



# 2011 Cost-of-Service Rate Report



# 2011 Cost-of-Service Rate Report



**DENVER WATER**

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# 1. Executive Summary

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## 1.1 Introduction

Denver Water conducts an annual cost-of-service rate study to equitably determine the costs to provide service to customers. The study includes:

- Development of the financial plan
- A cost-of-service analysis to determine the cost to provide service to customer classes
- Design of 2011 rates

## 1.2 Public process

The adoption of rates is part of a multi-step public process. Proposed rates are initially presented to the Board of Water Commissioners. Denver Water's operating rules require a 30-day public comment period between the initial presentation and the adoption of rates<sup>1</sup>. The 2011 rates public process included the following meetings with the Board of Water Commissioners and other stakeholders.

- **October 13, 2010.** Presentation of proposed 2011 rates to the Board of Water Commissioners.
- **October 13, 2010.** Presentation to the Building, Workforce, and Sustainability City Council subcommittee.
- **October 19, 2010.** Presentation of proposed 2011 rates at the Distributors Forum.<sup>2</sup>
- **October 24, 2010.** Presentation to the Denver Water Citizen's Advisory Committee.
- **October 27, 2010.** Board workshop with public comment period.
- **November 17, 2010.** Presentation of proposed 2011 rates for adoption to the Board of Water Commissioners. This Board action item is included in Appendix A at the end of this report.

## 1.3 Study findings

### 1.3.1 Revenue adjustment for 2011

Rate revenue should be sufficient to meet annual revenue requirements, cover debt service, and maintain adequate reserves. Revenue requirements include operation and maintenance expense, payments on existing and proposed debt service, and cash-funded capital projects. To meet these requirements, a rate revenue adjustment of 9.5% was adopted for 2011. This adjustment becomes effective March 3, 2011. Because the adjustment is in effect for 10 months of calendar year 2011, the 10-month increase is approximately 10.4%. This adjustment will produce approximately \$21 million in additional revenues to meet annual revenue requirements. Table 1-1 summarizes the 2011 revenue requirements and the sources of funds to meet those requirements.

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<sup>1</sup> The public may provide comments through written communication or by attending any Board meeting.

<sup>2</sup> The Distributors Forum consists of the suburban water districts served by Denver Water.

# 1. Executive Summary

<b>Table 1-1 2011 Total Revenue Requirements</b>	
<b>Description</b>	<b>Amount (millions)</b>
Operations and maintenance	\$186.4
Debt Service	41.4
Cash-Funded Capital	<u>57.0</u>
<b>Total Revenue Requirements</b>	<b>\$284.8</b>

The \$284 million revenue requirement is met from \$246.5 million of rate revenue<sup>3</sup>, \$16.3 million from reserve funds, and miscellaneous revenue of \$22 million.

## 1.3.2 Cost-of-service analysis

The cost-of-service analysis determines the cost to provide service to customer classes. Denver Water's cost-of-service analysis follows the methodologies promulgated by the American Water Works Association.<sup>4</sup> The cost-of-service process includes allocating costs to customer classes based on their respective usage characteristics. These characteristics include average class usage, peak rates of demand, number of customers, and fire protection requirements. Chapter 3 details the cost-of-service analysis. Table 1-2 compares revenue under current 2010 rates and 2011 cost-of-service adjustment for the inside-city and outside-city customers.

<b>Table 1-2 2011 Cost-of-Service Adjustments (in thousands)</b>				
<b>Description</b>	<b>2010 Revenue at Existing Rates</b>	<b>2011 Cost-of- Service</b>	<b>\$ Change</b>	<b>% Change</b>
Inside City	\$98,571	\$109,259	\$10,688	10.8%
Outside City	<u>126,533</u>	<u>137,229</u>	<u>10,697</u>	8.5
<b>Total</b>	<b>\$225,104</b>	<b>\$246,488</b>	<b>\$21,385</b>	<b>9.5%</b>

## 1.3.3 Adopted 2011 rates

Rates adopted for 2011 are designed to recover the rate revenue needed to meet March through December's revenue requirements. Adopted 2011 rates retain the existing two-part structure, a monthly service charge regardless of meter size or customer class, and a volume charge that varies by customer class. Table 1-3 summarizes proposed rates for the residential and nonresidential treated water customer classes.

<sup>3</sup> Rate revenue includes \$225.1 million of revenue at 2010 rates plus \$21.4 million from revenue increase.

<sup>4</sup> Woodcock, C.P.N., et al. Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices, M1. (2001). American Water Works Association: Denver, CO.

# 1. Executive Summary

<b>Table 1-3 2011 Adopted Rates</b>					
<b>Customer Class</b>	<b>Inside City</b>	<b>Outside City Read &amp; Bill</b>	<b>Outside City Total Service</b>	<b>OCSA <sup>1</sup></b>	<b>Master Meter <sup>2</sup></b>
<b>Service Charge, \$ per bill</b>	\$6.00	\$6.00	\$6.00	\$6.00	\$6.00
<b>Volume Charge, \$ per 1,000 gallons</b>					
<b>Single Family Residential</b>					
Block 1 (0 to 11,000 gallons)	\$2.41	\$2.36	\$2.70		
Block 2 (12 to 30,000 gallons)	4.82	4.72	5.40		
Block 3 (30 to 40,000 gallons)	7.23	7.08	8.10		
Block 4 (over 40,000 gallons)	9.64	9.44	10.80		
<b>Small Multifamily</b>					
Block 1 (0 to 15,000 gallons) <sup>3</sup>	\$2.67	\$3.04	\$3.64		
Block 2 (over 15,000 gallons)	3.20	3.65	4.37		
<b>All Other (Nonresidential)</b>					
Winter	\$1.69	\$2.09	\$2.31		
Summer	3.38	4.18	4.62		
<b>Irrigation Only</b>					
Winter	\$1.14	\$1.22	\$1.32		
Summer	4.56	4.88	5.28		
Raw	\$0.47	\$0.81	\$0.81	\$0.95	
Recycled	\$0.93			\$1.05	
Master Meter				\$3.83	\$3.45
Master Meter Maintenance					\$4.70
<i>(1) Outside the combined service area</i>					
<i>(2) Master Meter customers are outside-city</i>					
<i>(3) Applies to two dwelling units. Threshold increases by 6,000 for each additional unit up to 5 units.</i>					

## 1.3.4 Typical monthly residential bills

Typical residential customers' total annual bill will increase approximately \$41 per year, or about \$3.40 per month. For example, the average annual cost for water for an IC customer will increase from \$330 at 2010 rates to \$371 under the 2011 adopted rates.

Typical outside-city residential customers' total annual bill will increase approximately \$33 per year or about \$2.66 per month. For example, the average annual cost for water for an outside-city customer will increase from \$555 at 2010 rates to \$587 under the 2011 adopted rates.

### 2.1 Introduction

Denver Water provides service to approximately 1.3 million people in the Denver-metro area. Denver Water is governed by a five-member Board appointed by the mayor of Denver. Denver Water’s mission is presented below.

*“Denver Water will provide its customers with high quality water and excellent service through responsible and creative stewardship of the assets we manage. We will do this with a productive and diverse work force. We will actively participate in and be a responsible member of the water community.”*

Denver Water’s service history predates Colorado statehood. The Denver City Water Company, a privately-held organization, was formed in 1870. In October 1894, the Denver City Water Company and several other regional agencies serving the Denver area merged to create the Denver Union Water Company. The Denver Water Department purchased the company in November 1918 for the residents of the City and County of Denver.

Denver Water is a public agency funded by water rates, system development charges, hydropower sales, and other miscellaneous revenues. Denver Water receives no tax revenue from city, state, or federal entities. Denver Water operates from the city’s water works fund, which ensures the separation between city hall and Denver Water. The general city government has no access to the water works fund and Denver Water has no access to the city’s general fund. Both funds are accounted for by the city auditor.

### 2.2 Governance

Article X of the Denver City Charter defines the creation, governance, and operation of Denver Water. Section 10.1.7 of Article X establishes a water works fund separate from the City and County of Denver’s general fund. This provision allows the city and Denver Water to operate independently of each other. The following charter excerpts details the rate-setting authority of Denver Water.

#### 2.2.1 Section 10.1.9 – Water Rates

This section outlines the rate-setting authority for all retail customers within the City and County of Denver.

*“The Board shall fix rates for which water shall be furnished for all purposes within the City and County of Denver, and rates shall be as low as good service will permit. Rates may be sufficient to pay for operation, maintenance, reserves, debt service, additions, extensions, betterments, including those reasonably required for the anticipated growth of the Denver Metropolitan area . . .”*

### 2.2.2 Section 10.1.12 – City Rates

This section defines cost recovered through rates charged to the City and County of Denver municipal customers. City and County of Denver accounts include city parks, zoo, museum, and municipal buildings, such as the courthouse and City Hall. This provision explicitly requires City and County municipal rates exclude capital-related charges.

*“... the Board shall furnish water to the municipal government of the City and County of Denver at rates which shall approximately equal but not exceed the cost of the water furnished, not including items in such rate for debt service, additions, extensions or betterments. Such rate shall not be applicable to agencies or authorities sponsored by or supported by the City and County . . . The Board shall furnish water out of the City Ditch or some equivalent source for the use of Denver in City Park and Washington Park, without any charge whatsoever.”*

In addition to the reduced-rate cost basis, City and County of Denver is not assessed system development charges for new development.

### 2.2.3 Section 10.1.13 – Water Leases (Outside City Rates)

This section outlines costs to be recovered from customers outside the City and County of Denver. This section requires that inside-city customers be fully reimbursed for the cost to provide service plus an additional amount as determined by the Board. The additional amount above the full cost serves as an offset to inside-city costs.

*“The Board shall have power to lease water and water rights for use outside the territorial limits of the City and County of Denver . . . Every such lease shall contain terms to secure payment of sufficient money to fully reimburse the people of Denver for the cost of furnishing the water together with an additional amount to be determined by the Board . . .*

## 2.3 Water system

Denver Water’s service area encompasses approximately 343 square miles and serves about 1.3 million people. This service area includes the City and County of Denver and a number of municipalities and special water districts immediately outside the city’s boundaries.

Denver Water owns and operates the entire utility system’s infrastructure, from mountain reservoirs to the treated water distribution system. This infrastructure is valued at more than \$1.3 billion. The list below provides statistical information on major infrastructure facilities for the utility<sup>5</sup>:

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<sup>5</sup> Taken from the Denver Water 2009 Comprehensive Annual Financial Report, Statistics Section and [www.denverwater.org](http://www.denverwater.org)

- 14 storage reservoirs with a total capacity of 692,846 acre-feet
- 77.5 miles of mountain collection system conduits and 46 miles of raw water supply mains
- 17 pump stations with a pumping capacity of 1,059.9 million gallons per day
- Three treatment plants (Foothills, Marston and Moffat) with a total capacity of 715 million gallons per day. One recycled water treatment plant with a total capacity of 30 million gallons per day
- 3,000 miles of treated water distribution system mains

### 2.3.1 Source of supply

Denver Water's primary source of supply is surface water from the central Rocky Mountains. The watersheds extend more than 3,100 square miles on the state's East and West Slope of the Rocky Mountains as illustrated in Figure 3-1. Source of supply water is provided through three collection systems in the Rocky Mountains. These include:

- South Platte
- Robert's Tunnel
- Northern

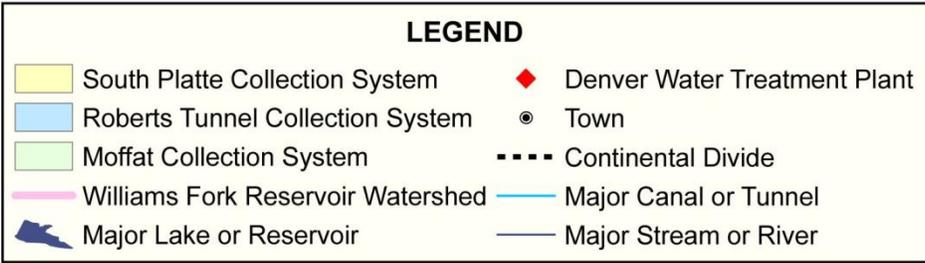
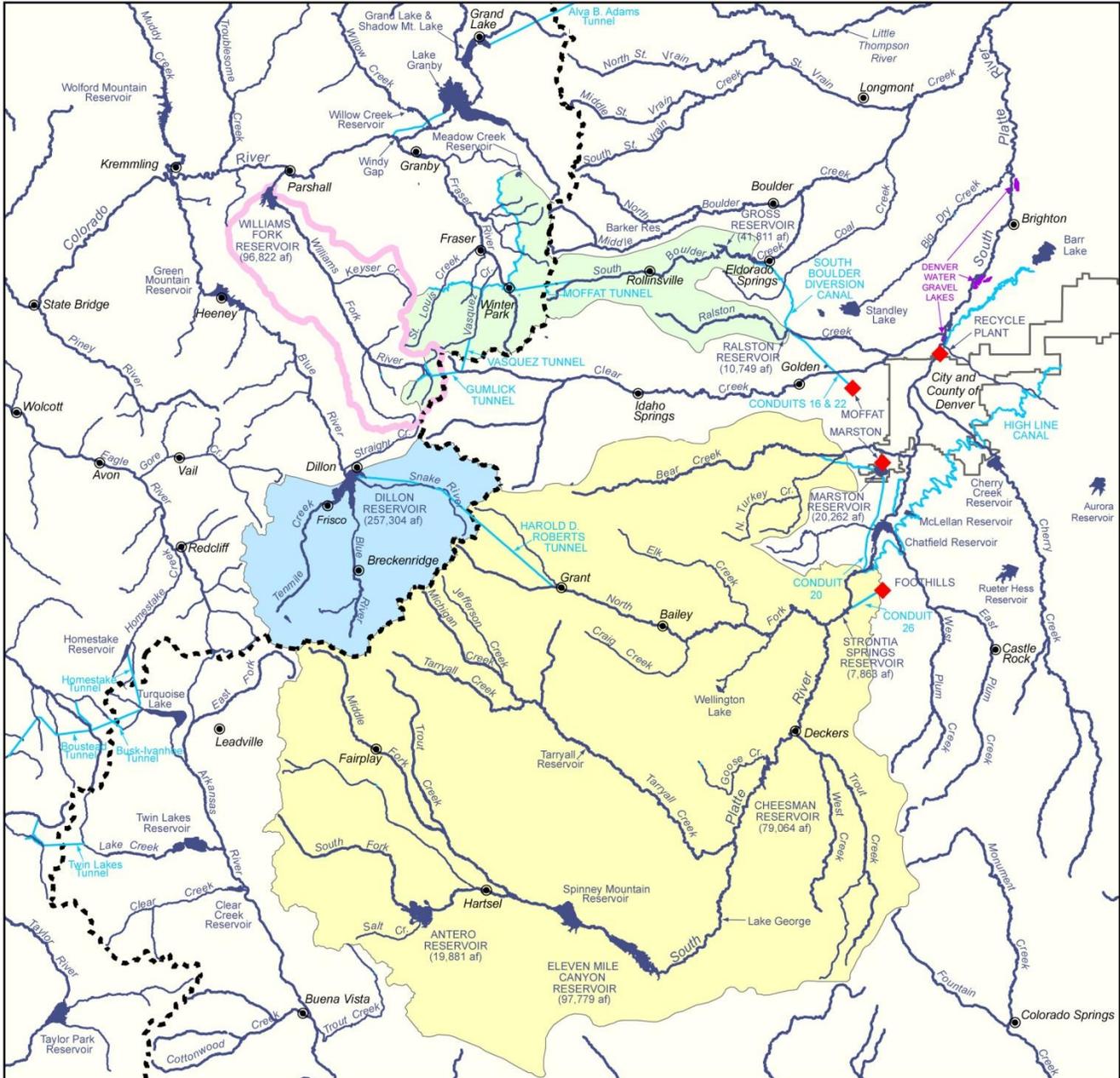
The South Platte Collection System includes Antero, Eleven Mile, Cheesman, and Strontia Springs reservoirs. The South Platte Collection System provides approximately 42% of Denver Water's supply. The Robert's Tunnel Collection System transports water from Dillon Reservoir through the Continental Divide and drains into the North Fork of the South Platte River. The Robert's Tunnel collection system supplies approximately 27% of Denver Water's supply. The Northern Collection System delivers water from the Williams Fork and Fraser rivers and provides approximately 31% of Denver Water's supply. The Northern Collection System relies on an integrated system of tunnels to transport the water to the Gross and Ralston reservoirs.

### 2.3.2 Treatment and distribution

The Foothills and Marston treatment plants treat water from the South Platte Collection System. The Moffat Treatment Plant treats water from the Northern Collection System, which includes Ralston Reservoir. Denver Water's total treatment plant capacity is 715 million gallons a day. Treated water is delivered through the treated water distribution system, which consists of approximately 3,000 miles of pipes, 23 clear water storage reservoirs, 17 pumping stations, and 19,185 fire hydrants. Denver Water also provides recycled (nonpotable) water service to its customers. It is estimated the recycled water plant will eventually treat and distribute 30 million gallons of water per day.

## 2. Introduction

Figure 2-1  
Denver Water Collection System



### 2.4 Denver Water customers

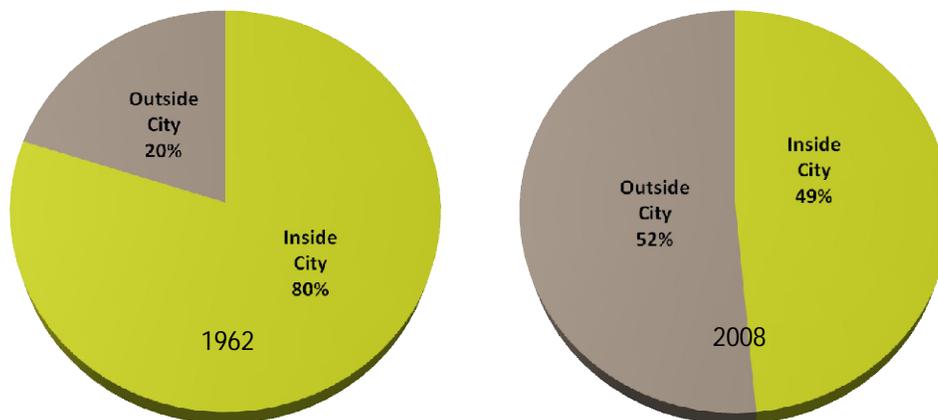
#### 2.4.1 Service area

Denver Water provides potable (treated) and nonpotable (raw and recycled) water service within the jurisdictional boundaries of the City and County of Denver. Denver Water also serves as the utility source of both potable and nonpotable water service to many suburban locations outside the City and County of Denver through contractual agreements.

Denver Water's Combined Service Area consists of the City and County of Denver and the geographic areas of its suburban water distributors. Denver Water is sole water provider in this area and as a result, plans to acquire new water supplies and construct new facilities for the entire combined service area. Figure 2-3 on the following page illustrates the service area boundaries.

In addition to the water service provided within the combined service area, Denver Water also sells water to customers outside of its combined service area through temporary, fixed-volume contracts. The level of water sold to inside-city customers and outside-city customers has changed significantly since 1962. Figure 2-2 below compares the water demanded in 1962 and 2008 between city and suburban customers.

Figure 2-2  
Percent of Total Water Demand  
1962 and 2008

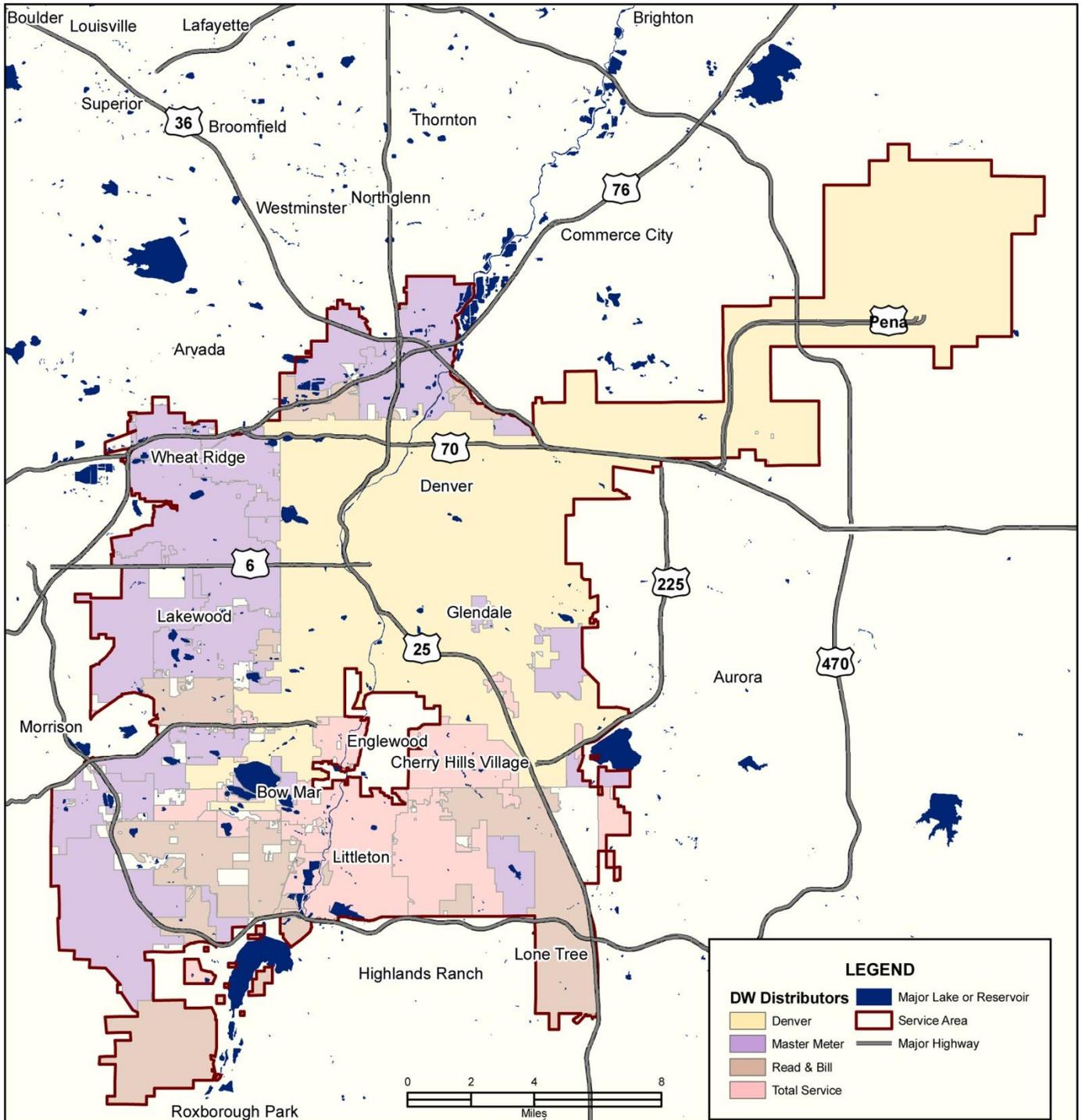


#### 2.4.2 Outside City customers

Denver Water provides service to 68 treated water distributors in its combined service area and other individual contract customers outside the combined service area. Distributors are classified as Read and Bill, Total Service, and Master Meter. The cost to provide service to these distributors varies based on their level of service requirement. Distributors share in all costs associated with source of supply, treatment, transmission, and customer-related costs to deliver water to their service areas. A definition of each distributor is provided on page 10.

