Santa Clara Valley Water District

File No.: 25-0518

Agenda Date: 6/24/2025
Item No.: 3.4.

BOARD AGENDA MEMORANDUM

Government Code § 84308 Applies: Yes ☐ No ☒
(If "YES" Complete Attachment A - Gov. Code § 84308)

SUBJECT:
Receive Information on Consultant Study Regarding Santa Clara Valley Water District's Water Use Projections, Water Demand Elasticity, and Customer Affordability Study; and Provide Feedback to Staff.

RECOMMENDATION:
Receive information on consultant study regarding Santa Clara Valley Water District's water use projections, water demand elasticity, and customer affordability, including study scope, objectives, and status update; provide feedback to staff.

SUMMARY:
Santa Clara Valley Water District (Valley Water) has engaged two consultants to perform a study to validate or suggest refinements to Valley Water's current water use projections for Valley Water-managed water use, analyze water demand elasticity, and determine or address the affordability of water to residents and businesses within Santa Clara County (the Study). The majority of County residents and businesses receive water service from a retailer, while Valley Water acts as the water wholesaler. Study results may impact future Valley Water groundwater charges.

Background:

The Financial Planning and Revenue Collection office manages long-term forecast models and the annual rate setting process for the Water Utility. Water charges are adopted annually. Based upon feedback received from the Board during previous long-term forecasting cycles, staff decided to pursue a study to inform future rate setting cycles.

The consultants - Raftelis Financial Consultants, Inc. and Hazen and Sawyer - have been tasked to provide analyses for the following Study scope and objectives:

1. Analyze water use projections in Santa Clara County, for retailers, their direct customers, and private well owners to better determine Valley Water-managed water use projections. Valley Water-managed water use translates to revenue for the Water Utility.
2. Prepare a water demand elasticity analysis to better understand how rates impact water demand.

3. Determine the affordability of water provided by Valley Water to Santa Clara County residents and businesses now and based on future rate projections.

Valley Water staff and Valley Water's consultants both recognize that the scope of this Study presents unique challenges, one of which is obtaining detailed water usage data from non-Valley Water sources.

Staff anticipates technical memorandums for each of the three (3) analyses to be completed, followed by a final report documenting the study.

Study Updates:

The consultants have largely completed the first task. A technical memorandum has been drafted and will be included as part of the final Study report. The key takeaways are:

- Valley Water's approach to projecting water use is consistent with peers
- Forecast-to-actual water use has been largely accurate, with reduced variance in recent years
- High level statistical analyses demonstrate that the current approach yields reasonable ranges for near-term demand
- Water use overall continues to trend downward
- Tools exist to refine the forecasting method, if desired

Work on the second and third Study tasks are underway.

Staff recently shared this first task update with the Water Supply and Demand Management Committee (Committee); the Committee encouraged Staff to bring this update to the full Board. Staff plans to continue to bring periodic Study updates to the Committee and to the Board as appropriate.

Staff seeks feedback from the Board.

ENVIRONMENTAL JUSTICE AND EQUITY IMPACT:
Further analysis is necessary to determine the environmental justice and equity impacts associated with results of the Study. Updated environmental justice and equity determinations will be included in future Study updates.

FINANCIAL IMPACT:
There is no financial impact associated with this item at this time. Future changes to District-managed water use projections could impact future groundwater production and other water charges.

CEQA:
The recommended action does not constitute a project under CEQA because it does not have a potential for resulting in direct or reasonably foreseeable indirect physical change in the environment.

