



CITY COUNCIL STUDY SESSION MEMORANDUM

To: Mayor and City Council
 From: Charles Ozaki, City and County Manager
 Prepared by: David Allen, Deputy Director of Public Works
 Pat Soderberg, Director of Finance
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Meeting Date	Agenda Item #
January 17, 2012	5

Agenda Title
Council Priority Regarding Comprehensive Water Plan – Status Report

Summary

- One of Council’s priorities for 2011 was the Comprehensive Water Use Plan, which included an analysis on the factors affecting the size of the proposed Broomfield Reservoir, providing options for funding the construction of Broomfield Reservoir with water license sales and monthly consumption charges, and updating Broomfield’s Long Range Financial Plan with current plans for the proposed Broomfield Reservoir and Windy Gap Firming projects. The priority also included the completion of a utility operations audit and a determination of whether to complete a rate study.
- The City’s water use planning is an ongoing effort to effectively meet the demands by current and future customers for both the potable and non-potable water systems in an efficient manner.
- Broomfield currently has enough firm yield water supplies to meet demands through 2018. In order to meet ultimate demands, however, the City will need to firm up its Windy Gap shares. The Windy Gap Firming Project (WGFP) includes the construction of a 90,000 acre-feet storage reservoir (Chimney Hollow) on the Front Range located west of Carter Lake in Larimer County. Once firming, the Windy Gap supply, together with existing CBT shares and Denver contractual supplies, will meet potable water demands at build-out.
- Prior to August 2009, it was anticipated that additional supplies and improvements would be required to meet annual demands and peak summer needs by 2012. The proposed Broomfield Reservoir was sized with a 5,000 acre-feet capacity to (1) meet peak summer demands at ultimate development and (2) provide interim firming of Windy Gap supplies until the Chimney Hollow Reservoir is built.
- Due to the economic recession that started in late 2008 and the subsequent reevaluation in future growth, the need for Broomfield Reservoir has been effectively delayed by approximately five years as shown in Figures 1 and 2 of the staff memorandum.
- Additional capital projects have been identified that could further postpone the need for Broomfield Reservoir by another 5 to 10 years. Figure 3 of the staff memorandum shows how the purchase of an additional 1,625 acre-feet of CBT Units would help meet future supply needs while Figure 4 shows how the conversion of existing Siena Reservoir could assist in meeting peak summer day demands.
- Three different alternatives, with varying capital improvement schedules, were evaluated using Broomfield’s financial model. The financial analysis showed that the alternatives could be implemented with smaller bond issues than those included in the current Long Range Financial Plan.
- The memorandum provides Council with an update on the progress that has been made on the Comprehensive Water Use Plan.

Prior Council Action

N/A

Financial Considerations

Broomfield’s Financial Plan includes provisions for implementing the improvements associated with Broomfield’s Comprehensive Water Use Plan and Comprehensive Non-Potable (Reuse) Water Plan.

Next Steps

Staff would appreciate questions, comments, and suggestions from the Mayor and Council regarding the Comprehensive Water Plan.

BACKGROUND

Council Priority

One of Council's priorities for 2011 was the Comprehensive Water Use Plan which included:

- Analyzing the factors affecting the size of the proposed Broomfield Reservoir,
- Providing options for funding the construction of Broomfield Reservoir with water license sales and monthly consumption charges,
- Updating Broomfield's Long Range Financial Plan with current plans for the proposed Broomfield Reservoir and Windy Gap Firming projects, and
- Completing a utility operations audit and considering whether to complete a rate study.

Broomfield's water planning effort is a continuous process that quantifies the gap between current and ultimate development, and identifies the scope and timing when significant capital improvements are required. In addition, it covers the financial planning necessary to fund the construction of new capital facilities. This memorandum serves as a briefing to council on the status of Broomfield's recent water system planning efforts.

SYSTEM FACTORS AFFECTING WATER LICENSE SALES

Broomfield's ability to sell water licenses and support future growth is currently limited by the quantity of existing supplies and the capacity of several key facilities. There are four functional categories that control Broomfield's ability to serve future customers. These functional limitations include:

1. Water Supply
2. Transmission Conveyance (Peak day demand)
3. Water Treatment
4. Water Distribution

Recent planning efforts have focused on the first three areas since they make up the greatest proportion of future capital expenditures and require the longest lead times to implement. In some instances, the duration of the planning efforts may span 5 to 20 years while the design and construction can be completed in as little as 2 to 3 years. When new water licenses are sold and the demands begin to approach the capacity limits of these functional categories, system improvements must be funded and constructed to avoid having to limit the sale of new water licenses or the possibility of having shortages or reduced service levels. Therefore, it is extremely important to time the construction of new capital projects as closely as possible to the need to avoid restricting water license sales if projects are not completed in time.

The last functional area, water distribution, is equally important as the first three. However; the same level of advanced planning is not as critical since the pipeline network that makes up the distribution system can be extended as new residential and commercial development projects are built.

Water Supply

Potable water demands in Broomfield during the past 10 years have ranged between 9,227 acre-feet and 12,745 acre-feet per year. The lower end of the range occurred in 2004 when the non-potable water system first came on line, and the upper limit occurred in 2006, which had an uncharacteristically hot and dry spring. Last year, total potable demands were slightly less than 11,000 acre-feet.

Broomfield currently owns and has firmed enough water to supply up to 15,494 acre-feet through a treated water contract with Denver Water and 12,849 units owned in the Colorado – Big Thompson (CBT) Project. Broomfield also owns 56 units in the Windy Gap project; however, the number of water licenses that can be sold will be limited until Broomfield either firms approximately 5,600 acre-feet of its Windy Gap supplies or secures other water supplies. Projected demands on Broomfield's potable water system at ultimate build-out will be approximately 20,300 acre-ft per year.

Transmission Conveyance and Water Treatment

In addition to having firm water supplies, Broomfield must have sufficient transmission and treatment capacities to meet peak summer demands. Since 2004, the peak summer day demand has been about 2.3 times higher than the annual average daily demand.

Peak day demands have ranged from 18.0 MGD to 22.0 MGD during the past five years and last year's peak day was 19.7 MGD. Broomfield's current peak transmission capacity is 30.9 million gallons per day (MGD) which includes 10.6 MGD from Denver Water, 14.7 MGD from the Carter Lake Pipeline, and 5.6 MGD from Glasser Reservoir. An additional 14 MGD of transmission conveyance capacity is planned to meet projected demands of approximately 42.6 MGD at build-out. Two separate alternatives; a second pipeline from Carter Lake or construction of a local reservoir (i.e. Broomfield Reservoir) were evaluated as possible alternatives to increase the capacity of the transmission conveyance system. The Broomfield Reservoir option was selected as the most cost effective and beneficial alternative to meet Broomfield's peak summer needs.

