CITY OF BOULDER
WATER RESOURCES ADVISORY BOARD
INFORMATION ITEM

MEETING DATE: September 16, 2013

AGENDA TITLE: Information Item – Utility Rate Studies

PRESENTERS:
Jeff Arthur, Director of Public Works for Utilities
Ken Baird, Utilities Financial Manager

EXECUTIVE SUMMARY:

Customer billings comprise the majority of revenues within the Water, Wastewater and Stormwater/Flood Management Utilities. The rates and changes for these services are reviewed periodically to ensure that they are sufficient to meet ongoing Utility needs and also meeting other intended purposes such as equity, stability and other considerations that will be discussed below.

Staff is beginning the process of conducting rate studies for utilities. This item is presented to provide background and context for rate studies and give WRAB members the opportunity to provide initial input on rate considerations and updates.

BACKGROUND:

A key task for Utilities finance staff is rate setting, which occurs during the annual budget process. The basis for rates is a major rate study that is performed periodically. The rate study includes creating a rate model which city staff uses for updating the rates using such inputs as revenue required, number of customers and estimated billed usage. The City contracts with financial consultants to conduct these detailed studies.

The following is a timeline of consultant rate studies:

-November 2001 – Traditional cost-of-service study for the Water, Wastewater and Stormwater/Flood management utilities
-February 2004 – Consultant study as a result of the 2002 drought looking into various rate structures, including water budgets
-July 2006 – Rate study to determine the base rate for implementing water budgets
-After 2007 – Smaller studies related to CII, multifamily and wastewater billing methodology

Recent rate studies have focused primarily in the Water utility due to the attention given to the water budget rate structure. The last major rate analysis for the Wastewater and Stormwater/Flood Utilities is from 2001. This study was based on industry standard cost-of-service principles, and the consultants provided spreadsheet models that are still used to help

calculate the water bill fixed service charges, the wastewater fixed and volumetric charges and the stormwater/flood management charge. Since the last major study for Wastewater and Stormwater/Flood Control was over ten years ago, this has become a priority for finance staff, along with reviewing water rates.

ANALYSIS:

There are key considerations when embarking on rate studies. This section will focus on these considerations for setting context and expectations.

Enterprise Fund Status

Each utility operates as its own independent enterprise fund where revenues are sufficient to cover operating, capital and bond costs while also maintaining sufficient reserves. Colorado case law has stated that "the enterprise must be an independent, self-supporting government-owned business that receives income, fees, and revenue in return for the provision of goods or services" [Nicoll v. E-470 Public Highway Authority, 896 P.2d 859, 868 (Colo. 1995).] Ultimately, rates are set so that revenues are sufficient to meet the needs of the utility, and carrying a fund balance in excess of meeting these needs is avoided.

Fixed Service Charge and Fixed Utility Costs

The fixed portion of the bill is intended to recover customer related costs related to such operational costs as billing, meter reading and also a portion of capital costs. At least 90% of utility costs are fixed. This is relatively high compared to other utilities due to a few reasons. Most of the water and wastewater in the system uses gravity for distribution, so electric costs are relatively low. Our water supply costs are also relatively fixed with the exception being Windy Gap water including pumping and carriage charges which vary based on the amount delivered.

While the great majority Utility expenditures are fixed, the revenues received from the fixed service charge on the bill are around 20% in the Water Fund and around 4% in the Wastewater Fund. A survey of Front Range utilities indicates that the City has the lowest Wastewater fixed service charge of fourteen other communities. The typical residential meter size has a $1.05 service charge in 2013, and the average of other communities is $9.11. A key consideration in the rate studies will be to evaluate the appropriate amount to charge for the fixed service charge.

It is also important to consider the high percentage of fixed costs needed run the utility when considering conservation goals. When overall demand is reduced, this has a relatively small impact on the utility's operating expenses, and the revenue requirement from rates sees a minimal decrease. However, when billed usage goes down, revenues received from billings will decrease to a greater degree and it may become necessary to increase rates to make up for the lost revenue. Reduced demand may also have an impact on capital projects, resulting in revising or delaying projects that are needed to accommodate growth. Based on City growth projections we anticipate having sufficient hydraulic capacity in the system, so reduced demand is not expected to have a significant impact on capital projects.

Revenue Stability
Having a consistent revenue stream is helpful for future capital and operating planning, and ensuring planned expenses will be funded. One way to achieve greater revenue stability would be to revise the rates so that more revenue comes from the fixed service charge, but doing so reduces the price incentive that customers have for conserving water. Another approach suggested in the context of water budget rate structures involves setting rates so that the revenue requirement is met through the lower rate blocks, for example from blocks one through three out of the five blocks. An analysis was conducted for WRAB in December 2011 (see **Attachment A**) that showed that collecting the budgeted 2012 revenue requirement from blocks 1-3 would require a 22% increase to the base (block 2) rate and would bring in an estimated additional $3,600,000. Since 2012 ended up being a high consumption year due to the hot and dry summer, if that higher rate had been adopted the Water Fund would have had an additional $6 Million. Since the water utility's revenues are significantly impacted by weather, targeting to receive the revenue requirement from just the lower blocks can result in bringing in excessive revenue in a given year.

