

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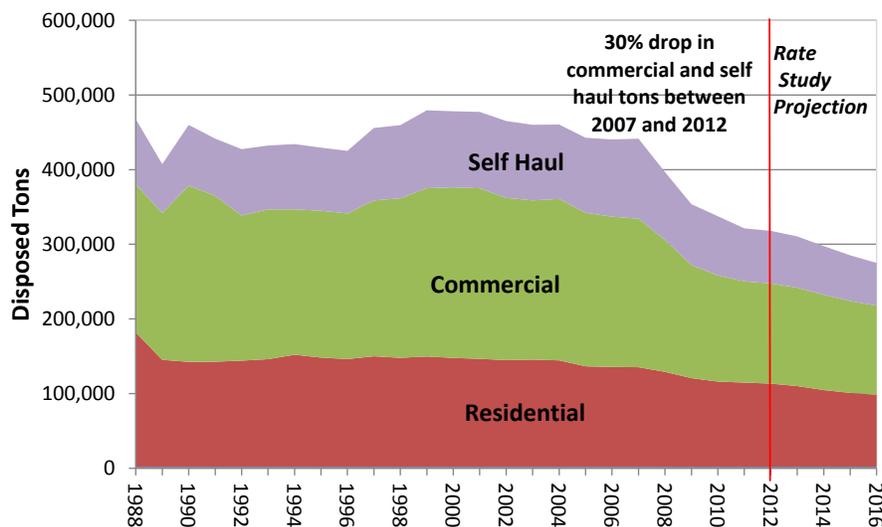
Figure IV-7
Actual and Projected Total Waste Generation



Note: Garbage tons include self-haul, commercial, and residential tons. Only residential recycling tons are presented since most commercial recycling is not provided by the City. Residential and self-haul food and yard waste are included in organics.

While the increase in food and yard waste has had a small positive impact on solid waste revenues, the more significant declines in garbage tonnage has put upward pressure on rates.

Figure IV-8
Disposed Garbage tons



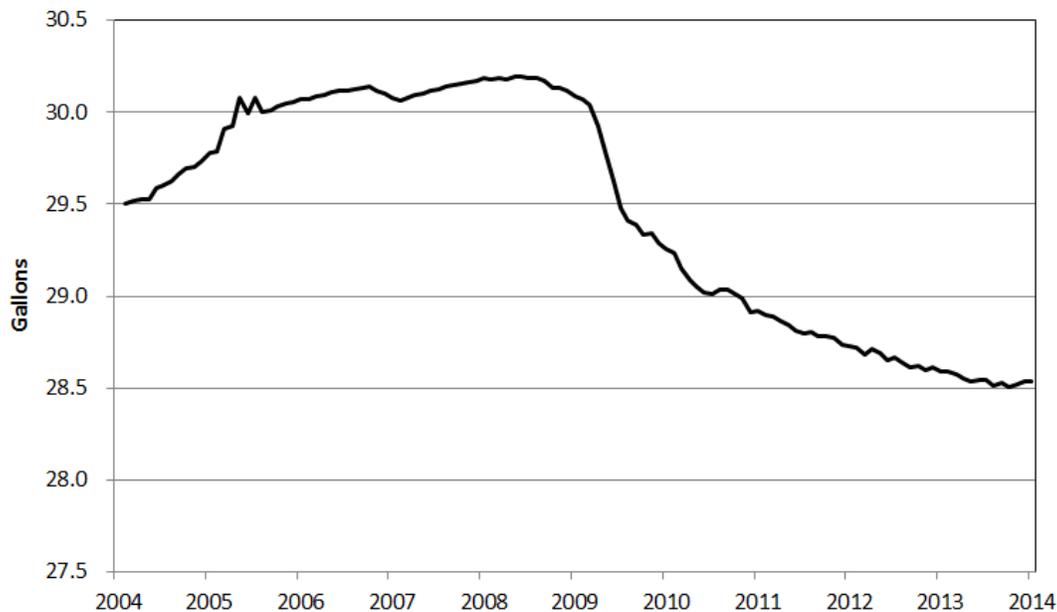
The most pronounced decline in garbage tonnage has been in the self-haul and commercial sectors, with a 25 percent drop in tonnage volumes since 2007. As a result of the recession, actual **commercial garbage** tons disposed in 2009 were at a 25-year low. While economic factors explain the sudden and extreme nature of the tonnage decline, the impact of SPU's ongoing waste reduction and recycling

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programs is also evident. **Self-haul garbage tons** experienced an unprecedented decline from 2007 to 2011. There were approximately 107,098 self-haul tons in 2007, dropping to 71,033 tons in 2011.

While the decline in **residential tonnage** has been much smaller, there has been a pronounced shift to smaller can sizes as customers have gained more comfort in recycling and composting.

Figure IV-9
Average Residential Can Size



IV.B. Industry Context

The solid waste industry was transformed by the Resource Conservation and Recovery Act of 1976 (“Act”), which set national goals for:

- protecting human health and the environment from the potential hazards of waste disposal;
- conserving energy and natural resources;
- reducing the amount of waste generated; and
- ensuring that wastes are managed in an environmentally-sound manner.

The Act declared that “open dumping is harmful to health, contaminates drinking water from underground and surface supplies, and pollutes the air and the land” and required states to “prohibit the establishment of new open dumps” and required all solid waste to be either “utilized for resource recovery” or “disposed of in sanitary landfills” that met EPA standards.

The Act resulted in several changes in the waste market, which was transformed into a private, nationwide industry with the awarding of exclusive franchises. Substandard dumps were closed and large, state-of-the-art regional facilities were created for disposal. Incineration and recycling became

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more common, which led to creation of transfer stations, recycling centers, incinerators and waste-to-energy facilities. The number of landfills was reduced. In 2010, the most recent data available, there were 1,908 landfills in the U.S. compared to 7,924 in 1988.⁶⁷ Due to differences in tipping fees between states, there was an increase in long-distance hauling and interstate shipments of waste by truck, rail or barge. At the same time, responsibility for regulation resided with state and local governments, who sought to control the flow of waste by intervening in its transportation, processing and disposal.

The City of Seattle's two transfer stations were built in the 1960's for the purpose of consolidating refuse for transfer to local landfills for disposal. The City operated two landfills from the 1960s through the 1980s that were designated by the EPA as Superfund sites and closed in 1983 and 1986. Garbage was then hauled to the King County landfill, and eventually to a more distant landfill. This change required adding intermodal container loading facilities to the City's transfer stations, which have only received minor modifications over the last 40 years. Safety and environmental concerns, failure to meet customer service quality levels, and failure to meet water diversion goals resulted in the current plans to replace both transfer stations.

IV.B.1. Industry Cost Drivers/Trends

"Pay as you throw" (PAYT) programs have households pay more if they put out more garbage for collection. PAYT programs have increased in the last couple decades, with the number of PAYT programs in the U.S. growing from about 100 in the late 1980s to about 7,100 currently.⁶⁸

The State of Washington ranks among the leaders in both number of PAYT communities and percent PAYT of all communities in a state.

⁶⁷ "Tipping fees vary across the U.S." Waste & Recycling News. 20 July 2012.

⁶⁸ "Pay As You Throw (PAYT) in the US: 2006 Update and Analyses." Lisa A. Skumatz, Ph.D. and David J. Freeman. December 2006.

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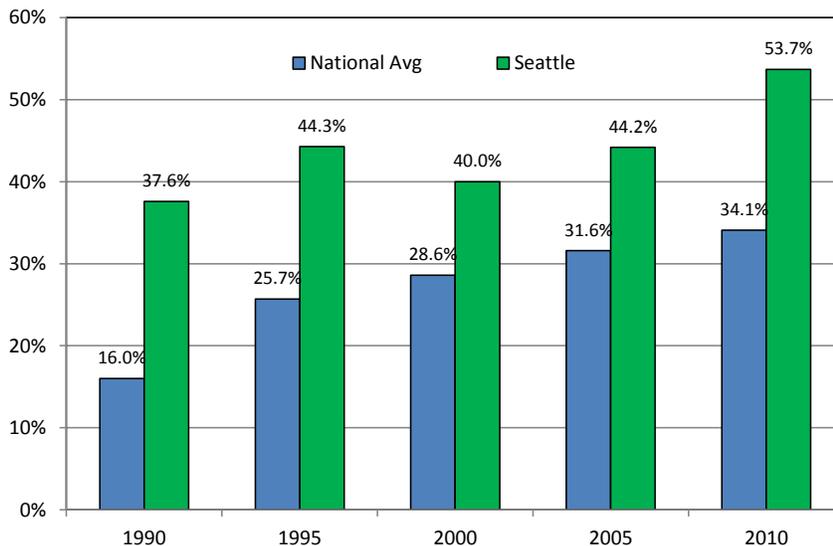
Table IV-1

U.S. PAYT Communities and Share of Communities Covered, by State

State	Number PAYT Communities	% PAYT of All Communities in State	State	Number PAYT Communities	% PAYT of All Communities in State	State	Number PAYT Communities	% PAYT of All Communities in State
AK	3	0.9%	LA	1	0.3%	OH	243	23.1%
AL	2	0.4%	MA	139	59.1%	OK	2	0.3%
AR	80	15.4%	MD	49	13.3%	OR*	336	100.0%
AZ	5	2.0%	ME*	158	7.4%	PA	253	18.0%
CA	536	49.6%	MI	302	47.9%	RI	9	33.3%
CO	59	16.7%	MN*	1,850	100.0%	SC	13	3.5%
CT	25	20.8%	MO	36	3.7%	SD	20	5.7%
DC	0	0.0%	MS	0	0.0%	TN	2	0.5%
DE	12	16.0%	MT	14	5.1%	TX	20	1.3%
FL	9	1.0%	NC	64	9.8%	UT	65	22.5%
GA	43	7.2%	ND	8	2.1%	VA	7	1.9%
Hi	0	0.0%	NE	18	3.4%	VT*	180	20.3%
IA	539	56.5%	NH	45	75.0%	WA	522	100.0%
ID	25	12.2%	NJ	55	10.9%	WI	512	81.3%
IL	170	12.9%	NM	2	0.9%	WV	20	7.1%
IN	173	28.8%	NV	4	5.7%	WY	2	1.0%
KS	8	1.3%	NY	445	42.4%			
KY	1	0.2%				Total	7,095	26.3%

SPU has always had contracts with haulers for solid waste collection with PAYT programs for solid waste garbage and recycling services. In in the past 25 years SPU has approached PAYT more aggressively by expanding its garbage and recycling programs. SPU continues to a national leader in solid waste recycling as shown in Figure IV-10.

**Figure IV-10
Municipal Solid Waste Recycling Rates**



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IV.C. Baseline Spending Assumptions

Baseline spending assumptions represent the level of spending required to maintain existing service levels plus meet firm regulatory requirements. “*Maintaining existing service levels*” means that *actual* service quality (as opposed to *targeted* service quality) neither degrades nor improves through 2020. Baseline spending assumptions DO NOT⁶⁹:

- Adjust for any anticipated, future efficiencies
- Prioritize existing expenditures and eliminate or reduce lower priority projects/programs
- Include capital projects in the six-year Capital Improvement Program that are new efforts not required by regulators or are not necessary to maintain existing service levels
- Include new initiatives to address gaps in meeting SPU’s strategic objectives.

Section IV.C discusses operating expenditures and the level of capital expenditures directly funded with baseline rates revenues and other non-rates revenue funding sources⁷⁰ further discussed in Section IV.D. The majority of capital expenditures are directly paid for with proceeds from the sale of revenue bonds and do not impact the baseline rates revenue requirement discussed in Section IV.D on a dollar-for-dollar basis. Instead, capital spending impacts the baseline rates funding requirement in two areas: a) debt service payments on revenue bond borrowing, and b) financing of a portion of current year capital expenditures with rates and non-rates revenues (“Cash-financed CIP”)⁷¹.

Sub-section IV.C.1. includes a summary of assumed service levels used in developing baseline spending assumptions.

Sub-section IV.C.2. details current (2014) operating expenditures as well as the level of capital expenditures assumed to be funded with rates and non-rates revenues. These represent spending levels required to support current service levels. **Sub-section IV.C.3.** follows with the same information for 2015 through 2020, including a discussion of inflation and other assumptions underlying increases in spending over 2014 levels.

Sub-section IV.C.4. provides an overview of total 2015 to 2020 baseline capital spending levels required to maintain current service levels and meet regulatory requirements. Whereas Sections IV.C.2 and IV.C.3 note the level of capital expense funded with rates and non-rates revenues, this section defines **total** projected capital spending, including the portion paid for with revenue bond issue proceeds. In addition this section provides a description of the work done under the capital improvement program.

