

Rate Study Summary

April 9, 2014

Northern Water has conducted a water rate study to determine what adjustments may be needed in Northern Water's revenue structure, primarily its water assessment rates, to ensure the future financial health of the organization and to meet operational commitments to the Colorado-Big Thompson Project. This document provides a summary of the rate study draft report. The full draft report will be available on Northern Water's website in late April.

What is a Water Rate Study and Why is Northern Water Doing One?

As with many public organizations, Northern Water's revenue has been affected by unpredictable national and regional economic conditions over the last few years. At the same time, the cost to provide services to the district and allottees has continued to increase due to many factors, including the need to repair and replace aging infrastructure, meet federal and state water quality and environmental regulations, address the impact of recent wildfires, and proactively address watershed health both now and into the future.

The water rate study is intended to provide data and information to allottees and the Northern Water Board of Directors to make a fair and equitable decision regarding future water assessments at Northern Water. The rate study has developed a range of possible financial futures and associated rate design options. For the rate study analysis, rate structures are based on cost-of-service rate-making principles commonly applied by municipal water utilities.

How Did We Get Here?

Northern Water is a public agency created in 1937 under the Water Conservancy Act (C.R.S. 37-35) to contract with the federal government to build the Colorado-Big Thompson (C-BT) Project. Now, Northern Water and the U. S. Bureau of Reclamation (Reclamation) jointly operate and maintain many aspects of the C-BT Project. As part of its responsibility, Northern Water also collects, distributes and monitors weather and water quality data, tracks streamflows and reservoir levels, and provides water resource planning and water conservation information.

The C-BT Project delivers an average of 215,000 acre-feet of water annually to supplement municipal, agricultural and industrial water supplies for 860,000 people and 640,000 acres of irrigated land in Larimer, Boulder, Broomfield, Weld, Morgan, Logan, Washington, and Sedgwick counties. The C-BT Project diverts water from the Colorado River Basin to the South Platte Basin through a system of 12 reservoirs with a total storage capacity of nearly 1 million acre-feet, 35 miles of tunnels, 95 miles of canals, 3 pumping plants, and 6 hydroelectric power plants with an installed capacity of 216 megawatts.

In addition to the C-BT Project, Northern Water operates four Water Activity Enterprises, including the Southern Water Supply Project, Pleasant Valley Pipeline, Northern Integrated Supply Project, and Hydropower Enterprise. The Windy Gap Project and the Windy Gap Firming Project are operated by Northern Water's Municipal Sub-District. The enterprises and Sub-District are 100% participant funded (or in the case of Hydropower, self-supporting); tax revenue and assessments do not fund enterprises. The water rate study does not include rate analyses for the enterprises or Sub-District.

Financial Structure - Revenue

Property tax revenue makes up approximately 53% of Northern Water's total revenue (Figure 1). Property tax revenues are primarily derived from a one mill levy on 1.6 million acres of real property within Northern Water boundaries. A small amount of property tax revenue is also received from specific ownership taxes (i.e., auto registrations) within the District. Except under certain circumstances that currently do not apply to Northern Water, the Water Conservancy Act does not allow an increase in the 1 mill levy.

Assessments on C-BT units owned by municipal, industrial, and irrigation water users within district boundaries comprise approximately 21% of the total revenue. Assessments are charged based on the number of C-BT units owned by a water user (via allotment contracts)¹, and vary by customer class - irrigation or municipal & industrial (M&I) uses. Unlike most municipal utilities, the Northern Water's assessments are based on the number of C-BT units owned, not on the amount of water delivered.