ATTACHMENTS:
Attachment 1: PowerPoint

UNCLASSIFIED MANAGER:
Darin Taylor, 408-630-3041

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RAFTELIS

Hazen

Valley Water

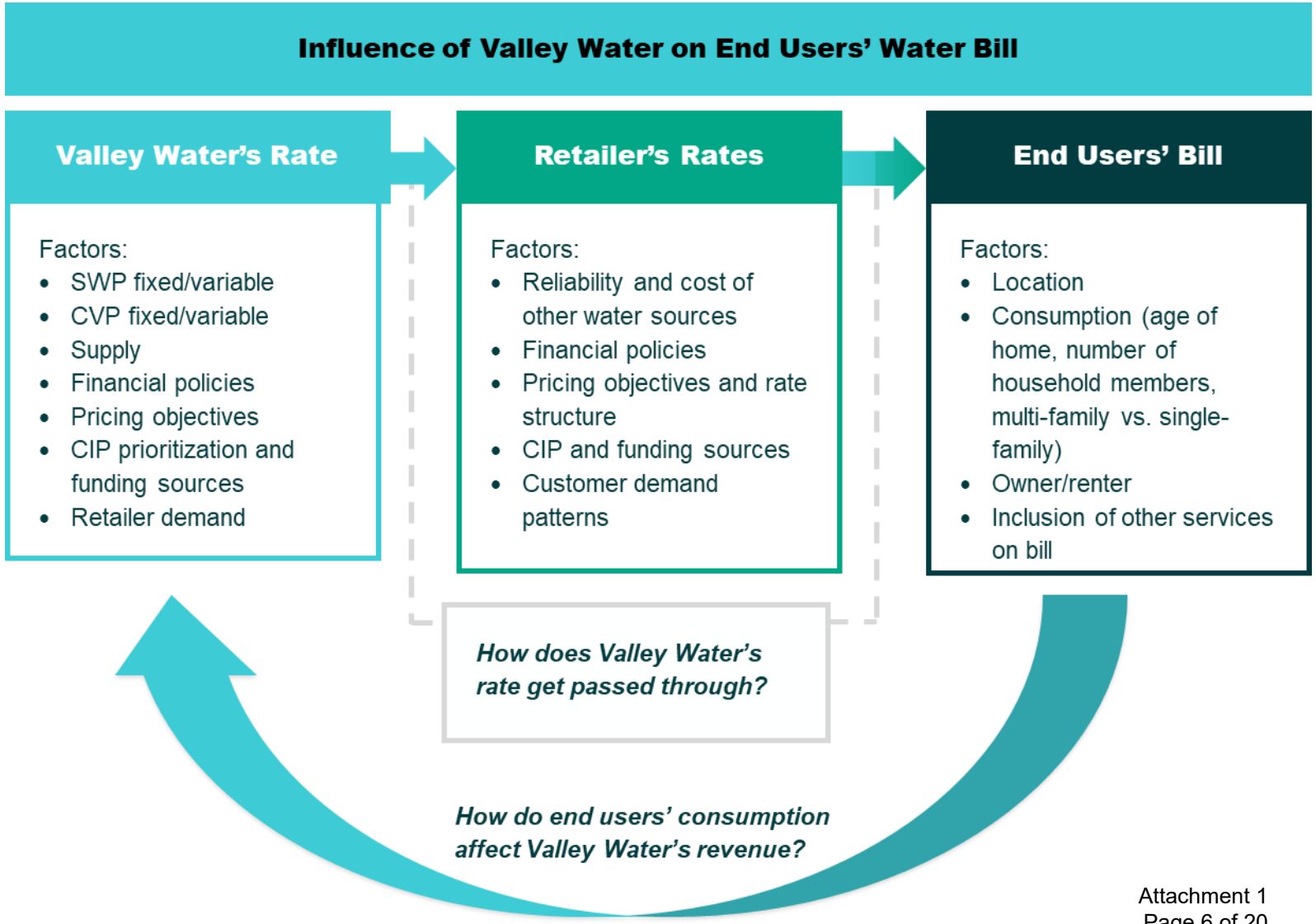
Water Use Projections, Water Demand Elasticity, and Customer Affordability Study

Board Meeting

June 24, 2025

Project Goals

- Identify how Valley Water's rates impact water demand (elasticity) and affordability of water service in Santa Clara County
- Validate and/or refine water demand forecasting for purposes of annual rate setting and long-term capital planning



Task 1: Review and Make Recommendations for Water Use Projections

- Review the existing District-managed water demand forecast which informs Valley Water's rate setting process
- Review how expected changes in the service area are utilized
- Evaluate the performance of prior water use projections
- Analyze alternative approaches against the current approach
- Identify potential improvements to Valley Water's demand forecasting
- Consider other quantitative and qualitative tools to help inform annual demand forecasting

