Council Study Session

November 20, 2023

Agenda Item	Water & Enterprise System Utility Rates and Affordability	
From	Scott Fleury PE	Public Works Director
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Item Type	Requested by Council ☐ Update ☐ Request for Direction ☒ Presentation ☐	

SUMMARY

Before Council is an update on water rate forecasting for the current biennium with the six year look ahead. The water rate analysis was performed by Hansford Economic Consulting using the current budget and capital planning documents. The update accounts for the projected debt required to construct the new Water Treatment Plant using the Environmental Protection Agency (EPA) Water Innovation and Infrastructure Financing Act (WIFIA) funding mechanism.

This update also includes background and previous information discussed by Council regarding utility rate affordability and applying a metric to the overall cost of utilities for community members in order to make holistic decisions about rate increases for the enterprise funds that are within the Council's purview.

POLICIES, PLANS & GOALS SUPPORTED

VISION STATEMENTS for Success:

- *Ashland is a resilient, sustainable community that maintains the distinctive quality of place for which it is known*
- *We will continue to be a unique and caring city that stresses environmental conservation, fosters artistic expression, and is open to new ideas and innovation*
- *We will plan and direct our efforts to fulfill this Vision for the long term with a constant view toward being an open, welcoming community for all with a positive economic future*

VALUE STATEMENTS for Success that Support the Vision:

COMMUNITY

- Community affordability, including in available housing and childcare
- Belonging through mutual respect and openness, inclusion and equity
- Quality of life that underpins the City's economic vibrancy
- Environmental resilience, including addressing climate change and ecosystem conservation
- Regional cooperation, including in support for public safety and homelessness

ORGANIZATION

- Respect for the citizens we serve, for each other, and for the work we do
- Excellence in governance and city services
- Sustainability through creativity, affordability and rightsized service delivery
- Public safety, including emergency preparedness for climate change risk

- **Quality infrastructure and facilities through timely maintenance and community investment**

PREVIOUS COUNCIL ACTION

Typically the Council approves rate adjustments for the enterprise systems annually with the last rate adjustment approved on June 4, 2019.

June 4, 2019 Meeting Minutes
June 4, 2019 Staff Report

BACKGROUND

Water Utility Fund Proposed Rate Increases

The water rate analysis proposes 10% increases for the next few years to account for projected expenses within the fund including the new water treatment plant.

For reference, the Water Fund along with other enterprise funds have seen significant cost increase in goods and services, construction and personal costs since 2019. The construction cost using Portland indexing has increased 31.7% from quarter 1 of 2019 to quarter 3 of 2023, reference figure 1 below. Audited personal expenses have increased 5.7% from 2019 through 2022 as shown in table A-2 of the Water Rate Technical Memorandum and staff expects this to significantly increase moving forward as the Water Divisions, specifically distribution have suffered from staffing shortages over the past few years and currently all divisions are fully staffed.

The City is making a large capital investment in the treatment plant that will ensure a sustainable and secure water supply into the long term, which shows forward planning at a time when many communities are not investing in their water infrastructure; in addition, the City is working with TAP partners to ensure the secondary resilient source of water for emergencies and drought-year water supplies, and investing in infrastructure that will allow the sale of Ashland's water to TAP partners during the winter when Ashland has an excess of water supplies. Ashland's costs are high now because of the infrastructure investments it is making.

Figure 1: Construction Cost Index

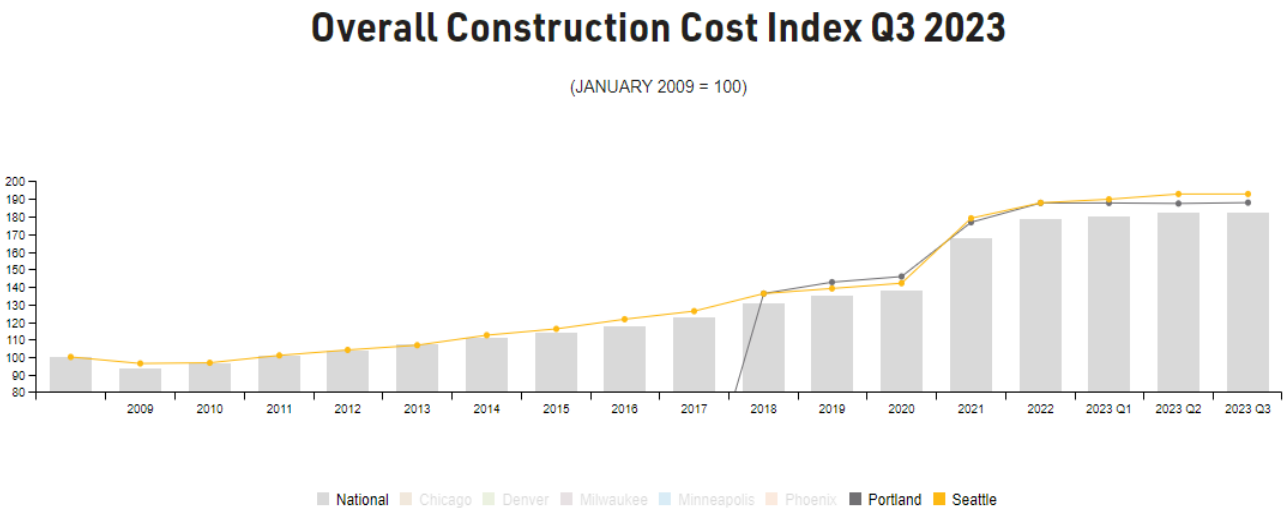
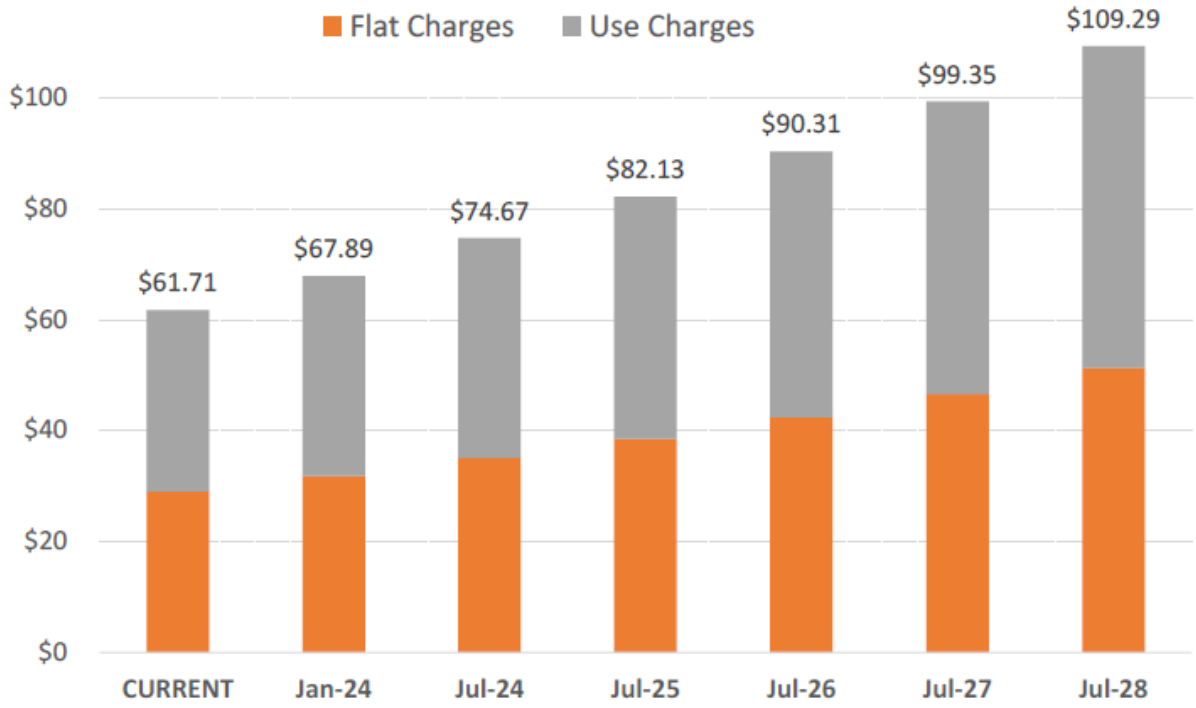


Figure 2 shows the projected chargers for the water utility considering the six year forecasted spending. The typical monthly residential water rate is based on a water use of 1000 cubic feet (7,480 gallons/month, 250 gallons per day per household).

Figure 2: Water Rate Impacts
Single Family Home Bill for 1,000 cubic feet



Water Treatment Plant Project Funding

City staff is still coordinating with PFM the City's Financial Consultant along with the Bond Attorneys from Hawkins to review the proposed loan agreement with the Environmental Protection Agency (EPA) and develop the Master Declaration required to utilize the EPA's WIFIA Funding program for the project.

To proceed forward with the WIFIA program for funding of the project, the Council was required to approve a borrowing resolution, which was done at the September 20th, 2022 Business Meeting:

September 20, 2022 Water Bond Resolution Staff Report
September 20, 2022 Meeting Minutes

When the City first applied for WIFIA funding through the EPA the project cost used was much lower than currently anticipated and the City was assuming an 80/20% split with WIFIA funding 80% of the project and the remaining 20% coming from another funding source. In coordination with the EPA since approval of the original bond resolution, it was determined that 100% of the construction costs could be funded through the WIFIA program due to the in-kind match and previously incurred eligible expenses provided by the City. These matching funds and previous expenses include the value of the parcel where the plant will be constructed and engineering/planning expenses to date. The EPA has determined the maximum eligible loan amount considering the in-kind match is $75,730,172.

The Bond Resolution previously approved by Council did not consider the increase to project costs and also availability of full WIFA funding for the project. Thus, a new bond resolution will be required to be approved by Council as staff moves towards loan closing. Staff expects to bring an updated resolution to Council in January for discussion and approval.

WIFIA Process Steps:

1. Develop and Approve Water Revenue Bond Resolution (Completed, but needs to be redone)
2. Post Public Notice of Water Revenue Bond Resolution (Completed but needs to be redone)
3. Obtain Indicative Credit Rating and Preliminary Plan of Finance (Completed)
4. Complete WIFIA Loan application (Completed)
5. Submit Application to EPA (Completed)
6. Develop water revenue and rate forecast (Completed)
7. Finalize Plan of Finance and Obtain Final Credit Rating (In process)
8. Negotiate Final Terms and Conditions for Borrowing with EPA (in process)
9. Close Loan (Anticipated April/May 2024)

In May of this year, HDR updated the opinion of construction costs to match the 90% design level the project current is at reference table 1 below. Currently the opinion of cost for the construction of the plant ranges from a high of $70,424,000 to a low of $55,115,000. This opinion of cost also includes contingency, escalation and market volatility factors.

Table 1: Water Treatment Plant Opinion of Cost

Cost Summary

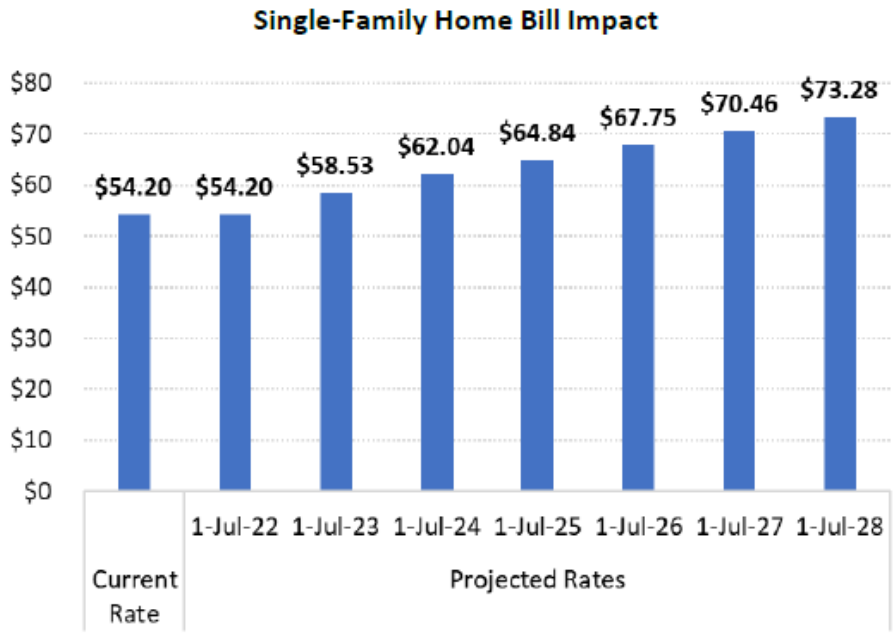
Summary of Opinion of Probable Construction Cost		
High Range		Low Range
+15%	**WTP Construction Costs**	-10%
$ 70,424,000	$ 61,238,000	$ 55,115,000
Summary of Opinion of Probable Construction Cost		
High Range		Low Range
+15%	**Solar Array Construction Costs**	-10%
$ 2,458,000	$ 2,137,000	$ 1,924,000
Summary of Opinion of Probable Construction Cost		
High Range		Low Range
+15%	**BESS Construction Costs**	-10%
$ 3,063,000	$ 2,663,000	$ 2,397,000

In an attempt to directly offset project costs staff has applied for Bipartisan Infrastructure Law (BIL) grant funding given to the State of Oregon for communities with emerging contaminants. The City of Ashland is listed with the State for emerging contaminants, specifically for algal toxins. Staff is also coordinating with the Evan Brooks Associates on other grant funding opportunities for the plant and other enterprise capital projects defined in the six year Capital Improvement Plan.

Wastewater Utility Fund Proposed Rate Increase

The projected rate increase for the Wastewater fund was developed as part of the financial analysis contained within the recently adopted Collection System Master Plan. This analysis accounts for costs associated with both the Treatment and Collections funds for wastewater. The average wastewater rate is based on the 600 cubic feet of wastewater (sewer) usage. There was no rate increase applied in 2023 as developed in the financial analysis section of the master plan. Figure 3 shows the project rate structure through 2028.

Figure 3: Wastewater Rate Impacts



Storm Drain Utility Fund Proposed Rate Increase

The proposed storm drain rate increase for 2024 is 7%. The last rate increase enacted in the storm drain fund was in 2022 and 9%.

Table 2: Storm Drain Rate Impacts

Across-the-Board Rate Schedule	Existing 2020	ATB 2021	ATB 2022	ATB 2023	ATB 2024	ATB 2025	ATB 2026	ATB 2027	ATB 2028	ATB 2029
Annual System-Wide Rate Increase		0.00%	9.00%	9.00%	7.00%	6.00%	6.00%	6.00%	5.00%	4.00%
Monthly Storm Draiange Fee										
Single Family (per residence)	$4.99	$4.99	$5.44	$5.93	$6.34	$6.72	$7.13	$7.56	$7.93	$8.25
Condominium 1-9 Units (per unit)	2.14	2.14	2.33	2.54	2.72	2.88	3.06	3.24	3.40	3.54
Multi-Family 1-9 Units (per unit)	2.14	2.14	2.33	2.54	2.72	2.88	3.06	3.24	3.40	3.54
Mobile Home and Trailer 1-9 Units (per unit)	2.14	2.14	2.33	2.54	2.72	2.88	3.06	3.24	3.40	3.54
Other (per 1,000 sq. ft. of impervious surface area)	1.66	1.66	1.81	1.97	2.11	2.24	2.37	2.51	2.64	2.74
Minimum Charge										
Residential Accounts	$4.99	$4.99	$5.44	$5.93	$6.34	$6.72	$7.13	$7.56	$7.93	$8.25
Commercial Accounts	4.99	4.99	5.44	5.93	6.34	6.72	7.13	7.56	7.93	8.25

Affordability

The Council has discussed metrics associated with affordability as part of an overall decision making process associated with utility rates. A common standard in budgeting is to account for 6-10% of your income to be associated with monthly utilities. From Census data the 2021 median income for Ashland is $63,641/annually or $5,303/month.

Staff has developed the tables below showing the overall utility cost and associated median income level. Table 3 shows the cost of each utility on a month basis along with the percentage of monthly income tied to each utility in the current condition. Generally, over 2% per utility is considered "high" and over 2.5% is considered burdensome. The tables below show the general overall utility bill impact including City utilities and franchise related utility costs (natural gas, trash)

Table 3: Utility Affordability Current

Utility Bill Affordability Analysis

2021 Median Household Income	$	5,303.42
2% of Median Household Income Per Utility		

Last Update	Utilities	Monthly Rate	% of Median Income
2019	Street Utility Fee	$ 9.56	0.18%
2021	Storm Drain Utility Fee	$ 5.44	0.10%
2019	Wastewater (average)	$ 54.20	1.02%
2019	Water (average)	$ 61.71	1.16%
2021	Electric (average)	$ 76.88	1.45%
2021	Ashland AFN	$ 65.00	1.23%
2022	Recology	$ 22.67	0.43%
N/A	Natural Gas	$ 56.00	1.06%
	Totals	**$ 351.46**	**6.63%**

Table 2 shows the projected utility cost and overall percentage against the median income level with all of the rate increases currently projected via a rate study or financial analysis completed as part of the master planning process.

Table 4: Utility Affordability Projected

Projected Update	Utilities	Monthly Rate	% of Median Income
2023 (3%)	Street Utility Fee	$ 9.85	0.19%
2024 (7%)*	Storm Drain Utility Fee	$ 5.82	0.11%
2024 (6%)**	Wastewater (average)	$ 57.45	1.08%
2024 (10%)***	Water (average)	$ 67.88	1.28%
2023	Electric (average)	$ 76.88	1.45%
2023	Ashland AFN	$ 65.00	1.23%
2022	Recology	$ 22.67	0.43%
N/A	Natural Gas	$ 56.00	1.06%
	Totals	**$ 361.55**	**6.82%**

*Projected in the adopted Storm Drain System Master Plan (July 1, 2024)
**Projected in the adopted Collection System Master Plan (July 1, 2024)
***Projected in October 2023 Water Rate Analysis

Table 4 comes directly from the Water Rate Memorandum and shows the specific relation of water rates to median household income.

Table 4: Water Rate Study Affordability
Impact of Rates on Household Affordability

Item	Annual	Monthly
Oregon Median Household Income (MHI) [1]	$70,084	$5,840
Ashland MHI [1]	$63,641	$5,303
CURRENT Water Bill 3/4" using 1,000 cu. ft.	$741	$61.71
Water Bill as % of Ashland MHI		**1.16%**
January 2024 Water Bill 3/4" using 1,000 cu. Ft.	$815	$67.89
Water Bill as % of Ashland MHI		**1.28%**
Water Rates @ 2.0% of MHI [2]	$1,273	$106.07

Source: US Census.
[1] 2021 5-year American Community Survey estimate.
[2] Per EPA guidelines a typical water bill greater than 2% is high and a typical water bill greater than 2.5% is burdensome.

As shown in the tables the total billing still falls within the affordability metrics previously discussed by Council.

Cost of Service

The Council has also shown interest in a more progressive water rate structure and in order to create a new structure or update the current tiered system it is recommended to update the 2016 Cost of Service

Study. The water rates analysis also makes the same recommendation. Staff estimates this study will cost approximately $50,000 and will need to be lead by a consulting firm. There are funds available in professional services for the biennium to perform such a study if directed by Council.

Low Income Assistance Program

As part of the scope of work for utility rate analysis, Hansford Economic also analyzed the current utility assistance program and developed a memo on recommendations reference attachment #2.

Staff has discussed these recommendations with Isleen Glatt, Senior Services Superintendent, who works with many individuals who participate or try to participate in the program. The main concern is modifying the income level and age restriction requirements in order to give more access to the programs for community members.

In review of the work Hansford performed Isleen made the following recommendations to be considered as well:

The current program uses 100% or 125% of Federal Poverty Levels as the criteria, but this is an extremely low income by Oregon cost of living and housing. Often times low-income seniors who are interested in the program make just a little too much to qualify for assistance. Medicaid, which is very hard to qualify for, uses 138-150% of Federal Poverty. Most low-income programs in our area use 150-200% of Federal Poverty. I recommend adopting 150% and 200% for our senior utility discount, or the equivalent income level using local median income standards, as used in the City's ALIEP benefit and Affordable Housing Program.

FISCAL IMPACTS

The City contracted with Hansford Economic Consulting for $27,750 to perform the water rate analysis and also review and make recommendations regarding the City's current low income assistance program. To date $23,803 has been expended towards the contract amount.

The 2023-2025 Biennial Budget proposed rate increases support the overall funds including personnel, operations, capital and debt expenses. The proposed rate increases relate to anticipated revenues to offset expenditures within the enterprise utility. Should the Council not want to move forward with adoption of rate increase to support projected expenses, offsetting reductions in expenditures must be made.

DISCUSSION QUESTIONS

Does the Council have any questions regarding the rate forecasting completed?

Does the Council have any questions about a cost-of-service study?

Does the Council have any questions about the low income utility assistance program?

SUGGESTED NEXT STEPS

Next steps include bringing forward specific rate resolutions for Council approval along with an updated borrowing resolution for the Water Treatment Plant project.

REFERENCES & ATTACHMENTS

Attachment #1: Water Rate Technical Memorandum
Attachment #2: Low Income Utility Assistance Memorandum
Attachment #3: 2016 Water Cost of Service Study
Attachment #4: Resolution 92-22

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Technical Memorandum

To: **Scott Fleury, Public Works Director**

From: Catherine Hansford **Date:** October 25, 2023

Subject: Water Rates Update

Purpose

The City of Ashland (City) charges water utility rates for provision of water services. In 2015, Hansford Economic Consulting LLC (HEC) completed a full cost-of-service study for the City and water rates were updated pursuant to that Study. Since then, the City has made some percentage increases in the rates to account for rising costs, and revision of some major capital improvement plans, most notably for the water treatment plant; however, water rates have not increased since July 1, 2019. HEC has updated the water rates projection per the City's current water fund financial needs, including its updated infrastructure costs and financing strategy to complete its new water treatment plant. This memorandum presents the analysis of current and future financial health of the water utility fund, including projection of water rates for revenue sufficiency for the next five years. New water rates need to be implemented in January 2024.

Support tables are included in **Attachment A**.

Major Findings

The financial analysis makes the following major findings:

1. The water utility fund is in a strong financial position, but to remain fiscally healthy, rates will need to continue to be increased due to major infrastructure costs, most notably the construction of the new water treatment plant, as well as typical annual inflationary pressures on operations costs. The analysis projects that six 10% increases will be needed, beginning January 2024, followed by five increases each July, beginning July 2024.

2. The water fund needs to maintain a high cash balance until the new water treatment plant project is completed. Actual costs may be greater than estimated, and the project may take longer to complete than anticipated. In addition, the City has several other high-cost capital projects taking place over the same timeframe that require reimbursement from other parties: (a) The Talent-Ashland-Phoenix Water System (TAP) partners and (b) an American Rescue Plan Act (ARPA) grant. Strong reserves are necessary for cash flow purposes when capital outlay is made on a reimbursement basis.

3. The City should conduct a cost-of-service study to ensure customer groups are paying for their share of water service costs, and to ensure a rate design that reflects customer use characteristics and administrative goals of the water fund. This memorandum presents the percentage increases of existing water rates as a full water rates study requires greater time and resources to complete.

Table 1 on the next page summarizes the projected water rates for the current and next two bienniums (six fiscal years). **Figure 1** shows the financial impact to a single-family home using 1,000 cubic feet of water in a month. Per Environmental Protection Agency and State of Oregon measurements of cost burden reasonableness (explained in this memorandum), monthly water bills will continue to be affordable in Ashland with these rate increases.

If the City's water rates had increased with the West Region Consumer Price Index between June 2019 and June 2023, the water bill for a household using 1,000 cubic feet would be $73.89 starting July 1, 2023, as the cost of goods in the western US has increased 20% since 2019. The water rates for January 2024 ($67.89) are lower than they would be by applying the 20% increase ($73.89); this shows the City is spending prudently and managing its resources efficiently.

Figure 1
Single Family Home Bill for 1,000 cubic feet

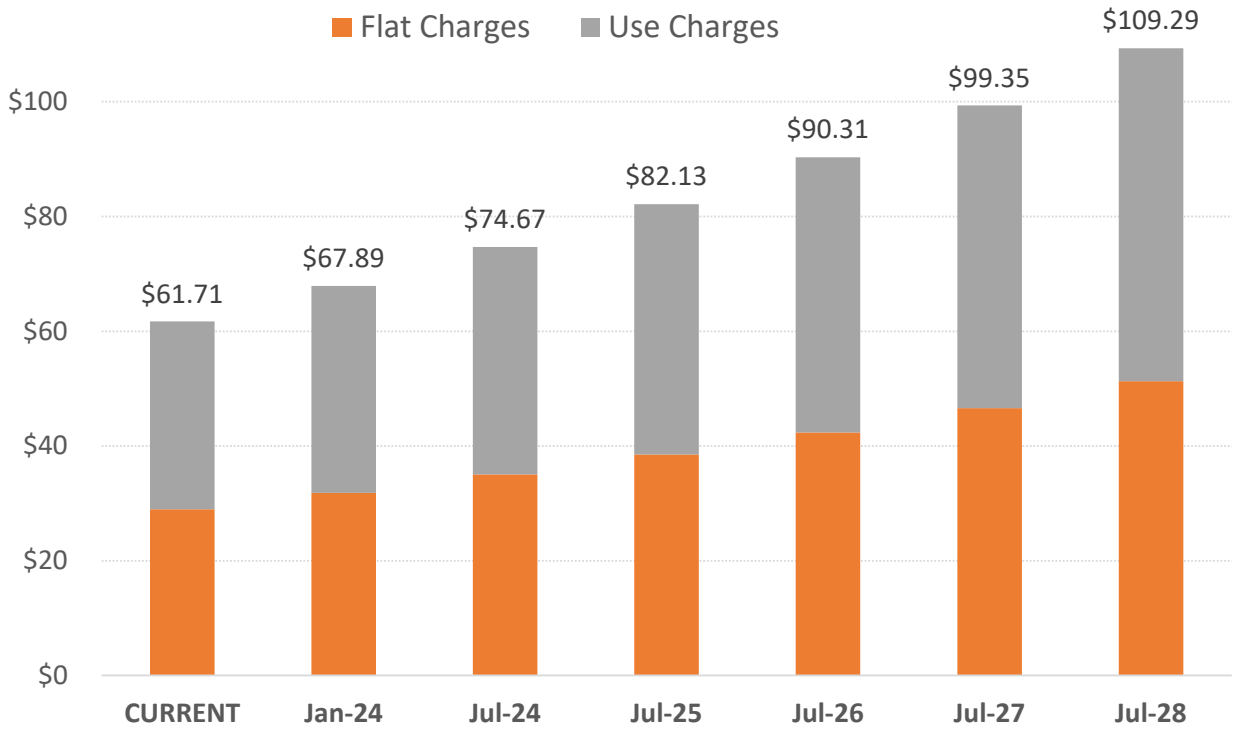


Table 1
Summary of Rate Increases for the next Six Years

Rate Component	Rates Implementation						
	Current	**1/1/2024**	**7/1/2024**	**7/1/2025**	**7/1/2026**	**7/1/2027**	**7/1/2028**
		10.0%	*10.0%*	*10.0%*	*10.0%*	*10.0%*	*10.0%*
Monthly Customer Charge per Bill	$13.33	$14.66	$16.13	$17.74	$19.51	$21.46	$23.61
Monthly Service Charge per Meter [1]							
3/4" and Fire Guards	$15.62	$17.18	$18.90	$20.79	$22.87	$25.16	$27.68
1"	$16.29	$17.92	$19.71	$21.68	$23.85	$26.24	$28.86
1.5"	$74.52	$81.97	$90.17	$99.19	$109.11	$120.02	$132.02
2"	$118.41	$130.25	$143.28	$157.61	$173.37	$190.71	$209.78
3"	$237.45	$261.20	$287.32	$316.05	$347.66	$382.43	$420.67
4"	$376.59	$414.25	$455.68	$501.25	$551.38	$606.52	$667.17
6"	$741.01	$815.11	$896.62	$986.28	$1,084.91	$1,193.40	$1,312.74
8"	$1,174.75	$1,292.23	$1,421.45	$1,563.60	$1,719.96	$1,891.96	$2,081.16
USE CHARGES FOR POTABLE WATER							
Residential [2]			**per month, per unit**				
0 to 300 cf	$0.0280	$0.0308	$0.0339	$0.0373	$0.0410	$0.0451	$0.0496
301 to 1,000 cf	$0.0348	$0.0383	$0.0421	$0.0463	$0.0509	$0.0560	$0.0616
1001 to 2,500 cf	$0.0472	$0.0519	$0.0571	$0.0628	$0.0691	$0.0760	$0.0836
> 2,500 cf (2,501 - 3,600 cf June to Sept)	$0.0609	$0.0670	$0.0737	$0.0811	$0.0892	$0.0981	$0.1079
> 3,600 cf (June to Sept only)	$0.0784	$0.0862	$0.0948	$0.1043	$0.1147	$0.1262	$0.1388
Commercial			**per month, per meter**				
0-50,000 cf	$0.0348	$0.0383	$0.0421	$0.0463	$0.0509	$0.0560	$0.0616
> 50,000 cf	$0.0472	$0.0519	$0.0571	$0.0628	$0.0691	$0.0760	$0.0836
Insitutional	$0.0334	$0.0367	$0.0404	$0.0444	$0.0488	$0.0537	$0.0591
Commercial & Institutional Irrigation							
October - May	$0.0376	$0.0414	$0.0455	$0.0501	$0.0551	$0.0606	$0.0667
June - September	$0.0510	$0.0561	$0.0617	$0.0679	$0.0747	$0.0822	$0.0904
Bulk Water [3]	$0.0384	$0.0422	$0.0464	$0.0510	$0.0561	$0.0617	$0.0679
Fire Protection Service [4]							
Meter Replacement Charge	$1.34	$1.47	$1.62	$1.78	$1.96	$2.16	$2.38
Meter Charge	$15.62	$17.18	$18.90	$20.79	$22.87	$25.16	$27.68
Service Charge, if applicable	$13.33	$14.66	$16.13	$17.74	$19.51	$21.46	$23.61
Usage Charges	$0.0384	$0.0422	$0.0464	$0.0510	$0.0561	$0.0617	$0.0679
TID Non-Potable Water			**per irrigation season, per acre or portion of**				
Unmetered Service	$241.18	$265.30	$291.83	$321.01	$353.11	$388.42	$427.26
Metered Service:							
Service Charge			per meter as above				
Meter Replacement Fee [5]			per meter as above				
Water Consumption per c.f.	$0.0025	$0.0028	$0.0031	$0.0034	$0.0037	$0.0041	$0.0045

Outside City Limits

All rates and charges for water service provided outside the city limits will be 1.5 times the inside city rates and charges.

Source: City of Ashland. sum rates

[1] All customers charged the flat monthly fees every month regardless of whether water is taken.

[2] For residential customers with separate irrigation meters the metered irrigation water is added to the domestic water use. Irrigation water is charged the 301 to 1,000 cf rates for use 0 to 1,000 cf.

[3] For temporary water provided through a bulk meter on a fire hydrant.

[4] This rate shall apply to all water taken through fire protection services or fire guards.

[5] Due once per year on first TID non-potable water bill.

Methodology

The water rate analysis presented in this memorandum is not a full cost of service study examining proportionate costs to different customer groups; rather, it projects financial needs over the current and next two bienniums, and how to fund those needs. Water rate revenues are projected under various assumptions including these:

- Water demand is projected to stay static over the next ten years. Although new water customers may hook into the water system during this period, other factors may cause water demand to remain at their current level, or even decrease. Factors that affect demand include, amongst other factors, the weather, water restrictions, and installation of more water efficient water appliances. **Table A-1** presents historical water production for the past eleven years. The table demonstrates the variability of water demand from year to year and it also shows that total water produced to satisfy demand decreased between 2013 and 2022. Water production has been greater in 2023, likely due to the ending of the most recent drought.

- Operating expenses, which account for annual costs to run the water system excluding any major capital repairs or new infrastructure installations, are projected through the six-year period based on historical annual increases in cost as well as City staff input on anticipated future cost increases in the current biennium. Historical water fund expenses from 2016 through 2022 are presented in **Table A-2.** On average, expenses increased 3.7% per year over the six-year period. The projection of revenue requirement is based on the historical changes of costs by cost category, and for the next two bienniums, ranges between 4.2% and 4.7% each year.

- Aside from water rate revenues, the water fund receives non-potable water revenues from customers using the Talent Irrigation Ditch (TID), and other miscellaneous income such as interest income and new service installation charges. These revenues are credited against the estimated annual costs to determine the revenue requirement (the amount of money that must be raised through water rates). System development charges, which are specifically collected to mitigate new development's impact on the water system, are not credited against revenues to be raised by rates. Revenues that are credited in the analysis are based on historical and budgeted numbers, as well as conservative estimates of future revenues. Historical revenues are presented in **Table A-3**. Total water sales have remained similar each year since 2019 due to the freezing of water rates.

- In addition to operating expenses, the water utility fund incurs costs for capital expenditures. Capital expenditures include costs to rehabilitate major infrastructure components, and/or install new or replacement facilities. **Table A-4** presents the City's Capital Improvements Plan (CIP) for water for current and next two bienniums. The City's estimated costs were increased for inflation annually over the next five years, apart from the water treatment plant estimated costs as the engineering estimates for that project already include inflation in the project cost estimates.

- The City's financial advisor has provided a funding strategy for the new water treatment plant total estimated cost of $70 million. The City has secured a Water Infrastructure Finance and Innovation Act (WIFIA) loan for the full amount of $70 million. The water fund's existing debt service and the estimated new water treatment plant debt service is shown in **Table A-5**.

- The water rate analysis assumes additional City debt funding to complete the CIP within the six-year period. **Table A-6** shows the financing costs and estimated annual debt service assumptions to raise bond proceeds of $6.7 million to fund dam safety improvements.

- The projected revenue requirement for each year in the forecast is presented in **Table A-7**. The revenue requirement is estimated to increase from approximately $12.0 million this fiscal year to $16.5 million in five years. The revenue requirement may go up and down in the in-between years because of cash-funded capital improvement costs and debt service schedules.

- One of the revenue credits in the analysis is rate revenue from TID raw water customers. City rates charged to TID customers are assumed to increase at the same percentage increase as all other City water customer fees. A cost-of-service analysis may demonstrate the need for TID customer rates to increase at different rates; however, the same is assumed for the purposes of this analysis. TID revenue projections are provided in **Table A-8.**

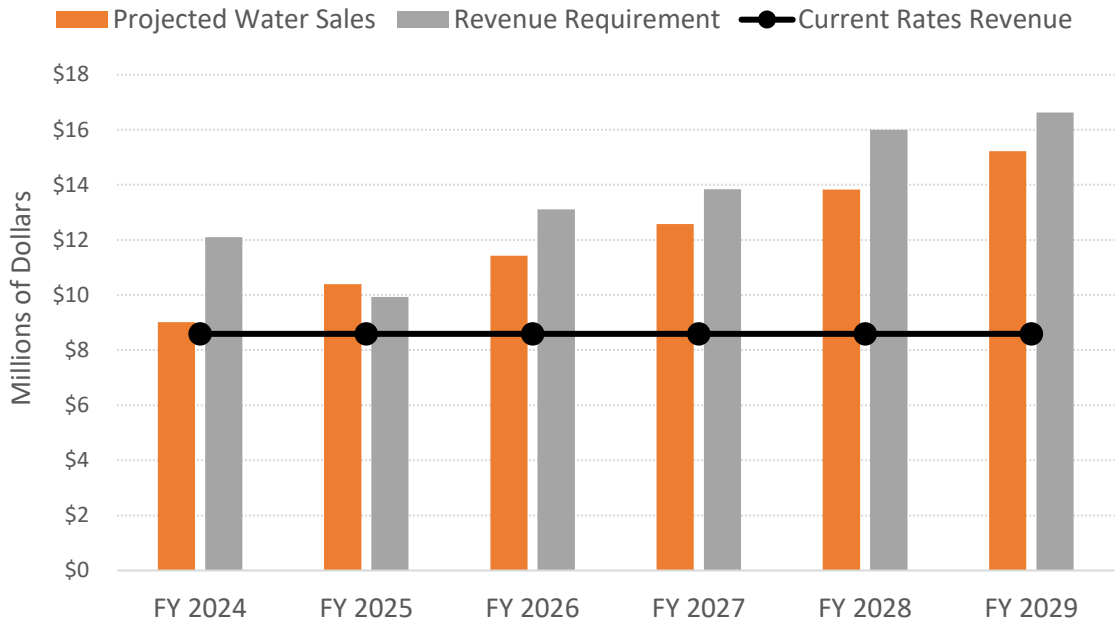
- It is preferable to adopt a smooth rate schedule that does not increase and decrease each year to exactly account for the revenue requirement. Based on the assumption that water demand is static, as previously discussed, the water revenues are increased by 10% in January 2024, followed by five annual 10% increases beginning July 2024. **Table A-9** presents the estimated cash flow for the water fund through fiscal year ending 2029. The table demonstrates at least 115% debt service coverage is achieved and positive net revenue is generated after accounting for operating expenses and debt service. The ending cash balance each year is an estimate of available cash for restricted, committed and unassigned water service or project needs. Per terms of the WIFIA loan, the City could establish a Rate Stabilization Fund if it chooses to do so.

  Excluded from the cash flow analysis are loan funds and bond proceeds received by the City, and project costs funded by those loans and bond proceeds. The analysis excludes these because of the unknown timing of the projects' expenditures and revenues. Debt service for these projects is included in the cash flow analysis. As a result, actual cash balances may be significantly greater or lesser from one year to the next than shown in the table.

Results

Revenue generated by water rates must be sufficient to cover all operating expenses each year and debt service coverage and raise sufficient revenue to fund capital projects that are not debt-financed or covered by existing reserves. **Figure 2** shows the current level of water sales revenues, projected revenue requirement, and projected water sales under the calculated percentage increases in water rates, beginning January 2024. The graph shows that a portion of the cash-funded capital improvement costs included in the revenue requirement will be paid for with water fund reserves that have been accumulated for this purpose.

Figure 2
Revenue Requirement and Projected Water Sales



Historical and projected annual ending cash balances are shown in **Figure 3**. The cash balance is projected to have peaked in fiscal year ending 2023 as reserves were being increased to fund upcoming known capital project costs. The City will use a combination of grants, loans, rates revenue and cash reserves to pay for capital improvement costs over the next six years.

Figure 4 shows the projected total cash balance of the water fund through fiscal year 2029, and the target minimum cash balance. The target minimum cash balance is equivalent to 20% of revenues plus one year of debt service (excluding City General Obligation bonds and the WIFIA loan, which are not secured by bond reserves). This amount enables the City to respond to emergency expenses, decreased revenues due to drought and fires if structures are destroyed, and to put aside one year of debt service, which is typically required to be held in a restricted account per the terms of the loan.