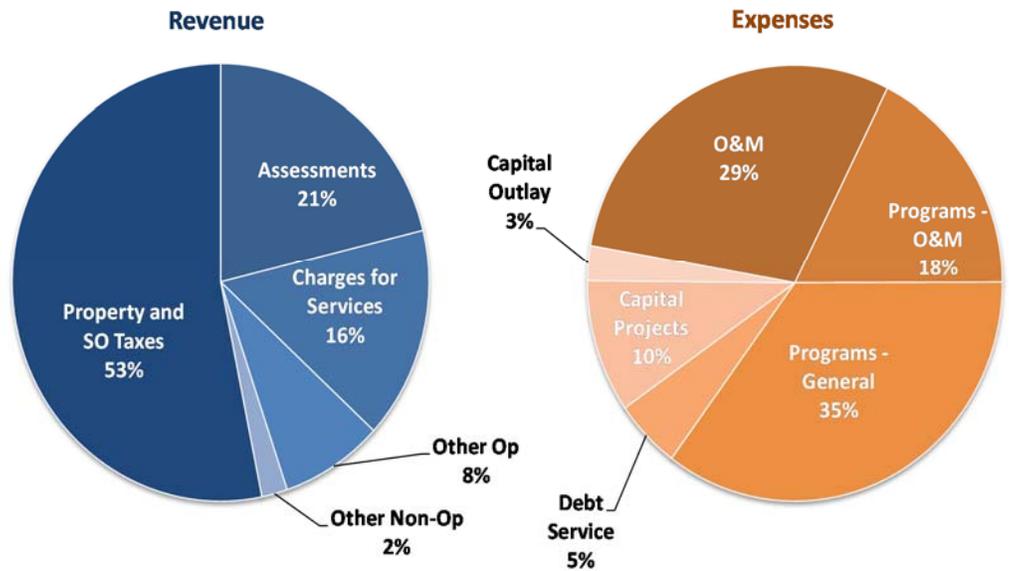


Figure 1
Summary of Northern Water Revenue and Expenses

Allotment contracts executed prior to 1959 are fixed-rate contracts, while allotment issued contracts since that time are open-rate contracts (Figure 2). Assessments for fixed-rate C-BT units are contractually set in-perpetuity at \$1.50 per unit (not including other fees), while assessments for open-rate contracts are set at a rate determined annually by the Board of Directors. Current open-rate water assessments are \$10.00 per unit for irrigation contracts and \$28.00 per unit for M&I contracts. Because assessments comprise only a relatively low percentage of the overall revenue, larger percentage increases in

assessments are required to effectuate a smaller percentage increase in overall revenue. For example, currently, a 10% increase in assessments results in only a 2% increase in revenue to Northern Water.

In addition to assessments, special charges are also assessed to water users, including allottees downstream of Boulder Reservoir (Unit 2 charge, \$0.50 per unit), tax exempt entities (\$0.50 per unit), and municipal water users that take delivery during the winter season (\$200 plus \$1.50 per acre-foot delivered between November 1 and April 1). When applicable, Water users are also assessed for use of carryover storage space.

Remaining revenue comes from a variety of sources, including charges for services to Reclamation and the Enterprises for services performed by Northern Water on their behalf, and other sources. Revenue from assessments and special charges are the only sources

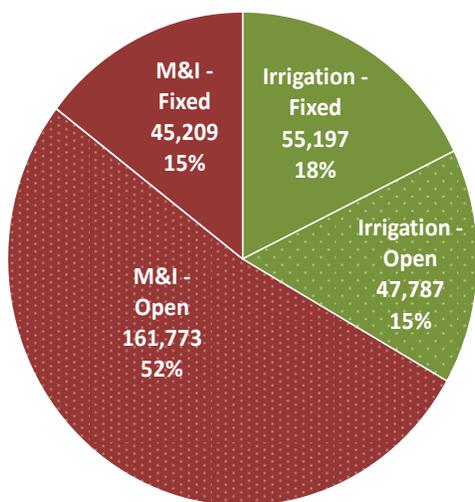


Figure 2
Summary of C-BT Unit Ownership

¹ A C-BT unit is equal to 1/310,000 of the total quantity of water the Board of Directors makes available in any particular year. Water is made available through a quota, which is expressed as a percentage of 310,000 acre feet, the amount of water the C-BT Project was designed to deliver each year. Quotas have historically ranged from 50% to 100%, and are normally based on the amount of supplemental water required in the Northern Colorado region.