Similarly, the capacity of Broomfield's Water Treatment Plant (WTP) is currently 20.9 MGD. In order to meet peak demands at ultimate build-out, the WTP will need to be expanded by another 12 MGD. Current plans are to implement this expansion in two separate 6 MGD phases. The first phase needs to be complete by 2018 and the second by 2023.

UPDATES IN RESPONSE TO MODIFIED GROWTH FORECASTS

Broomfield's capital improvement program and the Long Range Financial Plan include all the additional supplies and new projects required to serve build-out conditions. However, the improvement schedules were based on the information and assumptions that were developed prior to the economic recession that began in late 2008.

Starting in late 2009 and continuing through 2010, it became apparent the assumptions used for the Long Range Financial Plan need to be adjusted since the water system was not growing as quickly as planned. In effect, the need to construct Broomfield Reservoir was not as urgent, and revenues from water license sales were not being generated as planned. Since actual growth rates and water license sales following 2008 were considerably less than projected, it was necessary to adjust the growth forecasts to account for recent changes in the economy and reevaluate both the scope and the timing of major capital improvements to the water system.

Revised Demand Projections

The first step in the process was to reduce projected growth rates from 2% to 3% per year to 1.5% per year for five years (2008-2012). After 2012, growth rates were assumed to gradually increase back up to a 2% to 2.5% per year. Figure 1 compares actual demands against the growth patterns that were used before and after 2009.

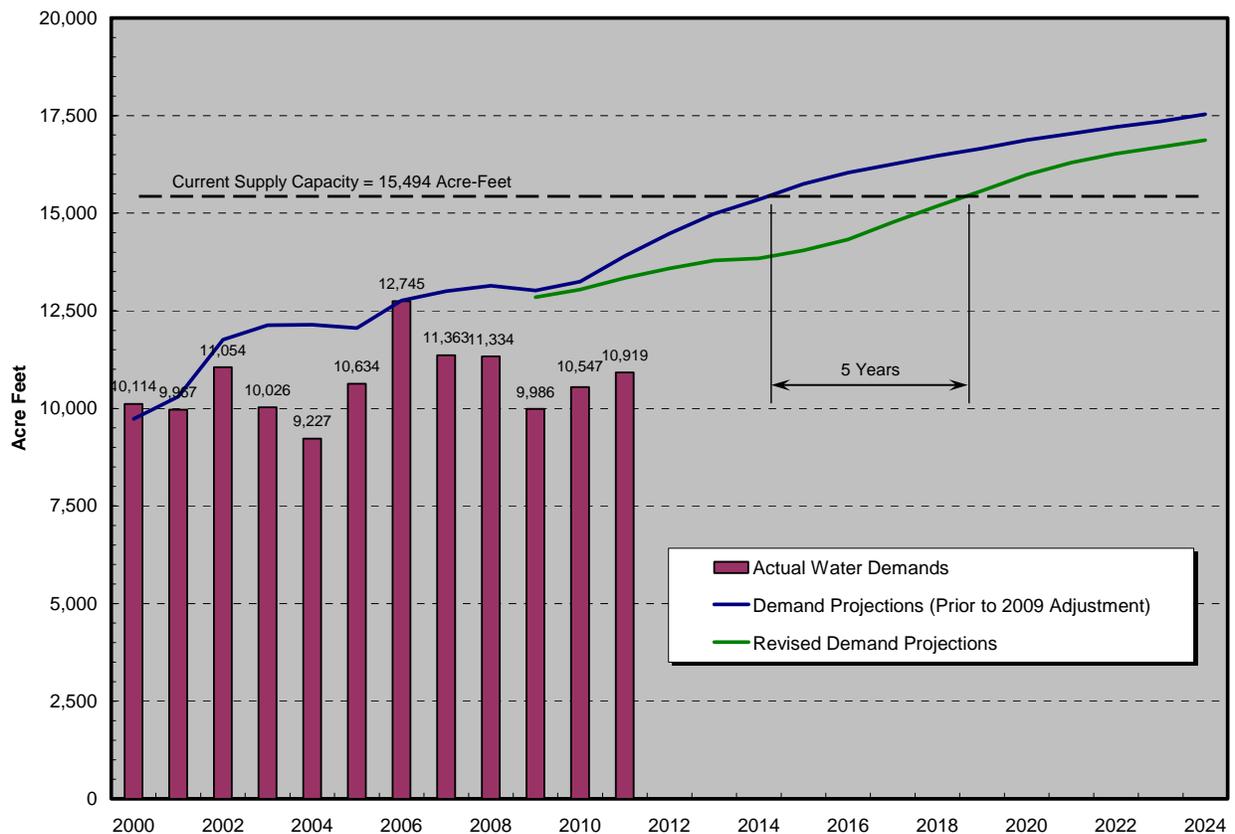


Figure 1: Annual Water Demands and Supply Capacity

The existing supply capacity, represented by the black dashed line, consists of Denver Water and CBT units only. It excludes Windy Gap since those supplies have not been firmed yet. The blue line represents the growth projections that were used for planning purposes before the 2008 economic downturn while the green line includes revised demand projections based on a slower growth rate. Previously, it was anticipated that Broomfield reservoir would need to be online by 2012.

The number of water license sales from 2008 to 2012 were originally projected to total 3,688; however, the sales for this same time frame will be closer to 1,335 based on actual receipts and projections for 2012. The adjustments to the growth projections have essentially delayed the need for new supplies by five years.

The stated reduction in growth rates was used to conduct a similar analysis on projected peak day requirements. Figure 2 provides a graphical representation of the actual peak day summer demands against the growth patterns that were used before and after the 2009 adjustment.