⁶⁹ Increases or reductions to spending associated with the bulleted exclusions are addressed in the strategic plan rather than the financial baseline.

⁷⁰ This includes other current year operating and non-operating revenues, as well as prior year revenues remaining in operating cash balances.

⁷¹ See Section IV.C.2 and Appendix A for further information on the impact of capital spending on rates.

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IV.C.1. Current Service Level

Table IV-2 presents additional information on the service levels assumed in developing baseline spending.

**Table IV-2
Solid Waste Current Service Level Targets and Actual Performance**

Service Levels	Target	Mandatory?	Usual Performance	Comments
1. Provide odor and rodent control at the Recycling and Disposal Stations by cleaning out garbage at day's end at least 90% of the time.	90% min	Yes	100%	100% is Health Department permit requirement.
2. Reduce collection misses to less than 1 per 1000 stops	1 per 1000 max (0.7% of customers each year)	No	<<1/1000 (approximately 0.2%)	No unilateral change in this until end of collection contracts (2019 or 2021). We are presently awarding \$680,000/year for exceeding these targets. Could keep targets, and maintain penalties for not meeting targets but not reward exceeding in the future. Or adjust targets in the future.
3. Reduce repeat misses to less than 1 per 10,000 stops	1 per 10,000 max (0.7% of customers each decade)	No	<0.1/10,000	Same as above.
4. Achieve City's waste reduction and recycling rate goal	60% in 2015	No	55.7% in 2012	Our studies show higher recycling rate reduces total system cost, especially in the long-term
5. Late container deliveries per 100 requests	Max 2/100	No	<1.0	Not mentioned in collection contracts
6. Collect at least 95% of missed solid waste pickups within one business day following notification by customers.	95% min	No	>99%	Not mentioned in collection contracts

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IV.C.2. Overview of 2014 Spending Requirement (Use of Solid Waste Revenues)

The majority of annual baseline rates revenues are used to fund operating expenditures. These revenues also directly fund a portion of current year capital expenditures (cash-financed CIP). As detailed in Appendix A, apart from the cash-financed portion of the CIP, rates revenues do not directly fund capital expense but are used to repay debt on revenue bond proceeds used to fund both current year and prior year(s) capital expenditures. Figure IV-11 depicts the sources and uses of operating and capital funding.

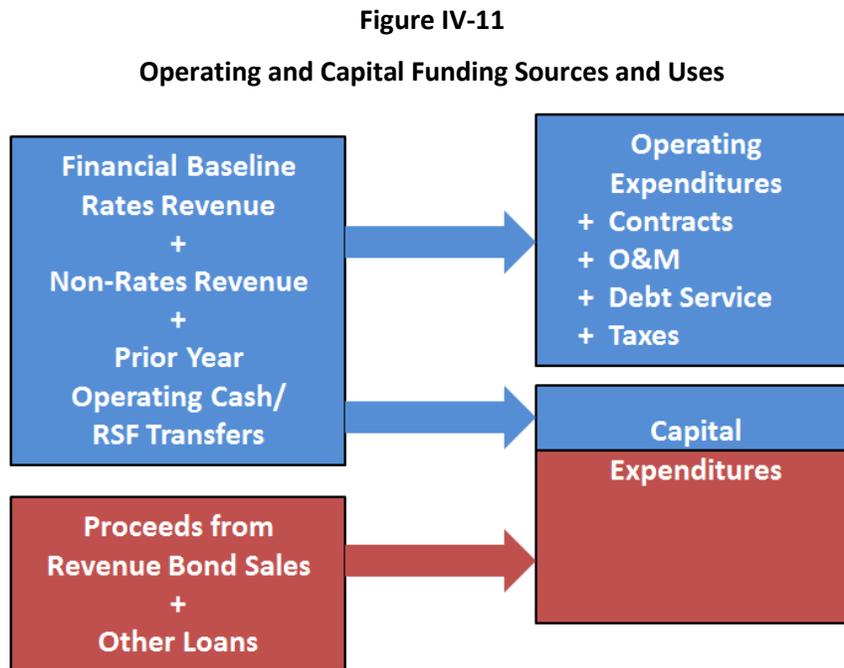
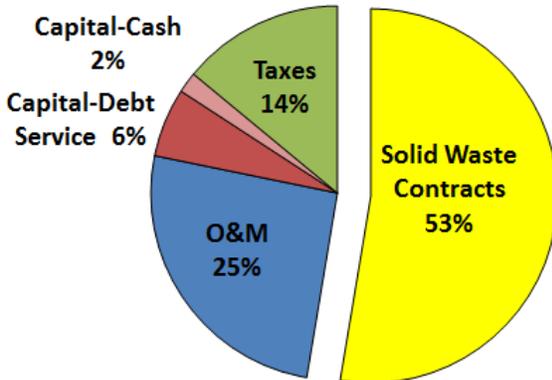


Figure IV-12 presents a breakdown of projected Solid Waste 2014 use of revenues⁷². Solid Waste contract expense account for over half of projected expenditures, followed by O&M at 26 percent, taxes at 14 percent and capital financing (debt and cash) at 8 percent

⁷² Revenues funding 2014 expenditures include current year rates and non-rates revenues and may also include prior year operating revenues transferred from the Rate Stabilization Fund or otherwise carried over in operating cash balances from prior years.

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Figure IV-12
Solid Waste Fund 2014 Spending Requirement
Use of Solid Waste Revenues



	2014 (\$M)	% of Total
Solid Waste Contracts	\$94.9	53%
O&M	\$46.1	26%
Capital-Debt Service	\$10.8	6%
Capital-Cash	\$3.3	2%
Taxes	\$25.3	14%
Total baseline	\$180.2	100%

IV.C.2.a. Solid Waste Contract Payments

The largest portion of expense is payments to private haulers for the collection, transfer, disposal, and processing of garbage, organics, and recyclable materials. Payments levels are established through long-term contracts which generally last 10 years. Appendix B provides an overview of current solid waste contracts.

IV.C.2.b. O&M

As Figure IV-12 shows, 26 percent of the 2014 solid waste revenues pays for operations and maintenance (O&M) expenses. The majority of these costs cover branch O&M -- the costs of running the department's operations and corporate activities (Field Operations & Maintenance, Customer Service, Utility Systems Management, Project Delivery, Human Resources & Service Equity, Finance & Administration, and Corporate Strategies & Communications). A smaller portion pays for costs outside of the branches' control, such as cost-allocated payments to other city departments, space rent, claims, and contingencies for emergencies.

Within the solid waste branch O&M, personnel costs (wages, benefits, overtime, temporary staffing, etc.) comprise the largest portion of expenditures at roughly 65 percent. The next largest cost center is services, which includes consultant and other outside services (e.g. financial auditing, security, printing, etc.), inter-departmental payments for direct services (e.g. customer billing system services from City Light), and payments to other government agencies and non-profits organizations (e.g. litter collection services from the Parks Department). The remaining branch O&M costs are composed of fleet, supplies, inventory, maintenance, utility and other like expenses.

The activities performed in the solid waste branch O&M can also be characterized as "mandatory", "core" or "value-added". Activities that are considered mandatory or core are essential to directly or indirectly providing basic utility services and/or meeting regulatory requirements. Examples include

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meeting King County Health Department requirements, collecting and disposing garbage, recyclable and organics at the curb, operating the transfer stations and household hazardous waste facilities, and operating the customer contact center. Activities that are considered “value added” are more discretionary and enable us to operate more effectively, efficiently, and sustainably, and/or add value to the organization and our customers. Examples include waste reduction, education and outreach, asset management, and service equity activities.

IV.C.2.c. Capital Financing (Debt Service and Cash Financed CIP)

The Solid Waste Fund pays for current year capital expenses through a combination of Solid Waste Fund revenues (“cash-financed” CIP) and proceeds from periodic revenue bond issues. Annual debt service payments of principal and interest represent the annual cost to the fund of issuing revenue bonds.

Financing a portion of the CIP with revenues provides greater flexibility to the utility by reducing the amount of debt that must be issued and associated long term debt service obligations. Debt-financing, however, is important to inter-generational equity as it assigns a portion of cost to future ratepayers who will benefit from long-lived assets.

Table IV-3 presents projected funding sources for current year 2014 capital spending, as well as 2014 capital financing expense by type, funded with rates and non-rates revenues. The CIP funding sources shows where the cash comes from to pay for invoices related to current year (2014) CIP expenses. The ratio of cash-to-revenue bond financing is established by financial policies, as described further in this section. So, when we discuss the “percent of cash financed CIP”, we are referring to the percent of total current year CIP expense that is funded with Solid Waste Fund revenues (as opposed to revenue bonds or other “borrowed” sources).

The capital financing expense shows annual payments made from Solid Waste Fund revenues to pay for current year capital expense (cash-financed CIP) and debt payments on current/prior year revenue bond issues. Total capital financing expense (as opposed to capital spending) is the amount that must be funded through the annual baseline funding requirement.

**Table IV-3
Solid Waste Fund 2014 Capital Funding Sources and Capital Financing Expense**

2014 CIP Funding Sources			2014 SWF Capital Financing Expense		
	2014 (\$M)	% of Total		2014 (\$M)	% of Total
Revenue Bond Proceeds	\$27.1	89%	Debt Service Payments	\$10.8	77%
Operating Revenues	\$3.3	11%	Cash-financed CIP	\$3.3	23%
Total 2014 CIP Spending	\$30.3	100%	Total 2014 Capital Financing	\$14.0	100%

Debt Service

Debt service is the annual principal and interest payment on ALL outstanding revenue bonds debt issued by the Solid Waste Fund. Debt payments are typically spread over 25 years. Total annual debt service expenditures are the sum of annual payments for all prior year outstanding bond issues, as well as debt service on any current year issuances, if applicable.

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In 2014, the SWF will make cumulative debt service payments of \$10.8 million on revenue bonds issued in 2007⁷³, and 2011. SPU expects to issue \$65.2 M in new revenue bonds in the spring of 2014. However, the first debt service payments on this new issue will not be due until 2015.

Cash-Financed CIP

Cash-financed CIP are Solid Waste Fund revenues used to fund a portion of current year capital expenditures. The level of cash financing of the CIP is typically determined by adopted financial policies. In the case of the Solid Waste Fund, the formal policy target is a \$2.5 million annual cash financing minimum, expressed in 2003 dollars (\$3.3 M in 2014), and the informal policy target is the larger of that or 10 percent of annual CIP spending (\$3.0M in 2014)⁷⁴.

For 2014, the \$3.3M in projected cash to CIP is 11 percent of the total projected CIP spending of \$30.3 million. As noted in the introduction to this section, proceeds from revenue bond sales are used to fund the remaining 89 percent of current year capital expenditures.

See Appendix A for further detail on the funding flow for capital and operating expenditures.

IV.C.2.d. Taxes

Taxes include State and City taxes on SWF revenues and tonnage (transfer) taxes on garbage tons transferred by SPU within the City. City and State revenue taxes are percentage based and thus vary proportionally with increased revenues. City Council adopts rates for the tonnage tax, which is a City-levied per-ton tax on non-recycling solid waste transferred for disposal in Seattle.⁷⁵

SPU expects to pay \$25.3 million in SWF taxes in 2014, with 70 percent of this to be paid to the City of Seattle and the remainder to the State. The state collects B&O tax (projected at \$3.0 million in 2014) and Solid Waste tax (projected at \$4.5 million), which are backed out of revenues and not explicitly listed as a separate line item on the SWF's income statement. The City collects a utility tax (11.5 percent for \$13.6 million in 2014) and tonnage tax (\$4.1 million in 2014).

IV.C.3. 2014-2020 Baseline Spending Requirement (Use of Revenues)

This section focuses on SPENDING levels underlying the baseline FUNDING requirement between 2015 and 2020. These funding levels assume:

- 2014 proposed budgetary spending, plus
- Inflationary adjustments, plus
- Other discrete changes to costs to maintain existing service levels plus meet regulatory requirements

⁷³ The 2007 issue included debt service on refunded 1999 series bonds.

⁷⁴ See Section IV.A.2.b. Capital Financing for further background on the informal guideline.

⁷⁵ SPU pays the tax as both a collector of solid waste and an operator of a transfer station in the City. The tax is also paid by other entities for the non-contract tons they transfer within the City limits. The tax provides funding for Clean Cities programs. Solid waste rates are set to recover the cost of paying the tonnage taxes to the City. SPU recovers revenue in the rates, pays the City its tax obligation and then the City transfers the total tonnage tax receipts back to SPU to pay for Clean Cities related costs

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Figure IV-13 shows the composition of increases to the Solid Waste spending requirement between 2015 and 2020 which is composed of inflationary adjustments to the 2014 proposed budget plus other discrete changes to costs to maintain existing service levels and meet regulatory requirements.