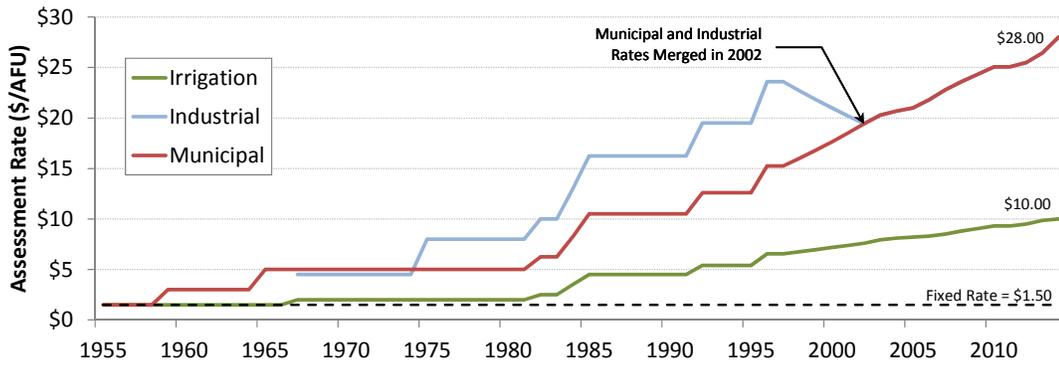


Figure 3
Historical Open-Rate Assessments

Water has very little debt as compared with other similar organizations.

Recent Financial Performance

Recent financial performance can be characterized by economic conditions pre and post 2008 recession. Prior to the recession, an average annual increase of approximately 8% in

available to the Board of Directors to balance Northern Water’s annual budget and plan for future expenses.

Financial Structure - Expenses

Operation and maintenance (O&M) of the C-BT Project comprises nearly half of Northern Water expenses (Figure 1); 29% is incurred by O&M crews, and 18% is the portion of the programs budget directly related to O&M (such as administration, financial, management, engineering and other services that are directly related to the operations of the C-BT Project). Increasing levels of O&M are required on the project to maintain reliable water deliveries, as much of the project infrastructure was originally constructed over 60 years ago. Additionally, capital outlays are required to make major upgrades to project infrastructure, and to fund equipment purchases.

property tax revenue resulted in total revenue that met or exceeded expenses. In addition, reserves were bolstered from several large inclusions into Northern Water which were required to pay back taxes (or inclusion fees) and the sale its former Loveland property. This resulted in small increases in assessment rates primarily based on the rate of inflation (Figure 3).

Since the 2008 recession, property tax revenue has been virtually flat. Meanwhile, on-going expenses were necessary in order to maintain the operational reliability of the C-BT Project, to proactively respond to recent wildfires and floods, and to address a growing list of environmental and water quality regulatory requirements (Figure 4), including those related to providing water for the 10825 Program². Increases in

The general programs budget comprises approximately 35% of expenses, and includes programs that provide regional benefits to the District as a whole, including portions of the water resources, irrigation management services, water conservation, water quality, environmental programs (endangered species and regulatory compliance), and other administrative and management functions.

Other expenses include debt service and capital outlay. Current debt service requirements cover major capital improvement projects that were funded jointly with Reclamation, including Horsetooth Dam Modernization, and Pole Hill Canal box culvert installation. Northern



Capital expenses primarily paid from reserves:

- Carter Lake Outlet
- Pole Hill Canal
- Ruedi Reservoir Contracts (10825)²
- Carter Lake Hydropower Loan
- New Red Top Valley Ditch Water Rights Purchase (10825)²

Repairs of the Pole Hill Canal (Photo Northern Water)



Program expenses primarily paid from operations:

- Water Quality Program
- Fire Response/Mitigation
- Platte River/Upper Colorado Recovery Programs
- Upper Colorado River Wild and Scenic Alternative

Colorado Pike minnow (Photo courtesy U.S. Fish and Wildlife Service, Swimming Upstream Newsletter, Winter 2013)

Figure 4
Recent Large Capital and Operating Expenses

² The 10825 Program requires Colorado water users to develop and provide 10,825 acre-feet per year of flow in the Colorado above Grand Junction to protect endangered species as part of the Upper Colorado River Endangered Fish Recovery Program.

assessment rates continued to be small - primarily tied to inflation - rather than Northern Water's revenue requirements.

Northern Water has taken proactive measures to control its expenses, including postponing filling open positions, adjusting employee health insurance benefits, implementing a new financial management system, and applying for grants and investigating cooperative funding opportunities for water quality and environmental activities.

The result of recent economic conditions is that in three of the previous four years, total expenses have exceeded total revenue requiring use of reserve funds to balance Northern Water's expenses (Figure 5). In 2014, revenue exceeded expenses as Northern Water was repaid a portion of the 2013 costs by other Colorado water users for securing 10825 program water rights, a "one-time only" revenue source in 2004 that will not repeat in future years. Although reserve funds are in part intended to help stabilize revenue, this is not a sustainable funding approach in the long term. The need to plan for future revenues and expenditures led Northern Water to implement its water rate study.