Wastewater billed usage has been declining in recent years, resulting in the rate increases not bringing in expected revenues. The wastewater volume charge is based on a customer's Average Winter Consumption (AWC), which reflects indoor usage. AWC has been steadily declining over the past 10 years, due to conservation efforts including more efficient indoor fixtures. Also, the Wastewater fixed service charge being a relatively small portion of the bill results in less stable revenues.

Equity
Another important consideration in rate setting is equity. There should be equity in each customer class paying their proportional share of the expenses in the Utility, and also equity in customers paying their fair share based on how much they consume. Traditional cost of service rate studies create models to calculate the appropriate proportions on each customer class and also for the volumetric charges. As previously mentioned, these models have been used for the Wastewater and Stormwater/Flood Management charges in the City, and also the fixed service charge in the Water Fund. Since enacting water budgets, equity in the water bill volume change has been targeted by the proportion of billed usage within a sector equaling the proportion of billed revenue that sector brings in. In the last two years, the billed usage from single family residential and commercial/industrial/institutional sectors have brought in their proportional share of water revenues. Multifamily Residential brought in a disproportionally more revenues, and Irrigation accounts brought in less, each by 2%.

Price Elasticity
How much a customer will change their consumption as price changes is measured through price elasticity. Utility services are relatively inelastic due to the essential nature of the service and few options for substitutes. During the unusually hot and dry summer of 2012, customers early in the season were paying higher than normal water bills, and as the summer continued they continued to consume in the upper blocks, paying higher rates. Then later in the season, consumption was closer to average which correlated to an increase in precipitation. It appears

that the significant determinant of consumption from year to year is precipitation and temperature, with the price of service playing a minor role. It will be helpful to understand price elasticity of the City's utility services when making decisions about what effect rate changes will have.

Other Considerations
Along with those previously mentioned, there are other key considerations in conducting rate studies. These include:
-Legal defensibility
-Minimizing customer impacts
-Affordability to all customers
-Simple to understand and update
-Ease of implementation and administration
-Rate stability (avoiding rate spikes)
-Economic Vitality

BOARD INPUT:
Staff is seeking board feedback on the following questions:
- Does WRAB have any questions or input related to what to consider in the rate studies?
- Does WRAB have any input on what information they would like to see through the process of the rate studies?
-Does WRAB have any comments on the sequencing of rate studies with the Water Conservation Futures Study update and Commercial/Industrial/Institutional water budget benchmarking study?

NEXT STEPS
Staff will be initiating rate studies following completion of the Water Conservation Futures Study and the CII Benchmarking study.

Attachments:
A: December 19, 2011 WRAB Information Item – Revenue Stability

Attachment A

C I T Y O F B O U L D E R
WATER RESOURCES ADVISORY BOARD
INFORMATION ITEM

MEETING DATE: December 19, 2011

SUBJECT: Revenue Stability – Revenue from Blocks 4 & 5

PRESENTERS: Jeff Arthur, Director of Public Works for Utilities
Ken Baird, Financial Manager

Executive Summary

WRAB has asked for information regarding water revenue stabilization, specifically analyzing use of revenues coming from the top two blocks in the rate structure, Blocks 4 and 5. As conservation efforts continue and more customers stay within their water budget, it is important to ensure that the revenues and expenditures are in alignment. Staff conducted analysis on what the Block 2 (base) rate would have to be for the required revenue to come from only Blocks 1-3. Using the rate model for 2012, the new base rate would be $3.65, compared to the adopted base rate of $3.00. Staff also looked at Block 4 and 5 usage and revenue trends since the inception of water budgets in 2007. Upper block usage declined in the initial years of the water budget approach, but appears to have leveled off.

Community Sustainability Assessments and Impacts

- Economic: The economic impacts of meeting the water utility revenue requirement without revenue from Blocks 4-5 are included in the analysis section. Increasing the base rate under the existing block structure would impact all customers of the utility, and the Water Utility Fund would receive excess revenues.

- Environmental: The water budget rate structure was implemented to encourage water conservation. Some environmental benefits of conservation include reduced use of a limited resource and reduced energy and chemical use associated with treatment of water and wastewater.

- Social: In considering water rates, it is important that rates be fair and equitable across different groups.