Figure 3
Historical and Projected Water Fund Cash Balance

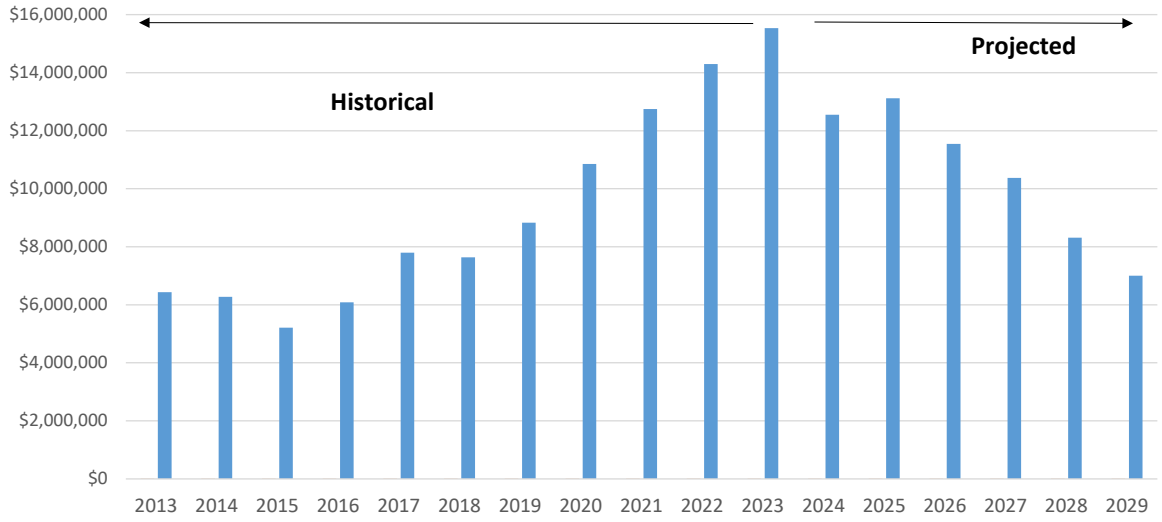
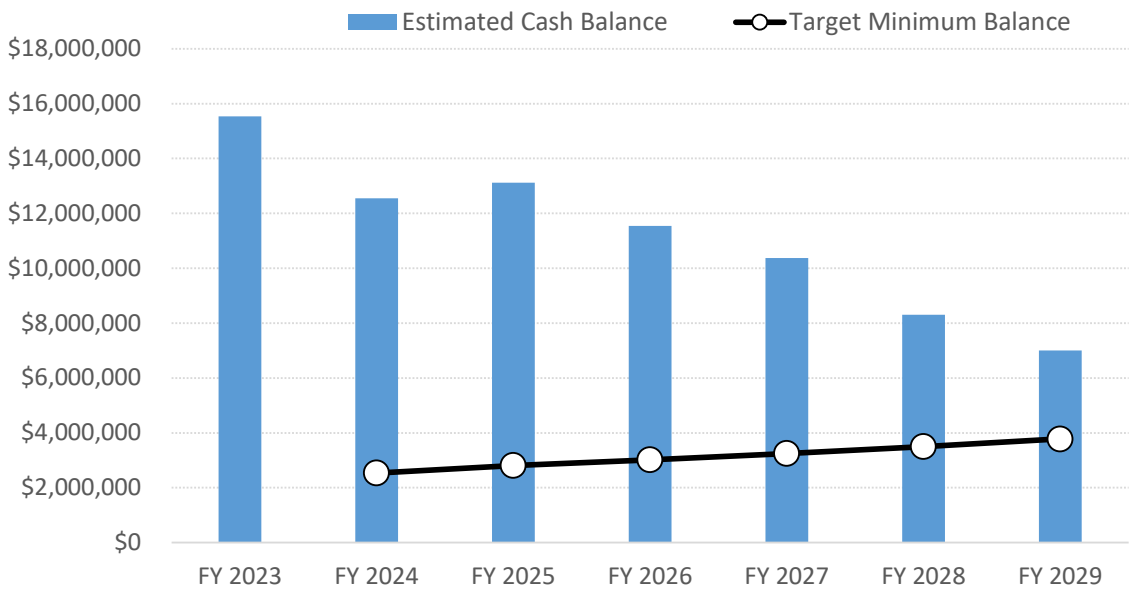


Figure 4
Projected Water Fund Cash Balance



Impact on Residential Customers

The EPA considers a water bill under 2.0% of median household income to be affordable. Currently, the water bill is $61.71 (about 1.16% of area median household income). With the first rate increase of 10% in January 2024, the bill for 1,000 cubic feet of water would be $67.89, or 1.28% of median household income, as shown in **Table 2** below, keeping the water bill within what is considered the threshold range of affordability in the industry.

Table 2
Impact of Rates on Household Affordability

Item	Annual	Monthly
Oregon Median Household Income (MHI) [1]	$70,084	$5,840
Ashland MHI [1]	$63,641	$5,303
CURRENT Water Bill 3/4" using 1,000 cu. ft.	$741	$61.71
Water Bill as % of Ashland MHI		**1.16%**
January 2024 Water Bill 3/4" using 1,000 cu. Ft.	$815	$67.89
Water Bill as % of Ashland MHI		**1.28%**
Water Rates @ 2.0% of MHI [2]	$1,273	$106.07

Source: US Census.

[1] 2021 5-year American Community Survey estimate.
[2] Per EPA guidelines a typical water bill greater than 2% is high and a typical water bill greater than 2.5% is burdensome.

To receive preferable financing terms and/or grant funding from the State of Oregon, the water bill needs to be at least $66.29 when using 1,000 cubic feet of water in a month in Ashland (this is 1.25% of median household income). With the increase in rates, the City will qualify for preferential loan terms. The State uses the last decennial US Census data and adjusts each year to determine the current median household income. The estimate of median household income used in this analysis is the 2021 5-year ACS figure for Ashland. **Table 2** also shows that monthly water bills would need to be greater than $106.07 per month for the EPA to consider the bill unaffordable.

Table 3 compares a typical water bill for a ¾" meter using 1,000 cubic feet to other cities and communities in Oregon. Ashland's water bill is at the higher end of the range, reflecting the large capital investments in the treatment plant that will ensure a sustainable and secure water supply into the future. In addition, the City is working with TAP partners to bolster its secondary source of water for emergencies and drought-year water supplies, and investing in infrastructure that will allow the sale of Ashland's water to TAP partners during the winter when Ashland has an excess of water supplies. These actions show forward planning at a time when many communities are not investing in their water infrastructure; in the long run the benefits of these actions will be reaped by ratepayers.

Table 3
Comparison Water Bills for a Typical Residence in Oregon

Water Purveyor	Base Charge as % of Bill	Base Charges	Use Charges	Monthly Bill
			for 10 HCF	*3/4" Meter*
Klamath Falls	13%	$3.56	$23.80	$27.36
Central Point	57%	$17.37	$13.06	$30.43
Medford	68%	$21.92	$10.21	$32.13
Corvallis	41%	$18.47	$26.46	$44.93
Phoenix	88%	$40.61	$5.36	$45.97
Eagle Point	39%	$18.11	$28.00	$46.11
Bend	55%	$25.99	$21.60	$47.59
Talent	46%	$22.11	$25.75	$47.86
Springfield	48%	$23.10	$25.26	$48.36
Grants Pass	77%	$37.62	$11.25	$48.87
Tualatin	22%	$11.00	$39.00	$50.00
Roseburg	58%	$30.31	$21.60	$51.91
Ashland (current)	47%	$28.95	$32.76	$61.71
Albany	35%	$23.01	$43.10	$66.11
Ashland (Jan. 2024)	47%	$31.84	$36.05	$67.89
Tualatin Valley WD	14%	$11.71	$70.30	$82.01

Source: Rate schedule for each water purveyor, July 2023.

compare

ATTACHMENT A

WATER UTILITY FUND

2023 FINANCIAL ANALYSIS

SUPPORT TABLES

Table A-1
City of Ashland Water Rate Study
Historical Potable Water Production

DRAFT

Month	Calendar Year											Avg. Annual	Percent
Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Water Delivery (MG)	of Delivery by Month
	Figures in Millions of Gallons											2013-2023	
January	43.0	42.4	53.7	48.6	52.9	49.3	51.3	50.6	48.6	49.6	69.8	50.9	5%
February	37.0	37.4	48.1	45.2	45.5	45.2	44.3	46.7	43.7	45.7	62.6	45.6	5%
March	42.4	41.7	54.4	48.0	52.4	48.8	50.3	52.1	51.6	51.6	69.8	51.2	5%
April	54.8	56.4	64.2	64.2	51.7	59.5	56.1	75.0	82.0	55.5	72.6	62.9	6%
May	90.5	97.7	94.3	89.4	88.7	93.3	96.7	103.1	123.4	76.3	114.3	97.1	10%
June	117.3	119.3	126.5	123.2	121.5	118.5	131.2	106.0	137.1	110.9	127.8	121.7	12%
July	170.5	137.2	130.7	136.1	157.1	158.1	150.9	147.4	111.3	143.5		144.3	14%
August	155.3	131.4	125.3	151.5	161.9	157.8	145.9	160.5	97.0	99.1		138.6	14%
September	114.3	104.1	104.6	120.2	123.0	131.6	98.0	136.1	68.3	101.5		110.2	11%
October	99.2	83.6	90.9	70.8	94.9	85.8	71.8	48.6	55.5	77.6		77.9	8%
November	81.6	55.4	46.9	53.5	55.6	60.8	59.3	46.6	50.0	71.2		58.1	6%
December	53.0	51.0	49.3	49.4	49.6	49.2	51.3	50.6	49.9	69.9		52.3	5%
Total	**1,058.8**	**957.5**	**988.9**	**1,000.0**	**1,054.9**	**1,057.8**	**1,007.1**	**1,023.3**	**918.4**	**952.3**	***A***	**1,010.7**	**100%**
Base Monthly Flow (Dec - Mar)											***B***	**50.0**	
Average Annual Base Flow											***C = B*12***	**599.9**	**59%**
Average Annual Additional Flow											***D = A-C***	**410.7**	**41%**

Source: City of Ashland.

prodn

Table A-2
City of Ashland Water Rate Study
Historical Water Fund Operation Expenditures (excludes SDC funds)

DRAFT

Expenses	Fiscal Year Ending 2016	2017	2018	2019	2020	2021	2022	6-Year Change	Avg. Annual % Change
Water Fund Operating Expenses				**Audited figures**					
Personnel	$1,704,110	$1,712,355	$1,815,873	$1,863,488	$1,883,177	$1,737,258	$1,970,368	$266,258	2.4%
Supplies	$206,742	$202,999	$194,574	$214,583	$184,685	$269,174	$227,349	$20,607	1.6%
Rental, Repair, Maintenance	$221,868	$312,859	$282,656	$336,585	$254,069	$376,643	$344,521	$122,653	7.6%
Communications	$14,985	$14,413	$27,359	$16,691	$14,947	$15,104	$19,421	$4,436	4.4%
Contractual Services	$340,374	$214,959	$183,657	$197,351	$193,747	$303,948	$194,171	($146,203)	-8.9%
Internal Charges & Fees	$1,520,175	$1,554,723	$1,596,181	$1,776,378	$2,144,666	$2,152,004	$1,984,837	$464,662	4.5%
Other Purchased Services	$169,127	$178,117	$171,131	$189,537	$173,075	$157,538	$306,303	$137,176	10.4%
Franchise Tax	$418,922	$446,737	$639,429	$675,602	$689,205	$721,304	$682,933	$264,011	8.5%
Conservation Programs	$47,727	$69,177	$40,558	$35,044	$27,658	$35,007	$38,810	($8,918)	-3.4%
Subtotal Operating Expenses	**$4,644,030**	**$4,706,339**	**$4,951,418**	**$5,305,259**	**$5,565,229**	**$5,767,980**	**$5,768,712**	**$1,124,682**	**3.7%**

Source: City of Ashland.

op exp

Table A-3
City of Ashland Water Rate Study
Historical and Budgeted Water Fund Revenues

DRAFT

REVENUES	Fiscal Year Ending 2016 actual	2017 actual	2018 actual	2019 actual	2020 actual	2021 actual	2022 actual	2023 preliminary	2024 budget
Charges for Service									
Water Sales									
Commercial	$980,376	$933,234	$986,155	$1,004,092	$975,456	$966,838	$987,976	$1,030,431	$1,080,000
Fire Guard	$35,322	$23,350	$24,363	$26,222	$27,428	$27,794	$30,610	$29,864	$27,000
Government & Municipal	$314,223	$242,263	$262,089	$293,630	$275,260	$291,775	$318,970	$268,181	$306,700
Multi-Family Residential	$786,549	$748,064	$797,892	$610,755	$602,103	$683,481	$661,172	$646,221	$779,700
Single Family Residential	$3,968,571	$4,373,406	$4,759,645	$5,190,266	$5,365,728	$5,709,393	$5,417,680	$5,472,587	$5,400,000
Irrigation (incl. TID customers)	$740,136	$910,045	$888,155	$1,010,849	$1,010,858	$1,164,905	$983,244	$1,137,898	$1,000,000
Subtotal Water Sales	**$6,825,178**	**$7,230,361**	**$7,718,298**	**$8,135,814**	**$8,256,833**	**$8,844,186**	**$8,399,652**	**$8,585,182**	**$8,593,400**
Reimbursement SDC	$277,247	$310,390	$294,968	$346,254	$226,981	$354,943	$204,411	$152,778	$0
Improvement SDC	$0	$0	$0	$0	$0	$85,885	$0	$0	$100,000
New Service Installation	$73,122	$61,724	$53,673	$23,395	$59,620	$69,886	$64,673	$41,307	$40,000
Miscellaneous	$27,287	$37,150	$42,922	$30,690	$38,961	$7,430	$2,900	$4,370	$0
Subtotal Charges for Service	**$377,656**	**$409,263**	**$391,562**	**$400,339**	**$325,562**	**$518,144**	**$271,984**	**$198,455**	**$140,000**
Other Revenues									
Interest on Pooled Investments	$32,632	$69,182	$139,859	$228,124	$216,316	$80,500	$65,754	$304,255	$146,450
Miscellaneous Income	$39,351	$47,197	$40,443	$26,996	$41,749	$14,294	$4,104	$1,289	$25,000
Grants	$14,897	$0	$0	$0	$6,331	$16,766	$0	$26,250	$0
Bond Proceeds	$542,457	$347,625	$732,215	$2,795,804	$1,103,851	$0	$0	$1,366,794	$14,252,562
Subtotal Other Revenues	**$629,337**	**$464,003**	**$912,517**	**$3,050,924**	**$1,368,247**	**$111,560**	**$69,858**	**$1,698,588**	**$14,424,012**
Total Revenues	**$7,832,171**	**$8,103,628**	**$9,022,377**	**$11,587,077**	**$9,950,642**	**$9,473,890**	**$8,741,494**	**$10,482,225**	**$23,157,412**
Total Revenues w/o Bond Proceeds & Grants	**$7,274,818**	**$7,756,003**	**$8,290,162**	**$8,791,273**	**$8,840,460**	**$9,457,124**	**$8,741,494**	**$9,089,181**	**$8,904,850**

Source: City of Ashland.

revs

Table A-4
City of Ashland Water Rate Study
Water Capital Improvement Plan - Inflated Dollars

DRAFT

All estimates inflated with the exception of the treatment plant costs (inflation already built in)

Water Improvements	Funding Source	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
		BN 23-25		BN 25-27		BN 27-29	
Water Supply	*inflation assumption-->*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	*3.5%*	
Dam Safety Improvements	New Bonds	$3,313,000	$3,429,000	$0	$0	$0	$0
East & West Fork Transmission Line Rehabilitation	Cash	$2,300,000	$0	$0	$0	$0	$0
7.0 MGD Water Treatment Plant	Debt Package	$4,000,000	$40,000,000	$26,424,000	$0	$0	$0
Reeder Reservoir Sediment Removal	Cash	$0	$0	$172,000	$0	$0	$191,000
Subtotal Water Supply		**$9,613,000**	**$43,429,000**	**$26,596,000**	**$0**	**$0**	**$191,000**
Pump Stations							
TAP BPS Backup Power	ARPA Grant	$417,000	$0	$0	$0	$0	$0
Hillview BPS Replacement	Cash	$0	$0	$402,000	$1,248,000	$0	$0
Subtotal Pump Stations		**$417,000**	**$0**	**$402,000**	**$1,248,000**	**$0**	**$0**
Water Distribution							
Annual Pipe Replacement	Cash	$300,000	$311,000	$322,000	$333,000	$345,000	$357,000
Distribution Pipe Projects	Cash	$660,000	$603,000	$1,519,000	$345,000	$1,591,000	$666,000
Subtotal Water Distribution		**$960,000**	**$914,000**	**$1,841,000**	**$678,000**	**$1,936,000**	**$1,023,000**
Operations and Maintenance							
Telemetry Upgrades	Cash	$80,000	$0	$0	$0	$0	$0
Tolman Creek Road PRV Station	Cash	$0	$0	$0	$84,000	$0	$0
FERC Part 12 Inspection	Cash	$600,000	$0	$0	$0	$0	$0
Subtotal Operations and Maintenance		**$680,000**	**$0**	**$0**	**$84,000**	**$0**	**$0**
Water System Studies							
Rezoning Study	Cash	$0	$0	$0	$0	$0	$60,000
Water Conservation and Management Plan Update	Cash	$75,000	$0	$0	$0	$0	$0
Water Master Plan Updates	Cash	$0	$0	$108,000	$0	$0	$0
Subtotal Water System Studies		**$75,000**	**$0**	**$108,000**	**$0**	**$0**	**$60,000**
TAP Improvements and Studies							
Non-Peak/Emergency Supply Connection to Talent	ARPA Grant	$236,000	$0	$0	$0	$0	$0
N. Phoenix Road Pipe Improvements	Cash [1]	$0	$0	$0	$0	$1,063,000	$1,100,000
N Phoenix Road Master Meter Connection	Cash [1]	$0	$0	$0	$0	$129,000	$0
Regional BPS Short-Term Expansion	TAP	$211,000	$0	$0	$0	$0	$0
Regional BPS Programming Updates	ARPA Grant	$0	$105,000	$0	$0	$0	$0
Talent BPS Generator Upgrade (Option 1)	ARPA Grant	$0	$461,000	$0	$0	$0	$0
Talent BPS Expansion for Talent & Ashland (Option 1)	TAP	$0	$143,000	$0	$0	$0	$0
Talent BPS Seismic upgrades	ARPA Grant	$0	$104,000	$0	$0	$0	$0
24-inch Pipe Seismic upgrades (Hwy 99 Phoenix)	ARPA Grant	$0	$1,680,000	$0	$0	$0	$0
Talent to Ashland Pipe Improvements (Option 1)	Cash [1]	$0	$0	$0	$0	$0	$799,000
Talent BPS Additional Hydraulic Analysis	Cash [1]	$0	$0	$7,000	$0	$0	$0
Subtotal TAP Improvements and Studies		**$447,000**	**$2,493,000**	**$7,000**	**$0**	**$1,192,000**	**$1,899,000**
TOTAL WATER CAPITAL PROJECTS	**$96,293,000**	**$12,192,000**	**$46,836,000**	**$28,954,000**	**$2,010,000**	**$3,128,000**	**$3,173,000**
Treatment Plant Debt Package	*$70,424,000*	*$4,000,000*	*$40,000,000*	*$26,424,000*	*$0*	*$0*	*$0*
City GO Bonds	*$6,742,000*	*$3,313,000*	*$3,429,000*	*$0*	*$0*	*$0*	*$0*
ARPA Grant	*$3,003,000*	*$653,000*	*$2,350,000*	*$0*	*$0*	*$0*	*$0*
TAP Partner Reimbursements [2]	*$207,550*	*$123,709*	*$83,841*	*$0*	*$0*	*$0*	*$0*
Reserves / Cash	*$15,916,450*	*$4,102,291*	*$973,159*	*$2,530,000*	*$2,010,000*	*$3,128,000*	*$3,173,000*

Source: City of Ashland May 2023.

cip infl

[1] Potential cost-share with TAP Partners, unknown at this time.

[2] Ashland is responsible for 41.37% of the total cost; as the project lead, Ashland will pay the contractors to complete the work with reimbursement from Talent and Phoenix.

Table A-5
City of Ashland Water Rate Study
Existing and Projected Debt

DRAFT

Existing Debt	**FY 2024** Budgeted	**FY 2025** 2	**FY 2026** 3	**FY 2027** 4	**FY 2028** 5	**FY 2029** 6
City GO Bonds (FF&C)	$194,125	$195,463	$196,469	$197,131	$197,438	$0
MWC Debt for SDC Purchase	$163,756	$163,756	$163,756	$163,756	$163,756	$163,756
IFA DEQ Loan S14005	$136,207	$136,207	$136,207	$136,207	$136,207	$136,207
IFA DEQ Loan S16021	$394,098	$394,098	$394,098	$394,098	$394,098	$394,098
WIFIA Treatment Plant Debt [1]	$0	$702,000	$1,638,000	$2,574,000	$3,276,000	$3,705,287
Total Existing Debt Service	**$888,186**	**$1,591,524**	**$2,528,530**	**$3,465,192**	**$4,167,499**	**$4,399,348**

Source: City of Ashland May 2023, and HEC.

debt

[1] WIFIA $70 million loan.

Table A-6
City of Ashland Water Rate Study
Estimated New Debt for Other CIP Improvements

DRAFT

Item	*Assumptions*	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Dam Safety Improvements		$3,313,000	$3,429,000	$0	$0	$0	$0
Total Debt Funded Improvements		**$3,313,000**	**$3,429,000**	**$0**	**$0**	**$0**	**$0**
Bond Sizing							
Capitalized Interest	*12 months*	$182,220	$188,600	$0	$0	$0	$0
Issuance Costs	*3%*	$99,390	$102,870	$0	$0	$0	$0
Underwriter's Discount	*1%*	$33,130	$34,290	$0	$0	$0	$0
Bond Reserve Fund	*1 year debt service*	$332,800	$344,400	$0	$0	$0	$0
Estimated Bond Size		$3,960,540	$4,099,160	$0	$0	$0	$0
Bond Size Adjusted for Rounding	*1.20 bond load*	**$3,976,000**	**$4,115,000**	**$0**	**$0**	**$0**	**$0**
Estimated Annual Debt Service [1]		**$332,800**	**$344,400**	**$0**	**$0**	**$0**	**$0**
Estimated Debt Service Payment			**$332,800**	**$677,200**	**$677,200**	**$677,200**	**$677,200**

Source: HEC estimates based on planned CIP.

new debt

[1] Debt service estimate based on sale of revenue bonds with the following terms:
interest rate: 5.5%
years: 20

Table A-7
City of Ashland Water Rate Study
Projected Water Fund Revenue Requirement

DRAFT

Revenues and Expenses		**FY 2024** Current (1)	**FY 2025** 2	**FY 2026** 3	**FY 2027** 4	**FY 2028** 5	**FY 2029** 6
Operating Expenses		Budgeted [1]			*Projected*		
Personnel	3.5%	$2,709,283	$2,767,361	$2,864,219	$2,964,467	$3,068,223	$3,175,611
Supplies	2.0%	$360,525	$358,900	$366,078	$373,400	$380,868	$388,485
Repair & Maintenance	8.0%	$579,500	$564,330	$609,476	$658,235	$710,893	$767,765
Communications	2.0%	$22,200	$21,650	$22,083	$22,525	$22,975	$23,435
Contractual Services	3.0%	$419,500	$418,000	$430,540	$443,456	$456,760	$470,463
Internal Charges & Fees	5.0%	$2,101,797	$2,069,072	$2,172,526	$2,281,152	$2,395,210	$2,514,970
Other Purchased Services	4.0%	$78,750	$60,300	$62,712	$65,220	$67,829	$70,542
Franchise Tax	4.0%	$705,000	$720,000	$748,800	$778,752	$809,902	$842,298
Conservation Programs	2.0%	$94,950	$0	$35,000	$35,700	$36,414	$37,142
TAP Water [2]	3.5%	$250,000	$258,750	$267,806	$277,179	$286,881	$296,922
Subtotal Operating Expenses		**$7,321,506**	**$7,238,364**	**$7,579,240**	**$7,900,086**	**$8,235,955**	**$8,587,633**
Debt Service & Loan Repayments							
City GO Bonds (FF&C)	Table A-5	$194,125	$195,463	$196,469	$197,131	$197,438	$0
MWC Debt for SDC Purchase	Table A-5	$163,756	$163,756	$163,756	$163,756	$163,756	$163,756
IFA DEQ Loan S14005	Table A-5	$136,207	$136,207	$136,207	$136,207	$136,207	$136,207
IFA DEQ Loan S16021	Table A-5	$394,098	$394,098	$394,098	$394,098	$394,098	$394,098
WIFIA Treatment Plant Debt	Table A-5	$0	$702,000	$1,638,000	$2,574,000	$3,276,000	$3,705,287
New City Debt	Table A-6	$0	$332,800	$677,200	$677,200	$677,200	$677,200
Subtotal Debt Service & Loan Repayments		**$888,186**	**$1,924,324**	**$3,205,730**	**$4,142,392**	**$4,844,699**	**$5,076,548**
Capital Improvements Cash Funded	Table A-4	$4,102,291	$973,159	$2,530,000	$2,010,000	$3,128,000	$3,173,000
Subtotal Annual Cost		**$12,311,982**	**$10,135,847**	**$13,314,970**	**$14,052,478**	**$16,208,654**	**$16,837,180**
Credits							
New Service Installation	2.0%	$40,000	$40,800	$41,616	$42,448	$43,297	$44,163
Interest on Investments	constant	$146,450	$140,000	$140,000	$140,000	$140,000	$140,000
Miscellaneous	2.0%	$25,000	$25,500	$26,010	$26,530	$27,061	$27,602
Non-Potable Water (TID) Charges	Table A-8	$79,669	$92,185	$101,322	$111,129	$122,485	$134,652
Subtotal Credits		**$291,119**	**$298,485**	**$308,948**	**$320,107**	**$332,843**	**$346,417**
REVENUE REQUIREMENT		**$12,020,863**	**$9,837,362**	**$13,006,023**	**$13,732,370**	**$15,875,810**	**$16,490,763**
Current Water Sales (excludes TID)		$8,513,731	$8,513,731	$8,513,731	$8,513,731	$8,513,731	$8,513,731

Source: HEC. *rev req*

[1] Budgeted operating expenses and debt service. New City debt service is not budgeted in 2023-25 biennium budget.

[2] Accounted for in the 2024 budget under Water Supply - Other Purchased Services. Separated here for MWC rate increases.
MWC rate increases are planned at 3.5% per year.

Table A-8
City of Ashland Water Rate Study
Projection of TID Non-Potable Water Revenue Offset

DRAFT

Costs	Assumption	FY 2024 Budgeted [1]	FY 2025 2	FY 2026 3	FY 2027 4	FY 2028 5	FY 2029 6
TID Annual Cost Paid by Metered Customers							
Base Meter Charge [1]							
SOU (6" meter)	$8,892	$9,781	$10,759	$11,835	$13,019	$14,321	$15,753
Lithia Park (4" meter)	$4,519	$4,971	$5,468	$6,015	$6,617	$7,278	$8,006
Metered Water Use [2]							
SOU (6" meter)	$17,754	$19,885	$22,015	$24,146	$26,276	$29,117	$31,958
Lithia Park (4" meter)	$2,551	$2,857	$3,164	$3,470	$3,776	$4,184	$4,592
Total SOU	**$26,646**	**$29,666**	**$32,775**	**$35,981**	**$39,295**	**$43,438**	**$47,710**
Total Lithia Park (City)	**$7,070**	**$7,828**	**$8,632**	**$9,485**	**$10,392**	**$11,462**	**$12,598**
Total TID Metered Customers	**$33,717**	**$37,494**	**$41,406**	**$45,466**	**$49,688**	**$54,900**	**$60,309**
All Other TID Users Costs							
Annual Flat Fees [3]	$41,965	$46,162	$50,778	$55,856	$61,441	$67,585	$74,343
Total TID Unmetered Customers	**$41,965**	**$46,162**	**$50,778**	**$55,856**	**$61,441**	**$67,585**	**$74,343**
Total Estimated TID Customer Payments							
Meter Fees	$13,411	$14,752	$16,228	$17,850	$19,635	$21,599	$23,759
Use Fees	$62,271	$68,904	$75,957	$83,471	$91,493	$100,886	$110,893
Total Fees	**$75,682**	**$83,657**	**$92,185**	**$101,322**	**$111,129**	**$122,485**	**$134,652**

Source: City of Ashland and HEC.

tid offset

[1] Customer charges and meter replacement fees for one 6" meter (SOU) and one 4" meter (Lithia Park).

[2] [3] Calculated Rate per Metered Connecti	$0.0025	$0.0028	$0.0031	$0.0034	$0.0037	$0.0041	$0.0045
Calculated Rate per Acre	**$241.18**	**$265.30**	**$291.83**	**$321.01**	**$353.11**	**$388.42**	**$427.26**

Table A-9
City of Ashland Water Rate Study
Projected Water Fund Cashflow

DRAFT

Revenues and Expenses	Fiscal Year Ending FY 2024 Budgeted [1]	FY 2025 2	FY 2026 3	FY 2027 4	FY 2028 5	FY 2029 6
Rates Increase	*10.0%*	*10.0%*	*10.0%*	*10.0%*	*10.0%*	*10.0%*
Revenue						
Municipal Water Sales	$8,939,417	$10,301,614	$11,331,776	$12,464,953	$13,711,448	$15,082,593
TID Water Sales	$79,669	$92,185	$101,322	$111,129	$122,485	$134,652
Other Revenue Sources	$211,450	$206,300	$207,626	$208,979	$210,358	$211,765
Total Revenue [2]	**$9,230,537**	**$10,600,099**	**$11,640,723**	**$12,785,060**	**$14,044,292**	**$15,429,010**
Operating Expenses	**$7,321,506**	**$7,238,364**	**$7,579,240**	**$7,900,086**	**$8,235,955**	**$8,587,633**
Net Revenue before Debt Service	**$1,909,031**	**$3,361,735**	**$4,061,483**	**$4,884,975**	**$5,808,337**	**$6,841,378**
Debt Service	**$888,186**	**$1,924,324**	**$3,205,730**	**$4,142,392**	**$4,844,699**	**$5,076,548**
Debt Service Coverage [3]	*2.15*	*1.75*	*1.27*	*1.18*	*1.20*	*1.35*
Net Revenue	**$1,020,845**	**$1,437,411**	**$855,753**	**$742,583**	**$963,638**	**$1,764,830**
Beginning Balance	$15,533,793	$12,552,347	$13,116,600	$11,542,352	$10,374,935	$8,310,573
Net Revenue (Deficit)	$1,020,845	$1,437,411	$855,753	$742,583	$963,638	$1,764,830
Cash-Funded Capital Improvements	($4,102,291)	($973,159)	($2,530,000)	($2,010,000)	($3,128,000)	($3,173,000)
Bond/Loan Proceeds	*Excludes Bond/Loan Proceeds & Projects Funded with Proceeds [4]*					
Add SDC Revenue	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Ending Balance [5]	**$12,552,347**	**$13,116,600**	**$11,542,352**	**$10,374,935**	**$8,310,573**	**$7,002,403**
Target Minimum Balance [6]	**$2,540,168**	**$2,814,081**	**$3,022,206**	**$3,251,073**	**$3,502,919**	**$3,779,863**

Source: City of Ashland and HEC. flow

[1] Increase in rates for FY 2024 is for 6 months (Jan-Jun). [2] Excludes system development charges and LID assessments.

[3] Minimum 1.15 "coverage revenues" required for the WIFIA loan. [4] Timing of receipt of loan/debt proceeds is unknown.

[5] The City may establish a Rate Stabilization Fund into which cash greater than all lawful expenses have been paid, and the City has achieved at least the minimum cash balance for the Water Fund.

[6] The target balance is 20% of revenues plus one year debt service (excluding City GO debt and the WIFIA loan, which are not secured by bond reserves).

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Technical Memorandum DRAFT

To: **Scott Fleury, Public Works Director**

From: Catherine Hansford **Date:** January 16, 2023

Subject: Senior and Senior Disabled Low Income Utilities Bill Assistance Program

Purpose

The City of Ashland (City) currently has utility bill relief programs for low-income households. Two programs have been set up under the authority of Resolution 92-22. The programs have morphed over time, with Ashland Administrative Policy providing greater detail about the Low-Income Energy Assistance Program; however, the water and wastewater utility discounts have not been reviewed since 1992. Brief descriptions of the two programs are provided here:

- **The Low-Income Energy Assistance Program.** This program applies to the electric portion of the City's utility bill. Under this program, a household with income at or below 65% of the State Median Income (SMI) can receive a credit of 50% for low-income senior and low-income disabled persons for up to six months during the winter months, and to all other low-income households for up to three months. Households can receive a $300 maximum credit applied to the electric portion of the utility bill each year they apply. This program is administered under City Administrative Policy 2017.08.01.

- **The Senior and Disabled Year-Round Discount Program.** This program currently applies to all public works (water, wastewater, transportation and storm drain) utility fees and electric; however, as originally written in Resolution 92-22, the discount was intended to only be applied to water, sewer, and electric. Under this program, a household can receive a 20% or 30% discount indefinitely; note however, that if the qualifying person moves out of the residence, the discount is removed. Proof of eligibility is required by the City, but in practicality the City lacks human resources to verify eligibility of every account every year. One-time emergency assistance of up to $100 in a calendar year may also be granted to a utility customer.

This memorandum reviews low-income utility bill assistance programs at other Oregon cities to recommend potential modifications to the City's current Senior and Senior Disabled Low Income Year-Round Discount Program, specifically for the water and wastewater utilities.

Potential modifications to Resolution 92-22 are provided. The potential modifications would eliminate the discount currently being provided to the same customers' storm drain and transportation utility fees.

Review of Comparison City Programs

HEC conducted a survey of comparison low-income household utilities bill assistance programs. **Exhibit A** summarizes the programs of surveyed cities. Some cities only apply the discount to water or sewer or both water and sewer, some also provide the discount to stormwater, garbage, and other City services. Of the 18 cities included in the survey, only Ashland and Klamath Falls limit low-income assistance programs to seniors. Four of the cities only provide limited relief (once or twice per year), rather than continual monthly bill discounts.

Senior Discounts. Ashland only provides bill assistance to Seniors who are low-income and age 65+ years. Klamath Falls also requires the low-income household to have a qualifying senior for a discount which is given as a once-per-year rebate, but most of the cities of similar size to Ashland (population between 15,000 and 40,000) that have low-income assistance programs for water and wastewater utilities do not restrict their program to Seniors. Of the 9 comparably-sized cities, 7 do not have an age or other qualifying condition (Hermiston, Sherwood, Milwaukie, Newberg, West Linn, and Redmond). Troutdale requires the low-income household to have a Senior or a Disabled person living in the household (the Disabled person in the household does not have to be a Senior). Troutdale's two qualifying discounts are only applicable to the sewer bill (Troutdale does also provide water and stormwater services).

Of the larger sized cities, Albany; which has a population of about 57,000 people, provides a low-income senior discount. Albany defines a senior citizen as age 60+, rather than 65+. Bend and Salem also provide low-income senior discounts. Elderly persons in Salem must be aged at least 60 years to qualify for discounts to their water, sewer, and garbage bills. Elderly persons in Bend must be at least 62 years old, and the bill assistance program is only for sewer and storm drain services (Bend does also provide water service).

Disabled Person Discounts. Ashland only provides a disabled person discount if the disabled person is at least 60 and qualifies as low income. As already mentioned, Troutdale provides a discount for disabled persons regardless of age, provided they qualify as low income. Salem and Bend, larger sized cities, have disabled persons programs that provide the same discount as their elderly citizens programs do, but the disabled person need not be a senior (they must qualify as low income). Portland's program applies to water, sewer, and storm drain. Salem's program applies to water, sewer, and garbage services. The City of Albany also provides discounted bills to disabled persons provided they qualify as low income, also independent of their age, on their water bills and City services fees (but not their sewer and stormwater fees).

Other Discounts. Newberg offers an active military and veteran discount in addition to a low-income discount (they are mutually exclusive).

Amount of Assistance Offered. The amount of financial assistance offered varies from city to city. Most of the surveyed cities provide their assistance as a percentage discount off the total bill as Ashland does; however, some restrict the percentage discount to the base charges only or waive the base charge and a percentage of the use charge.

Emergency Bill Assistance. Ashland offers a one-time $100 credit per year per account, subject to funds availability. Similar to Ashland's Emergency Credit program, Milwaukie also provides temporary assistance with limited funds, but no other city of similar size provides emergency water and wastewater utility bill assistance. Milwaukie offers a maximum of $400 every 12 months. Of the 7 larger sized cities (population greater than 40,000), Bend, Salem, and Portland also offer some form of temporary assistance. Bend offers a one-time credit up to $150 for households not already eligible for other discounts on their utilities bill. Portland and Salem both provide $500 one-time discounts each year for households with a demonstrated need.

Options to Modify the Current Program

Based on the survey of low-income assistance programs run by other Oregon cities, Ashland should consider the following, not listed in any particular order, and not exclusively of each other:

- Removing the restriction of the program to Seniors only and expanding the program to all low-income households with percentage of assistance provided on a sliding scale with household income levels. If changed in this way, the need to prove being elderly or disabled is removed.

- Allowing low-income disabled persons to receive the same assistance as a low-income Senior Citizen (removing the 60 years old age restriction currently in place for disabled persons).

- Reducing the Seniors eligibility criteria from 65 to 60 or 62.

- Keeping the one-time Emergency Assistance program as it is.

Recommended Modifications to Resolution 92-2 and Ashland Municipal Code

It is recommended that the City repeal Resolution 92-2 and adopt two separate resolutions for utility bill assistance programs for 1) electric, and 2) water and sewer. If the City wanted to continue providing discounts for storm drain and transportation utility fees, which are currently provided but not authorized by resolution 92-2, then an additional new resolution would be necessary for those utility fee discounts. City Municipal Code will also need to be amended to reflect City Council decisions on utility bill assistance programs.

Municipal Code

It is recommended that, at a minimum, the following changes be made to the Municipal Code (deletions shown in ~~strikeout~~ and additions shown in red) to reflect the current low-income assistance program. While no changes are recommended to the Municipal Code for special hardship cases (14.02.015.D), staff has noted that the City does not have documentation of any applications for special hardship consideration in the past 12 years.

14.02.015 Senior Citizen Discount

A. To qualify for a 30% senior citizen discount under the utilities bill assistance program, a person must be 65 years of age or disabled and 60 years of age and the total household income shall not exceed the Federal Community Services Administration poverty guidelines.

B. To qualify for a 20% senior citizen discount under the utilities bill assistance program, a person must be 65 years of age or disabled and 60 years of age and the total household income shall be between 100% and 125% of the Federal Community Services Administration poverty guidelines.

~~B~~. C. The senior citizen discount shall only apply to the applicant's residence.

~~C~~. D. A senior citizen desiring to receive a utilities bill discount must submit an initial application to the City on forms provided by the City. In order to maintain continuous qualification for such discount, the senior citizen shall, not later than June 30 of each ensuing year, file an annual application for renewal on forms provided by the City. The City Manager or the City Manager's designee shall determine whether the applicant meets the qualifications and requirements of the City.

~~D~~. E. In special hardship cases, a committee of two (2) City Council members and the Senior Program Director may recommend that the City Manager grant exemptions to the foregoing income limitations where the circumstances justify such exemptions. (Ord. 3192 § 107, amended, 11/17/2020; Ord. 2673, amended, 1992).

14.04.030 Water rate schedules

The water rate schedules and ~~senior discount rate~~ utilities bill assistance discounts shall be established by Resolution of the City Council……..

14.08.035 Sewer User Charges

The sewer Rate Schedules and ~~senior discount rate~~ utilities bill assistance discounts shall be established by Resolution of the City Council……..