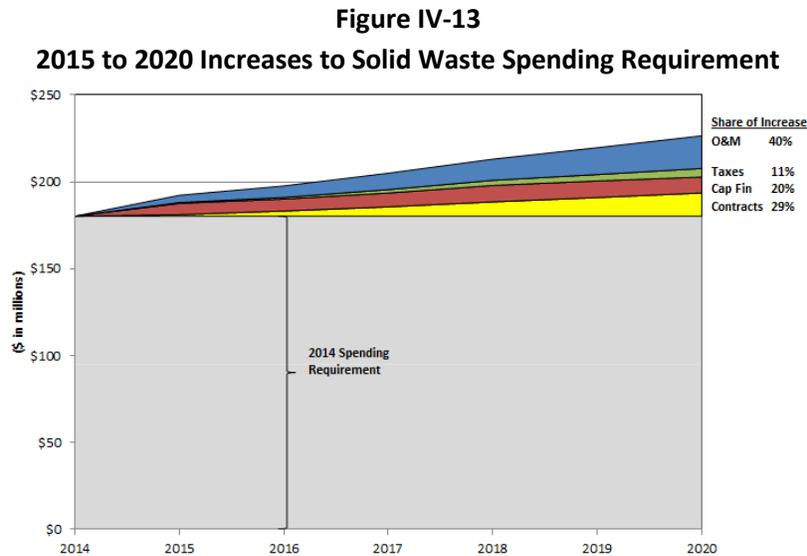
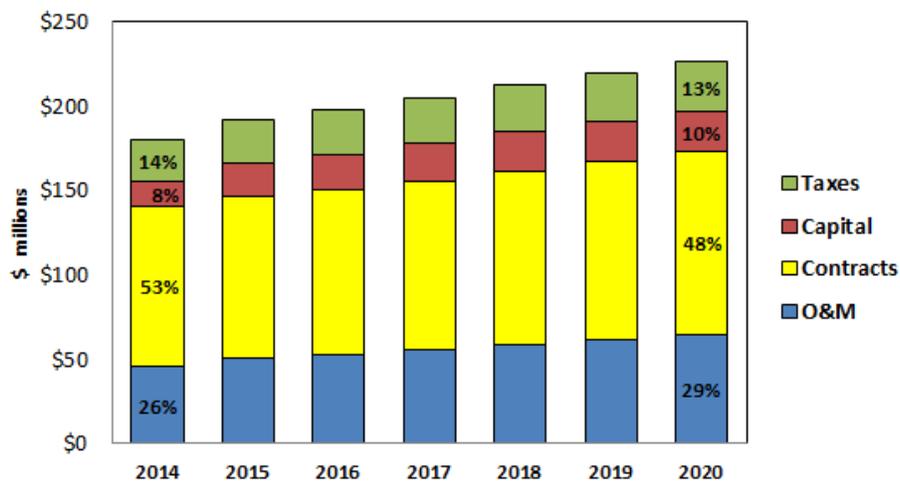


Figure IV-14 provides a different look at planned Solid Waste spending, showing the components of TOTAL expense, by year, between 2014 and 2020. This figure also shows the percentage each component represents of the base (2014) and in 2020.

Figure IV-14
Components of Solid Waste Spending , 2014-2020
(\$ millions)



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O&M accounts for 41 percent of total spending increases following by solid waste contracts at 28 percent, capital financing at 20 percent and taxes at 11 percent. O&M's and Capital Financing's share of TOTAL spending grow, from 26 percent to 29 percent for the former and from eight percent to 10 percent for the latter. In spite of significant growth, Solid Waste's share of TOTAL spending decline from 53 percent to 48 percent by 2020. Taxes remain relatively constant , declining from 14 percent of TOTAL spending in 2014 to 13 percent in 2020.

IV.C.3.a. Solid Waste Contract Expense

Payments to contractors providing services for solid waste collection, processing, transfer, and disposal are projected to grow by \$13.4 million, or a total of about 14 percent between 2014 and 2020, averaging about 2.2 percent per year. Although still the single largest Solid Waste expense component, contracts share of total Solid Waste spending is projected to decrease across the period from 53 to 48 percent.

Table IV-4 presents the projected Solid Waste contracts spending requirement.

Table IV-4
Solid Waste Contracts Spending Requirement 2014-2020

	2014	2015	2016	2017	2018	2019	2020	Total
Annual Expense	\$94.9	\$95.8	\$97.8	\$100.3	\$103.1	\$105.6	\$108.2	
Change in Expense		\$0.9	\$2.0	\$2.4	\$2.8	\$2.5	\$2.6	\$13.4

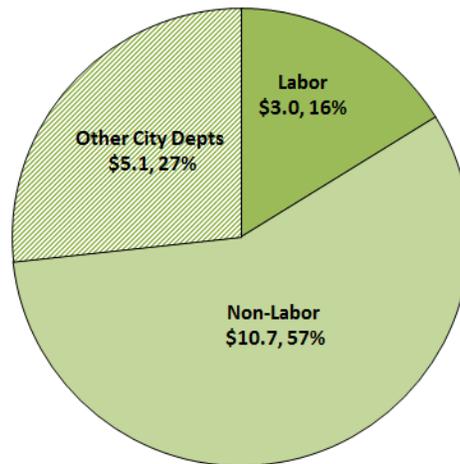
Increases to solid waste contracts expense are driven by a combination of changes in demand and changes to contractor rates. The DEMAND basis varies by contract. See Appendix D for applicable demand units by contract type.

Contractor rates are adjusted annually in April based on negotiated contractual adjustment factors. Financial projections assume a 3 percent inflation rate for collections contracts. This rate is a hybrid of CPI, wage, and fuel inflation. The current pair of collections contracts came into effect with the economic downturn and the accompanying decline in commodity prices. As a result, the first inflation adjustment in 2010 was -1.9 percent. Inflation adjustments have averaged 2.5 percent annually since then. Processing and disposal contracts are based only on CPI indices stated in contract terms.

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IV.C.3.b. O&M Expense

Figure IV-15
Solid Waste Fund
2014-2020 Baseline O&M Spending



As Figure IV-14 shows, O&M accounts for the largest portion of the 2015-2020 baseline increase relative to 2014 spending. The O&M baseline drivers are labor, non-labor, and City central costs (allocated costs to other City departments).

There are three major components to the labor cost increases:

- Health care benefit costs are expected to inflate by seven percent per year.
- The City's contribution to the retirement system is assumed to continue to increase.
- Real wages are rising slightly higher than the rate of inflation. The annual cost of living adjustment (COLA) is assumed to be 2.5 percent for all City employees. In addition to this, other factors are driving SPU wages above COLA. These include the fact that changing business needs and more automation result in needing fewer entry-level (lower paid) positions, and more and more new employees are calling for higher starting salaries as a condition of employment.

Most non-labor costs assume a general inflation rate of two percent on most goods and services. However, based on the eight-year inflation average (2005-2012), some cost centers are estimated to rise beyond two percent per year. These include fuel, professional and technical services, and utilities. See Appendix D for a complete list of inflation assumptions.

In addition to inflation on non-labor costs, the O&M baseline is changing because of specific adjustments made to either maintain current service levels. In the solid waste line of business examples of this include:

- Continuation of programs in support of SPU's recycling goals, which results in a net savings by reducing disposal costs;

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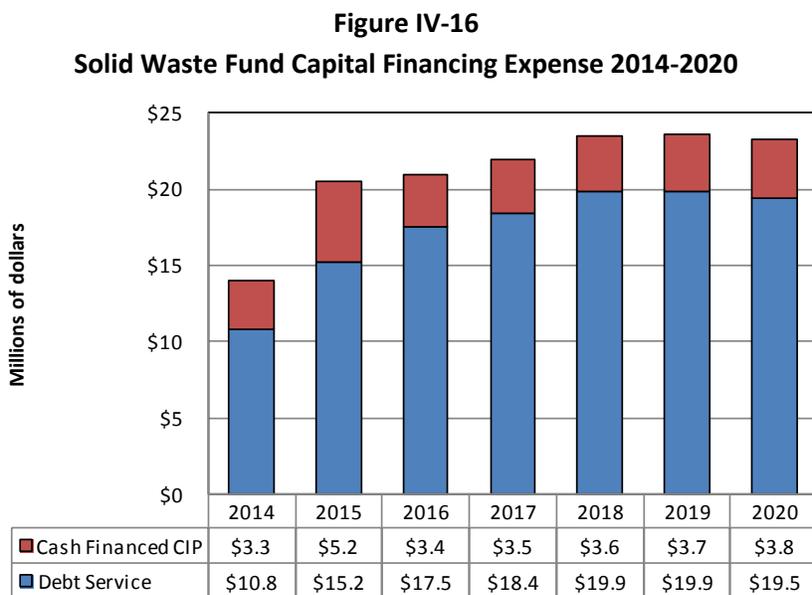
- Increased staffing for the new North Transfer Station, starting in 2016;
- Reduced transfer station hauling costs for organics due to having the new contractors provide hauling services;
- Higher vendor costs for software maintenance and support; and
- Higher payments to City Light when the new customer billing system is launched.

Finally, the last O&M baseline driver is City central costs. These are costs that are allocated to SPU for services provided by other departments in support of general City operations. This includes payments to the Finance & Administrative Services (FAS) Department, the Department of Information Technology (DoIT), the City Auditor’s Office, the Law Department, the City Council, the City Budget Office, etc. As with non-labor costs, based on the eight-year inflation average (2005-2012), several City central costs are estimated to rise beyond two percent per year. See Appendix D for a complete list of inflation assumptions.

CPI inflation is based on City guidance and ranges from two percent to 2.6 percent. Applicable indices averaged 0.5 percent during the recession (2008-2010) and three percent during the recovery (2010-2012). See Appendix D for a further breakdown of inflationary assumptions.

IV.C.3.c. Capital Financing

As discussed in Section IV.C.2.c, capital expenditures in any given year are paid for with a combination of revenue bond proceeds and Solid Waste operating and non-operating revenues. These revenues are also used to pay the debt service (interest and principal payments) on the current and prior revenue bond issues. Figure IV-16 presents the projected components of annual Solid Waste Fund capital financing expense from 2014 through 2020.



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Over the period, total capital financing expense is projected to increase by \$9.2 million, from \$14 million in 2014 to \$23.2 million in 2020, an increase of 66 percent.

Table IV-5 presents the change in annual capital financing by component. The change in expense is what drives changes to rates.

Table IV-5
Change in Solid Waste Capital Financing Expense, 2015 to 2020
(\$ in millions)

	2015	2016	2017	2018	2019	2020	Total
Debt Service	\$4.5	\$2.3	\$0.9	\$1.5	\$0.0	-\$0.4	\$8.7
Cash Financed CIP	\$2.0	-\$1.8	\$0.1	\$0.1	\$0.1	\$0.1	\$0.5
Total	\$6.5	\$0.5	\$1.0	\$1.6	\$0.1	-\$0.3	\$9.2

Debt service is the predominant driver of the increase, accounting for \$8.7 million of the net increase in capital financing expense. The increases in debt service assume that the Solid Waste Fund will issue about \$143 million in new revenue bonds through 2017 (\$65 million in 2014; \$48 million in 2015; and \$30 million in 2017). Significant new debt is required during this period fund construction of new solid waste facilities (75 percent of planned spending) and to comply with regulatory requirements related to the South Park landfill (19 percent of planned spending). See Section IV.C.4 for additional detail.

Cash-financed CIP adds only \$0.5 million in net increased expense between 2014 and 2020. Rates are set to fund the greater of 10 percent of annual CIP spending or \$2.5 million annual cash financing minimum, expressed in 2003 dollars, which ranges from \$3.3 million in 2014 to \$3.8 million in 2020. In all years except 2015, 10 percent of CIP spending is below the \$2.5 million (inflated to current dollars) target, resulting in a cash contribution that fluctuates very little across the period.

II.C.3.d. Taxes

The Solid Waste Fund pays taxes on SWF revenues and tonnage (transfer) taxes on garbage tons transferred by SPU within the City. City and State revenue taxes are percentage based and thus vary proportionally with increased revenues. City Council adopts rates for the tonnage tax, which is a City-levied per-ton tax on non-recycling solid waste transferred for disposal in Seattle.⁷⁶

Table IV-17 presents projected Solid Waste Fund taxes for 2015 through 2020.