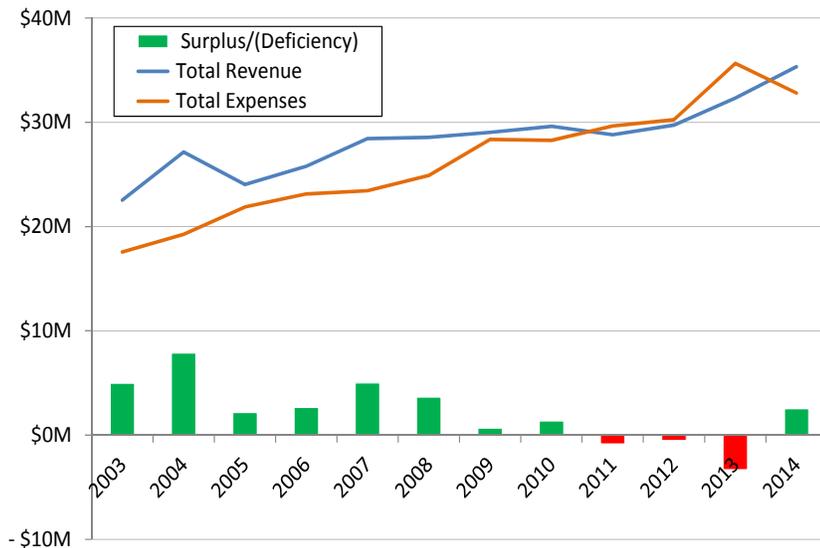


Figure 5
Historical Revenue and Expenses

How Was the Rate Study Conducted?

Cost-of-service is an industry-standard approach for developing rates and assumes that a water utility should be a self-sustaining organization and adequately financed with rates based on sound engineering and economic principals. There are three primary steps to

the cost-of-service approach: financial planning, cost-of-service analysis, and rate design. In Northern Water's case, an ability-to-pay analysis of the irrigation customer class was also performed.

Financial Planning

The financial plan examines expected future costs to develop revenue requirements over a 10-year financial planning horizon. Financial planning requires assumptions regarding future regional economic conditions (conditions that are largely outside the control of Northern Water) and financial goals of the organization (which are within the control of Northern Water).

Regional economic conditions have an impact on Northern Water in several ways, most importantly, on the amount of property tax revenue that Northern Water may receive. Economic conditions also drive the rate of C-BT unit transfers (which result in transfer from fixed to open-rate contracts), federal budgeting issues that affect the level of expenditures by Reclamation on the C-BT Project, and on-going operating and capital expenses.

Northern Water's financial planning goals are to maintain a balanced budget and reasonable reserves, recognizing the natural and administrative risks related to C-BT water supplies. Based on these goals, the following planning scenarios were developed:³

- **Status Quo** – Maintain average historical rate of increase to assessments (3%)
- **Basic Cost Recovery (Break-Even)** – Fully recover operational costs and maintain existing target reserves (approximately 63% O&M and 8% Programs) during an Average Regional Economy
- **Moderate Reserve Recovery** – Fully recover operational costs and target a 100% O&M reserve and 50% Programs reserve with an Average Regional Economy
- **Aggressive Reserve Recovery** – Fully recover operational costs and target a 100% O&M and 100% Programs reserve with an average regional economy

³ Reserve targets given as a percent of annual budget. All scenarios maintain existing restricted and fixed asset reserve levels.

The financial planning scenarios were combined with the range of economic conditions to provide an overview of the future financial conditions for Northern Water. Projected reserve levels provided a proxy of Northern Water’s future financial condition.

The Status Quo scenario shows that the current level of assessment increases is likely not sustainable. Over time, reserves would continue to decrease to meet operational budget requirements, and except under the most robust regional economic conditions, would be fully depleted by the end of the planning horizon (Figure 6).

combination of open-rate unit assessments and other fees and charges). Cost-of-service was then defined as the proportionate share of net system costs to serve each customer class. Two cost-of-service methods were evaluated:

- **Uniform Allocation** - Applied a uniform allocation of O&M expenses to each customer class.
- **Split Allocation** - Considered the portion of O&M expenses benefiting specific customers classes (M&I and/or Irrigation), resulting in cost allocation as a percentage of expenses for each class. O&M expenses were split based on 2013 actual costs.