14.16.030 Electric Rate Schedules

The electric rate schedules and utilities bill assistance discounts shall be established by Resolution of the City Council……

EXHIBIT A

COMPARISON OREGON CITIES

UTILITIES BILL ASSISTANCE PROGRAMS

City Name and Population	City or Agency Handling the Program	Utilities Included	Eligibility and Program Type (Low Income, Senior, Disabled, Other)	Program Description
Troutdale (16,819)	City	Sewer only (City provides water, sewer, storm drain services)	**Low Income** - Senior Citizen 65+, must be <50% of Multnomah County MFI limits by HH size, must not be in arrears with utility bill, service must be in the name of the applicant and applicant must be resident, must apply every year. Disabled - applicant must receive Social Security Disability, HH income must not exceed 80% of the MFI, same eligibility requirements as for senior citizens.	50% of monthly sewer charge.
Hermiston (19,749)	City	Water, Sewer	**Low Income** - based on Fed. Poverty guidelines by HH size, must be verified annually using Federal income tax statement.	50% of water and sewer base charges.
Sherwood (20,222)	City	Water, Sewer, Streets, Surface Water Mgm't	**Low Income** - must have been a customer for 4+ months, must be at 60% of SMI by HH size.	Once per year assistance for 2 months of base charges on all services and an additional month base charge for water.
Milwaukie (21,305)	Low Income Assistance - City; Temporary Assistance - St Vincent DePaul Society	Water, Sewer, Stormwater, Streets	**Low Income** - Temporary Assistance - Individual must be the resident of the dwelling, must show emergency financial need; Low Income Assistance - must be served at least one of the City services, occupied by the applicant, no delinquency with any City charge, must not exceed gross annual HH income levels established by the Housing Choice Voucher Program (by HH size), must apply every year.	Temporary Program - Max. assistance is $200 per month, only two months of assistance available every 12 months. Funds are limited and may run out. Low Income Assistance Program - waiver of water base charge, 50% of sewer bill, 50% of stormwater bill, waiver of the street maintenance fee.
Ashland (21,600)	City	Water, Sewer, Electric Currently also gives discount to storm drain and streets	**Senior Citizen Low Income**, must be age 65+ or 60+ and disabled, must reapply every year, must receive water and sewer service. HH income level capped by Federal poverty income by HH size. Applied to all utility fees (water, sewer, storm drain, transportation). **Emergency Credit** - account must be no more than $100 past due.	**Senior Citizen Low Income:** Year-round discount of 30% if HH income level is at or below 100% of the Fed. Poverty income guidelines or 20% if between 100% and 125%. **Emergency Credit:** $100 one-time per year per account only.
Klamath Falls (22,501)	City	Water, Sewer	**Senior Citizen Low Income**, must reapply every year, must have been a customer the last calendar year, must receive water and sewer service, HH income level capped by Federal povery income by HH size.	One-time discount applied for water and sewer of $65.

City Name and Population	City or Agency Handling the Program	Utilities Included	Eligibility and Program Type (Low Income, Senior, Disabled, Other)	Program Description
Newberg (25,767)	City	Water, Sewer	**Low Income** - must show proof how the HH is income-limited (no MHI test); **Active Military & Veteran** - no income requirement, must have at least 1 military person in the HH. For both programs must live in Newberg, cannot be >30 days delinquent on account, and must reapply every year.	Both programs - $25 per month or $15 per month if no sewer.
West Linn (27,420)	City	Water, Sewer, Surface Water, Street, Parks	**Low Income** - must live at the address and receive bill in their name, HH income must not exceed 185% of HHS poverty guidelines for Oregon, must reapply every year, water services must be smaller than 1-inch.	Monthly water charges - 50% of customer service and capacity charges, plus 50% off first 700 cubic feet. All other services - 50% off the bill.
Redmond (37,566)	City	Water, Sewer, Stormwater	**Low Income** - must provide proof of income determined by HH size, only valid for address on the application, does not apply to residences used for business, renewal required every year.	Up to 25% reduction of City utility bill.
Oregon City (37,786)	City	Water, Sewer, Stormwater, Pavement Maint.	**Low Income** - must provide proof of eligibility (meet LIHEAP requirements) determined by HH size, must renew every year.	Usually about half the total bill; summer water use that exceeds average winter use is billed the full amount.
Albany (57,322)	City but apply through the Community Services Consortium	Water, City Services (provides water, sewer, stormwater)	**Low Income** - HH gross income is <60% of SMI, amount determined by HH size, must be either a low income senior citizen at least 60 yrs old or a low income disabled person, must recertify every year.	Credit up to 4 HCF per month and 50% of the City Services Fee.
Corvallis (59,434)	City	Water, Sewer	**Low Income** - Must pay for the City bill, must reapply every year, must participate in the SNAP or Oregon Health Plan or school free lunch program.	Credit up to $25 per month.
Bend (102,834)	City	Water, Sewer, Stormwater, Garbage possible (depends on income)	**Low Income**: Utility Billing Assistance - Sewer only customers not eligible. Must have a delinquent balance on water/sewer bill. Must have HH income less than 80% of HUD median income based on HH size. Senior Citizens & Disabled Persons Reduced Sewer and Stormwater Program - must be 62+years or disabled, must renew every 2 years, must provide proof of income eligibility.	Utility Billing Assistance - One-time credit up to $150. Cannot be combined with the Senior Citizens & Disabled Persons Reduced Sewer and Stormwater Program. Senior Citizens & Disabled Persons Reduced Sewer and Stormwater Program - half off the base rates for sewer and stormwater (about $23 per month).

City Name and Population	City or Agency Handling the Program	Utilities Included	Eligibility and Program Type (Low Income, Senior, Disabled, Other)	Program Description
Hillsboro (107,618)	City	Water, Sewer, Transportation, Surface Water Mgm't	**Low Income** - must receive services from government assistance programs OR have HH income at or below 185% of Federal Poverty Limit for the past 60 days (varies by household size). Must obtain proof of eligibility from a community partner (such as Salvation Army).	Relief may be given on up to 2 bills in a 12-month period; total cannot exceed $250.
Gresham (114,833)	City	Water, Sewer	**Low Income** - must have a Gresham utility billing account, program is targeted to HH making <60% of median family income, limited funding for 61%-70% median family income, HH income validation required.	Each application considered individually. Assistance is limited to once per year. Program closes when funds are depleted.
Salem (179,642)	Emergency Program (City); Elderly & Disabled Program (Mid-Willamette Valley Community Action Agency)	Water, Sewer, Garbage	**Low Income** - Disabled & Elderly Program - must be age 60+ with income at or below 60% SMI, Emergency Program - must meet income guidelines of the Emergency Food Assistance Program, must requalify every year.	Elderly & Disabled program - monthly discount on utility and garbage. Emergency program -Up to $500 each calendar year.
Portland (647,697)	City	Water, Sewer, Stormwater	**Low Income** - Up to 60% of MFI, must have a single-family account, must reapply every 2 years, applicant must live at the property, self-report income. Crisis Voucher - additional credit for a temporary crisis (once only every 12 months), must be enrolled in the bill discount program, and must pay some of the bill.	Discount applied to every sewer, water and stormwater bill. Amount depends on income of the HH; typically about $50 off per month. Crisis Voucher - $500 one-time discount.

Source: July 1, 2022 population prepared by the Population Research Center, Portland State University.

HH =	Household	LIHEAP =	Low Income Home Energy Assistance Program
MFI =	Median Family Income	MHI =	Median Household Income
HHS =	U.S. Health and Human Services	HUD =	U.S. Department of Housing and Urban Development
SMI =	State (of Oregon) Median Income	SNAP =	Supplemental Nutrition Assistance Program

HANSFORD ECONOMIC CONSULTING

Water Rate Cost of Services Study

CITY OF ASHLAND

March 15, 2016

HEC Project #140136

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Section 1: INTRODUCTION

1.1 PURPOSE OF THE STUDY

The City of Ashland (City) contracted with Hansford Economic Consulting (HEC) to perform a Water Rates Cost of Service Study (Study). The purpose of this Study is two-fold: (1) to ensure that different customer types pay their fair share of water system costs by performing a cost of service analysis and (2) to collect sufficient revenues to adequately fund the water system in a safe manner; providing the residents and businesses of the City with a clean, safe and reliable potable water system that meets State and Federal requirements, by projecting revenue needs and determining a supporting rate schedule.

This report provides an explanation and justification of redistribution of water system costs to customer types and calculated water rates through fiscal year ending 2022. This report has been prepared with the following principles in mind:

(1) Revenues derived from water fees should not exceed the funds required to provide the water service.

(2) Revenues derived from water fees should not be used for any purpose other than that for which the fees were imposed.

(3) Customer water bills should reflect the customer's fair share (proportional) cost of service to provide water to the customer.

(4) Water fees should only be charged to customers using the service or with the ability to use the service at any time. Water fees should not be charged based on potential or future use of water.

The City conducted a Water Master Plan that was completed in 2012. The Water Master Plan called for several large capital improvement projects and the need to raise water rates to plan for those project costs. The City raised water rates July 2013, 2014, and 2015 by 10% each year as a result of the findings of the Water Master Plan.

Since the 2012 completion of the Water Master Plan the region has experienced a drought. Projected water demands have not been realized, which have resulted in (a) less revenue than anticipated, and (b) greater expenditure in earlier years to complete the Talent-Ashland-Phoenix (TAP) project to augment water supplies. The recent water rate increases were based on percentage increases needed from water sales and not based on cost of service. The City wanted to assess whether customers are paying their proportional share of costs of the water system (not subsidizing among customer types). The City also wanted to ensure that sufficient revenues would be available to pay for projects identified in the Master Plan, as well as other projects identified since completion of the 2012 Master Plan.

Given decreased water demand in recent years the City also anticipated that water rates would have to increase through fiscal year 2022 or necessary capital projects (most particularly a new water treatment plant) would have to be postponed.

1.2 METHODOLOGY

This report was prepared using the principles established by the American Water Works Association (AWWA). The AWWA "Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1" (the "M1 Manual") establishes commonly accepted professional standards for cost of service studies. The M1 Manual general principles of rate structure design and the objectives of the Study are described below.

According to the M1 Manual, the first step in the ratemaking analysis is to determine the adequate and appropriate funding of a utility. This is referred to as the "revenue requirements" analysis. This analysis considers the short-term and long-term service objectives of the utility over a given planning horizon, including capital facilities and system operations and maintenance, to determine the adequacy of a utility's existing rates to recover its costs. A number of factors may affect these projections, including the number of customers served, water-use trends, nonrecurring sales, weather, conservation, use restrictions, inflation, interest rates, wholesale contracts, water rights agreements, and other changes in operating and economic conditions.

After determining a utility's revenue requirements, a utility's next step is determining the cost of service. Utilizing a public agency's approved budget, financial reports, operating data, and capital improvement plans, a rate study categorizes (functionalizes) the costs, expenses, and assets of the water system among major operating functions to determine the cost of service.

After the assets and the costs of operating those assets are properly categorized by function, the rate study allocates those "functionalized costs" to the various customer classes (e.g., single-family residential, multi-family residential and commercial) by determining the characteristics of those classes and the contribution of each to incurred costs such as peaking factors, different delivery costs, service characteristics and demand patterns. Rate design is the final part of the M1 Manual's ratemaking procedure. The revenue requirement and cost of service analyses are used to determine appropriate rates for each customer class.

1.3 ORGANIZATION OF THE REPORT

The Study is presented in six sections.

Following this introduction, Section 2 provides a summary of major assumptions and findings of the study. Section 3 provides information on the City's water system including historical water production and consumption, customer base, historical City growth, and health of the water enterprise fund. Section 4 projects revenue needs, "the revenue requirement", through fiscal year 2021-22, calculates costs associated with City Talent Irrigation District (TID) non-potable water service, and determines a meter replacement program and its associated costs.

Section 5 presents the cost of service analysis, water demand projections, and details of the calculated water rates. The impacts of the new water rate structure are presented in Section 6, including a comparison of bills with other Oregon water providers.

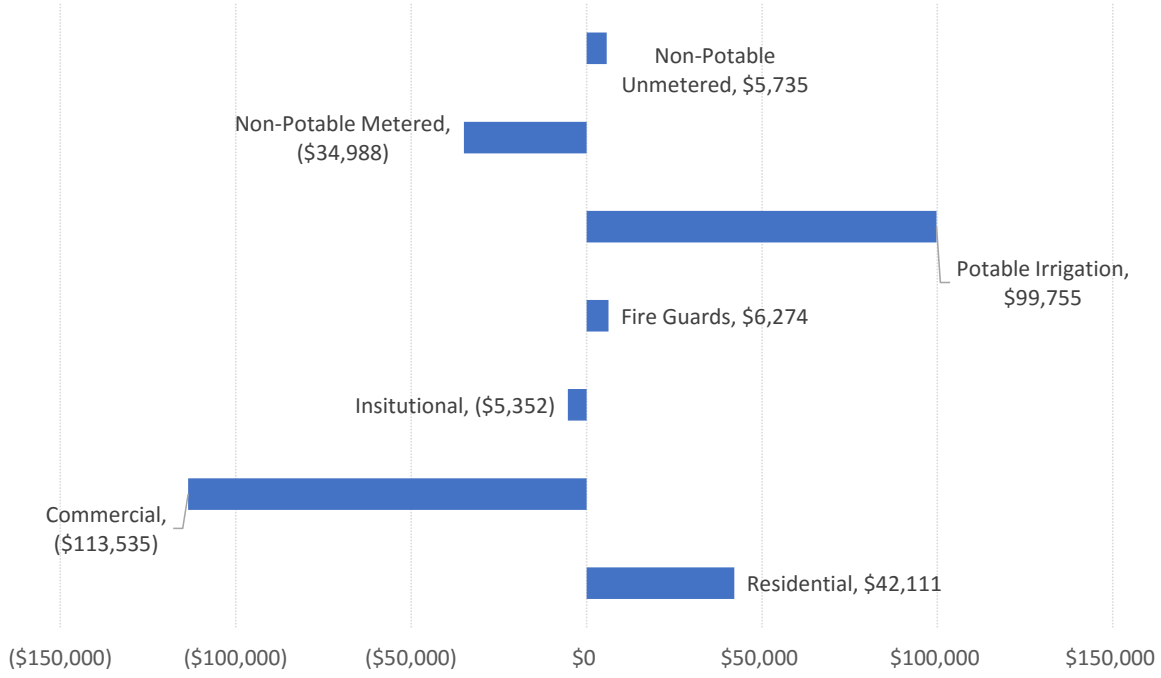
Appendix A includes support tables for the water rates analysis.

Section 2: SUMMARY OF FINDINGS

2.1 MAJOR FINDINGS

Cost of Service. The cost of service analysis finds that commercial, institutional, and non-potable metered irrigation customers are currently paying more than their proportional share of water system costs. Potable irrigation and non-potable unmetered irrigation customers are paying less than their proportional share of water system costs. This is illustrated in **Figure 1** below. Customer types with negative revenue requirement in the illustration should be paying less as a customer group than they are currently paying. Customer types with positive revenue requirement should be paying more as a customer group than they are currently paying. Although residential shows an underpayment of $42,111, this is a very minimal difference, as it is only 1% of the current cost (see **Table 25**). As a result of the cost of service analysis (see Section 5) the rates from fiscal year 2016-17 onwards shift costs between customer types.

Figure 1
Cost of Service Redistribution of Fiscal Year 2015-16 Revenue Requirement



Costs are allocated to potable customers based on their potential to use system capacity and their water usage characteristics. Costs are allocated to non-potable customers based on typical annual water usage for metered customers and property acreage for unmetered customers.

Rate Structure Modifications. The current rate structure is proposed to be modified to better reflect customer usage patterns and cost of service, ensure accuracy for account billing, and encourage water use efficiency.

- **Flat Charges (All Customers).** Currently bills comprise one flat charge – the monthly service charge. Under the new rate structure bills would continue to have one flat charge which would include the service charge, but it would also include a customer charge for costs associated with administration of the water system and provision of customer service. The customer charge would be the same every month, and the same for every account (accounts with more than one meter only charged once). The service charge would continue to cover the costs of services and meters and a portion of system capacity costs; generally, the costs to be able to provide water service regardless of the amount of water used during a given period. The service charge would continue to apply to each meter at the property.

  Service Charge Meter Ratios Change. The service charge meter ratios were adjusted to AWWA meter ratios established using safe maximum operating capacities for meters in the M1 Manual. These meter ratios more accurately capture the capacity of the water service to each customer than the current meter ratios. As a result of this change the larger meter sizes would pay more per month than under the current meter ratios. For 1" meter services the meter ratio was set equal to a ¾" meter to ensure that households required to upsize for fire code requirements are not penalized (this methodology was also used to establish the Forest Resiliency Program Fee in May, 2015 and is being used with greater frequency in cities in other Western U.S. states)[1].

- **Commercial Customers.** Commercial customers are separated into commercial, institutional, and potable water irrigation customers. Institutional customers include the current government/municipal customers. This change is made to better reflect the different customer water demand patterns associated with non-residential activity. The tiers for the new customer categories are also different from the current tiers. The rate structure is intended to fit typical customer usage patterns and promote water use efficiency as well as proportionately allocate the cost of service to those who place the greatest demands on the system.

  The table on the following page shows proposed modifications to the non-residential customer tiers. Note that non-residential irrigation water would be charged at on peak and off peak rates. The purpose of seasonal rates for irrigation is to reduce the cost of irrigation water during the spring, fall, and winter months when water supply is not a concern and increase the cost of irrigation water when supplies may be impacted by drought.

[1] Source: HEC experience working with cities in California.

	TIER 1	TIER 2
	Cubic Feet	
CURRENT for ALL NON-RESIDENTIAL	< 50,000	>50,000
NEW		
INSTITUTIONAL	No tier – uniform rate	
IRRIGATION	No tier – seasonal rates	
COMMERCIAL 2" or less	< 2,500	>2,500
COMMERCIAL >2"	< 15,000	>15,000

- **Residential Customers.** There is no change proposed for residential tiers. Residential customers with separate potable irrigation meters (about 5% of all potable irrigation customers) would pay a service charge each month for each meter but only one customer charge for the account each month. Metered potable irrigation water would be added to the domestic water for calculation of use charges. As the City is converting to new water billing software in 2016 there may be a transition period during which time residential potable irrigation water is billed starting at the Tier 2 rate for residential water. Billing would begin at Tier 2 because average water use is 460 cubic feet per month for indoor use (see **Table 21**) indicating that a typical home would be using some irrigation water in Tier 2. Once the new billing software is in place the irrigation metered use would be added to domestic metered use.

- **Potable Water Irrigation Customers.** All potable irrigation customers (commercial and residential) would be billed the flat monthly charges (service charge and customer charge) year-round rather than only in the months that water is taken as is current practice. Potable irrigation customers would be treated the same as all other potable water customers in this regard, reflecting the ability for the customer to take water at any time of year. This shift from current billing practice may cause some potable irrigation customers to want to discontinue having a separate irrigation meter. This is an option for residential potable irrigation customers.[2]

2.2 KEY ASSUMPTIONS

Implementation. The new rate structure is assumed to be in effect beginning July 1, 2016 and to be increased each July 1 thereafter. The rate increases would coincide with the fiscal year as is current practice.

Water CIP Projects are funded through rates, connection fees, and City borrowing. Rates and City borrowing will be used to finance capital improvements that benefit existing customers. Connection fees will only be used for projects that are related to new growth in the City. Developer contributions may be required for certain facilities. It is assumed that the City will obtain Safe Drinking Water State Revolving Fund (DWSRF) money to finance construction of the new water treatment plant and Crowson II reservoir. If DWSRF money is not obtained the

[2] This is not an option for non-residential customers because of sewer billing methodology.

revenue requirement would increase (assuming all other costs do not change) and water rates would have to increase beyond those calculated in this report.

System rehabilitation costs are included in rates. Rates should include depreciation of existing assets so that funds are accumulated and available for replacement of assets on a timely basis, preferably paid for with cash. This Study uses estimated depreciation costs to collect for system rehabilitation. Rate money collected for system rehabilitation is used to fund capital improvement projects for existing customers. In some years system rehabilitation revenue may exceed capital improvement costs. In these years the excess revenue is added to reserves for future rehabilitation projects.

TAP Water Costs. The TAP emergency water pipeline was recently completed. This treated water source will be utilized by the City in late summer or early fall, as needed, to augment supplies. For purposes of the Study it is assumed that water is taken for 31 days each year. The current contract rate is 68 cents per 1,000 gallons of water. In the model it is assumed the cost increases to 75 cents per 1,000 gallons in 2016 and at 3.5% per year each year thereafter.

2.3 Calculated Rates

The Study provides a basis for adoption of new rates beginning July 1, 2016. By modifying the rate structure the City will generate sufficient revenue to continue to meet its bond covenants, build a healthy reserve, fund necessary capital improvements, and fully fund water operations.

The revenue requirement, which is the amount of money to be raised by rates, is calculated to increase by the following percentages:

2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
8%	4%	3%	3%	3%	3%

The revenue requirement percentage increases for the next 3 years match those calculated in the 2012 Water Master Plan; however, with the shift in costs between customer categories not all customer categories will experience the same percentage increases.

Table 1 on the following page shows calculated water rates through 2022 for all customer categories and compares the calculated rates with the current rate structure.

Table 2 on page 9 shows the calculated bill for a single family home using 1,000 cubic feet of water in a billing cycle. A typical residential bill would increase from $51.72 to $54.35 July 1, 2016.

Table 1
Calculated Water Rates through 2022

Rate Component	Rates Implementation						
	7/1/2015	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
Monthly Customer Charge per Bill	n.a.	$11.74	$12.19	$12.54	$12.89	$13.25	$13.64
Monthly Service Charge per Meter [1]							
3/4" and Fire Guards	$23.50	$13.75	$14.27	$14.68	$15.10	$15.52	$15.98
1"	$46.99	$14.34	$14.88	$15.31	$15.75	$16.19	$16.66
1.5"	$66.99	$65.61	$68.13	$70.07	$72.08	$74.10	$76.24
2"	$88.24	$104.27	$108.28	$111.36	$114.55	$117.76	$121.16
3"	$184.50	$209.08	$217.12	$223.30	$229.69	$236.13	$242.95
4"	$282.07	$331.60	$344.32	$354.13	$364.29	$374.52	$385.35
6"	$528.92	$652.47	$677.56	$696.84	$716.81	$736.90	$758.18
8"	$881.49	$1,034.38	$1,074.23	$1,104.77	$1,136.39	$1,168.21	$1,201.93
USE CHARGES FOR POTABLE WATER							
Residential [2]				**per month, per unit**			
0 to 300 cf	$0.0243	$0.0246	$0.0256	$0.0263	$0.0271	$0.0278	$0.0287
301 to 1,000 cf	$0.0299	$0.0307	$0.0319	$0.0329	$0.0338	$0.0348	$0.0358
1001 to 2,500 cf	$0.0400	$0.0415	$0.0431	$0.0444	$0.0457	$0.0470	$0.0484
> 2,500 cf (2,501 - 3,600 cf June to Sept)	$0.0517	$0.0537	$0.0559	$0.0575	$0.0592	$0.0609	$0.0627
> 3,600 cf (June to Sept only)	$0.0673	$0.0691	$0.0719	$0.0739	$0.0761	$0.0783	$0.0806
Non-Residential				**per month, per meter**			
0-50,000 cf	$0.0343	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
> 50,000 cf	$0.0353	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Commercial <2" meter							
0-2,500 cf	n.a.	$0.0307	$0.0319	$0.0329	$0.0338	$0.0348	$0.0358
> 2,500 cf	n.a.	$0.0415	$0.0431	$0.0444	$0.0457	$0.0470	$0.0484
Commercial 2"+ meter							
0-15,000 cf	n.a.	$0.0307	$0.0319	$0.0329	$0.0338	$0.0348	$0.0358
> 15,000 cf	n.a.	$0.0415	$0.0431	$0.0444	$0.0457	$0.0470	$0.0484
Insitutional	n.a.	$0.0294	$0.0305	$0.0314	$0.0323	$0.0333	$0.0342
Commercial and Institutional Irrigation							
October to May	n.a.	$0.0331	$0.0345	$0.0356	$0.0367	$0.0378	$0.0390
June to September	n.a.	$0.0449	$0.0469	$0.0483	$0.0498	$0.0513	$0.0530
Bulk Water [3]	same as non-res.	$0.0338	$0.0351	$0.0362	$0.0372	$0.0383	$0.0394
Fire Protection Service [4]							
Meter Replacement Charge	n.a.	$1.18	$1.22	$1.26	$1.30	$1.34	$1.38
Service Charge	$23.50	$13.75	$14.27	$14.68	$15.10	$15.52	$15.98
Usage Charges	same as non-res.	$0.0338	$0.0351	$0.0362	$0.0372	$0.0383	$0.0394
TID Non-Potable Water				**per irrigation season, per acre or portion of**			
Unmetered Service	$170.01	$183.11	$196.20	$209.30	$222.40	$235.50	$248.59
Metered Service:							
Service Charge	per meter as above	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Meter Replacement Fee [5]	none			per meter as above			
Water Consumption per c.f.	$0.0055	$0.0022	$0.0023	$0.0024	$0.0025	$0.0026	$0.0026
Outside City Limits							
All rates and charges for water service provided outside the city limits will be 1.5 times the inside city rates and charges.							

Source: City of Ashland.

[1] Irrigation customers currently only billed charges when the service takes water. Effective July 1, 2016 these customers will be charged the flat monthly fees every month regardless of whether water is taken.

[2] For residential customers with separate irrigation meters the metered irrigation water is added to the domestic water use.

[3] For temporary water provided through a bulk meter on a fire hydrant.

[4] This rate shall apply to all water taken through fire protection services or fire guards.

[5] Due once per year on first TID non-potable water bill.

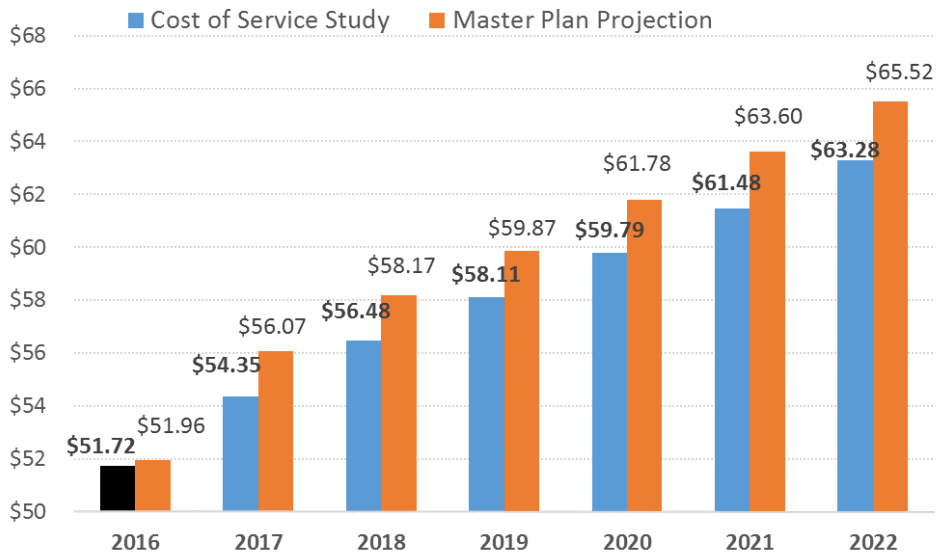
Table 2
Calculated Typical Home Bill for 1,000 Cubic Feet

Residential Charges	Fiscal Year Ending 2016	2017	2018	2019	2020	2021	2022
	current	1	2	3	4	5	6
Flat Charges							
Customer Charge		$11.74	$12.19	$12.54	$12.89	$13.25	$13.64
Service Charge	$23.50	$13.75	$14.27	$14.68	$15.10	$15.52	$15.98
Total Flat Charges	**$23.50**	**$25.48**	**$26.46**	**$27.21**	**$27.99**	**$28.78**	**$29.61**
Use Charges							
Tier 1 per cu. ft.	$0.0243	$0.0246	$0.0256	$0.0263	$0.0271	$0.0278	$0.0287
Tier 2 per cu. ft.	$0.0299	$0.0307	$0.0319	$0.0329	$0.0338	$0.0348	$0.0358
Tier 1 Charges (300 cu ft)	$7.29	$7.37	$7.67	$7.89	$8.12	$8.35	$8.60
Tier 2 Charges (700 cu ft)	$20.93	$21.50	$22.36	$23.01	$23.68	$24.35	$25.07
Total Use Charges	**$28.22**	**$28.87**	**$30.02**	**$30.89**	**$31.80**	**$32.70**	**$33.67**
Bill for 3/4" using 1,000 cu. ft.	**$51.72**	**$54.35**	**$56.48**	**$58.11**	**$59.79**	**$61.48**	**$63.28**
Percentage Increase		5%	4%	3%	3%	3%	3%

Source: HEC.

Figure 2 shows the calculated bill for a single family home with a ¾" meter using 1,000 cubic feet in the cost of service study compared to the master plan projections through 2022. Bills may be lower or higher than shown depending on actual quantity of water used.

Figure 2
Typical Monthly Bill for ¾" Single Family Home



2.4 RATE IMPACTS

Residential. In 2016 residential water bills would experience increases of about 5% rather than the full 8% increase in revenue requirement because of the cost redistribution between customers. The bills for residential customers will remain affordable per the Oregon Drinking Water State Revolving Fund program definition (see Section 6).

Commercial. Many commercial water bills would decrease under the new rate structure in 2016. The reduction in bills is also due to the reallocation of costs under the cost of service analysis. Commercial customers with 2" and larger meters would pay a larger portion of their bill as a flat monthly charge due to the change in service charge meter ratios to AWWA safe maximum operating capacities for meters. Larger water meter commercial customers would have higher bills in 2016.

Institutional. Institutional customers would experience a slight increase in bills in the winter months and a decrease in bills in the summer months. Institutional customers have a relatively flat demand throughout the year, with a slight peak in the spring months before the irrigation season begins, so the change to a uniform use charge (the same rate per 1,000 gallons is charged regardless of total water use) is appropriate.

Potable Irrigation. During the peak summer months potable irrigation bills would increase in 2016 due to cost redistribution. The new rate design is intended to curb irrigation water use during the peak use months by having a higher "on peak" rate per 1,000 gallons June through September. During off-peak months (October through April) water bills would increase if no water was taken. This reflects billing the flat monthly charges regardless of whether water is used or not. For accounts using water during the off-peak, irrigation bills would decrease. The off-peak potable irrigation water rate encourages planting in spring and fall months when water supply is not a concern.

TID Non-Potable Water Irrigation. The unmetered customers' rate would increase from $170.01 per acre to $183.11 per acre July 1, 2016 as a result of cost redistribution. The TID metered customer rate would decrease from $0.0055 per cubic foot to $0.0022 per cubic foot July 1, 2016. In addition, TID metered customers would pay a meter replacement fee.

Section 3: CURRENT CONDITIONS

3.1 CITY WATER SYSTEM

The City operates a surface water supply system. The main water supply is from Ashland Creek and reservoir. This water is treated at a City owned and operated water treatment plant. Treated water enters the distribution system from this point and either flows directly to customers or to one of 4 reservoirs (water tanks) located in the City. In 2014 the TAP water supply was completed to Ashland. The City can take up to 2.13 million gallons per day (mgd) in emergency water supplies from the Medford Water Commission. This water source will be used in late summer or early fall as needed to augment supplies. In addition to these two sources of treated water the City also obtains water from the Talent Irrigation District (TID). Non-potable TID water is supplied to irrigation customers located along the TID canal. Under terms of the contracts with TID the City may also use the water for potable water demands. When used for potable needs, water from the canal is diverted to the Ashland Creek water treatment plant where it is treated and enters the City's potable water distribution system.

Potable water production averages 46 million gallons per month during the winter months (December through March). Peak month production is July or August when production averages 152 million gallons per month. The highest month production in the past 6 years was 180 million gallons in July 2009. **Table 3** shows historical potable water production.

Table 3
Historical Potable Water Production

Month	Calendar Year							Avg. Annual	Percent
Year	2009	2010	2011	2012	2013	2014		Water Delivery (MG)	of Delivery by Month
	Figures in Millions of Gallons								
January	51.06	48.16	48.88	48.07	42.97	42.38		46.92	5%
February	44.48	41.77	44.11	44.96	36.98	37.36		41.61	4%
March	48.71	47.54	47.18	47.65	42.45	41.71		45.87	5%
April	64.90	48.40	48.70	53.24	54.76	56.41		54.40	5%
May	105.77	59.31	60.78	90.64	90.46	97.70		84.11	8%
June	124.39	88.51	88.77	109.75	117.26	119.26		107.99	11%
July	180.38	157.48	135.27	133.40	170.48	137.17		152.36	15%
August	167.64	158.29	152.00	149.87	155.29	131.38		152.41	15%
September	116.02	114.52	131.36	124.35	114.30	104.15		117.45	12%
October	69.73	86.43	82.60	81.33	99.24	83.61		83.83	8%
November	48.97	51.89	54.13	45.01	81.63	55.40		56.17	6%
December	51.26	47.26	49.63	40.50	52.97	51.01		48.77	5%
Total	**1,073.32**	**949.57**	**943.42**	**968.78**	**1,058.79**	**957.53**	***A***	**991.90**	**100%**
Base Monthly Flow (Dec - Mar)							***B***	**45.79**	
Average Annual Base Flow							***C = B*12***	**549.53**	**55%**
Average Annual Additional Flow							***D = A-C***	**442.37**	**45%**

Source: City of Ashland.

Water production includes Ashland Creek and TAP water supplies. Annual base water production is the winter monthly average production multiplied by 12. Base water production comprises 55% of annual production. Additional flow to meet demands that pick up during the spring, summer, and fall months comprises 45% of annual production.

Historical water consumption is shown in **Table 4.** Due to billing cycles, consumption by month in the table reflects the amount of water billed each month which is not exactly the same as total water used in each month; however, the pattern of use is very similar with peak month usage typically in July or August. **Figure 3** shows the seasonal pattern of water consumption.

Figure 3
Annual Water Consumption by Month

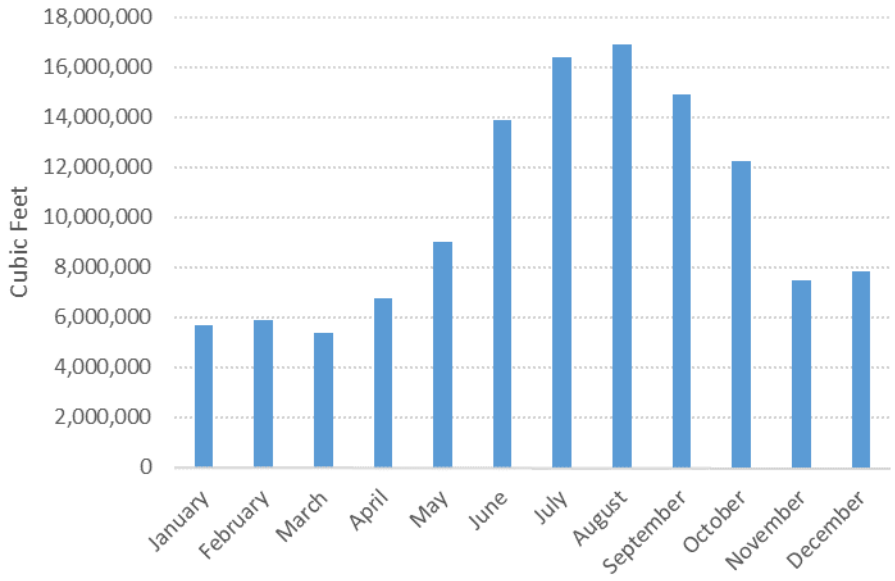


Table 4 compares potable water consumption and production. The figures show that about 4.5% of water produced is unbilled or unaccounted for. This figure is considered healthy for a water system[3].

The total annual water usage billed increased 13% between 2010 and 2013 then fell back to almost the same level as 2010 in 2014. The decrease in water use between 2013 and 2014 is probably largely due to the drought. Oftentimes a decrease such as this can be sustained for many years, particularly if followed by another drought year, as has been the case in 2015. Referred to as 'demand hardening,' customers become accustomed to using less water. During the drought years they have retrofitted fixtures and reset irrigation clocks or changed out landscaping to reduce their water use.

[3] "Most states have regulatory policies that set acceptable losses from public water system distribution systems at a maximum of between 10 and 15 percent of the water produced by the public water system.", page vii of 'Control and Mitigation of Drinking Water Losses in Distribution Systems', EPA November 2010 publication.

Table 4
Historical Water Consumption

Month	Calendar Year 2010	2011	2012	2013	2014
Consumption			*Figures in Cubic Feet*		
January	5,688,024	6,377,053	5,822,654	6,398,479	5,698,647
February	5,099,644	5,088,576	5,264,148	5,106,362	5,903,155
March	5,997,480	5,766,127	6,218,217	6,620,823	5,395,848
April	6,277,962	5,688,600	5,835,945	6,921,512	6,737,313
May	6,175,787	6,517,554	9,374,536	11,570,159	9,004,008
June	10,178,300	10,104,520	13,707,604	15,747,969	13,874,124
July	15,731,277	14,807,946	17,927,282	20,205,591	16,364,166
August	20,686,522	18,804,858	20,516,243	21,154,339	16,915,748
September	17,851,518	19,930,790	17,585,640	16,960,380	14,895,165
October	11,796,560	13,546,376	16,327,008	9,331,983	12,225,379
November	7,824,931	7,349,883	7,001,274	7,667,451	7,481,362
December	5,685,693	6,519,096	6,151,560	6,465,232	7,819,658
Total Consumption (Cu. Ft.)	**118,993,698**	**120,501,379**	**131,732,111**	**134,150,280**	**122,314,573**
Total Consumption (Gallons)	890,072,861	901,350,315	985,356,190	1,003,444,094	914,913,006
Millions of Gallons Billed	890	901	985	1,003	915
Millions of Gallons Produced [1]	950	943	969	1,059	958
Production less Consumption	**59**	**42**	**-17**	**55**	**43**
Production as % of Billing	6.3%	4.5%	-1.7%	5.2%	4.5%

Source: City of Ashland.

[1] Includes TAP water of 6.3 MG in 2014. Production figures for 2012 unreliable due to calibration difficulties at the plant.

In selecting a base year as a platform for water use from which to project water demand over the Study time period it would be best to either use the average of the last five years or the most recent year of water use. This Study projects water use based on the most recent year of water use (2014). Unlike the Water Master Plan, in which the core objective is to ensure sufficient capacity is available for a 'worst case' growth in demand scenario (maximum likely use), this Study needs to ensure sufficient revenue is available in a 'best case' growth in demand scenario under which there are minimum increases in water use. The average annual water use of the last 5 years was 939 million gallons. The Study uses the 2014 use of 915 million gallons as the base for projecting water demand.

Over the same five-year period (2010-2014) the population of Ashland increased very slightly from an estimate of 20,100 to 20,300. Gallons of water produced per capita per day has remained flat at 129. Ashland's population growth and gallons per capita per day is shown in **Table 5**.