⁷⁶ SPU pays the tax as both a collector of solid waste and an operator of a transfer station in the City. The tax is also paid by other entities for the non-contract tons they transfer within the City limits. The tax provides funding for Clean Cities programs. Solid waste rates are set to recover the cost of paying the tonnage taxes to the City. SPU recovers revenue in the rates, pays the City its tax obligation and then the City transfers the total tonnage tax receipts back to SPU to pay for Clean Cities related costs

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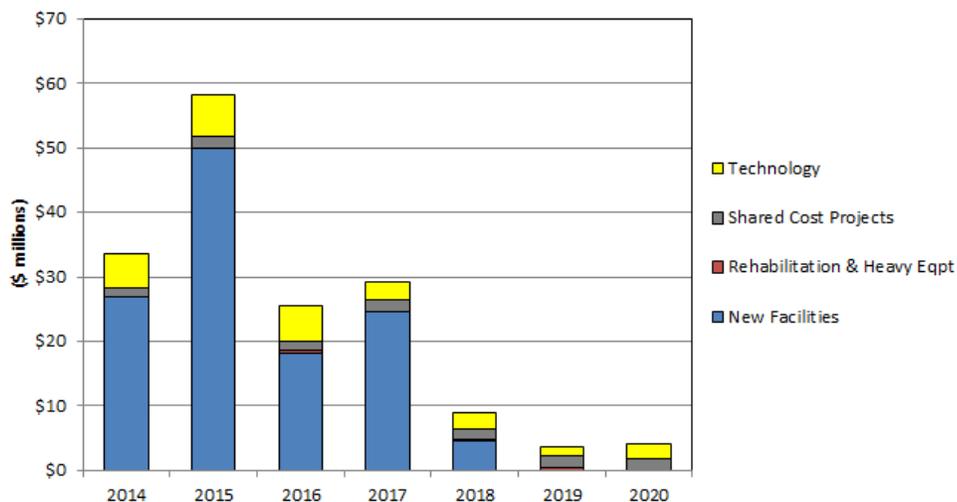
Table IV-17
Solid Waste Tax Spending Requirement, 2015 to 2020
 (\$ in millions)

	2015	2016	2017	2018	2019	2020
City Tonnage Tax	\$3.8	\$3.6	\$3.5	\$3.5	\$3.4	\$3.4
City Utility Tax	\$14.1	\$14.5	\$15.2	\$15.9	\$16.4	\$17.3
State B&O Tax	\$3.2	\$3.3	\$3.4	\$3.5	\$3.7	\$3.8
State Solid Waste Tax	\$4.8	\$4.9	\$5.1	\$5.3	\$5.5	\$5.7
Total Taxes	\$25.9	\$26.3	\$27.2	\$28.2	\$29.0	\$30.2

IV.C.4. 2014-2020 Baseline Capital Spending

Planned spending in the Solid Waste CIP is \$130 million over the 2015-2020 period. Unlike the Water and Drainage & Wastewater CIP, the Solid Waste CIP is episodic. In the seven years prior to the initiation of the transfer station rebuild projects, the solid waste CIP (excluding Technology) averaged \$4.7 million annually. In the years when the transfer station rebuild projects are included, the solid waste capital budget (excluding Technology) averages \$21 million annually. Once the stations are completed, the core solid waste CIP is expected to return closer to the lower, historic levels.

Figure IV-18
Solid Waste Fund Planned Capital Expense, 2014-2020



The solid waste fund places a high priority on managing environmental issues and addressing regulatory requirements related to current and historic solid waste facilities while protecting human health and safety.

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Major 2015-2020 solid waste CIP projects include:

- Rebuilding the North Transfer Station;
- Constructing a recycling/re-use facility at the South Transfer Station; and
- Completing the South Park Redevelopment project.

IV.D Financial Baseline Rate Projections

The Baseline Rate Path is the series of increases to current solid waste rates which will be required to generate revenues sufficient to maintain existing service levels plus meet firm regulatory requirements. As described in Section II.C, “*Maintaining existing service levels*” means that *actual* service quality (as opposed to *targeted* service quality) neither degrades nor improves through 2020.

Four factors determine the size of annual rate increases: a) annual spending levels; b) financial policy requirements; c) non-rates sources of funding; and d) solid waste demand.

The first three factors combined determine how much total revenue must be generated by solid waste rates, also known as the rates revenue requirement⁷⁷. Rate increases are required to fund increases in the revenue requirement from one rate setting period to the next. Where demand is constant, the average rate increase will equal the increase in the revenue requirement. Increasing demand (i.e., customers disposing of more tons of waste or using larger waste containers) will reduce the required rate increase and declining demand will increase the rate increase relative to the change in the revenue requirement.

Section IV.A. discusses the drivers of historical rate increases, including adopted increases through 2016. This section focuses on the impacts of proposed baseline spending on new rates to be adopted for 2017 through 2020. Unlike other SPU lines of businesses where new rates take effect on January 1, new Solid Waste rates take effect on April 1. This schedule allows for rate increases to be in line with changes in solid waste contract expense which is the single largest component of Solid Waste expense. Solid waste contract rate adjustments are made on April 1 of each year.

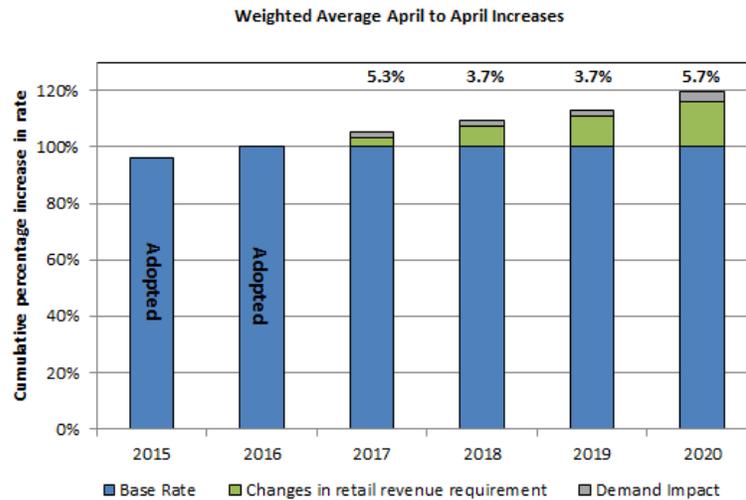
Figure IV-19 presents a breakdown of projected annual and cumulative rate increases required to maintain current service level.⁷⁸ These are increases to the projected April-to-April weighted average rate.⁷⁹

⁷⁷ The **revenue requirement** is the amount of revenue required to pay for solid waste operating expenses spending and meet financial policy targets, including the funding of a portion of capital expenditures with rates and non-rates revenues. The **rates revenue requirement** is equal to the revenue requirement, less funding from sources other than rates including drawdowns of cash balances, and other operating/non-operating revenues.

⁷⁸ The change in the retail revenue requirement includes all increased costs that exceed the base used to set 2016 adopted rates. The demand impact shows additional year to year increases required to recover cumulative increased costs at lower levels of demand.

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Figure IV-19
Projected Solid Waste Fund Rate Increase, 2017-2020



Between 2017 and 2020, rates must increase by 20 percent, or an average of 4.6 percent per year to generate rates revenues sufficient to maintain current service levels.⁸⁰

Tables IV-6 presents the contribution of each of the components of the Solid Waste rates revenue requirement (spending, financial policy impacts, and non-rates funding) and of demand to the weighted average April-to-April rate increases.

Table IV-6
Solid Waste Rate Increase Factors by Year

	2017	2018	2019	2020
SPENDING +	3.7%	4.1%	3.4%	3.4%
FINANCIAL POLICIES +	0.0%	0.0%	0.0%	0.2%
NON-RATES FUNDING +	-0.5%	-0.3%	0.2%	1.1%
DEMAND IMPACT =	2.0%	0.0%	0.1%	1.1%
Average Weighted % Rate Change	5.3%	3.7%	3.7%	5.7%

Although there are annual fluctuations in the contribution of each factor, spending increases are the largest driver of rate increases from 2017 through 2020. The “re-setting” of demand in 2017 is also a significant rate driver at the beginning of the period.

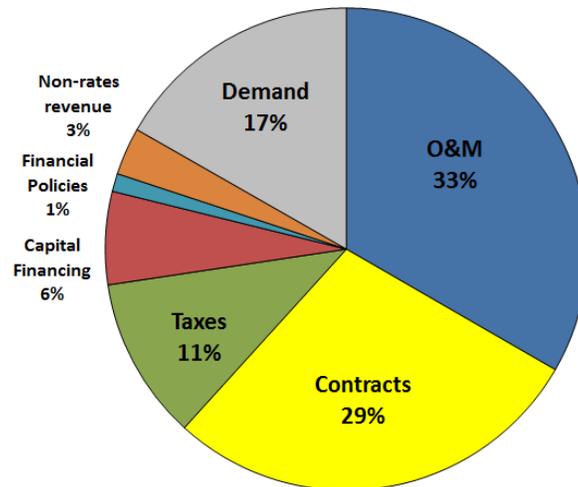
Figure IV-20 presents the composition of the factors increasing solid waste rates.

⁷⁹ The April to April rate increases are consistent across all customer classes, with the exception of Self-Haul rates that increase at a different rate than other classes through 2017. The weighted average rate takes into account this differential.

⁸⁰ The average annual increase across the 2015-2020 plan period is 3.2 percent, including adopted rate increases for 2015 and 2016.

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Figure IV-20
Composition of Additions to Solid Waste Rate, 2017 to 2020



Spending (O&M + contract + taxes + capital Financing) accounts for about 79 percent of the total increase in rates between 2017 and 2020, with O&M being the largest driver, accounting for 33 percent of increased spending. Contracts are also a major component of the increase, accounting for 29 percent of the total. Taxes (11 percent) and capital financing (six percent) are smaller components of the increase. “Non-spending” factors account for 21 percent of the overall rate increase, with declines in demand for solid waste services being the largest component (17 percent). A net decline in non-rates funding sources (three percent) and financial policy requirements to maintain targeted operating cash balances (one percent) are more minor factors.

Additional information on spending increases is found in Section IV.C.3. Section IV.D.1 discusses the impact of changes in non-rates funding sources on solid waste rates. Section IV.D.2 presents assumptions underlying the solid waste demand forecast used in developing the 2017 through 2020 rate path.

All 2016 spending, financial policy, non-rates revenue, and demand assumptions used to determine rate drivers are based on assumptions for 2016 used to set 2016 rates, not the current 2016 spending projections presented in Section IV.C. In a new rate setting year, the size of rate increase is set in relation to how rates were last set for the prior year. Differences between actual spending and revenue in a given year, and assumptions underlying rates for that year, will be reflected in revised year-end cash balances.

IV.D.1 Non-Rates Funding Sources

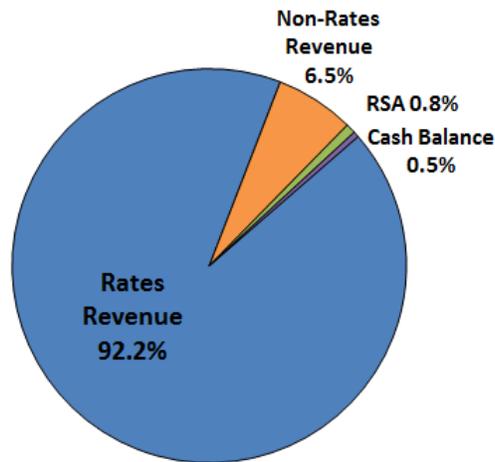
Between 2017 and 2020, SPU project that about 6 percent of the total funding requirement will be paid for cash reserves and other non-rates revenues, including capital contributions, grants, permit fees, interest income and other miscellaneous revenues. The use of cash and other funding sources reduces

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the amount to be recovered through direct service and rates and therefore are reflected as reductions to the total revenue requirement in each year.

Figure IV-21 below presents the sources (rates and non-rates) of funding for the new rate setting periods between 2017 and 2020. Rates revenues are projected to fund about 92 percent of the solid waste revenue requirement, other non-rates revenues 7 percent, with the balance funded with Rate Stabilization Account⁸¹ (RSA) withdrawals and draw down of cash balances.

Figure IV-21
Solid Waste Sources of Funding, 2016-2020



Between 2017 and 2020, non-rates funding sources decline by \$0.8 million on net, increasing the amount of funding which must be generated through rates. The largest source of this decline is the reduction in the amount of cash balances available to fund expenditures from 2018 forward, which adds \$1.7 million to the rates revenue requirement. Withdrawals of balances in the RSA are used in each year of the 2017 through 2020 rate period. The amount used fluctuates up and down but on net, reduces the rates revenue requirement by \$0.6 million.

