RAFTELIS

Town of Alpine, WY
Draft Water and Wastewater Capacity Fees

DATE:	July 1, 2025
TO:	Monica Chenault Clerk and Treasurer
FROM:	Todd Cristiano, Raftelis
SUBJECT:	Updated Draft Water and Wastewater Capacity Fees

Introduction and Summary

The Town retained Raftelis to develop water and wastewater capacity fees. This memo summarizes the draft results of that analysis. Raftelis calculated the proposed fees using industry-standard methodologies and data provided by the Town. *The calculations are based on several key assumptions which will need to be reviewed by Town and staff and engineer. Changes to these assumptions could significantly affect the final results.*

The calculated ¾" meter water capacity fee and wastewater capacity fee per EDU are $7,925 and $9,080, respectively. These values represent the maximum supportable fee. The maximum supportable fee refers to the highest legally justifiable fee that a local government or utility provider can charge new development to cover the cost of expanding infrastructure or services made necessary by that development. This fee is calculated based on data and analysis provided by the Town to ensure it reflects the proportionate share of costs attributable to serving new development.

Connection Charges and Proposed Capacity Fees

The Town currently imposes connection charges for both water and wastewater services, which cover the labor and materials required to install new taps and meters. In contrast, the proposed capacity fees outlined in this memo reflect the cost of reserving system capacity for new development. These capacity fees do not include any expenses related to the physical connection to the water or wastewater systems.

Overview of the Capacity fee Calculation

The general steps in calculating capacity fees are as follows:

- Determine the value of infrastructure facilities (existing and/or future)
- Estimate the capacity of the system
- Calculate the unit cost of capacity
- Apply unit cost of capacity to demand of a ¾" equivalent meter (water) or equivalent dwelling unit (EDU) for wastewater

Table 1 summarizes the generally accepted methodologies for calculating capacity fees. Each method is designed to recover the cost of capacity needed to serve new development. The selection of a methodology should consider the capacity required, the value of the capacity, and utility's goals and objectives for recovering capacity-related capital costs. The three methodologies include buy-in, incremental, and hybrid. The table below lists the basic parameters a utility may consider when selecting a methodology that best meets its needs.

Table 1: Industry-Accepted Capacity fee Methodologies

Description	Buy-in	Incremental	Hybrid	Capacity Basis (gpm) [1]	Valuation Basis ($)
Available existing capacity sufficient to accommodate new growth	X			Existing Available Capacity	Existing Asset Value [2]
No existing capacity with significant future capacity requirements		X		Future Capacity	Current Cost of Future Facilities
Some existing capacity available with future capacity requirements needed to accommodate new growth		X	X	Available Capacity + Future Capacity	Existing Asset Value + Current Cost of Future Facilities

[1] The basis of capacity used to calculate the unit cost is often based on the largest facilities that govern system capacity.
[2] Assets may be valued at original cost of in current dollars using a cost index like the Consumer Price Index (CPI) or a construction cost index like Engineering News Record (ENR-CCI).

The equations below summarize the capacity fee calculation, in general.

$$\frac{Value\ of\ Infrastructure\ (\$)}{System\ Capacity\ (gpm)} = Unit\ Cost\ of\ Capacity\ (\$\ per\ gpm)$$

$$Unit\ Cost\ of\ Capacity\ (\$\ per\ gpm)\ x\ New\ Connection\ Demand\ Requirement\ (gpm) = Capacity\ Fee$$

Buy-in

The buy-in method determines the capacity fee by evaluating the value of existing assets and the capacity those assets provide. It is most appropriate for utilities with available capacity to serve new development in both the near and long term. This approach allows the utility to recover a proportionate share of the system's value from new customers—essentially reimbursing existing ratepayers who funded the original infrastructure. In this way, new development is effectively "buying into" the existing system. The buy-in method often values a utility system’s assets at current replacement cost and may account for accumulated depreciation. This current valuation method recognizes the increase in value of facilities and fairly compensate existing customers for the carrying cost of building facilities in advance of serving new development. Importantly, this methodology, like other capacity fee approaches, does not confer ownership rights of the utility assets to the customer.