Table 5
City Population Growth

Year	Certified Population Estimate	Annual Change	Annual % Change	Water Production Gallons per Capita per Day
	1-Jul			
2000	19,610			
2001	19,770	160	0.8%	
2002	20,130	360	1.8%	
2003	20,430	300	1.5%	
2004	20,590	160	0.8%	
2005	20,880	290	1.4%	160
2006	21,430	550	2.6%	161
2007	21,630	200	0.9%	154
2008	21,485	-145	-0.7%	153
2009	21,505	20	0.1%	137
2010	20,095	-1,410	-6.6%	129
2011	20,255	160	0.8%	128
2012	20,325	70	0.3%	131
2013	20,295	-30	-0.1%	143
2014	20,340	45	0.2%	129
Change	730	52		
Average Annual Population Increas		**0.26%**		

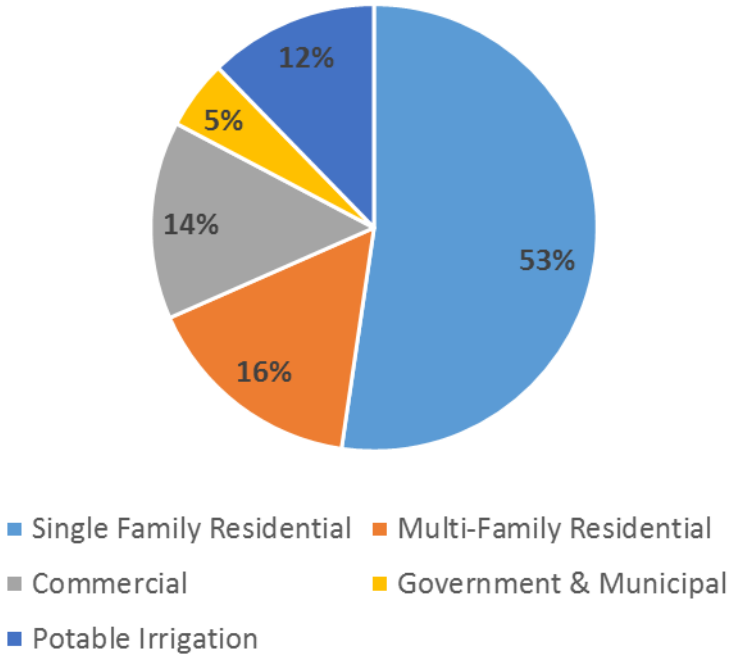
Source: Portland State University Population Research Center - www.pdx.edu/prc and Carollo 2012 City of Ashland Comprehensive Water Master Plan.

3.2 CUSTOMER BASE

As shown in **Table 5**, the City services a population of approximately 20,300 and it has sustained an annual average population increase of 0.26% since 2000. City water customers include residential (single family and multi-family), commercial, institutional (government/municipal), potable irrigation and non-potable irrigation (TID) customers. **Figure 4** shows water use by customer type. The figure excludes water use by the non-potable irrigation customers.

As the pie chart shows, the majority of City water use (69%) is by residential customers.

Figure 4
Water Use by Customer Type



3.3 THE WATER FUND

The water enterprise fund accounts for the revenues and expenses associated with operating the water system.[4]

Revenues. Historically, 61% of the water enterprise fund's operating revenue has been derived from water sales. Other operating revenue includes bond proceeds, system development charges (SDCs), new service installation fees, inter-government revenues, interest, and other miscellaneous revenues. **Table A-1** shows historical and budgeted water fund revenues. **Figure 5** shows the typical annual share of revenues by source.

Water sales by customer type is shown in **Figure 6**.

[4] An enterprise fund is a fund that is intended to recover its costs through user fees and charges. Enterprise funds also provide the repayment capacity for, and make debt service payments on, any debt incurred for capital projects associated with the utility; therefore, any water enterprise fund bond-funded projects do not diminish the City's general fund debt capacity.

Figure 5
Typical Annual Sources of Water Fund Revenue

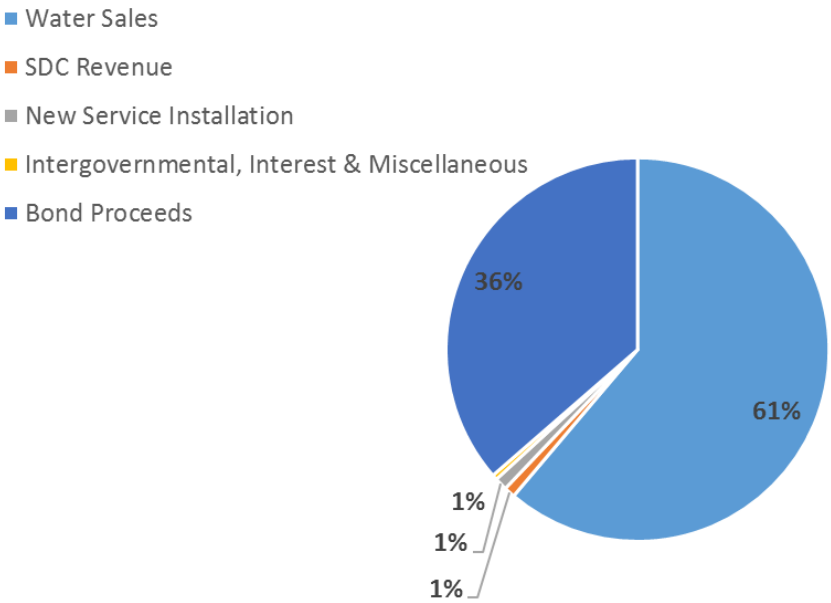
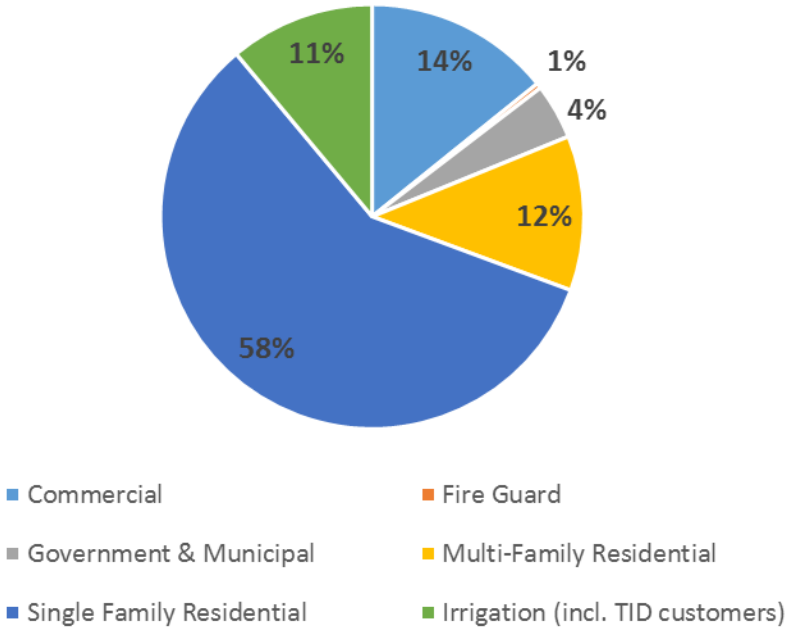


Figure 6
Water Sales by Customer Type



Rate revenue is generated according to the current water rate schedule shown in **Table 6**. Customers are billed fixed service charges according to their water meter size plus use charges.

Table 6
Current Water Rates

Rate Component			Rate Schedule 7/1/2015
Monthly Service Charge			**Within City Limits**
Meter Size			
3/4"			$23.50
1"			$46.99
1.5"			$66.99
2"			$88.24
3"			$184.50
4"			$282.07
6"			$528.92
8"			$881.49
Usage Charges			
Residential [1]			
			October - May
0 to 300 cf	per month	per unit	$0.0243
301 to 1,000 cf	per month	per unit	$0.0299
1,001 to 2,500 cf	per month	per unit	$0.0400
> 2,500 cf	per month	per unit	$0.0517
			June - September
0 to 300 cf	per month	per unit	$0.0243
301 to 1,000 cf	per month	per unit	$0.0299
1,001 to 2,500 cf	per month	per unit	$0.0400
2,501 to 3,600 cf	per month	per unit	$0.0517
> 3,600 cf	per month	per unit	$0.0673
Non-Residential [1]			
0-50,000 cf	per month		$0.0343
> 50,000 cf	per month		$0.0353
TID Irrigation Rates			
Unmetered Service	per acre or portion of		$170.01
Metered Service	Base Service Charge		per meter as above
	Water Consumption per cf		$0.0055
Bulk Water Rate			
For water provided on a temporary basis through a bulk meter on a fire hydrant			
Deposit			$1,859.28
Basic Fee			$234.77
Cost of Water			same as non-residential
Fire Protection Service			
This rate shall apply to all fire protection services or fire guards. The basic service charge will be equal to the minimum basic service charge. Water will be billed at non-residential rates.			
Outside City Limits			
All rates and charges for water service provided outside the city limits will be 1.5 times the rates for water service provided within the city limits.			

Source: City of Ashland.

[1] Irrigation customers only billed when the service takes water.

New development pays System Development Charges (SDC) fees to pay for new facilities necessary to accommodate the increased demand associated with new customers. The current SDC fee schedule is shown in **Table 7**. SDC charges are not updated as part of this Study.

Table 7
Water System Development Charges

Applicant	SDC Charges		
	Reimbursement	Improvement	Total
Residential			
All, per Sq. Ft. Habitable Area	$0.9318	$1.6751	$2.6069
Commercial & Industrial			
Meter Size			
3/4"	$1,792.89	$3,084.22	$4,877.11
1"	$2,988.75	$5,140.43	$8,129.18
1.5"	$5,975.70	$10,280.87	$16,256.57
2"	$9,561.48	$16,448.58	$26,010.06
3"	$20,917.65	$35,983.04	$56,900.69
4"	$35,857.80	$61,685.21	$97,543.01
6"	$74,704.35	$128,508.83	$203,213.18
8"	$107,573.40	$185,053.61	$292,627.01

Source: Economic & Financial Analysis, June 5, 2014.

Water customers are also charged a fixed monthly fee by water meter size for the Ashland Forest Resiliency Program. This new fee was adopted by City Council in May 2015 and is also not part of the Study. The Forest Resiliency Program was included in the Water Fund prior to fiscal year 2015-16. It is now part of public safety. The Forest Resiliency Program fee schedule is shown in **Table 8** on the following page.

Expenses. The water fund incurs annual expenses for supply, distribution, treatment plant, and conservation functions. Costs for these functions are further grouped into ten categories in the Study:

Personnel (includes benefits)	Supplies
Repair & Maintenance	Communications
Contractual Services	Central Service
Miscellaneous Charges	Other Purchased Services
Conservation Programs	Franchise Tax

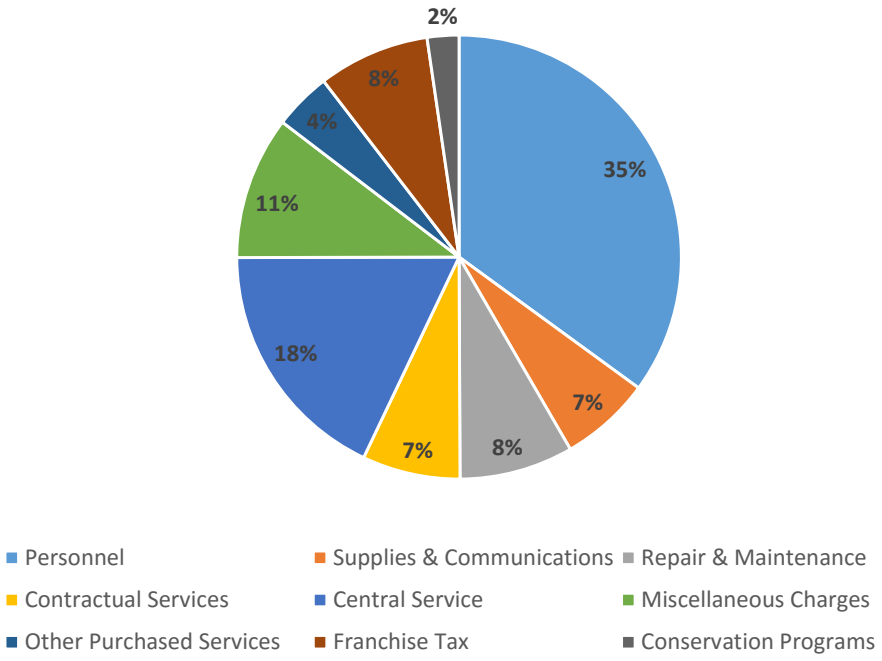
Table 8
Forest Resiliency Program Fee Schedule

Meter Size	Monthly Charge
3/4"	$1.39
1"	$1.39
1.5"	$6.95
2"	$11.12
3"	$22.24
4"	$34.75
6"	$69.50
8"	$111.20

Source: Resolution 2015-14 adding a surcharge to water meters for the purpose of generating and dedicating general fund resources for additional work in the forest interface as part of the Ashland Forest Resiliency Program, May 2015.

Over the past six years personnel costs (including salaries and benefits), central service costs (support from other departments allocated to water), and miscellaneous costs have been the largest expenditure items. Personnel costs have comprised approximately 35 percent of annual costs of the water utility. The percentage share of fiscal year 2015-16 budgeted expenses by expense category is shown in **Figure 7.**

Figure 7
Typical Annual Water Fund Expenses



An addition to the fiscal year 2015-16 budget is the cost of TAP water. This new water source first came online in the fall of 2014. The City anticipates using this water source one month every year in typical water years.

Table A-2 shows historical and budgeted expenditures by water system function. Operations expenditures are summarized in **Table A-3.**

Water Fund Balance. In 2010 and 2011 the water fund was unable to sustain itself. Inter-fund loans from other City funds were used to pay for operations of the water system. Following an increase in revenue in 2013 as a result of the completion of the Water Master Plan and implementation of increased rates, the water fund was able to sustain itself. The water fund balance increased from $2.7 million to $6.4 million. The inter-fund loans were repaid. The water fund balance decreased in fiscal years ending 2014 and 2015 (the last 2 fiscal years) to $5.2 million as revenues decreased due to the drought (despite rate increases over the same time period). Bond proceeds have been used increasingly since 2013 to fund major capital improvements. The historical water fund balance is shown in **Table 9** below.

Table 9
Historical Water Fund Balance

	Fiscal Year Ending					
Water Fund	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Revenues	$4,455,768	$4,806,604	$5,745,624	$8,280,514	$6,322,141	$6,604,338
Expenses	$5,007,651	$4,996,091	$5,049,115	$6,899,636	$7,315,933	$8,414,077
Excess (Deficiency)	**($551,883)**	**($189,487)**	**$696,509**	**$1,380,878**	**($993,792)**	**($1,809,739)**
Other Financing Sources	$80,000	$550,000	($200,000)	$2,347,791	$829,630	$744,916
	Interfund loan	*Interfund loan*	*repayment of interfund loan*	*repayment of interfund loan & bond proceeds*	*repayment of interfund loan & bond proceeds*	*bond proceeds*
Net Change in Fund Balance	**($471,883)**	**$360,513**	**$496,509**	**$3,728,669**	**($164,162)**	**($1,064,823)**
Fund Balance July 1	$2,323,768	$1,851,885	$2,212,398	$2,708,907	$6,437,576	$6,273,414
Fund Balance June 30	**$1,851,885**	**$2,212,398**	**$2,708,907**	**$6,437,576**	**$6,273,414**	**$5,208,591**

Source: City of Ashland CAFRs.

Section 4: FINANCIAL PROJECTIONS

4.1 REVENUE REQUIREMENT

The revenue requirement refers to the amount of money that must be raised annually through rates. The projection of revenue requirement is therefore the cornerstone for calculation of rates. This section explains the derivation of revenue requirement for this Study. Components of revenue requirement include:

- Capital Improvements
- Debt Service
- System Rehabilitation
- Operations Expenses and Reserves

City TID non-potable water sales revenue as well as other non-water sales revenue projections are credited against projected operations costs. Non-water sales include intergovernmental revenue, interest on investments, new service installation revenue, and other miscellaneous revenues.

4.1.1. Capital Improvements

The City's water system capital improvements plan (CIP) is shown in **Table A-4**. The table shows costs in inflated dollars to account for the increased cost of infrastructure over time. Project costs are increased 3.12% per year for inflation per the historical 1995-2015 20-year Engineering News-Record Construction Cost Index (ENR CCI) average annual increase.

The table only shows costs to be borne by existing customers. Improvements that benefit future customers will be paid for with system development charges. Total CIP costs benefiting existing customers is summarized in **Table 10.** Total costs (inflated) are estimated at $28.6 million. Of this total, $20.3 million (70%) is for the new water treatment plant and reservoir identified in the Master Plan.

Of the total identified $28.6 million (inflated costs) in improvements, $20.3 million is assumed to be funded with SRF loans, $2.1 million is assumed to be funded with bond proceeds, $3.8 million with cash raised by rates specifically for system rehabilitation, $0.4 million with other water fund cash, and $2.0 million with use of restricted reserves for capital improvements.

4.1.2. Debt Service

Existing debt service of the water fund is shown in **Table A-5.** Existing debt comprises City general obligation bonds as well as Medford Water Commission debt and State of Oregon revolving fund loan debt for the TAP project. State of Oregon revolving fund loan debt payments are estimated to begin in fiscal year 2017-18.

New debt service estimates for projects bond-funded by the City are shown in **Table A-6. Table A-7** shows the assumptions and debt service for financing the new water treatment plant and Crowson II reservoir with the Oregon DWSRF program.

Table 10
Summary of 10-Year CIP for Existing Customers

Item	Total	2015-16 Base	2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
Total Project Costs (inflated dollars)	**$28,624,250**	**$4,323,240**	**$12,072,625**	**$10,595,310**	**$282,400**	**$546,475**	**$469,200**	**$335,000**
System Rehabilitation Cash [1]	$3,792,224	$0	$1,004,428	$1,154,721	$282,400	$546,475	$469,200	$335,000
Cash Funded (Rates)	$402,240	$402,240	$0	$0	$0	$0	$0	$0
Use of Restricted Reserves [2]	$1,965,726	$0	$1,933,647	$32,079	$0	$0	$0	$0
Treatment Plant (SRF Funded)	$13,041,810	$1,043,370	$5,910,570	$6,087,870	$0	$0	$0	$0
Crowson II (SRF Funded)	$7,322,940	$778,320	$3,223,980	$3,320,640	$0	$0	$0	$0
Bond Funded	$2,099,310	$2,099,310	$0	$0	$0	$0	$0	$0
Total	**$28,624,250**	**$4,323,240**	**$12,072,625**	**$10,595,310**	**$282,400**	**$546,475**	**$469,200**	**$335,000**

Source: HEC

[1] During years that system rehabilitation cash collection is greater than the CIP, monies will be restricted for capital improvements.

[2] Reserves restricted for capital improvement projects.

4.1.3. System Rehabilitation

Depreciation is used as the basis for which to collect rates to cover system rehabilitation costs. It is recommended that the City collect water rates to fund system rehabilitation costs. **Table 11** shows the estimated cost of depreciation of the water system. The estimated cost includes replacement of existing assets and assets that are estimated to be constructed during the Study time period (see **Table A-8**).

Table 11
Estimated Water System Assets Depreciation

Assets	Annual Depreciation						
	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
	Base	1	2	3	4	5	6
Existing Assets							
Water Rights	$0	$0	$0	$0	$0	$0	$0
Buildings	$0	$0	$0	$0	$0	$0	$0
Equipment	$11,832	$8,189	$1,390	$1,390	$1,390	$1,390	$1,390
Improvements	$676,083	$673,081	$663,935	$663,935	$663,735	$661,981	$657,684
Total Existing	**$687,915**	**$681,270**	**$665,325**	**$665,325**	**$665,126**	**$663,371**	**$659,074**
New Assets							
Improvements	$121,580	$323,159	$489,396	$494,288	$503,811	$511,829	$517,412
Total New	**$121,580**	**$323,159**	**$489,396**	**$494,288**	**$503,811**	**$511,829**	**$517,412**
Combined Existing & New	**$809,495**	**$1,004,428**	**$1,154,721**	**$1,159,613**	**$1,168,937**	**$1,175,200**	**$1,176,486**
% Included in Rates		100%	100%	100%	100%	100%	100%
Amount In Rates		**$1,004,428**	**$1,154,721**	**$1,159,613**	**$1,168,937**	**$1,175,200**	**$1,176,486**

Source: City of Ashland and HEC.

4.1.4. Operations Expenses and Reserves

Table A-9 shows that operations costs of the water fund have increased at an average annual rate of 3.4% since 2010. This average annual increase is compared with a 2.7% Engineering News Record (ENR) Construction Cost Index (CCI) increase and 1.8%-2.2% Consumer Price Index (CPI) indexes. It is typical for utilities costs to increase at a faster rate than the price indexes shown.

This Study recommends using average annual increases of 4.0% for personnel costs, 3.5% for TAP water costs, and 3.0% for all other operating costs.

4.1.5. Calculated Revenue Requirement

Table 12 on the next page estimates the revenue requirement of the water fund for the next 10 years. In fiscal year 2015-16 the revenue requirement is calculated at $5.78 million. The City projects revenues of $6.52 million. Any realized additional revenue will be reserved for capital improvements identified in the Water Master Plan.

Table 12
Projected Revenue Requirement

Revenues and Expenses		2015-16 Base	2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
Operating Expenses								
Personnel	4.0%	$1,737,310	$1,806,802	$1,879,074	$1,954,237	$2,032,407	$2,113,703	$2,198,251
Supplies	3.0%	$305,825	$315,000	$324,450	$334,183	$344,209	$354,535	$365,171
Repair & Maintenance [1]	3.0%	$410,512	$359,827	$370,622	$381,741	$393,193	$404,989	$417,139
Communications	3.0%	$22,380	$23,051	$23,743	$24,455	$25,189	$25,945	$26,723
Contractual Services	3.0%	$353,600	$364,208	$375,134	$386,388	$397,980	$409,919	$422,217
Central Service	3.0%	$887,650	$914,280	$941,708	$969,959	$999,058	$1,029,030	$1,059,901
Miscellaneous Charges	3.0%	$517,020	$532,531	$548,507	$564,962	$581,911	$599,368	$617,349
Other Purchased Services	3.0%	$207,320	$213,540	$219,946	$226,544	$233,340	$240,341	$247,551
Franchise Tax	3.0%	$402,653	$414,733	$427,175	$439,990	$453,189	$466,785	$480,789
Conservation Programs	3.0%	$114,500	$117,935	$121,473	$125,117	$128,871	$132,737	$136,719
TAP Water [2]	3.5%	$44,000	$48,000	$50,000	$52,000	$54,000	$56,000	$58,000
Subtotal Operating Expenses		**$5,002,770**	**$5,109,906**	**$5,281,831**	**$5,459,577**	**$5,643,347**	**$5,833,351**	**$6,029,809**
Debt Service								
Existing Debt (City bonds)		$453,291	$451,941	$450,491	$453,891	$457,091	$450,191	$448,241
Existing Debt Medford Water Commission		$163,768	$163,768	$163,768	$163,768	$163,768	$163,768	$163,768
Existing Debt (IFA note)		$0	$0	$157,000	$103,000	$103,000	$103,000	$103,000
New City Debt [3]	Table A-6		$188,000	$188,000	$188,000	$188,000	$188,000	$188,000
New SRF Debt	Table A-7		$53,736	$313,722	$581,505	$1,145,400	$1,145,400	$1,145,400
Subtotal Debt Service		**$617,059**	**$857,445**	**$1,272,981**	**$1,490,164**	**$2,057,259**	**$2,050,359**	**$2,048,409**
Capital Outlay Cash Funded		$402,240	$0	$0	$0	$0	$0	$0
System Rehabilitation		$0	$1,004,428	$1,154,721	$1,159,613	$1,168,937	$1,175,200	$1,176,486
Operating Reserves		$0	$310,000	($105,000)	($245,000)	($735,000)	($650,000)	($555,000)
Subtotal Annual Cost		**$6,022,069**	**$7,281,780**	**$7,604,533**	**$7,864,353**	**$8,134,543**	**$8,408,910**	**$8,699,704**
Credits								
New Service Installation	2.0%	$114,800	$117,096	$119,438	$121,827	$124,263	$126,748	$129,283
Intergovernmental Revenue	constant	$14,000	$14,000	$14,000	$14,000	$14,000	$14,000	$14,000
Interest on Investments	constant	$20,400	$20,400	$20,400	$20,400	$20,400	$20,400	$20,400
Miscellaneous	2.0%	$12,000	$12,240	$12,485	$12,734	$12,989	$13,249	$13,514
Non-Potable Water (TID) Charges	Table 14	$80,742	$50,800	$53,727	$56,676	$59,632	$62,642	$65,663
Subtotal Credits		**$241,942**	**$214,536**	**$220,050**	**$225,637**	**$231,284**	**$237,040**	**$242,860**
REVENUE REQUIREMENT		**$5,780,127**	**$7,067,244**	**$7,384,483**	**$7,638,716**	**$7,903,258**	**$8,171,870**	**$8,456,844**
		base						
Change from Base Year Water Sales		**$6,515,358**	$551,886	$869,124	$1,123,358	$1,387,900	$1,656,512	$1,941,485
Annual Change			$551,886	$317,239	$254,234	$264,542	$268,612	$284,974
Percentage Change			8%	4%	3%	3%	3%	3%

Source: HEC.

[1] Maintenance costs reduced in year 1 by $63,000 which is the average amount spent on meter replacement in the City each year currently. Meter replacement costs will be recouped in the new meter replacement monthly charges.

[2] Assumes 2.13 mgd for 31 days/year. In 2015 the cost is 68 cents per 1,000 gallons. The cost is assumed to increase to 75 cents per 1,000 gallons. in 2016 and thereafter 3.5% per year in the model.

[3] Assumes payments start the following year.

The revenue requirement is projected to increase to $7.07 million in fiscal year 2016-17, and increase each year thereafter. The revenue requirement is projected to continue to increase fiscal years ending 2018 through 2022 to account for inflation, fund capital expenditures, and account for new debt. To keep rates at a 3% annual increase during this timeframe,

approximately $2.3 million of existing cash reserves will be depleted. Note that the revenue requirement is the amount that must be collected from potable water customers; it excludes revenues from water sales to City TID customers. The percentage increases in revenue requirement match the 2012 Water Master Plan for the first three fiscal years.

4.2 TALENT IRRIGATION DISTRICT NON-POTABLE IRRIGATION SERVICE

Total annual costs of the water system to potable users is reduced by credits, including credit for water sales to TID non-potable water customers. In fiscal year 2015-16 TID charges are budgeted at $81,000. This Study calculates the costs of the TID system at $52,870 for fiscal year 2015-16. **Table A-10** shows annual costs comprise city canal maintenance costs as well as staffing and materials costs. **Table A-11** provides a supporting cost estimate for annual maintenance costs.

TID irrigation water is supplied under a 1924, 1926 and 1935 contract between the City and TID. This contract allows for use of 769 acre-feet for both non-potable irrigation and treated domestic water supplies. Use of TID deliveries by year since 2004 is shown in **Table A-12**. During drought years the contract may be reduced as it was in 2013 and 2014. The City also has a contract with TID for 600 acre-feet per year. The 600-acre feet contract is for potable water customers only.

The City diverts TID water to the Ashland Creek water treatment plant where it is treated and then enters the potable water distribution system. In drought years the City may also divert a portion or all the 769 acre-feet contract water to the treatment plant. Under this circumstance only the 'front side' canal users, located before the diversion to the treatment plant may receive water. As shown in **Table A-12**, on average, TID customers use 73% of the 769 acre-feet of water rights. This percentage is applied to the TID cost calculation for city canal maintenance costs. **Table 13** shows allocation of TID system costs between unmetered and metered non-potable water customers for fiscal year 2015-16.

Table 13
Calculated TID Use Rates for Fiscal Year 2015-16

Item	Calculation	Current Rates	Calculated 15/16 Rates
Total TID Annual Cost	a		$52,870
Metered Rate per Cu. Ft.	b	**$0.0055**	**$0.0022**
SOU Annual Costs [1]	c = 7,101,690*b		$15,348
Lithia Park (City) Annual Costs [1]	d = 1,020,495*b		$2,205
Unmetered Irrigators Costs	e = a-c-d		$35,316
Unmetered Irrigators Acres	e		174
Unmetered Annual Rate per Acre	f = d/e	**$170.01**	**$202.97**

Source: City of Ashland and HEC.

[1] Excludes service charge and meter replacement fee.
Cost share based on TID water use - see Table A-10:

Total Cubic Feet	24,463,405
SOU Cubic Feet	7,101,690
Lithia Park Cubic Feet	1,020,495
All Other Irrigators Cubic Feet	16,341,220

City of Ashland Ordinance 1288 provides for metered and unmetered TID irrigation water rates. The ordinance requires that rates shall be self-supporting so far as is practicable, so that domestic water users do not subsidize the cost of the TID irrigation water system; however, the ordinance also states that the primary use of the City's TID water is for domestic purposes in water-short years. In addition, TID non-potable water will be available for irrigation purposes at rates less than those in effect for domestic water.

The calculated rate for metered customers is less than the current rate. The rate for unmetered customers does not immediately increase to cost of service. It gradually increases over the next six years to cost of service.

	Current	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021
Metered Rate per Cu. Ft.	$0.0055	$0.0022	$0.0023	$0.0024	$0.0025	$0.0026	$0.0026
Unmetered Rate per Acre	$170.01	$183.11	$196.20	$209.30	$222.40	$235.50	$248.59

Table 14 shows the calculated offset to the revenue requirement over the Study period.

Table 14
TID Revenue Offset

Costs	Assumption	2015-16 Base	2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
TID Annual Cost Paid by Metered Customers								
Base Meter Charge [1]								
SOU		$4,231	$432	$446	$460	$466	$487	$502
Lithia Park (City)		$2,257	$351	$362	$373	$377	$395	$407
Metered Water Use [2]								
SOU		$39,059	$15,875	$16,420	$16,984	$17,568	$18,172	$18,798
Lithia Park (City)		$5,613	$2,281	$2,359	$2,441	$2,524	$2,611	$2,701
Total SOU		**$44,672**	**$18,156**	**$18,779**	**$19,425**	**$20,092**	**$20,784**	**$21,499**
Total Lithia Park (City)		**$7,869**	**$2,632**	**$2,722**	**$2,814**	**$2,901**	**$3,007**	**$3,108**
Total TID Metered Customers		**$52,541**	**$20,788**	**$21,501**	**$22,238**	**$22,993**	**$23,790**	**$24,608**
All Other TID Users Costs								
Annual Flat Fees [3]		$29,582	$31,861	$34,140	$36,418	$38,697	$40,976	$43,255
Total TID Unmetered Customers		**$29,582**	**$31,861**	**$34,140**	**$36,418**	**$38,697**	**$40,976**	**$43,255**
Total Estimated TID Customer Payments								
Meter Fees		$6,488	$783	$809	$833	$842	$883	$909
Use Fees		$74,254	$50,016	$52,919	$55,843	$58,790	$61,760	$64,754
Total Fees		**$80,742**	**$50,800**	**$53,727**	**$56,676**	**$59,632**	**$62,642**	**$65,663**
Contracted Water	2.0%	$0	$0	$0	$0	$0	$0	$0
City Maintenance Costs	3.0%	$30,070	$30,972	$31,901	$32,858	$33,844	$34,859	$35,905
Canal Depreciation	constant	$0	$0	$0	$0	$0	$0	$0
TID Billing Costs (personnel)	4.0%	$22,800	$23,712	$24,660	$25,647	$26,673	$27,740	$28,849
Total Annual Cost (rounded)		**$52,870**	**$54,684**	**$56,562**	**$58,505**	**$60,517**	**$62,599**	**$64,754**
Annual Percentage Increase			3.4%	3.4%	3.4%	3.4%	3.4%	3.4%
Calculated Rate per Metered Connection		$0.0055	$0.0022	$0.0023	$0.0024	$0.0025	$0.0026	$0.0026
Calculated Rate per Acre at Cost of Service		**$170.01**	**$209.93**	**$217.14**	**$224.60**	**$232.32**	**$240.32**	**$248.59**
Calculated Rate per Acre at Gradual Increase			**$183.11**	**$196.20**	**$209.30**	**$222.40**	**$235.50**	**$248.59**

Source: City of Ashland and HEC.

[1] Customer charges and meter replacement fees for one 6" meter (SOU) and one 4" meter (Lithia Park).
[2], [3] Calculated Rates from Table 12.

4.3 METER REPLACEMENT PROGRAM

City crews replace older water meters that are near the end of their useful life, or which are inaccurately measuring water flow. The City has not been collecting funds to routinely replace meters. The cost to replace meters, by size of meter, was used to determine the annual cost of a meter replacement program (it is estimated that meters will have to be replaced every 20 years). Meter replacement program costs will increase as the number of City water meters increases and as the cost of installation increases. It is estimated that the meter replacement program will increase annually from approximately $138,000 in 2015 to $172,000 fiscal year ending 2022, as shown in **Table 15**.

Table 15
Estimated Meter Replacement Fee Program Costs

Item	Assumption	Fiscal Year Ending 2015-16 Base	2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
Projected Growth in Water Meters			*0.59%*	*0.59%*	*0.59%*	*0.59%*	*0.59%*	*0.59%*
Projected City Water Meters		**8,819**	**8,871**	**8,923**	**8,976**	**9,029**	**9,082**	**9,136**
Estimated Replacement Cost per Meter [1]	3.12%	$312	$322	$332	$342	$353	$364	$376
Percentage of Meters Replaced	20-yr cycle	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Estimated Meter Replacement Program Cost		**$137,719**	**$142,851**	**$148,169**	**$153,697**	**$159,426**	**$165,363**	**$171,533**

Source: City of Ashland and HEC.

[1] Weighted average cost of meters.

Assumptions for meter costs in 2015 are shown in **Table A-13**. Meter costs and fees are increased 3.12% per year per the historical 20-year average annual ENR CCI increase previously described. **Table 16** shows the calculated meter replacement fees. Since the revenues and costs of the meter replacement program are assumed to be equal each year, the program is not included in the revenue requirement calculation.

Table 16
Calculated Meter Replacement Fees

Meter Size	Effective July 1 2015-16 Base	2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
			Annual escalator 3.12%				
3/4"	$1.15	$1.18	$1.22	$1.26	$1.30	$1.34	$1.38
1"	$1.72	$1.77	$1.83	$1.88	$1.94	$2.00	$2.07
1-1/2"	$2.71	$2.79	$2.88	$2.97	$3.06	$3.16	$3.26
2"	$3.65	$3.76	$3.88	$4.00	$4.12	$4.25	$4.38
3"	$7.81	$8.06	$8.31	$8.57	$8.83	$9.11	$9.39
4"	$16.98	$17.51	$18.05	$18.62	$19.20	$19.80	$20.41
6"	$23.54	$24.28	$25.03	$25.81	$26.62	$27.45	$28.30
8"	$28.39	$29.27	$30.18	$31.12	$32.10	$33.10	$34.13

Source: HEC.

Section 5: Cost of Service Analysis

5.1 Functional Cost Allocation

City water system costs were classified into different functions: customer costs, meter and services costs, capacity costs, and commodity costs. Customer costs, meter and services costs, and a portion of capacity costs are fixed costs. Fixed costs generally consist of costs that a utility incurs to serve customers irrespective of the amount or rate of water they use.[5] A portion of capacity costs and all commodity costs are variable costs. Variable costs are those that change in total as the volume of activity changes, as measured in a specific time period. These commonly include the costs of chemicals used in the treatment process, energy related to pumping for transmission and distribution, and purchased water.

Table A-14 shows how the expenses in the City's budget were allocated to the different functions of water service. Expense functions were allocated based on one of five different methodologies. These methodologies include:

1. **Plant In Service.** Plant in service allocation is shown in **Table A-15**. Plant in service costs include the original cost of current water system assets. Total cost is allocated to customers, meters and services, capacity, and commodity.

2. **Ratio of Average to Peak Month.** The calculation of peak to average month flows is shown in **Table 3**. Expenses are allocated 55% to customers and 45% to use functions using this methodology.

3. **Utilities.** All utilities costs (electricity) are allocated 100% to commodity because they are directly affected by the amount of water delivered. TAP water is also allocated 100% to commodity.

4. **Customers.** Central service costs and costs such as office supplies, telephones, computers, postage and insurance are allocated 100% to customer costs. These costs are not affected by the amount of water delivered.

5. **Average of Classified Costs.** Many expenses are allocated to multiple functions of water service because they do not directly relate to capacity of the water system, or quantity of water deliveries. These expenses are allocated among the customer, meters and services, capacity, and commodity functions based on the combined percentage allocation of all other classified costs. Examples of expenses allocated using this methodology include salaries and other personnel costs, professional services, and training costs.

Customer, meters and services, and a portion of capacity costs are captured in flat monthly fees. Commodity costs and a portion of capacity costs are captured through variable water service fees (use fees). Capacity costs were split between flat monthly fees and use fees to reflect that some capacity or infrastructure costs must be recovered regardless of the amount of water used.[6]

[5] M1 Manual, pp. 137-138.
[6] M1 Manual page 139, fixed charges.

The portion of capacity costs allocated to the flat monthly fees is referred to as a readiness to serve charge. The allocation of revenue requirement using the functional allocation is shown in **Table 17**.

Table 17
Allocation of Revenue Requirement to Cost Functions

Costs	Functional Allocation	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Total Revenue Requirement		**$6,543,230**	**$7,067,244**	**$7,384,483**	**$7,638,716**	**$7,903,258**	**$8,171,870**	**$8,456,844**
Customer	18%	$1,177,781	$1,272,104	$1,329,207	$1,374,969	$1,422,587	$1,470,937	$1,522,232
Meters & Services	5%	$327,162	$353,362	$369,224	$381,936	$395,163	$408,594	$422,842
Capacity (in flat charge) [1]	19%	$1,243,214	$1,342,776	$1,403,052	$1,451,356	$1,501,619	$1,552,655	$1,606,800
Capacity (in use charge)	31%	$2,028,401	$2,190,846	$2,289,190	$2,368,002	$2,450,010	$2,533,280	$2,621,622
Commodity	27%	$1,766,672	$1,908,156	$1,993,810	$2,062,453	$2,133,880	$2,206,405	$2,283,348
Total	**100%**	**$6,543,230**	**$7,067,244**	**$7,384,483**	**$7,638,716**	**$7,903,258**	**$8,171,870**	**$8,456,844**

Source: HEC.

[1] The readiness to serve charge.

[2] In 2014 the City collected 45% of water charges in flat monthly charges; however, this was a drought year. During drought years the base charges comprise a larger portion of total revenues.

5.2 RATE DESIGN

Allocation of costs to customer categories is based on the Commodity-Demand method described in the M1 Manual Chapter III.2. Once the revenue requirement has been projected and the functional allocation analysis performed the City has to arrive at a rate design (how the revenue requirement will be collected) with knowledge of how the City's water system costs are structured. In determining an appropriate rate design for Ashland, this Study considered the following key objectives:

- Rates must be capable of generating sufficient revenues to meet all annual financial obligations of the water enterprise fund;
- The rate structure should encourage water efficiency;
- Change to the rate structure must be administratively feasible (compatible with the existing billing system and straightforward to explain to customers);
- The rate structure should be as representative of local customer water use patterns as possible; and
- Revised rates must be supportive of City goals, keeping within affordability guidelines.

With these objectives in mind, the differential in costs by pumping zone was analyzed. The analysis did not show any significant differences in costs by pumping zone; this potential change to the rate design was discarded.

Flat Monthly Costs. The customer, meters and services, and readiness to serve costs should all be collected in flat monthly fees. Options for collection include combining all costs into one service charge based on meter size (as is currently done) or separating customer costs from capacity costs and collecting customer costs based on the number of accounts, rather than meter size. While both approaches are common, this Study recommends a customer charge and a service charge because this methodology more accurately captures the costs of service. Central services costs, which make up the majority of customer costs, are a direct function of the number of water accounts served, not capacity of the system (meters).

This Study recommends implementation of monthly customer charges as shown in **Table 18**. If a water account has multiple meters associated with it, the account would only pay the customer charge once. In contrast, capacity costs are collected for each meter with the potential to use the capacity of the system.

Table 18
Calculation of Customer Service Costs per Account

Allocated To	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Projected Annual Growth Rate		*0.59%*	*0.59%*	*0.59%*	*0.59%*	*0.59%*	*0.59%*
Revenue Requirement Allocated	$1,177,781	$1,272,104	$1,329,207	$1,374,969	$1,422,587	$1,470,937	$1,522,232
Total City Water Accounts	8,980	9,033	9,087	9,140	9,194	9,249	9,303
Customer Cost per Bill per Year	**$131.16**	**$140.83**	**$146.28**	**$150.43**	**$154.72**	**$159.04**	**$163.62**
Cost per Month	**$10.93**	**$11.74**	**$12.19**	**$12.54**	**$12.89**	**$13.25**	**$13.64**

Source: City of Ashland and HEC.