IV.D.2 Demand Assumptions

Tonnage forecasts are derived from SPU's Recycling Potential Assessment (RPA) Model. The RPA is an overarching model used by SPU to determine the financial and societal benefits of potential programs.

⁸¹ In the 2013-2016 solid waste rate study, the Council approved conditions for the deferral of "excess" revenues and cash to and from a Rate Stabilization Account (RSA). Excess revenues to be deferred would be equal to the amount that SWF operating cash balances at the end of each year exceed year-end cash balances projected in this rate study, as long as such a deferral would still allow the Fund to meet all financial policy targets. Revenues in the RSA may be withdrawn in a future year to allow the SWF to meet financial policy targets or to reduce the size of any 2015 or 2016 rate adjustment, as long as financial policy targets and required year-end cash balances (as projected in the rate study) are still met.

Section IV: Solid Waste Fund

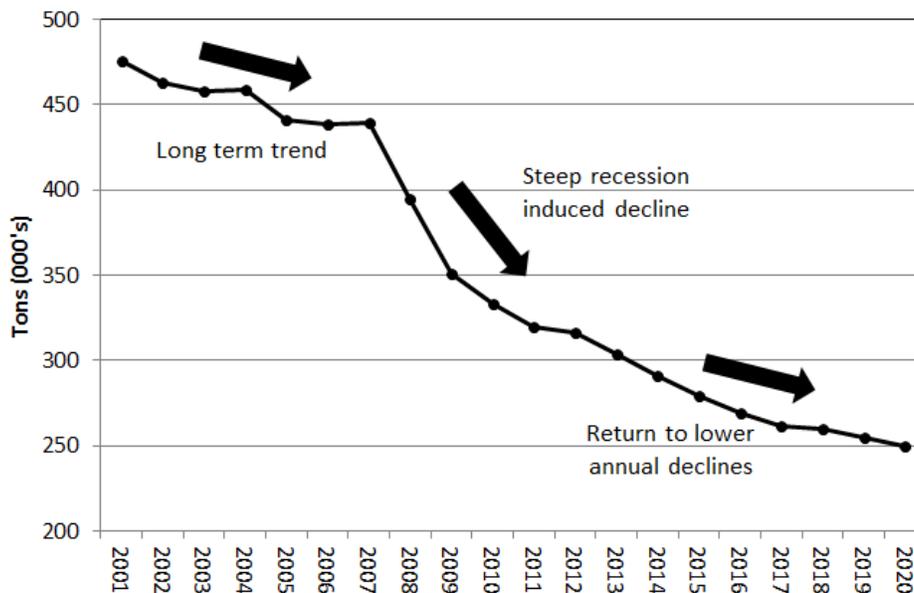
Demand forecasts in the RPA are based on econometric modeling using economic, demographic, price and weather variables.

Forecasts for demand for individual rates are based on historic regressions of the performance of those rates. These individual rates include, for example, average residential can size and dumpster pickup volume and frequency.

The solid waste historical tonnage and forecast through 2020 are shown in Figure IV-22. The demand forecast projects declining volume and tonnage through 2020. Tonnage forecasts assume a one percent annual decline in tonnage, which is slightly more than the long-term pre-2009 trend. From 2009 to 2011, SPU's rate increase, better diversionary programs, and a weak economy lead to four percent to 10 percent annual reductions in volume. This steep decline slowed in 2012.

Similarly to volume, the average residential can size declined by two percent a year with the implementation of new contracts. Average can subscription size is expected to decline 0.1 percent to 0.7 percent per year. Residential dumpster volumes are expected to decline by less than 0.1 percent a year. Commercial dumpster volumes have not leveled out and are continuing to drop four percent a year. This trend is expected to continue as conservation and increased diversion reduces volumes sent to the landfill.

Figure IV-22
Solid Waste Sources of Funding, 2016-2020



Declining demand has the greatest impact on rates in the first year of the new rate period (2017), increasing the rate by two percent over the change in the rates revenue requirement. There is a larger differential between 2016 rates assumptions and 2017 projected demand than the year on year change in subsequent years as actual demand during the current rate period is lower than what was anticipated when rates were originally set.

Section V. AFFORDABILITY

Affordability is one of SPU's objectives in the Strategic Business Plan. SPU understands the importance for bills to be predictable and affordable to its customers. SPU has examined the issue of affordability since 2007 and continues to build this objective into the rates setting processes.

The question SPU and other utilities have grappled with is "At what level are utility bills so high they become unaffordable?" The standard industry definition of affordability states that a customer should be able to pay his or her utility bills and still afford to pay for other essential goods and services such as housing, food, basic medical needs, etc.

Although several agencies and organizations have attempted to quantify an affordability threshold, there is no "magic metric" that truly defines affordable utility bills or rates. Given this and given the general definition mentioned above, the next question that arises is "To whom are utility bills unaffordable?"

There are essentially two groups of utility customers: those who are able to pay for essential goods and services and those who are not able to pay. For customers who are able to pay, the question is: "Are they willing to pay the rates that reflect the associated service levels and costs? Are these services and programs value for the money?" The challenge to SPU is to offer services and programs that are important to our customers and provide tangible benefits, provide transparency on the cost of these services, and continue to actively manage costs and be as efficient as possible. The Strategic Business Plan strives to achieve this.

For customers who are not able or struggle to pay their utility bills, they are faced with making difficult and undesirable choices about essential goods and services. For this group of customers, SPU offers several programs to reduce utility bills. These include the Low Income Rate Assistance Program (LIRA), the Emergency Assistance Program, and conservation programs. In terms of LIRA, Seattle has one of the more generous utility bill assistance programs for low-income customers in the country. But in light of continuing rate increases, the Executive and Utilities (SPU and Seattle City Light) are working to further expand the LIRA programs.

This section provides more technical information on affordability. Section V.A summarizes two past studies SPU completed on affordability, as well as a recent industry review, while Section V.B provides information about national rate trends. Section V.C discusses SPU baseline rates and affordability.

Section V: Affordability

V.A. SPU Affordability Studies

V.A.1. 2007 SPU Affordability Study

In 2007 SPU submitted a Utility Affordability Study in response to Council Resolutions 30863 and 30928 which requested the identification of methods to assess the affordability of SPU's services. Affordability of SPU's rates was examined from several different perspectives. Affordability for SPU customers were evaluated using the percent of median household income approach developed by the EPA, as well as applying this approach for low income households. The study also estimated the utility bill's proportion of non-discretionary income using both traditional measures (e.g., Federal and State poverty definitions), as well as an index developed for regional analysis.

The ratio of median household income to the utility bill (percent of MHI) standard evolved from the EPA's Variance Technology Affordability formula,⁸² which was one of the factors used to assess whether drinking water regulations required by 1996 changes to Safe Drinking Water Act were affordable to both rural and urban communities. The EPA percent of MHI standard is calculated as:

$$\% \text{ MHI} = \left(\frac{\text{Total Annual Charges}}{\text{Annual Median Household Income}} \right) \times 100$$

In general, the EPA assumes that water consumption becomes "unaffordable" when the household affordability ratio exceeds two percent of the median annual income.⁸³ That is if an individual utility service such as water has total annual user charges of less than two percent of median household income, then this service is affordable.

Using this measure, SPU's affordability ratios for 2007 were determined as indicated in Table V-1.⁸⁴

Table V-1
Utility Bills as Percentage of Median Household Income (percent of MHI)

	Solid Waste	Sewer	Water	Drainage
Median Customer	0.50 percent	0.70 percent	0.54 percent	0.25 percent
3- Person Low Income Household	0.51 percent	1.13 percent	0.68 percent	0.26 percent

Note: Utility Services are deemed affordable when percent of MHI is less than two percent

⁸² EPA, "Information for States on Developing Affordability Criteria for Drinking Water", 1998.

⁸³ Initially, EPA's affordability standard was set at 2.5 percent of household median income. This standard was based primarily on then current expenditures levels for water and other public services from the Consumer Expenditure Survey, as well as what EPA viewed as "comparable" services. EPA concluded that median-income household could afford to pay between 1.5 percent and 3.0 percent of the household's income. Recently, those using this approach to assess affordability have been more conservative and employed a 2 percent MHI threshold.

⁸⁴ Bill values used are median residential bills for 2007. Median income is 2006 estimate from the U.S. Census (\$58,311) updated to 2007 using Seattle CPI-U (\$60,585).

Section V: Affordability

All services were well under the two percent MHI rule proposed by the EPA, which might suggest that City utility services are affordable. However, the results also illustrated why this measure is not particularly useful. The two percent MHI threshold addresses whether a utility rate is affordable to the community as a whole but does not address whether it is affordable to specific customers. This measure also obscures income distribution while ignoring the population of low-income customers.

The 2007 study went a step further in analyzing the low income customer segment. SPU’s services are a basic necessity and although customers can reduce their usage of these services, they cannot generally eliminate them. Those with the lowest incomes generally have the least ability to pay their bills and to absorb rate increases.

SPU offers rate assistance to low income customers through the Seattle Human Services Department (HSD) managed assistance programs. HSD requires those in the program to submit information about income, family size, etc. SPU developed summary statistics of this customer segment and calculated affordability directly. The following table showed a calculation of household affordability indices for customers participating in SPU’s low-income utility credit (LIUC) program. Since these customers receive a 50 percent subsidy on their bills, the affordability indices are half of what they would be otherwise.

**Table V-2
Median Annual Bills and Median Household Affordability
for Low Income Utility Credit (LIUC) Customers**

Household Size					
	1	2	3	4	Greater than 4
Sewer	0.73 percent	0.88 percent	1.13 percent	0.97 percent	1.04 percent
Water	0.66 percent	0.64 percent	0.68 percent	0.59 percent	0.60 percent
Solid Waste	0.63 percent	0.58 percent	0.51 percent	0.45 percent	0.38 percent
Drainage	0.40 percent	0.29 percent	0.26 percent	0.24 percent	0.20 percent

Note: Median bills shown assume the low-income discounted rate.

The above results showed that, as household sizes increase, median bills tend to increase for sewer and water but stay relatively flat for solid waste and drainage. In terms of affordability, sewer tends to decrease with family size, water tends to be fairly constant, and solid waste and drainage affordability tends to increase with family size.

V.A.2. 2008 SPU Affordability Study

In May 2008 SPU submitted its report on “Affordability Measures for City Utility Services and Improvements to Low-Income Programs” in response to Mayor Nickels’ request to improve participation rates in low-income assistance programs. The report provided a basic framework for evaluating affordability, looked at both aggregate and individual measures of affordability, discussed different

Section V: Affordability

minimum income thresholds for low income program application, provided options for specific affordability measures and rate assistance structure, and proposed strategies for increasing participation in the program.

The report recommended the following actions to increase participation in SPU's rate assistance program:

1. Allow automatic enrollment with income self-certification for applicants;
2. Raise/standardize the income criteria to 70 percent of state median income and merge the low-income and senior with disabilities programs; and
3. More intensive and proactive outreach strategies.

In addition, the following recommendations were made to better address affordability:

1. Do not adopt the two percent rule or other ratio indicator to measure affordability; and
2. Continue to evaluate and promote the Self-Sufficiency Standard.⁸⁵

V.A.3. Recent Industry Affordability Review

According to the 2012 American Water Works Association (AWWA) Water and Wastewater Rates Survey, nationwide, the median charges as a percentage of household income (affordability) for a customer with 1,000 CCF usage is 0.71 percent for water and 0.90 percent for wastewater.⁸⁶

Recent discussion on the application of EPA's affordability guidelines has highlighted limitations. Federal mandates related to water and wastewater can place a financial hardship on many U.S. communities, and those who are least fortunate are the ones that are most adversely impacted. The EPA's affordability measure as it relates to potable water supply is limited to assessing the national-level affordability of regulatory options for small communities. The measure is not intended to pertain to individual utilities, or to the category of medium and large utilities.

A recent 2013 report developed for the U.S. Conference of Mayors, American Water Works Association and Water Environment Federation⁸⁷ suggested that the use of median household income can be highly misleading for the following reasons:

- MHI is a poor indicator of economic distress and bears little relationship to poverty or other measures of economic need within a community;

⁸⁵ The Self-Sufficiency Standard is an index which constructs the costs required to live in a specific location individually and then aggregates these values to get the total income sufficient to live without government assistance. It is calculated for a specific location and takes into account family composition and the net effects of taxes and tax credits. The sufficiency income varies with family composition and is useful since it accounts for many factors that determine expenses like the presence or absence of small children (and therefore childcare).

⁸⁶ By comparison, the SPU affordability percentages for a customer with 1000 CCF usage (typical consumption) are 1.02 percent for water and 2.03 percent for wastewater, while the SPU percentages at its typical consumption of 500 CCF are 0.63 percent for water and 1.01 percent for wastewater.