## 2. Introduction

Figure 2-3  
Denver Water Service Area



## 2. Introduction

- **Master Meter.** Master Meter distributors purchase water on a wholesale basis from Denver Water and resell it to retail customers. Master Meter distributors own and operate the transmission and distribution systems in their service territories and are responsible for meter reading, billing, and customer service. Rates exclude local distribution costs, meter reading, billing and customer service costs for individual customers served by Master Meters. Denver Water serves 24 Master Meter distributors.
- **Read and Bill.** Read and Bill distributors own and operate the transmission and distribution systems within their service territories. Denver Water provides meter reading, billing, and customer service. Read and Bill rates exclude local distribution costs. Denver Water serves 15 Read and Bill distributors.
- **Total Service.** Denver Water provides full service to Total Service distributors. This includes operation of the local distribution system within their service territories as well as meter reading, billing, and customer service. Denver Water serves 29 Total Service distributors.

### 2.5 Denver Water customer classes

Denver Water groups individual customers to classes based on similar usage characteristics. Revenue recovered through each customer classes' rates is commensurate with the cost to provide service. Cost responsibility is a function of customer rate class average and peak water demands relative to the demands of other customer rate classes, as well as billing, meter reading, and fire protection costs. Table 2-1 lists the customer classes served by location and type of service.

Table 2-1 Denver Water Customer Classes						
Customer Rate Class	Inside City		Outside City			
	Retail <sup>1</sup>	City/County	Read and Bill <sup>2</sup>	Total Service <sup>3</sup>	Other	Master Meter <sup>4</sup>
<b>Retail Treated Water</b>						
Single Family Residential	✓		✓	✓		
Single Family Irrigation-Only	✓		✓	✓		
Small Multifamily Residential	✓		✓	✓		
All Other (Nonresidential)	✓	✓	✓	✓		
Irrigation Only (Nonresidential)	✓	✓	✓	✓		
<b>Retail Nonpotable Water</b>						
Raw Water	✓	✓			✓	
Recycled Water	✓	✓			✓	
<b>Wholesale Treated Water</b>						✓

1. Inside City applies to customers inside the City and County of Denver.  
2. Outside City Read and Bill applies to customers served by suburban Read and Bill distributor districts.  
3. Outside City Total Service applies to customers served by suburban Total Service distributor districts.  
4. Master Meter applies to customers served by suburban Master Meter distributor districts.

### 2.6 Historical rate structures

Denver Water’s rate structures have varied by customer class over the years to reflect changing pricing and policy objectives. The first cost-of-service water rate study was completed in 1958 by the engineering consulting firm Black & Veatch. Studies have been conducted by both external consultants and by Denver Water’s rate administration section since that time. The last cost-of-service rate study conducted by an external consultant was KPMG Peat Marwick in the mid-1980s. Table 2-2 provides a summary of Denver Water rate structure changes since 1958.

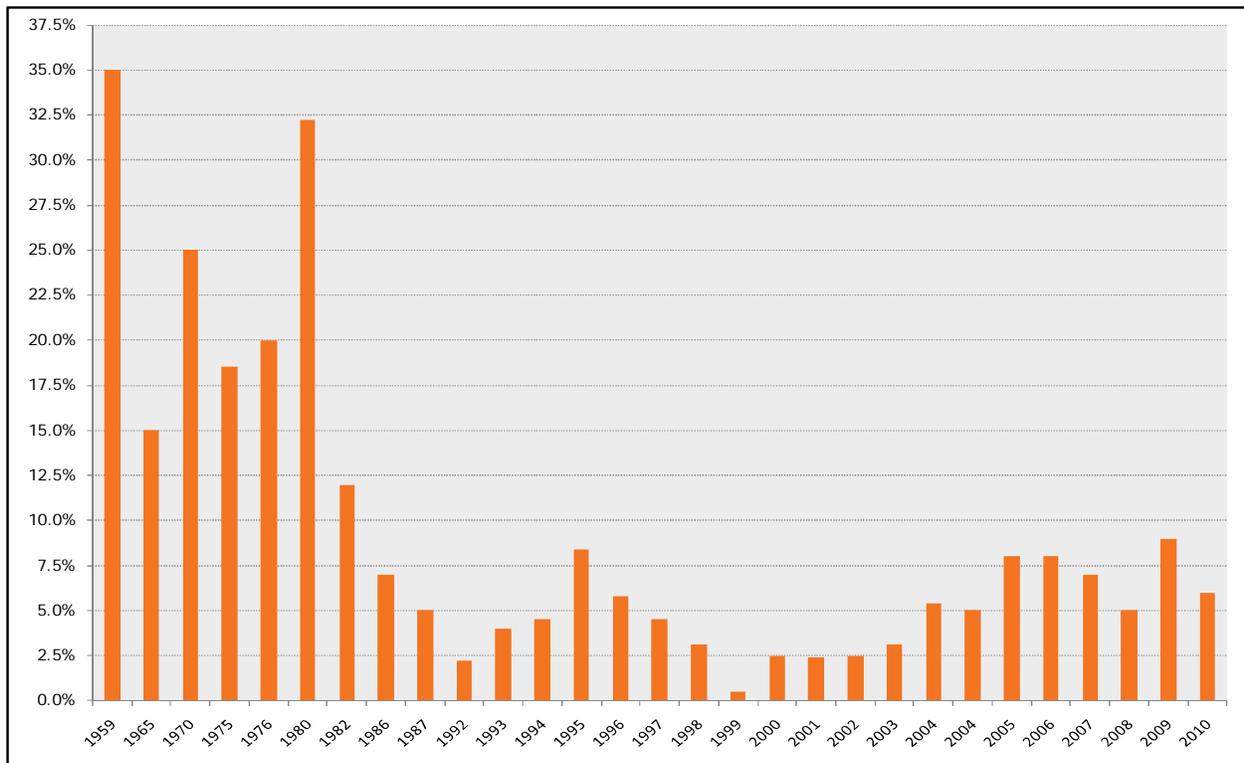
<b>Table 2-2</b>									
<b>Denver Water Historical Rate Structures by Customer Class</b>									
Year	All Customers	Residential	Duplex	SFR	SFR Irrigation	Small MF	All Other Retail	Other Irrigation	Irrigation Only
1957-58	DB (8)								
1959-79	DB (5)								
1980-89	DB (4)								
1990-94		IB (2)					DB (2)		
1995		IB (2)	IB (2)				UB		
1996-98				IB (2)		IB (2)	UB		
1999-05				IB (3)		IB (2)	Seasonal		
2006				IB (4)		IB (2)	Seasonal		
2007				IB (4)	Seasonal	IB (2)	Seasonal		
2008				IB (4)	Seasonal	IB (2)	Seasonal	Seasonal	
2009				IB (4)	Seasonal	IB (2)	Seasonal	Seasonal	
2010				IB (4)		IB (2)	Seasonal		Seasonal

*DB: Declining Block*  
*IB: Increasing Block*  
*UB: Uniform Block*  
*(#): Number of Blocks*

### 2.7 Historical rate increases

Denver Water regularly adjusts rate revenues to meet annual revenue requirements. Figure 2-4 summarizes the historical revenue adjustments from 1959 through 2010. Customer class increases will vary annually due to the differences in each customer classes' usage characteristics.

Figure 2-4  
Historical Revenue Increases



Appendix C details revenue increases from 1959 to 2011, as well as the revenue increases for inside-city and outside-city customers from 1992 to 2011.

### 3.1 Introduction

Denver Water operates from a self-supporting water works fund. Denver Water financial activities are independent of the City and County of Denver as stated in Article X of the City and County Charter. Funding for annual operations and maintenance expenses, capital projects, and debt service is met primarily through water rates, system development charges, participation fees, other miscellaneous revenue, and non-operating revenue. Denver Water maintains one fund for cash flow activities however, for the purposes of this study utility financials have been divided into the following sub-funds:

- Part 1 capital construction
- Part 2 and 3 capital repair and replacement
- Operating

Separate financial forecasts have been made for these funds for the three-year study period, 2011 through 2013, to determine the adequacy of revenues to meet revenue requirements. Appendix C summarizes the financial plan.

### 3.2 Capital plan

Denver Water reviews and annually updates its 10-year capital plan. This plan includes major construction projects and annual repair and replacement projects. Part 1 capital includes major construction upgrade projects, capacity related projects, water acquisition projects, and federal and state regulatory projects. Part 2 and 3 capital includes annual repair and replacement projects, such as improvements to treatment plants, transmission and distribution mains, pumping facilities, and raw water facilities.

### 3.3 Part 1 capital construction fund

The Part 1 capital construction fund tracks activities associated with funding large construction and growth-related projects. The balance is \$46.9 million at the beginning of 2011. Approximately \$46 million of the beginning balance are carryover proceeds from the 2010 \$90 million bond issue.

#### 3.3.1 Sources of funds

Sources of funds include annual system development charge revenue, participation fees, land sales, bond proceeds, transfers from the operating fund, and interest income. SDC revenue is based on an annual growth rate of approximately 1% and is projected to be approximately \$10 million annually. Bond proceeds of \$59 million and \$82 million are projected in 2012 and 2013 respectively to assist in funding Part 1 capital projects. Interest income of 2% is applied to the average annual fund balance.

### 3.3.2 Uses of funds

Uses include Part 1 capital projects costs, salaries and wages associated with internal design and project management of projects, and indirect O&M overhead expenses. Annual project costs total \$58.1 million in 2011, \$74.8 million in 2012, and \$126.9 million in 2013. These projects include raw water, treatment, recycled water, and delivery projects. Approximately 26.4% of Part 1 capital project costs are related to Integrated Resource Planning projects, including the Moffat Collection System/Gross Reservoir expansion. Treatment, delivery, and pumping and storage projects account for approximately 45.8% of total project costs. Recycled water projects account for approximately 11.2% of total project costs. The remaining 16.6% of project costs include miscellaneous conduit expansion projects, raw water projects, the West Slope water rights mediation, conservation projects, and other miscellaneous projects. Annual payments on debt service are funded through user rates in the O&M fund. Capital projects include an annual inflation allowance of approximately 2.7%.

### 3.4 Part 2 and 3 capital repair and replacement fund

The Part 2 and 3 capital repair and replacement fund tracks activities associated with funding non-growth related projects. This fund is a zero-balance fund (i.e. sources in equal sources out) and therefore, the balance is \$0 million at the beginning of 2011.

#### 3.4.1 Sources of funds

The primary source of funding is through transfers from the operations and maintenance fund to assist with cash-funded repair and replacement projects.

#### 3.4.2 Uses of funds

The sole use of funds is to support system reinvestment projects. Annual project costs total \$57 million in 2011, \$77 million in 2012, and \$70.5 million in 2013. These projects include rehabilitation and improvement of raw water, recycled water, water treatment, transmission and distribution, and general plant facilities. Treated distribution system projects account for approximately 57% of total Part 2 capital costs for the three-year study period. Treatment and raw water facility projects account for 12% and 16% of total costs, respectively. The remaining 15% of project costs consist of miscellaneous improvements to hydropower facilities, dam facilities, recycled water facilities, conservation programs, and general plant facilities. Major projects for 2011, excluding main replacements, include Union Pacific Railroad Track Relocation and miscellaneous raw water conduit projects. Capital projects include an annual inflation allowance of approximately 2.7%.

### 3.5 Operating fund

The operating fund tracks activities associated with funding annual revenue requirements through rate revenues and other miscellaneous operating revenues.

### 3.5.1 Revenues

Operating revenues consist of water sales, hydropower, reimbursement and grants, interest income and other miscellaneous revenue. Projected water sales are based on a detailed analysis of Denver Water’s historical utility billing records from 2002 through 2009. This data is used to project revenue under existing rates by customer class, considering the number of accounts and projected water usage. Total water sales are projected to be 75 billion gallons in 2011, which will generate \$225 million in water sales under current 2010 rates. Water sales under existing 2010 rates are projected to be \$226 million in 2012 and \$227 million in 2013. The City of Aurora is participating in the Strontia Springs dredging project and will reimburse Denver Water \$5.3 million for its portion of project costs. Hydropower revenue averages \$4.5 million annually. Other miscellaneous revenue averages approximately \$12.2 million annually.

### 3.5.2 Revenue requirements

The operating fund revenue requirements include operation and maintenance expense, payments on existing and proposed debt service, and transfers to the Part 2 and 3 repair and replacement fund. Operation and maintenance expenses consist of personnel, materials, and supplies to treat, distribute, and maintain the water system continuously. A portion of operations and maintenance indirect expenses are transferred to capital funds and are capitalized along with the completion of projects. Indirect operations and maintenance expenses include general and administrative costs associated with maintenance, employee benefits, prorated leaves, vehicles and equipment, and averages \$14.1 million annually over the three-year period. Payments on existing and proposed debt service average \$43 million annually over the study period. This average annual payment is net of Build America Bond Subsidies received from the federal government for the 2010 \$90 million bond issue. Build American Bond Subsidies total \$7.1 million over the study period. Transfers to the Part 2 and 3 repair and replacement fund average \$68 million annually.

## 3.6 Target reserve requirements

Denver Water follows a financial management strategy designed to maintain smooth and predictable annual revenue increases to meet annual revenue requirements. Denver Water uses cash reserves and adjusts bond proceeds to assist with minimizing annual revenue increases. Denver Water strives to maintain a minimum reserve allowance as part of its financial strategy. The annual reserve requirement components are listed in Table 3-1 along with the 2011 requirements.

<b>Table 3-1 2011 Target Reserve Calculation</b>	
<b>Description</b>	<b>Amount (\$ thousands)</b>
100% Annual Debt Service	\$41,396
50% of Annual Part 2 and 3 Capital	28,484
25% of Annual O&M Expense	46,604
5% of Annual Water Sales	<u>12,324</u>
<b>Total 2011 Reserve Requirements</b>	<b>\$128,808</b>

### 3.7 Debt service coverage requirements

Denver Water maintains the stand-alone revenue bond rating of AA or better. Denver Water uses the following debt guidelines to meet or exceed this rating:

- A debt ratio less than or equal to 40%.

$$\text{Debt Ratio} = \text{Total Debt} \div (\text{Net Fixed Assets} + \text{Net Working Capital})$$

- Interest coverage equal to or greater than 2.5x.

$$\text{Interest Coverage} = \text{Net Revenues} \div (\text{Interest Requirements}-\text{SDC})$$

- Debt service coverage, as defined in the Master Bond Resolution should be equal to or greater than 2.2x. The minimum requirement stated is 1.1x

$$\text{Debt Service Coverage} = \text{Net Revenues} \div \text{Annual Debt Service}$$

- Year-end balance in the Water Works Fund, net of principal and interest should be equal to or greater than \$5 million.

### 3.8 Indicated revenue adjustments

Revenue should be sufficient to meet annual revenue requirements, bond covenants, and target reserves. To meet these requirements, the following revenue adjustments are required.

<b>Table 3-2 Annual Revenue Adjustments and Financial Performance Measures</b>					
<b>Year</b>	<b>Annual Increase</b>	<b>Debt Ratio</b>	<b>Debt Service Coverage</b>	<b>Interest Coverage</b>	<b>Ratio of Target Reserves Met</b>
2011	10.4%	23.3%	1.99x	1.22x	117%
2012	10.4%	20.7%	2.79x	2.15x	103%
2013	10.4%	21.3%	3.24x	2.82x	99%

The system-wide 2011 annual revenue increase is 9.5%, as shown in Table 3-2; 10.4% represents the increase in system-wide revenue for 10 months in which the rates will be effective.

### 4.1 Introduction

In order to develop equitable water rates, Denver uses the generally accepted cost-of-service principles to allocate costs to customer classes. Cost allocations recognize class usage, peak rates of demand, number of customers, and fire protection requirements. Denver Water's annual cost-of-service rate study uses the industry standard methodologies supported by the American Water Works Association M1 Manual<sup>6</sup>. A test year of 2011, the period in which resultant rates are effective, was selected for the cost-of-service study. Appendix E contains the supporting tables referenced in this chapter.

### 4.2 Cost-of-service process

The cost-of-service analysis consists of the following six primary steps:

1. Determine annual revenue requirements
2. Allocate costs to functions
3. Allocate costs to cost pools
4. Allocate costs to cost components
5. Determine customer class units of service
6. Distribute costs to customer classes

### 4.3 Revenue requirements overview

Setting water rates requires a method to determine the level of revenue needed to recover annual expenditures and meet financial objectives, such as debt service coverage ratios and target reserves. This amount of revenue is referred to as revenue requirements. There are three generally accepted methodologies to determine annual revenue requirements:

1. Cash basis
2. Utility basis
3. Utility basis with cash residual<sup>7</sup>

#### 4.3.1 Cash basis

The cash basis considers the actual cash needs of the utility for a given time period and is the most common method used by municipal water utilities. Sources of funds, such as rate revenue, miscellaneous revenue, and reserves must be sufficient to meet the utility's budgeted expenditures. Cash-basis revenue requirements include:

- Operations and maintenance
- Debt service
- Cash-funded capital expenditures
- Changes in fund balances

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<sup>6</sup> Woodcock, C.P.N., et al. Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices, M1. (2001). American Water Works Association: Denver, CO.

<sup>7</sup> Denver Water uses the utility basis with cash residual.

Operations and maintenance expenses consist of personnel, materials, and supplies to treat, distribute, and maintain the water system on a continuous basis. Debt service is the annual principal and interest payment on outstanding obligations. Cash-funded capital expenditures are those capital expenditures that are not financed through debt, system development charges, or other non-operating revenues. Policies vary by utility on the amount and type of capital expenditures funded by cash.

### 4.3.2 Utility basis

The utility basis is often used by investor-owned utilities regulated by a utility commission or municipal utilities that provide water service to customers outside of the utility’s jurisdiction (non-owners). Utilities using the utility basis often have shareholders who own the system through an equity position. Utility basis revenue requirements include:

- Operations and maintenance expenses
- Depreciation expense
- Return on rate base<sup>8</sup>

Operations and maintenance expenses under the utility basis are the same as cash basis. Depreciation expense is the annual loss in the value of system assets as a result of wear and tear, age, or obsolescence. Utilities charge a fair rate of return on assets to compensate for the financial risks to operate a utility. A fair rate of return is assumed to be a return that could be earned by investing an owner’s money in an investment of similar risk. The rate of return also is referred to as the cost of capital. Table 4-1 compares the cash basis and utility basis revenue requirements.

<b>Table 4-1</b>	
<b>Comparison of Cash Basis and Utility Basis Revenue Requirements</b>	
<b>Cash Basis</b>	<b>Utility Basis</b>
Operation and Maintenance Expense	Operation and Maintenance Expense
Cash-Funded capital costs	Depreciation
Principal and interest on debt	Return on rate base
Changes in fund balance	Changes in fund balances

### 4.3.3 Utility basis with cash residual

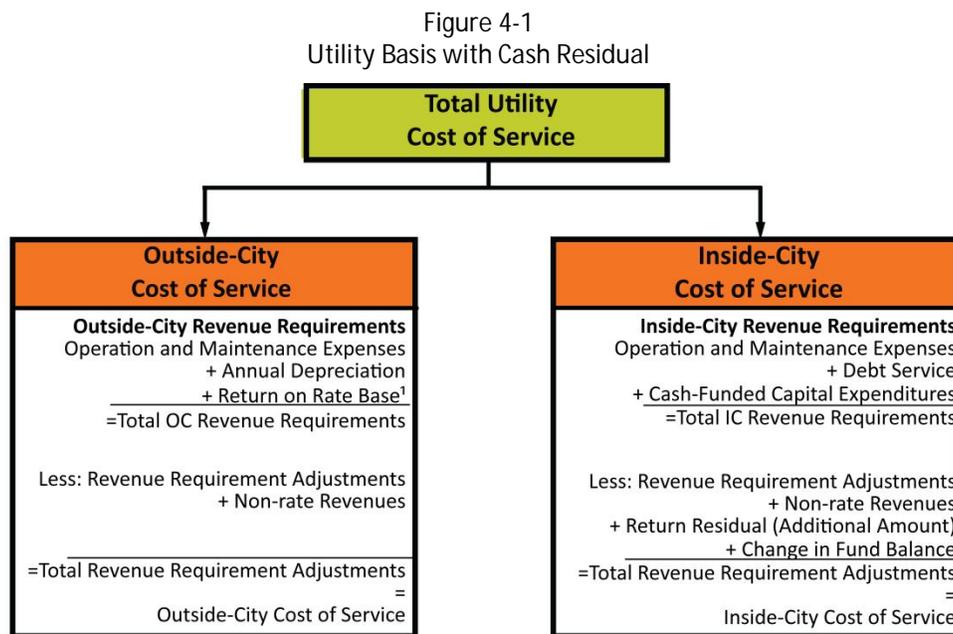
The utility basis with cash residual is a combination of the first two methodologies described above. The utility basis with cash residual is typically used in municipal utilities that must meet an overall cash-based revenue requirement and that has a customer base that includes owner and non-owners.

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<sup>8</sup> This is the return on investment for the assets employed to serve customers.

4.4 Denver Water 2011 revenue requirements

Denver Water uses the utility basis with cash residual method because it serves outside customers, or non-owners of the system. The utility basis with cash residual allows Denver Water to recover annual revenue requirements on a cash basis. However, the utility basis is used to calculate the outside-city revenue requirement to capture the financial risk of serving the outside-city customers. This risk is measured through a return on investment of outside-city assets. Annual depreciation on outside-city assets recovers the annual loss in value of assets. . Figure 4-1 illustrates the utility basis with cash residual calculation.



*(1) Return on rate base includes the additional amount required by the Charter. The additional amount compensates inside-city customers for the financial risk of serving outside-city customers. This additional amount reduces the total inside-city revenue requirement.*

4.4.1 Outside-city revenue requirements

Outside-city revenue requirements consist of operation and maintenance expense, annual depreciation expense and a return-on-rate base. Annual operation and maintenance expense for outside-city customers totals \$89.2 million in 2011. Annual depreciation expense is based on the projected loss in value of outside-city assets for 2011. Depreciation is calculated using the straight-line method with an average useful life of 45 years. Projected depreciation expense on outside-city assets is estimated to be \$18.9 million in 2011. The return on rate base is the product of the calculated rate of return and the outside-city assets (rate base). The rate base is net of accumulated depreciation and contributions in aid of construction. The 2011 return is projected to be \$40.7 million on a rate base of \$546.6 million and a rate of return of 7.3%. These costs are offset by an allocation of non-rate revenues totaling \$11.6 million for 2011.