The split allocation method was used for purposes of assessment design.

Irrigation Ability-to-Pay Analysis

A full ability-to-pay analysis was also performed for the irrigation customer class as part of the rate study using standard Reclamation Irrigation Payment Capacity guidelines. The average ability-to-pay for irrigated agriculture in Northern Colorado was calculated at approximately \$22 per C-BT unit.

However, the methodology has several inherent assumptions that make a uniform application to Northern Water irrigation allottees difficult. For instance, the payment capacity method assumes a representative farm as a full-time family farm that relies primarily on farm income

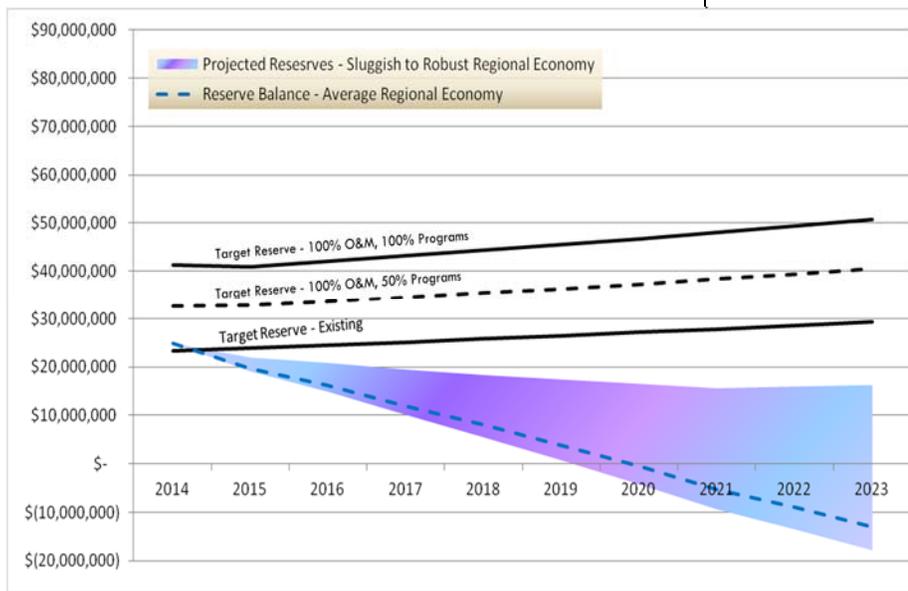


Figure 6
Projected Reserves under Variable Regional Economic Conditions – Status Quo

The Moderate Reserve Recovery Scenario indicates that the target reserve level can be met by the end of the planning horizon through annual revenue increases in the range of 13% to 17% per year (Figure 7). There is a large degree of uncertainty over the planning horizon with regard to regional economic conditions, particularly between average and robust economic conditions. For purposes of the cost-of-service analysis (described below), average regional economic conditions were assumed.

Cost-of-Service

The revenue requirements identified in the financial planning analysis were reduced by non-assessment revenues to derive the net requirements (or net costs) that must be funded by water user charges (a