⁸⁷ "Assessing the Affordability of Federal Water Mandates." *American Water Works Association and Water Environment Federation*. 2013.

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- MHI does not capture impacts across diverse populations;
- MHI provides a “snapshot” that does not account for the historical and future trends of a community’s economic, demographic, and/or social conditions;
- MHI does not capture impacts to landlords and public housing agencies; and
- The “Residential Indicator” used by the EPA does not fully capture household economic burdens.

The report suggests that impacts of customer bills be assessed as follows:

- Across the income distribution, especially at the lower end.
- Across potentially vulnerable household types (e.g., renters and elderly).
- Across neighborhoods, especially those that are economically at risk

V.B. National Rate Trends

V.B.1. Water and Wastewater

In the past 35 years, the Federal share of investment in water infrastructure has plummeted from about 75 percent to about three percent, according to Ken Kirk of the National Association of Clean Water Agencies.⁸⁸ This reduced funding has coincided with a significant uptick in infrastructure investments required to protect health, comply with state and federal regulatory requirements, and replace aging infrastructure.

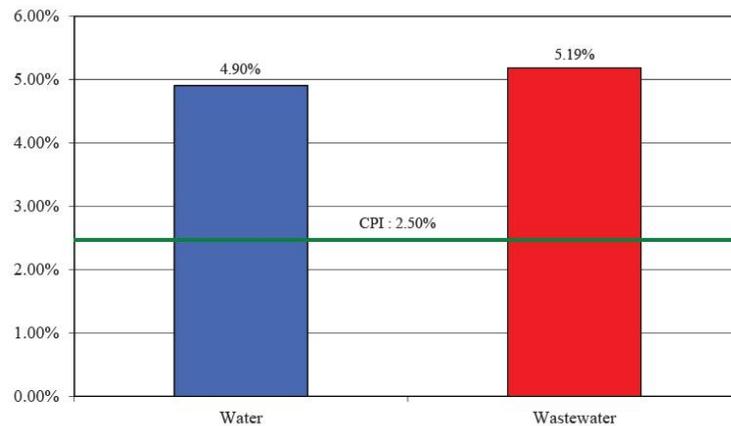
Both water and wastewater rates have grown faster than the rate of inflation over the past 15 years in order to fund an ever larger local share of a growing cost base. According to the 2012 AWWA Water and Wastewater Rates Survey, between 1996 and 2012 annual water and wastewater charges for residential customers⁸⁹ increased an average of 4.90 percent and 5.19 percent, respectively, compared with an average 2.5 percent annual increase in CPI.

⁸⁸ “Why Your Water Bill Must Go Up.” The Atlantic Cities. 28 November 2012.

⁸⁹ Based on usage of 10 ccf of water per month.

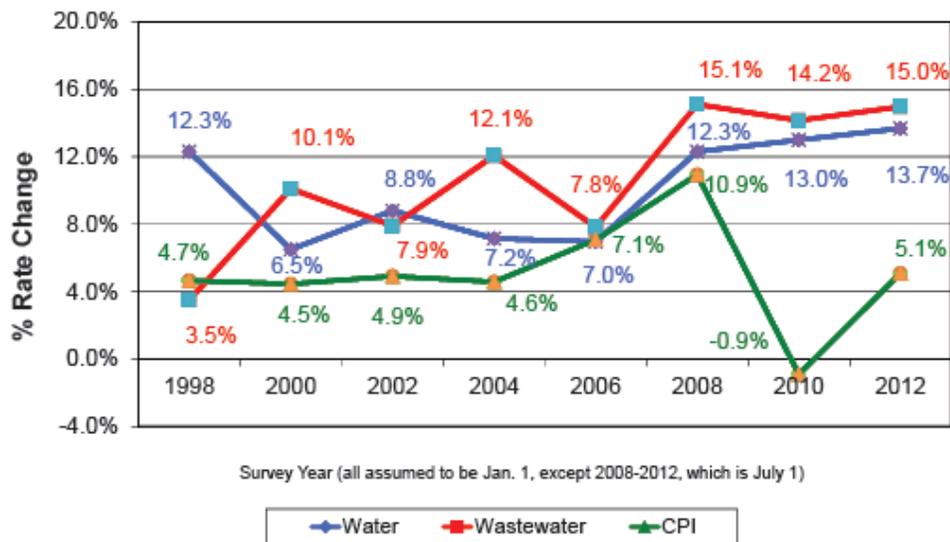
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Figure V-1
Average Annual Water and Wastewater Rate Increase from 1996 to 2012



This trend accelerated over the past few years, with residential water and wastewater monthly charges increasing by an average of 13.7% and 15.0%, respectively, over the two year period between July 1, 2010 and July 1, 2012. The Consumer Price Index (CPI) for all urban customers increased by only 5.1% during this same period. Figure V-2 below shows this widening gap between growth in water and wastewater rates and growth in CPI through 2012.

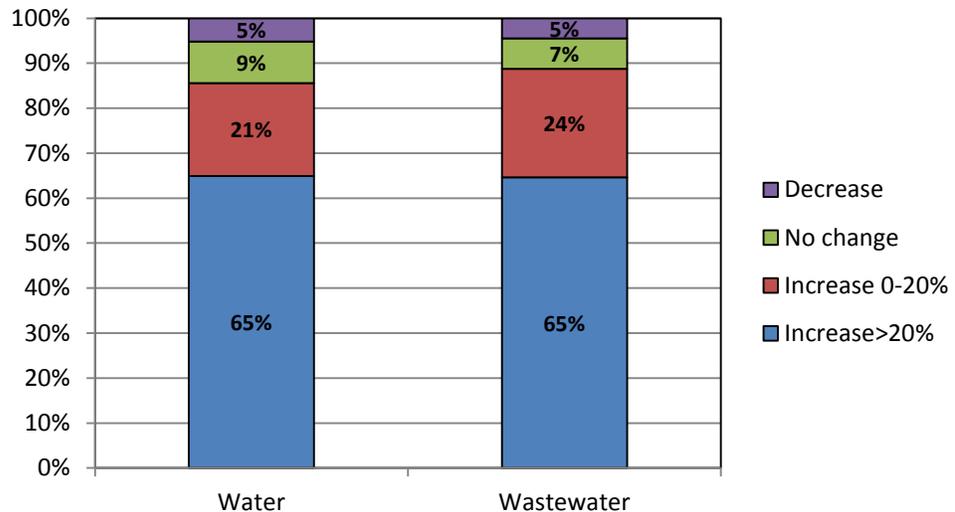
Figure V-2
Trend in CPI and Water/Wastewater Rate Growth, 1998 to 2012



The AWWA 2012 Survey provides additional detail on the size distribution of 2012 rate increases across 194 water utilities and 133 wastewater utilities. Figure V-3 presents the percentage of total utilities surveyed with varying levels of 2012 rate increases. The patterns are very similar between water and wastewater utilities, with about 65% of both groups experiencing 2012 rate increases in excess of 20%.

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Figure V-3
Size Distribution of 2012 Water and Wastewater Rate Increases



In 2013, water prices increased an average of 6.7 percent in 30 major cities, a slower rate than in recent years but well above the 2.1 percent increase in the U.S. Bureau of Labor Statistics' Consumer Price Index for 2012. The median increase in water prices was 6.2 percent.⁹⁰

V.B.2. Drainage/Stormwater

Unlike water and wastewater, stormwater charges are established based on surrogate measures for metered usage, such as impervious area. In fact, 89 percent of participants in the 2012 Black & Veatch Stormwater Utility Survey use impervious area information in the calculation of their stormwater fees.

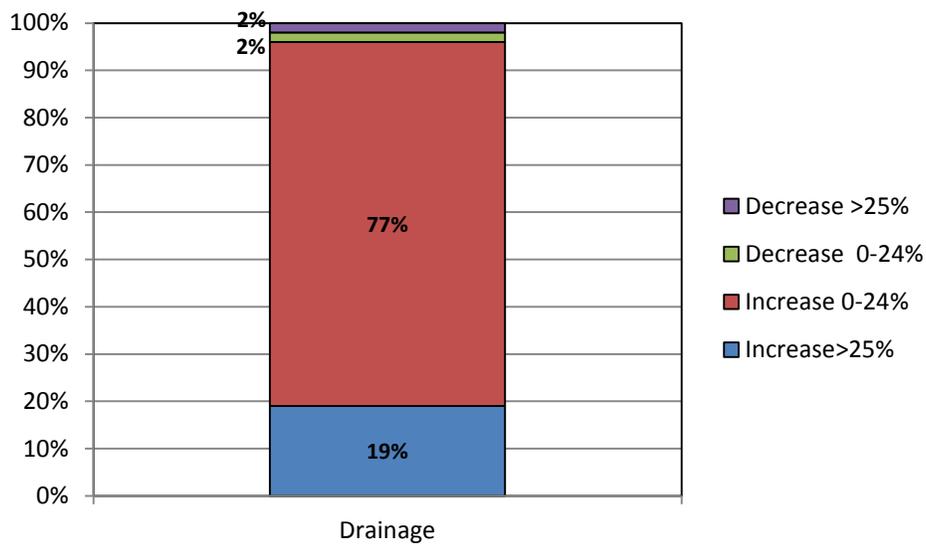
When asked about the magnitude of the last change in stormwater fees:

- 19 percent of utilities had an increase between 25 percent and 50 percent;
- 77 percent had an increase of less than 25 percent; and
- 2 percent had a decrease of less than 25 percent.

⁹⁰ "The Price of Water 2013: Up Nearly 7 Percent in Last Year in 30 Major U.S. Cities; 25 Percent Rise Since 2010." *Circle of Blue*. 05 June 2013.

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Figure V-4
Magnitude of Last Change in Stormwater Fees



V.B.3. Solid Waste

Solid Waste business models vary in terms of who provides service and the type of service provided. Services may be provided by public entities, private entities or a mix of the two. Rates cover varying types of service, from incinerator only, to managing landfill risk to a mix of owning and/or contracting out parts of the collection/transport process. SPU falls into this latter category. It owns transfer stations, but not landfills, and contracts out for collection and transport to the transfer station, but manages its own rail transfer to the landfill. Due to the lack of true comparables, Solid Waste Utilities are not included in this section.

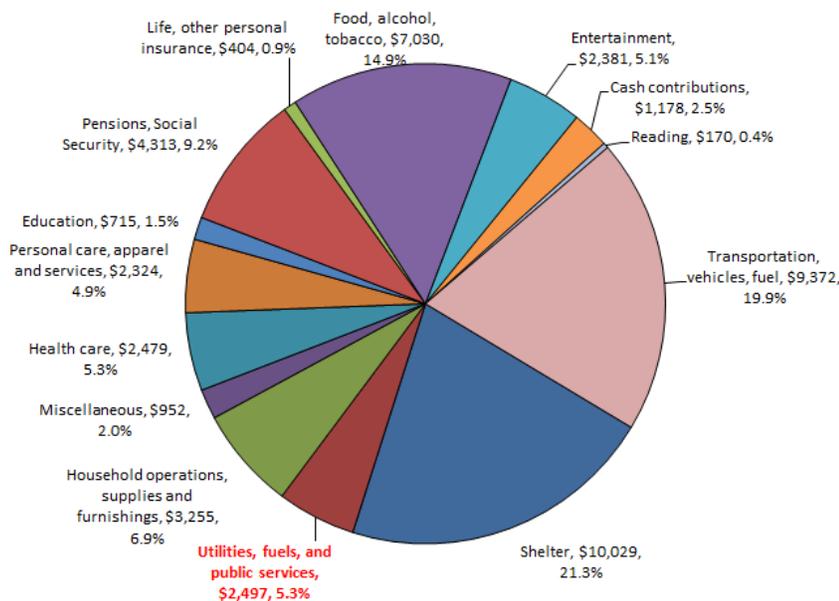
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V.C. SPU Rate Affordability

A general definition of affordability should address the concept that everyone should be able to meet their basic needs. While there are varying definitions of affordability, there is no single “magic metric”. The City Council discussed affordability during SPU most recent rate reviews and chose to take a holistic approach to costs and services by means of having SPU develop its Strategic Business Plan.

One indication of the affordability of utility charges is the percent of a household’s expenses that are dedicated to these expenses. According to the U.S. Bureau of Labor Statistics⁹¹, in the Seattle Metropolitan Service Area (MSA), in 2001 5.3 percent of a consumer’s unit expenditures went to utilities, fuels and public services. In 2011, this portion of expenditures had increased slightly to 5.9 percent.