### 4.4.1.1 Rate of return

Denver Water uses the weighted average cost of capital methodology to calculate the annual rate of return on outside-city assets. The weighted average cost of capital is the product of the weighted average cost of debt, total debt outstanding, cost of equity, and the total equity of the company. The cost of debt is based on the effective interest rate on debt. The effective interest rate accounts for bond premiums and discounts.

The second component is the cost of equity. Denver Water is a municipal entity and is not publically traded with stockholders. As a result, the cost of equity for Denver Water can be estimated by calculating the cost of equity for a group of peer publically traded utility companies. Denver Water uses the discount cash flow method to calculate the cost of equity. The selection of peer utilities is based on the type of utility service provided, financial performance, and similarities to Denver Water. These criteria include:

1. Regression of historical and projected revenue per share, dividends per share, and book value per share must have a coefficient of correlation of 0.8 or higher.
2. Bond rating must be BBB+ or better.
3. Equity beta value must be 0.90 or better.
4. Percentage of revenue derived from regulated operations must be at least 80%.
5. Number of employees must be similar to that of Denver Water.
6. Number of accounts and/or population served must be similar to that of Denver Water.

The peer utilities must meet the first three criteria. The remaining criteria are used to further narrow the list of companies. Denver Water uses the historical and forward looking revenue per share, dividends per share, and book value per share, various dividend yields, and five-year average growth in share price to calculate a cost of equity for each peer utility. The average of the calculated cost of equity is used in the final determination of the cost of equity. Denver Water adjusts the cost of equity for taxes to recognize the personal income tax obligations on receiving a return on an investment. The cost of equity is incorporated into the weighted average cost of capital calculation to determine the 2011 rate of return. The final rate of return used in the model is a five year average of the weighted average cost of capital, cost of equity, and cost of debt. An average is used to reduce annual volatility in the rate of return. Table 4-2 summarizes the rate-of-return calculation.

<b>Table 4-2</b>	
<b>Denver Water Rate of Return</b>	
<b>Description</b>	<b>Rate</b>
Five-year average WACC (2006-2010)	7.3%
<i>Less:</i> Five-year average cost of debt (2006-2010)	<u>(4.2)</u>
<i>Equals:</i> risk premium	3.1
<i>Plus:</i> 2010 cost of debt	<u>4.2</u>
<b>2011 projected rate of return</b>	<b>7.3%</b>

**4.4.1.2 Return on rate base**

The rate of return is applied to outside-city’s asset value (rate base) to determine the total earnings required from the investments made to serve outside-city customers. Table 4-3 summarizes the rate base components:

<b>Table 4-3 Development of Outside City Rate Base</b>	
<b>Description</b>	<b>Amount (\$ thousands)</b>
Part 1 capital additions	\$1,166.8
Part 2 and 3 assets	192.8
Specifically identified distribution system assets	136.4
Other miscellaneous assets	<u>\$31.6</u>
<b>Subtotal</b>	<b>\$1,527.6</b>
<b>Less:</b>	
Contributed capital	\$495.7
Retirements	128.6
Accumulated depreciation	<u>356.7</u>
<b>Net Rate Base</b>	<b>\$546.6</b>

The return on rate base is the product of the projected 2011 rate base and the 2011 projected rate of return.

**4.4.2 Inside City revenue requirements**

Inside City revenue requirements are net of the total cash basis revenue requirements less outside-city utility basis revenue requirements. Inside City revenue requirements include operation and maintenance expense, annual principal and interest payments on outstanding debt, and cash-funded capital costs. In 2011, operations and maintenance costs total \$97.3 million and capital costs and debt costs total \$98.3 million. These costs are offset by an allocation on non-rate revenues, use of reserve funds, and a portion of the return-on-rate base from outside-city customers. The portion of the return-on-rate base allocated to inside-city customers represents the additional amount allowed by the Denver Water’s charter. The capital costs net of the additional amount totals \$22.5 million. Non-rate revenue offsets total \$10.5 million for 2011.

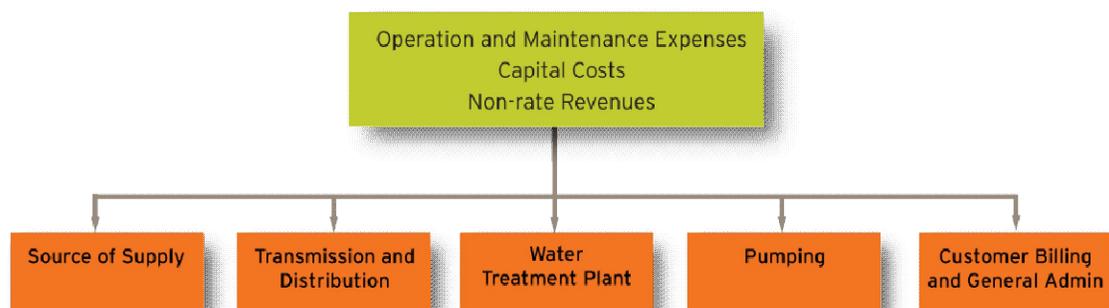
### 4.5 Cost functionalization

Revenue requirements can be separated into cost functions or activity centers that represent the various facilities. Denver Water’s operations and maintenance and capital costs are separated into the following functional areas:

- Source of supply
- Treatment
- Pumping
- Transmission and distribution
- Customer accounts
- General and administrative
- Non-operating

Each of these categories is further divided into subcategories to identify a specific type of expense within a category. This step enhances the accuracy and equitability of assigning costs to customer classes. Figure 4-2 illustrates the allocation of costs to functions.

Figure 4-2  
Cost Functionalization



### 4.6 Cost pools

Cost pools identify costs that are shared by a group of customers. Denver Water cost pools separate costs based on facilities that serve all customer classes, customers within the City and County and Denver, and customers outside the city. Allocating the functionalized costs described in Section 4.5 to cost pools provides a means for equitably recovering facility costs from those who benefit. Table 4-4 describes Denver Water’s cost pools.

Table 4-4 Denver Water Cost Pools	
Cost Pool	Cost Allocation
Joint cost	Revenue requirements shared among all customer classes
Specific Inside City	Revenue requirements incurred by inside-city customer classes only
Specific Outside City	Revenue requirements incurred by outside-city customer classes only
Specific Outside City Total Service	Revenue requirements incurred by outside-city total service customer classes only

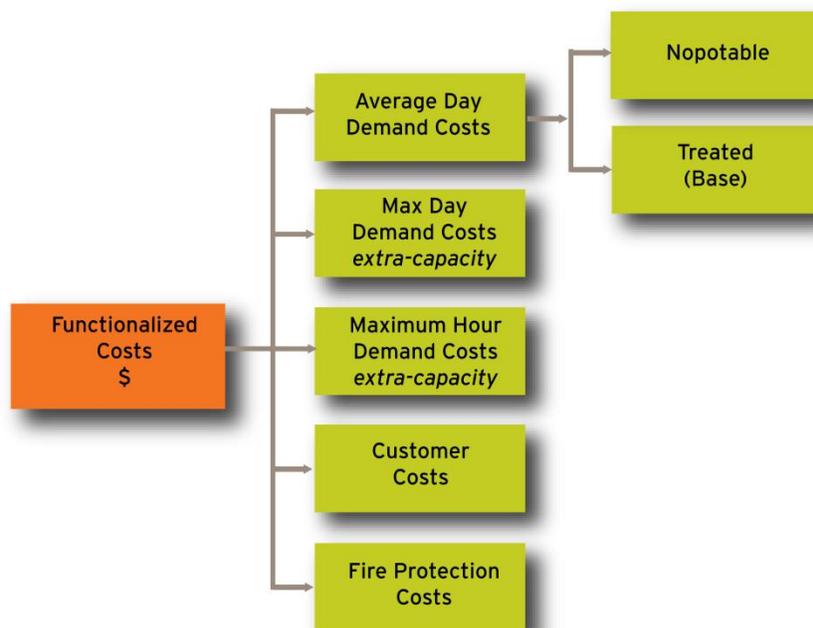
For example, the cost of maintaining raw water supply reservoirs, such as the Gross and Antero reservoirs, benefit all customers. As such, all customer classes would share in the annual cost of these facilities based on their proportionate share of water usage characteristics. Costs associated with the Einfeldt and Capital Hill pump stations serve and benefit only inside-city customers and as such, these costs are allocated to the specific inside-city cost pool. In a similar manner, transmission and distribution mains outside the City and County of Denver benefit only outside-city customers. Costs associated with these facilities are allocated to the specific outside-city cost pool.

### 4.7 Cost component allocation

#### 4.7.1 Cost components

Once revenue requirements have been separated into their respective cost pools, they can be further allocated to cost components. Functionalized costs for facilities described in Section 4.5 are further allocated to cost components based on the facility’s design and functional parameters that predominately influences the amount of annual operations and maintenance expense or capital cost. These parameters include the annual water usage (base and nonpotable), peak rates of demand, the number of customers, and fire protection. The allocation of costs to these parameters is based on the base/extra-capacity method promulgated by the American Water Works Association. Allocation to cost components provides a means for distributing costs to various classes of customers based on their respective requirements for each particular type of service (e.g. treatment, delivery, storage, etc.). Figure 4-3 illustrates the allocation to costs to cost components.

Figure 4-3  
Allocation of Functionalized Costs to Cost Components



Base and nonpotable costs vary directly with the quantity of water sold under average day load conditions. Extra-capacity costs represent those costs incurred due to customer peak demands for water in excess of average day demand. Extra-capacity associated with maximum day demands represents usage in excess of average day usage. Extra-capacity costs associated with maximum hour demands represent usage in excess of maximum day usage. Customer costs vary based on the number of connections, meters served by them and billing expenses. Direct fire protection costs consist of maintenance of fire hydrants.

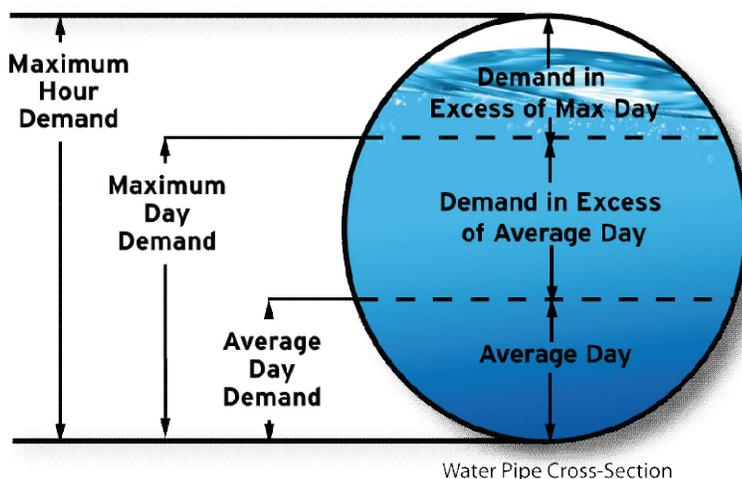
### 4.7.2 Allocation factors

The allocation of each functionalized cost-to-cost components is based on the demand characteristics of the system. Because all customers do not exert their maximum demand for water at the same time, capacities of water facilities are designed to meet coincidental demands of all classes of customers. For every facility on the system, there is an underlying average demand, or uniform rate of usage, exerted coincidentally by customers for which the base cost component applies. Denver Water uses the historical maximum day demand to average day demand ratios to allocate costs to average and maximum day extra-capacity cost classifications. In a similar manner, the maximum hour demand to maximum day demand ratios are used to allocate costs to maximum hour extra-capacity cost classifications.

Comparison of historical system coincidental maximum day and maximum hour demands to AD demands results in appropriate ratios for the allocation of revenue requirements to average day and extra-capacity cost components. A maximum day to average day ratio of 2.28 is used based on a four-year historical average. This indicates approximately 44% of the capacity of facilities designed and operated for maximum day demand is needed for average or base use. Accordingly, the remaining 56% is for maximum day extra-capacity requirements.

Because maximum hour water usage also uses facilities designed and operated for average day and maximum day demands, costs associated with meeting maximum hour demands are allocated to base, maximum day extra-capacity, and maximum hour extra-capacity. A ratio of maximum hour to average day water use of 3.54 is based on demands experienced by Denver Water's system. This ratio indicates 28% of the capacity of facilities designed and operated for maximum hour demand is needed for average (base) use, 36% is required to meet maximum day extra-capacity demand, and the remaining 36% is for maximum hour extra-capacity demand. These ratios are used to allocate the line item functionalized costs to cost components. Figure 4-4 represents the cross-section of a water pipe, which illustrates the relationship between average day, maximum day and maximum hour demands.

Figure 4-4  
Average and Peak Demand Relationships



#### 4.7.3 Allocation of costs to cost components

Functionalized costs are allocated based on the system demand ratios described in Section 4.7.2 or by direct assignment. This separation of costs provides a means for distributing costs to customer classes based on their respective responsibility for each type of service (e.g. average day, maximum day, maximum hour, customer, etc.).

For example, storage reservoirs such as Gross and Antero are associated with storing raw water for delivery for the benefit of all customers. As such, these costs are allocated to the nonpotable cost component in the joint cost pool. In a similar manner, treatment plants are designed to meet average day and maximum day demands for all customers. Costs associated with the treatment plant are allocated 44% to the average day cost component and 56% to the maximum day extra-capacity cost component in the joint cost pool. Distribution-related expenses are designed to meet average day, maximum day, and maximum hour demands. Therefore, 28% of costs are allocated to the average day cost component, 36% of costs are allocated to the maximum day extra-capacity cost component, and 36% of costs are allocated to the maximum hour extra-capacity cost component. For example, distribution main costs associated with serving the Denver International Airport are allocated to the average day, maximum day, and maximum hour cost components in the specific inside-city cost pool.

Other revenue requirements can be directly assigned to a specific cost component. Billing and administrative costs such as meter reading are allocated directly to the billing cost component. Indirect expenditures not specifically assigned are allocated in proportion to all other operations and maintenance cost components. Table 4-5 summarizes the cost components associated with each cost pool discussed in Section 4.6.

## 4. Cost of Service

Table 4-5 Denver Water Cost Pool Cost Components				
Cost Components	Joint Costs	Specific Inside City	Specific Outside City	Specific Outside City Total Service
Average day demand				
Nonpotable	✓			
Base	✓	✓	✓	✓
Maximum day	✓	✓	✓	✓
Maximum hour	✓	✓	✓	✓
Billing	✓	✓	✓	✓
Customer service	✓	✓	✓	✓
Fire	✓	✓	✓	
Indirect	✓			

### 4.8 Allocation of costs to customer classes

The revenue requirements allocated to cost functions, cost pools, and cost components can be distributed to each customer class based on their respective customer usage characteristics discussed in Section 4.7.

#### 4.8.1 Customer class units of service

Customers of a water utility are often identified according to customer class. Each customer class has unique water demand and usage characteristics. Because cost-of-service is based on the concept of proportionality, customer service characteristics for each customer class must be analyzed to allocate the system revenue requirements equitably.

Denver Water uses the base/extra-capacity cost allocation method supported by the American Water Works Association to determine customer class units of service. Table 4-6 lists these characteristics.

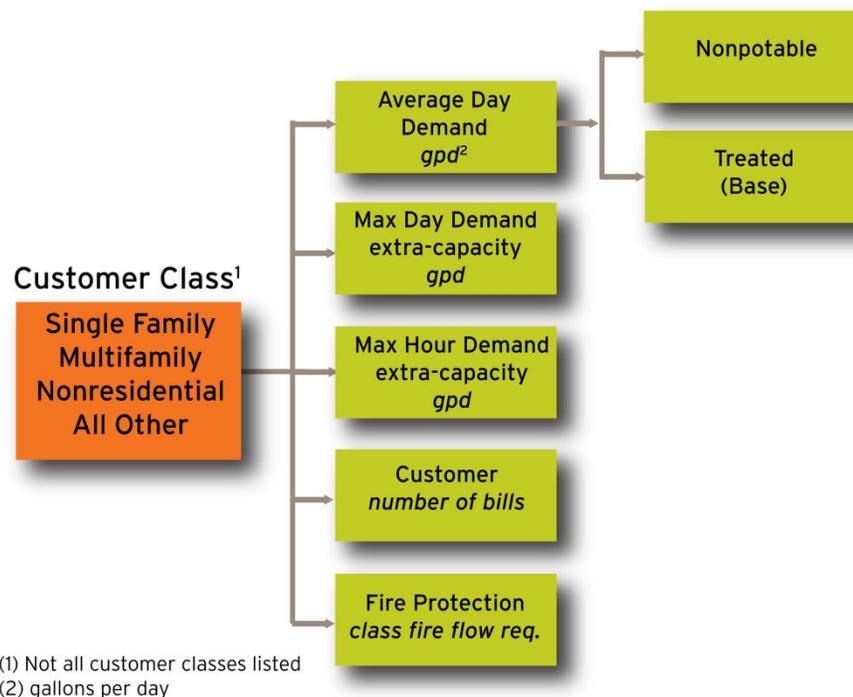
Table 4-6 Customer Usage Characteristics	
Characteristics	Measurement
Average day demand <sup>1</sup>	Average day use in gallons per day
Maximum day demand	Demand in excess of the average day demand in gallons per day (maximum day demand less average day demand)
Maximum hour demand	Demand in excess of the max day demand in gallons per day (maximum hour demand less maximum day demand)
Customer	Number of accounts
Billing	Number of bills
Fire protection	Based on proportionate class usage characteristics

*(1) Denver Water separates average day demand into two components; nonpotable and base. Nonpotable measures average day water use for nonpotable water. Base measures average day water use for treated water.*

The average day cost responsibility of each customer class is related to the quantity of water used by each class under average day load conditions. Average day quantities are based on an analysis of detailed water billing records.

The responsibility for extra-capacity costs varies with extra-capacity requirements for maximum day and maximum hour demands of each class. Average day usage and capacity factors, representing the estimated relationship between individual class peak demand and average day usage, are used to develop extra-capacity requirements for maximum day and maximum hour demands. The estimated capacity factors are based on an analysis of monthly usage characteristics for each customer class. These calculated average day, maximum day, and maximum hour demands are used to allocate the functionalized cost-of-service discussed above to each customer class. Figure 4-5 illustrates the customer usage characteristics allocation.

Figure 4-5  
Customer Usage Characteristics



### 4.8.2 System units of service

System units of service are based on the test year's projected water demands and customer data. The sum of each customer classes' usage characteristics equals the system demands for each usage characteristic. For example, the sum of all customer classes' average day demand equals the system's total average day demand. In a similar manner, the sum of all customer class bills equals the total number of system bills. These system units of service are used to calculate the unit cost of service.

4.8.3 Unit cost of service

Unit costs of service are calculated for each customer usage characteristics within each cost pool. The unit cost of service equals the total cost for each cost component (average day, maximum day, maximum hour, etc.) divided by system units of service for each cost component. Unit costs are calculated for each cost pool (e.g. joint, specific to inside, etc.). For example, joint unit costs for the base component equals total joint average day costs divided by joint system average day units. Table 4-7 lists each cost component’s unit cost measurement.

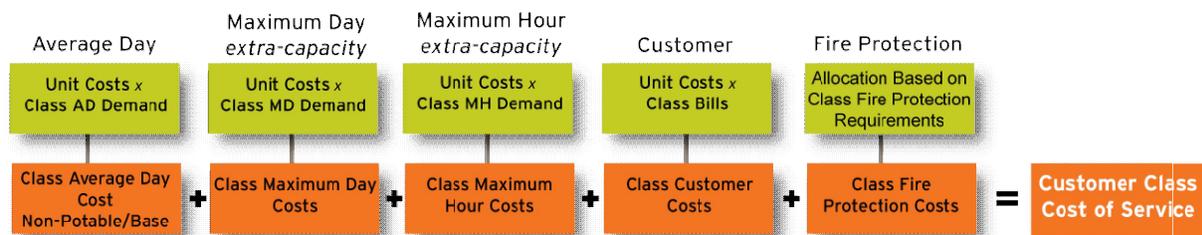
Table 4-7 Unit Costs of Service	
Characteristic	Measurement
Average day demand <sup>1</sup>	
Nonpotable	\$ per average nonpotable daily use in gallons per day (gpd)
Base	\$ per average treated daily use in gpd
Maximum day demand	\$ per demand in excess of the average day demand in gpd
Maximum hour demand	\$ per demand in excess of the maximum day demand in gpd
Customer	\$ per account
Billing	\$ per bill
Fire protection	\$ per gallon per day

(1) Denver Water separates average day demand into two components; nonpotable and base. Nonpotable measures average day water use for nonpotable water. Base measures average day water use for treated water.

4.8.4 Customer class cost-of-service

The customer class cost-of-service is the sum of the unit costs for each cost component discussed in Section 4.8 times the customer class usage characteristics for each cost component. Figure 4-6 illustrates the calculation of the customer class cost of service.

Figure 4-6  
Development of Customer Class Cost of Service



(1) Calculation repeated for each customer class. Sum each class' cost of service equals total cost of service.

## 5.1 Introduction

The principle concern in establishing water rate schedules is to design rates reasonably commensurate with the cost of providing water service. Denver Water designed rate schedules by grouping customers into classes with similar usage characteristics. Practicality further dictates the use of a rate schedule that is simple to apply, reasonably recovers costs from all classes, and is subject to as few misinterpretations as possible.

*The Principles of Utility Rates*<sup>9</sup> and the American Water Works Association's *Principles of Water Rates, Fees, and Charge*<sup>10</sup> establish basic rate-making principles for water rate design. Denver Water combines these principles and utility-specific objectives to address community values and policy requirements when setting rates and rate structures.

- **Revenue sufficiency** – Rates sufficient to meet annual revenue requirements
- **Predictability** – Minimize unexpected changes to revenues or rates
- **Ease of administration** – Compatible with utility billing processes
- **Easy to understand** – Understandable by customers and subject to proper interpretation
- **Defensibility** – Compliant with industry-standard guidelines and free from controversy
- **Equity** – Fair distribution of costs without arbitrariness or capriciousness
- **Conservation** – Promotes the efficient and effective use of water through technology, changes in consumer behavior and pricing signals

## 5.2 Water rates

### 5.1.1 Existing rates

Existing rates have been in effect since February 2010. The existing rate structure consists of a monthly service charge, which is uniform for all customer classes regardless of customer class, location, or meter size. A volume charge is assessed to customer classes for all water use. The volume charge structure varies by customer class. Table 5-1 details the volume rate structure for each customer class.

<b>Rate Structure</b>	<b>Descriptions</b>
Single Family Residential	Four-tiered increasing block
Multifamily	Two-tiered increasing block
All Other (Nonresidential)	Seasonal rate
Irrigation Only	Seasonal rate
Other classes	Uniform

<sup>9</sup> Bonbright, James C., Danielsen, Albert L., Kamerschen, David R. (1988). *Principles of Public Utility Rates*. Arlington, Virginia: Public Utilities Reports, Inc.

<sup>10</sup> Woodcock, C.P.N., et al. *Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices*, MI. (2001). American Water Works Association: Denver, CO.