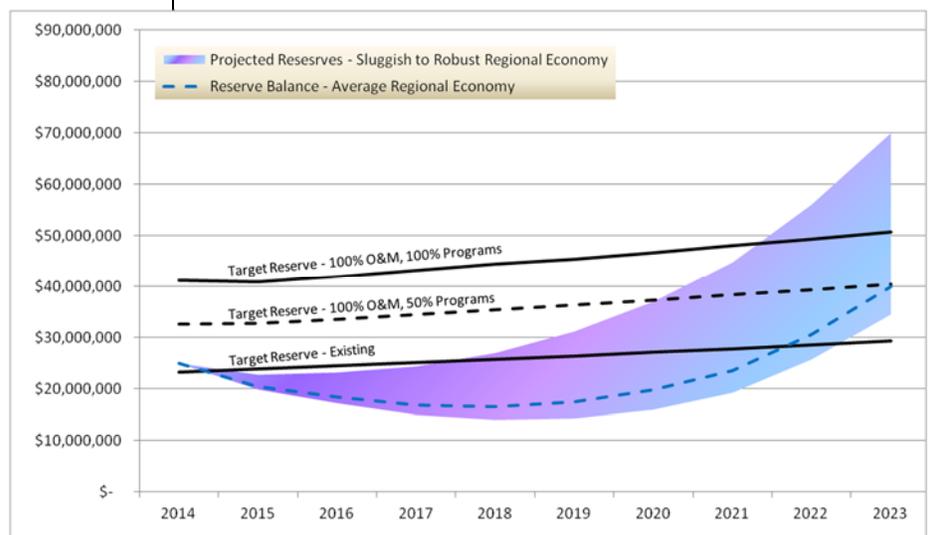


Figure 7
Projected Reserves under Variable Regional Economic Conditions – Moderate Reserve Recovery Scenario

for household income. Census data shows that this may be true for less than 50% of farming operations in Northern Colorado. Additionally, the method does not account for the supplemental nature of C-BT water to the farming operation, and one that is typically the last increment of water applied to a crop (i.e., late season irrigation after other sources have been exhausted).

Assessment Design

Assessment design used results of cost-of-service analysis to develop potential implementation options. Assessment structure options applied differences in cost recovery mechanisms based on net cost-of-service. Several options were considered, with the following three analyzed in detail:

- **Option 1 (Existing Structure)** - Open-rate irrigation assessments would continue to be based on the average irrigation ability-to-pay and municipal open-rate assessments would recover the balance of the total net cost-of-service.
- **Option 2 (Base Cost-of-Service)** - Open-rate irrigation assessments transition from an ability-to-pay basis to a cost-of-service basis. The irrigation open-rate assessment recovers the base cost to deliver an acre-foot of water. The open-rate municipal assessments recover the balance of the total net cost-of-service.
- **Option 3 (Open-Rate Cost-of-Service)** - Both irrigation and municipal open-rate assessments would transition to a net cost-of-service basis. The open-rate irrigation units would be assessed a rate equal to the irrigation net cost-of-service, less revenue from irrigation fixed-rate units. Similarly, municipal open-rate units would be assessed a rate equal to the municipal net cost-of-service, less revenue from municipal fixed-rate units.

Implementation options considered the timing and magnitude of potential rate increases. Several options were considered, with the following two methods analyzed in detail.

- **Smooth Increase** – Assessment increases would be smoothed over the 10-year period to have approximately equal annual percent increases. Increases would be structured so that Northern Water achieves a revenue neutral financial position within four years (by 2018).

- **Step Increase** – Assessment increases would be phased in with two major step increases. The first step increase would be structured so that Northern Water achieves a revenue neutral financial position within two years (by 2016). The second step, assumed to occur at year five, is designed so that financial planning goals can be met at the end of the planning horizon with only minor adjustments in non-step years (i.e. at or near rate of inflation).

What are the Results?

Using a combination of the three assessment structure options and the two implementation alternatives, six potential assessment structures were developed. The resulting rate structures all recover the same amount of revenue and meet Northern Water’s financial planning goals over the 10-year planning horizon (assuming average regional economic conditions).

Assessment design over the first five years of the planning horizon (Figure 8) focuses on returning Northern Water to a balanced budget, with the step increase options achieving this in 2016, and the smooth increase options achieving this by 2018. Municipal assessments in 2018 are nearly equal for all options. Irrigation assessments in 2018 vary depending on the assessment design options. Cost-of-service based irrigation rates (Options 2 and 3) are higher in 2018 as assessments move towards cost-of-service in the later years of the planning horizon.

For all options, a 9% increase is assumed in 2015 for both rate classes. In 2016, the municipal step would be about a 70% increase, followed by 3% annual increases through 2018. Irrigation steps would be between 70% and 90% (depending on the assessment design option)