To avoid double-counting, the value of existing facilities is typically reduced by any grants, contributions in aid of construction (CIAC), and the outstanding principal on debt related to major system infrastructure. In the Town’s case, since existing debt is being repaid through user rates, subtracting the outstanding debt from the asset value ensures that the same costs are not recovered twice—once through user charges and again through capacity fees.

Incremental

The incremental method is commonly used by utilities experiencing rapid growth and limited available capacity within their existing systems. This forward-looking approach focuses on planned, growth-related capital improvements, typically outlined in a utility's long-term capital expansion program or master plan. The method estimates the cost and capacity of new facilities required to serve future development. The incremental cost is defined as the cost to provide service to the next unit of growth, ensuring that new development pays its proportionate share of system expansion.

Hybrid

The hybrid (or combined) methodology incorporates elements of both the system buy-in and incremental approaches. It is well-suited for utilities that have some available capacity in their existing systems, along with planned expansion to accommodate future growth.

For this study, Raftelis selected the hybrid methodology for the water system and the buy-in methodology for the wastewater system. The Town's water system has existing capacity and includes planned capital improvements to support future development, making the hybrid approach appropriate. In contrast, the wastewater system—based on the available capacity at the treatment plant—has sufficient capacity to accommodate near-term growth, supporting the use of the buy-in method.

Calculated Water Capacity Fee

The Town's water capacity fee was calculated using the incremental approach as the system has capacity in the existing system and has planned capacity expansions planned in the near future.

System Valuation

The value of the Town's existing assets was determined based on the current replacement cost of existing infrastructure assets. These assets include wells, storage tanks, and transmission mains.

Infrastructure assets were valued using current replacement cost estimates, based on data provided by Town staff and the Town engineer. Due to gaps in the Town's asset inventory, Raftelis used a unit cost approach to value existing infrastructure. This method estimates the value of each facility based on standard unit costs for the materials, supplies, labor, and construction of facilities. These values were provided by the Town and the Town engineering consultants, using historical bid tabulation for similar construction projects.

Because the existing facilities are not new, Raftelis further reduced these values by estimated accumulated depreciation to reflect their current condition. Depreciation accounts for wear and tear, obsolescence, or the loss in service value of the asset over time. This adjustment reflects the remaining value or capacity of each asset. The depreciation rate was determined through an evaluation of the existing assets and comparing the net book value (NBV) of assets at current costs divided by the original value of assets at replacement cost. Based on the assets included in the Town's records, Raftelis estimates that approximately the Town's infrastructure is approximately 50% depreciated. The replacement cost of existing facilities with accumulated depreciation is estimated at $24.20 million.

The existing system assets were also reduced by outstanding principal on three water loans and by a grant. These adjustments total $127,643 based on FY24 financial data from the Town.

In addition to existing facilities, the Town's engineer has identified three capital projects that will expand system capacity to support future growth: Well #4 interconnect, additional storage capacity, and a generator. These expansion projects total $1.4 million. The combined value of existing assets—adjusted for accumulated depreciation, and outstanding principal—along with these planned expansion projects, totals approximately $25.6 million.

Table 2 presents a breakdown of the value of both existing facilities and proposed expansion infrastructure.