Table 19 on the next page shows allocation of meters and services and the readiness to serve costs. The calculation is based on total number of billable meter equivalents and the meter ratios of meter sizes to a 3/4" meter. Meter ratios reflect the difference in water volume that can be taken through the meter. Calculation of equivalent meter ratios is shown in **Tables 20** and **A-16**.

In addition to the customer and service charges calculated from the revenue requirement projection and allocation, the new rate structure adds the meter replacement fee (see Section 4) to the service charge. The revised flat monthly charge now includes three components: the service charge, the customer charge, and the meter replacement fee.

Variable (Use) Costs. Remaining capacity costs and commodity costs are recovered from customers through use charges applied to actual water consumption as measured through

water meters. In 2014 the City collected 55% of costs through use charges.[7] This Study calculates rates with 58% of costs collected in use charges so that use charges continue to send a water conservation signal to customers. There are many ways that the City could collect use charges. This Study selected a rate structure based on City goals and customer water use patterns.

Table 19
Calculation of Monthly Service Charge by Meter Size

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
	Base	1	2	3	4	5	6
Allocated Costs [1]	$1,570,375	$1,696,139	$1,772,276	$1,833,292	$1,896,782	$1,961,249	$2,029,642
Est. Billable Meter Equivalents	11,184	11,250	11,317	11,384	11,451	11,519	11,587

Meter Size	Meter Ratio	Monthly Service Charge per Meter						
3/4"	1.00	$11.70	$12.56	$13.05	$13.42	$13.80	$14.19	$14.60
1"	1.00	$11.70	$12.56	$13.05	$13.42	$13.80	$14.19	$14.60
1.5"	5.00	$58.51	$62.82	$65.25	$67.10	$69.02	$70.94	$72.99
2"	8.00	$93.61	$100.51	$104.41	$107.36	$110.43	$113.51	$116.78
3"	16.00	$187.22	$201.02	$208.81	$214.73	$220.86	$227.02	$233.56
4"	25.00	$292.53	$314.10	$326.27	$335.51	$345.09	$354.72	$364.94
6"	50.00	$585.05	$628.19	$652.53	$671.03	$690.19	$709.45	$729.87
8"	80.00	$936.08	$1,005.11	$1,044.05	$1,073.65	$1,104.30	$1,135.12	$1,167.80

Source: City of Ashland and HEC.

[1] Includes meter and services costs and portion of capacity costs that represent the readiness to serve.

Table 20
Estimated Meter Equivalent Units

Meter Size	Number of Meters	Ratio to 3/4" Service [1]	Equivalent Meter Units
3/4"	7,814	1.0	7,814
1"	509	1.0	509
1.5"	167	5.0	835
2"	145	8.0	1,160
3"	21	16.0	336
4"	14	25.0	350
6"	2	50.0	100
8"	1	80.0	80
Total	**8,673**		**11,184**

Source: Table B-1 of the AWWA M1 Manual, City of Ashland, and HEC.

[1] Uses safe maximum operating capacities of C-700-09 Displacement Type Meters (bronze main case) for meters smaller than 2" and C-702-10 Compound Type, Class I for meters 2" and larger.

[7] Percentage will fluctuate from year to year. Since 2014 was a drought year it is expected that use charges would normally comprise a larger share of total water rate revenues (between 55% and 60%).

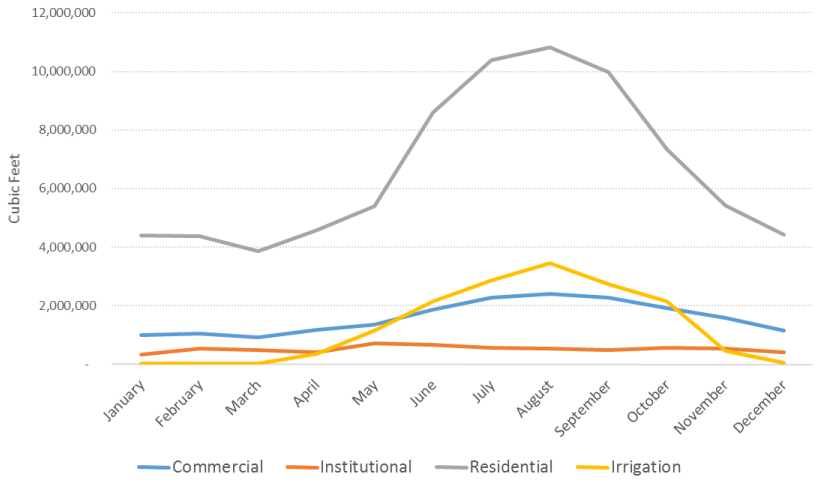
This Study proposes to keep the City's current increasing block rate structure for most customers for use charges. Properly designed increasing block rates recover class-specific costs of service while sending a more conservation-oriented price signal to that class.[8] The M1 Manual page 116 also summarizes that "increasing block rate structure have found growing use in areas experiencing growth in water demand that is reaching the safe yield or capacity of the system, where there has been an impetus for improved efficiency in water use." Setting appropriate increasing blocks is determined by examining customer characteristics.

5.2.1. Customer Characteristics

Table 21 on the following page shows the customer characteristics of residential, non-residential, and irrigation customers. Average monthly use, monthly winter average and monthly summer average use as well as average annual use by customer type are calculated using 2014 meter reads. In the summer months all residential customers and commercial customers with meters 2" or less use approximately twice the amount of water that they do during the winter months. Larger commercial customers and institutional customers use about 1.5 times the amount of water during the summer months. The summer to average month ratio is close to one for institutional customers and the maximum month usage is in May, before the peak use for the water system as a whole. Institutional characteristics suggest one rate for all water use would be appropriate. Irrigation customers display very different usage to the other customer types. Only about 10% of irrigation customers take water throughout the year.

Figure 8 shows customer usage patterns by customer type throughout the year. The peaking patterns of residential and irrigation customers is pronounced compared with the other customer types. These customers also comprise 81% of total water use (see **Figure 4**) therefore a rate structure that encourages efficient use of water during the summer months is very important.

Figure 8
Monthly Water Use by Customer Type



[8] M1 Manual page 111.

Table 21
Customer Usage Characteristics

Customer Type	Number of Billing Meters	Number of Billing Units	Median Monthly Use	Average Monthly Use	Maximum Average Month Use (non-coincidental)		Average Annual Use	Monthly Winter Average	Monthly Summer Average	Winter to Summer	Summer to Avg. Month Ratio
			cubic feet per month use per unit				*figures in cubic feet*	[1]	[2]		
Residential											
Master Metered	606	3,300	296	374	548	August	4,487	265	525	2.0	1.4
Single Unit	6,993	6,993	505	772	1,296	August	9,265	460	1,201	2.6	1.6
Non-Residential					*use per meter*						
Commercial < 2"	504		588	1,672	2,601	August	20,064	1,080	2,360	2.2	1.4
Commercial 2" or larger	51		5,310	11,224	15,989	August	134,691	9,094	14,918	1.6	1.3
Institutional	77		994	6,780	9,543	May	81,366	5,876	7,360	1.3	1.1
Irrigation [3]	325		1,657	6,442	10,652	September	77,301	647	8,808	13.6	1.4
Total	**8,556**	**10,293**									

Source: City of Ashland and HEC.

[1] December through March consumption.

[2] June through September consumption.

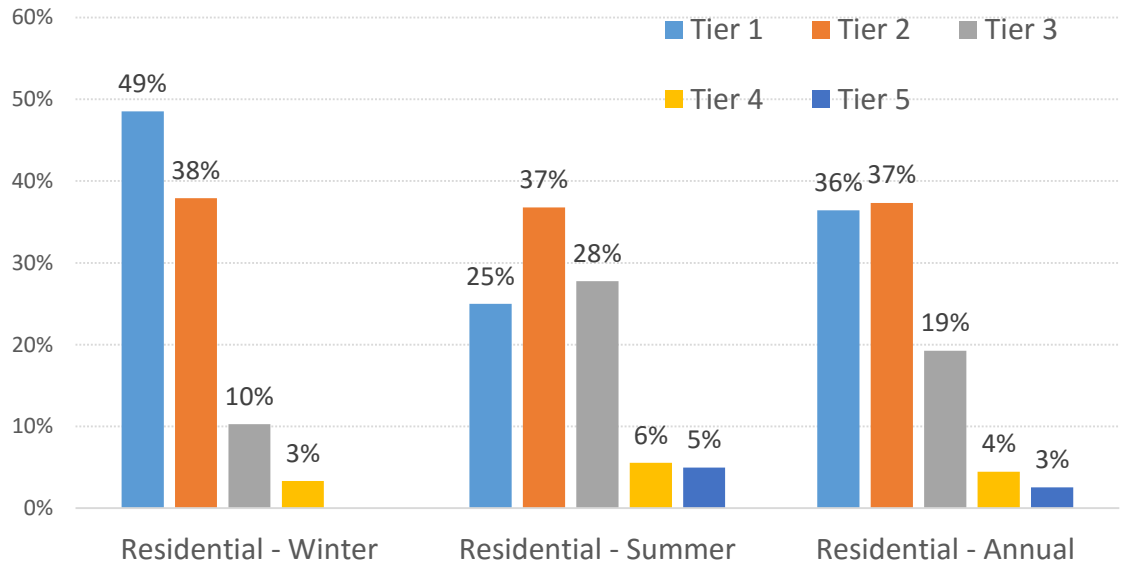
[3] Approximately 32 accounts (10%) use water year-round.

Use by customer type by month is further examined by water meter size in **Table A-17**. The table shows that use is driven by customer category and by meter size. Based on use characteristics by customer type the proposed rate structure includes five customer categories, designed to capture customer use patterns. The customer categories include residential, commercial 2" or smaller, commercial greater than 2", institutional, and irrigation.

Bill Tabulation. Bill tabulation is a tool used to analyze customer use data to determine appropriate rate blocks. Bill tabulations and analysis for residential customers are shown in **Tables A-18** through **A-20**. On an annual basis, residential customers take 36% of water in tier 1, 37% in tier 2, 19% in tier 3, 4% in tier 4 and 3% in tier 5 (summer months only). Residential use by tier is illustrated in **Figure 9.**

This Study recommends keeping the current tiers for residential customers. As is desired, the current rate structure is capturing the majority of water use in tiers 1, 2, and 3. Only excessive water users (the top 7% of water) are billed in tiers 4 and 5. Tier 5 only applies during the summer (June through September)[9].

Figure 9
Residential Water Use by Tier



Non-residential bill tabulation under the current rate structure is shown in **Table A-21.** The table shows large discrepancies in water billed under tiers 1 and 2 among the different non-residential customer types (irrigation, commercial and institutional) as illustrated in **Figure 10**. This Study recommends only charging commercial customers two tiers. The proposed

[9] Tier 1 is intended to capture typical customer monthly indoor water usage. Tier 2 is intended to capture typical customer monthly indoor usage and some outdoor water usage. Tier 3 is intended to apply to customers using more than the typical customer does in an average water use month.

two tiers result in the bill tabulation shown in **Table A-22**. As a result of changing the commercial tiers according to meter size (less than 2" and 2" and larger), 60-65% of water is billed in tier 1, providing consistency among different commercial users. This is shown in **Figure 11**. The current rate structure and proposed rate structure are compared in **Tables A-23** and **A-24**.

Figure 10
Non-Residential Water Use by Tier (current rate structure)

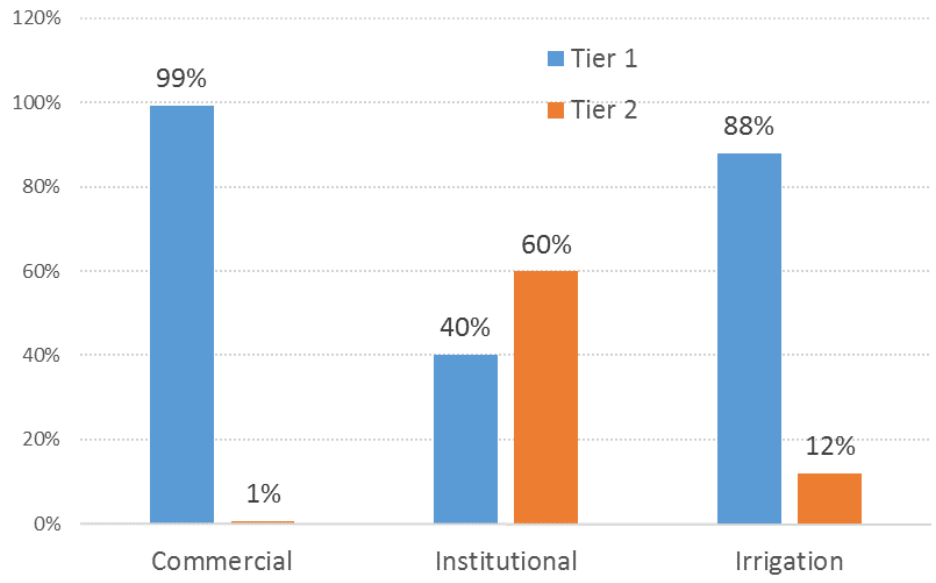
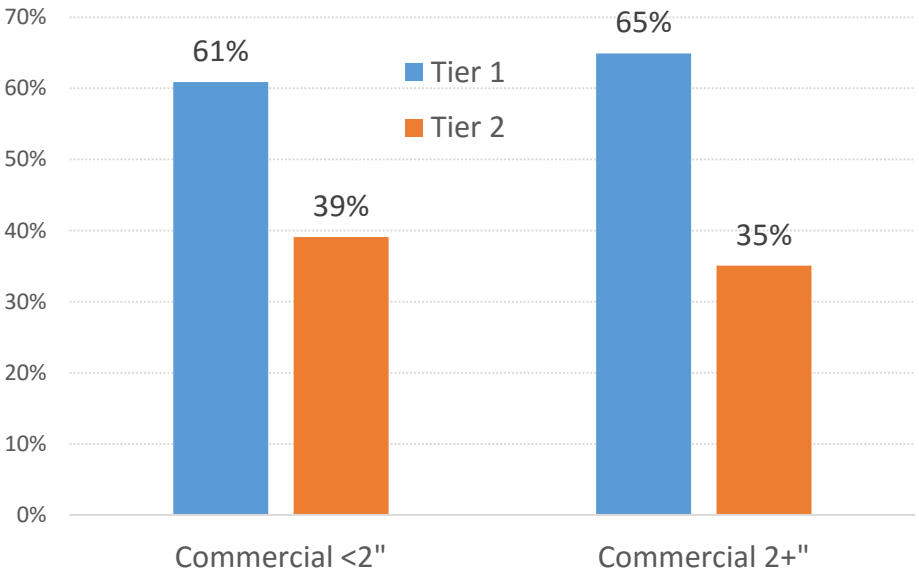


Figure 11
Commercial Water Use by Tier (proposed rate structure)



5.3 POTABLE WATER DEMAND PROJECTION

Historical potable water use by customer type is shown in **Table A-25.** Projected potable water demand is shown in **Table 22**. Total number of water users by customer category is projected using an average annual growth rate of 0.59%. The growth rate is based on the average of the State certified population estimates historical growth rate and the City's Comprehensive Plan estimated growth rate. Projected water demand is based on average annual use by customer category for calendar year 2014.

Table 22
Projected Potable Water Demand

Potable Water Customer	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
	Base	1	2	3	4	5	6
Residential				**Figures in Cubic Feet**			
Single Family	62,048,584	62,463,798	62,760,506	63,092,739	63,426,063	63,763,271	64,099,340
Multi-Family	20,299,186	20,443,836	20,544,128	20,654,585	20,765,447	20,877,506	20,989,338
Subtotal Residential	**82,347,770**	**82,907,634**	**83,304,634**	**83,747,324**	**84,191,510**	**84,640,777**	**85,088,678**
Non-Residential							
Commercial <2" meter	10,276,017	10,477,157	10,522,645	10,576,058	10,629,590	10,683,875	10,737,773
Commercial 2"+ meter	7,446,478	7,592,234	7,625,196	7,663,901	7,702,694	7,742,031	7,781,088
Institutional	6,197,355	6,282,192	6,314,230	6,348,832	6,383,577	6,418,661	6,453,731
Irrigation	14,792,917	14,121,921	14,133,872	14,179,296	14,224,212	14,271,344	14,315,774
Subtotal Non-Residential	**38,712,767**	**38,473,504**	**38,595,943**	**38,768,087**	**38,940,073**	**39,115,911**	**39,288,367**
Total Billable	**121,060,537**	**121,381,138**	**121,900,577**	**122,515,411**	**123,131,582**	**123,756,688**	**124,377,045**
Tracking Water	1,254,006	1,261,422	1,268,881	1,276,385	1,283,932	1,291,525	1,299,162
Unaccounted Water	5,504,154	5,518,915	5,542,626	5,570,631	5,598,698	5,627,170	5,655,429
Estimated Water Produced	**127,818,697**	**128,161,475**	**128,712,083**	**129,362,426**	**130,014,213**	**130,675,383**	**131,331,636**

Source: City of Ashland and HEC.

Tables A-26 and **A-27** show the water demand calculations. Projected water demand accounts for decreased use of water due to reaction to increased water prices. This effect is called 'price elasticity.' Price elasticity measures the change in water use resulting from a price increase, all other things held equal. Price elasticity factors vary by location, pricing structure of both water and sewer rates, time of year, and customer type. Price elasticity is only applied to real price increases; that is the price increase adjusted for inflation, to keep the effect of the price of water independent of total cost increases. For example, if the price increase necessary to meet the revenue requirement is 10.0% and inflation is 2.0%, any change in water demand as a result of a price increase is calculated on an 8.0% increase. With a negative price elasticity of 0.1, a single family residential customer is expected to decrease water use by 1.0% when price increases 10.0%. Irrigation customers are anticipated to react the most to water price increases.

Table A-28 compares the water demand projection in the Study to water demand projections in the 2012 Water Master Plan. It also shows derivation of the average annual growth rate used in the Study. This cost of service water rate study projects lower demands than the 2012 Water Master Plan; however, this is considered reasonable for purposes of the Study. As described in Section 1 of the Study, the purpose of the Water Master Plan is to plan for maximum future use whereas the purpose of the Study is to plan for minimum future use.

5.4 CALCULATED RATES

The flat monthly charges were calculated in Section 5.2. Use charges are calculated based on the proposed new customer categories, rate structure (tiers), estimated water use by tier, and total projected water demand (Section 5.3).

Total costs allocated to use charges equals capacity costs allocated to use charges and commodity costs. The allocation of these costs by customer type is shown in **Table A-29**. A support table to the allocation of commodity costs is shown in **Table A-30**.

Table 23 on the next page shows the calculation of usage charges. The cost ratios between residential tier 1 and tier 2 is 0.80. Between tier 2 and tier 3 the ratio is 1.35, between tier 3 and tier 4 it is 1.75 and between tier 4 and tier 5 it is 2.25. As an example, tier 3 water is 35% more expensive than tier 2 water.

Commercial customers would be charged at the residential tier 2 and tier 3 rates.

On-peak and off-peak (seasonal) potable irrigation rates were calculated for commercial and institutional irrigation customers based on historical usage as shown in **Table A-31**. On-peak rates would be charged June through September.

Institutional customers would be charged one rate for all consumption.

Calculated water rates through the Study period are shown in **Table 24** on page 40. Monthly service charges include the meter replacement fee.

Table 23
Calculated Use Charges per Cubic Foot

Item		2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
		Base	1	2	3	4	5	6
Allocated Cost		$3,795,073	$4,099,001	$4,283,000	$4,430,455	$4,583,890	$4,739,685	$4,904,969
Total Consumption		121,060,537	121,381,138	121,900,577	122,515,411	123,131,582	123,756,688	124,377,045
Cost per Cubic Foot [1]		**$0.0313**	**$0.0338**	**$0.0351**	**$0.0362**	**$0.0372**	**$0.0383**	**$0.0394**
Institutional Costs								
Insitutional Cost		$170,913	$184,600	$192,887	$199,528	$206,438	$213,454	$220,898
Insitutional Use		6,197,355	6,282,192	6,314,230	6,348,832	6,383,577	6,418,661	6,453,731
Institutional Cost per Cu. Ft.		**$0.0276**	**$0.0294**	**$0.0305**	**$0.0314**	**$0.0323**	**$0.0333**	**$0.0342**
Residential & Commercial Costs								
Residential Cost		$2,613,129	$2,822,401	$2,949,094	$3,050,626	$3,156,275	$3,263,548	$3,377,356
Commercial Cost		$466,606	$503,975	$526,597	$544,727	$563,592	$582,747	$603,069
Total Resid. & Comm'l Costs		**$3,079,735**	**$3,326,375**	**$3,475,692**	**$3,595,353**	**$3,719,866**	**$3,846,295**	**$3,980,425**
Estimated Usage by Customer Group by Tier								
Tier 1 (Residential)		29,979,403	30,183,226	30,327,758	30,488,923	30,650,632	30,814,192	30,977,254
Tier 2 (Residential & Comm'l)		41,828,362	42,254,443	42,451,723	42,674,612	42,898,188	43,124,473	43,349,830
Tier 3 (Residential & Comm'l)		22,486,770	22,724,357	22,830,151	22,949,856	23,069,927	23,191,461	23,312,483
Tier 4 (Residential)		3,675,585	3,700,574	3,718,294	3,738,054	3,757,880	3,777,933	3,797,925
Tier 5 (Residential June - Sept only)		2,100,145	2,114,423	2,124,548	2,135,838	2,147,167	2,158,624	2,170,047
Total Use Residential & Comm'l		**100,070,265**	**100,977,025**	**101,452,474**	**101,987,283**	**102,523,794**	**103,066,683**	**103,607,539**
Resid. & Comm'l Cost per Cu. Ft.	Ratio							
Tier 1 (Residential)	**0.80**	**$0.0230**	**$0.0246**	**$0.0256**	**$0.0263**	**$0.0271**	**$0.0278**	**$0.0287**
Tier 2 (Residential & Comm'l)	**1.00**	**$0.0287**	**$0.0307**	**$0.0319**	**$0.0329**	**$0.0338**	**$0.0348**	**$0.0358**
Tier 3 (Residential & Comm'l)	**1.35**	**$0.0387**	**$0.0415**	**$0.0431**	**$0.0444**	**$0.0457**	**$0.0470**	**$0.0484**
Tier 4 (Residential)	**1.75**	**$0.0502**	**$0.0537**	**$0.0559**	**$0.0575**	**$0.0592**	**$0.0609**	**$0.0627**
Tier 5 (Residential June - Sept only	**2.25**	**$0.0646**	**$0.0691**	**$0.0719**	**$0.0739**	**$0.0761**	**$0.0783**	**$0.0806**
Irrigation Costs [2]								
Irrigation Cost		$544,426	$588,026	$614,422	$635,575	$657,586	$679,936	$703,647
Irrigation Off-Peak Use	27%	4,050,831	3,867,088	3,870,361	3,882,799	3,895,099	3,908,006	3,920,172
Irrigation Summer (Peak) Use	73%	10,742,086	10,254,833	10,263,511	10,296,496	10,329,113	10,363,339	10,395,602
Off-Peak Cost per Cu. Ft.		**$0.0292**	**$0.0331**	**$0.0345**	**$0.0356**	**$0.0367**	**$0.0378**	**$0.0390**
On-Peak Cost per Cu. Ft.		**$0.0397**	**$0.0449**	**$0.0469**	**$0.0483**	**$0.0498**	**$0.0513**	**$0.0530**

Source: HEC.

[1] Bulk water rate is the average cost of water collected in use charge for all customer types.

[2] Commercial and Institutional Irrigation services.

Table 24
Summary of Calculated Water Rates

Charges	Current	Rates Effective on July 1 Bills 2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
				Monthly Charges ($ per Bill)			
Customer Charge	$0.00	$11.74	$12.19	$12.54	$12.89	$13.25	$13.64
Service Charge				Monthly Charges ($ per Meter Size)			
3/4" and Fire Guards	$23.50	$13.75	$14.27	$14.68	$15.10	$15.52	$15.98
1"	$46.99	$14.34	$14.88	$15.31	$15.75	$16.19	$16.66
1.5"	$66.99	$65.61	$68.13	$70.07	$72.08	$74.10	$76.24
2"	$88.24	$104.27	$108.28	$111.36	$114.55	$117.76	$121.16
3"	$184.50	$209.08	$217.12	$223.30	$229.69	$236.13	$242.95
4"	$282.07	$331.60	$344.32	$354.13	$364.29	$374.52	$385.35
6"	$528.92	$652.47	$677.56	$696.84	$716.81	$736.90	$758.18
8"	$881.49	$1,034.38	$1,074.23	$1,104.77	$1,136.39	$1,168.21	$1,201.93
Potable Water Use Charges				$ per cubic foot			
Bulk Water	[1]	$0.0338	$0.0351	$0.0362	$0.0372	$0.0383	$0.0394
Institutional Water	[1]	$0.0294	$0.0305	$0.0314	$0.0323	$0.0333	$0.0342
Residential	**[2]**						
Tier 1	$0.0243	$0.0246	$0.0256	$0.0263	$0.0271	$0.0278	$0.0287
Tier 2	$0.0299	$0.0307	$0.0319	$0.0329	$0.0338	$0.0348	$0.0358
Tier 3	$0.0400	$0.0415	$0.0431	$0.0444	$0.0457	$0.0470	$0.0484
Tier 4	$0.0517	$0.0537	$0.0559	$0.0575	$0.0592	$0.0609	$0.0627
Tier 5 (Jun-Sep only)	$0.0673	$0.0691	$0.0719	$0.0739	$0.0761	$0.0783	$0.0806
Commercial	**[3]**						
Tier 1	$0.0343	$0.0307	$0.0319	$0.0329	$0.0338	$0.0348	$0.0358
Tier 2	$0.0353	$0.0415	$0.0431	$0.0444	$0.0457	$0.0470	$0.0484
Irrigation [4]							
Off-Peak (Oct - May)	[1]	$0.0331	$0.0345	$0.0356	$0.0367	$0.0378	$0.0390
On-Peak (Jun - Sep)	[1]	$0.0449	$0.0469	$0.0483	$0.0498	$0.0513	$0.0530

Source: HEC.

[1] Currently charged the same as commercial customers.

[2] Tiers do not change under new rate structure. They are: Tier 1 - up to 300 cf, Tier 2 - 301-1,000 cf, Tier 3 - 1,001-2,500 cf, Tier 4 - 2,501-3,600 cf, Tier 5 - greater than 3,600 cf. Residential irrigation services currently charged the same as residential domestic services. Under the new rate structure irrigation use would be combined with domestic use.

[3] Commercial current tiers are <50,000 cf and >50,000 cf. New tiers are <2,500 cf and >2,500 cf for commercial customers with meters <2" and <15,000 and >15,000 for larger meters.

[4] Seasonal rates for commercial and institutional irrigation meters.

5.4.1. Cost of Service Redistribution of Costs

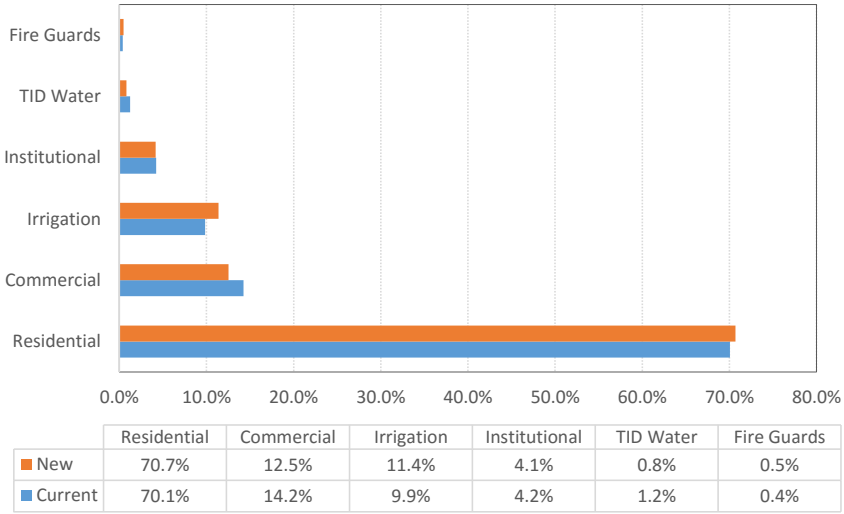
The cost of service analysis shows that currently there is subsidization of rates among customer classes. **Table 25** shows the reallocation of costs as a result of the cost of service analysis. Cost reallocation is also illustrated in **Figure 12**. Detailed calculations of revenues under the new rate structure are provided in **Table A-32**.

Table 25
Cost Allocation by Customer Type

Customer Type	Current (per Budget)		New (see Table A-32)		Cost Redistribution	
	Total	Share of Total	Total	Share of Total	As % of Current Cost	Total Difference
POTABLE						
Residential	$4,621,000	70%	$4,663,111	71%	1%	$42,111
Non-Residential						
Commercial	$938,800	14%	$825,265	13%	-12%	($113,535)
Institutional	$278,900	4%	$273,548	4%	-2%	($5,352)
Fire Guards	$25,500	0%	$31,774	0%	25%	$6,274
Irrigation	$649,777	10%	$749,532	11%	15%	$99,755
Subtotal Potable	**$6,513,977**	**99%**	**$6,543,230**	**99%**	**0%**	**$29,253**
NON-POTABLE (TID)						
Metered	$52,541	1%	$17,554	0%	-67%	($34,988)
Unmetered	$29,582	0%	$35,316	1%	19%	$5,735
Subtotal Non-Potable	**$82,123**	1%	**$52,870**	**1%**	**-36%**	**($29,253)**
Total FY 2015-16	**$6,596,100**	**100%**	**$6,596,100**	**100%**	0%	**$0**

Source: City of Ashland and HEC.

Figure 12
Redistribution of Costs to Customer Types



5.5 PROJECTED CASH FLOW AND FUND BALANCE

Table 26 projects cash flow through fiscal year 2021-22 for the operating fund. With adoption of the calculated rates it is anticipated that the City will be able to meet all water enterprise fund obligations, including existing and potential debt service coverage requirements, and achieve a targeted reserve of 20% of annual revenues in every year.

Table 26
Projected Operating Fund Cash Flow

Revenues and Expenses	2015-16 Base	2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
	New Rates Effective	*7/1/2016*	*7/1/2017*	*7/1/2018*	*7/1/2019*	*7/1/2020*	*7/1/2021*
Revenue							
Municipal Water Sales	**$6,521,112**	**$7,067,244**	**$7,384,483**	**$7,638,716**	**$7,903,258**	**$8,171,870**	**$8,456,844**
TID Water Sales	$80,742	$50,800	$53,727	$56,676	$59,632	$62,642	$65,663
Other Revenue Sources	$161,200	$163,736	$166,323	$168,961	$171,652	$174,397	$177,197
Total Revenues	**$6,763,054**	**$7,281,780**	**$7,604,533**	**$7,864,353**	**$8,134,543**	**$8,408,910**	**$8,699,704**
Operating Expenses	**$5,002,770**	**$5,109,906**	**$5,281,831**	**$5,459,577**	**$5,643,347**	**$5,833,351**	**$6,029,809**
Net Revenue before Debt Service and System Rehabilitation	**$1,760,284**	**$2,171,874**	**$2,322,701**	**$2,404,776**	**$2,491,196**	**$2,575,559**	**$2,669,895**
Debt Service	**$617,059**	**$857,445**	**$1,272,981**	**$1,490,164**	**$2,057,259**	**$2,050,359**	**$2,048,409**
Debt Service Coverage [1]	*2.85*	*2.53*	*1.82*	*1.61*	*1.21*	*1.26*	*1.30*
System Rehabilitation	$0	$1,004,428	$1,154,721	$1,159,613	$1,168,937	$1,175,200	$1,176,486
Additional Cash for CIP Projects	$402,240	$1,933,647	$32,079	$0	$0	$0	$0
Net Revenue	**$740,985**	**($1,623,647)**	**($137,079)**	**($245,000)**	**($735,000)**	**($650,000)**	**($555,000)**
Beginning Balance [2]	$3,264,915	$4,005,900	$2,382,253	$2,245,174	$2,877,387	$2,764,848	$2,820,848
Net Revenue	$740,985	($1,623,647)	($137,079)	($245,000)	($735,000)	($650,000)	($555,000)
Transfer In (Out)	$0	$0	$0	$0	$0	$0	$0
Add Back Rehabilitation Net of CIP	$0	$0	$0	$877,213	$622,462	$706,000	$841,486
Ending Balance	**$4,005,900**	**$2,382,253**	**$2,245,174**	**$2,877,387**	**$2,764,848**	**$2,820,848**	**$3,107,335**
Target Balance [3]	$1,352,611	$1,456,356	$1,520,907	$1,572,871	$1,626,909	$1,681,782	$1,739,941

Source: City of Ashland and HEC.

[1] Minimum requirement of 1.20 assumed.

[2] Beginning balance as of July 1, 2015.

[3] 20% of operating revenues.

Projected water fund balances are shown in **Table 27**. This table includes the capital fund which is funded with SDC revenues.

Figure 13 illustrates the historical and projected water fund balance. The water fund balance is projected to decrease from $5.00 million to $4.16 million in fiscal year 2021-22.

Figure 13
Water Fund Balance

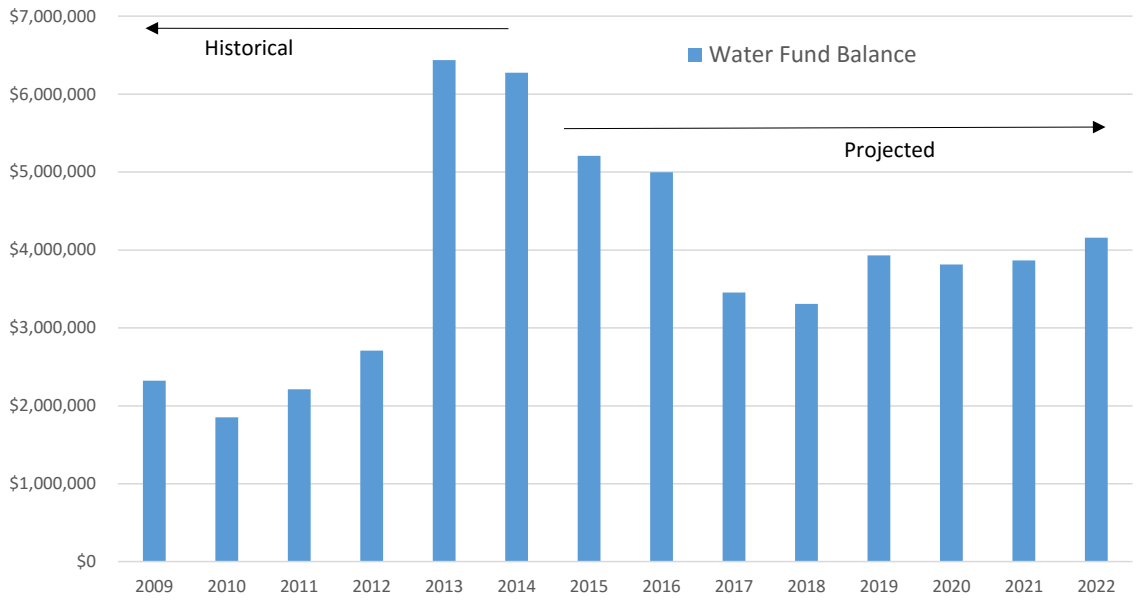


Table 27
Projected Water Fund Balance

Projected Cash Balances	2015-16 Base	2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
Operating							
Beginning Balance	**$775,215**	$1,516,200	$1,826,200	$1,721,200	$1,476,200	$741,200	$591,200
Revenues	$6,763,054	$7,281,780	$7,604,533	$7,864,353	$8,134,543	$8,408,910	$8,699,704
Expenses	($6,022,069)	($8,905,427)	($7,741,612)	($8,109,353)	($8,869,543)	($9,058,910)	($9,254,704)
TAP Contingency	$0	$0	$0	$0	$0	$0	$0
Transfer In (Out)	$0	$1,933,647	$32,079	$0	$0	$500,000	$500,000
Ending Operating Balance	**$1,516,200**	**$1,826,200**	**$1,721,200**	**$1,476,200**	**$741,200**	**$591,200**	**$536,200**
System Rehabilitation							
Beginning Balance	**$2,489,700**	$2,489,700	$556,053	$523,974	$1,401,187	$2,023,649	$2,229,649
System Rehabilitation Revenue	$0	$1,004,428	$1,154,721	$1,159,613	$1,168,937	$1,175,200	$1,176,486
Revenue used for CIP Projects	$0	($1,004,428)	($1,154,721)	($282,400)	($546,475)	($469,200)	($335,000)
Transfer In (Out)	$0	($1,933,647)	($32,079)	$0	$0	($500,000)	($500,000)
Ending Rehabilitation Balance	**$2,489,700**	**$556,053**	**$523,974**	**$1,401,187**	**$2,023,649**	**$2,229,649**	**$2,571,135**
Total Operating Balance	**$4,005,900**	**$2,382,253**	**$2,245,174**	**$2,877,387**	**$2,764,848**	**$2,820,848**	**$3,107,335**
Capital							
Beginning Balance	**$1,943,676**	$991,716	$1,070,716	$1,061,716	$1,052,716	$1,048,716	$1,044,716
Add SDC Revenue [1]	$100,000	$250,000	$260,000	$260,000	$270,000	$270,000	$280,000
Future Customers CIP PAYG	($1,051,960)	$0	$0	$0	$0	$0	$0
Debt Service	$0	($171,000)	($269,000)	($269,000)	($274,000)	($274,000)	($274,000)
Transfer In (Out)	$0	$0	$0	$0	$0	$0	$0
Ending Capital Balance	**$991,716**	**$1,070,716**	**$1,061,716**	**$1,052,716**	**$1,048,716**	**$1,044,716**	**$1,050,716**
Water Fund Balance	**$4,997,616**	**$3,452,969**	**$3,306,890**	**$3,930,103**	**$3,813,564**	**$3,865,564**	**$4,158,051**

Source: HEC.

[1] Assumes addition of 50 EDUs per year and annual increase of SDCs of 2%.

Section 6: IMPACTS OF NEW RATE STRUCTURE

6.1 BILL IMPACTS

Bill impact analysis is used to demonstrate the new rate structure and the redistribution of costs among customer types in **Tables A-33** through **A-41** for the first year of rate increase, fiscal year 2016-17. The tables demonstrate that the new rate structure has the desired outcome on each customer group.

Residential. Residential water bills would experience a small increase under the new rate structure due to the increase in revenue requirements and the reallocation of costs under the cost of service analysis (see **Table A-33**).

Commercial. Many commercial water bills would decrease under the new rate structure. The reduction in bills is also due to the reallocation of costs under the cost of service analysis. Larger meter sizes would be billed a greater portion of their total bill in flat monthly charges and would experience a total bill increase. Bill impacts are shown in **Tables A-34** through **A-37.**

Institutional. Institutional water bills would experience a slight increase in the winter months and a decrease in the summer months. Since institutional customers have a relatively flat demand throughout the year, with a slight peak in the spring months before the irrigation season begins, this is appropriate. Institutional bills for 2" and 4" customers are shown in **Tables A-38** and **A-39**.

Potable Irrigation. During peak summer months potable irrigation bills would increase. The rate design is intended to curb potable irrigation water use during the peak use months. During off-peak months water bills would increase if no water was taken. This reflects billing the flat monthly charges regardless of whether water is used or not. For accounts using water, irrigation bills would decrease. The off-peak potable irrigation water rate encourages planting in summer and fall months when water supply is not a concern. Irrigation bill impacts are shown in **Tables A-40** and **A-41**.