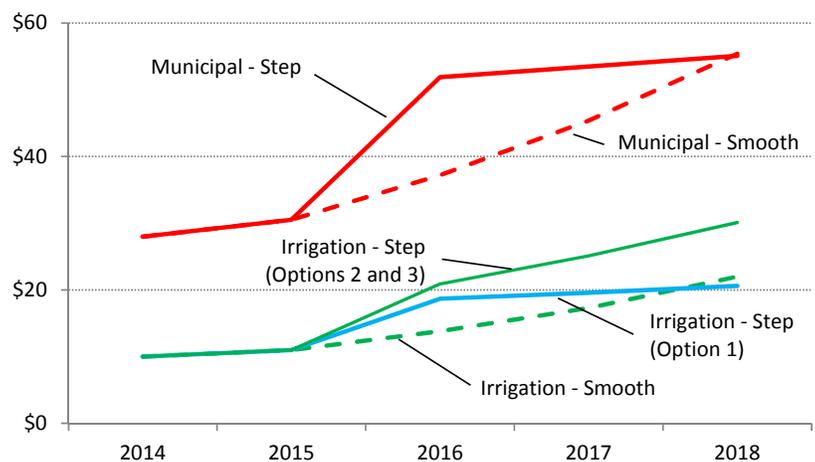


Figure 8
Options for Open-Rate Assessments (2014-2018)

followed by 20% annual increases through 2018. The smooth increase alternatives would generally range between 21% and 27% through 2018 for both rate classes.

Assessment design over the last five years of the planning horizon (Figure 9) focuses on maintaining a balanced budget and building cash reserves. Because of the numerous assumptions in the planning forecasts and economic conditions, assessments over the last five years of the planning horizon are more varied and uncertain. However, several conclusions can be drawn from the rate design options through the 10-year planning horizon:

- Although the step increase results in higher rates earlier in the planning horizon, it results in approximately 20% lower rates by 2023.
- There is a wide range in irrigation rates at the end of the planning horizon, depending on the assessment design option selected.
- Option 1 results in an increasing disparity between municipal and irrigation rates, with municipal rates exceeding \$100 per C-BT unit, while irrigation rates remain in the \$20 to \$30 range.
- Option 3 reduces the disparity between municipal and irrigation rates, with a difference of only \$5 to \$7 per C-BT unit by 2023.

Other Fees and Charges

The rate study analysis also concluded that adjustment to other fees and charges may be appropriate based on cost-of-service recovery requirements. Since these fees and charges apply to a small subset of allottees (primarily municipalities, governmental agencies, and water users that receive water from Boulder Reservoir), they are not discussed further in this document. More information on the fees, charges and analysis can be found in the main report.

Carryover Charge

Carryover charges are currently based on open-rate assessments for each class. Two methods for analyzing the carryover charge were studied, including the avoided cost to allottees and the net unit cost per C-BT

unit. The avoided cost analysis compared the cost to construct comparable storage using cost estimates for recent regional reservoir construction projects. This analysis indicated the annual avoided cost to allottees is between \$60 and \$140 per acre-foot. The net unit cost approach (which excludes tax revenue) results in a unit cost per C-BT unit between \$47 and \$72 per acre-foot. The analysis indicates that the current carryover charge is relatively low compared with those pricing methods.

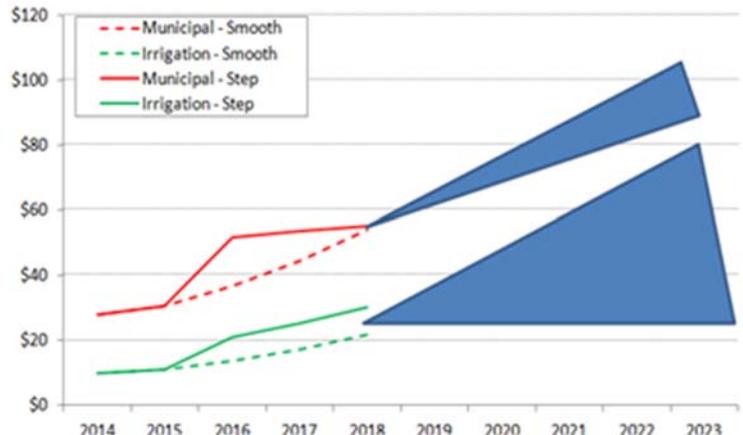


Figure 9
Long-Term Assessment Forecast for Average Regional Economy

How Does Northern Water Compare?

A benchmarking analysis was performed to compare Northern Water business processes and performance metrics to other similar water providers in the Western U.S. Key metrics comparisons included employees, assets, liabilities, debt, revenue/receipts, and total expenses per acre-feet delivered. Financial ratios included assets-to-liabilities, debt-to-assets, operating ratio, current ratio and assets as a percent of revenues. Comparable water providers included one each from Colorado, Nebraska, Texas, Utah, Arizona, Nevada, and California.