## 5.1.2 Adopted 2011 rates

Adopted rates retain the existing rate structure. These rates are designed to generate the level of revenue sufficient to meet the 2011 revenue requirements. Tables 5-2 compares 2010 current rates with adopted 2011 rates. Appendix A contains the 2011 published rate schedules.

<b>Table 5-2</b>		
<b>Comparison of 2010 Rates with 2011 Adopted Rates</b>		
<b>Customer Class</b>	<b>Existing 2010</b>	<b>Adopted 2011</b>
<b>Service Charge, \$ per bill</b>	\$5.58	\$6.00
<b>Volume Charge, \$ per 1,000 gallons</b>		
<b>Single Family Residential</b>		
<b>Inside City</b>		
Block 1 (0 to 11,000 gallons)	\$2.11	\$2.41
Block 2 (12 to 30,000 gallons)	4.22	4.82
Block 3 (30 to 40,000 gallons)	6.33	7.23
Block 4 (over 40,000 gallons)	8.44	9.64
<b>Read &amp; Bill</b>		
Block 1 (0 to 11,000 gallons)	\$2.20	\$2.36
Block 2 (12 to 30,000 gallons)	4.40	4.72
Block 3 (30 to 40,000 gallons)	6.60	7.08
Block 4 (over 40,000 gallons)	8.80	9.44
<b>Total Service</b>		
Block 1 (0 to 11,000 gallons)	\$2.59	\$2.70
Block 2 (12 to 30,000 gallons)	5.18	5.40
Block 3 (30 to 40,000 gallons)	7.77	8.10
Block 4 (over 40,000 gallons)	10.36	10.80
<b>Small Multifamily</b>		
<b>Inside City</b>		
Block 1 (0 to 15,000 gallons)	\$2.33	\$2.67
Block 2 (over 15,000 gallons)	2.80	3.20
<b>Read &amp; Bill</b>		
Block 1 (0 to 15,000 gallons)	\$2.71	\$3.04
Block 2 (over 15,000 gallons)	3.25	3.65
<b>Total Service</b>		
Block 1 (0 to 15,000 gallons)	\$3.39	\$3.64
Block 2 (over 15,000 gallons)	4.07	4.37
<b>All Other (Nonresidential)</b>		
<b>Inside City</b>		
Winter	\$1.54	\$1.69
Summer	3.08	3.38
<b>Read &amp; Bill</b>		
Winter	\$1.99	\$2.09
Summer	3.98	4.18
<b>Total Service</b>		
Winter	\$2.16	\$2.31
Summer	4.32	4.62
<i>(1) Applies to two dwelling units. Threshold increases by 6,000 for each additional unit up to 5 units.</i>		

<b>Table 5-2</b>		
<b>Comparison of 2010 Rates with 2011 Adopted Rates</b>		
<b>Customer Class</b>	<b>Existing 2010</b>	<b>Adopted 2011</b>
<b>Irrigation Only</b>		
<b>Inside City</b>		
Winter	\$1.00	\$1.14
Summer	4.00	4.56
<b>Read and Bill</b>		
Winter	\$1.09	\$2.09
Summer	4.36	4.18
<b>Total Service</b>		
Winter	\$1.26	\$1.32
Summer	5.04	5.28
<b>Other</b>		
Master Meter	\$3.01	\$3.45
Master Meter Maintenance	\$4.45	\$4.70
Treated OCSA	3.36	3.83
Raw Water		
Inside City	\$0.47	\$0.47
Outside City	0.77	0.81
OCSA	0.90	0.95
Recycled Water		
Inside City	\$0.89	\$0.93
OCSA	0.91	1.05

### 5.3 Typical monthly residential bills

Single-family residential revenue requirements are recovered through the monthly service charges and consumption charges based on a four-tiered increasing block structure. For 2011, the rates are developed over a 10-month period instead of a year because rates will not be effective until March. January and February of 2011 will be recovered through the current 2010 rates.

The revenue requirement for this class is reduced by the consumption charge and service charge revenue recovered in the first two months of 2011 at 2010 rates, as well as the projected 10 months of service charge revenue at the 2011 rate. Consumption from March to December is distributed to the four blocks based on historical block averages from 2005 to 2008. The consumption in each of the blocks is then weighted by the steepness; for example total block two consumption is multiplied by two.

The calculation of the rate for the first block, of which all other blocks are based, the total revenue requirement for the class is divided by the total of the four blocks of weighted consumption. The block one rate is multiplied by the price rate of each block to develop the rates for blocks two through four.

Typical residential customers' total annual bill will increase approximately \$41 per year or about \$3.40 per month. For example, the average annual cost for water for an inside-city customer will increase from \$330 at 2010 rates to \$371 under the 2011 adopted rates.

Typical outside-city residential customers' total annual bill will increase approximately \$33 per year or about \$2.66 per month. For example, the average annual cost for water for an outside-city customer will increase from \$555 at 2010 rates to \$587 under the 2011 adopted rates.

Appendix A

Board Action Item and 2011 Water Rate Schedule



**DENVER WATER**

# DENVER BOARD OF WATER COMMISSIONERS

Meeting Date: November 17, 2010

Board Item: V-A-1

## Adoption of Water Rates for 2011

Action by Consent

**Action**

Information

Staff recommends adjustments to existing water rates for customer meters read on or after March 3, 2011.

### STUDY FINDINGS AND RECOMMENDATIONS

- Financial Plan

Water sales revenue under existing 2010 rates is inadequate to meet 2011 revenue requirements, debt service coverage, and maintain adequate reserves; therefore, a revenue adjustment of 10.4%<sup>1</sup> in 2011 is proposed. Table 1 summarizes the 2011 revenue requirements.

<b>Table 1</b>	
<b>Revenue Requirements</b>	
<b>Description</b>	<b>Revenue Requirement (millions)</b>
Operation and Maintenance Expense	\$186
Debt Service	41
Cash-funded capital	<u>57</u>
<b>Total 2011 Revenue Requirements</b>	<b>\$284</b>

These revenue requirements are met from \$247 million of water rate revenues from the proposed 2011 water rates, \$22 million of miscellaneous revenues, and \$16 million of reserves.

- Cost of Service Analysis

Allocation of the cost to provide service to customer classes is necessary in the development of equitable water rates. Cost allocations recognize class usage, peak rates of demand, number of customers, and fire protection requirements. Table 2 on the next page shows the percentage change to each customer classes' cost to provide service.

<sup>1</sup> The 10.4% adjustment is proposed to be implemented on March 3, 2011. The amount of additional revenue recovered from this increase is equal to 9.5% if implemented over a 12-month period.

Table 2 2011 Cost of Service Adjustment				
Description	2010 Projected Revenue	2011 Net Revenue Requirement	Change	
			\$	%
Inside City	\$98.6	\$109.3	\$10.7	10.8%
Outside City	<u>126.5</u>	<u>137.2</u>	<u>10.7</u>	8.5%
<b>Cost of Service Adjustment (1)</b>	<b>\$225.1</b>	<b>\$246.5</b>	<b>\$21.4</b>	<b>9.5%</b>

1. Annualized increase. This increase is equivalent to a 10.4% over a 10-month period.

- Proposed 2011 Rates

The principle concern in establishing water rate schedules is to design rates commensurate with the cost of providing water service. The proposed 2011 rates retain the current structure. Attachment #1 includes full proposed 2011 Denver Water rate schedules.

- Public Participation

Public comment on proposed 2011 water rates was taken at the Board Workshop on November 10, 2010 and a public participation meeting was held by the Citizen’s Advisory Committee on the evening of October 21, 2010. Proposed 2011 water rates were presented to the Outside City Distributor’s Forum on October 19, 2010. In addition, the City and County of Denver rate increase was discussed with the Building, Workforce, and Sustainability Subcommittee on October 13, 2010.

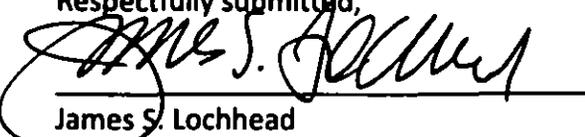
- Recommendation

It is recommended the board approve the proposed water rates for 2011 shown in Attachment #1.

Approvals:

  
 Angela Brilmont, Director of Finance

Respectfully submitted,

  
 James S. Lochhead

**Denver Water**  
**Rate Schedule No. 1 - Inside City**  
**For Meters Read On or After March 3, 2011**

**A. Treated Water Consumption Charges**

<u>Single Family Residential</u>	<u>Monthly Consumption (Gallons)</u>	<u>Rate per 1,000 Gallons</u>
Block 1	0,000 - 11,000	\$2.41
Block 2	12,000 - 30,000	\$4.82
Block 3	31,000-40,000	\$7.23
Block 4	Over 40,000	\$9.64

<u>Small Multi-Family (Duplex through Five-Plex with a Single Meter)</u>	<u>Monthly Consumption (Gallons)</u>	<u>Rate per 1,000 Gallons</u>
Block 1	0 - 15,000	\$2.67
Block 2	Over 15,000	\$3.20

Applies to two dwelling units. Monthly consumption increases by 6,000 gallons per dwelling unit up to five (5) dwelling units.

<u>All Other (Non-Residential)</u>	<u>Monthly Consumption (Gallons)</u>	<u>Rate per 1,000 Gallons</u>
Winter	All consumption	\$1.69
Summer	All consumption	\$3.38

Winter bills have billing periods ending on October 28 through May 2.  
 Summer bills have billing periods ending on May 3 through October 27.

<u>Irrigation-Only</u>	<u>Monthly Consumption (Gallons)</u>	<u>Rate per 1,000 Gallons</u>
Winter	All consumption	\$1.14
Summer	All consumption	\$4.56

Applies to irrigation-only taps.  
 Winter bills have billing periods ending on October 28 through May 2.  
 Summer bills have billing periods ending on May 3 through October 27.

**B. Treated Water Fixed Charges**

<u>Service Charge (All Meter Sizes)</u>	<u>Monthly</u>
	\$6.00

**C. Private Fire Protection Charges**

<u>Sprinkler Systems and Standpipes</u>	
<u>Tap Size</u>	<u>Monthly</u>
1 Inch	\$4.68
2 Inch	\$7.81
4 Inch	\$12.08
6 Inch	\$17.25
8 Inch	\$30.19
10 Inch	\$43.13
12 Inch	\$69.00
16 Inch	\$172.50
 <u>Fire Hydrants</u>	 \$17.25

**D. Notes**

**Applicability:** Charges under this schedule are applicable to all licensees for treated water service or private fire protection service inside the limits of the City and County of Denver.

**Payment:** Charges for treated water service and private fire protection service under this schedule are net. Bills are due and payable to Denver Water upon issuance. Monthly bills are delinquent 20 days after the billing date. Late charges will be assessed per Denver Water policy.

**Rates:** Charges for treated water service consist of a consumption charge and a fixed charge. The consumption charge is based upon the amount of water delivered during the billing period. The fixed charge applies to all accounts that are "on" at any time during the billing period.

**Denver Water**  
**Rate Schedule No. 2 - Read and Bill**  
**For Meters Read On or After March 3, 2011**

**A. Treated Water Consumption Charges**

<u>Single Family Residential</u>	<u>Monthly Consumption (Gallons)</u>	<u>Rate per 1,000 Gallons</u>
Block 1	0,000 - 11,000	\$2.36
Block 2	12,000 - 30,000	\$4.72
Block 3	31,000-40,000	\$7.08
Block 4	Over 40,000	\$9.44

<u>Small Multi-Family (Duplex through Five-Plex with a Single Meter)</u>	<u>Monthly Consumption (Gallons)</u>	<u>Rate per 1,000 Gallons</u>
Block 1	0 - 15,000	\$3.04
Block 2	Over 15,000	\$3.65

Applies to two dwelling units. Monthly consumption increases by 6,000 gallons per dwelling unit up to five (5) dwelling units.

<u>All Other (Non-Residential)</u>	<u>Monthly Consumption (Gallons)</u>	<u>Rate per 1,000 Gallons</u>
Winter	All consumption	\$2.09
Summer	All consumption	\$4.18

Winter bills have billing periods ending on October 28 through May 2.  
 Summer bills have billing periods ending on May 3 through October 27.

<u>Irrigation-Only</u>	<u>Monthly Consumption (Gallons)</u>	<u>Rate per 1,000 Gallons</u>
Winter	All consumption	\$1.22
Summer	All consumption	\$4.88

Applies to irrigation-only taps.

Winter bills have billing periods ending on October 28 through May 2.  
 Summer bills have billing periods ending on May 3 through October 27.

**B. Treated Water Fixed Charges**

<u>Service Charge (All Meter Sizes)</u>	<u>Monthly</u>
	\$6.00

**C. Private Fire Protection Charges**

<u>Sprinkler Systems and Standpipes</u>	
<u>Tap Size</u>	<u>Monthly</u>
1 Inch	\$1.53
2 Inch	\$2.55
4 Inch	\$3.94
6 Inch	\$5.63
8 Inch	\$9.85
10 Inch	\$14.07
12 Inch	\$22.50
16 Inch	\$56.26
<u>Fire Hydrants</u>	\$5.63

**D. Notes**

**Applicability:** Charges under this schedule are applicable to all licensees for treated water service or private fire protection service outside the limits of the City and County of Denver served under agreements whereby the distributor in some manner operates and maintains portions of the water system used to supply the licensee and Denver Water is responsible for billing each licensee on an individual basis.

**Payment:** Charges for treated water service and private fire protection service under this schedule are net. Bills are due and payable to Denver Water upon issuance. Monthly bills are delinquent 20 days after the billing date. Late charges will be assessed per Denver Water policy.

**Rates:** Charges for treated water service consist of a consumption charge and a fixed charge. The consumption charge is based upon the amount of water delivered during the billing period. The fixed charge applies to all accounts that are "on" at any time during the billing period.

**Denver Water**  
**Rate Schedule No. 3 - Total Service**  
**For Meters Read On or After March 3, 2011**

**A. Treated Water Consumption Charges**

<u>Single Family Residential</u>	<u>Monthly Consumption</u> <u>(Gallons)</u>	<u>Rate per</u> <u>1,000 Gallons</u>
Block 1	0,000 - 11,000	\$2.70
Block 2	12,000 - 30,000	\$5.40
Block 3	31,000-40,000	\$8.10
Block 4	Over 40,000	\$10.80

<u>Small Multi-Family (Duplex through Five-Plex with a Single Meter)</u>	<u>Monthly Consumption</u> <u>(Gallons)</u>	<u>Rate per</u> <u>1,000 Gallons</u>
Block 1	0 - 15,000	\$3.64
Block 2	Over 15,000	\$4.37

Applies to two dwelling units. Monthly consumption increases by 6,000 gallons per dwelling unit up to five (5) dwelling units.

<u>All Other (Non-Residential)</u>	<u>Monthly Consumption</u> <u>(Gallons)</u>	<u>Rate per</u> <u>1,000 Gallons</u>
Winter	All consumption	\$2.31
Summer	All consumption	\$4.62

Winter bills have billing periods ending on October 28 through May 2.  
 Summer bills have billing periods ending on May 3 through October 27.

<u>Irrigation-Only</u>	<u>Monthly Consumption</u> <u>(Gallons)</u>	<u>Rate per</u> <u>1,000 Gallons</u>
Winter	All consumption	\$1.32
Summer	All consumption	\$5.28

Applies to irrigation-only taps.

Winter bills have billing periods ending on October 28 through May 2.  
 Summer bills have billing periods ending on May 3 through October 27.

**B. Treated Water Fixed Charges**

<u>Service Charge (All Meter Sizes)</u>	<u>Monthly</u>
	\$6.00

**C. Private Fire Protection Charges**

<u>Sprinkler Systems and Standpipes</u>	
<u>Tap Size</u>	<u>Monthly</u>
1 Inch	\$2.04
2 Inch	\$3.40
4 Inch	\$5.26
6 Inch	\$7.51
8 Inch	\$13.15
10 Inch	\$18.79
12 Inch	\$30.06
16 Inch	\$75.14
<u>Fire Hydrants</u>	\$7.51

**D. Notes**

**Applicability:** Charges under this schedule are applicable to all licensees for treated water service or private fire protection service outside the limits of the City and County of Denver served under agreements whereby Denver Water operates and maintains the water system used to supply water to the licensee.

**Payment:** Charges for treated water service and private fire protection service under this schedule are net. Bills are due and payable to Denver Water upon issuance. Monthly bills are delinquent 20 days after the billing date. Late charges will be assessed per Denver Water policy.

**Rates:** Charges for treated water service consist of a consumption charge and a fixed charge. The consumption charge is based upon the amount of water delivered during the billing period. The fixed charge applies to all accounts that are "on" at any time during the billing period.

**Denver Water  
Rate Schedule No. 4  
Outside City: Master Meter  
For Meters Read On or After March 3, 2011**

**A. Treated Water Consumption Charges**

	<u>Rate per 1,000 Gallons</u>
<u>All Consumption</u>	\$3.45

**B. Treated Water Fixed Charges**

	<u>Monthly</u>
<u>Service Charge (All Meter Sizes)</u>	\$6.00

**D. Notes**

**Applicability:** Charges for treated water service under this schedule are applicable to municipalities, quasi-municipal districts and water companies outside the limits of the City and County of Denver served under agreements whereby the municipality, quasi-municipal district or water company operates and maintains water systems to supply individual licensees. Denver Water bills distributors for water delivered through "master meters." Each distributor establishes charges for its individual licensees for water service.

**Payment:** Charges for treated water service under this schedule are net. Bills are prepared on a monthly basis and are due and payable to Denver Water upon issuance. Bills become delinquent 20 days after the billing date appearing on the billing statement. Late charges will be assessed per Denver Water policy.

**Rates:** Charges for treated water service consist of a consumption charge and a fixed charge. The consumption charge is based upon the amount of water delivered during the billing period. The fixed charge applies to all accounts that are "on" at any time during the billing period.

**Denver Water  
Rate Schedule No. 5  
Outside City: Master Meter Maintenance  
For Meters Read On or After March 3, 2011**

**A. Treated Water Consumption Charges**

	<b>Rate per 1,000 Gallons</b>
<b><u>All Consumption</u></b>	\$4.70

**B. Treated Water Fixed Charges**

	<b><u>Monthly</u></b>
<b><u>Service Charge (All Meter Sizes)</u></b>	\$6.00

**D. Notes**

**Applicability:** This is a variation of a standard master meter contract in which Denver Water bills distributors for water delivered through "master meters" and the distributor charges its individual licensees for water service. The charges for treated water service under this schedule are applicable to master meter distributors who elect to continue performing customer billing and collection functions within their service area while contracting with Denver Water to operate, maintain and replace their water system.

**Payment:** Charges for treated water service under this schedule are net. Bills are prepared on a monthly basis and are due and payable to Denver Water upon issuance. Bills become delinquent 20 days after the billing date appearing on the billing statement. Late charges will be assessed per Denver Water policy.

**Rates:** Charges for treated water service consist of a consumption charge and a fixed charge. The consumption charge is based upon the amount of water delivered during the billing period. The fixed charge applies to all accounts that are "on" at any time during the billing period.

**Denver Water  
Rate Schedule No. 6  
Raw and Recycled Water Service  
For Recycled Water Meters Read On or After March 3, 2011  
For Raw Water Billing Periods Ending On or After March 3, 2011**

**A. Raw Water Consumption and Fixed Charges**

<u>Consumption Charges (All Consumption)</u>	<u>Rate per 1,000 Gallons</u>	<u>Rate per Acre Foot</u>
Inside City	\$0.47	\$153.15
Outside City	\$0.81	\$263.94
Outside the Combined Service Area (See Rate Schedule No. 7)	\$0.95	\$309.56
 <u>Fixed Charges</u>	 Not Applicable	 Not Applicable

**C. Recycled Water Consumption and Fixed Charges**

<u>Consumption Charges (All Consumption)</u>	<u>Rate per 1,000 Gallons</u>	<u>Rate per Acre Foot</u>
Inside City	\$0.93	\$303.04
Outside City	Not Applicable	Not Applicable
Outside the Combined Service Area (See Rate Schedule No. 7)	\$1.05	\$342.14
 <u>Fixed Charges</u>	 <u>Monthly</u>	
Service Charge (All Meter Sizes)	\$6.00	

**D. Notes**

**Applicability:** Charges under this schedule are applicable to entities (including municipalities, quasi-municipal districts and corporations) with whom Denver Water has contracts to deliver raw or recycled water service at inside city or outside city rates. See Rate Schedule No. 7 for applicability outside the combined service area.

**Payment:** Payment terms for charges for raw or recycled water service under this schedule are defined by the terms of each contract. In general, bills for raw and recycled water service are prepared on a monthly basis and are due and payable within 20 days.

**Rates:** Charges for raw water service consist of solely of a consumption charge. Charges for recycled water service consist of a consumption charge and a fixed charge. The consumption charge is based upon the amount of water delivered during the billing period. The fixed charge applies to all accounts that are "on" at any time during the billing period.

**Denver Water  
Rate Schedule No. 7  
Outside the Combined Service Area  
For Treated and Recycled Water Meters Read On or After March 3, 2011  
For Raw Water Billing Periods Ending On or After March 3, 2011**

**A. Treated Water Consumption and Fixed Charges**

	<b>Rate per <u>1,000 Gallons</u></b>	<b>Rate per <u>Acre Foot</u></b>
<b><u>Consumption Charges (All Consumption)</u></b>	\$3.83	\$1,248.01
<b><u>Fixed Charges</u></b>	<b><u>Monthly</u></b>	
Service Charge (All Meter Sizes)	\$6.00	

**B. Raw Water Consumption and Fixed Charges**

	<b>Rate per <u>1,000 Gallons</u></b>	<b>Rate per <u>Acre Foot</u></b>
<b><u>Consumption Charges (All Consumption)</u></b>	\$0.95	\$309.56
<b><u>Fixed Charges</u></b>	Not Applicable	Not Applicable

**C. Recycled Water Consumption and Fixed Charges**

	<b>Rate per <u>1,000 Gallons</u></b>	<b>Rate per <u>Acre Foot</u></b>
<b><u>Consumption Charges (All Consumption)</u></b>	\$1.05	\$342.14
<b><u>Fixed Charges</u></b>	<b><u>Monthly</u></b>	
Service Charge (All Meter Sizes)	\$6.00	

**D. Notes**

**Applicability:** Charges under this schedule are applicable to entities (including municipalities, quasi-municipal districts and corporations) with whom Denver Water has contracts to deliver a fixed amount of water each year at Denver Water's outside the combined service area rates. These entities are located outside of Denver Water's combined service area, which is comprised of the City and County of Denver plus the total geographic area of all Total Service, Read and Bill, and Master Meter distributors who rely on Denver Water for their treated water supply. For contracts with entities outside of the combined service area, Denver Water is only obligated to provide specified amounts of treated, raw or recycled water as specified by contract. Denver Water has no relationship with, or obligation to, individual customers of the entity holding the fixed amount contract.

**Payment:** Payment terms for charges under this schedule are defined by the terms of each contract. In general, bills for raw and recycled water service are prepared on a monthly basis and are due and payable within 20 days.