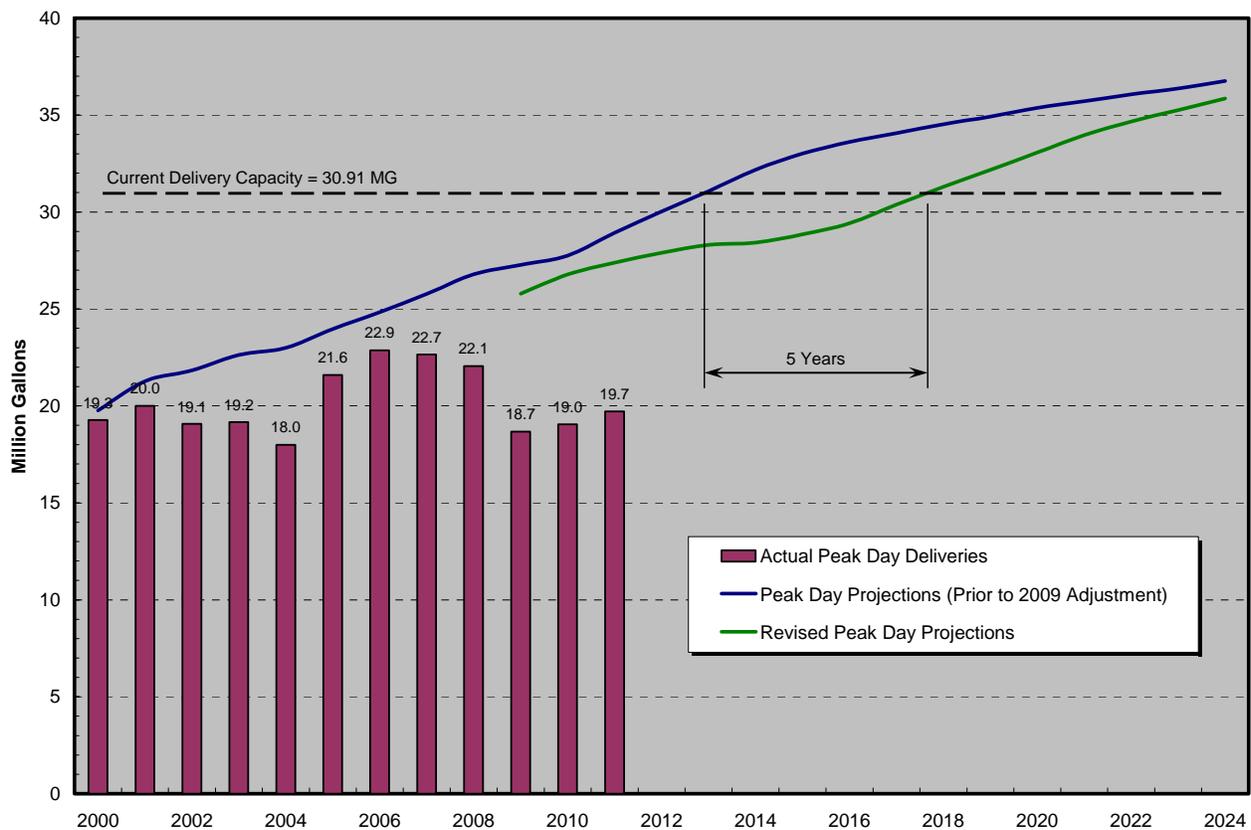


Figure 2: Peak Day Demands and Delivery Capacity

The current delivery capacity is shown as the dashed black line and includes Denver Water, Carter Lake Pipeline, and Glasser Reservoir. The blue and green lines represent the projections that were used before and after the 2008 economic recession began, respectively. Similar to water supply, the need for providing additional peaking capacity has been delayed by about five years.

Since the timing and need for constructing Broomfield Reservoir has been delayed by about five years, other alternatives have been identified to increase water supplies and assist in meeting peak summer demands. These alternatives could effectively postpone the need for Broomfield Reservoir another 5 to 10 years, depending on the functional limitation. In addition, the schedule of when the WGFP is expected to come on line may be closer to the time when Broomfield needs the additional supplies. If this occurs,

Broomfield Reservoir may not even be necessary to provide interim firming of Windy Gap and could be reduced to only meet peak demands.

CAPITAL IMPROVEMENT ALTERNATIVES

The updated supply and peaking projections developed in Figures 1 and 2 were extended to the year 2040. These forecasts were used to determine how long the existing system can support water license sales without exceeding current functional capacities. Alternate capital projects for water supply and transmission conveyance were identified to bridge the gap between current and ultimate build-out conditions.

The supplies from the WGFP are assumed to be required to meet ultimate demands in Broomfield. The gap between current and ultimate conditions is 5,600 acre-feet. To help bridge this gap, Broomfield could purchase an additional 1,625 acre-feet of supplies in the CBT system while staying under the cap established by the Northern Colorado Water Conservancy District. This alternative approach for meeting Broomfield’s future water demands is shown in Figure 3.