Results of the benchmarking analysis showed that Northern Water compares favorably in all key metrics and ratios to similar water providers in the Western U.S. As an example, Northern Water ranks well below both the median and mean values for total expenses per

acre-foot delivered, with only one water provider having a lower value (Figure 10).

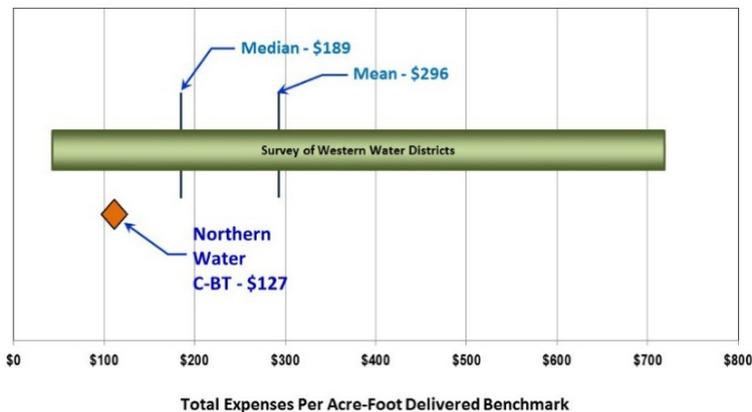


Figure 10
Benchmarking - Total Expenses per Acre-Foot Delivered

In addition to the benchmarking analysis, a survey of assessment rates for over 50 northeastern Colorado irrigation companies and districts was conducted. The survey showed a wide range of assessments (Figure 11), with the weighted average (weighted by annual diversion amount) equal to approximately \$19 per acre-foot (average yield at river diversion). Currently, C-BT units average approximately \$14.29 per acre-foot (assuming an average yield of 0.7 acre-feet per unit). One important finding in the survey is that there has been a noticeable increase in assessment rates between 2013 and 2014 as irrigation companies and districts recuperate from the 2013 flood.

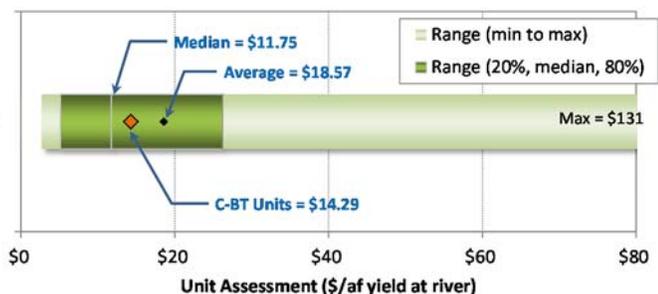


Figure 11
Range of Current Northeastern Colorado Irrigation Assessments

Northern Water Commitments

Northern Water is committed to continue providing the high level of C-BT reliability and service that has come to be expected over its 75-year history. At the same time, Northern Water recognizes its duty to allottees and constituents to operate in an efficient manner.

Northern Water will continue to seek opportunities to jointly fund operational expenses with our partners, obtain external funding sources (such as grants) to perform services such as forest fuels reduction projects that have a regional economic benefit, and implement internal cost-control measures. Northern Water also anticipates annually updating the assessment analysis and providing “forward guidance” of anticipated future assessments. This will provide allottees additional time to incorporate changes into their own financial plans.

What is the Process From Here Forward?

Northern Water conducted the first allottee informational meeting on January 10, 2014 to provide background information on Northern Water’s financial structure and the rate study process. The second allottee informational meeting is being held on April 9, 2014 to provide preliminary results from the rate study process, and prepare allottees to provide formal comments to the Board of Directors prior to and during its **formal rate setting hearing scheduled for May 1, 2014** (and continued on June 5, 2014 if needed). The Board of Directors will consider all comments and information received during this period.

How Do I Provide Input?

Comments on the water rate study are welcome and encouraged. To provide input, please:

- Fill out a comment card at the April 9 meeting and drop it in the boxes provided, or hand it to Northern Water staff.
- Provide written comments prior to the May 1 water rate hearing, either by e-mail to RateStudy@northernwater.org or the mailing address on the front page of this document, c/o Water Rate Study.
- Provide verbal or written comments at the May 1 water rate hearing.

For more information, please contact Jerry Gibbens at 970-622-2299, or RateStudy@northernwater.org.