6.2 AFFORDABILITY TEST

Under the calculated water rates for July 1, 2016, a ¾" meter single family home using 1,000 cubic feet in a month would pay $54.35, which is 1.5% of the estimated median household income for Ashland. The proposed water rates are affordable under EPA guidelines. These calculations are shown in **Table 28**.

Table 28
Affordability Test

Item	Annual	Annual Increase	Monthly
Ashland Median Household Income [1]	$43,500		
2015-16 Water Rates 3/4" using 1,000 cu. ft./mo	$621		$51.72
Current Water Rates as % of Ashland MHI	**1.4%**		
2016-17 Water Rates 3/4" using 1,000 cu. ft./mo	$652		$54.35
Proposed Water Rates % of Ashland MHI	**1.5%**		
Water Rates @ 2.0% of MHI [2]	$870	$870	$72.50
Water Rates @ 2.5% of MHI [2]	$1,088	$1,087	$90.63

Source: US Census.

[1] 2014 5-year American Community Survey estimate.

[2] Per EPA guidelines a water rate greater than 2% is high and a water rate higher than 2.5% is burdensome.

6.3 COMPARISON OF WATER RATES

Figure 14 illustrates what a household with a ¾" meter using 1,000 cubic feet in a month would pay for water in Ashland and several comparison communities as of August 1, 2015. Ashland's water rates are currently at the high end of the range and will remain at the high end of the range with the proposed rate increases.

Figure 14
Comparison of Single Family Monthly Water Bill

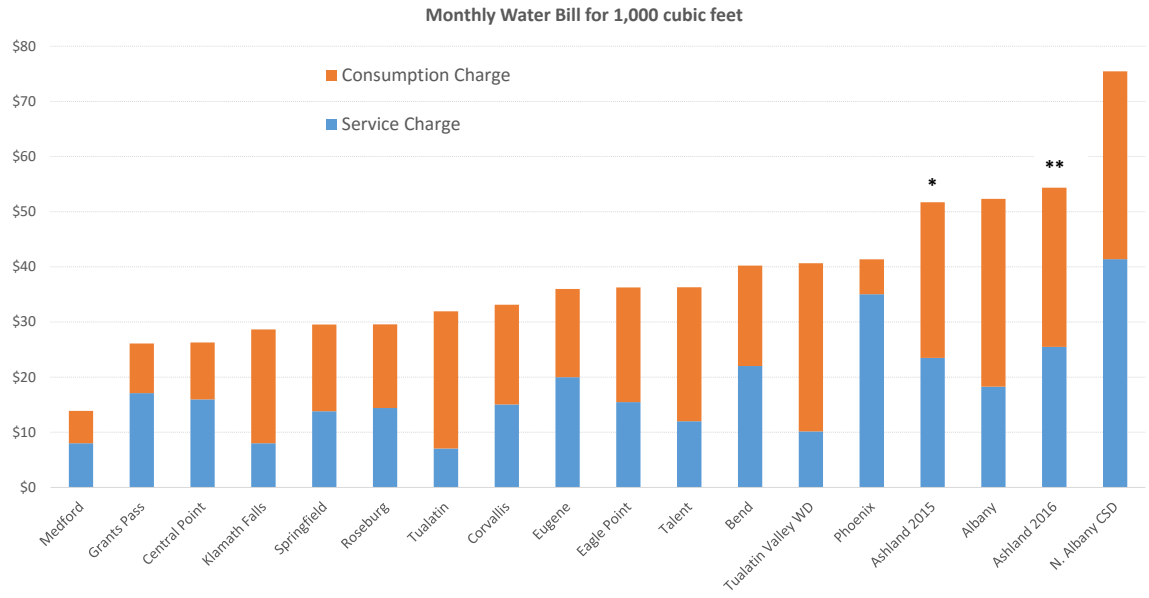


Table 29 compares fiscal year 2015-16 water bills for a typical single family home using 1,000 cubic feet under the current and new rate structures, and projects the calculated water bill through fiscal year ending 2022. Per EPA guidelines[10], water rates would be considered affordable through fiscal year 2021-22.

Table 29
Calculated Typical Home Bill for 1,000 Cubic Feet

		Fiscal Year Ending					
Residential Charges	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
	current	1	2	3	4	5	6
Flat Charges							
Customer Charge		$11.74	$12.19	$12.54	$12.89	$13.25	$13.64
Service Charge	$23.50	$13.75	$14.27	$14.68	$15.10	$15.52	$15.98
Total Flat Charges	**$23.50**	**$25.48**	**$26.46**	**$27.21**	**$27.99**	**$28.78**	**$29.61**
Use Charges							
Tier 1 per cu. ft.	$0.0243	$0.0246	$0.0256	$0.0263	$0.0271	$0.0278	$0.0287
Tier 2 per cu. ft.	$0.0299	$0.0307	$0.0319	$0.0329	$0.0338	$0.0348	$0.0358
Tier 1 Charges (300 cu ft)	$7.29	$7.37	$7.67	$7.89	$8.12	$8.35	$8.60
Tier 2 Charges (700 cu ft)	$20.93	$21.50	$22.36	$23.01	$23.68	$24.35	$25.07
Total Use Charges	**$28.22**	**$28.87**	**$30.02**	**$30.89**	**$31.80**	**$32.70**	**$33.67**
Bill for 3/4" using 1,000 cu. ft.	**$51.72**	**$54.35**	**$56.48**	**$58.11**	**$59.79**	**$61.48**	**$63.28**
Percentage Increase		5%	4%	3%	3%	3%	3%

Source: HEC.

[10] "Affordability Assessment Tool for Federal Water Mandates", prepared for the United States Conference of Mayors, The American Water Works Association, and the water Environment Federation by Stratus Consulting, Boulder, Colorado, 2013.

APPENDIX A

RATE STUDY SUPPORT TABLES

Table A-1
City of Ashland Water Rate Study
Historical and Budgeted Water Fund Revenues

REVENUES	Fiscal Year						
	2009-10 actual	**2010-11** actual	**2011-12** actual	**2012-13** actual	**2013-14** actual	**2014-15** actual	**2015-16** budget
Charges for Service							
Water Sales							
Commercial	$580,812	$603,874	$679,370	$762,567	$816,152	$892,585	$938,800
Fire Guard	$14,880	$17,342	$18,434	$24,025	$29,845	$31,423	$25,500
Government & Municipal	$174,795	$185,897	$201,809	$242,995	$266,409	$272,797	$278,900
Multi-Family Residential	$479,996	$500,079	$562,916	$643,854	$671,343	$715,405	$777,900
Single Family Residential	$2,439,336	$2,504,647	$2,781,220	$3,208,071	$3,473,458	$3,537,845	$3,843,100
Irrigation (incl. TID customers)	$444,284	$419,039	$528,824	$609,199	$581,370	$624,453	$731,900
Subtotal Water Sales	**$4,134,103**	**$4,230,879**	**$4,772,573**	**$5,490,711**	**$5,838,578**	**$6,074,507**	**$6,596,100**
System Development Charges	$151,864	$180,604	$491,612	$266,196	$269,029	$328,414	$100,000
Connection Fees	$0	$0	$0	$0	$0	$0	$0
Temporary Service	$0	$0	$0	$0	$0	$0	$0
New Service Installation	$12,627	$18,086	$83,058	$29,262	$35,746	$50,837	$114,800
Miscellaneous	$0	$1,290	$35,601	$27,587	$39,308	$38,580	$12,000
Subtotal Charges for Service	**$164,491**	**$199,980**	**$610,272**	**$323,046**	**$344,084**	**$417,831**	**$226,800**
Other Revenues							
1982 Water Bonds	$46	$21	$24	$18	$24	$14	$0
1992 Water Bonds	$54	$24	$28	$21	$28	$15	$0
Intergovernmental Revenue	$99,928	$344,396	$336,811	$1,969,979	$89,747	$70,473	$14,000
Interest on Investments	$22,991	$10,006	$16,598	$19,542	$32,527	$24,080	$20,400
Miscellaneous Income	$34,154	$21,297	$9,318	$477,199	$17,154	$17,420	$0
Bond Proceeds	$80,000	$550,000	$0	$2,547,791	$979,630	$744,916	$3,921,000
Subtotal Other Revenues	**$237,174**	**$925,744**	**$362,780**	**$5,014,551**	**$1,119,110**	**$856,917**	**$3,955,400**
Total Revenues	**$4,535,767**	**$5,356,603**	**$5,745,625**	**$10,828,307**	**$7,301,772**	**$7,349,255**	**$10,778,300**
Fund Balance					$6,273,414	$5,208,591	
Total Revenues					**$13,575,186**	**$12,557,846**	

Source: City of Ashland. *revs*

Table A-2
City of Ashland Water Rate Study
Historical and Budgeted Expenditures by Water System Function

EXPENDITURES	Fiscal Year						
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
SUPPLY	Actual	Actual	Actual	Actual	Actual	Actual	Adopted
Salaries & Wages					$2,932	$11,664	$0
Benefits					$235	$2,150	$0
Subtotal Personal Services					**$3,168**	**$13,815**	**$0**
Infrastructure	$0	$0	$800	$0	$135	$28,011	$0
Professional Services	$7,442	$19,997	$23,211	$34,853	$54,508	$54,303	$229,600
Miscellaneous	$109,916	$109,457	$113,392	$112,533	$140,783	$145,109	$151,050
Other	$58,791	$61,459	$60,408	$63,664	$143,393	$104,638	$149,900
Subtotal Materials & Services	**$176,148**	**$190,913**	**$197,810**	**$211,050**	**$338,820**	**$332,061**	**$530,550**
Capital Outlay	$75,469	$108,186	$193,531	$59,501	$1,640,806	$2,491,193	$1,209,150
Debt Service	$22,860	$23,147	$23,122	$21,416	$22,613	$22,174	$9,568
TOTAL SUPPLY	**$274,477**	**$322,246**	**$414,463**	**$291,968**	**$2,005,408**	**$2,859,242**	**$1,749,268**
DISTRIBUTION							
Salaries & Wages	$580,171	$562,250	$494,924	$537,596	$583,438	$654,405	$635,000
Benefits	$278,819	$275,600	$265,372	$301,271	$365,844	$378,422	$394,750
Subtotal Personal Services	**$858,990**	**$837,850**	**$760,296**	**$838,867**	**$949,282**	**$1,032,827**	**$1,029,750**
Office	$2,195	$1,480	$1,605	$4,120	$1,322	$1,252	$2,650
Small Tools	$1,873	$2,961	$5,473	$3,503	$3,081	$5,545	$4,000
Uniforms - Clothing	$1,928	$828	$810	$1,676	$3,961	$1,589	$1,500
Uniforms - Other	$175	$1,769	$2,678	$404	$0	$1,339	$3,000
Technical	$3,075	$2,788	$6,113	$859	$5,174	$5,433	$15,000
Chemicals	$706	$307	$1,253	$2,516	$3,563	$111	$5,500
County Services	$3,200	$4,000	$3,600	$2,800	$0	$3,200	$4,950
Other	$0	$0	$0	$0	$0	$0	$15,000
Books & Periodicals	$48	$82	$51	$89	$252	$111	$200
Subtotal Supplies	**$13,200**	**$14,215**	**$21,582**	**$15,967**	**$17,352**	**$18,582**	**$51,800**
Fleet Maintenance	$73,500	$73,500	$66,340	$66,340	$66,340	$66,340	$66,340
Fuel	$24,692	$29,117	$27,218	$25,849	$19,338	$14,342	$28,000
Replacement	$51,300	$51,300	$51,300	$51,300	$51,300	$51,300	$61,560
Electricity	$28,771	$21,488	$22,101	$22,931	$31,322	$51,618	$60,000
Water	$881	$460	$385	$0	$0	$0	$0
Wastewater & Other	$0	$130	$0	$0	$0	$0	$300
Custodial	$0	$9	$16	$0	$0	$0	$0
Disposal	$0	$0	$0	$0	$0	$214	$500
Infrastructure	$42,570	$43,741	$67,480	$91,824	$91,296	$73,007	$115,000
Subtotal Rental, Repair, Maintenance	**$221,714**	**$219,745**	**$234,838**	**$258,243**	**$259,596**	**$256,820**	**$331,700**
Local	$1,207	$1,178	$1,167	$1,222	$1,347	$1,353	$1,200
Long Distance	$12	$15	$17	$16	$16	$18	$20
Cellular	$1,577	$1,523	$1,961	$2,036	$2,428	$2,667	$3,700
Computers	$0	$0	$0	$2,749	$3,085	$1,144	$2,500
Postage	$188	$264	$628	$432	$1,459	$1,539	$2,000
Radios	$0	$0	$0	$0	$0	$0	$1,000
Subtotal Communications	**$2,985**	**$2,981**	**$3,773**	**$6,456**	**$8,334**	**$6,721**	**$10,420**
Professional Services	$5,626	$1,113	$4,159	$20,679	$22,745	$33,767	$60,000
Physician/Health	$0	$183	$0	$187	$0	$0	$0
Other	$0	$0	$184	$244	$90	$39	$50,000
Subtotal Contractual Services	**$5,626**	**$1,296**	**$4,343**	**$21,110**	**$22,835**	**$33,806**	**$110,000**

Table A-2
City of Ashland Water Rate Study
Historical and Budgeted Expenditures by Water System Function

EXPENDITURES	Fiscal Year						
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Central Service	$549,753	$549,753	$570,000	$632,000	$646,640	$659,530	$692,510
Insurance Service	$35,760	$35,760	$34,900	$34,900	$34,900	$34,900	$35,600
Technology Debt	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000
Use of Facilities	$125,883	$125,883	$80,000	$80,000	$80,000	$80,000	$80,000
Bad Debt Expense	$6,204	$10,089	$7,894	$3,620	$22,504	$13,224	$12,000
Other	$0	$0	$3,000	$2,111	$583	$0	$0
Licensing	$5,546	$8,623	$8,423	$6,321	$10,965	$5,104	$37,700
Subtotal Miscellaneous Charges & Fees	**$773,147**	**$780,109**	**$754,217**	**$808,951**	**$845,592**	**$842,758**	**$907,810**
Advertising	$0	$0	$0	$0	$0	$1,875	$0
Air	$0	$0	$0	$0	$0	$1,533	$3,000
Personal Vehicle Mileage	$0	$0	$0	$284	$0	$0	$350
Lodging	$0	$517	$0	$510	$0	$939	$2,000
Meals	$0	$1,006	$0	$113	$0	$334	$350
Training	$2,602	$423	$2,470	$1,655	$0	$89	$4,000
Dues	$268	$1,082	$0	$0	$0	$0	$0
Medical & Laboratory	$9,595	$10,710	$10,545	$11,563	$11,526	$12,567	$15,000
Subtotal Other Purchased Services	**$12,466**	**$13,737**	**$13,015**	**$14,125**	**$11,526**	**$17,338**	**$24,700**
Franchise Tax	$419,978	$342,525	$294,695	$356,283	$357,799	$372,200	$402,653
Capital Outlay	$53,865	$72,088	$109,315	$84,197	$206,990	$104,317	$1,105,200
Debt Service	$325,990	$330,336	$327,051	$137,064	$333,461	$329,340	$250,649
TOTAL DISTRIBUTION	**$2,687,960**	**$2,614,882**	**$2,523,125**	**$2,541,263**	**$3,012,767**	**$3,014,709**	**$4,224,682**
TREATMENT PLANT							
Salaries & Wages	$275,564	$298,719	$294,268	$312,259	$308,548	$332,754	$340,050
Benefits	$112,364	$140,315	$134,534	$154,592	$158,437	$177,449	$197,320
Subtotal Personal Services	**$387,929**	**$439,034**	**$428,801**	**$466,851**	**$466,985**	**$510,203**	**$537,370**
Office	$2,330	$5,154	$5,196	$2,214	$1,544	$1,180	$2,000
Small Tools	$798	$324	$463	$739	$559	$1,142	$800
Uniforms - Clothing	$1,197	$454	$1,131	$805	$686	$2,084	$2,500
Uniforms - Other	$245	$443	$774	$567	$60	$383	$500
Technical	$12,154	$10,438	$9,766	$15,213	$20,128	$10,446	$22,000
Chemicals	$147,418	$131,893	$111,049	$128,767	$157,280	$171,617	$220,000
Emergency Work	($12)	$0	$0	$30	$0	$0	$0
Books & Periodicals	$0	$140	$126	$186	$0	$170	$150
Subtotal Supplies	**$164,131**	**$148,846**	**$128,505**	**$148,521**	**$180,257**	**$187,021**	**$247,950**
Fleet Maintenance	$10,200	$10,200	$9,200	$9,200	$9,200	$9,200	$9,397
Fuel	$3,211	$4,568	$6,255	$5,618	$9,846	$7,334	$6,500
Replacement	$900	$900	$900	$900	$900	$900	$1,080
Maintenance	($750)	$0	$622	$0	$0	$0	$0
Electricity	$37,102	$38,965	$46,948	$33,378	$34,855	$38,552	$38,000
Custodial	$170	$476	$26	$98	$86	$116	$1,000
Grounds Care	$2,873	$988	$1,064	$79	$308	$266	$1,500
Infrastructure	$9,023	$7,077	$11,042	$10,176	$4,871	$21,531	$15,000
Subtotal Rental, Repair, Maintenance	**$62,729**	**$63,174**	**$76,057**	**$59,450**	**$60,067**	**$77,898**	**$72,477**

Table A-2
City of Ashland Water Rate Study
Historical and Budgeted Expenditures by Water System Function

EXPENDITURES	Fiscal Year						
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Local	$5,566	$5,485	$5,532	$5,651	$5,665	$5,661	$5,600
Long Distance	$1	$0	$0	$0	$0	$0	$10
Cellular	$477	$444	$262	$263	$252	$493	$500
Computers	$0	$0	$0	$2,037	$960	$9,611	$2,500
Postage	$5,408	$1,933	$221	$40	$217	$22	$3,000
Radios	$0	$0	$0	$0	$0	$300	$100
Subtotal Communications	**$11,452**	**$7,862**	**$6,015**	**$7,990**	**$7,094**	**$16,087**	**$11,710**
Professional Services	$11,880	$580	$24,389	$7,701	$5,579	$1,080	$12,000
Other	$72	$0	$0	$0	$0	($1,600)	$0
Subtotal Contractual Services	**$11,952**	**$580**	**$24,389**	**$7,701**	**$5,579**	**($520)**	**$12,000**
Central Service	$143,119	$143,119	$155,000	$155,000	$158,100	$161,200	$169,260
Insurance Service	$8,030	$8,030	$4,000	$4,000	$4,000	$4,000	$4,080
Technology Debt	$28,200	$28,200	$28,200	$28,200	$28,200	$28,200	$28,200
Use of Facilities	$137,235	$137,235	$100,000	$100,000	$100,000	$100,000	$100,000
Other	$0	$0	$3,000	$2,111	$583	$0	$0
Licensing	$1,155	$1,709	$7,850	$3,222	$1,194	$3,714	$4,700
Subtotal Miscellaneous Charges & Fees	**$317,739**	**$318,293**	**$298,050**	**$292,533**	**$292,077**	**$297,114**	**$306,240**
Personal Vehicle Mileage	$180	$0	$198	$261	$0	$142	$200
Advertising	$0	$0	$0	$0	$0	$78	$0
Lodging	$773	$813	$1,000	$1,117	$1,357	$2,064	$2,000
Meals	$289	$180	$389	$380	$362	$188	$600
Training	$4,253	$1,581	$1,280	$1,044	$1,015	$2,749	$2,000
Dues	$70	$268	$81	$81	$166	$255	$270
Medical & Laboratory	$17,425	$11,200	$11,886	$13,700	$11,261	$10,918	$19,400
Subtotal Other Purchased Services	**$22,990**	**$14,042**	**$14,834**	**$16,583**	**$14,161**	**$16,394**	**$24,470**
Capital Outlay	$79,183	$1,872	$4,145	$98,033	$50,388	$108,397	$2,226,690
Debt Service	$231,260	$233,322	$233,146	$220,863	$235,320	$232,114	$436,211
TOTAL TREATMENT PLANT	**$1,289,365**	**$1,227,024**	**$1,213,943**	**$1,318,525**	**$1,311,928**	**$1,444,707**	**$3,875,118**
FOREST INTERFACE							
Salaries & Wages	$66,540	$130,770	$151,035	$146,031	$97,935	$92,753	$0
Benefits	$32,822	$54,554	$65,010	$68,379	$52,657	$48,424	$0
Subtotal Personal Services	**$99,361**	**$185,324**	**$216,045**	**$214,410**	**$150,592**	**$141,177**	**$0**
Other	$120,486	$181,646	$268,098	$2,243,767	$423,446	$165,908	$0
Advertising	$0	$465	$302	$900	$1,670	$1,280	$0
Personal Vehicle Mileage	$0	$165	$94	$286	$48	$339	$0
Meals	$0	$0	$0	$0	$48	$0	$0
Training	$594	$658	$930	$463	$2,146	$2,605	$0
Forest Commissions	$575	$858	$258	$258	$87	$130	$0
TOTAL FOREST INTERFACE	**$221,016**	**$369,116**	**$485,728**	**$2,460,085**	**$578,038**	**$311,440**	**$0**
SDC REIMBURSEMENT							
Capital Outlay	$38,321	$113,549	$96,007	$0	$0	$0	$0
Debt Service	$82,297	$83,328	$83,240	$77,098	$81,408	$79,825	$34,443
Unappropriated - Other Financing	$0	$0	$0	$0	$0	$0	$0
TOTAL SDC REIMBURSEMENT	**$120,618**	**$196,877**	**$179,246**	**$77,098**	**$81,408**	**$79,825**	**$34,443**
SDC IMPROVEMENTS							
Contractual	$0	$413	$0	$1,600	$947	$27,093	$0
Capital Outlay	$198,014	$48,370	$45,273	$30,537	$101,554	$34,419	$1,298,360
Debt Service	$41,147	$41,664	$41,620	$38,549	$40,704	$383,799	$180,977
Unappropriated - Other Financing	$0	$0	$0	$0	$0	$0	$0
TOTAL SDC REIMBURSEMENT	**$239,162**	**$90,447**	**$86,893**	**$70,686**	**$143,205**	**$445,311**	**$1,479,337**

Table A-2
City of Ashland Water Rate Study
Historical and Budgeted Expenditures by Water System Function

EXPENDITURES	Fiscal Year						
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
CONSERVATION							
Salaries & Wages	$73,475	$69,630	$49,841	$51,505	$77,643	$87,799	$105,240
Benefits	$34,263	$34,852	$23,111	$22,385	$42,088	$44,734	$64,950
Subtotal Personal Services	**$107,737**	**$104,482**	**$72,952**	**$73,889**	**$119,731**	**$132,532**	**$170,190**
Office	$651	$511	$1,914	$231	$581	$536	$4,550
Small Tools	$24	$27	$918	$13	$35	$78	$200
Uniforms - Clothing	$47	$0	$148	$118	$0	$0	$200
Uniforms - Other	$0	$0	$0	$29	$0	$0	$125
Technical	$0	$0	$0	$40	$0	$740	$800
Meetings	$0	$50	$0	$29	$0	$156	$100
Books & Periodicals	$16	$0	$224	$41	$0	$0	$100
Subtotal Supplies	**$739**	**$588**	**$3,204**	**$500**	**$616**	**$1,510**	**$6,075**
Fleet Maintenance	$300	$300	$270	$270	$270	$270	$270
Fuel	$0	$126	$0	$57	$227	$58	$150
Replacement	$5,790	$5,790	$5,790	$5,790	$5,790	$5,790	$5,790
Rental Charges	$0	$42	$124	$122	$121	$121	$125
Subtotal Rental, Repair, Maintenance	**$6,090**	**$6,258**	**$6,184**	**$6,240**	**$6,408**	**$6,239**	**$6,335**
Local	$82	$0	$0	$38	$159	$160	$100
Long Distance	$0	$0	$0	$0	$0	$0	$50
Cellular	$112	$95	$94	$95	$214	$525	$0
Computers	$0	$0	$756	$317	$0	$0	$0
Postage	$0	$0	$36	$0	$0	$28	$100
Subtotal Communications	**$193**	**$95**	**$886**	**$450**	**$372**	**$713**	**$250**
Professional Services	$0	$0	$56	$0	$0	$8,271	$2,000
Central Service	$23,625	$23,625	$23,700	$23,700	$24,170	$24,650	$25,880
Insurance Service	$2,245	$2,245	$3,370	$3,370	$3,370	$3,370	$3,440
Use of Facilities	$15,085	$15,085	$7,500	$7,500	$7,500	$7,500	$8,250
Subtotal Miscellaneous Charges & Fees	**$40,955**	**$40,955**	**$34,626**	**$34,570**	**$35,040**	**$43,791**	**$39,570**
Advertising	$333	$0	$2,113	$1,068	$290	$132	$1,600
Printing & Binding	$36	$0	$0	$10	$16	$0	$200
Air	$407	$241	$337	$610	$302	$1,538	$1,500
Personal Vehicle Mileage	$22	$215	$0	$0	$106	$407	$500
Lodging	$66	$1,050	$73	$715	$686	$1,363	$2,000
Meals	$175	$488	$142	$222	$166	$295	$750
Training	$811	$0	$1,220	$169	$779	$730	$1,000
Dues	$508	$125	$440	$381	$783	$785	$700
Subtotal Other Purchased Services	**$2,358**	**$2,118**	**$4,324**	**$3,175**	**$3,128**	**$5,250**	**$8,250**
Conservation Programs	$16,982	$20,999	$23,539	$21,191	$17,884	$68,805	$114,500
TOTAL CONSERVATION	**$175,054**	**$175,495**	**$145,716**	**$140,014**	**$183,179**	**$258,842**	**$345,170**
MISCELLANEOUS							
Interfund Loans	$0	$0	$200,000	$200,000	$150,000	$0	$250,000
Contingency	$0	$0	$0	$0	$0	$0	$170,000
Unappropriated	$0	$0	$0	$0	$0	$0	$0
TOTAL WATER FUND	**$5,007,651**	**$4,996,087**	**$5,249,115**	**$7,099,639**	**$7,465,934**	**$8,414,076**	**$12,128,018**

Source: City of Ashland. *exps*

Table A-3
City of Ashland Water Rate Study
Historical and Budgeted Water Fund Operation Expenditures

Expenses	Fiscal Year 2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Adopted 2015-16
Water Fund Operating Expenses							
Personnel	$1,454,017	$1,566,691	$1,478,094	$1,594,018	$1,689,757	$1,830,555	$1,737,310
Supplies	$178,069	$163,649	$153,291	$164,988	$198,225	$207,113	$305,825
Repair & Maintenance	$290,532	$289,177	$317,079	$323,933	$326,070	$340,958	$410,512
Communications	$14,630	$10,938	$10,675	$14,896	$15,801	$23,521	$22,380
Contractual Services	$25,020	$21,873	$51,999	$63,664	$82,921	$95,860	$353,600
Central Service	$716,497	$716,497	$748,700	$810,700	$828,910	$845,380	$887,650
Miscellaneous Charges	$525,259	$532,316	$451,585	$437,887	$484,583	$483,392	$517,020
Other Purchased Services	$96,604	$91,357	$92,581	$97,546	$172,208	$143,619	$207,320
Franchise Tax	$419,978	$342,525	$294,695	$356,283	$357,799	$372,200	$402,653
Conservation Programs	$16,982	$20,999	$23,539	$21,191	$17,884	$68,805	$114,500
Other Forest Interface	$221,016	$369,116	$485,728	$2,460,085	$578,038	$311,440	$0
Other Supply Costs	$0	$0	$800	$0	$135	$28,011	$0
Subtotal Operating Expenses	**$3,958,605**	**$4,125,137**	**$4,108,767**	**$6,345,190**	**$4,752,332**	**$4,750,855**	**$4,958,770**
Capital Outlay	$208,517	$182,146	$306,991	$241,732	$1,898,185	$2,703,906	$4,541,040
Total	**$4,167,122**	**$4,307,283**	**$4,415,758**	**$6,586,922**	**$6,650,517**	**$7,454,761**	**$9,499,810**

Source: City of Ashland. *op exp*

Table A-4
City of Ashland Water Rate Study
Water Capital Improvement Projects Benefitting Existing Customers in Inflated Dollars

Water Improvement	Total Cost Estimate	2015-16 Base	2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
Water Supply								
FERC Part 12 Dam Safety Inspection (50% Electric, 50% Water) [1]	$11,950	$0	$11,950	$0	$0	$0	$0	$0
Ashland Creek West Fork Bridge Construction [1]	$31,300	$0	$31,300	$0	$0	$0	$0	$0
Sediment TMDL in Reeder Resv. [1]	$32,800	$0	$15,925	$0	$0	$16,875	$0	$0
Reeder Resv Access Road TMDL Compliance [1]	$28,150	$28,150	$0	$0	$0	$0	$0	$0
East & West Fork Transmission Line Rehabilitation	$300,000	$0	$300,000	$0	$0	$0	$0	$0
Reeder Resv Variable Depth Intake	$126,700	$0	$0	$0	$0	$126,700	$0	$0
TID Terrace St Pump Station Improvements	$255,000	$255,000	$0	$0	$0	$0	$0	$0
TID Canal Piping: Starlite to Terrace Street [1]	$0	$0	$0	$0	$0	$0	$0	$0
Emergency TAP Pipeline & Pump	$920,000	$920,000	$0	$0	$0	$0	$0	$0
Subtotal Water Supply	**$1,705,900**	**$1,203,150**	**$359,175**	**$0**	**$0**	**$143,575**	**$0**	**$0**
Water Treatment & Storage								
Permanganate Feed Facility Study & Implementation	$307,200	$307,200	$0	$0	$0	$0	$0	$0
Raw Water Bypass Measurement	$25,000	$0	$25,000	$0	$0	$0	$0	$0
2.6-MG Reservoir & Clearwell ("Crowson II") [1]	$7,322,940	$778,320	$3,223,980	$3,320,640	$0	$0	$0	$0
2.5 MGD Water Treatment Plant [1]	$13,041,810	$1,043,370	$5,910,570	$6,087,870	$0	$0	$0	$0
Subtotal Treatment & Storage	**$20,696,950**	**$2,128,890**	**$9,159,550**	**$9,408,510**	**$0**	**$0**	**$0**	**$0**
Water Distribution								
Park Estates Pump Station/Loop Road Reservoir Alternatives	$2,527,600	$618,000	$1,909,600	$0	$0	$0	$0	$0
Radio Read Meter Program	$0	$0	$0	$0	$0	$0	$0	$0
Hydrant Replacement Program	$172,300	$0	$0	$0	$55,700	$57,400	$59,200	$0
Granite Reservoir Valving	$123,000	$0	$0	$123,000	$0	$0	$0	$0
Subtotal Water Distribution	**$2,822,900**	**$618,000**	**$1,909,600**	**$123,000**	**$55,700**	**$57,400**	**$59,200**	**$0**
Mainline Projects (see page 2)	**$3,398,500**	**$373,200**	**$644,300**	**$1,063,800**	**$226,700**	**$345,500**	**$410,000**	**$335,000**
TOTAL WATER CAPITAL PROJECTS (inflated dollars)	**$28,624,250**	**$4,323,240**	**$12,072,625**	**$10,595,310**	**$282,400**	**$546,475**	**$469,200**	**$335,000**

Table A-4
City of Ashland Water Rate Study
Water Capital Improvement Projects Benefitting Existing Customers in Inflated Dollars

Water Improvement	Total Cost Estimate	2015-16 Base	2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
Water Mainline Projects								
Oak Street - Nevada to Bear Creek Bridge	$273,200	$273,200	$0	$0	$0	$0	$0	$0
Lithia Water Line Replacement - Pioneer Street to Plaza	$100,000	$100,000	$0	$0	$0	$0	$0	$0
Ivy Lane - Morton Street to west end of Ivy Lane	$346,200	$0	$346,200	$0	$0	$0	$0	$0
Ivy Lane - South Mountain to FH-16AD-038	$100,300	$0	$100,300	$0	$0	$0	$0	$0
A Street - 1st St to 6th St	$515,000	$0	$150,000	$365,000	$0	$0	$0	$0
Parker Street - Walker Ave to Lit Way	$198,500	$0	$23,900	$174,600	$0	$0	$0	$0
Harmony Lane - Siskiyou Blvd to Lit Way	$79,500	$0	$11,900	$67,600	$0	$0	$0	$0
Lit Way - Joy Avenue to Ray Lane	$42,900	$0	$6,000	$36,900	$0	$0	$0	$0
Ray Lane - Lit Way to Joy Ave	$66,300	$0	$6,000	$60,300	$0	$0	$0	$0
Beach Street - Larkin Lane to Iowa Street	$114,900	$0	$0	$12,300	$102,600	$0	$0	$0
Siskiyou Boulevard - Crowson Road south towards I-5 Exit 11	$168,800	$0	$0	$168,800	$0	$0	$0	$0
AHS Property - Fire hydrant in school property	$0	$0	$0	$0	$0	$0	$0	$0
Meade Street - Vista St/Hillcrest to Iowa Street	$0	$0	$0	$0	$0	$0	$0	$0
Ditch Road - Strawberry PS to Grandview Dr	$187,200	$0	$0	$92,200	$95,000	$0	$0	$0
Lithia Water Line	$86,100	$0	$0	$86,100	$0	$0	$0	$0
Elkader Street - Ivy Lane to Pinecrest Trail	$0	$0	$0	$0	$0	$0	$0	$0
Ivy Lane - South Mountain Ave to Elkader St	$0	$0	$0	$0	$0	$0	$0	$0
South Mountain Ave - S. Mountain Ave to Emma St	$7,600	$0	$0	$0	$7,600	$0	$0	$0
South Mountain Ave - From S. Mountain Ave to FH 16AD-043	$21,500	$0	$0	$0	$21,500	$0	$0	$0
Vista Street - Fork St to Hillcrest St	$155,000	$0	$0	$0	$0	$155,000	$0	$0
Vista Street - Intersection of Vista, Hillcrest, Glenview Dr	$5,500	$0	$0	$0	$0	$5,500	$0	$0
Pinecrest Terrace - Penny Drive to Woodland Drive	$185,000	$0	$0	$0	$0	$185,000	$0	$0
Pinecrest Terrace - Walker Ave to Starlight Place	$410,000	$0	$0	$0	$0	$0	$410,000	$0
Penny Drive - Woodland Dr to Weissenback Way	$85,000	$0	$0	$0	$0	$0	$0	$85,000
Woodland Drive - Leonard St to Pinecrest Terrace	$55,000	$0	$0	$0	$0	$0	$0	$55,000
Hiawatha Place - Walker Ave to FH 15CA-020	$60,000	$0	$0	$0	$0	$0	$0	$60,000
Morton Street - FH 16AC-023 to PRV 12	$135,000	$0	$0	$0	$0	$0	$0	$135,000
Subtotal Mainline Projects (inflated dollars)	**$3,398,500**	**$373,200**	**$644,300**	**$1,063,800**	**$226,700**	**$345,500**	**$410,000**	**$335,000**

Source: City of Ashland and HEC. *infl cip*

[1] Portion (or all) of project to be funded by future customers (excluded from table).

Table A-5
City of Ashland Water Rate Study
Existing Debt

Bonds	2015-16 Base	2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
2009 G.O Bonds	$66,666	$66,666	$66,666	$66,666	$66,666	$66,666	$66,666
2013 G.O. Bonds	$195,275	$197,225	$194,125	$195,975	$197,725	$194,425	$196,075
2013 G.O Bonds Refinancing	$191,350	$188,050	$189,700	$191,250	$192,700	$189,100	$185,500
MWC Debt for SDC Purchase	$163,768	$163,768	$163,768	$163,768	$163,768	$163,768	$163,768
Total Existing Debt Service	**$617,059**	**$615,709**	**$614,259**	**$617,659**	**$620,859**	**$613,959**	**$612,009**
State of Oregon Revolving Fund (estimated) [1]			**$157,000**	**$103,000**	**$103,000**	**$103,000**	**$103,000**
Total Existing Debt Service with SRF	**$617,059**	**$615,709**	**$771,259**	**$720,659**	**$723,859**	**$716,959**	**$715,009**

Source: City of Ashland and HEC.

debt

[1] SRF Loan Principal $2,561,027 *Project completed by May 2016. Assume first debt payment is due Dec 1, 2017.*
Years 29
Interest Rate 1.0%

	2014-15	2015-16	2016-17	**Total**
Estimated Disbursements	$870,000	$1,150,000	$541,027	**$2,561,027**
Interest	$8,700	$20,200	$25,610	**$54,510**

Table A-6
City of Ashland Water Rate Study
Estimated New City Debt

Facilities and Cost	*Assumptions*	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Water Improvements [1]		**$2,099,310**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Bond Sizing								
Capitalized Interest	*6 months*	$47,230	$0	$0	$0	$0	$0	$0
Issuance Costs	*3%*	$62,980	$0	$0	$0	$0	$0	$0
Underwriter's Discount	*1%*	$20,990	$0	$0	$0	$0	$0	$0
Bond Reserve Fund	*1 year debt service*	$188,000	$0	$0	$0	$0	$0	$0
Estimated Bond Size		$2,418,510	$0	$0	$0	$0	$0	$0
Bond Size Adjusted for Rounding	*1.160 bond load*	**$2,435,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Estimated Annual Debt Service	**[2]**	**$188,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Source: HEC

new debt

[1] Existing customer share only. Excludes cost of improvements benefitting future customers.

[2] Debt service estimate based on sale of revenue bonds with the following terms: Assumed first payment due the following fiscal year.

interest rate: 4.5%

years: 20

Table A-7
City of Ashland Water Rate Study
Estimated Debt for SRF Funded Facilities

Item	2015-16	2016-17	2017-18	Total
Treatment Plant				
2.5 MGD Water Treatment Plant	$1,043,370	$5,910,570	$6,087,870	$13,041,810
Contingency 10%	$104,337	$591,057	$608,787	$1,304,181
Total Estimated Treatment Plant Cost	**$1,147,707**	**$6,501,627**	**$6,696,657**	**$14,345,991**
Estimated Interest	$24,561	$163,696	$307,004	**$495,261**
Annual Debt Service [1]				**$652,900**
Total Payments				**$19,587,000**
Principal				$14,345,991
Interest				$5,241,009
Crowson II Reservoir				
Tank	$778,320	$3,223,980	$3,320,640	$7,322,940
Contingency (5%)	$38,916	$161,199	$166,032	$732,294
Total Estimated Reservoir Cost	**$817,236**	**$3,385,179**	**$3,486,672**	**$8,055,234**
Estimated Interest	$29,175	$150,026	$274,500	**$453,702**
Annual Debt Service [1]				**$492,500**
Total Payments				**$12,312,500**
Principal				$8,055,234
Interest				$4,257,266
TOTAL SRF ANNUAL DEBT SERVICE				**$1,145,400**

Source: City of Ashland. srf

[1] Terms assumed:

	Plant	Tank
Interest	2.14%	3.57%
Years	30	25

Assumes projects completed by October 2017 and first debt payment is due Dec 1, 2018.