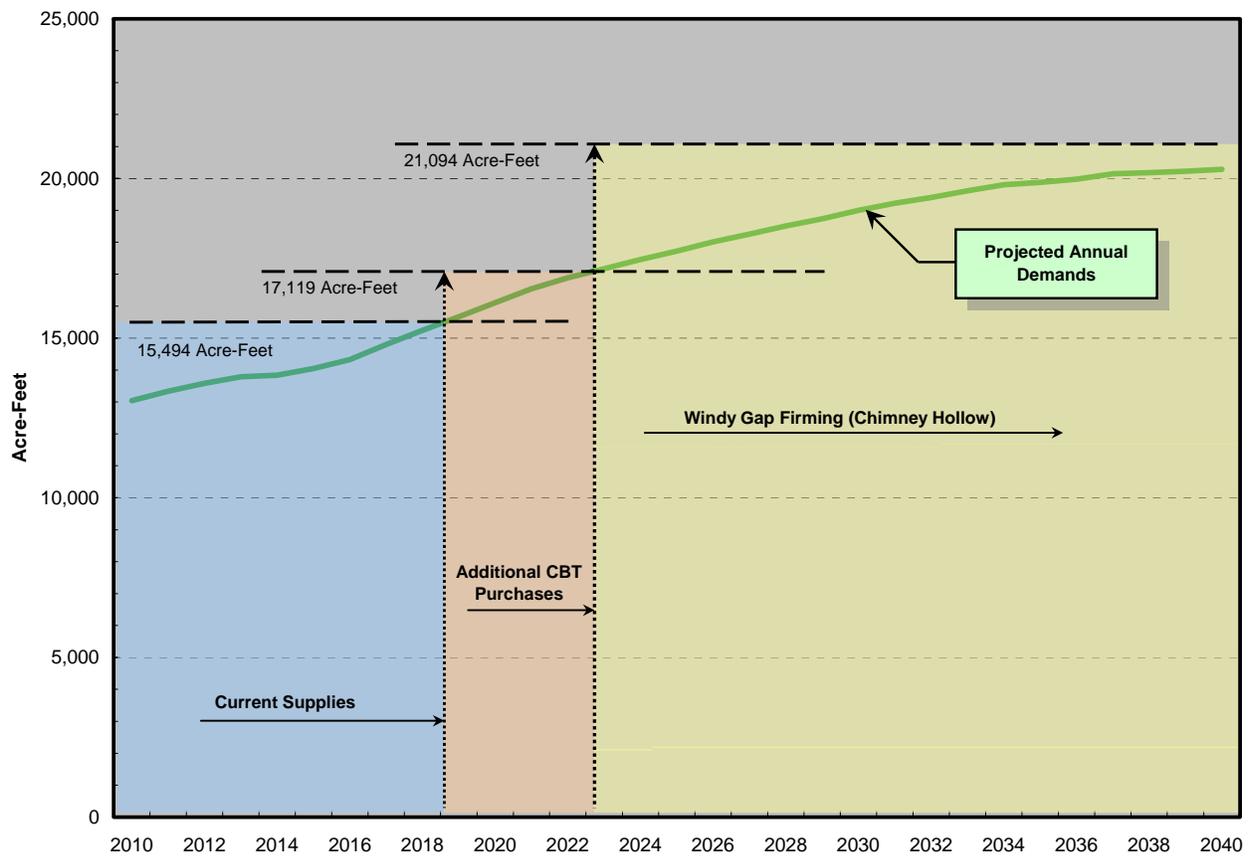


Figure 3: Projected Annual Water Use

The blue shaded area indicates the length of time Broomfield can rely on the existing supplies of 15,494 acre-feet. If Chimney Hollow is not available for use in the 2018 to 2019 timeframe, Broomfield can effectively increase its supplies by purchasing an additional 1,625 acre-feet of CBT units. This would delay the need for the WGFP by

another five years to 2023. The estimated cost to purchase the CBT units is \$18.6 million. After 2023, the WGFP would need to be in service to supply ultimate build out conditions.

Under the revised projections, a local reservoir with 1,300 acre-feet of useable storage is required to supply peak summer demands at build-out. This is slightly less than the estimates of 1,500 to 1,700 acre-feet for peak supply, which were based on a higher maximum-to-average-day peaking ratio than is being used today. Based on current projections, additional peaking capacity needs to be available before 2018. If a local reservoir is not constructed within the next few years, Broomfield could convert Siena Reservoir to provide additional storage before the final local reservoir is built. To date, Siena Reservoir has been included in the ultimate service plan for the reuse, rather than potable, water system. This phased approach for meeting expected increases in peak day summer demands is shown in Figure 4.

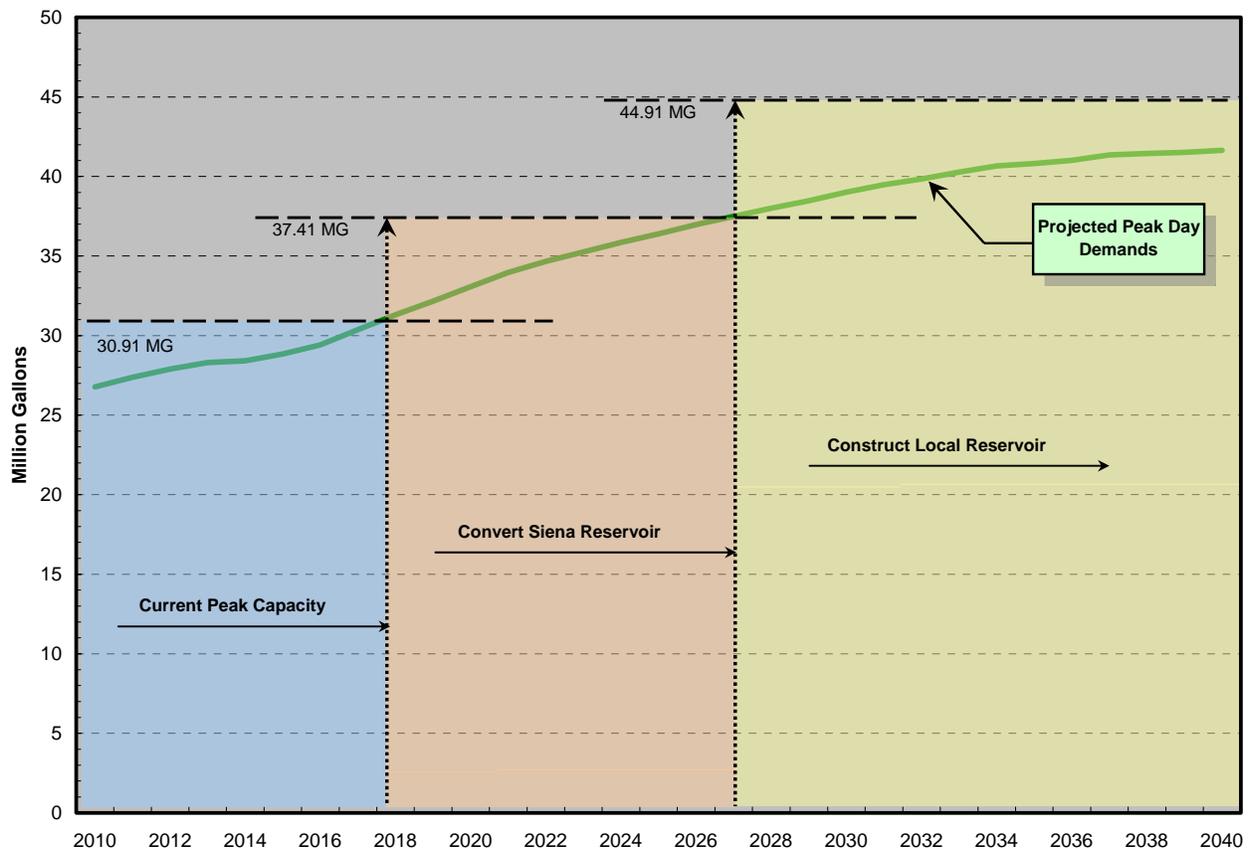


Figure 4: Projected Peak Day Demands

Similar to the previous annual demand graph, the blue shaded area represents the length of time that existing facilities can meet peak day demands. However, prior to 2018 additional facilities will need to be added to accommodate growth and support associated water license sales. The tan shaded area represents an alternative that delays the construction of a local reservoir by nearly 10 years, until 2027. This would be accomplished by converting Siena Reservoir from the non-potable to the potable water system.

Broomfield acquired Siena Reservoir from Pulte Homes as part of an agreement that provided water licenses in exchange for non-potable water facilities and supplies. Siena Reservoir has a capacity of 450 acre-feet but the volume of storage that would be used for meeting peak summer demands would be limited to approximately 300 acre-feet. The estimated cost of the conversion is approximately \$7.5 million. If this sequencing is pursued, another local reservoir wouldn't need to be constructed until the 2026 or 2027 timeframe to provide the balance of storage required for ultimate peak day demands.