**Rates:** Charges for raw water service consist of solely of a consumption charge. Charges for treated and recycled water service consist of a consumption charge and a fixed charge. The consumption charge is based upon the amount of water delivered during the billing period. The fixed charge applies to all accounts that are "on" at any time during the billing period.

**Denver Water**  
**Rate Schedule No. 8 - System Development Charges**  
**Effective March 3, 2011**

**I. Single Family Residential**

**Applicability:** Licenses for single family residential treated water taps within the City and County of Denver and Denver Water's service areas, including special contracts.\* System Development Charges are due and payable prior to issuance of a license to the customer.

	<b>Treated Water</b>	
	<u>Inside Denver</u>	<u>Outside Denver</u>
Base charge per residence	\$2,830	\$3,960
Charge per square foot of gross lot size	\$0.59	\$0.82

**II. Multi Family Residential**

**Applicability:** Licenses for multifamily residential treated water taps within the City and County of Denver and Denver Water's service areas, including special contracts.\* System Development Charges are due and payable prior to issuance of a license to the customer.

	<b>Treated Water</b>	
	<u>Inside Denver</u>	<u>Outside Denver</u>
Base charge for a duplex or the first two household units that are served through a single tap	\$8,860	\$12,400
Charge for each additional household unit above two units that are served through a single tap	\$1,730	\$2,420

**III. Irrigation-Only**

**Applicability:** An SDC for any license supplying potable or nonpotable irrigation-only service will be based on one of the following methods, **but will not be less than the SDC for the size of tap to be installed.**

- 1) the size of the entire licensed property, or
- 2) the volume of water to be taken on an annual basis

**IV. All Other**

**Applicability:** Licenses for all other treated and non-potable water taps within the City and County of Denver and Denver Water service areas, including special contracts.\* System Development charges are due and payable prior to issuance of a license to the customer.

<u>Tap Size</u>	<b>Treated Water</b>		<b>Non-Potable Water</b>	
	<u>Inside Denver</u>	<u>Outside Denver</u>	<u>Inside Denver</u>	<u>Outside Denver</u>
3/4"	\$7,180	\$10,050	\$5,050	\$7,070
1"	\$18,720	\$26,200	\$13,490	\$18,880
1 1/2"	\$39,540	\$55,350	\$29,310	\$41,030
2"	\$73,030	\$102,250	\$53,870	\$75,420
3"	\$137,370	\$192,320	\$103,740	\$145,240
4"	\$195,200	\$273,280	\$144,780	\$202,690
6"	\$300,310	\$420,430	\$233,030	\$326,240
8"	\$408,290	\$571,600	\$321,280	\$449,790
10"	\$564,070	\$789,690	\$409,520	\$573,330
12"	\$607,280	\$850,190	\$497,770	\$696,880

**V. Special Contracts, Fixed Volume Contracts, and Large Volume Customers**

**Applicability:** Special contracts, fixed volume contracts, and customers using large volumes of water within the City and County of Denver and Denver Water's service areas. System Development Charges are due and payable prior to issuance of a license to the customer.

	<b>Treated Water</b>		<b>Non-Potable Water</b>	
	<u>Inside Denver</u>	<u>Outside Denver</u>	<u>Inside Denver</u>	<u>Outside Denver</u>
Inside Combined Service Area				
Acre Foot Conversion (\$/AF)	\$13,160	\$18,430	\$9,260	\$12,970
1,000 Gallons Conversion (\$/1,000 gal.)	\$40.40	\$56.55	\$28.43	\$39.80
Outside Combined Service Area				
Acre Foot Conversion (\$/AF)		\$23,370		\$16,450
1,000 Gallons Conversion (\$/1,000 gal.)		\$71.72		\$50.48

\* **NOTE:** There are several distributor contracts and water service agreements that contain negotiated tap ratio conversions per acre foot and some agreements that contain negotiated, and in some cases, prepaid system development charges. These contracts will continue to be administered utilizing the System Development Charge calculations and/or tap ratio conversions specified in each of these contracts. Tap credit pools shall continue to be administered in a manner consistent with the applicable water service agreement and Denver Water Operating Rules.

Appendix B  
Typical Monthly Bill Comparison



**DENVER WATER**

**Table B-1**  
**Comparison of Monthly Bills Under Existing and Proposed Rate Scenarios**  
**Single Family Residential**

<b>Inside City</b>	<b>2010</b>	<b>2011</b>	<b>Change</b>	
<b>Use per Bill (Kgal)</b>	<b>Current</b>	<b>Adopted</b>	<b>\$</b>	<b>%</b>
0	\$5.58	\$6.00	\$0.42	7.5%
1	\$7.69	\$8.41	\$0.72	9.4%
2	\$9.80	\$10.82	\$1.02	10.4%
3	\$11.91	\$13.23	\$1.32	11.1%
4	\$14.02	\$15.64	\$1.62	11.6%
5	\$16.13	\$18.05	\$1.92	11.9%
10	\$26.68	\$30.10	\$3.42	12.8%
15	\$45.67	\$51.79	\$6.12	13.4%
20	\$66.77	\$75.89	\$9.12	13.7%
30	\$108.97	\$124.09	\$15.12	13.9%
50	\$256.67	\$292.79	\$36.12	14.1%

<b>Read &amp; Bill</b>	<b>2010</b>	<b>2011</b>	<b>Change</b>	
<b>Use per Bill (Kgal)</b>	<b>Current</b>	<b>Adopted</b>	<b>\$</b>	<b>%</b>
0	\$5.58	\$6.00	\$0.42	7.5%
1	\$7.78	\$8.36	\$0.58	7.5%
2	\$9.98	\$10.72	\$0.74	7.4%
3	\$12.18	\$13.08	\$0.90	7.4%
4	\$14.38	\$15.44	\$1.06	7.4%
5	\$16.58	\$17.80	\$1.22	7.4%
10	\$27.58	\$29.60	\$2.02	7.3%
15	\$47.38	\$50.84	\$3.46	7.3%
20	\$69.38	\$74.44	\$5.06	7.3%
30	\$113.38	\$121.64	\$8.26	7.3%
50	\$267.38	\$286.84	\$19.46	7.3%

<b>Total Service</b>	<b>2010</b>	<b>2011</b>	<b>Change</b>	
<b>Use per Bill (Kgal)</b>	<b>Current</b>	<b>Adopted</b>	<b>\$</b>	<b>%</b>
0	\$5.58	\$6.00	\$0.42	7.5%
1	\$8.17	\$8.70	\$0.53	6.5%
2	\$10.76	\$11.40	\$0.64	5.9%
3	\$13.35	\$14.10	\$0.75	5.6%
4	\$15.94	\$16.80	\$0.86	5.4%
5	\$18.53	\$19.50	\$0.97	5.2%
10	\$31.48	\$33.00	\$1.52	4.8%
15	\$54.79	\$57.30	\$2.51	4.6%
20	\$80.69	\$84.30	\$3.61	4.5%
30	\$132.49	\$138.30	\$5.81	4.4%
50	\$313.79	\$327.30	\$13.51	4.3%

Appendix C  
Historical Rate Adjustments



**DENVER WATER**

**Table C-1  
Historical Rate Revenue Adjustments**

<b>Effective Date</b>	<b>% Increase</b>
March 1, 1959	35.0%
June 1, 1965	15.0%
January 1, 1970	25.0%
April 1, 1975	18.5%
April 16, 1976	20.0%
April 16, 1980	32.2%
February 16, 1982	12.0%
April 15, 1986	7.0%
April 15, 1987	5.0%
June 15, 1992	2.2%
June 1, 1993	4.0%
June 1, 1994	4.5%
January 1, 1995	8.4%
January 1, 1996	5.8%
January 1, 1997	4.5%
January 1, 1998	3.1%
January 1, 1999	0.5%
March 6, 2000	2.5%
January 1, 2001	2.4%
January 1, 2002	2.5%
January 1, 2003	3.1%
January 1, 2004	5.4%
June 9, 2004	5.0%
January 1, 2005	8.0%
January 1, 2006	8.0%
January 1, 2007	7.0%
January 1, 2008	5.0%
January 1, 2009	9.0%
February 3, 2010	6.0%
March 3, 2011	9.5%

**Table C-2**  
**Historical Rate Revenue Adjustments Inside & Outside City**  
**Customers 1992-2011**

<b>Year</b>	<b>Inside City</b>	<b>Outside City</b>	<b>Total System</b>
1992	7.0%	0.0%	2.2%
1993	7.0%	2.0%	4.0%
1994	12.8%	0.0%	4.5%
1995	12.9%	4.9%	8.4%
1996	9.8%	2.6%	5.8%
1997	4.3%	4.9%	4.5%
1998	5.6%	1.1%	3.1%
1999	0.8%	0.3%	0.5%
2000	3.4%	2.6%	2.5%
2001	2.8%	2.6%	2.4%
2002	2.7%	2.5%	2.5%
2003	3.1%	3.1%	3.1%
January 2004	3.8%	6.8%	5.4%
June 2004	5.0%	5.0%	5.0%
2005	6.2%	9.3%	8.0%
2006	7.7%	8.2%	8.0%
2007	6.8%	7.1%	7.0%
2008	7.1%	3.5%	5.0%
2009	6.6%	10.8%	9.0%
2010	9.2%	3.7%	6.0%
2011	10.8%	8.5%	9.5%

Appendix D  
Financial Plan



**DENVER WATER**

**Table D-1**  
**2011 Cost of Service Rate Study**  
**Projected 2011-2013 Allocated O&M**  
**(\$ thousands)**

<b>Functional Costs</b>	<b>Projected 2011 O&amp;M Costs</b>	<b>Projected 2012 O&amp;M Costs</b>	<b>Projected 2013 O&amp;M Costs</b>
<b>Source of Supply</b>			
Supervision and Engineering	\$717	\$697	\$713
Storage Reservoirs	\$6,531	\$6,350	\$6,493
Diversion Dams and Intakes	\$31	\$30	\$30
Wells	\$65	\$63	\$65
Collection and Transmission Facilities - Raw Water	\$3,357	\$3,264	\$3,337
Ditch Assessments and Other Expenses	\$99	\$97	\$99
Power Generating Facilities	\$730	\$710	\$725
Power Transmission Facilities	\$20	\$19	\$20
Generation Replacement	\$194	\$188	\$192
Gravel Pits (Water Storage)	\$78	\$76	\$78
<b>Source of Supply Total</b>	<b>\$11,821</b>	<b>\$11,494</b>	<b>\$11,752</b>
<b>Treatment</b>			
Supervision and Engineering	\$828	\$805	\$823
Treatment Plants	\$27,604	\$26,840	\$27,444
Power Generation and Transmission Facilities	\$273	\$266	\$272
Reuse Project	\$0	\$0	\$0
Recycling	\$4,759	\$4,627	\$4,731
Waste Disposal Closure & Postclosure Care	\$347	\$338	\$345
<b>Treatment Total</b>	<b>\$33,812</b>	<b>\$32,876</b>	<b>\$33,616</b>
<b>Pumping</b>			
Supervision and Engineering	\$483	\$470	\$480
Pumping Stations	\$9,140	\$8,887	\$9,087
<b>Pumping Total</b>	<b>\$9,623</b>	<b>\$9,356</b>	<b>\$9,567</b>
<b>Transmission &amp; Distribution (T&amp;D)</b>			
Supervision and Engineering	\$9,390	\$9,130	\$9,336
Storage Facilities	\$1,239	\$1,205	\$1,232
Distribution Mains - Potable	\$12,970	\$12,611	\$12,895
Distribution Mains - Nonpotable	\$101	\$98	\$100
Transmission Mains	\$3,071	\$2,986	\$3,053
Fire Hydrants	\$1,925	\$1,872	\$1,914
Service Lines Potable	\$2,814	\$2,736	\$2,798
Service Lines Non-Potable	\$5	\$5	\$5
Meter Shop Expenses	\$4,476	\$4,352	\$4,450
Power Generation and Transmission Facilities	\$100	\$98	\$100
<b>Transmission and Distribution Total</b>	<b>\$36,091</b>	<b>\$35,092</b>	<b>\$35,881</b>
<b>Customer Accounts</b>			
Administration and Supervision	\$2,210	\$2,149	\$2,197
Customer Service Expenses	\$11,153	\$10,844	\$11,088
Collection Expenses	\$0	\$0	\$0
Water Sales Expenses	\$1	\$0	\$1
Water Conservation	\$926	\$901	\$921
<b>Customer Account Total</b>	<b>\$14,290</b>	<b>\$13,894</b>	<b>\$14,207</b>
<b>General &amp; Administrative</b>			
<b>General</b>			
Structures and Improvements	\$2,715	\$2,640	\$2,700
Risk Mgmt. and Ins.	\$2,173	\$2,112	\$2,160
Safety & Security	\$3,223	\$3,134	\$3,204
Environmental	\$791	\$769	\$786
<b>Administrative Expenses</b>			
Manager and Staff Division	\$8,335	\$8,104	\$8,287
Public Affairs Division	\$11,926	\$11,595	\$11,856
Legal Division	\$5,555	\$5,401	\$5,522
Finance Division	\$9,830	\$9,558	\$9,773
Information Technology Division	\$24,087	\$23,420	\$23,947
Engineering Division	\$13,988	\$13,601	\$13,907
Planning Division	(\$1,844)	(\$1,792)	(\$1,833)
<b>General &amp; Administration Total</b>	<b>\$80,779</b>	<b>\$78,542</b>	<b>\$80,310</b>
<b>Total O&amp;M</b>	<b>\$186,415</b>	<b>\$181,254</b>	<b>\$185,334</b>

\*Totals may not add due to rounding.

**Table D-2**  
**2011 Cost of Service Rate Study**  
**Operating Fund Cash Flow Analysis**  
**(\$ thousands)**

Description	Budget 2010	2011	2012	2013
<b>Operating Revenues</b>				
Water Sales Revenue Under Existing Rates	\$222,252	\$225,104	\$226,440	\$227,752
Additional Revenue Required	\$2,726	\$21,385	\$47,299	\$76,207
Total Water Sales Revenue	\$224,978	\$246,489	\$273,739	\$303,959
<b>Other Revenue</b>				
Surcharges	\$0	\$0	\$0	\$0
Non-Operating Revenues	\$2,793	\$2,772	\$2,784	\$2,796
Hydro Power Revenues	\$3,855	\$4,500	\$4,500	\$4,500
Reimbursements & Grants	\$0	\$5,100	\$200	\$0
Interest Income	\$1,063	\$1,341	\$1,101	\$1,063
Other Revenue	\$8,050	\$8,300	\$8,300	\$8,300
Total Non-Operating Revenue	\$15,761	\$22,013	\$16,885	\$16,659
<b>Total Revenues</b>	<b>\$240,739</b>	<b>\$268,502</b>	<b>\$290,623</b>	<b>\$320,618</b>
<b>Revenue Requirements</b>				
O&M (Including Indirect Costs Allocated to Capital)	\$183,606	\$201,186	\$195,155	\$199,097
Less: Indirect O&M Costs Allocated to Capital	\$0	\$14,771	\$13,901	\$13,764
Total Net O&M	\$183,606	\$186,415	\$181,254	\$185,334
<b>Debt Service &amp; Debt Service Issuance Expenses</b>				
Existing Debt Service	\$51,232	\$46,333	\$39,931	\$40,466
Release of DRS funds/BABS Subsidy	\$0	(\$4,937)	(\$2,344)	(\$2,344)
Proposed Debt Service	\$0	\$0	\$2,655	\$6,345
Debt Issuance Costs	\$0	\$0	\$592	\$726
Total Debt Service	\$51,232	\$41,396	\$40,834	\$45,192
<b>Transfers To / (From):</b>				
Part 1 Capital Plan Cash Flow Fund	\$0	\$0	\$0	\$15,040
Part 2 and 3 Capital Plan Cash Flow Fund	\$39,426	\$56,969	\$77,004	\$70,492
Total Transfers	\$39,426	\$56,969	\$77,004	\$85,532
<b>Total Revenue Requirements</b>	<b>\$274,264</b>	<b>\$284,779</b>	<b>\$299,093</b>	<b>\$316,058</b>
<i>Operating Surplus or (Deficiency)</i>	<i>(\$33,525)</i>	<i>(\$16,278)</i>	<i>(\$8,470)</i>	<i>\$4,560</i>
<i>Plus: Beginning Balance</i>	<i>\$194,012</i>	<i>\$160,487</i>	<i>\$144,210</i>	<i>\$135,740</i>
<b>Ending Investment Balance</b>	<b>\$160,487</b>	<b>\$144,210</b>	<b>\$135,740</b>	<b>\$140,301</b>
<b>Revenue Adjustments</b>				
Effective Month (1=Jan, 2=Feb, etc.)		3	3	3
Annual Revenue Adjustments	0.0%	10.4%	10.4%	10.4%
Cumulative Adjustments	0.0%	10.4%	21.9%	34.6%
*Totals may not add due to rounding.				

**Table D-3**  
**2011 Cost of Service Rate Study**  
**Part 1 Capital Plan Cash Flow Analysis**  
**(\$ thousands)**

Description	Budget 2010	2011	2012	2013
<b>Sources of Funds</b>				
System Development Charges	\$10,369	\$10,382	\$10,803	\$18,029
Participation Fees	\$4,106	\$5,453	\$5,416	\$5,387
Land Sales	\$0	\$0	\$0	\$0
Bond Proceeds	\$90,000	\$0	\$59,000	\$82,000
Transfer From / (To) Operating Fund	\$0	\$0	\$0	\$15,040
Interest Income	\$0	\$1,340	\$0	\$0
<b>Total Sources of Funds</b>	<b>\$104,475</b>	<b>\$17,176</b>	<b>\$75,219</b>	<b>\$120,456</b>
<b>Uses of Funds</b>				
Part 1 Capital Projects	\$57,516	\$49,899	\$65,934	\$118,988
Part 1 Salaries	\$0	\$3,318	\$4,255	\$3,349
Part 1 Indirect O&M	\$0	\$4,896	\$4,608	\$4,562
<b>Total Uses of Funds</b>	<b>\$57,516</b>	<b>\$58,113</b>	<b>\$74,797</b>	<b>\$126,899</b>
Annual Surplus / (Deficiency)	\$46,959	-\$40,937	\$422	-\$6,444
<i>Plus:</i> Beginning Balance	\$0	\$46,959	\$6,022	\$6,444
<b>Ending Balance</b>	<b>\$46,959</b>	<b>\$6,022</b>	<b>\$6,444</b>	<b>\$0</b>
<i>*Totals may not add due to rounding.</i>				

**Table D-4**  
**2011 Cost of Service Rate Study**  
**Part 2 and 3 Capital Plan Fund Cash Flow Analysis**  
**(\$ thousands)**

Description	Budget 2010	2011	2012	2013
<b>Sources of Funds</b>				
Bond Proceeds	\$0	\$0	\$0	\$0
Transfer From / (To) Operating Fund	\$39,426	\$56,969	\$77,004	\$70,492
Interest Income	\$0	\$0	\$0	\$0
<b>Total Sources of Funds</b>	<b>\$39,426</b>	<b>\$56,969</b>	<b>\$77,004</b>	<b>\$70,492</b>
<b>Uses of Funds</b>				
Part 2 Capital Projects	\$30,083	\$32,729	\$52,531	\$47,119
Part 2 Salaries	\$0	\$4,269	\$3,604	\$2,691
Part 2 Indirect O&M	\$0	\$8,593	\$8,086	\$8,006
Part 3 Capital Projects	\$9,343	\$9,005	\$10,258	\$10,123
Part 3 Salaries	\$0	\$1,092	\$1,318	\$1,358
Part 3 Indirect O&M	\$0	\$1,283	\$1,207	\$1,195
<b>Total Uses of Funds</b>	<b>\$39,426</b>	<b>\$56,969</b>	<b>\$77,004</b>	<b>\$70,492</b>
Annual Surplus / (Deficiency)	\$0	\$0	\$0	\$0
<i>Plus:</i> Beginning Balance	\$0	\$0	\$0	\$0
<b>Ending Balance</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<i>*Totals may not add due to rounding.</i>				

**Table D-5**  
**2011 Cost of Service Rate Study**  
**Combined Cash Flow Summary**  
**(\$ thousands)**

Description	Budget 2010	2011	2012	2013
<b>Operating Revenues</b>				
Water Sales Revenue Under Existing Rates	\$222,252	\$225,104	\$226,440	\$227,752
Additional Revenue Required	\$2,726	\$21,385	\$47,299	\$76,207
<b>Total Water Sales Revenue</b>	<b>\$224,978</b>	<b>\$246,489</b>	<b>\$273,739</b>	<b>\$303,959</b>
<b>Other Revenue</b>				
Surcharges	\$0	\$0	\$0	\$0
Non-Operating Revenues	\$2,793	\$2,772	\$2,784	\$2,796
Hydro Power Revenues	\$3,855	\$4,500	\$4,500	\$4,500
Strontia Springs Dredging Reimbursement	\$0	\$5,100	\$200	\$0
Interest Income	\$532	\$1,341	\$550	\$532
Other Revenue	\$8,050	\$8,300	\$8,300	\$8,300
<b>Total Non-Operating Revenue</b>	<b>\$15,230</b>	<b>\$22,013</b>	<b>\$16,334</b>	<b>\$16,128</b>
<b>Other Receipts</b>				
System Development Charges	\$10,369	\$10,382	\$10,803	\$18,029
Participation Fees	\$4,106	\$5,453	\$5,416	\$5,387
Land Sales	\$0	\$0	\$0	\$0
Part 1 Bond Proceeds	\$90,000	\$0	\$59,000	\$82,000
Part 2 & 3 Bond Proceeds	\$0	\$0	\$0	\$0
Interest Income (50%)	\$532	\$1,341	\$550	\$532
<b>Total Other Receipts</b>	<b>\$105,007</b>	<b>\$17,176</b>	<b>\$75,769</b>	<b>\$105,948</b>
<b>Total Revenues and Receipts</b>	<b>\$345,214</b>	<b>\$285,678</b>	<b>\$365,842</b>	<b>\$426,034</b>
<b>Expenditures:</b>				
O&M (Including Indirect Costs Allocated to Capital)	\$183,606	\$201,186	\$195,155	\$199,097
<b>Less:</b> Indirect O&M Costs Allocated to Capital	\$0	\$14,771	\$13,901	\$13,764
<b>Total Net O&amp;M</b>	<b>\$183,606</b>	<b>\$186,415</b>	<b>\$181,254</b>	<b>\$185,334</b>
<b>Debt Service &amp; Debt Service Issuance Expenses</b>				
Existing Debt Service	\$51,232	\$46,333	\$39,931	\$40,466
Release of DRS funds	\$0	-\$4,937	-\$2,344	-\$2,344
Proposed Debt Service	\$0	\$0	\$2,655	\$6,345
Debt Issuance Costs	\$0	\$0	\$592	\$726
<b>Total Debt Service</b>	<b>\$51,232</b>	<b>\$41,396</b>	<b>\$40,834</b>	<b>\$45,192</b>
<b>Capital Plans with Indirects</b>				
Part 1	\$57,516	\$58,113	\$74,797	\$126,899
Part 2	\$30,083	\$45,590	\$64,221	\$57,816
Part 3	\$9,343	\$11,379	\$12,783	\$12,675
<b>Total Capital Plans</b>	<b>\$96,942</b>	<b>\$115,082</b>	<b>\$151,801</b>	<b>\$197,391</b>
<b>Total Expenditures</b>	<b>\$331,780</b>	<b>\$342,892</b>	<b>\$373,890</b>	<b>\$427,917</b>
<i>Annual Surplus / (Deficiency)</i>	<i>\$13,434</i>	<i>-\$57,215</i>	<i>-\$8,048</i>	<i>-\$1,883</i>
<i>Plus: Beginning Balance</i>	<i>\$194,012</i>	<i>\$207,446</i>	<i>\$150,231</i>	<i>\$142,184</i>
<b>Ending Balance</b>	<b>\$207,446</b>	<b>\$150,231</b>	<b>\$142,184</b>	<b>\$140,301</b>
<b>Financial Performance Measures</b>				
Ending Balance	\$207,446	\$150,231	\$142,184	\$140,301
Target Operating Reserves	\$128,095	\$128,808	\$138,337	\$141,970
Variance from Target Investment Balance	\$79,351	\$21,423	\$3,847	(\$1,669)
<b>Debt Service Coverage</b>				
Including SDC and Participation Revenue	1.40	1.99	2.79	3.24
Excluding SDC and Participation Revenue	1.12	1.64	2.40	2.74
<b>Revenue Adjustments</b>				
Effective Month (1=Jan, 2=Feb, etc.)		3	3	3
Annual Revenue Adjustments		10.4%	10.4%	10.4%
Cumulative Adjustments		10.4%	21.9%	34.6%

\*Totals may not add due to rounding.