Table 2: Existing and Expansion Infrastructure Valuation

Line No	Description	Units	Unit Price	Units	Replacement Cost New	Remaining Life	Replacement Cost Less Depreciation	Source
	Existing Infrastructure Assets							
1	Wells #1, #2, #3	4	$400,000	per well	$1,600,000	49%	$786,829	Alpine staff
2	Well #4, Mega Well [1]	1	$1,500,000	per project	1,500,000	90%	1,350,000	Alpine staff [1]
3	Three Storage Tanks	1,500,000	$5.00	per gallon	7,500,000	49%	3,688,261	Estimate
	North and South Alpine Transmission, length in feet							
5	8"	42,308	$700	per linear ft	29,615,636	49%	$14,564,024	JVA Engineers
6	10"	1,550	778	per linear ft	1,205,404	49%	592,779	JVA Engineers
7	12"	7,924	855	per linear ft	6,775,239	49%	3,331,846	JVA Engineers
8	**Total Existing Infrastructure Assets**				**$48,196,278**		**$24,313,739**	
	Less: Outstanding Principal on Water Debt							
9	DWSRF Loan 117, FY24 Balance				$46,911		$46,911	Alpine Staff
10	DWSRF Loan 64, FY24 Balance				53,175		53,175	Alpine Staff
11	First Bank				27,538		27,538	Alpine Staff
12	**Total Outstanding Principal**				**$127,623**		**$127,623**	
13	**Existing Assets Net Valuation**				**$48,068,654**		**$24,186,115**	
	Expansion Projects							
14	Mega Well Inter-Connect	1		per project	$808,000		$808,000	Jorgensen, Inc.
15	Storage Tank	1		per project	228,000		228,000	Jorgensen, Inc.
16	Generator	1		per project	405,000		405,000	Jorgensen, Inc.
17	**Total Expansion Projects**				**$1,441,000**		**$1,441,000**	
18	**Total System Valuation (Line 13 + Line 17)**				**$49,509,654**		**$25,627,115**	

[1] Assume the well #4 and distribution system were purchased together
[2] Assume a firm capacity of 80% of design capacity

System Capacity

The system capacity used in the capacity fee calculation is typically based on the facility that governs the overall allowable capacity in the system —in this case, the Town's well system. Total system capacity includes both existing and planned sources. Currently, the Town operates four wells with a combined capacity of 1.8 million gallons per day (mgd). Well #4, with a design capacity of 2.16 mgd, has been adjusted to reflect a firm capacity of 80%, or 1.73 mgd. This brings the total system capacity to 3.53 mgd.

Unit Cost of Capacity

The unit cost of capacity is calculated by dividing the total system valuation by the system's total capacity, resulting in a unit cost of $7.26 per gallon per day (gpd). Table 3 provides the detailed calculation of this unit cost.

Table 3: Water Capacity fee Unit Cost of Capacity

Line No	Description	Units	Source
1	**Total System Valuation**	**$25,627,115**	
	System Peak Demand, gpd		
2	Existing Capacity	1,800,000	Alpine Staff
3	Future Capacity Added, 1,500 gpm design capacity [1]	1,728,000	Alpine Staff
4	**Total Existing and Future Capacity, gpd**	**3,528,000**	
5	*Unit Cost, $ per gpd, (Line 18 / Line 21)*	*$7.26*	

[1] Assume a firm capacity of 80% of design capacity

¾" Meter Demand

A customer demand analysis identifies the demand requirements of individual customers or entire customer classes and forms the basis for calculating the capacity fee. To maintain a rational nexus between the cost of infrastructure and the cost to serve new customers, customer demand must be measured using the same units as those used in the unit cost of capacity calculation.

For example, if the unit cost of well production facilities is based on peak day demand measured in gallons per day (gpd), then new customer demands must also be measured in peak day gpd for a consistent and equitable fee calculation.

The capacity fee demand is based on the demand associated with the smallest meter size (typically ¾ inch) and is scaled using meter capacity ratios. These ratios reflect the maximum safe allowable flow (in gallons per minute) of a given meter size relative to that of a ¾" meter.

Fee Calculation

Table 4 on the following page shows the detailed data used to calculate the water capacity fee. The calculated ¾" capacity fee is estimated at $7,925.