Figures 3 and 4 were used to develop three different implementation scenarios for further evaluation using Broomfield's financial model. The purchase of additional CBT units is included in all three alternatives below since it increases overall firm supply and helps mitigate against factors that are outside of Broomfield's control. A brief description of each capital project sequencing alternative is summarized below:

Alternative A – This alternative assumes that Broomfield Reservoir is sized to meet peak summer demands only. No interim firming for the Windy Gap supplies would be included. Additional (interim) firming supplies would be made available through the purchase of 1,625 acre-feet of CBT units. This scenario represents a worst-case supply situation since the WGFP is pushed out as far as possible. Final permitting for the WGFP could be delayed if legal challenges are raised by project opponents.

Alternative B – This alternative assumes that Siena Reservoir is converted to provide interim peaking and additional CBT units are purchased to provide interim supplies until the WGFP is completed. A smaller Broomfield Reservoir would still need to be built to meet ultimate peak day demands. This scenario represents a worst-case peaking situation since the construction of Broomfield Reservoir is delayed as long as possible.

Alternative C – This alternative is similar to Alternative B except the funding for Broomfield Reservoir is scheduled to occur sooner than Alternative B and before the WGFP. This scenario represents a condition where some interim firming could be provided by Broomfield Reservoir until the WGFP is completed.

Each of the alternatives includes expansion of the Water Treatment Plant. Table 1 includes a detailed listing of the individual capital projects associated with each alternative, along with the expected funding year, on-line year, and estimated costs.

Table1: Summary of Capital Project Improvement Alternatives

Alternative	Capital Project	Funding Year	On-line Year	Est. Cost (millions)
A	CBT Purchases	2013 - 2017	As purchased	\$ 18.6
	Broomfield Reservoir (1,300 af)	2015	2017	\$ 19.0
	WTP Expansion #1	2016	2018	\$ 10.3
	Windy Gap Firming	2018	2022	\$ 78.0
	WTP Expansion #2	2024	2026	\$ 15.0
	Total			
B	CBT Purchases	2013 - 2017	As purchased	\$ 18.6
	Convert Siena Reservoir	2015	2017	\$ 7.5
	WTP Expansion #1	2016	2018	\$ 10.3
	Windy Gap Firming	2018	2022	\$ 78.0
	Broomfield Reservoir (1,000 af)	2023	2025	\$ 21.0
	WTP Expansion #2	2024	2026	\$ 15.0
Total				\$ 148.4
C	CBT Purchases	2013 - 2017	As purchased	\$ 18.6
	Convert Siena Reservoir	2015	2017	\$ 7.5
	WTP Expansion #1	2016	2018	\$ 10.3
	Windy Gap Firming	2018	2022	\$ 78.0
	Broomfield Reservoir (1,000 af)	2020	2022	\$ 19.0
	WTP Expansion #2	2024	2026	\$ 15.0
Total				\$ 148.4

The primary difference between the three alternatives is that Alternative A assumes a single reservoir (i.e. Broomfield Reservoir) will be used to meet peaking demands while Alternatives B and C use two reservoirs (i.e. Broomfield and Siena Reservoirs). In terms of timing and funding amounts, the additional CBT purchases, Windy Gap Firming, and WTP expansions are the same in each alternative.

Figure 5 shows the locations of the Broomfield and Siena Reservoirs with respect to the WTP and the proposed piping alignments for each reservoir.

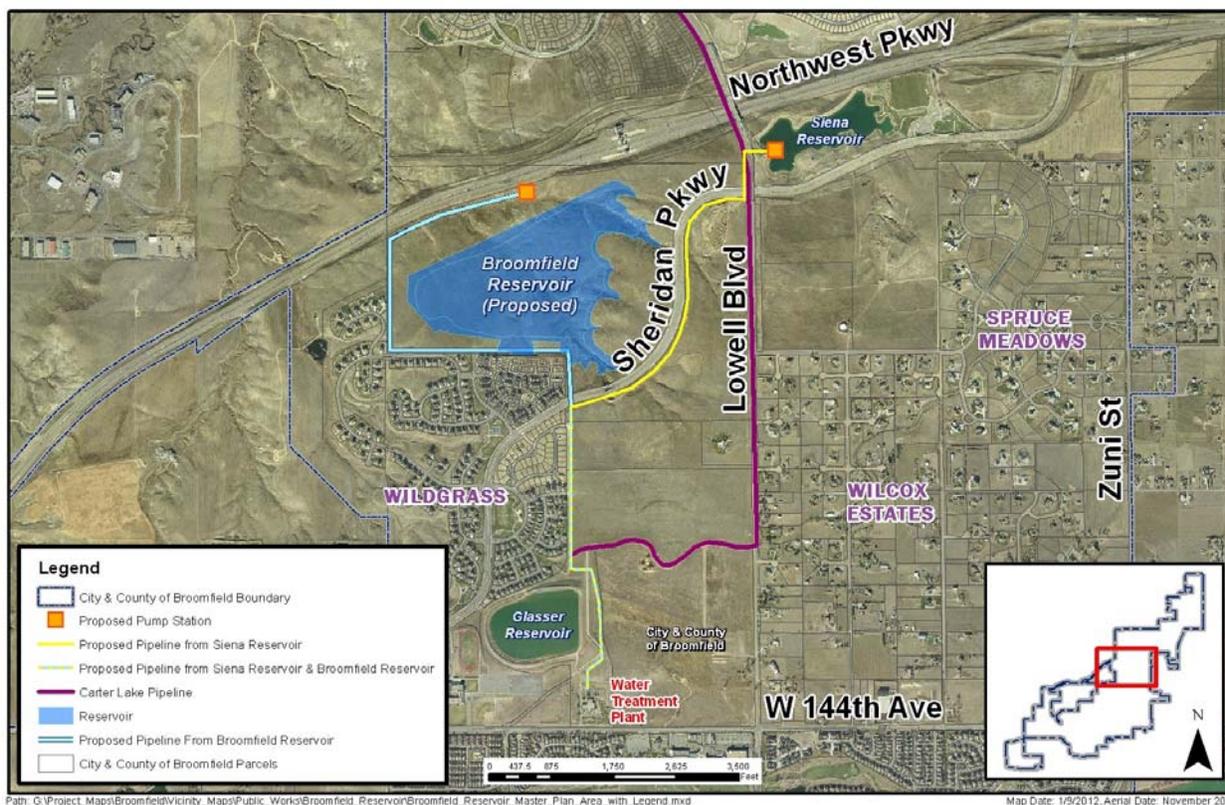


Figure 5: Broomfield Reservoir and Siena Reservoir Vicinity Map

The original design plans for Broomfield Reservoir included a pump station and pipeline to the WTP. The approximate alignment for the pipeline is shown in blue. For both alternatives that use Siena Reservoir, a similar pump station and pipeline would need to be constructed. The pipe alignment for the Siena Reservoir is shown in yellow. Since both alignments overlap between Sheridan Parkway and the WTP, a single pipeline would be constructed in this segment.