Appendix E  
Cost-of-Service Analysis



**DENVER WATER**

**Table E-1**  
**2011 Cost-of-Service Rate Study**  
**Test Year Cost of Service (Utility Basis with Cash Residual)**  
**(\$ thousands)**

Line No	Description	Total	Outside City	Inside City <sup>(a)</sup>
	<b>Revenue Requirements (cash basis)</b>			
1	O&M Expense	\$186,415		
2	Debt Service	\$41,396		
3	Cash Funded Capital	\$56,969		
4	<b>Total Revenue Requirements</b>	<b>\$284,779</b>		
	<b>Less: Revenue Requirement Adjustments</b>			
5	Miscellaneous Revenue	\$22,013		
6	Change in Fund Balance	\$16,278		
7	<b>Total Revenue Requirement Adjustmer</b>	<b>\$38,291</b>		
8	<b>Total Revenue From Rates</b>	<b>\$246,489</b>		
	<b>Allocation of Inside-City and Outside-City Revenue Requirements</b>			
	<b>Revenue Requirements</b>			
9	O&M Expense		\$89,152	\$97,262
10	Debt Service			\$41,396
11	Cash Funded Capital			\$56,969
12	OCSA Premium		\$863	
13	Depreciation		\$18,947	
14	Return on Rate Base		\$39,820	
15	<b>Subtotal</b>		<b>\$148,782</b>	<b>\$195,627</b>
	<b>Less:</b>			
	Revenue Requirement Adjustments			
16	Miscellaneous Revenue		\$11,553	\$10,460
17	Change in Fund Balance			\$16,278
18	Return Residual (Additional Amount) <sup>b</sup>			\$59,630
19	<b>Subtotal</b>		<b>\$11,553</b>	<b>\$86,368</b>
20	<b>Total Revenue Required from Rates</b>	<b>\$246,489</b>	<b>\$137,229</b>	<b>\$109,259</b>

(a) The net capital requirement is \$22.5 million. This is the net of debt service plus cash-funded capital less return residual and the change in fund balance.

(b) The return residual is the sum of Lines 12 through 14.

\*Totals may not add due to rounding.

**Table E-2**  
**2011 Cost-of-Service Rate Study**  
**Customer Service Characteristics**

Line No	Customer Class	Customer Service Characteristics						
		Annual Non-Potable (k gal)	Annual Potable Use (k gal)	Max Day (k gal)	Max Hour (k gal)	Equivalent Bills	Fire Protection Customers	
<b>Inside City</b>								
1	Residential	14,040,569	13,435,952	42,493	47,959	1,579,296	131,608	0
2	Multifamily	1,573,075	1,505,335	2,982	4,278	111,456	9,288	0
3	Nonresidential	15,012,650	14,366,172	26,597	39,658	181,716	15,143	0
4	Irrigation	1,087,494	1,040,664	6,068	5,385	14,508	1,209	0
5	City & County of Denver	2,567,651	2,457,083	13,702	12,242	14,028	1,169	0
6	Fire Protection - Public	0	0	0	0	0	0	0
7	Fire Protection - Private	0	0	1,500	3,000	53,026	0	5,080
8	<b>Total Inside City</b>	<b>34,281,440</b>	<b>32,805,206</b>	<b>93,343</b>	<b>112,522</b>	<b>1,954,030</b>	<b>158,417</b>	<b>5,080</b>
<b>Outside City</b>								
<b>Read &amp; Bill</b>								
9	Residential	4,839,807	4,631,394	19,470	19,423	396,624	33,052	0
10	Multifamily	124,032	118,691	311	384	6,114	510	0
11	Nonresidential	3,661,165	3,503,507	11,800	12,848	29,904	2,492	0
12	Irrigation	621,026	594,284	3,980	3,386	4,980	415	0
13	Fire Protection - Public	0	0	0	0	0	0	0
14	Fire Protection - Private	0	0	70	225	9,626	0	951
<b>Total Service</b>								
15	Residential	5,070,664	4,852,310	22,456	21,493	387,840	32,320	0
16	Multifamily	170,932	163,571	498	566	7,908	659	0
17	Nonresidential	2,617,898	2,505,165	7,830	8,875	34,392	2,866	0
18	Irrigation	646,593	618,750	3,544	3,169	6,744	562	0
19	Fire Protection - Public	0	0	0	0	0	0	0
20	Fire Protection - Private	0	0	60	225	10,022	0	919
21	R/B Large Fed. Agencies	20,919	20,018	67	65	24	2	0
22	Treated Water OCSA	1,487,794	1,423,727	4,702	5,167	84	7	0
23	Master Meters	16,060,242	15,368,653	51,001	55,994	444	37	0
24	<b>Total Outside City</b>	<b>35,321,073</b>	<b>33,800,070</b>	<b>125,789</b>	<b>131,820</b>	<b>894,706</b>	<b>72,922</b>	<b>1,870</b>
<b>Recycled</b>								
25	Recycled Water Inside	277,970	266,000	310	622	84	7	0
26	Recycled Water City & County	266,475	255,000	1,422	1,270	180	15	0
27	Recycled Water Outside	0	0	0	0	0	0	0
28	Recycled Water OCSA	836,000	800,000	933	1,872	12	1	0
29	<b>Total Recycled</b>	<b>1,380,445</b>	<b>1,321,000</b>	<b>2,666</b>	<b>3,765</b>	<b>276</b>	<b>23</b>	<b>0</b>
30	<b>System Subtotal</b>	<b>70,982,959</b>	<b>67,926,276</b>	<b>221,797</b>	<b>248,107</b>	<b>2,849,012</b>	<b>231,362</b>	<b>6,950</b>
31	<b>Potable System Loss</b>	3,056,682						
<b>Raw</b>								
32	Raw Water Inside City	525,000						
33	Raw Water City and County	300,000						
34	Raw Water Outside	5,400,000						
35	Raw Water OCSA	1,260,000						
36	<b>Total Raw</b>	<b>7,485,000</b>						
37	<b>Total System</b>	<b>78,467,959</b>						
<b>Demands</b>								
38	Joint Costs	78,467,959	67,926,276	221,797	248,107	2,849,012	231,362	6,950
39	Joint Costs w/o Recycled	77,087,514	66,605,276	219,132	244,342	2,848,736	231,339	6,950
40	Specific Costs--(Inside + Large Fed. RB)	35,671,804	33,346,224	95,143	114,480	1,954,318	158,441	5,080
41	C&C	3,134,126	2,712,083	15,124	13,512	14,208	1,184	0
42	Inside w/o C&C	32,537,678	30,634,141	80,019	100,968	1,940,110	157,257	5,080
43	Specific Costs--Outside TS	8,506,088	8,139,797	34,388	34,328	446,906	36,407	919
44	Specific Costs--(Outside minus Large Fed RB)	42,796,155	34,580,052	126,655	133,627	894,694	72,921	1,870
45	Specific Costs w/o Recycled	41,960,155	33,780,052	125,721	131,755	894,682	72,920	1,870
46	RB, TS Specific Costs	17,752,118	16,987,673	70,019	70,594	894,154	72,876	1,870
47	OCSA Specific Costs	3,583,794	2,223,727	5,635	7,039	96	8	0

\*Totals may not add due to rounding.

Table E-3  
 2011 Cost-of-Service Rate Study  
 Allocation of O&M Expense by Cost Pool by Customer Service Characteristic (CSC)  
 (\$ thousands)

Line No	Description	Total	Non Potable Water	Base	Max Day	Max Hour	Billing	Customer Service	Fire	Indirect
<b>Joint to All Customers</b>										
1	Source of Supply	\$11,821	\$10,343	\$264	\$875	\$340	\$0	\$0	\$0	\$0
2	Treatment	33,812	4,759	12,740	16,215	98	0	0	0	0
3	Pumping	4,551	348	1,386	1,774	1,043	0	0	0	0
4	Transmission and Distribution	16,510	0	4,860	4,630	4,630	0	2,389	0	0
5	Customer Accounts	14,229	0	6,874	0	0	1,345	6,009	0	0
6	General and Administrative	8,902	0	0	0	0	0	0	0	8,902
7	Administrative	71,877	0	6,553	0	0	0	0	0	65,324
8	Indirect	0	13,110	27,728	19,936	5,185	1,141	7,126	0	(74,226)
9	<b>Total</b>	<b>\$161,701</b>	<b>\$28,559</b>	<b>\$60,404</b>	<b>\$43,430</b>	<b>\$11,296</b>	<b>\$2,486</b>	<b>\$15,525</b>	<b>\$0</b>	<b>\$0</b>
10	<i>Percent Allocation</i>		17.7%	37.4%	26.9%	7.0%	1.5%	9.6%	0.0%	0.0%
<b>Allocation of Joint O&amp;M to Inside and Outside</b>										
11	<b>Joint Costs</b>	<b>\$161,701</b>	<b>\$28,559</b>	<b>\$60,404</b>	<b>\$43,430</b>	<b>\$11,296</b>	<b>\$2,486</b>	<b>\$15,525</b>	<b>\$0</b>	<b>\$0</b>
<b>Customer Service Characteristics, Kgal</b>										
12	Inside City		35,671,804	32,825,224	93,410	112,587	1,954,054	158,441	5,080	
13	Outside City		42,796,155	33,780,052	125,721	131,755	894,682	72,921	1,870	
14	<b>Total</b>		<b>78,467,959</b>	<b>66,605,276</b>	<b>219,132</b>	<b>244,342</b>	<b>2,848,736</b>	<b>231,362</b>	<b>6,950</b>	<b>0</b>
15	Inside City, % of Total by CSC		45.5%	49.3%	42.6%	46.1%	68.6%	68.5%	73.1%	0.0%
16	Outside City, % of Total by CSC		54.5%	50.7%	57.4%	53.9%	31.4%	31.5%	26.9%	0.0%
	<b>Total</b>		<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>
17	Inside City, \$ of Total by CSC	\$78,807	\$12,983	\$29,769	\$18,513	\$5,205	\$1,705	\$10,632	\$0	\$0
18	Outside City, \$ of Total by CSC	82,893	15,576	30,635	24,917	6,091	781	4,893	0	0
19	<b>Total</b>	<b>\$161,701</b>	<b>\$28,559</b>	<b>\$60,404</b>	<b>\$43,430</b>	<b>\$11,296</b>	<b>\$2,486</b>	<b>\$15,525</b>	<b>\$0</b>	<b>\$0</b>
<b>Percent Allocation by CSC</b>										
20	Inside City	100.0%	16.5%	37.8%	23.5%	6.6%	2.2%	13.5%	0.0%	0.0%
21	Outside City	100.0%	18.8%	37.0%	30.1%	7.3%	0.9%	5.9%	0.0%	0.0%
<b>Specific Inside City</b>										
22	Source of Supply	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	Treatment	0	0	0	0	0	0	0	0	0
24	Pumping	1,488	0	417	536	536	0	0	0	0
25	Transmission and Distribution	16,971	0	4,803	5,274	5,330	0	0	1,564	0
26	Customer Accounts	49	0	49	0	0	0	0	0	0
27	General and Administrative	0	0	0	0	0	0	0	0	0
28	Administrative	0	0	0	0	0	0	0	0	0
29	Indirect	0	0	0	709	855	0	0	(1,564)	0
30	<b>Total</b>	<b>\$18,509</b>	<b>\$0</b>	<b>\$5,269</b>	<b>\$6,519</b>	<b>\$6,721</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
31	<i>Percent Allocation</i>	100.0%	0.0%	28.5%	35.2%	36.3%	0.0%	0.0%	0.0%	0.0%
<b>Specific Outside City - Total Service</b>										
32	Source of Supply	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
33	Treatment	0	0	0	0	0	0	0	0	0
34	Pumping	0	0	0	0	0	0	0	0	0
35	Transmission and Distribution	1,774	0	502	622	639	0	0	11	0
36	Customer Accounts	12	0	12	0	0	0	0	0	0
37	General and Administrative	0	0	0	0	0	0	0	0	0
38	Administrative	0	0	0	0	0	0	0	0	0
39	Indirect	0	0	0	2	9	0	0	(11)	0
40	<b>Total</b>	<b>\$1,786</b>	<b>\$0</b>	<b>\$514</b>	<b>\$624</b>	<b>\$648</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
41	<i>Percent Allocation</i>	100.0%	0.0%	28.8%	35.0%	36.3%	0.0%	0.0%	0.0%	0.0%
<b>Specific Outside City</b>										
42	Source of Supply	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
43	Treatment	0	0	0	0	0	0	0	0	0
44	Pumping	3,583	0	1,161	1,487	935	0	0	0	0
45	Transmission and Distribution	836	0	140	173	173	0	0	350	0
46	Customer Accounts	0	0	0	0	0	0	0	0	0
47	General and Administrative	0	0	0	0	0	0	0	0	0
48	Administrative	0	0	0	0	0	0	0	0	0
49	Indirect	0	0	0	78	271	0	0	(350)	0
50	<b>Total</b>	<b>\$4,419</b>	<b>\$0</b>	<b>\$1,301</b>	<b>\$1,738</b>	<b>\$1,379</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
51	<i>Percent Allocation</i>	100.0%	0.0%	29.5%	39.3%	31.2%	0.0%	0.0%	0.0%	0.0%

\*Totals may not add due to rounding.

Table E-4  
2011 Cost-of-Service Rate Study  
Development of O&M Unit Cost of Service  
(\$ thousands)

Line No	Description	Total	Non Potable Water	Base	Max Day	Max Hour	Billing	Customer Service	Fire	Indirect
<b>Percent Allocation of O&amp;M Expense by Cost Pool by CSC</b>										
Joint										
1	Joint Inside	100.0%	16.5%	37.8%	23.5%	6.6%	2.2%	13.5%	0.0%	0.0%
2	Joint Outside	100.0%	18.8%	37.0%	30.1%	7.3%	0.9%	5.9%	0.0%	0.0%
3	Specific Inside, (Table x, Line 2)	100.0%	0.0%	28.5%	35.2%	36.3%	0.0%	0.0%	0.0%	0.0%
4	Specific Outside Total Service (	100.0%	0.0%	28.8%	35.0%	36.3%	0.0%	0.0%	0.0%	0.0%
5	Specific Outside, (Table x, Line	100.0%	0.0%	29.5%	39.3%	31.2%	0.0%	0.0%	0.0%	0.0%
<b>Allocation of O&amp;M by Cost Pool by CSC</b>										
Joint										
6	Joint Inside	\$78,807	\$12,983	\$29,769	\$18,513	\$5,205	\$1,705	\$10,632	\$0	\$0
7	Joint Outside	\$82,893	\$15,576	\$30,635	\$24,917	\$6,091	\$781	\$4,893	\$0	\$0
8	Specific Inside	\$18,509	\$0	\$5,269	\$6,519	\$6,721	\$0	\$0	\$0	\$0
9	Specific Outside Total Service	\$1,786	\$0	\$514	\$624	\$648	\$0	\$0	\$0	\$0
10	Specific Outside	\$4,419	\$0	\$1,301	\$1,738	\$1,379	\$0	\$0	\$0	\$0
	<b>Total</b>	<b>\$186,415</b>	<b>\$28,559</b>	<b>\$67,489</b>	<b>\$52,312</b>	<b>\$20,044</b>	<b>\$2,486</b>	<b>\$15,525</b>	<b>\$0</b>	<b>\$0</b>
<b>Customer Service Characteristics, Kgal</b>										
Joint										
11	Joint Inside		35,671,804	32,825,224	93,410	112,587	1,954,318.00	158,441	5,080	0
12	Joint Outside		42,796,155	33,780,052	125,721	131,755	894,694.12	72,921	1,870	0
13	Specific Inside		35,671,804	33,346,224	95,143	114,480	1,954,318	158,441	5,080	35,527,208
14	Specific Outside Total Service		8,506,088	8,139,797	34,388	34,328	446,906	36,407	919	8,588,853
15	Specific Outside		42,796,155	34,580,052	126,655	133,627	894,694	72,921	1,870	43,095,502
<b>Unit Cost by Cost Pool by CSC</b>										
Joint										
16	Joint Inside		\$0.36	\$0.91	\$198.19	\$46.23	\$0.87	\$67.10	\$0.00	\$0.00
17	Joint Outside		0.36	0.91	198.19	46.23	0.87	67.10	0.00	0.00
18	Specific Inside		0.00	0.16	68.51	58.71	0.00	0.00	0.00	0.00
19	Specific Outside Total Service		0.00	0.06	18.16	18.87	0.00	0.00	0.00	0.00
20	Specific Outside		0.00	0.04	13.73	10.32	0.00	0.00	0.00	0.00

\*Totals may not add due to rounding.

Table E-5  
2011 Cost-of-Service Rate Study  
Allocation of Assets by Cost Pool by Customer Service Characteristic  
Inside City  
(\$ thousands)

Line No	Description	Total	Non Potable Water	Base	Max Day	Max Hour	Billing	Customer Service	Fire	Indirect
<b>Joint to All Customers</b>										
1	Source of Supply	\$713,021	\$593,214	\$26,757	\$86,342	\$6,708	\$0	\$0	\$0	\$0
2	Treatment	\$362,858	\$0	\$159,188	\$202,613	\$1,057	\$0	\$0	\$0	\$0
3	Pumping	\$37,349	\$0	\$11,776	\$15,094	\$10,479	\$0	\$0	\$0	\$0
4	Transmission and Distribution	\$160,150	\$0	\$54,519	\$69,751	\$35,881	\$0	\$0	\$0	\$0
5	Hydroelectric	\$6,292	\$0	\$1,762	\$2,265	\$2,265	\$0	\$0	\$0	\$0
6	Water Meters	\$89,578	\$0	\$89,578	\$0	\$0	\$0	\$0	\$0	\$0
7	Fire Hydrants	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	General Plant	\$131,577	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$131,577
9	Indirects	\$0	\$57,005	\$33,016	\$36,138	\$5,419	\$0	\$0	\$0	(\$131,577)
10	<b>Total</b>	<b>\$1,500,826</b>	<b>\$650,218</b>	<b>\$376,596</b>	<b>\$412,203</b>	<b>\$61,809</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
11	Percent Allocation		43.3%	25.1%	27.5%	4.1%	0.0%	0.0%	0.0%	0.0%
<b>Allocation of Joint Assets to Inside and Outside</b>										
12	<b>Joint Assets</b>	<b>\$1,500,826</b>	<b>\$650,218</b>	<b>\$376,596</b>	<b>\$412,203</b>	<b>\$61,809</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
13	Inside City, % of Total by CSC		45.5%	49.1%	42.9%	46.1%	68.6%	68.5%	0.0%	0.0%
14	Outside City, % of Total by CSC		54.5%	50.9%	57.1%	53.9%	31.4%	31.5%	0.0%	0.0%
15	Inside City, \$ of Total by CSC	\$685,808	\$295,591	\$184,878	\$176,819	\$28,519	\$0	\$0	\$0	\$0
16	Outside City, \$ of Total by CSC	\$815,018	\$354,627	\$191,718	\$235,383	\$33,289	\$0	\$0	\$0	\$0
17	<b>Total</b>	<b>\$1,500,826</b>	<b>\$650,218</b>	<b>\$376,596</b>	<b>\$412,203</b>	<b>\$61,809</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Specific Inside City</b>										
18	Source of Supply	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
19	Treatment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20	Pumping	\$22,157	\$0	\$6,204	\$7,976	\$7,976	\$0	\$0	\$0	\$0
21	Transmission and Distribution	\$518,442	\$0	\$145,164	\$186,639	\$186,639	\$0	\$0	\$0	\$0
22	Hydroelectric	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	Water Meters	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	Fire Hydrants	\$38,530	\$0	\$0	\$0	\$0	\$0	\$0	\$38,530	\$0
25	General Plant	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	Indirects	\$0	\$0	\$0	\$17,470	\$21,060	\$0	\$0	\$0	(\$38,530)
27	<b>Total</b>	<b>\$79,128</b>	<b>0</b>	<b>\$151,368</b>	<b>\$212,085</b>	<b>\$215,675</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
28	Percent Allocation		0.0%	26.1%	36.6%	37.2%	0.0%	0.0%	0.0%	0.0%
<b>Allocation of Inside City Assets</b>										
<b>Inside City Asset Allocation</b>										
29	Joint Inside	\$685,808	\$295,591	\$184,878	\$176,819	\$28,519	\$0	\$0	\$0	\$0
30	Specific Inside	\$579,128	\$0	\$151,368	\$212,085	\$215,675	\$0	\$0	\$0	\$0
31	<b>Total</b>	<b>\$1,264,936</b>	<b>\$295,591</b>	<b>\$336,245</b>	<b>\$388,905</b>	<b>\$244,194</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Inside City Percent Allocation</b>										
32	Joint Inside		100.0%	54.98%	45.47%	11.68%	0.00%	0.00%	0.00%	0.00%
33	Specific Inside		0.0%	45.02%	54.53%	88.32%	0.00%	0.00%	0.00%	0.00%
34	<b>Total</b>		<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>
<b>Inside City Percent Allocation by Cost Pool</b>										
35	Joint Inside		43.3%	25.1%	27.5%	4.1%	0.0%	0.0%	0.0%	0.0%
36	Specific Inside		0.0%	26.1%	36.6%	37.2%	0.0%	0.0%	0.0%	0.0%

\*Totals may not add due to rounding.