Attachment A

Background

In December 2004, City Council approved moving forward with a water budget rate structure. Red Oak Consulting conducted a rate study in 2006 to calculate options for the Block 2 (base) rate for 2007, the first year of water budgets, incorporating the direction from council. The study concluded that to meet the revenue requirement from Blocks 1-3, the base rate would need to be $3.20. In considering the bill impact to customers, council adopted a rate of $2.50. In the rate study, it was anticipated that the $2.50 base rate would bring in the revenue necessary for the 2007 budget from Blocks 1-5, with some additional revenue from Block 5. The excess revenue at year-end was $340,000. Since then, council has adopted base rates calculated so that all of the needed revenue will come from Blocks 1-5.

At the August 2011 retreat, WRAB included revisiting this issue in its list of priorities, and further information is provided below.

Analysis

To calculate what the rate would have to be to meet the revenue requirement from Blocks 1-3, staff used the city's rate model developed by Red Oak that is used each year for rate setting. The revenues needed from consumption charges for 2012 based on the proposed budget is $16.3 million. To meet that amount in Blocks 1-3, the new base rate would have to be $3.65. If the existing block structure was maintained, this would bring in an additional $3.6 million above the revenue requirement. The estimated impact to a single family bill would be $62 for the year. The table below also shows rate and revenue impacts of different scenarios.

2012 Water Rate Scenarios *(collect revenue requirements in goal blocks)*

Collect Revenue Requirement in Blocks…	. . .New Base Rate would Be:	Percent Increase Over 2012 Base Rate	Additional Revenue Above Revenue Requirement	Single-Family Annual WATER Bill Impact	Commercial Hotel Annual WATER Bill Impact	Commercial Restaurant Annual WATER Bill Impact
Blocks 1-2	$4.40	47%	$7,600,000	$133	$4,214	$436
Blocks 1-3	**$3.65**	**22%**	**$3,600,000**	**$62**	**$1,956**	**$202**
Blocks 1-4	$3.40	13%	$2,200,000	$38	$1,204	$125
Blocks 1-5 (current)	$3.00	0%	$0	$0	$0	$0

In assessing how revenues are recovered in the different blocks, there are other variables to consider. Along with the base rate, the other potential 'moving parts' are the multiplier used in calculating the charge in the other blocks, and the threshold percentage of budget that triggers when the consumption charge moves into the next block. These factors will also be considered in future rate studies and analysis. The 2012 thresholds and multipliers for each block are shown in the table below.

Attachment A

Billing Block	2012 Rates (per 1,000 gallons) "Multiplier"	% of water budget "Threshold"
Block 1	$2.25 (3/4 base rate)	0-60%
Block 2	$3.00 (**base rate**)	61-100%
Block 3	$6.00 (2 X base rate)	101-150%
Block 4	$9.00 (3 X base rate)	151-200%
Block 5	$15.00 (5 X base rate)	Greater than 200%

WRAB has also inquired regarding the trend in reliance on Blocks 4 and 5 revenues. The tables below show the percentage of quantity charge-related revenue from these blocks and the consumption percentages. These percentages do not include the fixed monthly charge, which accounts for 22%-24% of the revenue requirement.

It is difficult to identify a clear trend line given the number of variables that have changed during the years following implementation of water budgets. During 2007, water budget adjustments were being made to correct factors like irrigable area and the number of units in an apartment. In 2008 there were more options available for calculating the water budget from Commercial, Industrial, Institutional customers, which resulted in changes to this classification. Consumption in 2009 was a relatively low. In recent years it appears that the revenues and consumption from Blocks 4 and 5 have leveled off. Further analysis of the rate structure will look to determine whether the rate structure is meeting the goal of discouraging excessive water use through higher charges in the upper blocks.

Consumption from Blocks 4 & 5

	2007	2008	2009	2010	2011 (YTD Nov.)	2012 (Modeled)
Block 4	2.6%	2.3%	1.7%	2.0%	2.1%	2.1%
Block 5	3.5%	2.5%	2.0%	2.3%	2.0%	2.5%
Total	6.0%	4.7%	3.7%	4.3%	4.1%	4.6%

Revenue from Blocks 4 & 5

	2007	2008	2009	2010	2011 (YTD Nov.)	2012 (Modeled)
Block 4	7.1%	6.8%	5.2%	5.9%	6.4%	6.1%
Block 5	15.9%	12.4%	10.1%	11.6%	10.1%	11.9%
Total	23.1%	19.3%	15.3%	17.5%	16.5%	18.0%

Next Steps

This item is being provided to WRAB for informational purposes at this time. There will be further opportunity to evaluate and make recommendations on the rate structure and reliance on

the upper blocks through the 2013 budget process, the upcoming Commercial, Industrial, and Institutional water use study, and a possible update of the Water Conservation Futures Study.