FINANCIAL CONSIDERATIONS

The three different capital improvement alternatives were evaluated using Broomfield’s water utility financial projection model. This model serves to support the ongoing implementation of the Long Range Financial Plan. The model completed for each alternative takes into account the capital spending needs and resulting increases needed in operating charges and license fees that are specific to each plan. For each of the financial models there were basic assumptions that were held constant throughout the evaluation so that the differences in the results could be representative of only the changes in the assumptions between the three alternatives outlined above. These basic assumptions are:

- The number of license fee (TE) sales each year – based on the most recent evaluation of forecasting for future development.
- Maintenance of the operating reserve for the fund at 16% of annual operating expenditures.

- Maintenance of the debt service reserve for each year at a level to cover three years of debt service payments.
- Maintenance of positive annual ending operating and capital fund balances, net of reserves.
- Consistent ending fund balances, net of reserves, at year 2045 of approximately \$30,000,000, (operating – \$10,000,000; capital –\$20,000,000).

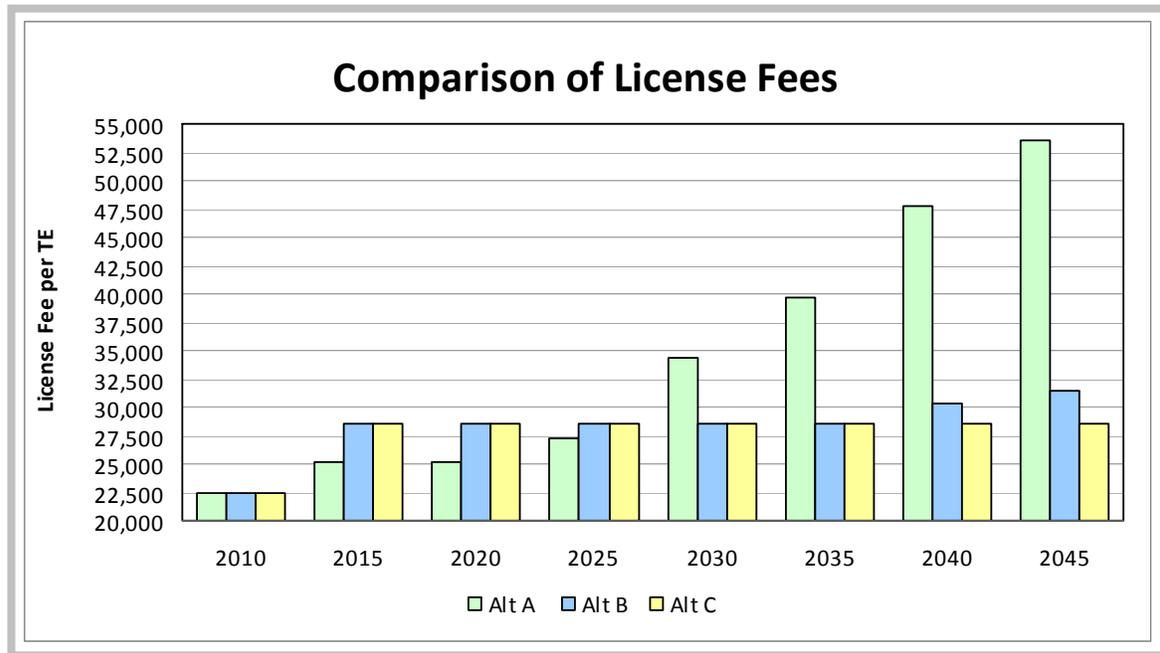
The results from the modeling effort for each alternative are summarized on Attachment 1 to this memo. In this Attachment, each alternative is designated by a specific color: Alternative A in green, Alternative B in blue and Alternative C in yellow. The summary shows specific data from each alternative including:

- The amount of bonds necessary to cover capital costs.
- Annual debt service payments.
- The timing of the capital expenditures.
- Notation of the specific capital projects associated with each alternative and how they impact the system capacity.
- TE capacity for each alternative taking into consideration system expansion and TE sales.
- Operating and Capital Ending Fund Balances, gross and net of reserves.
- Annual increases in user service charges and license fees, in percentages and in dollars, that are needed to maintain the financial integrity of the fund.

A summary comparison of the main variables between the Alternatives is shown below.

Summary of Variables Between Alternatives			
Description	Alternative A	Alternative B	Alternative C
Total Bonds Needed	\$ 92,910,937	\$ 53,000,000	\$ 52,910,937
Total Debt Service on Bonds	\$ 235,590,409	\$ 169,543,722	\$ 169,396,334
Total Capital Costs	\$ 137,785,125	\$ 147,285,125	\$ 145,285,125
Total TE's Available at Full Capacity	37,707	37,707	37,707
License Fees in 2045 (per TE)	\$ 53,577	\$ 31,495	\$ 28,525

The following chart shows how the license fees compare under each Alternative.



A determination on when to update the Long Range Financial Plan will follow the completion of a Utility Operations Assessment and after Council consideration on whether to conduct a rate study for the water, sewer and reuse utilities.

NEXT STEPS

Future water planning activities will continue to build and expand on the progress already made. In addition to monitoring existing capacities against annual growth, several other planning related activities will be presented to Council for direction and consideration of approval in the next several months. These future activities include:

- Presentation of the Utility Operations Assessment – Council requested that a utility operations audit be completed prior to considering any utility rate increases.
- Consideration to Conduct Utility Rate Studies – This would follow the completion of the utility audit.
- Consideration to Adopt an Updated Water Conservation Plan – Broomfield’s previous Water Conservation Plan was adopted in 1996 and does not meet current state requirements. The updated plan has been through two public comment periods, including reviews by staff at the Colorado Water Conservation Board.
- Consideration to Provide Additional Funding for the Windy Gap Firming Project – The final Environmental Impact Statement for the WGFP was released in November 2011. The Municipal Subdistrict of the Northern Colorado Water Conservancy District is requesting additional funding to complete the final phases of federal permitting before design begins.

- Direction to Proceed with a Non-potable Water System Master Plan – More detailed analysis is required to project the timing and geographic location of future demands, define the scope and scheduling of capital improvements, and evaluate the sources of revenues and estimated fees necessary to build out the non-potable water system.
- Consideration to Purchase Additional CBT Units – Based on recent water system planning efforts, additional purchases of CBT Units could be included in the capital budget beginning in 2013.