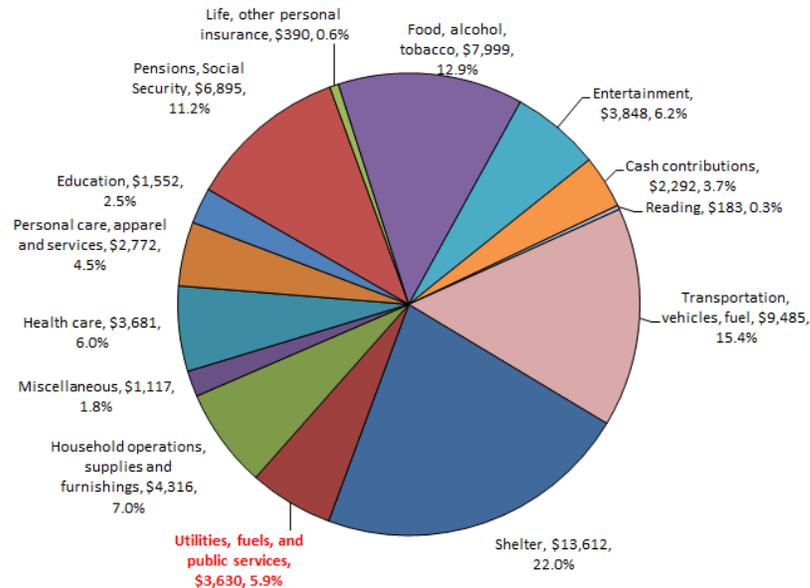
Seattle MSA Consumer Unit Expenditures - 2001



⁹¹ Consumer Expenditures (U.S. Department of Labor, U.S. Bureau of Labor Statistics)

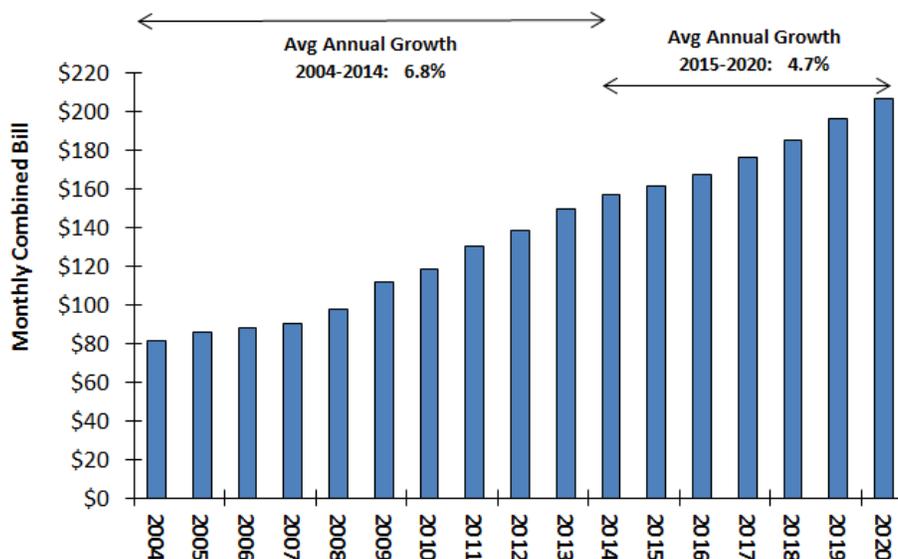
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Seattle MSA Consumer Unit Expenditures - 2011



As summarized earlier, in order to address regulatory requirements and maintain current levels of service, SPU rates will need increase in the future, but by much less than in the last decade. The projected *average annual* baseline bill increase for SPU's four lines of business is *4.7% per year* over the six year period from 2015 through 2020, compared to a 6.8 per year average between 2004 and 2014.

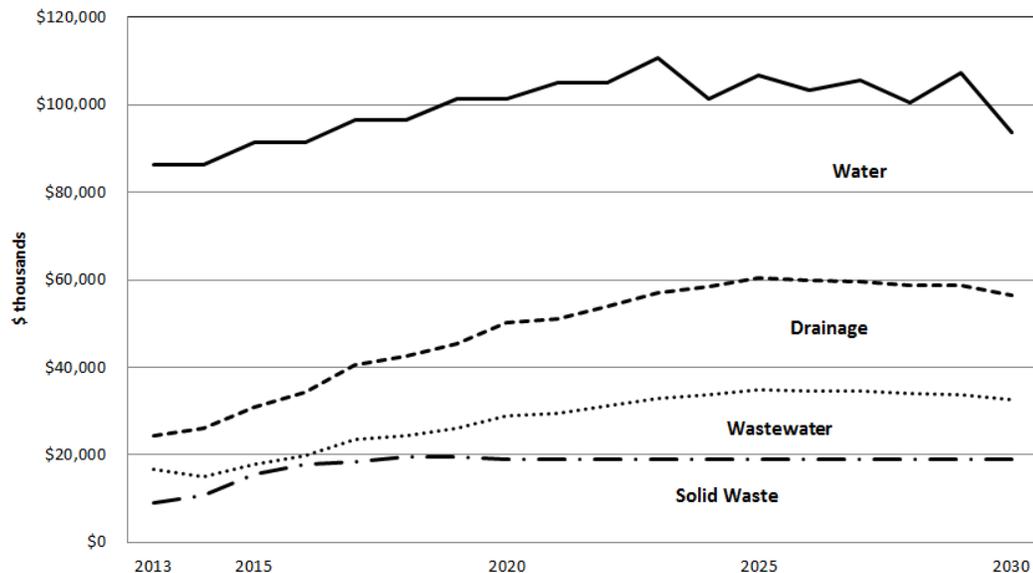
Figure V-5
Growth in Typical Monthly Single Family Residential Combined Utility Bill 2004-2020



Section V: Affordability

Though SPU will require rate increases that are higher than inflation in the short-term, in the absence of additional regulatory requirement, future rate increases will not be as significant as SPU begins to retire more outstanding debt than issuing new debt. One of the key indicators when rate increases will eventually trend more closely with inflation is the debt required to finance SPU's future capital programs. Though water CIP will fall to more moderate levels in the future, due to the large historical outstanding debt, debt service for the Water Fund will not start to fall off until the early 2020's. Regulatory requirements will lead to growing drainage and wastewater CIP which will cause debt service to continue to grow into the late 2020's. Solid waste debt service will level off in the near future as new bonds are only required in the short-term to finance the remodeling of SPU's two transfer stations.

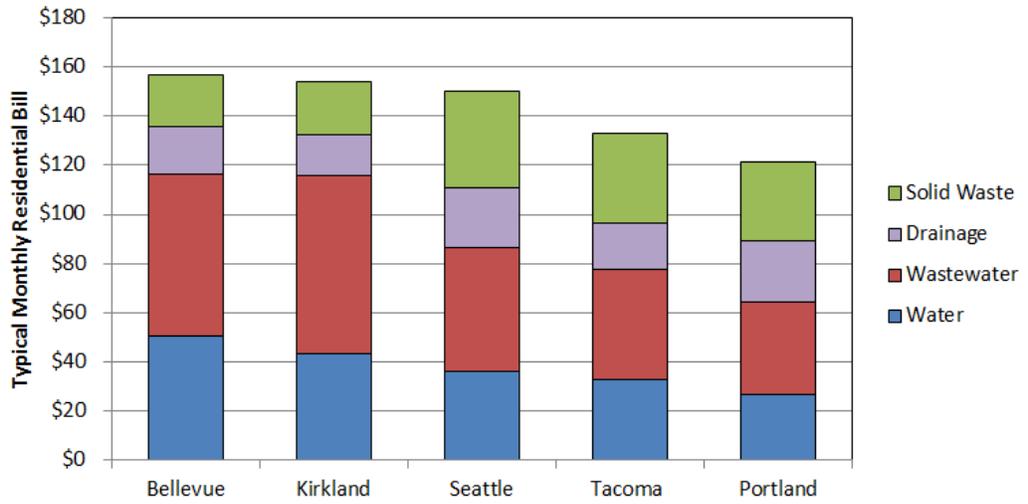
Figure V-6
2013-2030 Debt Service Payments



While Seattle customers have faced recent significant rate increases, the total SPU utility bill is comparable to that of other regional utilities. Figure V-2 shows the total SPU combined utility bill for a typical residential customer compared to other regional utilities.

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Figure V-2
Regional Comparison of 2013 Typical Monthly Residential Bill

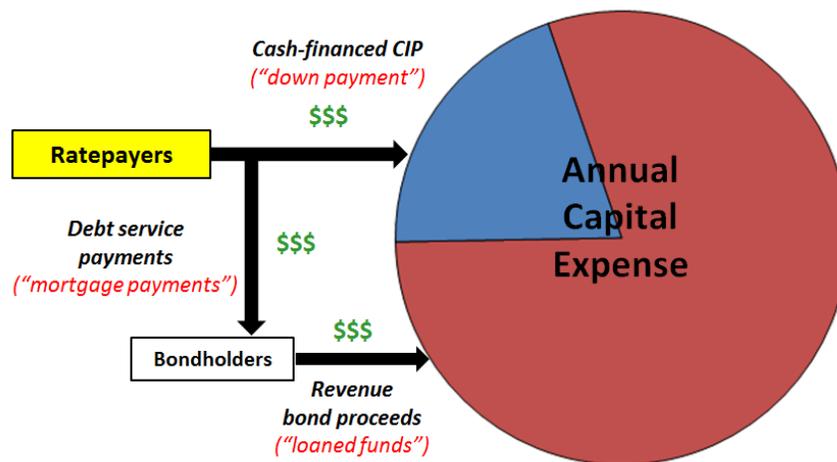


Appendix A: Capital Financing Context

Capital expense is paid for through a combination of current year revenues (cash-financed CIP) and proceeds from periodic revenue bond issues. Annual debt service payments of principal and interest represent the annual cost to the fund of issuing revenue bonds. This process is similar to home financing, with cash-financed CIP equating to a down payment, revenue bond proceeds equating to funds that the mortgage lender uses to pay for the cost of home in excess of the down payment, and annual debt service payments equating to annual mortgage payments to the lender. Both the cash and debt financed portions of capital financing expense are paid out of operating revenues, much as a homeowner uses annual income to pay for the initial down payment and subsequent mortgage payments on a home purchase.

Figure A-1 graphically depicts the funding flow for capital expenditures

Figure A-1
Funding Flow for Capital Expenditures



While a typical homeowner only purchases one home over the course of a multi-year period, utilities typically “purchase” new infrastructure every year over multi-year periods. Consequently, each year there is a new “down payment” which is a percentage of capital spending in that year. Revenue bond issues are typically sized to fund about two years of capital expenditures. So every few years, new bonds must be issued to pay for the portion of ongoing capital expenditures not paid for with current revenues. Debt payments are typically spread over 30 years, so a utility may be paying debt service payments on MULTIPLE bond issues in any one annual period. This equates to having to pay multiple mortgages on multiple homes purchased over several years.

Appendix A: Capital Financing Context

Impact of Capital Financing on Rates

Assuming constant demand and no change in other funding sources, a rate increase will be required to fund **incremental** annual increases to a utility's revenue requirement. Growth in operating spending impacts the revenue requirement in a different manner from growth in CIP spending. Incremental increases to operating expense will drive a linear dollar for dollar increase to the revenue requirement. So if operating spending in Year 1 is \$50,000,000 and in Year 2 is \$55,000,000, the revenue requirement will increase by \$5,000,000⁹².

The relationship between changes in capital spending and changes to the revenue requirement varies between the two financing options of cash and debt.

Cash-Financed CIP. Increases in capital spending will result in incremental increases to cash-financed CIP, assuming a constant percentage funded from year to year. However, there is not a 1:1 relationship between increases in capital spending and the resultant increase in the revenue requirement. For example, if 20 percent of total annual capital spending is financed each year with cash, then a \$1.00 increase in capital spending will result in a \$0.20 increase to the revenue requirement. If there is no change in CIP spending from year to year (and no change in the percentage financed), there will be no change in total cash financing and thus no change in the revenue requirement.

Debt Payments. Revenue bond proceeds are used to finance the total annual debt-financed portion of capital spending not just the incremental change in capital spending from the prior year. Therefore, any capital spending, even if it is less or the same as the prior year, will generate an increase in debt service. How large this increase is depends on the amount financed and other financing terms (variable/fixed structure, current market interest rates, term of debt), not the rate of inflation.

⁹² This is a simple example that does not take into account revenue tax impacts. Additional revenue generated to fund increased spending must fund both the spending and increased taxes on the additional revenue. Assuming a 10% tax rate, in the example above, rates must be set to generate an additional \$5,555,556 in revenue, with \$5,000,000 used to pay for increased spending, and \$555,556 used to pay for increased taxes on the higher revenues.