Table A-8
City of Ashland Water Rate Study
Estimated Depreciation of New Assets

Improvement	Life (years)	2015-16 Base	2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
Water Supply								
FERC Part 12 Dam Safety Inspection (50% Electric, 50% Water) [1]	20	$0	$2,390	$2,390	$2,390	$2,390	$2,390	$2,390
Ashland Creek West Fork Bridge Construction [1]	80	$0	$1,565	$1,565	$1,565	$1,565	$1,565	$1,565
Sediment TMDL in Reeder Resv. [1]	50	$0	$1,274	$1,274	$1,274	$2,624	$2,624	$2,624
Reeder Resv Access Road TMDL Compliance [1]	40	$2,815	$2,815	$2,815	$2,815	$2,815	$2,815	$2,815
East & West Fork Transmission Line Rehabilitation	60	$0	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Reeder Resv Variable Depth Intake	100	$0	$0	$0	$0	$1,267	$1,267	$1,267
TID Terrace St Pump Station Improvements	50	$5,100	$5,100	$5,100	$5,100	$5,100	$5,100	$5,100
TID Canal Piping [1], [2]	60	$47,000	$47,000	$47,000	$47,000	$47,000	$47,000	$47,000
Emergency TAP Pipeline & Pump	80	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500	$11,500
Subtotal Water Supply		**$66,415**	**$76,644**	**$76,644**	**$76,644**	**$79,261**	**$79,261**	**$79,261**
Water Treatment & Storage								
Permanganate Feed Facility Study & Implementation	40	$7,680	$7,680	$7,680	$7,680	$7,680	$7,680	$7,680
Raw Water Bypass Measurement	40	$0	$625	$625	$625	$625	$625	$625
2.6-MG Reservoir & Clearwell ("Crowson II") [1]	60	$14,413	$74,117	$135,610	$135,610	$135,610	$135,610	$135,610
2.5 MGD Water Treatment Plant [1]	80	$14,491	$96,583	$181,136	$181,136	$181,136	$181,136	$181,136
Subtotal Treatment & Storage		**$36,585**	**$179,004**	**$325,051**	**$325,051**	**$325,051**	**$325,051**	**$325,051**
Water Distribution								
Park Estates Pump Station/Loop Road Reservoir Alternatives	50	$12,360	$50,552	$50,552	$50,552	$50,552	$50,552	$50,552
Radio Read Meter Program	15	$0	$0	$0	$0	$0	$0	$0
Hydrant Replacement Program	50	$0	$0	$0	$1,114	$2,262	$3,446	$3,446
Granite Reservoir Valving	50	$0	$0	$2,460	$2,460	$2,460	$2,460	$2,460
Subtotal Water Distribution		**$12,360**	**$50,552**	**$53,012**	**$54,126**	**$55,274**	**$56,458**	**$56,458**
Water Mains	**60**	**$6,220**	**$16,958**	**$34,688**	**$38,467**	**$44,225**	**$51,058**	**$56,642**
Total		**$121,580**	**$323,159**	**$489,396**	**$494,288**	**$503,811**	**$511,829**	**$517,412**

Source: HEC. *new depr*

[1] Portion (or all) of improvement project to be funded by future customers. Replacement costs paid for by existing customers.

[2] New canal improvements paid by new customers. Replacement costs paid by existing customers.

Table A-9
City of Ashland Water Rate Study
Average Annual Change in Operating Costs Compared with Indices

Expenses and Indices	Fiscal Year Ending 2010	2011	2012	2013	2014	2015	Change	% Change
Water Fund Operating Expenses [1]								
Personnel	$1,454,017	$1,566,691	$1,478,094	$1,594,018	$1,689,757	$1,830,555	$376,538	4.7%
Supplies	$178,069	$163,649	$153,291	$164,988	$198,225	$207,113	$29,044	3.1%
Repair & Maintenance	$290,532	$289,177	$317,079	$323,933	$326,070	$340,958	$50,426	3.3%
Communications	$14,630	$10,938	$10,675	$14,896	$15,801	$23,521	$8,891	10.0%
Contractual Services	$25,020	$21,873	$51,999	$63,664	$82,921	$95,860	$70,839	30.8%
Central Service	$716,497	$716,497	$748,700	$810,700	$828,910	$845,380	$128,883	3.4%
Miscellaneous Charges	$525,259	$532,316	$451,585	$437,887	$484,583	$483,392	($41,867)	-1.6%
Other Purchased Services	$96,604	$91,357	$92,581	$97,546	$172,208	$143,619	$47,015	8.3%
Franchise Tax	$419,978	$342,525	$294,695	$356,283	$357,799	$372,200	($47,778)	-2.4%
Conservation Programs	$16,982	$20,999	$23,539	$21,191	$17,884	$68,805	$51,823	32.3%
Total	**$3,737,590**	**$3,756,021**	**$3,622,240**	**$3,885,105**	**$4,174,159**	**$4,411,404**	**$673,814**	**3.4%**
Engineering News Record	*June 2010*	*June 2011*	*June 2012*	*June 2013*	*June 2014*	*June 2015*		
ENR Construction Cost Index 20-City [2]	8,805.00	9,053.00	9,291.00	9,542.00	9,800.00	10,039.00	1,234.00	2.7%
Bureau of Labor Statistics								
Consumer Price Index - Size D (Cities<50,000)	211.09	218.86	223.83	228.61	233.39	234.06	22.96	2.1%
Consumer Price Index - US City Average	217.29	224.99	228.83	232.86	237.69	237.79	20.50	1.8%
Consumer Price Index - Portland-Salem, OR	217.51	223.11	228.75	233.74	239.75	242.98	25.47	2.2%

Source: City of Ashland, Engineering News Record, Bureau of Labor Statistics. *cpi*

[1] Excludes Forest Interface which is no longer part of the Water Fund.

[2] Average annual increase for the past 20 years (June 1995-2015) is 3.12%.

Table A-10
City of Ashland Water Rate Study
Cost of TID Non-Potable Water Deliveries

TID Total Annual Cost		Estimated Cost	
Costs			
Contracted Water		$0	
City Maintenance Costs [1]		$30,070	
Canal Depreciation		$0	
TID Staffing and Materials Costs [2]		$22,800	
Total Annual Cost		**$52,870**	
		Typical Delivery [3]	
		Cubic Feet	**Acre Feet**
Total Use	**a**	**24,463,405**	**562**
SOU Use [4]	b	7,101,690	163
Lithia Park Use [4]	c	1,020,495	23
Remaining TID Irrigators	**d = a-b-c**	**16,341,220**	**375**

Source: City of Ashland and HEC. tid calc

[1] See Table A-11. Costs shown are 73% of the total costs in 2013 - see Table A-12.

[2] Estimated finance and public works departments time and materials costs to manage T.I.D. agreements, billing and customer service.

[3] Under the 1924, 1926, and 1935 contract the City can take up to 769 acre feet in a typical year for any purpose. The City also has an agreement with TID for an additional 600 acre feet for municipal purposes. On average, City TID customers use 73% of the 769 acre feet contract and the City municipal customers use the 600 acre feet contract. See Table A-12.

[4] Uses water consumption from the last non-drought year (2012).

Table A-11
City of Ashland Water Rate Study
TID Canal Maintenance Costs

Cost	2013	2014
Man Hours	1205	1411
Labor Cost	$33,076	$30,753
Equipment Cost	$8,098	$33,671
Total Cost	**$41,174**	**$64,425**

Source: City of Ashland. tid maint

Table A-12
City of Ashland Water Rate Study
Actual TID Non-Potable Water Deliveries (Past 10 Years)

Year	Total Acre-Feet	Municipal Use	Spill to Creek	Irrigation Use	1924, 1926 & 1935 Contract	Irrigation Use as % of Contract
	[1]	[2]			[3]	
			All Figures in Acre Feet			
2004	751.71	0.00	123.75	627.96	769.00	82%
2005	478.57	0.00	123.75	354.82	769.00	46%
2006	659.93	0.00	123.75	536.18	769.00	70%
2007	560.14	0.00	123.75	436.39	769.00	57%
2008	726.56	0.00	123.75	602.81	769.00	78%
2009	742.90	224.24	123.75	394.91	769.00	51%
2010	818.73	0.00	123.75	694.98	769.00	90%
2011	755.37	0.00	123.75	631.62	769.00	82%
2012	731.81	0.00	123.75	608.06	769.00	79%
2013	981.49	205.15	123.75	652.59	654.00	100%
2014	1,173.94	565.44	123.75	484.75	654.00	74%
Average Excluding Drought Years [4]				**561.60**	**769.00**	**73%**

Source: Talent Irrigation District. tid deliv

[1] TID measurements.
[2] City measurements.
[3] In 2013 and 2014 TID curtailed the amount allowed to 654 acre feet.
[4] Excludes drought years 2009, 2013, and 2014.

Table A-13
City of Ashland Water Rate Study
Meter Replacement Fee Calculation

Item	Assumption / Total	Meter Size 3/4"	1"	1-1/2"	2"	3"	4"	6"	8"
New Meter with Transponder [1]		$220	$330	$520	$700	$1,500	$3,260	$4,520	$5,450
Installation Costs [2]	20%	$44	$66	$104	$140	$300	$652	$904	$1,090
Administration Costs	5%	$11	$17	$26	$35	$75	$163	$226	$273
Total Cost per Meter	**$312**	**$275**	**$413**	**$650**	**$875**	**$1,875**	**$4,075**	**$5,650**	**$6,813**
Replacement Interval (years)		20	20	20	20	20	20	20	20
Cost per Meter per Year		$14	$21	$33	$44	$94	$204	$283	$341
Monthly Cost per Meter		**$1.15**	**$1.72**	**$2.71**	**$3.65**	**$7.81**	**$16.98**	**$23.54**	**$28.39**
Cost per Billing Meter [3]		**$1.17**	**$1.75**	**$2.75**	**$3.71**	**$7.94**	**$17.26**	**$23.94**	**$28.86**

Source: City of Ashland and HEC. *meter prog*

[1] Prices quoted from City vendor, November 2014.

[2] Actual installation costs vary by meter size as a percentage of meter cost.

[3] Accounts for 2% of meters not billable at any one time.

Table A-14
City of Ashland Water Rate Study
Calculation of Functional Allocation Revenue Requirement

Operating Expenditures	BUDGET 2015-16	Allocation Basis	Customer	Meters & Services	Capacity	Commodity	Unclassified
	with addition of	[1]					
SUPPLY	*TAP water*						
Salaries & Wages	$0	Avg. of Classified	0%	0%	0%	0%	100%
Benefits	$0	Avg. of Classified	0%	0%	0%	0%	100%
Infrastructure	$0	Plant In Service	9%	2%	74%	15%	0%
Professional Services	$229,600	Avg. of Classified	0%	0%	0%	0%	100%
Miscellaneous	$151,050	Avg. of Classified	0%	0%	0%	0%	100%
Other	$149,900	Avg. of Classified	0%	0%	0%	0%	100%
Capital Outlay	$1,209,150	Plant In Service	9%	2%	74%	15%	0%
Debt Service	$9,568	Peaking Month Use	0%	0%	55%	45%	0%
TAP Water	$44,000	Utilities	0%	0%	0%	100%	0%
TOTAL SUPPLY	**$1,793,268**						
DISTRIBUTION							
Salaries & Wages	$635,000	Avg. of Classified	0%	0%	0%	0%	100%
Benefits	$394,750	Avg. of Classified	0%	0%	0%	0%	100%
Office	$2,650	Customers	100%	0%	0%	0%	0%
Small Tools	$4,000	Peaking Month Use	0%	55%	0%	45%	0%
Uniforms - Clothing	$1,500	Plant In Service	9%	2%	74%	15%	0%
Uniforms - Other	$3,000	Plant In Service	9%	2%	74%	15%	0%
Technical	$15,000	Peaking Month Use	0%	55%	0%	45%	0%
Chemicals	$5,500	Peaking Month Use	0%	55%	0%	45%	0%
County Services	$4,950	Customers	100%	0%	0%	0%	0%
Other	$15,000	Avg. of Classified	0%	0%	0%	0%	100%
Books & Periodicals	$200	Customers	100%	0%	0%	0%	0%
Fleet Maintenance	$66,340	Peaking Month Use	0%	55%	0%	45%	0%
Fuel	$28,000	Peaking Month Use	0%	55%	0%	45%	0%
Replacement	$61,560	Peaking Month Use	0%	55%	0%	45%	0%
Electricity	$60,000	Utilities	0%	0%	0%	100%	0%
Water	$0	Utilities	0%	0%	0%	100%	0%
Wastewater & Other	$300	Utilities	0%	0%	0%	100%	0%
Custodial	$0	Avg. of Classified	0%	0%	0%	0%	100%
Disposal	$500	Plant In Service	9%	2%	74%	15%	0%
Infrastructure	$115,000	Plant In Service	9%	2%	74%	15%	0%
Local	$1,200	Customers	100%	0%	0%	0%	0%
Long Distance	$20	Customers	100%	0%	0%	0%	0%
Cellular	$3,700	Customers	100%	0%	0%	0%	0%
Computers	$2,500	Customers	100%	0%	0%	0%	0%
Postage	$2,000	Customers	100%	0%	0%	0%	0%
Radios	$1,000	Customers	100%	0%	0%	0%	0%
Professional Services	$60,000	Avg. of Classified	0%	0%	0%	0%	100%
Physician/Health	$0	Avg. of Classified	0%	0%	0%	0%	100%
Other	$50,000	Avg. of Classified	0%	0%	0%	0%	100%
Central Service	$692,510	Customers	100%	0%	0%	0%	0%
Insurance Service	$35,600	Customers	100%	0%	0%	0%	0%
Technology Debt	$50,000	Peaking Month Use	0%	55%	0%	45%	0%
Use of Facilities	$80,000	Peaking Month Use	0%	55%	0%	45%	0%
Bad Debt Expense	$12,000	Plant In Service	9%	2%	74%	15%	0%
Other	$0	Customers	100%	0%	0%	0%	0%
Licensing	$37,700	Plant In Service	9%	2%	74%	15%	0%
Air	$3,000	Customers	100%	0%	0%	0%	0%
Personal Vehicle Mileage	$350	Avg. of Classified	0%	0%	0%	0%	100%
Lodging	$2,000	Avg. of Classified	0%	0%	0%	0%	100%
Meals	$350	Avg. of Classified	0%	0%	0%	0%	100%
Training	$4,000	Avg. of Classified	0%	0%	0%	0%	100%
Dues	$0	Avg. of Classified	0%	0%	0%	0%	100%
Medical & Laboratory	$15,000	Avg. of Classified	0%	0%	0%	0%	100%
Franchise Tax	$402,653	Utilities	0%	0%	0%	100%	0%
Capital Outlay	$1,105,200	Plant In Service	9%	2%	74%	15%	0%
Debt Service	$250,649	Peaking Month Use	0%	0%	55%	45%	0%
TOTAL DISTRIBUTION	**$4,224,682**						
TREATMENT PLANT							
Salaries & Wages	$340,050	Avg. of Classified	0%	0%	0%	0%	100%
Benefits	$197,320	Avg. of Classified	0%	0%	0%	0%	100%
Office	$2,000	Customers	100%	0%	0%	0%	0%
Small Tools	$800	Peaking Month Use	0%	55%	0%	45%	0%
Uniforms - Clothing	$2,500	Plant In Service	9%	2%	74%	15%	0%
Uniforms - Other	$500	Plant In Service	9%	2%	74%	15%	0%
Technical	$22,000	Peaking Month Use	0%	55%	0%	45%	0%
Chemicals	$220,000	Utilities	0%	0%	0%	100%	0%

Table A-14
City of Ashland Water Rate Study
Calculation of Functional Allocation Revenue Requirement

Operating Expenditures	BUDGET 2015-16	Allocation Basis	Customer	Meters & Services	Capacity	Commodity	Unclassified
	with addition of	[1]					
Emergency Work	$0	Peaking Month Use	0%	55%	0%	45%	0%
Books & Periodicals	$150	Customers	100%	0%	0%	0%	0%
Fleet Maintenance	$9,397	Peaking Month Use	0%	55%	0%	45%	0%
Fuel	$6,500	Peaking Month Use	0%	55%	0%	45%	0%
Replacement	$1,080	Peaking Month Use	0%	55%	0%	45%	0%
Maintenance	$0	Peaking Month Use	0%	55%	0%	45%	0%
Electricity	$38,000	Utilities	0%	0%	0%	100%	0%
Custodial	$1,000	Avg. of Classified	0%	0%	0%	0%	100%
Grounds Care	$1,500	Avg. of Classified	0%	0%	0%	0%	100%
Infrastructure	$15,000	Plant In Service	9%	2%	74%	15%	0%
Local	$5,600	Customers	100%	0%	0%	0%	0%
Long Distance	$10	Customers	100%	0%	0%	0%	0%
Cellular	$500	Customers	100%	0%	0%	0%	0%
Computers	$2,500	Customers	100%	0%	0%	0%	0%
Postage	$3,000	Customers	100%	0%	0%	0%	0%
Radios	$100	Customers	100%	0%	0%	0%	0%
Professional Services	$12,000	Avg. of Classified	0%	0%	0%	0%	100%
Other	$0	Avg. of Classified	0%	0%	0%	0%	100%
Central Service	$169,260	Customers	100%	0%	0%	0%	0%
Insurance Service	$4,080	Customers	100%	0%	0%	0%	0%
Technology Debt	$28,200	Peaking Month Use	0%	55%	0%	45%	0%
Use of Facilities	$100,000	Peaking Month Use	0%	55%	0%	45%	0%
Other	$0	Customers	100%	0%	0%	0%	0%
Licensing	$4,700	Utilities	0%	0%	0%	100%	0%
Personal Vehicle Mileage	$200	Avg. of Classified	0%	0%	0%	0%	100%
Lodging	$2,000	Avg. of Classified	0%	0%	0%	0%	100%
Meals	$600	Avg. of Classified	0%	0%	0%	0%	100%
Training	$2,000	Avg. of Classified	0%	0%	0%	0%	100%
Dues	$270	Avg. of Classified	0%	0%	0%	0%	100%
Medical & Laboratory	$19,400	Avg. of Classified	0%	0%	0%	0%	100%
Capital Outlay	$2,226,690	Plant In Service	9%	2%	74%	15%	0%
Debt Service	$436,211	Peaking Month Use	0%	0%	55%	45%	0%
TOTAL TREATMENT PLANT	**$3,875,118**						
CONSERVATION							
Salaries & Wages	$105,240	Avg. of Classified	0%	0%	0%	0%	100%
Benefits	$64,950	Avg. of Classified	0%	0%	0%	0%	100%
Office	$4,550	Customers	100%	0%	0%	0%	0%
Small Tools	$200	Peaking Month Use	0%	55%	0%	45%	0%
Uniforms - Clothing	$200	Plant In Service	9%	2%	74%	15%	0%
Uniforms - Other	$125	Plant In Service	9%	2%	74%	15%	0%
Technical	$800	Peaking Month Use	0%	55%	0%	45%	0%
Meetings	$100	Customers	100%	0%	0%	0%	0%
Books & Periodicals	$100	Customers	100%	0%	0%	0%	0%
Fleet Maintenance	$270	Peaking Month Use	0%	55%	0%	45%	0%
Fuel	$150	Peaking Month Use	0%	55%	0%	45%	0%
Replacement	$5,790	Peaking Month Use	0%	55%	0%	45%	0%
Rental Charges	$125	Peaking Month Use	0%	55%	0%	45%	0%
Local	$100	Customers	100%	0%	0%	0%	0%
Long Distance	$50	Customers	100%	0%	0%	0%	0%
Cellular	$0	Customers	100%	0%	0%	0%	0%
Computers	$0	Customers	100%	0%	0%	0%	0%
Postage	$100	Customers	100%	0%	0%	0%	0%
Professional Services	$2,000	Avg. of Classified	0%	0%	0%	0%	100%
Central Service	$25,880	Customers	100%	0%	0%	0%	0%
Insurance Service	$3,440	Customers	100%	0%	0%	0%	0%
Use of Facilities	$8,250	Peaking Month Use	0%	55%	0%	45%	0%
Advertising	$1,600	Customers	100%	0%	0%	0%	0%
Printing & Binding	$200	Customers	100%	0%	0%	0%	0%
Air	$1,500	Customers	100%	0%	0%	0%	0%
Personal Vehicle Mileage	$500	Avg. of Classified	0%	0%	0%	0%	100%
Lodging	$2,000	Avg. of Classified	0%	0%	0%	0%	100%
Meals	$750	Avg. of Classified	0%	0%	0%	0%	100%
Training	$1,000	Avg. of Classified	0%	0%	0%	0%	100%
Dues	$700	Avg. of Classified	0%	0%	0%	0%	100%
Conservation Programs	$114,500	Utilities	0%	0%	0%	100%	0%
TOTAL CONSERVATION	**$345,170**						
TOTAL OPERATING EXPENDITURES	**$10,238,238**		**$1,382,804**	**$391,007**	**$3,901,763**	**$2,102,184**	**$2,460,480**
Unclassified Expenditures Reallocation			$437,448	$123,694	$1,234,316	$665,022	
Total with Reallocation	**$10,238,238**		**$1,820,252**	**$514,702**	**$5,136,079**	**$2,767,206**	
Revenue Requirement Allocation Percentages			**18%**	**5%**	**50%**	**27%**	

Source: HEC. *func*

[1] For allocation of plant in service see Table A-14. For allocation of peaking month use see Table 4.

Table A-15
City of Ashland Water Rate Study
Allocation of Plant in Service

	Percent Allocation					Cost Allocation				
Facility	**Customer**	**Meters & Services**	**Capacity**	**Commodity**	**Total**	**Customer**	**Meters & Services**	**Capacity**	**Commodity**	**Cost Basis**
Water Rights	100%				100%	$930,299	$0	$0	$0	$930,299
Buildings			50%	50%	100%	$0	$0	$12,400	$12,400	$24,800
Equipment										
Clorinator Unit				100%	100%	$0	$0	$0	$15,380	$15,380
Residual Analyzer				100%	100%	$0	$0	$0	$5,913	$5,913
Treatment Plant			100%		100%	$0	$0	$51,935	$0	$51,935
Distribution			80%	20%	100%	$0	$0	$15,186	$3,797	$18,983
Services & Meters		100%			100%	$0	$35,893	$0	$0	$35,893
Vehicles & Trailers	50%			50%	100%	$25,445	$0	$0	$25,445	$50,890
Miscellaneous Equipment		25%		75%	100%	$0	$22,362	$0	$67,085	$89,446
Subtotal Equipment						**$25,445**	**$58,254**	**$67,121**	**$117,619**	**$268,440**
Improvements										
Services & Meters		100%			100%	$0	$236,605	$0	$0	$236,605
Subdivision Water Lines	20%		80%		100%	$1,905,096	$0	$7,620,382	$0	$9,525,478
Water Mains			100%		100%	$0	$0	$10,885,740	$0	$10,885,740
Reservoir				100%	100%	$0	$0	$0	$2,238,247	$2,238,247
Pump Station				100%	100%	$0	$0	$0	$102,415	$102,415
Miscellaneous Distribution		25%		75%	100%	$0	$526,629	$0	$1,579,888	$2,106,518
Miscellaneous Other				100%	100%	$0	$0	$0	$759,813	$759,813
Water Treatment Plant			100%		100%	$0	$0	$5,987,687	$0	$5,987,687
Fire Hydrants			100%		100%	$0	$0	$40,433	$0	$40,433
Subtotal Improvements						**$1,905,096**	**$763,234**	**$24,534,242**	**$4,680,363**	**$31,882,935**
Total Plant in Service						**$2,860,840**	**$821,489**	**$24,613,763**	**$4,810,382**	**$33,106,474**
% of Plant in Service						9%	2%	74%	15%	100%

Source: City of Ashland and HEC.

plant

Table A-16
City of Ashland Water Rate Study
Number of Billing Meters

			Customer Category					
	% of		Residential		Commercial	Irrigation	Government	Fire
Meter Size	Total	TOTAL	SF	MF				
3/4"	90.1%	7,814	6,723	444	332	179	19	117
1"	5.9%	509	256	68	108	61	16	0
1.5"	1.9%	167	11	51	64	35	6	0
2"	1.7%	145	3	35	45	40	22	0
3"	0.2%	21	0	4	4	7	6	0
4"	0.2%	14	0	4	2	2	6	0
6"	0.0%	2	0	0	0	1	1	0
8"	0.0%	1	0	0	0	0	1	0
Total	**100.0%**	**8,673**	**6,993**	**606**	**555**	**325**	**77**	**117**
% of Total		**100%**	**81%**	**7%**	**6%**	**4%**	**1%**	**1%**

Source: City of Ashland. *meters*

Table A-17
City of Ashland Water Rate Study
Typical Water Consumption by Meter Size by Customer Type

Meter Size/	Consumption (2014 Data)												
Customer Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
						Figures in Cubic Feet							
3/4"													
Residential SF	486	460	428	448	550	795	1,073	1,178	1,136	955	678	483	**8,187**
Residential MF	839	826	813	896	1,057	1,572	1,715	1,733	1,548	1,260	943	851	**14,054**
Commercial	892	850	767	940	1,077	1,472	1,703	1,773	1,518	1,309	993	856	**14,148**
Institutional	300	318	352	400	480	791	1,326	1,086	896	1,143	711	378	**8,180**
Irrigation	297	347	163	533	1,467	2,913	3,503	3,581	3,010	2,099	914	238	**19,064**
1"													
Residential SF	478	469	474	774	877	1,479	1,948	1,779	1,553	1,318	638	506	**12,293**
Residential MF	1,242	1,326	1,073	1,223	1,316	1,923	2,171	2,004	1,754	1,534	1,208	1,033	**17,809**
Commercial	1,258	1,213	1,006	1,322	1,638	2,420	2,513	3,081	2,828	2,141	1,449	1,258	**22,127**
Institutional	1,010	805	591	856	961	1,176	1,029	983	1,017	1,118	977	634	**11,157**
Irrigation	234	704	970	718	2,547	3,314	4,647	5,037	3,775	3,014	858	500	**26,317**
1.5"													
Residential SF	636	594	522	848	1,142	1,699	2,308	2,314	2,265	1,525	1,145	1,156	**16,154**
Residential MF	2,697	3,479	2,856	3,052	3,511	4,579	4,859	5,116	4,968	4,307	3,773	3,142	**46,339**
Commercial	2,401	2,227	2,316	3,080	3,757	5,231	6,141	6,234	5,329	4,922	3,518	2,646	**47,804**
Institutional	1,976	1,818	2,222	1,338	7,820	2,048	1,665	847	797	692	2,650	870	**24,743**
Irrigation	414	322	308	1,922	4,713	8,614	12,982	13,984	11,558	8,031	1,719	840	**65,407**
2"													
Residential SF	963	260	680	550	613	1,210	1,703	2,533	3,210	2,450	1,687	630	**16,490**
Residential MF	10,187	10,694	9,899	11,196	12,200	20,561	22,593	20,322	19,732	15,615	12,704	12,281	**177,984**
Commercial	5,734	7,046	6,603	7,748	8,205	10,157	12,221	12,657	11,344	9,747	8,280	6,964	**106,707**
Institutional	6,145	10,434	9,260	8,995	19,053	15,680	16,262	14,952	9,444	10,082	10,929	8,452	**139,689**
Irrigation	640	377	506	8,343	11,538	20,023	22,624	23,745	19,845	15,143	7,106	2,996	**132,884**
3"													
Residential MF	14,005	15,605	13,263	11,863	15,288	23,425	21,040	19,945	21,543	22,723	21,983	19,908	**220,588**
Commercial	17,618	15,500	16,216	17,592	22,458	36,710	35,242	34,500	31,320	28,940	23,784	20,630	**300,510**
Institutional	3,518	8,547	7,499	7,241	8,906	12,434	10,264	9,852	9,912	8,154	6,711	5,177	**98,214**
Irrigation	6,910	1,200	1,400	2,735	41,146	36,502	62,480	85,750	49,291	62,530	7,330	580	**357,854**
4" and greater													
Residential MF	30,753	38,173	36,985	42,868	48,143	66,950	60,238	56,803	53,973	46,845	56,272	38,135	**576,134**
Commercial	13,250	10,500	9,750	19,000	38,000	35,250	57,750	53,000	55,500	41,500	30,250	23,250	**387,000**
Institutional	19,699	25,883	22,005	16,579	20,048	24,384	16,585	13,043	16,731	23,835	23,206	17,993	**239,989**
Irrigation	0	467	667	14,000	55,500	70,327	66,111	123,030	122,227	86,404	1,576	0	**540,309**

Source: City of Ashland and HEC.

use by size

Table A-18
City of Ashland Water Rate Study
Bill Tabulation for Rate Design - Residential - Winter

Potable Water Customer		Block Limit	Billing Units	Cumulative Bills through Block	Total Use of Bills Stopping in Block	Cumulative Use of Bills Stopping in Block	Total Use to This Block of Bills Passing Through Block	Cumulative Billed Usage	Percent Cumulative Billed Usage
Master Metered									
Zero Use			164	4,920	0	0	0	0	0%
Tier 1		300	2,072	4,756	407,866	407,866	805,200	1,213,066	65%
Tier 2		1,000	2,525	2,684	1,221,745	1,629,611	159,000	1,788,611	97%
Tier 3		2,500	152	159	200,941	1,830,552	17,500	1,848,052	100%
Tier 4	>	2,500	7	7	22,156	1,852,708	0	1,852,708	100%
Total			**4,920**		**1,852,708**				
Single Family									
Zero Use			1,660	56,630	0	0	0	0	0%
Tier 1		300	18,399	54,970	3,204,856	3,204,856	10,971,300	14,176,156	47%
Tier 2		1,000	30,748	36,571	16,592,584	19,797,440	5,823,000	25,620,440	86%
Tier 3		2,500	5,148	5,823	7,328,780	27,126,220	1,687,500	28,813,720	96%
Tier 4	>	2,500	675	675	2,740,988	29,867,208	0	29,867,208	100%
Total			**56,630**		**29,867,208**				

Source: City of Ashland and HEC. smaller bill tab

Table A-19
City of Ashland Water Rate Study
Bill Tabulation for Rate Design - Residential - Summer

Potable Water Customer		Block Limit	Billing Units	Cumulative Bills through Block	Total Use of Bills Stopping in Block	Cumulative Use of Bills Stopping in Block	Total Use to This Block of Bills Passing Through Block	Cumulative Billed Usage	Percent Cumulative Billed Usage
Master Metered									
Zero Use			65	2,460	0	0	0	0	0%
Tier 1		300	481	2,395	97,968	97,968	574,200	672,168	41%
Tier 2		1,000	1,454	1,914	832,998	930,966	460,000	1,390,966	85%
Tier 3		2,500	428	460	584,380	1,515,346	80,000	1,595,346	98%
Tier 4		3,600	23	32	67,452	1,582,798	32,400	1,615,198	99%
Tier 5	>	3,600	9	9	47,668	1,630,466	0	1,630,466	100%
Total			**2,460**		**1,630,466**				
Single Family									
Zero Use			543	28,315	0	0	0	0	0%
Tier 1		300	4,704	27,772	794,582	794,582	6,920,400	7,714,982	24%
Tier 2		1,000	11,461	23,068	6,951,500	7,746,082	11,607,000	19,353,082	61%
Tier 3		2,500	8,941	11,607	14,060,337	21,806,419	6,665,000	28,471,419	89%
Tier 4		3,600	1,684	2,666	4,966,874	26,773,293	3,535,200	30,308,493	95%
Tier 5	>	3,600	982	982	5,185,537	31,958,830	0	31,958,830	100%
Total			**28,315**		**31,958,830**				

Source: City of Ashland and HEC. res tab

Table A-20
City of Ashland Water Rate Study
Estimated Percent Water Billed by Residential by Tier

Potable Water					Cumulative Billed Usage					Percent Cumulative Billed Usage					Percent Use by Tier				
Customer Type	**Block 1**	**Block 2**	**Block 3**	**Block 4**	**Tier 1**	**Tier 2**	**Tier 3**	**Tier 4**	**Tier 5**	**Tier 1**	**Tier 2**	**Tier 3**	**Tier 4**	**Tier 5**	**Tier 1**	**Tier 2**	**Tier 3**	**Tier 4**	**Tier 5**
Winter		*per unit*					**Figure in Cubic Feet**												
Master Metered	300	1,000	2,500		1,213,066	1,788,611	1,848,052	1,852,708		65%	97%	100%	100%		65%	31%	3%	0%	
Single Unit	300	1,000	2,500		14,176,156	25,620,440	28,813,720	29,867,208		47%	86%	96%	100%		47%	38%	11%	4%	
Total					**15,389,222**	**27,409,051**	**30,661,772**	**31,719,916**		**49%**	**86%**	**97%**	**100%**		**49%**	**38%**	**10%**	**3%**	
Summer																			
Master Metered	300	1,000	2,500	3,600	672,168	1,390,966	1,595,346	1,615,198	1,630,466	41%	85%	98%	99%	100%	41%	44%	13%	1%	1%
Single Unit	300	1,000	2,500	3,600	7,714,982	19,353,082	28,471,419	30,308,493	31,958,830	24%	61%	89%	95%	100%	24%	36%	29%	6%	5%
Total					**8,387,150**	**20,744,048**	**30,066,765**	**31,923,691**	**33,589,296**	**25%**	**62%**	**90%**	**95%**	**100%**	**25%**	**37%**	**28%**	**6%**	**5%**
Annual																			
Master Metered					1,885,234	3,179,577	3,443,398	3,467,906	3,483,174	54%	91%	99%	100%	100%	54%	37%	8%	1%	0%
Single Unit					21,891,138	44,973,522	57,285,139	60,175,701	61,826,038	35%	73%	93%	97%	100%	35%	37%	20%	5%	3%
Total					**23,776,372**	**48,153,099**	**60,728,537**	**63,643,607**	**65,309,212**	**36%**	**74%**	**93%**	**97%**	**100%**	**36%**	**37%**	**19%**	**4%**	**3%**

Source: HEC.

percent block

Table A-21
City of Ashland Water Rate Study
Bill Tabulation for Rate Design - Non-Residential Current

Potable Water Customer		Block Limit	Billing Units	Cumulative Bills through Block	Total Use of Bills Stopping in Block	Cumulative Use of Bills Stopping in Block	Total Use to This Block of Bills Passing Through Block	Cumulative Billed Usage	Percent Cumulative Billed Usage
Irrigation		0	0	0	0	0	0	0	0%
Zero Use		0	1,700	4,080	0	0	0	0	0%
Tier 1		50,000	2,327	2,380	10,314,213	10,314,213	2,650,000	12,964,213	88%
Tier 2	>	50,000	53	53	4,422,250	14,736,463	0	14,736,463	100%
Total			**4,080**		**14,736,463**				
Commercial									
Zero Use		0	519	7,306	0	0	0	0	0%
Tier 1		50,000	6,774	6,787	16,932,837	16,932,837	650,000	17,582,837	99%
Tier 2	>	50,000	13	13	781,010	17,713,847	0	17,713,847	100%
Total			**7,306**		**17,713,847**				
Institutional									
Zero Use		0	121	1,032	0	0	0	0	0%
Tier 1		50,000	887	911	13,388	13,388	1,200,000	1,213,388	40%
Tier 2	>	50,000	24	24	3,012,632	3,026,020	0	3,026,020	100%
Total			**1,032**		**3,026,020**				

Source: City of Ashland and HEC.

nonres bill tab

Table A-22
City of Ashland Water Rate Study
Bill Tabulation for Rate Design - Commercial Proposed

Potable Water Customer		Block Limit	Billing Units	Cumulative Bills through Block	Total Use of Bills Stopping in Block	Cumulative Use of Bills Stopping in Block	Total Use to This Block of Bills Passing Through Block	Cumulative Billed Usage	Percent Cumulative Billed Usage
Commercial <2"									
Zero Use			460	6,586	0	0	0	0	0%
Tier 1		2,500	4,851	6,126	3,074,096	3,074,096	3,187,500	6,261,596	61%
Tier 2	>	2,500	1,275	1,275	7,209,273	10,283,369	0	10,283,369	100%
			6,586		**10,283,369**				
Commercial 2+"									
Zero Use			59	720	0	0	0	0	0%
Tier 1		15,000	472	661	1,989,468	1,989,468	2,835,000	4,824,468	65%
Tier 2	>	15,000	189	189	5,441,010	7,430,478	0	7,430,478	100%
			720		**7,430,478**				

Source: City of Ashland and HEC.

comm tab

Table A-23
City of Ashland Water Rate Study
Estimated Percent Water Billed by Non-Residential by Tier

Potable Water		Cumulative Billed Usage		Percent Cumulative Billed Usage		Percent Use by Tier	
Customer Type	Block 1	Tier 1	Tier 2	Tier 1	Tier 2	Tier 1	Tier 2
	per meter	Figure in Cubic Feet					
Commercial	50,000	17,582,837	17,713,847	99%	100%	99%	1%
Institutional	50,000	1,213,388	3,026,020	40%	100%	40%	60%
Irrigation	50,000	12,964,213	14,736,463	88%	100%	88%	12%

Source: HEC.