Table 4: Development of Water Capacity fee

Line No	Description	Units	Unit Price	Units	Replacement Cost New	Remaining Life	Replacement Cost Less Depreciation	Source
	Existing Infrastructure Assets							
1	Wells #1, #2, #3	4	$400,000	per well	$1,600,000	49%	$786,829	Alpine staff
2	Well #4, Mega Well [1]	1	$1,500,000	per project	1,500,000	90%	1,350,000	Alpine staff [1]
3	Three Storage Tanks	1,500,000	$5.00	per gallon	7,500,000	49%	3,688,261	Estimate
	North and South Alpine Transmission, length in feet							
5	8"	42,308	$700	per linear ft	29,615,636	49%	$14,564,024	JVA Engineers
6	10"	1,550	778	per linear ft	1,205,404	49%	592,779	JVA Engineers
7	12"	7,924	855	per linear ft	6,775,239	49%	3,331,846	JVA Engineers
8	**Total Existing Infrastructure Assets**				**$48,196,278**		**$24,313,739**	
	Less: Outstanding Principal on Water Debt							
9	DWSRF Loan 117, FY24 Balance				$46,911		$46,911	Alpine Staff
10	DWSRF Loan 64, FY24 Balance				53,175		53,175	Alpine Staff
11	First Bank				27,538		27,538	Alpine Staff
12	**Total Outstanding Principal**				**$127,623**		**$127,623**	
13	**Existing Assets Net Valuation**				**$48,068,654**		**$24,186,115**	
	Expansion Projects							
14	Mega Well Inter-Connect	1		per project	$808,000		$808,000	Jorgensen, Inc.
15	Storage Tank	1		per project	228,000		228,000	Jorgensen, Inc.
16	Generator	1		per project	405,000		405,000	Jorgensen, Inc.
17	**Total Expansion Projects**				**$1,441,000**		**$1,441,000**	
18	**Total System Valuation (Line 13 + Line 17)**				**$49,509,654**		**$25,627,115**	
	System Peak Demand, gpd							
19	Existing Capacity						1,800,000	Alpine Staff
20	Future Capacity Added, 1,500 gpm design capacity [2]						1,728,000	Alpine Staff
21	**Total Existing and Future Capacity, gpd**						**3,528,000**	
22	*Unit Cost, $ per gpd, (Line 18 / Line 21)*						*$7.26*	
	3/4" Meter Equivalent Demand							
23	Average Day Demand, 3/4" Meters (FY24)		326					
24	Peaking Factor		3.35					
25	Peak Demand Requirement, gpd (Line 29 x 30)						1,091	
26	**3/4" Equivalent Capacity Fee, (Line 22 x Line 25)**						**$7,924**	
27	**3/4" Equivalent Capacity Fee, (Line 22 x Line 25), Rounded**						**$7,925**	

[1] Assume the well #4 and distribution system were purchased together
[2] Assume a firm capacity of 80% of design capacity

Water Capacity fees by Meter Size

The calculated ¾" capacity fee is determined by multiplying the ¾" demand requirement by the unit cost of capacity, as shown in Table 4. Raftelis recommends that the Town consider setting fees for meter sizes larger than ¾" based on the ratio of each meter's maximum safe allowable capacity to that of a ¾" meter. This approach more accurately reflects the additional capacity needs of larger meters and aligns those needs with the cost of providing service. Capacity fees for meter sizes greater than 2" should be calculated on an individual basis, as demand requirements tend to vary more significantly with increasing meter size. Table 5 presents the resulting capacity fees for larger meter sizes.

Table 5: Calculated Water Capacity Fees by Meter Size

Meter Size	Max Safe Allowable Capacity	Capacity Ratio	Calculated Fee
inches	*gpm*		
3/4"	30	1.00	$7,925
1"	50	1.67	13,210
1 1/2"	100	3.33	26,420
2"	160	5.33	42,270

Wastewater Capacity fee

The sewer capacity fee was calculated using the buy-in method. Under this approach, the value of the Town's sewer system assets was determined based on current replacement costs, which were estimated using the Engineering News-Record Construction Cost Index (ENR-CCI). This index is widely used in utility rate and fee studies because it provides a standardized, consistent, and industry-accepted measure of changes in construction costs over time. Raftelis used the Town's wastewater asset listing as it captured the key infrastructure assets – wastewater treatment plant and collection system assets.

The replacement cost of the sewer system assets is estimated at $26.7 million. To account for the loss in value over time, this amount was reduced by accumulated depreciation of $12.2 million, resulting in a net depreciated asset value of $14.5 million. Additionally, to avoid double-counting costs already being repaid through user rates, the net asset value was further reduced by $3.1 million in outstanding wastewater loans plus an anticipated loan of $1.3 million for the pretreatment facility. In addition, the asset valuation was reduced by a grant for the wastewater pretreatment plant of $3.05 million. Following these adjustments, the estimated net system value at replacement cost less accumulated depreciation for the capacity fee calculation is $7.1 million.