COMPARATIVE DATA
WATER MODEL ALTERNATIVES A, B, C

	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C												
Sources and Uses of Funds	Final 2010	Revised 2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
Bond Proceeds to fund Capital Costs						15,000,000			77,910,937						
Bond Proceeds to fund Capital Costs									53,000,000						
Bond Proceeds to fund Capital Costs									52,910,937						
Debt Service on Bonds	6,263,018	6,282,352	6,287,818	6,293,704	6,299,779	7,056,124	7,498,663	7,491,583	11,380,905	13,748,202	13,740,801	13,739,376	13,784,364	7,458,414	
Debt Service on Bonds	6,263,018	6,282,352	6,287,818	6,293,704	6,299,779	6,306,124	6,295,024	6,287,944	8,931,719	10,545,645	10,538,244	10,536,819	10,581,807	4,255,857	
Debt Service on Bonds	6,263,018	6,282,352	6,287,818	6,293,704	6,299,779	6,306,124	6,295,024	6,287,944	8,927,266	10,538,498	10,531,097	10,529,672	10,574,660	4,248,710	
Capital Projects Expenditures for Alternative A				3,713,125	3,713,125	22,713,125	3,713,125	3,713,125	85,219,500						
Capital Projects Expenditures for Alternative B				3,713,125	3,713,125	11,213,125	3,713,125	3,713,125	85,219,500					21,000,000	
Capital Projects Expenditures for Alternative C				3,713,125	3,713,125	11,213,125	3,713,125	3,713,125	85,219,500		19,000,000				
Notes regarding capital spending and system capacity changes				5-year CBT Water Acquisition (2013-2017)	5-year CBT Water Acquisition (2013-2017)	5-year CBT Water Acquisition (2013-2017); Begin construction of Broomfield Reservoir	5-year CBT Water Acquisition (2013-2017)	5-year CBT Water Acquisition (2013-2017); Broomfield Reservoir on-line (1,300 AF)	Water Plant expansion to 24/ MGD, Begin construction of Chimney Hollow/Windy Gap				Windy Gap/Chimney Hollow on-line		
Notes regarding capital spending and system capacity changes				5-year CBT Water Acquisition (2013-2017)	5-year CBT Water Acquisition (2013-2017)	5-year CBT Water Acquisition (2013-2017); Begin conversion of Sienna Reservoir	5-year CBT Water Acquisition (2013-2017)	5-year CBT Water Acquisition (2013-2017); Sienna Res on-line (300 AF)	Water Plant expansion to 24/ MGD, Begin construction of Chimney Hollow/Windy Gap				Windy Gap/ Chimney Hollow on-line	Begin construction of Broomfield Reservoir	
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Total TE Capacity on System	26,466	26,466	26,466	26,466	26,466	26,466	26,466	27,083	30,225	30,225	30,225	30,225	32,395	32,395	
TE's on System at Beginning of Year	22,817	23,027	23,342	23,745	24,163	24,563	24,981	26,165	26,907	27,708	28,471	29,338	29,908	30,585	
New TE's Added During the Year	210	315	403	418	400	418	1,184	742	801	763	867	570	677	545	
Total TE's on System at End of Year	23,027	23,342	23,745	24,163	24,563	24,981	26,165	26,907	27,708	28,471	29,338	29,908	30,585	31,130	
Remaining TE Capacity at Year End	3,439	3,124	2,721	2,303	1,903	1,485	301	176	2,517	1,754	887	317	1,810	1,265	
Total TE Capacity on System	26,466	26,466	26,466	26,466	26,466	26,466	26,466	27,083	30,225	30,225	30,225	30,225	32,395	32,395	
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Remaining TE Capacity at Year End	3,439	3,124	2,721	2,303	1,903	1,485	301	176	2,517	1,754	887	317	1,810	1,265	
Operations Ending Balances, including Reserves	8,109,477	7,573,115	5,584,778	4,707,681	3,873,253	3,867,656	3,166,287	3,480,510	3,541,890	4,379,833	4,793,275	6,133,260	6,402,036	7,433,414	
Operations Ending Balance, net of reserves	5,927,386	5,314,837	3,326,500	2,449,403	1,297,744	1,206,608	327,721	594,926	532,146	1,261,212	1,518,234	2,760,397	2,766,322	3,649,067	
Capital Ending Balances, including Reserves	44,800,430	45,679,638	44,555,821	41,987,018	35,998,152	29,202,382	46,432,998	48,296,990	48,306,734	47,512,497	49,303,874	49,516,867	49,384,161	52,247,441	
Capital Ending Balances, net of reserves	22,789,912	17,378,301	16,254,484	13,683,324	6,502,654	2,831,231	13,812,308	9,427,082	7,078,355	6,247,956	14,321,720	20,815,675	27,008,919	29,872,199	
Operations Ending Balances, including Reserves	8,109,477	7,573,115	5,584,778	4,707,681	3,873,253	3,942,656	3,361,287	3,795,510	3,976,890	4,934,833	5,468,275	6,928,259	7,317,035	8,468,414	
Operations Ending Balance, net of reserves	5,927,386	5,314,837	3,326,500	2,449,403	1,297,744	1,281,608	522,721	909,926	967,146	1,816,212	2,193,234	3,555,396	3,681,321	4,684,067	
Capital Ending Balances, including Reserves	44,800,430	45,679,638	44,555,821	42,362,382	37,720,716	29,478,510	51,697,597	57,092,344	37,162,035	41,966,729	49,700,029	54,875,439	60,058,036	46,801,283	
Capital Ending Balances, net of reserves	22,789,912	17,378,301	16,254,484	16,012,327	11,382,496	514,695	18,483,161	19,627,608	5,541,327	10,309,859	24,325,546	35,781,918	47,290,465	34,033,712	
Operations Ending Balances, including Reserves	8,109,477	7,573,115	5,584,778	4,707,681	3,873,253	3,942,656	3,361,287	3,795,510	3,976,890	4,934,833	5,468,275	6,928,259	7,317,035	8,468,414	
Operations Ending Balance, net of reserves	5,927,386	5,314,837	3,326,500	2,449,403	1,297,744	1,281,608	522,721	909,926	967,146	1,816,212	2,193,234	3,555,396	3,681,321	4,684,067	
Capital Ending Balances, including Reserves	44,800,430	45,679,638	44,555,821	42,362,382	37,720,716	29,478,510	51,697,597	57,092,344	37,077,425	41,889,266	30,629,713	35,812,270	41,002,014	48,752,408	
Capital Ending Balances, net of reserves	22,789,912	17,378,301	16,254,484	16,012,327	11,382,496	519,148	18,494,761	19,646,355	5,478,158	10,253,837	5,276,671	16,740,190	28,255,884	36,006,278	
Annual % increase, Service Charge	0.00%	0.00%	0.00%	8.00%	7.00%	7.00%	0.00%	5.00%	0.00%	5.00%	0.00%	5.00%	0.00%	5.00%	
Service Charge per (000)	2.80	2.80	2.80	3.02	3.23	3.46	3.46	3.63	3.63	3.81	3.81	4.00	4.00	4.20	
Annual % increase, License Fee	0.00%	0.00%	0.00%	6.00%	0.00%	6.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
License fee per TE	22,452	22,452	22,452	23,799	23,799	25,227	25,227	25,227	25,227	25,227	25,227	25,227	25,227	25,227	
Annual % increase, Service Charge	0.00%	0.00%	0.00%	8.00%	7.00%	7.00%	0.00%	5.00%	0.00%	5.00%	0.00%	5.00%	0.00%	5.00%	
Service Charge per (000)	2.80	2.80	2.80	3.02	3.23	3.46	3.46	3.63	3.63	3.81	3.81	4.00	4.00	4.20	
Annual % increase, License Fee	0.00%	0.00%	0.00%	10.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
License fee per TE	22,452	22,452	22,452	24,697	27,167	28,525	28,525	28,525	28,525	28,525	28,525	28,525	28,525	28,525	
Annual % increase, Service Charge	0.00%	0.00%	0.00%	8.00%	7.00%	7.00%	0.00%	5.00%	0.00%	5.00%	0.00%	5.00%	0.00%	5.00%	
Service Charge per (000)	2.80	2.80	2.80	3.02	3.23	3.46	3.46	3.63	3.63	3.81	3.81	4.00	4.00	4.20	
Annual % increase, License Fee	0.00%	0.00%	0.00%	10.00%	10.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
License fee per TE	22,452	22,452	22,452	24,697	27,167	28,525	28,525	28,525	28,525	28,525	28,525	28,525	28,525	28,525	