Appendix A: Capital Financing Context

Table A-1 below presents a numerical example of the relationship between capital spending and capital financing expense.

Table A-1⁹³
Impact of Capital Spending on Capital Financing Expense

Current Year Capital Spending	Year 1	Year 2	
Total Capital Spending	\$50,000,000	\$50,000,000	
<i>Cash-Financed CIP (20 percent)</i>	<i>\$10,000,000</i>	<i>\$10,000,000</i>	
<i>Debt-Financed CIP (80 percent)</i>	<i>\$40,000,000</i>	<i>\$40,000,000</i>	

Total Annual Capital Financing Expense			Change (\$\$)
Cash	\$10,000,000	\$10,000,000	\$0
Debt Payments ⁹⁴	\$2,752,200	\$5,504,000	\$2,752,000
<i>Payment on Year 1 spending</i>	<i>\$2,752,200</i>	<i>\$2,752,200</i>	
<i>Payment on Year 2 spending</i>		<i>\$2,752,200</i>	

In the above illustrative example, capital spending remains constant from year one to year two, as does the percentage of spending financed with cash and debt. Under this constant spending assumption, the cash financed portion of annual capital financing expense does not change. However, annual debt service payments increase, thus increasing the revenue requirement (and rates). In fact, as annual debt service is cumulative, i.e. the sum of payments related to all prior outstanding issues⁹⁵, debt service will increase with new bond issues even when capital spending declines.

Figure A-2 presents the relationship between capital spending and the two capital financing components.

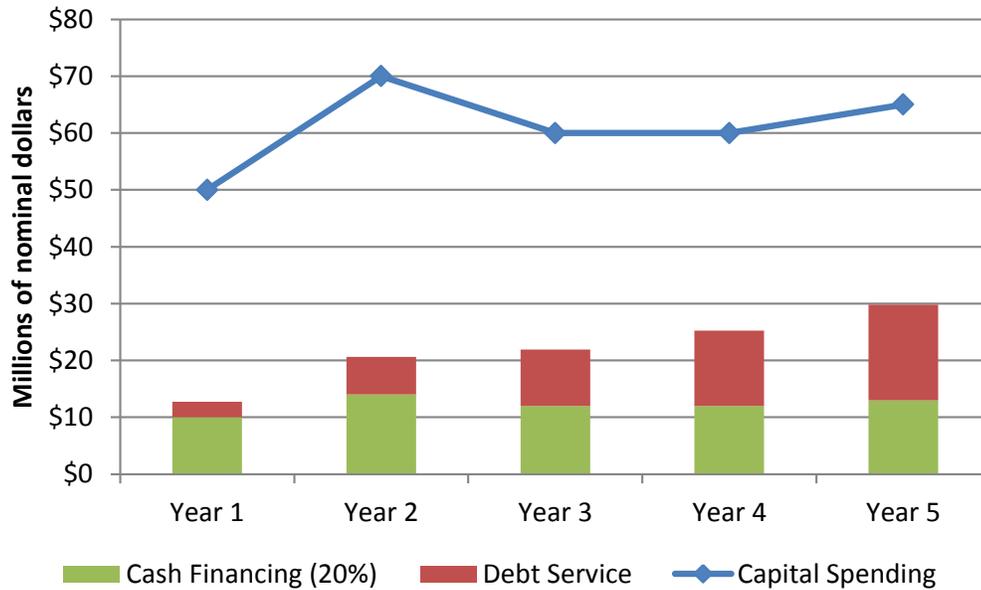
⁹³ To isolate the relationship between capital spending and debt service, this table assumes a new bond issue in each year which is sized to fully fund the debt-financed portion of capital spending in each year. In practice, debt issues are typically sized to finance 18 to 24 months of capital spending.

⁹⁴ Annual principal and interest payment assuming 5.5 percent annual interest on 30 year fixed debt.

⁹⁵ As debt is retired (after 30 years), decreases in base debt service will help to offset an increases associated with new debt issues.

Appendix A: Capital Financing Context

Figure A-2
Relationship between Capital Spending and Capital Financing Expense⁹⁶



The figure above presents capital spending and financing expense across a five-year period. The line represents annual capital expense which fluctuates across the period. Cash financing held at a constant 20 percent of spending fluctuates in the same direction as capital spending, increasing when spending increases and declining when expense declines. Debt service, on the other hand, continues to increase regardless of the direction in capital spending.

⁹⁶ Assumes 20 percent constant cash financing; 5.5 percent annual interest rate on debt service and a 30-year fixed term.

Appendix B: Financial Policy Considerations

Policy Metrics

Financial policies may provide general operating guidance that impacts performance (i.e. maintain equipment in good operating conditions) or highly specific financial targets which measure performance against industry standard metrics, such as net income or debt service coverage. Table B-1 describes common industry metrics used to measure utility financial performance and which form the basis for SPU's utility funds' financial policy targets.

Table B-1
Description of Financial Policy Metrics

Metrics	Objective	Importance
Net Income	Financial certainty	Measure of the sustainability of an enterprise over time. Signals to rating agencies the City's commitment to establishing fees that cover costs.
Year-End Cash Balance	Financial certainty Rate stability	Ensures that an enterprise has sufficient cash to meet near-term operating needs and absorb some unexpected changes to revenues and expenditures.
Variable Rate Debt	Financial certainty Rate stability	Balances the advantages of lower interest costs with the risk of unexpected interest rate increases.
Rate Stabilization Fund/Account	Financial certainty Rate stability	Provides a cushion to protect utilities from short-term revenue shortfalls caused by fluctuations in consumption.
Debt Service Coverage	Financial certainty Debt management	A higher coverage ratio means more "excess" revenue is available after making debt payments. This reduces financial risk and provides more flexibility to respond to unexpected needs or revenue shortfalls. Rating agencies particularly emphasize this metric.
Debt-to-Asset Ratio	Financial certainty Debt management	An indicator of reliance on debt for infrastructure financing. A high ratio suggests less flexibility, as a greater portion of each year's revenues is used to repay debt.
Cash-financed CIP	Debt management	Helps to prevent a rapid increase in debt levels and to limit an escalation in the debt-to-assets ratio. If implemented as an average, may be used to smooth rate increases when CIP spending is uneven from year to year.

Appendix B: Financial Policy Considerations

Financial Policy Implementation Considerations

There is not one universal metric for measuring financial performance. As noted in Table B-1, each metric addresses a different (or different set) of policy objectives. Each utility establishes a mix of financial policies that best suits its individual requirements. Different mixes may achieve similar objectives. The City's Financial Advisor noted the following factors that influence an entity's choice of financial policies:

- **Management to policies.** Utilities take different approaches in how they manage financial policies:
 - Active management of rates and expenses to ensure that policies are met.
 - Use of conservative planning assumptions to provide a significant cushion against negative variances.
 - Setting rates to target meeting financial policy goals and managing the achievement of these goals from an expense standpoint while considering a revenue solution only in extreme situations, even if this means that financial policy targets won't be met.

Financial policies managed in the manner noted in the last two bullets need to be more robust than those where utilities actively adjust rates and costs to ensure financial policy targets are always met.

- **Rate cycles.** Shorter rate cycles (i.e. annual revisions) allow ongoing adjustment to rates if there are financial performance shortfalls in a given year. Longer rate cycles (more typical of SPU utilities) require management of performance over time. More stringent policies provide a cushion when rates cannot be raised to address underperformance.
- **Capital plan size.** More stringent financial policies are particularly important in limiting debt buildup for jurisdictions with large ongoing capital programs.
- **Debt management considerations:** A package of financial policies is particularly important in providing an overall framework for debt management. For example, even with formal cash-financing policies, a utility may end up not meeting legal coverage requirements in the absence of other policy mechanisms that allow for an increase in revenues **before** a critical level of debt relative to revenues is reached. Heavy dependence on debt can eventually limit future options to issue debt due to additional bonds test requirements⁹⁷

⁹⁷ Prior to issuing new revenue bonds, the issuer must show that the new debt will not dilute the returns to existing bond holders. The additional bonds requirement test is a metric which demonstrates that prior year's revenues (or in some cases future revenues) are more than sufficient to pay debt service on both existing and new bonds.

Appendix C: Solid Waste Contracts

SPU contracts with private companies for the collection, transfer, processing, and disposal of garbage, organics, and recyclable materials. Contract payments accounted for about 69 percent of total Solid Waste Funds operating and maintenance expense (excluding taxes and debt service) in 2013. Table C-1 presents a summary of 2013 expense, current contractors by contract type, and the demand unit that forms the basis of payment. Following the table is a brief overview of the various solid waste contracts.

Table C-1
2013 Solid Waste Contract Expense

	Amount (000'	% of SWF Operating Expense	Current Contractors	Demand Unit for Payment
Collection	\$72,368	54%	Waste Management, Cleancescapes	Per household (with adjustment for tonnage); volume, frequency of pick-up
Transfer	\$857	1%	Waste Management	Tonnage
Processing	\$5,161	4%	Rabanco (recyclables), Cedar Grove (organics)	Tonnage
Disposal	\$13,508	10%	Waste Management	Tonnage
Total	\$91,894	69%		

Collection Contracts

The City has contracted with private companies for waste collection for almost a century. The City transferred commercial collection to State-regulated franchises during the period 1960-2000, and then returned the services to City contracts in 2001. Residential collection has been continuously contracted. With limited exceptions, City ordinance prohibits collection of non-recyclable waste within the City by companies that are not under contract with the City. The City currently contracts for collection services with Waste Management of Washington ("Waste Management"), a subsidiary of Waste Management, Inc. and Cleancescapes, Inc., a subsidiary of Recology, Inc. Each contract covers designated areas in the City and includes garbage, recycling, and food/yard waste collection from businesses and residents. The current collection contracts went into effect in 2009. The collection contract with Cleancescapes Inc. expires in 2017, with City options to extend the term to 2019 and 2021, and the collection contract with Waste Management expires in 2019, with City options to extend the terms to 2021. Independent private operations also provide commercial recycling collection in the City.

Appendix C: Solid Waste Contracts

Transfer Contracts

Collection contractors transport garbage and organics to City owned transfer stations, which also accept garbage/organics/recycling “self-hauled” by the public. The City opened a new south-end transfer station in 2013. The old north-end station was demolished in January 2014 and a replacement station is currently under construction.

The City contracts with Waste Management to transfer a portion of contractor-collected⁹⁸ garbage and organics at their private transfer station. Waste Management currently delivers sealed containers of compacted garbage to the railhead operated by the City’s disposal contractor, and organics to the City’s local organics processing contractor. This contract expires in 2019 with options to extend to 2021.

Processing Contracts

The City contracts with Rabanco Ltd., a subsidiary of Republic Services, for processing of contractor-collected recyclables. The current processing contract with Rabanco Ltd. expires in 2016, with an option for Seattle and Rabanco to extend to 2019. The City contracted food/yard waste processing with Cedar Grove through 2014 and with Lenz Enterprises and PacifiClean environmental from 2014 are effective until 2020.

Disposal Contracts

The City contracts with Waste Management to haul the City’s waste by rail from Seattle and dispose of the waste at Waste Management’s Columbia Ridge landfill in Arlington, Oregon, owned by Waste Management Disposal Services of Oregon, Inc., a subsidiary of Waste Management, Inc. If Columbia Ridge were to close, Waste Management would be obligated to deliver the waste to an identified alternative landfill. The disposal contract expires in 2028, with City options to opt out in 2019 and 2021.

⁹⁸ The City directly transfers the balance.

Appendix D: Inflation Assumptions

Table D-1 table shows the inflation assumptions that were used in the development of SPU's Strategic Plan baseline.

**Table D-1
Strategic Business Plan
Inflation Assumptions**

<u>Item</u>	<u>Inflation Assumption</u>		<u>Basis</u>
Labor	2015 1.6%	2016 2.2%	Seattle CPI-W (growth rate for 12 months ending in June)
	2017+ 2.5%		
Health Care	7% / year		
Workers Compensation	3% / year		8-year average for 2005-2012
Professional Services	3% / year		
Other O&M	2% / year		
	<u>Yr 1 of</u>	<u>Yr 2 of</u>	
Charges from other City	<u>biennium</u>	<u>biennium</u>	
departments:	8%	4%	
General allocations	8%	5%	
FAS	12%	5%	
DoIT allocation	12%	7%	
DoIT billed	11%	7%	
Fleets – allocation & fuel	11%	4%	
Fleets – maintenance	11%	11%	
Fleets - other			
Capital Project	1.7% - 3.5% / year		Global Insight Price Deflators for Government Purchases, State & Local Construction, August 2013