Table E-6  
2011 Cost-of-Service Rate Study  
Allocation of Assets by Cost Pool by Customer Service Characteristic  
Outside City  
(\$ thousands)

Line No	Description	Total	Non Potable Water	Base	Max Day	Max Hour	Billing	Customer Service	Fire	Indirect
<b>Specific Outside City - Total Service</b>										
1	Source of Supply	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
2	Treatment	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
3	Pumping	\$815		\$228	\$293	\$293	\$0	\$0	\$0	
4	Transmission and Distribution	\$50,241		\$14,067	\$18,087	\$18,087	\$0	\$0	\$0	
5	Hydroelectric	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
6	Water Meters	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
7	Fire Hydrants	\$8,238		\$0	\$0	\$0	\$0	\$0	\$8,238	
8	General Plant	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
9	Indirects	\$0		\$0	\$4,133	\$4,106	\$0	\$0	(\$8,238)	
10	<b>Total</b>	<b>\$59,294</b>	<b>\$0</b>	<b>\$14,296</b>	<b>\$22,513</b>	<b>\$22,486</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
11	Percent Allocation		0.0%	24.1%	38.0%	37.9%	0.0%	0.0%	0.0%	0.0%
<b>Specific Outside City</b>										
12	Source of Supply	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
13	Treatment	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
14	Pumping	\$29,100		\$8,915	\$11,435	\$8,750	\$0	\$0	\$0	
15	Transmission and Distribution	\$80,679		\$22,731	\$29,221	\$28,726	\$0	\$0	\$0	
16	Hydroelectric	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
17	Water Meters	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
18	Fire Hydrants	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
19	General Plant	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
20	Indirects	\$0		\$0	\$0	\$0	\$0	\$0	\$0	
21	<b>Total</b>	<b>\$109,778</b>	<b>\$0</b>	<b>\$31,646</b>	<b>\$40,656</b>	<b>\$37,476</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
22	Percent Allocation		0.0%	28.8%	37.0%	34.1%	0.0%	0.0%	0.0%	0.0%
<b>Allocation of Outside City Assets</b>										
<b>Allocation of Outside City Asset by Cost Pool by CSC</b>										
23	Joint Outside	\$815,018	\$354,627	\$191,718	\$235,383	\$33,289	\$0	\$0	\$0	\$0
24	Specific Outside Total Service	\$59,294	\$0	\$14,296	\$22,513	\$22,486	\$0	\$0	\$0	\$0
25	Specific Outside	\$109,778	\$0	\$31,646	\$40,656	\$37,476	\$0	\$0	\$0	\$0
26	<b>Total Outside City</b>	<b>\$984,090</b>	<b>\$354,627</b>	<b>\$237,660</b>	<b>\$298,552</b>	<b>\$93,251</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
27	Percent Allocation by CSC	100.0%	36.0%	24.2%	30.3%	9.5%	0.0%	0.0%	0.0%	0.0%
<b>Percent Allocation by Cost Pool</b>										
28	Joint Outside	82.8%	100.0%	80.7%	78.8%	35.7%	0.0%	0.0%	0.0%	0.0%
29	Specific Outside Total Service	6.0%	0.0%	6.0%	7.5%	24.1%	0.0%	0.0%	0.0%	0.0%
30	Specific Outside	11.2%	0.0%	13.3%	13.6%	40.2%	0.0%	0.0%	0.0%	0.0%
31	<b>Total Outside City</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>
<b>Percent Allocation by Cost Pool by CSC</b>										
32	Joint Outside	82.8%	36.0%	19.5%	23.9%	3.4%	0.0%	0.0%	0.0%	0.0%
33	Specific Outside Total Service	6.0%	0.0%	1.5%	2.3%	2.3%	0.0%	0.0%	0.0%	0.0%
34	Specific Outside	11.2%	0.0%	3.2%	4.1%	3.8%	0.0%	0.0%	0.0%	0.0%
35	<b>Total Outside City</b>	<b>100.0%</b>	<b>36.0%</b>	<b>24.2%</b>	<b>30.3%</b>	<b>9.5%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>
36	<b>Total Assets Allocated to CS</b>	<b>\$2,249,026</b>	<b>\$650,218</b>	<b>\$573,906</b>	<b>\$687,457</b>	<b>\$337,445</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
37	Percent of Total		28.9%	25.5%	30.6%	15.0%	0.0%	0.0%	0.0%	0.0%

\*Totals may not add due to rounding.

Table E-7  
 2011 Cost-of-Service Rate Study  
 Development of Capital Unit Cost of Service  
 (\$ thousands)

Line No	Description	Total	Non Potable Water	Base	Max Day	Max Hour	Billing	Customer Service	Fire	Indirect
<b>Allocation of Assets by Cost Pool by CSC</b>										
1	Total Joint	\$1,500,826	\$650,218	\$376,596	\$412,203	\$61,809	\$0	\$0	\$0	\$0
2	Total Specific Inside City	\$579,128	\$0	\$151,368	\$212,085	\$215,675	\$0	\$0	\$0	\$0
3	Total Specific Outside City-Tol	\$59,294	\$0	\$14,296	\$22,513	\$22,486	\$0	\$0	\$0	\$0
4	Total Specific Outside City	\$109,778	\$0	\$31,646	\$40,656	\$37,476	\$0	\$0	\$0	\$0
5	<b>Total Assets</b>	<b>\$2,249,026</b>	<b>\$650,218</b>	<b>\$573,906</b>	<b>\$687,457</b>	<b>\$337,445</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
6	Percent of Total		28.9%	25.5%	30.6%	15.0%	0.0%	0.0%	0.0%	0.0%
7	<b>Total 2011 Capital Costs</b>	<b>\$82,087</b>	<b>\$23,732</b>	<b>\$20,947</b>	<b>\$25,091</b>	<b>\$12,316</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Development of Outside City Unit Costs</b>										
<b>Outside City Capital Allocation by Cost Pool by CSC</b>										
8	Joint Outside	\$48,670	\$21,177	\$11,449	\$14,056	\$1,988	\$0	\$0	\$0	\$0
9	Specific Outside Total Service	\$3,541	\$0	\$854	\$1,344	\$1,343	\$0	\$0	\$0	\$0
10	Specific Outside	\$6,556	\$0	\$1,890	\$2,428	\$2,238	\$0	\$0	\$0	\$0
11	<b>Total Outside City Capital Al</b>	<b>\$58,767</b>	<b>\$21,177</b>	<b>\$14,192</b>	<b>\$17,829</b>	<b>\$5,569</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Outside City CSC, Kgal</b>										
12	Joint Outside		42,796,155	33,780,052	125,721	131,755	894,682	72,920	1,870	0
13	Specific Outside Total Service		8,506,088	8,139,797	34,388	34,328	446,906	36,407	919	0
14	Specific Outside		42,796,155	34,580,052	126,655	133,627	894,694	72,921	1,870	0
<b>Outside City Unit Costs</b>										
15	Joint Outside		\$0.49	\$0.34	\$111.81	\$15.09	\$0.00	\$0.00	\$0.00	\$0.00
16	Specific Outside Total Service		\$0.00	\$0.10	\$39.10	\$39.12	\$0.00	\$0.00	\$0.00	\$0.00
17	Specific Outside		\$0.00	\$0.05	\$19.17	\$16.75	\$0.00	\$0.00	\$0.00	\$0.00
<b>OCSA Premium</b>										
18	Treated	\$564	\$203	\$136	\$171	\$53	\$0	\$0	\$0	\$0
19	Raw	\$169	\$169	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20	Recycled	\$112	\$40	\$27	\$34	\$11	\$0	\$0	\$0	\$0
21	<b>Total</b>	<b>\$845</b>	<b>\$413</b>	<b>\$163</b>	<b>\$205</b>	<b>\$64</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Development of Inside City Unit Costs</b>										
22	Total Capital Costs	\$82,087	\$23,732	\$20,947	\$25,091	\$12,316	\$0	\$0	\$0	\$0
23	Less: Outside City	\$58,767	\$21,177	\$14,192	\$17,829	\$5,569	\$0	\$0	\$0	\$0
24	Less: OCSA Premium	\$845	\$413	\$163	\$205	\$64				
25	Less: City County Credit <sup>(a)</sup>	(\$2,246)	(\$160)	(\$457)	(\$956)	(\$672)	\$0	\$0		
26	<b>Total Inside City</b>	<b>\$24,720</b>	<b>\$2,303</b>	<b>\$7,048</b>	<b>\$8,014</b>	<b>\$7,356</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Inside City CSC</b>										
27	Joint Inside City		100.0%	55.0%	45.5%	11.7%	0.0%	0.0%	0.0%	0.0%
28	Specific Inside City		0.0%	45.0%	54.5%	88.3%	0.0%	0.0%	0.0%	0.0%
29	<b>Total</b>		<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>
<b>Allocation of Inside City Capital Costs</b>										
30	Joint Inside City	\$10,681	\$2,303	\$3,875	\$3,644	\$859	\$0	\$0	\$0	\$0
31	Specific Inside City	\$14,040	\$0	\$3,173	\$4,370	\$6,497	\$0	\$0	\$0	\$0
32	<b>Total</b>	<b>\$24,720</b>	<b>\$2,303</b>	<b>\$7,048</b>	<b>\$8,014</b>	<b>\$7,356</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>Customer Service Characteristics, Kgal</b>										
33	Joint Inside City		32,537,678	30,368,141	79,708	100,345	1,940,026	157,250	5,080	0
34	Specific Inside City		32,537,678	30,634,141	80,019	100,968	1,940,110	157,257	5,080	0
<b>Inside City Unit Costs</b>										
35	Joint Inside City		\$0.07	\$0.13	\$45.71	\$8.56	\$0.00	\$0.00	\$0.00	\$0.00
36	Specific Inside City		\$0.00	\$0.10	\$54.61	\$64.35	\$0.00	\$0.00	\$0.00	\$0.00

(a) Represents the return residual allocated to the City and County of Denver. This additional capital revenue requirement is distributed to all other inside-city customers.  
 The net capital inside-city revenue requirement is \$22.5 million.  
 \*Totals may not add due to rounding.

**Table E-8**  
**2011 Cost-of-Service Rate Study**  
**Development of Non-Rate Revenue Unit Cost**  
**(\$ thousands)**

Line No	Description	Non Potable Water	Base	Max Day	Max Hour	Billing	Service	Total
<b>Operation &amp; Maintenance</b>								
1	Joint Costs	\$28,559	\$60,404	\$43,430	\$11,296	\$2,486	\$15,525	\$161,701
2	Specific--Inside		\$5,269	\$6,519	\$6,721	\$0	\$0	\$18,509
3	Specific Outside--TS		\$514	\$624	\$648	\$0	\$0	\$1,786
4	Specific Outside--Joint		\$1,301	\$1,738	\$1,379	\$0	\$0	\$4,419
5	<b>Total System O&amp;M</b>	<b>\$28,559</b>	<b>\$67,489</b>	<b>\$52,312</b>	<b>\$20,044</b>	<b>\$2,486</b>	<b>\$15,525</b>	<b>\$186,415</b>
6	Total Capital	\$23,732	\$20,947	\$25,091	\$12,316	\$0	\$0	\$82,087
7	<b>Total Revenue Requirements</b>	<b>\$52,291</b>	<b>\$88,436</b>	<b>\$77,403</b>	<b>\$32,360</b>	<b>\$2,486</b>	<b>\$15,525</b>	<b>\$268,501</b>
8	Percent	19.5%	32.9%	28.8%	12.1%	0.9%	5.8%	100.0%
9	Distribution of Non-Rate Revenue	\$4,287,005	\$7,250,286	\$6,345,759	\$2,653,021	\$203,805	\$1,272,772	\$22,012,648
10	Demand, Kgal	78,467,959	67,926,276	221,797	248,107	2,849,012	231,362	
11	Non-Rate Revenue Unit Costs	\$0.05	\$0.11	\$28.61	\$10.69	\$0.07	\$5.50	
12	Distribution of Inside Other Non-Rate Revenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0
13	Demand	42,796,155	34,580,052	126,655	133,627	894,694	72,921	
14	Inside Other Non-Rate Revenue Unit Costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
15	Distribution of Outside Non-Rate Revenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0
16	Demand, Kgal	17,752,118	16,987,673	70,019	70,594	894,154	72,876	
17	Inside Other Non-Rate Revenue Unit Costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
18	O&M	\$28,558,996	\$67,489,192	\$52,311,672	\$20,044,133	\$2,485,933	\$15,524,750	\$186,414,676
19	Capital	\$23,732,146	\$20,946,840	\$25,091,303	\$12,316,331	\$0	\$0	\$82,086,620
20	Non-Rate Revenue	\$4,287,005	\$7,250,286	\$6,345,759	\$2,653,021	\$203,805	\$1,272,772	\$22,012,648
21	OCSA Premium	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	<b>Total Revenue Requirements from Rates</b>	<b>\$48,004,137</b>	<b>\$81,185,746</b>	<b>\$71,057,216</b>	<b>\$29,707,444</b>	<b>\$2,282,128</b>	<b>\$14,251,978</b>	<b>\$246,488,648</b>

\*Totals may not add due to rounding.

Table E-9  
2011 Cost-of-Service Rate Study  
Development of O&M Unit Cost of Service  
(\$ thousands)

Line No	Cost Pool	Non-Potable Water	Base	Max Day	Max Hour	Billing	Customer Service
<b>INSIDE CITY</b>							
<b>Residential &amp; Non-Residential</b>							
1	O&M	\$0.36	\$1.06	\$266.71	\$104.94	\$0.872560	\$67.10
2	Capital Inside Joint	\$0.07	\$0.13	\$45.71	\$8.56	\$0.00	\$0.00
3	Capital Inside Specific	\$0.00	\$0.10	\$54.61	\$64.35	\$0.00	\$0.00
4	Capital Total	\$0.07	\$0.23	\$100.33	\$72.91	\$0.00	\$0.00
5	Non Rate Revenue	\$0.05	\$0.11	\$28.61	\$10.69	\$0.07	\$5.50
6	<b>Total</b>	<b>\$0.38</b>	<b>\$1.19</b>	<b>\$338.42</b>	<b>\$167.15</b>	<b>\$0.80</b>	<b>\$61.60</b>
<b>City &amp; County</b>							
7	O&M	\$0.36	\$1.06	\$266.71	\$104.94	\$0.87	\$67.10
8	Return Benefit	(\$0.05)	(\$0.17)	(\$63.22)	(\$49.76)	\$0.00	\$0.00
9	Non Rate Revenue	\$0.05	\$0.11	\$28.61	\$10.69	\$0.07	\$5.50
10	<b>Total</b>	<b>\$0.26</b>	<b>\$0.79</b>	<b>\$174.87</b>	<b>\$44.49</b>	<b>\$0.80</b>	<b>\$61.60</b>
<b>Fire Protection</b>							
11	O&M	\$0.36	\$1.06	\$266.71	\$104.94	\$0.87	\$67.10
12	Capital Inside Joint	\$0.07	\$0.13	\$45.71	\$8.56	\$0.00	\$0.00
13	Capital Inside Specific	\$0.00	\$0.10	\$54.61	\$64.35	\$0.00	\$0.00
14	Capital Total	\$0.07	\$0.23	\$100.33	\$72.91	\$0.00	\$0.00
15	Non Rate Revenue	\$0.05	\$0.11	\$28.61	\$10.69	\$0.07	\$5.50
16	<b>Total</b>	<b>\$0.38</b>	<b>\$1.19</b>	<b>\$338.42</b>	<b>\$167.15</b>	<b>\$0.80</b>	<b>\$61.60</b>
<b>OUTSIDE CITY</b>							
<b>Read &amp; Bill</b>							
17	O&M	\$0.36	\$0.94	\$211.92	\$56.55	\$0.87	\$67.10
18	Capital	\$0.49	\$0.39	\$130.98	\$31.84	\$0.00	\$0.00
19	Non Rate Revenue	\$0.05	\$0.11	\$28.61	\$10.69	\$0.07	\$5.50
20	<b>Total</b>	<b>\$0.80</b>	<b>\$1.23</b>	<b>\$314.28</b>	<b>\$77.70</b>	<b>\$0.80</b>	<b>\$61.60</b>
<b>R&amp;B Fire Protection</b>							
21	O&M	\$0.36	\$0.94	\$211.92	\$56.55	\$0.87	\$67.10
22	Capital	\$0.49	\$0.39	\$130.98	\$31.84	\$0.00	\$0.00
23	Non Rate Revenue	\$0.05	\$0.11	\$28.61	\$10.69	\$0.07	\$5.50
24	<b>Total</b>	<b>\$0.80</b>	<b>\$1.23</b>	<b>\$314.28</b>	<b>\$77.70</b>	<b>\$0.80</b>	<b>\$61.60</b>
<b>Total Service</b>							
25	O&M	\$0.36	\$1.01	\$230.08	\$75.42	\$0.87	\$67.10
26	Capital	\$0.49	\$0.50	\$170.07	\$70.95	\$0.00	\$0.00
27	Non Rate Revenue	\$0.05	\$0.11	\$28.61	\$10.69	\$0.07	\$5.50
28	<b>Total</b>	<b>\$0.80</b>	<b>\$1.40</b>	<b>\$371.54</b>	<b>\$135.68</b>	<b>\$0.80</b>	<b>\$61.60</b>
<b>T/S Fire Protection</b>							
29	O&M	\$0.36	\$1.01	\$230.08	\$75.42	\$0.87	\$67.10
30	Capital	\$0.49	\$0.50	\$170.07	\$70.95	\$0.00	\$0.00
31	Non Rate Revenue	\$0.05	\$0.11	\$28.61	\$10.69	\$0.07	\$5.50
32	<b>Total</b>	<b>\$0.80</b>	<b>\$1.40</b>	<b>\$371.54</b>	<b>\$135.68</b>	<b>\$0.80</b>	<b>\$61.60</b>
<b>Master Meter</b>							
33	O&M	\$0.36	\$0.94	\$211.92	\$56.55	\$0.87	\$67.10
34	Capital	\$0.49	\$0.39	\$130.98	\$31.84	\$0.00	\$0.00
35	Non Rate Revenue	\$0.05	\$0.11	\$28.61	\$10.69	\$0.07	\$5.50
36	<b>Total</b>	<b>\$0.80</b>	<b>\$1.23</b>	<b>\$314.28</b>	<b>\$77.70</b>	<b>\$0.80</b>	<b>\$61.60</b>
<b>Outside Combined Service Area</b>							
37	O&M	\$0.36	\$0.94	\$211.92	\$56.55	\$0.87	\$67.10
38	Capital	\$0.49	\$0.39	\$130.98	\$31.84	\$0.00	\$0.00
39	Non Rate Revenue	\$0.05	\$0.11	\$28.61	\$10.69	\$0.07	\$5.50
40	<b>Total</b>	<b>\$0.80</b>	<b>\$1.23</b>	<b>\$314.28</b>	<b>\$77.70</b>	<b>\$0.80</b>	<b>\$61.60</b>

\*Totals may not add due to rounding.

**Table E-10**  
**2011 Cost-of-Service Rate Study**  
**Customer Class O&M Costs**  
*(\$ thousands)*

Line No	Customer Class	Non-Potable Water	Base	Max Day	Max Hour	Billing	Customer Service	Total
<b>Inside City</b>								
1	Residential	\$5,110,170	\$14,308,217	\$11,333,256	\$5,032,721	\$1,378,030	\$8,831,120	\$45,993,512
2	Multifamily	\$572,532	\$1,603,062	\$795,427	\$448,949	\$97,252	\$623,241	\$4,140,463
3	Nonresidential	\$5,463,965	\$15,298,827	\$7,093,676	\$4,161,640	\$158,558	\$1,016,121	\$33,192,788
4	Irrigation	\$395,802	\$1,108,225	\$1,618,430	\$565,125	\$12,659	\$81,126	\$3,781,367
5	City & County of Denver	\$934,516	\$2,616,597	\$3,654,350	\$1,284,612	\$12,240	\$78,442	\$8,580,757
6	Fire Protection - Public	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	Fire Protection - Private	\$0	\$0	\$400,060	\$314,815	\$46,268	\$0	\$761,143
8	<b>Total Inside City</b>	<b>\$12,476,985</b>	<b>\$34,934,927</b>	<b>\$24,895,198</b>	<b>\$11,807,863</b>	<b>\$1,705,008</b>	<b>\$10,630,049</b>	<b>\$96,450,030</b>
9	Recycled Water Inside	\$101,169	\$42,033	\$21,262	\$36,543	\$73	\$470	\$201,551
10	Recycled Water City & County	\$96,986	\$40,295	\$97,426	\$74,584	\$157	\$1,007	\$310,454
11	Raw Water Inside City	\$191,078						\$191,078
12	Raw Water City and County	\$109,187						\$109,187
13	<b>Total Inside City</b>	<b>\$12,975,404</b>	<b>\$35,017,255</b>	<b>\$25,013,886</b>	<b>\$11,918,990</b>	<b>\$1,705,238</b>	<b>\$10,631,526</b>	<b>\$97,262,300</b>
<b>Outside City</b>								
<b>Read &amp; Bill</b>								
14	Residential	\$1,761,484	\$4,374,520	\$4,125,976	\$1,098,464	\$346,078	\$2,217,845	\$13,924,367
15	Multifamily	\$45,142	\$112,108	\$65,970	\$21,707	\$5,335	\$34,189	\$284,451
16	Nonresidential	\$1,332,508	\$3,309,190	\$2,500,626	\$726,595	\$26,093	\$167,217	\$8,062,229
17	Irrigation	\$226,027	\$561,322	\$843,427	\$191,500	\$4,345	\$27,847	\$1,854,470
18	R/B Large Fed. Agencies	\$7,613	\$21,317	\$17,902	\$6,810	\$21	\$134	\$53,798
19	Fire Protection - Public	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20	Fire Protection - Private	\$0	\$0	\$14,834	\$12,725	\$8,399	\$0	\$35,958
21	<b>Total Read and Bill</b>	<b>\$3,372,775</b>	<b>\$8,378,458</b>	<b>\$7,568,735</b>	<b>\$2,057,801</b>	<b>\$390,272</b>	<b>\$2,447,233</b>	<b>\$24,215,274</b>
<b>Total Service</b>								
22	Residential	\$1,845,506	\$4,889,605	\$5,166,613	\$1,621,113	\$338,414	\$2,168,727	\$16,029,977
23	Multifamily	\$62,212	\$164,828	\$114,633	\$42,677	\$6,900	\$44,220	\$435,470
24	Nonresidential	\$952,803	\$2,524,420	\$1,801,451	\$669,360	\$30,009	\$192,313	\$6,170,357
25	Irrigation	\$235,332	\$623,505	\$815,375	\$239,024	\$5,885	\$37,711	\$1,956,832
26	Fire Protection - Public	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	Fire Protection - Private	\$0	\$0	\$13,805	\$16,970	\$8,745	\$0	\$39,520
28	<b>Total Total Service</b>	<b>\$3,095,854</b>	<b>\$8,202,358</b>	<b>\$7,911,877</b>	<b>\$2,589,145</b>	<b>\$389,952</b>	<b>\$2,442,971</b>	<b>\$24,632,157</b>
28	Treated Water OCSA	\$541,494	\$1,344,762	\$996,381	\$292,208	\$73	\$470	\$3,175,387
29	Master Meters	\$5,845,244	\$14,516,251	\$10,807,984	\$3,166,664	\$387	\$2,483	\$34,339,013
30	Recycled Water Outside							
31	Recycled Water OCSA	\$304,268	\$30,108	\$12,810	\$19,324	\$10	\$67	\$366,589
32	Raw Water Outside	\$1,965,370						\$1,965,370
33	Raw Water OCSA	\$458,586						\$458,586
34	<b>Total Outside City</b>	<b>\$15,583,592</b>	<b>\$32,471,937</b>	<b>\$27,297,786</b>	<b>\$8,125,143</b>	<b>\$780,695</b>	<b>\$4,893,224</b>	<b>\$89,152,376</b>
35	<b>Total System</b>	<b>\$28,558,996</b>	<b>\$67,489,192</b>	<b>\$52,311,672</b>	<b>\$20,044,133</b>	<b>\$2,485,933</b>	<b>\$15,524,750</b>	<b>\$186,414,676</b>

\*Totals may not add due to rounding.