COMPARATIVE DATA
WATER MODEL ALTERNATIVES A, B, C

ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C					
Sources and Uses of Funds	2039	2040	2041	2042	2043	2044	2045
Bond Proceeds to fund Capital Costs							
Bond Proceeds to fund Capital Costs							
Bond Proceeds to fund Capital Costs							
Debt Service on Bonds							
Debt Service on Bonds							
Debt Service on Bonds							
Capital Projects Expenditures for Alternative A							
Capital Projects Expenditures for Alternative B							
Capital Projects Expenditures for Alternative C							
Notes regarding capital spending and system capacity changes							
Notes regarding capital spending and system capacity changes							
Notes regarding capital spending and system capacity changes							
Total TE Capacity on System	37,707	37,707	37,707	37,707	37,707	37,707	37,707
TE's on System at Beginning of Year	35,300	35,439	35,578	35,717	35,856	35,995	36,134
New TE's Added During the Year	139	139	139	139	139	139	137
Total TE's on System at End of Year	35,439	35,578	35,717	35,856	35,995	36,134	36,271
Remaining TE Capacity at Year End	2,268	2,129	1,990	1,851	1,712	1,573	1,436
Total TE Capacity on System	37,707	37,707	37,707	37,707	37,707	37,707	37,707
TE's on System at Beginning of Year	35,300	35,439	35,578	35,717	35,856	35,995	36,134
New TE's Added During the Year	139	139	139	139	139	139	137
Total TE's on System at End of Year	35,439	35,578	35,717	35,856	35,995	36,134	36,271
Remaining TE Capacity at Year End	2,268	2,129	1,990	1,851	1,712	1,573	1,436
Total TE Capacity on System	37,707	37,707	37,707	37,707	37,707	37,707	37,707
TE's on System at Beginning of Year	35,300	35,439	35,578	35,717	35,856	35,995	36,134
New TE's Added During the Year	139	139	139	139	139	139	137
Total TE's on System at End of Year	35,439	35,578	35,717	35,856	35,995	36,134	36,271
Remaining TE Capacity at Year End	2,268	2,129	1,990	1,851	1,712	1,573	1,436
Operations Ending Balances, including Reserves	30,276,693	29,177,525	27,238,938	24,405,136	20,617,407	15,813,985	9,929,899
Operations Ending Balance, net of reserves	23,046,084	21,645,635	19,392,918	16,231,584	12,102,342	6,942,822	687,425
Capital Ending Balances, including Reserves	7,669,273	9,536,839	11,308,799	13,380,917	15,353,566	17,646,343	19,728,477
Capital Ending Balances, net of reserves	7,669,273	9,536,839	11,308,799	13,380,917	15,353,566	17,646,343	19,728,477
Operations Ending Balances, including Reserves	32,751,692	31,652,524	29,713,937	26,880,136	23,092,407	18,288,984	12,404,898
Operations Ending Balance, net of reserves	25,521,083	24,120,634	21,867,917	18,706,584	14,577,342	9,417,821	3,162,424
Capital Ending Balances, including Reserves	23,791,207	23,238,644	22,674,570	22,098,877	21,423,715	20,647,094	19,703,994
Capital Ending Balances, net of reserves	23,791,207	23,238,644	22,674,570	22,098,877	21,423,715	20,647,094	19,703,994
Operations Ending Balances, including Reserves	32,751,692	31,652,524	29,713,937	26,880,136	23,092,407	18,288,984	12,404,898
Operations Ending Balance, net of reserves	25,521,083	24,120,634	21,867,917	18,706,584	14,577,342	9,417,821	3,162,424
Capital Ending Balances, including Reserves	25,609,896	24,814,500	23,923,498	22,934,975	21,846,983	20,657,532	19,307,542
Capital Ending Balances, net of reserves	25,609,896	24,814,500	23,923,498	22,934,975	21,846,983	20,657,532	19,307,542
Annual % increase, Service Charge	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Service Charge per (000)	5.21	5.21	5.21	5.21	5.21	5.21	5.21
Annual % increase, License Fee	0.00%	6.00%	0.00%	6.00%	0.00%	6.00%	0.00%
License fee per TE	44,984	47,683	47,683	50,544	50,544	53,577	53,577
Annual % increase, Service Charge	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Service Charge per (000)	5.21	5.21	5.21	5.21	5.21	5.21	5.21
Annual % increase, License Fee	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%	0.00%
License fee per TE	29,678	30,272	30,877	31,495	31,495	31,495	31,495
Annual % increase, Service Charge	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Service Charge per (000)	5.21	5.21	5.21	5.21	5.21	5.21	5.21
Annual % increase, License Fee	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
License fee per TE	28,525	28,525	28,525	28,525	28,525	28,525	28,525