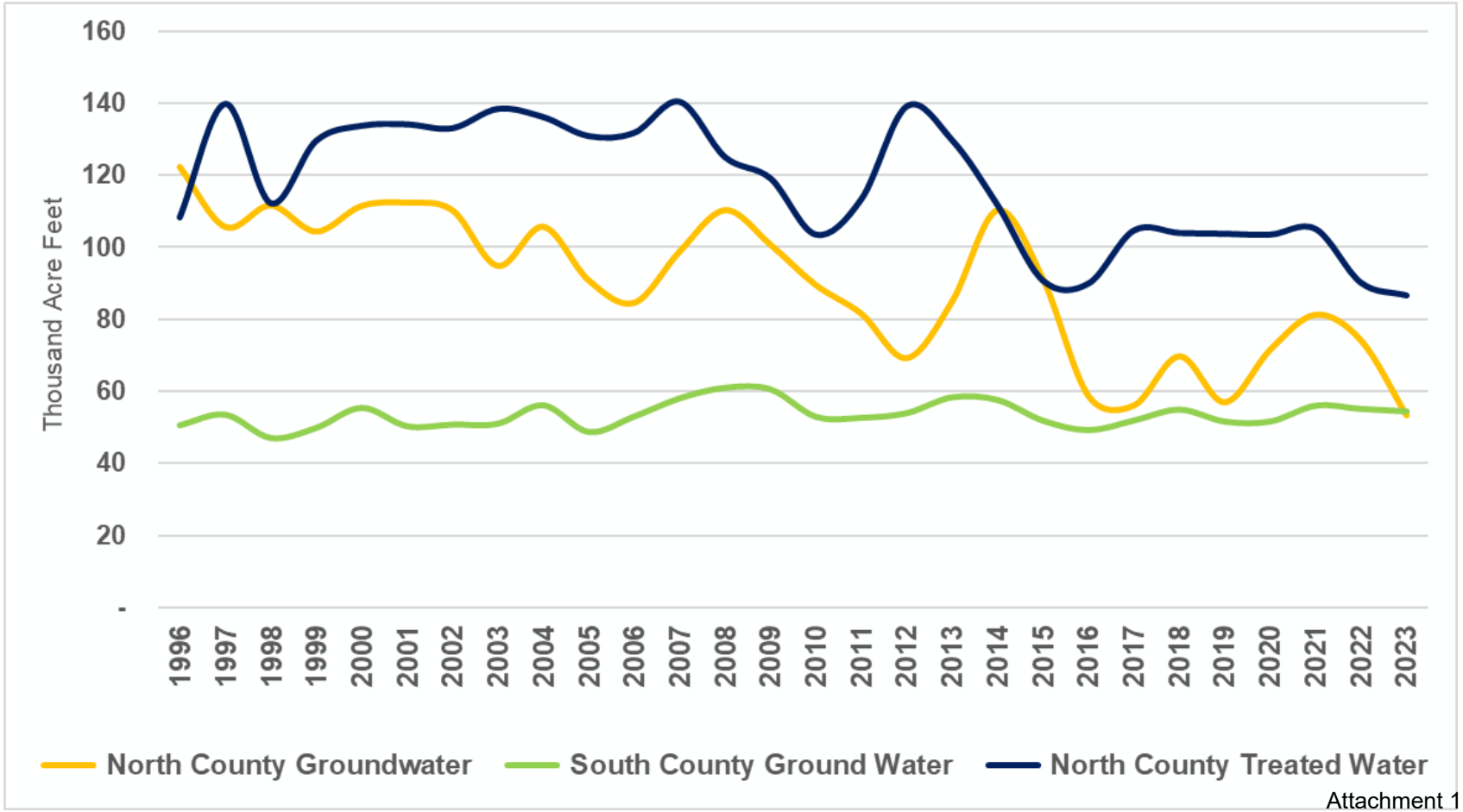
Existing Forecasting Method (Summarized)

- ***Rate Setting Year*** (Year 1): Uses historical demand weighted toward prior year actuals, and staff's institutional knowledge and discussions with Retailers
- ***Interim Years*** (Years 2-3): Uses historical demand, the most recent year's hydrology, and staff's institutional knowledge and discussions with Retailers
- ***Longer-Term*** (Year 4 and beyond): Builds from the *Interim Years* forecast to align with incremental growth rate assumptions from the Urban Water Management Plan (UWMP)

Historical Water Demand – Valley Water

Observations:

- South County Groundwater demand is stable over time,
- Treated Water and North County Groundwater have declined over time (per capita reductions, drought, other supplies)
- North County Groundwater has declined by roughly half since 1996
- Water usage has not trended upward with population growth for all water types
- Drought periods result in lower demands after a return to normal hydrology (i.e. demand hardening at lower levels



Benchmarking to Peer Agencies

- Reviewed demand forecasting approach and water use trends against SFPUC, SDCWA, EBMUD, and MWD
- For rate setting projections, peer utilities utilize a similar approach to Valley Water's that combines historical data with forward-looking adjustments on annual climate, drought conditions, and local growth estimates
- Similar trends are observed in water sales over time

SFPUC: San Francisco Public Utilities Commission
SDCWA: San Diego County Water Authority
EBMUD: East Bay Municipal Utility District
MWD: Metropolitan Water District of Southern California

Peer Agency Water Demand Trends – Annual Change

Agency	2015	2016	2017	2018	2019	2020	2021	2022	2023	2015 - 2023 % Change
MWD	N/A	-16%	-7%	5%	-12%	-1%	17%	4%	-22%	**-31%**
Valley Water	N/A	-15%	7%	8%	-7%	7%	7%	-9%	-12%	**-16%**
SFPUC	N/A	-13%	8%	11%	-3%	1%	2%	-5%	-8%	**-7%**
EBMUD	N/A	-7%	7%	7%	-1%	3%	0%	-7%	-6%	**-5%**
SDCWA	N/A	-19%	5%	-5%	-5%	-6%	9%	7%	-15%	**-3%**

Alternatives Analysis Methods

- Objective:
  - Compare results against Valley Water's existing approach
  - Support Valley Water staff in identifying a range of near-term water demand estimates
  - Provide a foundation / forensic analysis for more complex modeling that could be conducted in the future

Water Demand Forecasting – Alternative Methods

1. **Weather Normalization**
   - Identify what volume of sales would be expected in a typical water year using historical water demand, annual rainfall, and temperature
2. **Regression**
   - Identify the relationship between the four-year moving average demand and rainfall and drought
3. **Time Series Analysis**
   - Uses a moving-average and water year categorization

Disclaimer: All analyses are high-level, exploratory exercises, using limited data for forensic and illustrative purposes. Developing a robust water demand forecast would require additional data collection, preprocessing, and inclusion of more variables

Comparison of Alternative Methods – FY 2025 District-Managed Water in Thousand Acre-Feet (TAF)

FY 2025 Ranges	Valley Water Method	Time Series Method	Regression Method	*Average of Methods*
Low Range	**208**	187	221	*205*
Medium Range	**217**	198	230	*215*
High Range	**223**	204	234	*220*

Ranges are delineated by annual precipitation levels and classified as low (<33rd percentile), median (33rd–67th percentile), and high (>67th percentile).

Key Takeaways

- Valley Water's Approach is consistent with peers
- Forecast-to-Actual water sales have been largely accurate, with reduced variance in recent years
- High level statistical analyses demonstrate that the current approach yields reasonable ranges for near-term demand
- Water sales overall continue to trend downward
- Tools exist to refine the forecasting method, if desired

Potential Refinements

- Improved referencing of data sources and explicit forecasting assumptions
- Alignment of long-term demand forecast with current Urban Water Management Plan projected growth
  - i.e., incremental growth rates
- Incorporate future anticipated conservation by water type (i.e., Treated Water, North County Groundwater, South County Groundwater, Agricultural water use)
- Additional statistical methods to supplement the existing approach

Other Considerations

- Retailer specific adjustments in demand projections
- Consideration of spatial and sector segmentation
- Further analysis on drought rebound
- Treated Water contract provisions
- Retailer Urban Water Use Objectives
- Reserves policies

Next Steps

- Tasks:
  - Water Use (Demand) Projections:
    - Draft of technical memorandum completed
  - Elasticity Analyses
    - Modeling and developing elasticities for Treated Water and Groundwater by zone, specific to Retailer
  - Affordability Analyses
    - Modeling local/statewide affordability metrics – AR20, hours at minimum wage, and lowest quintile income for Santa Clara county, by Retailer
- Next:
  - Elasticity and Affordability Updates to the WSDM Committee


Q&A

District Managed Water Usage