Table A-24
City of Ashland Water Rate Study
Estimated Percent Water Billed by Proposed Commercial by Tier

Potable Water		Cumulative Billed Usage		Percent Cumulative Billed Usage		Percent Use by Tier	
Customer Type	Block 1	Tier 1	Tier 2	Tier 1	Tier 2	Tier 1	Tier 2
	per meter	Figure in Cubic Feet					
Commercial <2"	2,500	6,261,596	10,283,369	61%	100%	61%	39%
Commercial 2+"	15,000	4,824,468	7,430,478	65%	100%	65%	35%

Source: HEC.

new com block

Table A-25
City of Ashland Water Rate Study
Historical Potable Water Use by Customer Category

Potable Water Customer	Calendar Year 2010	2011	2012	2013	2014	Average 2010-2014	% of Average Of Billable
Residential			Figures in Cubic Feet				
Single Family	63,405,528	63,352,392	68,180,377	70,350,997	62,048,584	65,467,576	52%
Multi-Family	19,189,790	19,088,252	20,975,821	20,914,108	20,299,186	20,093,431	16%
Subtotal Residential	**82,595,318**	**82,440,644**	**89,156,198**	**91,265,105**	**82,347,770**	**85,561,007**	**68%**
Non-Residential							
Commercial <2" meter	9,745,579	10,280,935	10,542,620	10,727,829	10,276,017	10,314,596	8%
Commercial 2"+ meter	7,574,577	7,605,973	7,760,214	7,643,038	7,446,478	7,606,056	6%
Institutional	5,833,489	6,101,302	6,386,428	6,687,351	6,197,355	6,241,185	5%
Subtotal Non-Residential	**23,153,645**	**23,988,210**	**24,689,262**	**25,058,218**	**23,919,850**	**24,161,837**	**19%**
Irrigation	13,024,294	13,867,288	17,633,025	17,566,099	14,792,917	15,376,725	12%
Total Billable	**118,773,257**	**120,296,142**	**131,478,485**	**133,889,422**	**121,060,537**	**125,099,569**	
Tracking (non-billable)	220,441	205,237	253,626	260,858	1,254,006	438,834	
Total Demand	**118,993,698**	**120,501,379**	**131,732,111**	**134,150,280**	**122,314,543**	**125,538,402**	

Source: City of Ashland. *use*

Table A-26
City of Ashland Water Rate Study
Assumptions for the Effect of Increasing Prices on Water Demand (Price Elasticity)

Customer Type	Estimated Elasticity		2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
% Change in Price to Meet Rev. Requirement			8.47%	4.49%	3.44%	3.46%	3.40%	3.49%
Assumption for Inflation [1]			2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
Price Increase Adjusted for Inflation			**6.22%**	**2.24%**	**1.19%**	**1.21%**	**1.15%**	**1.24%**
Residential	[2]	[3]						
Single Family	-0.10	0.40%	-0.6%	-0.2%	-0.1%	-0.1%	-0.1%	-0.1%
Multi-Family	-0.10	0.40%	-0.6%	-0.2%	-0.1%	-0.1%	-0.1%	-0.1%
Non-Residential								
Commercial <2" meter	-0.15	1.80%	-0.9%	-0.3%	-0.2%	-0.2%	-0.2%	-0.2%
Commercial 2"+ meter	-0.15	1.80%	-0.9%	-0.3%	-0.2%	-0.2%	-0.2%	-0.2%
Institutional	-0.10	1.00%	-0.6%	-0.2%	-0.1%	-0.1%	-0.1%	-0.1%
Irrigation	-0.25	-3.75%	-1.6%	-0.6%	-0.3%	-0.3%	-0.3%	-0.3%

Source: HEC.

elasticity

[1] All Urban Consumers Price Index 1st half 2005 to 1st half 2015 average annual increase - http://library.uoregon.edu/govdocs/cpi.html.
[2] Based on HEC review of price elasticity of water literature.
[3] Due to cost redistribution (per the cost of service study), in the first year the actual price change will be different for each customer type.
This effect is applied to each customer group in the base year. Percentage changes by customer group are approximately:

Residential	-4%
Commercial	-12%
Institutional	-10%
Irrigation	15%

Table A-27
City of Ashland Water Rate Study
Projected Changes in Potable Water Demand due to Price Changes

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
	Base	1	2	3	4	5	6
Projected Growth	*[1]*	*0.59%*	*0.59%*	*0.59%*	*0.59%*	*0.59%*	*0.59%*
Residential				**Figures in Cubic Feet**			
Single Family	62,296,778	62,665,170	62,833,177	63,131,640	63,465,838	63,801,133	64,140,335
Multi-Family	20,380,383	20,500,902	20,564,731	20,665,616	20,776,726	20,888,244	21,000,965
Subtotal Residential	**82,677,161**	**83,166,073**	**83,397,908**	**83,797,256**	**84,242,564**	**84,689,376**	**85,141,301**
Non-Residential							
Commercial <2" meter	10,460,985	10,522,846	10,539,114	10,584,870	10,638,599	10,692,449	10,747,054
Commercial 2"+ meter	7,580,515	7,625,342	7,637,130	7,670,287	7,709,222	7,748,244	7,787,813
Institutional	6,259,329	6,296,343	6,319,342	6,351,569	6,386,376	6,421,326	6,456,618
Irrigation	14,238,183	14,322,380	14,205,431	14,217,453	14,263,145	14,308,327	14,355,738
Subtotal Non-Residential	**38,539,011**	**38,766,912**	**38,701,017**	**38,824,180**	**38,997,342**	**39,170,345**	**39,347,223**
Total Billable Water	**121,216,172**	**121,932,984**	**122,098,926**	**122,621,436**	**123,239,906**	**123,859,721**	**124,488,524**
Change in Demand Due to Price [2]							
Residential							
Single Family		-201,373	-72,671	-38,901	-39,775	-37,862	-40,995
Multi-Family		-57,066	-20,603	-11,030	-11,279	-10,737	-11,627
Subtotal Residential		**-258,439**	**-93,274**	**-49,932**	**-51,054**	**-48,599**	**-52,623**
Non-Residential							
Commercial <2" meter		-45,689	-16,470	-8,813	-9,009	-8,573	-9,281
Commercial 2"+ meter		-33,108	-11,935	-6,386	-6,528	-6,213	-6,725
Institutional		-14,151	-5,112	-2,737	-2,799	-2,665	-2,886
Irrigation		-200,459	-71,559	-38,157	-38,933	-36,982	-39,964
Subtotal Non-Residential		**-293,407**	**-105,075**	**-56,093**	**-57,269**	**-54,434**	**-58,856**
Total Billable Water		**-551,846**	**-198,349**	**-106,025**	**-108,324**	**-103,033**	**-111,479**

Source: HEC. elas demand

[1] Base demand adjusted by cost of service cost reallocation per Table A-27.

[2] Change applied to summer months consumption only.

Table A-28
City of Ashland Water Rate Study
Comparison of Projected and Actual Production from 2012 Water Master Plan

Year	Population Estimates			Actual	Projected		Average Day Demands (MGD)				
	Certified	Comp. Plan	COS [1]	Billed	Master Plan	COS [1]		Water Master Plan Projections			
Growth		187 / year	0.59%				Actual	No Add'l Conserv.	5% Conserv.	10% Conserv.	15% Conserv.
				consumption numbers				*production numbers*			
2000	19,610	19,110				*Figures in Million Gallons per Day*					
2001	19,770	19,297									
2002	20,130	19,484									
2003	20,430	19,671									
2004	20,590	19,858									
2005	20,880	20,045					3.33				
2006	21,430	20,232					3.44				
2007	21,630	20,419					3.33				
2008	21,485	20,606					3.28				
2009	21,505	20,793			3.07		2.93	3.35			
2010	20,095	20,980		2.43			2.60		3.38	3.38	3.38
2011	20,255	21,167		2.47			2.58				
2012	20,325	21,354		2.69			2.65				
2013	20,295	21,541		2.74			2.90				
2014	20,340	21,728		2.48			2.62				
2015		21,915	20,393			2.48					
2016		22,102	20,446			2.48					
2017		22,289	20,500			2.49					
2018		22,476	20,554			2.50					
2019		22,663	20,607			2.51					
2020		22,850	20,661		3.29	2.52		3.59	3.50	3.41	3.32
2021		23,037	20,715			2.54					
2022		23,224	20,769			2.55					
Change 2000-2014	730	2,618									
Avg. Annual % Inc.	**0.26%**	**0.92%**	**0.59%**								

Source: Portland State University Population Research Center, City of Ashland Comprehensive Plan, 2012 Water Master Plan (Carollo), and HEC. mp comp

[1] Cost of Service Water Rate Study.

Table A-29
City of Ashland Water Rate Study
Allocation of Potable Water Customer Use Charges (Portion of Capacity and Commodity Costs)

Potable Water Customer Type		2015-16 Base	2016-17 1	2017-18 2	2018-19 3	2019-20 4	2020-21 5	2021-22 6
Capacity Cost Share								
Total Cost Share	*Table A-30*	$2,028,401	$2,190,846	$2,289,190	$2,368,002	$2,450,010	$2,533,280	$2,621,622
Residential	69%	$1,404,825	$1,517,330	$1,585,441	$1,640,025	$1,696,822	$1,754,493	$1,815,676
Commercial < 2"	7%	$136,059	$146,956	$153,552	$158,839	$164,340	$169,925	$175,851
Commercial 2" or larger	4%	$77,469	$83,673	$87,429	$90,439	$93,571	$96,752	$100,126
Institutional	4%	$82,774	$89,403	$93,416	$96,632	$99,979	$103,377	$106,982
Irrigation	16%	$327,274	$353,483	$369,351	$382,067	$395,298	$408,733	$422,987
Total Capacity Costs	**100%**	**$2,028,401**	**$2,190,846**	**$2,289,190**	**$2,368,002**	**$2,450,010**	**$2,533,280**	**$2,621,622**
Commodity Cost Share								
Total Cost Share	*Table A-25*	$1,766,672	$1,908,156	$1,993,810	$2,062,453	$2,133,880	$2,206,405	$2,283,348
Residential	68%	$1,208,303	$1,305,070	$1,363,653	$1,410,601	$1,459,453	$1,509,056	$1,561,680
Commercial < 2"	8%	$145,664	$157,330	$164,392	$170,052	$175,941	$181,920	$188,265
Commercial 2" or larger	6%	$107,414	$116,016	$121,224	$125,397	$129,740	$134,149	$138,828
Institutional	5%	$88,139	$95,197	$99,471	$102,895	$106,459	$110,077	$113,916
Irrigation	12%	$217,152	$234,543	$245,071	$253,508	$262,288	$271,202	$280,660
Total Commodity Costs	**100%**	**$1,766,672**	**$1,908,156**	**$1,993,810**	**$2,062,453**	**$2,133,880**	**$2,206,405**	**$2,283,348**
Total Costs to be Recovered through Use Charges								
Residential	69%	$2,613,129	$2,822,401	$2,949,094	$3,050,626	$3,156,275	$3,263,548	$3,377,356
Commercial < 2"	7%	$281,723	$304,285	$317,944	$328,890	$340,280	$351,846	$364,115
Commercial 2" or larger	5%	$184,883	$199,689	$208,653	$215,837	$223,311	$230,901	$238,953
Institutional	5%	$170,913	$184,600	$192,887	$199,528	$206,438	$213,454	$220,898
Irrigation	14%	$544,426	$588,026	$614,422	$635,575	$657,586	$679,936	$703,647
Total Use Charges	**100%**	**$3,795,073**	**$4,099,001**	**$4,283,000**	**$4,430,455**	**$4,583,890**	**$4,739,685**	**$4,904,969**

Source: City of Ashland and HEC.

commodity

Table A-30
City of Ashland Water Rate Study
Calculation of Share of Maximum Day Water Use by Customer Category

Customer Type	Average Month Use (AM)	Non-Coincident Maximum Month Use (MM)	MM/AM Ratio	MD Peak Ratio	Max Daily Use	% of Avg. Month	% of Peak Month	% of Max. Day
	a	*b*	*c = b/a*	*d (below)*	*e = d*(b/31)*	*f = a/total a*	*g = b/total b*	*h = e/total e*
Residential	cu. ft.	cu. ft.			cu. ft.			
Master Metered	1,233,889	1,807,603	**1.46**	2.22	129,200	12%	10%	**10%**
Single Unit	5,399,033	9,066,113	**1.68**	2.54	742,780	51%	53%	**59%**
Non-Residential								
Commercial < 2"	842,679	1,311,138	**1.56**	2.00	84,453	8%	8%	**7%**
Commercial 2" or larger	572,439	815,422	**1.42**	1.83	48,085	5%	5%	**4%**
Institutional	522,097	734,827	**1.41**	2.17	51,378	5%	4%	**4%**
Irrigation	2,093,565	3,461,986	**1.65**	1.82	203,140	20%	20%	**16%**
Total	**10,689,965**	**17,248,262**	**1.61**		**1,259,036**	**100%**	**100%**	**101%**

Calculation of MD Peak Factor	Master Metered	Single Unit	Comm'l. < 2"	Comm'l. 2" +	Institutional	Irrigation
MM/AD Factor	1.46	1.68	1.56	1.42	1.41	1.65
System MD/MM Production Ratio [1]	1.10	1.10	1.10	1.10	1.10	1.10
Weekly Usage Adjustment	1.38	1.38	1.17	1.17	1.40	1.00
Calculated MD Peak Factor	**2.22**	**2.54**	**2.00**	**1.83**	**2.17**	**1.82**

Source: City of Ashland, AWWA M1 Manual, and HEC. *peaks*

[1] Calculation:	2010	2011	2012	2013	2014	Average
Maximum Day (MG)	5.88	5.36	5.14	5.95	4.80	
Maximum Month (MG)	158.29	152.00	149.87	170.48	137.17	
Average MGD in the Max. Month (max. day / 31)	5.11	4.90	4.83	5.50	4.42	
Ratio of Max. Day to Avg. in Max. Month	1.15	1.09	1.06	1.08	1.08	1.10

Table A-31
City of Ashland Water Rate Study
Potable Water Irrigation Peak Cost Allocation Calculation

	Potable Water Only	
Month	**All Water**	**Irrigation**
	cubic feet	
January	5,698,647	25,023
February	5,903,155	19,250
March	5,395,848	34,123
April	6,737,313	352,456
May	9,004,008	1,158,194
June	13,874,124	2,148,917
July	16,364,166	2,862,767
August	16,915,748	3,451,333
September	14,895,165	2,740,545
October	12,225,379	2,146,283
November	7,481,362	458,953
December	7,819,658	43,004
Total	**122,314,573**	**15,440,848**
On Peak	**62,049,203**	**11,203,562**
Peak as % of Total	**51%**	**73%**

Source: City of Ashland. irr peak

Table A-32
City of Ashland Water Rate Study
Cost of Service Cost Allocation for the Base Year 2015-16

Customer Type	New Charges																						New TID Charges	Grand Total	Share of Total
	Customer			Service			Use													Total	Total				
	# Bills	$ per Bill	Total	Meter Equivs.	$ per Meter Equiv.	Total	Tier 1	$ per CF	Total	Tier 2	$ per CF	Total	Tier 3	$ per CF	Total	Tier 4	$ per CF	Total	Tier 5	$ per CF	Total	Use	Bills			
		[1]			[1]																				
POTABLE																									
Residential	7,605	$10.93	**$997,442**	8,269	$11.70	**$1,161,072**	29,979,403	$0.0230	**$688,207**	30,736,386	$0.0287	**$881,980**	15,856,251	$0.0387	**$614,243**	3,675,585	$0.0502	**$184,574**	2,100,145	$0.0646	**$135,593**	82,347,770	**$2,504,596**		$4,663,111	71%
Non-Residential																									
Commercial	586	$10.93	**$76,857**	1,234	$11.70	**$173,269**	11,091,976	$0.0287	**$318,284**	6,630,519	$0.0387	**$256,855**			**$0**			**$0**			**$0**	17,722,495	**$575,138**		$825,265	13%
Institutional	122	$10.93	**$16,001**	617	$11.70	**$86,635**	6,197,355	$0.0276	**$170,913**			**$0**			**$0**			**$0**			**$0**	6,197,355	**$170,913**		$273,548	4%
Fire Guards	117	$10.93	**$15,345**	117	$11.70	**$16,428**			**$0**			**$0**			**$0**			**$0**			**$0**	0	**$0**		$31,774	0%
Irrigation	550	$10.93	**$72,136**	947	$11.70	**$132,971**	4,050,831	$0.0292	**$118,338**	10,742,086	$0.0397	**$426,087**			**$0**			**$0**			**$0**	14,792,917	**$544,426**		$749,532	11%
Subtotal Potable	**8,980**		**$1,177,781**	**11,184**		**$1,570,375**	**51,319,565**	**$0**	**$1,295,742**	**48,108,991**		**$1,564,922**	**15,856,251**		**$614,243**	**3,675,585**		**$184,574**	**2,100,145**		**$135,593**	**121,060,537**	**$3,795,073**	**$0**	**$6,543,230**	**99%**
NON-POTABLE (TID)																									
Metered																							$17,554	$17,554	0%
Unmetered																							$35,316	$35,316	1%
Subtotal Non-Potable																							**$52,870**	**$52,870**	**1%**
Total FY 2015-16	**8,980**		**$1,177,781**	**11,184**		**$1,570,375**																		**$6,596,100**	**100%**

Source: HEC.

cos distr

[1] Does not apply to TID customers.

Table A-33
City of Ashland Water Rate Study
Bill Impact for Single Family Residential **Fiscal Year 2016-17** **Residential 3/4" Off-Peak**

Monthly Water Use (Cu. Ft.)	Current (2015)						New Structure							Monthly Bill Increase
	Service Charge	Tier 1	Tier 2	Tier 3	Tier 4	**Total Bill**	Customer Charge	Service Charge	Tier 1	Tier 2	Tier 3	Tier 4	**Total Bill**	
		$0.0243	$0.0299	$0.0400	$0.0517				$0.0246	$0.0307	$0.0415	$0.0537		
Block Threshold (Cu. Ft.)		*300*	*1,000*	*2,500*					*300*	*1,000*	*2,500*			
Zero	$23.50					**$23.50**	$11.74	$13.75					**$25.48**	**$1.98**
200	$23.50	$4.86				**$28.36**	$11.74	$13.75	$4.91				**$30.39**	**$2.03**
400	$23.50	$7.29	$2.99	*winter average*		**$33.78**	$11.74	$13.75	$7.37	$3.07			**$35.92**	**$2.14**
600	$23.50	$7.29	$8.97			**$39.76**	$11.74	$13.75	$7.37	$9.21			**$42.06**	**$2.30**
800	$23.50	$7.29	$14.95			**$45.74**	$11.74	$13.75	$7.37	$15.36			**$48.21**	**$2.47**
1,000	$23.50	$7.29	$20.93	*summer average*		**$51.72**	$11.74	$13.75	$7.37	$21.50			**$54.35**	**$2.63**
1,200	$23.50	$7.29	$20.93	$8.00		**$59.72**	$11.74	$13.75	$7.37	$21.50	$8.29		**$62.64**	**$2.92**
1,400	$23.50	$7.29	$20.93	$16.00		**$67.72**	$11.74	$13.75	$7.37	$21.50	$16.58		**$70.93**	**$3.21**
1,600	$23.50	$7.29	$20.93	$24.00		**$75.72**	$11.74	$13.75	$7.37	$21.50	$24.88		**$79.23**	**$3.51**
1,800	$23.50	$7.29	$20.93	$32.00		**$83.72**	$11.74	$13.75	$7.37	$21.50	$33.17		**$87.52**	**$3.80**
2,000	$23.50	$7.29	$20.93	$40.00		**$91.72**	$11.74	$13.75	$7.37	$21.50	$41.46		**$95.81**	**$4.09**
2,200	$23.50	$7.29	$20.93	$48.00		**$99.72**	$11.74	$13.75	$7.37	$21.50	$49.75		**$104.10**	**$4.38**
2,400	$23.50	$7.29	$20.93	$56.00		**$107.72**	$11.74	$13.75	$7.37	$21.50	$58.04		**$112.39**	**$4.67**
2,600	$23.50	$7.29	$20.93	$60.00	$5.17	**$116.89**	$11.74	$13.75	$7.37	$21.50	$62.19	$5.37	**$121.91**	**$5.02**
2,800	$23.50	$7.29	$20.93	$60.00	$15.51	**$127.23**	$11.74	$13.75	$7.37	$21.50	$62.19	$16.12	**$132.66**	**$5.43**
3,000	$23.50	$7.29	$20.93	$60.00	$25.85	**$137.57**	$11.74	$13.75	$7.37	$21.50	$62.19	$26.87	**$143.41**	**$5.84**

Source: HEC.

impact res

Table A-34
City of Ashland Water Rate Study
Bill Impact for 3/4" Commercial Customer **Fiscal Year 2016-17** **Commercial 3/4"**

Monthly	Current (2015)				New Structure					Monthly Bill
	Service Charge	Tier 1	Tier 2	**Total Bill**	Customer Charge	Service Charge	Tier 1	Tier 2	**Total Bill**	
		$0.0343	$0.0353				$0.0307	$0.0415		
Block Threshold (Cu. Ft.)		*50,000*					*2,500*			
Zero	$23.50			**$23.50**	$11.74	$13.75			**$25.48**	**$1.98**
200	$23.50	$6.86		**$30.36**	$11.74	$13.75	$6.14		**$31.62**	**$1.26**
400	$23.50	$13.72		**$37.22**	$11.74	$13.75	$12.28		**$37.77**	**$0.55**
600	$23.50	$20.58		**$44.08**	$11.74	$13.75	$18.43		**$43.91**	**($0.17)**
800	$23.50	$27.44		**$50.94**	$11.74	$13.75	$24.57		**$50.05**	**($0.89)**
1000	$23.50	$34.30	*winter avg.*	**$57.80**	$11.74	$13.75	$30.71		**$56.19**	**($1.61)**
1200	$23.50	$41.16		**$64.66**	$11.74	$13.75	$36.85		**$62.33**	**($2.33)**
1400	$23.50	$48.02		**$71.52**	$11.74	$13.75	$43.00		**$68.48**	**($3.04)**
1600	$23.50	$54.88		**$78.38**	$11.74	$13.75	$49.14		**$74.62**	**($3.76)**
1800	$23.50	$61.74		**$85.24**	$11.74	$13.75	$55.28		**$80.76**	**($4.48)**
2000	$23.50	$68.60		**$92.10**	$11.74	$13.75	$61.42		**$86.90**	**($5.20)**
2200	$23.50	$75.46	*summer avg.*	**$98.96**	$11.74	$13.75	$67.56		**$93.05**	**($5.91)**
2400	$23.50	$82.32		**$105.82**	$11.74	$13.75	$73.71		**$99.19**	**($6.63)**
2600	$23.50	$89.18		**$112.68**	$11.74	$13.75	$76.78	$4.15	**$106.40**	**($6.28)**
2800	$23.50	$96.04		**$119.54**	$11.74	$13.75	$76.78	$12.44	**$114.70**	**($4.84)**
3000	$23.50	$102.90		**$126.40**	$11.74	$13.75	$76.78	$20.73	**$122.99**	**($3.41)**

Source: HEC.

impact com3/4

Table A-35
City of Ashland Water Rate Study
Bill Impact for 1" Commercial Customer **Fiscal Year 2016-17** **Commercial 1"**

Monthly Water Use (Cu. Ft.)	Current (2015)				New Structure					Monthly Bill Increase (Decrease)
	Service Charge	Tier 1	Tier 2	Total Bill	Customer Charge	Service Charge	Tier 1	Tier 2	Total Bill	
		$0.0343	$0.0353				$0.0307	$0.0415		
Block Threshold (Cu. Ft.)		*50,000*					*2,500*			
Zero	$46.99			**$46.99**	$11.74	$14.34			**$26.07**	**($20.92)**
400	$46.99	$13.72		**$60.71**	$11.74	$14.34	$12.28		**$38.36**	**($22.35)**
800	$46.99	$27.44	*winter avg.*	**$74.43**	$11.74	$14.34	$24.57		**$50.64**	**($23.79)**
1200	$46.99	$41.16		**$88.15**	$11.74	$14.34	$36.85		**$62.92**	**($25.23)**
1600	$46.99	$54.88		**$101.87**	$11.74	$14.34	$49.14		**$75.21**	**($26.66)**
2000	$46.99	$68.60	*summer avg.*	**$115.59**	$11.74	$14.34	$61.42		**$87.49**	**($28.10)**
2400	$46.99	$82.32		**$129.31**	$11.74	$14.34	$73.71		**$99.78**	**($29.53)**
2800	$46.99	$96.04		**$143.03**	$11.74	$14.34	$76.78	$12.44	**$115.29**	**($27.74)**
3200	$46.99	$109.76		**$156.75**	$11.74	$14.34	$76.78	$29.02	**$131.87**	**($24.88)**
3600	$46.99	$123.48		**$170.47**	$11.74	$14.34	$76.78	$45.61	**$148.45**	**($22.02)**
4000	$46.99	$137.20		**$184.19**	$11.74	$14.34	$76.78	$62.19	**$165.04**	**($19.15)**
4400	$46.99	$150.92		**$197.91**	$11.74	$14.34	$76.78	$78.77	**$181.62**	**($16.29)**
4800	$46.99	$164.64		**$211.63**	$11.74	$14.34	$76.78	$95.36	**$198.21**	**($13.42)**
5200	$46.99	$178.36		**$225.35**	$11.74	$14.34	$76.78	$111.94	**$214.79**	**($10.56)**
5600	$46.99	$192.08		**$239.07**	$11.74	$14.34	$76.78	$128.53	**$231.37**	**($7.70)**
6000	$46.99	$205.80		**$252.79**	$11.74	$14.34	$76.78	$145.11	**$247.96**	**($4.83)**

Source: HEC. *impact com1*

Table A-36
City of Ashland Water Rate Study
Bill Impact for 2" Commercial Customer **Fiscal Year 2016-17** **Commercial 2"**

Monthly Water Use (Cu. Ft.)	Current (2015) Service Charge	Tier 1	Tier 2	Total Bill	New Structure Customer Charge	Service Charge	Tier 1	Tier 2	Total Bill	Monthly Bill Increase (Decrease)
		$0.0343	$0.0353				$0.0307	$0.0415		
Block Threshold (Cu. Ft.)		*50,000*					*15,000*			
Zero	$88.24			**$88.24**	$11.74	$104.27			**$116.01**	**$27.77**
1200	$88.24	$41.16		**$129.40**	$11.74	$104.27	$36.85		**$152.86**	**$23.46**
2400	$88.24	$82.32		**$170.56**	$11.74	$104.27	$73.71		**$189.71**	**$19.15**
3600	$88.24	$123.48		**$211.72**	$11.74	$104.27	$110.56		**$226.57**	**$14.85**
4800	$88.24	$164.64		**$252.88**	$11.74	$104.27	$147.41		**$263.42**	**$10.54**
6000	$88.24	$205.80		**$294.04**	$11.74	$104.27	$184.27		**$300.27**	**$6.23**
7200	$88.24	$246.96		**$335.20**	$11.74	$104.27	$221.12		**$337.12**	**$1.92**
8400	$88.24	$288.12	*winter avg.*	**$376.36**	$11.74	$104.27	$257.97		**$373.98**	**($2.38)**
9600	$88.24	$329.28		**$417.52**	$11.74	$104.27	$294.83		**$410.83**	**($6.69)**
10800	$88.24	$370.44		**$458.68**	$11.74	$104.27	$331.68		**$447.68**	**($11.00)**
12000	$88.24	$411.60		**$499.84**	$11.74	$104.27	$368.53		**$484.54**	**($15.30)**
13200	$88.24	$452.76		**$541.00**	$11.74	$104.27	$405.38		**$521.39**	**($19.61)**
14400	$88.24	$493.92	*summer avg.*	**$582.16**	$11.74	$104.27	$442.24		**$558.24**	**($23.92)**
15600	$88.24	$535.08		**$623.32**	$11.74	$104.27	$460.66	$24.88	**$601.55**	**($21.77)**
16800	$88.24	$576.24		**$664.48**	$11.74	$104.27	$460.66	$74.63	**$651.30**	**($13.18)**
18000	$88.24	$617.40		**$705.64**	$11.74	$104.27	$460.66	$124.38	**$701.05**	**($4.59)**

Source: HEC. *impact com2*

Table A-37
City of Ashland Water Rate Study
Bill Impact for 4" Commercial Customer **Fiscal Year 2016-17** **Commercial 4"**

Monthly Water Use (Cu. Ft.)	Current (2015) Service Charge	Tier 1	Tier 2	Total Bill	New Structure Customer Charge	Service Charge	Tier 1	Tier 2	Total Bill	Monthly Bill Increase (Decrease)
		$0.0343	$0.0353				$0.0307	$0.0415		
Block Threshold (Cu. Ft.)		*50,000*					*15,000*			
Zero	$282.07			**$282.07**	$11.74	$331.60			**$343.34**	**$61.27**
2000	$282.07	$68.60		**$350.67**	$11.74	$331.60	$61.42		**$404.76**	**$54.09**
4000	$282.07	$137.20		**$419.27**	$11.74	$331.60	$122.84		**$466.18**	**$46.91**
6000	$282.07	$205.80		**$487.87**	$11.74	$331.60	$184.27		**$527.61**	**$39.74**
8000	$282.07	$274.40	*winter avg.*	**$556.47**	$11.74	$331.60	$245.69		**$589.03**	**$32.56**
10000	$282.07	$343.00		**$625.07**	$11.74	$331.60	$307.11		**$650.45**	**$25.38**
12000	$282.07	$411.60		**$693.67**	$11.74	$331.60	$368.53		**$711.87**	**$18.20**
14000	$282.07	$480.20	*summer avg.*	**$762.27**	$11.74	$331.60	$429.95		**$773.29**	**$11.02**
16000	$282.07	$548.80		**$830.87**	$11.74	$331.60	$460.66	$41.46	**$845.46**	**$14.59**
18000	$282.07	$617.40		**$899.47**	$11.74	$331.60	$460.66	$124.38	**$928.38**	**$28.91**
20000	$282.07	$686.00		**$968.07**	$11.74	$331.60	$460.66	$207.30	**$1,011.30**	**$43.23**
22000	$282.07	$754.60		**$1,036.67**	$11.74	$331.60	$460.66	$290.22	**$1,094.22**	**$57.55**
24000	$282.07	$823.20		**$1,105.27**	$11.74	$331.60	$460.66	$373.14	**$1,177.14**	**$71.87**
26000	$282.07	$891.80		**$1,173.87**	$11.74	$331.60	$460.66	$456.06	**$1,260.06**	**$86.19**
28000	$282.07	$960.40		**$1,242.47**	$11.74	$331.60	$460.66	$538.98	**$1,342.98**	**$100.51**
30000	$282.07	$1,029.00		**$1,311.07**	$11.74	$331.60	$460.66	$621.90	**$1,425.90**	**$114.83**

Source: HEC. *impact com4*

Table A-38
City of Ashland Water Rate Study
Bill Impact for 2" Institutional Customer **Fiscal Year 2016-17** **Institutional 2"**

Monthly Water Use (Cu. Ft.)	Current (2015) Service Charge	Current (2015) Tier 1	Current (2015) Tier 2	Current (2015) Total Bill	New Structure Customer Charge	New Structure Service Charge	New Structure Tier 1	New Structure Total Bill	Monthly Bill Increase (Decrease)
		$0.0343	$0.0353				$0.0294		
Block Threshold (Cu. Ft.)		*50,000*					*n.a.*		
Zero	$88.24			**$88.24**	$11.74	$104.27		**$116.01**	**$27.77**
1500	$88.24	$51.45		**$139.69**	$11.74	$104.27	$44.08	**$160.08**	**$20.39**
3000	$88.24	$102.90		**$191.14**	$11.74	$104.27	$88.15	**$204.16**	**$13.02**
4500	$88.24	$154.35	*winter avg.*	**$242.59**	$11.74	$104.27	$132.23	**$248.24**	**$5.65**
6000	$88.24	$205.80	*summer avg.*	**$294.04**	$11.74	$104.27	$176.31	**$292.31**	**($1.73)**
7500	$88.24	$257.25		**$345.49**	$11.74	$104.27	$220.39	**$336.39**	**($9.10)**
9000	$88.24	$308.70		**$396.94**	$11.74	$104.27	$264.46	**$380.47**	**($16.47)**
10500	$88.24	$360.15		**$448.39**	$11.74	$104.27	$308.54	**$424.55**	**($23.84)**
12000	$88.24	$411.60		**$499.84**	$11.74	$104.27	$352.62	**$468.62**	**($31.22)**
13500	$88.24	$463.05		**$551.29**	$11.74	$104.27	$396.69	**$512.70**	**($38.59)**
15000	$88.24	$514.50		**$602.74**	$11.74	$104.27	$440.77	**$556.78**	**($45.96)**
16500	$88.24	$565.95		**$654.19**	$11.74	$104.27	$484.85	**$600.85**	**($53.34)**
18000	$88.24	$617.40		**$705.64**	$11.74	$104.27	$528.92	**$644.93**	**($60.71)**
19500	$88.24	$668.85		**$757.09**	$11.74	$104.27	$573.00	**$689.01**	**($68.08)**
21000	$88.24	$720.30		**$808.54**	$11.74	$104.27	$617.08	**$733.08**	**($75.46)**
22500	$88.24	$771.75		**$859.99**	$11.74	$104.27	$661.16	**$777.16**	**($82.83)**

Source: HEC. *impact inst2*

Table A-39
City of Ashland Water Rate Study
Bill Impact for 4" Institutional Customer **Fiscal Year 2016-17** **Institutional 4"**

Monthly Water Use (Cu. Ft.)	Current (2015) Service Charge	Tier 1	Tier 2	Total Bill	New Structure Customer Charge	Service Charge	Tier 1	Total Bill	Monthly Bill Increase (Decrease)
		$0.0343	$0.0353				$0.0294		
Block Threshold (Cu. Ft.)		*50,000*					*n.a.*		
Zero	$282.07			**$282.07**	$11.74	$331.60		**$343.34**	**$61.27**
2500	$282.07	$85.75		**$367.82**	$11.74	$331.60	$73.46	**$416.80**	**$48.98**
5000	$282.07	$171.50	*winter avg.*	**$453.57**	$11.74	$331.60	$146.92	**$490.26**	**$36.69**
7500	$282.07	$257.25	*summer avg.*	**$539.32**	$11.74	$331.60	$220.39	**$563.73**	**$24.41**
10000	$282.07	$343.00		**$625.07**	$11.74	$331.60	$293.85	**$637.19**	**$12.12**
12500	$282.07	$428.75		**$710.82**	$11.74	$331.60	$367.31	**$710.65**	**($0.17)**
15000	$282.07	$514.50		**$796.57**	$11.74	$331.60	$440.77	**$784.11**	**($12.46)**
17500	$282.07	$600.25		**$882.32**	$11.74	$331.60	$514.23	**$857.57**	**($24.75)**
20000	$282.07	$686.00		**$968.07**	$11.74	$331.60	$587.69	**$931.03**	**($37.04)**
22500	$282.07	$771.75		**$1,053.82**	$11.74	$331.60	$661.16	**$1,004.50**	**($49.32)**
25000	$282.07	$857.50		**$1,139.57**	$11.74	$331.60	$734.62	**$1,077.96**	**($61.61)**
27500	$282.07	$943.25		**$1,225.32**	$11.74	$331.60	$808.08	**$1,151.42**	**($73.90)**
30000	$282.07	$1,029.00		**$1,311.07**	$11.74	$331.60	$881.54	**$1,224.88**	**($86.19)**
32500	$282.07	$1,114.75		**$1,396.82**	$11.74	$331.60	$955.00	**$1,298.34**	**($98.48)**
35000	$282.07	$1,200.50		**$1,482.57**	$11.74	$331.60	$1,028.46	**$1,371.80**	**($110.77)**
37500	$282.07	$1,286.25		**$1,568.32**	$11.74	$331.60	$1,101.93	**$1,445.27**	**($123.05)**

Source: HEC. *impact inst4*

Table A-40
City of Ashland Water Rate Study
Bill Impact for Potable Water Irrigation Customer On Peak **Fiscal Year 2016-17** **Irrigation On-Peak 3/4"**

Monthly Water Use (Cu. Ft.)	Current (2015) Service Charge	Current (2015) Tier 1	Current (2015) Tier 2	Current (2015) Total Bill	New Structure Customer Charge	New Structure Service Charge	New Structure Tier 1	New Structure Total Bill	Monthly Bill Increase (Decrease)
		$0.0343	$0.0353				$0.0449		
Block Threshold (Cu. Ft.)		*50,000*					*n.a.*		
Zero	$23.50			**$23.50**	$11.74	$13.75		**$25.48**	**$1.98**
800	$23.50	$27.44		**$50.94**	$11.74	$13.75	$35.90	**$61.38**	**$10.44**
1600	$23.50	$54.88		**$78.38**	$11.74	$13.75	$71.80	**$97.28**	**$18.90**
2400	$23.50	$82.32		**$105.82**	$11.74	$13.75	$107.71	**$133.19**	**$27.37**
3200	$23.50	$109.76		**$133.26**	$11.74	$13.75	$143.61	**$169.09**	**$35.83**
4000	$23.50	$137.20		**$160.70**	$11.74	$13.75	$179.51	**$204.99**	**$44.29**
4800	$23.50	$164.64		**$188.14**	$11.74	$13.75	$215.41	**$240.89**	**$52.75**
5600	$23.50	$192.08		**$215.58**	$11.74	$13.75	$251.31	**$276.79**	**$61.21**
6400	$23.50	$219.52		**$243.02**	$11.74	$13.75	$287.22	**$312.70**	**$69.68**
7200	$23.50	$246.96		**$270.46**	$11.74	$13.75	$323.12	**$348.60**	**$78.14**
8000	$23.50	$274.40		**$297.90**	$11.74	$13.75	$359.02	**$384.50**	**$86.60**
8800	$23.50	$301.84	*summer avg.*	**$325.34**	$11.74	$13.75	$394.92	**$420.40**	**$95.06**
9600	$23.50	$329.28		**$352.78**	$11.74	$13.75	$430.82	**$456.30**	**$103.52**
10400	$23.50	$356.72		**$380.22**	$11.74	$13.75	$466.73	**$492.21**	**$111.99**
11200	$23.50	$384.16		**$407.66**	$11.74	$13.75	$502.63	**$528.11**	**$120.45**
12000	$23.50	$411.60		**$435.10**	$11.74	$13.75	$538.53	**$564.01**	**$128.91**

Source: HEC.

impact irr on

Table A-41
City of Ashland Water Rate Study
Bill Impact for Potable Water Irrigation Customer Off Peak **Fiscal Year 2016-17** **Irrigation Off Peak 3/4"**

Monthly Water Use (Cu. Ft.)	Current (2015) Service Charge	Tier 1	Tier 2	Total Bill	New Structure Customer Charge	Service Charge	Tier 1	Total Bill	Monthly Bill Increase (Decrease)
		$0.0343	$0.0353				$0.0331		
Block Threshold (Cu. Ft.)		*50,000*					*n.a.*		
Zero	$0.00			**$0.00**	$11.74	$13.75		**$25.48**	**$25.48**
200	$23.50	$6.86		**$30.36**	$11.74	$13.75	$6.61	**$32.09**	**$1.73**
400	$23.50	$13.72		**$37.22**	$11.74	$13.75	$13.22	**$38.70**	**$1.48**
600	$23.50	$20.58	*winter avg.*	**$44.08**	$11.74	$13.75	$19.83	**$45.31**	**$1.23**
800	$23.50	$27.44		**$50.94**	$11.74	$13.75	$26.44	**$51.92**	**$0.98**
1000	$23.50	$34.30		**$57.80**	$11.74	$13.75	$33.05	**$58.53**	**$0.73**
1200	$23.50	$41.16		**$64.66**	$11.74	$13.75	$39.66	**$65.14**	**$0.48**
1400	$23.50	$48.02		**$71.52**	$11.74	$13.75	$46.27	**$71.75**	**$0.23**
1600	$23.50	$54.88		**$78.38**	$11.74	$13.75	$52.88	**$78.36**	**($0.02)**
1800	$23.50	$61.74		**$85.24**	$11.74	$13.75	$59.49	**$84.97**	**($0.27)**
2000	$23.50	$68.60		**$92.10**	$11.74	$13.75	$66.10	**$91.59**	**($0.51)**
2200	$23.50	$75.46		**$98.96**	$11.74	$13.75	$72.71	**$98.20**	**($0.76)**
2400	$23.50	$82.32		**$105.82**	$11.74	$13.75	$79.32	**$104.81**	**($1.01)**
2600	$23.50	$89.18		**$112.68**	$11.74	$13.75	$85.94	**$111.42**	**($1.26)**
2800	$23.50	$96.04		**$119.54**	$11.74	$13.75	$92.55	**$118.03**	**($1.51)**
3000	$23.50	$102.90		**$126.40**	$11.74	$13.75	$99.16	**$124.64**	**($1.76)**

Source: HEC.

impact irr off

RESOLUTION NO. 92-32

A RESOLUTION ADOPTING A SENIOR CITIZEN UTILITY DISCOUNT PURSUANT TO SECTIONS 14.04.030, 14.08.035 AND 14.16.030 OF THE ASHLAND MUNICIPAL CODE, AND REPEALING RESOLUTION NO. 92-18.

THE MAYOR AND CITY COUNCIL OF THE CITY OF ASHLAND DO RESOLVE AS FOLLOWS:

SECTION 1. Senior Citizen Utility Discount. If the applicant has met all of the requirements of the Ashland Municipal Code, the City shall, beginning with the next billing cycle after the date of the application, discount the total amount billed for water, sewer and electric service, not including connect fees, reconnect fees and similar charges. The amount of discount for the applicant's own residence shall be ~~twenty-five percent (25%)~~ thirty percent for water, ~~and~~ electric and sewer bills if the applicant's household income does not exceed the poverty guidelines of the Federal Community Services Administration, or ~~fifteen percent (15%)~~ twenty percent for water, ~~and~~ electric and sewer bills if the applicant's household income does not exceed one hundred twenty-five percent of the poverty guidelines of the Federal Community Services Administration. ~~In special hardship cases, a committee of two (2) Council members and the Senior Program Director, may grant exceptions to the foregoing income limitations where the circumstances justify such exceptions.~~

SECTION 2. The effective date of this resolution is July 1, 1992.

SECTION 3. Resolution No. 92-18 is repealed.

SECTION 4. Three (3) copies of this Resolution shall be maintained in the office of the City Recorder and shall be available for public inspection during regular business hours.

The foregoing Resolution was **READ** and **DULY ADOPTED** at a regular meeting of the City Council of the City of Ashland on the 5th day of May, 1992.

Nan E. Franklin
City Recorder

SIGNED and **APPROVED** this 6th day of May, 1992.

Catherine M. Golden
Mayor

Approved as to form:

Paul Nolte
City Attorney
(d:\council\resos92\senutil.dsc)