**Table E-11**  
**2011 Cost-of-Service Rate Study**  
**Customer Class Capital Costs**  
(\$ thousands)

Line No	Customer Class	Non-Potable Water	Base	Max Day	Max Hour	Billing	Customer Service	Total
<b>Inside City</b>								
1	Residential	\$993,647	\$3,106,133	\$4,263,154	\$3,496,542	\$0	\$0	\$11,859,476
2	Multifamily	\$111,326	\$348,005	\$299,210	\$311,913	\$0	\$0	\$1,070,454
3	Nonresidential	\$1,062,441	\$3,321,182	\$2,668,380	\$2,891,349	\$0	\$0	\$9,943,352
4	Irrigation	\$76,962	\$240,582	\$608,794	\$392,628	\$0	\$0	\$1,318,965
5	City & County of Denver	(\$141,996)	(\$428,192)	(\$896,101)	(\$630,116)	\$0	\$0	(\$2,096,404)
6	Fire Protection - Public	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	Fire Protection - Private	\$0	\$0	\$150,488	\$218,721	\$0	\$0	\$369,209
8	<b>Total Inside City</b>	<b>\$2,102,379</b>	<b>\$6,587,710</b>	<b>\$7,093,925</b>	<b>\$6,681,037</b>	<b>\$0</b>	<b>\$0</b>	<b>\$22,465,051</b>
9	Recycled Water Inside	\$19,672	\$27,550	\$16,949	\$40,053	\$0	\$0	\$104,224
10	Recycled Water City & County	(\$8,994)	(\$28,083)	(\$58,770)	(\$41,326)	\$0	\$0	(\$137,172)
11	Raw Water Inside City	\$37,154	\$0	\$0	\$0	\$0	\$0	\$37,154
12	Raw Water City and County	(\$9,429)	(\$615)	(\$1,288)	(\$906)	\$0	\$0	(\$12,238)
13	<b>Total Inside City</b>	<b>\$2,140,782</b>	<b>\$6,586,562</b>	<b>\$7,050,816</b>	<b>\$6,678,859</b>	<b>\$0</b>	<b>\$0</b>	<b>\$22,457,019</b>
<b>Outside City</b>								
<b>Read &amp; Bill</b>								
14	Residential	\$2,394,933	\$1,822,799	\$2,550,043	\$618,363	\$0	\$0	\$7,386,138
15	Multifamily	\$61,376	\$46,714	\$40,772	\$12,220	\$0	\$0	\$161,082
16	Nonresidential	\$1,811,693	\$1,378,892	\$1,545,502	\$409,025	\$0	\$0	\$5,145,112
17	Irrigation	\$307,309	\$233,895	\$521,277	\$107,802	\$0	\$0	\$1,170,283
18	R/B Large Fed. Agencies	\$1,480	\$4,628	\$6,734	\$4,732	\$0	\$0	\$17,574
19	Fire Protection - Public	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20	Fire Protection - Private	\$0	\$0	\$9,168	\$7,163	\$0	\$0	\$16,331
21	<b>Total Read and Bill</b>	<b>\$4,576,791</b>	<b>\$3,486,927</b>	<b>\$4,673,497</b>	<b>\$1,159,304</b>	<b>\$0</b>	<b>\$0</b>	<b>\$13,896,520</b>
<b>Total Service</b>								
22	Residential	\$2,509,170	\$2,418,650	\$3,819,096	\$1,524,998	\$0	\$0	\$10,271,913
23	Multifamily	\$84,584	\$81,533	\$84,735	\$40,147	\$0	\$0	\$290,999
24	Nonresidential	\$1,295,442	\$1,248,708	\$1,331,610	\$629,674	\$0	\$0	\$4,505,434
25	Irrigation	\$319,961	\$308,418	\$602,715	\$224,852	\$0	\$0	\$1,455,946
26	Fire Protection - Public	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	Fire Protection - Private	\$0	\$0	\$10,204	\$15,964	\$0	\$0	\$26,169
28	<b>Total Total Service</b>	<b>\$4,209,157</b>	<b>\$4,057,308</b>	<b>\$5,848,361</b>	<b>\$2,435,635</b>	<b>\$0</b>	<b>\$0</b>	<b>\$16,550,460</b>
28	Treated Water OCSA	\$939,436	\$696,532	\$786,891	\$217,930	\$0	\$0	\$2,640,790
29	Master Meters	\$7,947,258	\$6,048,712	\$6,679,832	\$1,782,624	\$0	\$0	\$22,458,426
30	Recycled Water Outside	\$0	\$0	\$0	\$0	\$0	\$0	\$0
31	Recycled Water OCSA	\$454,092	\$70,799	\$51,907	\$41,978	\$0	\$0	\$618,776
32	Raw Water Outside	\$2,672,139	\$0	\$0	\$0	\$0	\$0	\$2,672,139
33	Raw Water OCSA	\$792,491	\$0	\$0	\$0	\$0	\$0	\$792,491
34	<b>Total Outside City</b>	<b>\$21,591,364</b>	<b>\$14,360,278</b>	<b>\$18,040,487</b>	<b>\$5,637,472</b>	<b>\$0</b>	<b>\$0</b>	<b>\$59,629,601</b>
35	<b>Total System</b>	<b>\$23,732,146</b>	<b>\$20,946,840</b>	<b>\$25,091,303</b>	<b>\$12,316,331</b>	<b>\$0</b>	<b>\$0</b>	<b>\$82,086,620</b>

\*Totals may not add due to rounding.

**Table E-12**  
**2011 Cost-of-Service Rate Study**  
**Customer Class Non-Rate Revenues**  
*(\$ thousands)*

Line No	Customer Class	Non-Potable Water	Base	Max Day	Max Hour	Billing	Customer Service	Total
<b>Inside City</b>								
1	Residential	\$767,090	\$1,434,121	\$1,215,762	\$512,827	\$112,976	\$724,005	\$4,766,781
2	Multifamily	\$85,943	\$160,676	\$85,329	\$45,747	\$7,973	\$51,095	\$436,763
3	Nonresidential	\$820,199	\$1,533,410	\$760,966	\$424,065	\$12,999	\$83,305	\$3,634,945
4	Irrigation	\$59,414	\$111,078	\$173,615	\$57,585	\$1,038	\$6,651	\$409,382
5	City & County of Denver	\$140,281	\$262,263	\$392,016	\$130,900	\$1,003	\$6,431	\$932,895
6	Fire Protection - Public							\$0
7	Fire Protection - Private	\$0	\$0	\$42,916	\$32,079	\$3,793	\$0	\$78,788
8	<b>Total Inside City</b>	<b>\$1,872,927</b>	<b>\$3,501,548</b>	<b>\$2,670,604</b>	<b>\$1,203,205</b>	<b>\$139,782</b>	<b>\$871,488</b>	<b>\$10,259,554</b>
9	Recycled Water Inside	\$15,187	\$28,392	\$8,879	\$6,656	\$6	\$39	\$59,158
10	Recycled Water City & County	\$14,559	\$27,218	\$40,684	\$13,585	\$13	\$83	\$96,141
11	Raw Water Inside City	\$28,683	\$0	\$0	\$0	\$0	\$0	\$28,683
12	Raw Water City and County	\$16,390	\$0	\$0	\$0	\$0	\$0	\$16,390
13	<b>Total Inside City</b>	<b>\$1,947,745</b>	<b>\$3,557,159</b>	<b>\$2,720,167</b>	<b>\$1,223,446</b>	<b>\$139,801</b>	<b>\$871,609</b>	<b>\$10,459,926</b>
<b>Outside City</b>								
<b>Read &amp; Bill</b>								
14	Residential	\$264,417	\$494,344	\$557,040	\$207,695	\$28,373	\$181,826	\$1,733,696
15	Multifamily	\$6,776	\$12,669	\$8,906	\$4,104	\$437	\$2,803	\$35,696
16	Nonresidential	\$200,023	\$373,956	\$337,605	\$137,383	\$2,139	\$13,709	\$1,064,815
17	Irrigation	\$33,929	\$63,432	\$113,869	\$36,209	\$356	\$2,283	\$250,079
18	R/B Large Fed. Agencies	\$1,143	\$2,137	\$1,920	\$694	\$2	\$11	\$5,907
19	Fire Protection - Public							\$0
20	Fire Protection - Private	\$0	\$0	\$2,003	\$2,406	\$689	\$0	\$5,097
21	<b>Total Read and Bill</b>	<b>\$506,289</b>	<b>\$946,538</b>	<b>\$1,021,344</b>	<b>\$388,491</b>	<b>\$31,996</b>	<b>\$200,632</b>	<b>\$3,095,290</b>
<b>Total Service</b>								
22	Residential	\$277,030	\$517,924	\$642,481	\$229,828	\$27,744	\$177,800	\$1,872,807
23	Multifamily	\$9,339	\$17,459	\$14,255	\$6,050	\$566	\$3,625	\$51,294
24	Nonresidential	\$143,026	\$267,395	\$224,015	\$94,897	\$2,460	\$15,767	\$747,559
25	Irrigation	\$35,326	\$66,044	\$101,394	\$33,887	\$482	\$3,092	\$240,225
26	Fire Protection - Public							\$0
27	Fire Protection - Private	\$0	\$0	\$1,717	\$2,406	\$717	\$0	\$4,840
28	<b>Total Total Service</b>	<b>\$464,720</b>	<b>\$868,822</b>	<b>\$983,861</b>	<b>\$367,068</b>	<b>\$31,970</b>	<b>\$200,283</b>	<b>\$2,916,724</b>
28	Treated Water OCSA	\$81,284	\$151,965	\$134,519	\$55,250	\$6	\$39	\$423,063
29	Master Meters	\$877,433	\$1,640,413	\$1,459,165	\$598,747	\$32	\$204	\$4,575,992
30	Recycled Water Outside	\$0	\$0	\$0	\$0	\$0	\$0	
31	Recycled Water OCSA	\$45,674	\$85,390	\$26,703	\$20,018	\$1	\$6	\$177,792
32	Raw Water Outside	\$295,023	\$0	\$0	\$0	\$0	\$0	\$295,023
33	Raw Water OCSA	\$68,839	\$0	\$0	\$0	\$0	\$0	\$68,839
34	<b>Total Outside City</b>	<b>\$2,339,261</b>	<b>\$3,693,128</b>	<b>\$3,625,592</b>	<b>\$1,429,575</b>	<b>\$64,004</b>	<b>\$401,163</b>	<b>\$11,552,722</b>
35	<b>Total System</b>	<b>\$4,287,005</b>	<b>\$7,250,286</b>	<b>\$6,345,759</b>	<b>\$2,653,021</b>	<b>\$203,805</b>	<b>\$1,272,772</b>	<b>\$22,012,648</b>

\*Totals may not add due to rounding.

**Table E-13**  
**2011 Cost-of-Service Rate Study**  
**Customer Class Cost of Service**  
**(\$ thousands)**

Line No	Customer Class	Non-Potable Water	Base	Max Day	Max Hour	Billing	Customer Service	Total
<b>Inside City</b>								
1	Residential	\$5,336,726	\$15,980,229	\$14,380,647	\$8,016,436	\$1,265,054	\$8,107,115	\$53,086,207
2	Multifamily	\$597,915	\$1,790,391	\$1,009,309	\$715,115	\$89,279	\$572,145	\$4,774,154
3	Nonresidential	\$5,706,207	\$17,086,599	\$9,001,090	\$6,628,924	\$145,559	\$932,816	\$39,501,194
4	Irrigation	\$413,349	\$1,237,728	\$2,053,609	\$900,167	\$11,621	\$74,475	\$4,690,950
5	City & County of Denver	\$652,239	\$1,926,142	\$2,366,232	\$523,596	\$11,237	\$72,011	\$5,551,458
6	Fire Protection - Public							\$0
7	Fire Protection - Private	\$0	\$0	\$507,631	\$501,457	\$42,475	\$0	\$1,051,563
8	<b>Total Inside City</b>	<b>\$12,706,437</b>	<b>\$38,021,089</b>	<b>\$29,318,519</b>	<b>\$17,285,695</b>	<b>\$1,565,225</b>	<b>\$9,758,562</b>	<b>\$108,655,527</b>
9	Recycled Water Inside	\$105,655	\$41,191	\$29,332	\$69,941	\$67	\$431	\$246,616
10	Recycled Water City & County	\$73,433	(\$15,006)	(\$2,028)	\$19,674	\$144	\$924	\$77,141
11	Raw Water Inside City	\$199,549	\$0	\$0	\$0	\$0	\$0	\$199,549
12	Raw Water City and County	\$83,368	(\$615)	(\$1,288)	(\$906)	\$0	\$0	\$80,559
13	<b>Total Inside City</b>	<b>\$13,168,442</b>	<b>\$38,046,659</b>	<b>\$29,344,535</b>	<b>\$17,374,404</b>	<b>\$1,565,437</b>	<b>\$9,759,917</b>	<b>\$109,259,393</b>
<b>Outside City</b>								
<b>Read &amp; Bill</b>								
14	Residential	\$3,891,999	\$5,702,976	\$6,118,979	\$1,509,132	\$317,705	\$2,036,019	\$19,576,810
15	Multifamily	\$99,742	\$146,153	\$97,836	\$29,822	\$4,898	\$31,386	\$409,836
16	Nonresidential	\$2,944,178	\$4,314,126	\$3,708,523	\$998,237	\$23,954	\$153,508	\$12,142,526
17	Irrigation	\$499,407	\$731,785	\$1,250,834	\$263,094	\$3,989	\$25,564	\$2,774,674
18	R/B Large Fed. Agencies	\$7,951	\$23,808	\$22,716	\$10,848	\$19	\$123	\$65,466
19	Fire Protection - Public							\$0
20	Fire Protection - Private	\$0	\$0	\$22,000	\$17,482	\$7,711	\$0	\$47,192
21	<b>Total Read and Bill</b>	<b>\$7,443,277</b>	<b>\$10,918,848</b>	<b>\$11,220,888</b>	<b>\$2,828,615</b>	<b>\$358,276</b>	<b>\$2,246,601</b>	<b>\$35,016,504</b>
<b>Total Service</b>								
22	Residential	\$4,077,646	\$6,790,330	\$8,343,228	\$2,916,282	\$310,669	\$1,990,927	\$24,429,083
23	Multifamily	\$137,457	\$228,902	\$185,113	\$76,773	\$6,334	\$40,595	\$675,175
24	Nonresidential	\$2,105,220	\$3,505,732	\$2,909,047	\$1,204,138	\$27,549	\$176,547	\$9,928,232
25	Irrigation	\$519,967	\$865,879	\$1,316,696	\$429,989	\$5,402	\$34,619	\$3,172,553
26	Fire Protection - Public							\$0
27	Fire Protection - Private	\$0	\$0	\$22,292	\$30,529	\$8,028	\$0	\$60,849
28	<b>Total Total Service</b>	<b>\$6,840,291</b>	<b>\$11,390,844</b>	<b>\$12,776,376</b>	<b>\$4,657,712</b>	<b>\$357,983</b>	<b>\$2,242,688</b>	<b>\$38,265,893</b>
28	Treated Water OCSA	\$1,399,646	\$1,889,328	\$1,648,753	\$454,888	\$67	\$431	\$5,393,114
29	Master Meters	\$12,915,070	\$18,924,550	\$16,028,650	\$4,350,541	\$356	\$2,279	\$52,221,447
30	Recycled Water Outside	\$0	\$0	\$0	\$0	\$0	\$0	\$0
31	Recycled Water OCSA	\$712,686	\$15,517	\$38,014	\$41,284	\$10	\$62	\$807,574
32	Raw Water Outside	\$4,342,486	\$0	\$0	\$0	\$0	\$0	\$4,342,486
33	Raw Water OCSA	\$1,182,238	\$0	\$0	\$0	\$0	\$0	\$1,182,238
34	<b>Total Outside City</b>	<b>\$34,835,695</b>	<b>\$43,139,087</b>	<b>\$41,712,681</b>	<b>\$12,333,040</b>	<b>\$716,691</b>	<b>\$4,492,061</b>	<b>\$137,229,255</b>
35	<b>Total System</b>	<b>\$48,004,137</b>	<b>\$81,185,746</b>	<b>\$71,057,216</b>	<b>\$29,707,444</b>	<b>\$2,282,128</b>	<b>\$14,251,978</b>	<b>\$246,488,648</b>

\*Totals may not add due to rounding.

**Table E-14**  
**2011 Cost-of-Service Rate Study**  
**Customer Class Cost of Service**  
(\$ thousands)

Line No	Customer Class	2010 Revenue	2011 Cost of Service	Variance \$	Variance %
<b>Inside City</b>					
1	Residential	\$47,504,242	\$53,086,207	\$5,581,966	11.8%
2	Multifamily	\$4,273,106	\$4,774,154	\$501,048	11.7
3	Nonresidential	\$36,232,624	\$39,501,194	\$3,268,571	9.0
4	Irrigation	\$4,107,399	\$4,690,950	\$583,551	14.2
5	City & County of Denver	\$4,926,896	\$5,551,458	\$624,562	12.7
6	Fire Protection - Public				
7	Fire Protection - Private	\$918,923	\$1,051,563	\$132,640	14.4
8	<b>Total Inside City</b>	<b>\$97,963,189</b>	<b>\$108,655,527</b>	<b>\$10,692,338</b>	<b>10.9%</b>
9	Recycled Water Inside	\$237,209	\$246,616	\$9,408	4.0%
10	Recycled Water City & County	\$67,085	\$77,141	\$10,056	15.0
11	Raw Water Inside City	\$246,750	\$199,549	(\$47,201)	(19.1)
12	Raw Water City and County	\$57,000	\$80,559	\$23,559	41.3
13	<b>Total Inside City</b>	<b>\$98,571,232</b>	<b>\$109,259,393</b>	<b>\$10,688,160</b>	<b>10.8%</b>
<b>Outside City</b>					
<b>Read &amp; Bill</b>					
14	Residential	\$18,353,376	\$19,576,810	\$1,223,434	6.7%
15	Multifamily	\$371,725	\$409,836	\$38,112	10.3
16	Nonresidential	\$11,612,615	\$12,142,526	\$529,910	4.6
17	Irrigation	\$2,477,752	\$2,774,674	\$296,922	12.0
18	R/B Large Fed. Agencies	\$54,168	\$65,466	\$11,298	20.9
19	Fire Protection - Public				
20	Fire Protection - Private	\$52,365	\$47,192	(\$5,173)	(9.9)
21	<b>Total Read and Bill</b>	<b>\$32,922,001</b>	<b>\$35,016,504</b>	<b>\$2,094,503</b>	<b>6.4%</b>
<b>Total Service</b>					
22	Residential	\$23,467,720	\$24,429,083	\$961,363	4.1%
23	Multifamily	\$633,360	\$675,175	\$41,815	6.6
24	Nonresidential	\$9,341,295	\$9,928,232	\$586,937	6.3
25	Irrigation	\$3,031,548	\$3,172,553	\$141,005	4.7
26	Fire Protection - Public				
27	Fire Protection - Private	\$70,252	\$60,849	(\$9,403)	(13.4)
28	<b>Total Total Service</b>	<b>\$36,544,176</b>	<b>\$38,265,893</b>	<b>\$1,721,717</b>	<b>4.7%</b>
28	Treated Water OCSA	\$4,784,191	\$5,393,114	\$608,923	12.7%
29	Master Meters	\$46,262,122	\$52,221,447	\$5,959,325	12.9
30	Recycled Water Outside	\$0	\$0	\$0	
31	Recycled Water OCSA	\$728,067	\$807,574	\$79,507	10.9%
32	Raw Water Outside	\$4,158,000	\$4,342,486	\$184,486	4.4
33	Raw Water OCSA	\$1,134,000	\$1,182,238	\$48,238	4.3
34	<b>Total Outside City</b>	<b>\$126,532,556</b>	<b>\$137,229,255</b>	<b>\$10,696,699</b>	<b>8.5%</b>
35	<b>Total System</b>	<b>\$225,103,788</b>	<b>\$246,488,648</b>	<b>\$21,384,860</b>	<b>9.5%</b>

\*Totals may not add due to rounding.

Appendix F  
2011 Cost-of-Service Changes



**DENVER WATER**

## **Appendix G: Cost-of-Service Changes for 2011**

### **G-1 City and County of Denver**

The Board modified the cost-of-service methodology used to calculate water rates for the City and County of Denver in 2009 adhering to the following timeline:

- Allowing 2009 rates to remain effective during 2010
- 2010 rates calculated in 2010-2012 Cost-of-Service Study effective in 2011
- 2011 rates calculated in 2011 Cost-of-Service Study effective in 2012

### **G-2 Projected Demand and Peaking Factors**

In July of 2009 Denver Water underwent a transition from bi-monthly billing to monthly billing. The post-drought demand and customer count data have been modified for projecting monthly forecasts altering the peaking factors. The historical demand and customer count data is captured in bi-monthly distribution, so a two month average was used to project the 2011 customer class demand and customer count.

The monthly distribution of demand changed the allocation of peaking costs for each customer class. To normalize the impact the new peaking factors have on customer class rates, a four year phase-in of these peaking factors was used. For a detailed explanation of the four year peaking factor phase in please refer to Appendix A: Peaking Factors in the 2011 Cost-of-Service Rate Study Model Documentation.

### **G-3 Rate of Return**

The current rate of return calculation was originally implemented in the mid 1990's and has had minor modifications since that time. With access to the internet a vast amount of information is available for publically traded companies, which has been limited in the past due to a lack of resources and information. Previously the dividend yield was calculated over one month using the weekly adjusted closing price. Four dividend yields are now utilized in calculating the rate of return: 2009, projected 2010, forward annual and a five year average dividend yield. A three year historical share price growth has been used, but because of recent economic conditions this has been extended to a five year historical share price growth to reduce volatility in the rate of return. For a more in depth discussion regarding how the rate of return is calculated, refer to Section 4.4.1.1 Rate of Return.