Equivalent Dwelling Unit Demand

Jorgensen Engineering, the Town's engineer of record, recently updated the average daily flow per equivalent residential unit (ERU) from 275 gpd to 300 gpd. Ordinance 2022-14 specifies a peak flow of 375 gpd, which reflects a peak factor of 1.4 applied to the previous value. Raftelis applied the same peak factor of 1.4 to the updated average flow of 300 gpd to estimate the peak flow for one ERU now stated as 409 gpd.

Unit Cost of Capacity

The WWTP has a design capacity of 400,000. Raftelis has applied a 20% reduction to this figure, following common industry practice—and in line with requirements in many states—that call for utilities to begin planning and designing expansions once a facility reaches 80% of its total capacity. The unit cost of capacity is the new system asset value divided by the capacity of the wastewater treatment plant which is 320,000 gpd. The unit cost is $22.20 per gpd.

Calculated Wastewater Capacity fee per ERU

The calculated capacity fee is the product of the unit cost of capacity multiplied by the peak demand of one EDU. The calculated fee is estimated to be $9,080. Table 6 details the full calculation of the wastewater capacity fees.

Table 6: Development of Wastewater Capacity Fee

Line No	Description		Replacement Cost New	Replacement Cost Less Accum Depr.	Source
	Existing Infrastructure Assts				
1	Land [1]		$629,212	$629,212	Town asset records
2	Wastewater System		1,681,499	631,492	Town asset records
3	Wastewater Treatement Plant		11,506,368	2,609,269	Town asset records
4	Wastewater Collection System		7,270,047	5,244,999	Town asset records
5	Pretreatment Plant		4,306,200	4,306,200	Town asset records
6	North Alpine Wastewater System		1,351,272	1,111,108	Town asset records
7	**Total Existing Infrastructure Assets**		**$26,744,597**	**$14,532,280**	
	Less: Outstanding Principal and Grants				
8	Pretreatment Grant			$3,050,750	Town records
9	Proposed Pretreatment Loan			$1,255,830	Town records
10	SLIB -CWSRF-71			98,653	Town records
11	CWSRF Loan 080			2,228,224	Town records
12	BOSV Capital Lease - Pretreatment			793,460	Town records
13	**Total Outstanding Principal**			**$7,426,917**	
14	**Total System Valuation (Line 7 + Line 13)**			**$7,105,363**	
15	System Firm Capacity (80% of Design), gpd [2]			320,000	
16	*Unit Cost, $ per gpd (Line 14 / Line 15)*			*$22.20*	
	Equivalent Dwelling Unit Demand				
17	Average Day Demand, per ERU [2]	300			
18	Peaking Factor	1.4			
19	Peak Demand Requirement, gpd (Line 17 x Line 18)			409	
20	**Calculated Capacity Fee, $ per EDU, (Line 16 x Line 19)**			**$9,080**	

[1] From 64.01 Capital Assets Roll-Forward 2024 (002)
[2] From Jorgensen Engineering

Reliance of Town Provided Data

Throughout the course of this project, the Town (and/or its representatives) provided Raftelis with various technical data, including cost and revenue information. Raftelis did not independently verify the accuracy of this information—whether historical or projected—and relied on the data provided in developing our findings, recommendations, and this report. Additionally, cost allocation data supplied by the Town was used to complete the cost-of-service analysis.

It is important to recognize that actual results may differ from projections. Certain assumptions used in this analysis may not occur as expected, and unanticipated events or conditions may arise. As a result, actual outcomes may vary—possibly significantly—from those presented in this report. Raftelis does not assume responsibility for the accuracy of data or projections provided by, or prepared on behalf of, the Town, and we are not obligated to update the report to reflect events after its completion.

The results and recommendations contained in this report are currently under review by the Town. Drawing conclusions based on this draft may lead to misinterpretations, as the report is subject to further revision and refinement.