Santa Clara Valley Water District
Board of Directors Meeting

Headquarters Building Boardroom
5700 Almaden Expressway
San Jose, CA 95118

10:00 A.M. SPECIAL MEETING AND CLOSED SESSION AGENDA

Monday, January 14, 2019
10:00 AM

District Mission: Provide Silicon Valley safe, clean water for a healthy life, environment and economy.

DISTRICT BOARD OF DIRECTORS

Linda J. LeZotte, Chair, District 4
Nai Hsueh, Vice Chair, District 5
John L Varela, District 1
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NORMA CAMACHO
Chief Executive Officer

MICHELE L KING, CMC
Clerk of the Board
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Note: The finalized Board Agenda, exception items and supplemental items will be posted prior to the meeting in accordance with the Brown Act.

Santa Clara Valley Water District
Board of Directors

10:00 A.M. SPECIAL MEETING AND CLOSED SESSION AGENDA

Monday, January 14, 2019	10:00 AM	Headquarters Building Boardroom

1. CALL TO ORDER:

1.1. Roll Call.

1.2. Pledge of Allegiance/National Anthem.

1.3. Time Open for Public Comment on any Item not on the Agenda.
Notice to the public: This item is reserved for persons desiring to address the Board on any matter not on this agenda. Members of the public who wish to address the Board on any item not listed on the agenda should complete a Speaker Card and present it to the Clerk of the Board. The Board Chair will call individuals to the podium in turn. Speakers comments should be limited to three minutes or as set by the Chair. The law does not permit Board action on, or extended discussion of, any item not on the agenda except under special circumstances. If Board action is requested, the matter may be placed on a future agenda. All comments that require a response will be referred to staff for a reply in writing. The Board may take action on any item of business appearing on the posted agenda.

2. TIME CERTAIN:

10:00 AM

2.1. Water Supply Master Plan 2040 Update. (Continued from January 8, 2019) 19-0060

Recommendation:

A. Reaffirm the 2012 "Ensure Sustainability" Strategy for the Water Supply Master Plan 2040;
B. Approve changing the water supply reliability level of service goal from meeting 90 percent of normal year demands, as identified in the Water Supply Master Plan, in drought years to meeting 80 percent of demands in drought years;
C. Receive information and provide direction on the approach to the monitoring and assessment plan (MAP) for implementing the Water Supply Master Plan 2040; and
D. Direct staff to return with updates on projects with near-term decisions points.

Manager: Jerry De La Piedra, 408-630-2257

Attachments:
Attachment 1: Risk Ranking Report
Attachment 2: Project List
Attachment 3: No Regrets Memo
Attachment 4: 2017 Survey Results
Attachment 5: 2018 Stakeholder Workshops Summary
Attachment 6: PowerPoint

Est. Staff Time: 15 Minutes

2.2. Follow-up discussion of the Preliminary Fiscal Year (FY) 2019-20 Groundwater Production Charge Analysis. (Continued from January 8, 2019) 19-0066

Recommendation: Discuss and provide direction on the preliminary FY 2019-20 Groundwater Production Charge analysis prepared by staff.

Manager: Nina Hawk, 408-630-2736
Darin Taylor, 408-630-3068

Attachments: Attachment 1: PowerPoint

Est. Staff Time: 10 Minutes

3. CLOSED SESSION

Notice to the Public: The Board of Directors meets in Closed Session in accordance with the Ralph M. Brown Act. Following the conclusion of Closed Session discussion, the Board will return for the remaining items on the regular meeting agenda.

3.1. PUBLIC EMPLOYEE PERFORMANCE EVALUATION 19-0067
Pursuant to Government Code Section 54957(b)(1)
Title: District Counsel

3.2. District Counsel's Report.

4. ADJOURN:

4.1. Clerk Review and Clarification of Board Requests.

4.2. Adjourn to 4:00 p.m. Closed Session and 6:00 p.m. Special Meeting, on January 22, 2019, in the Santa Clara Valley Water District Headquarters Building Boardroom, 5700 Almaden Expressway, San Jose, California.

File No.: 19-0060

Agenda Date: 1/14/2019
Item No.: 2.1.

BOARD AGENDA MEMORANDUM

SUBJECT:
Water Supply Master Plan 2040 Update. (Continued from January 8, 2019)

RECOMMENDATION:

A. Reaffirm the 2012 "Ensure Sustainability" Strategy for the Water Supply Master Plan 2040;
B. Approve changing the water supply reliability level of service goal from meeting 90 percent of normal year demands, as identified in the Water Supply Master Plan, in drought years to meeting 80 percent of demands in drought years;
C. Receive information and provide direction on the approach to the monitoring and assessment plan (MAP) for implementing the Water Supply Master Plan 2040; and
D. Direct staff to return with updates on projects with near-term decisions points.

SUMMARY:
The Water Supply Master Plan (Master Plan) is the District's strategy for providing a reliable and sustainable water supply in a cost-effective manner. It informs investment decisions by describing the type and level of water supply investments the District is planning to make through 2040, the anticipated schedule, the associated costs and benefits, and how Master Plan implementation will be monitored and adjusted. The Board last received information on the Master Plan update at its November 20, 2018 meeting. At that time, the Board received and discussed staff's recommendations to change the water supply reliability level of service goal, reaffirm the 2012 "Ensure Sustainability" strategy, and provide input on the monitoring and assessment approach. The Board requested that staff return to the Board at a later date for formal Board action and include additional information on project risks and other agencies' level of service goals. This memorandum summarizes prior analyses including the risk analysis, provides a rationale for updating the District's current water supply reliability level of service goal including other agencies' level of service goals, and describes how the Master Plan will be monitored and adapted to changing conditions.

Summary of Prior Analyses

Staff has analyzed anticipated water supply and demand conditions for 2040, without any new projects. The supply conditions assume dam retrofits are completed, the Fisheries and Aquatic Habitat Collaborative (FAHCE) settlement agreement is implemented, and State Water Project (SWP) and Central Valley Project (CVP) supplies decline over time due to additional regulatory restrictions and climate change. The demands are based on 2020 water use targets in retailers'

Urban Water Management Plans, extended through 2040 to account for updated regional growth projections and expected water conservation program savings. The analysis continues to indicate that extended droughts are our greatest challenge and the county could experience shortages of up to about 150,000 acre-feet (AF) in the most critical year.

A number of projects and combinations of projects have been evaluated for addressing these projected shortages. The analyses considered:

- Water supply yields under different scenarios,
- Other benefits such water quality or environmental benefits,
- Costs,
- Risks,
- Performance with different demand assumptions,
- Performance with different imported water supply assumptions,
- Performance under late century climate change,
- Input from the Expert Panel, and
- Stakeholder and Board interests.

Staff presented the results of these analyses at prior Board meetings, with most of the information provided at the September 19, 2017 and June 12, 2018 meetings. Based on direction from the Board on November 20, 2018, staff has now added an abbreviated risk analysis of the projects the Board has approved for planning. Most of these projects were evaluated in the Risk Ranking Report from Summer 2017 (Attachment 1). The projects are summarized in the Project List (Attachment 2). The new risk analysis considers the probabilities and consequences of projects not achieving their projected yields by 2040, the planning horizon for the Master Plan. The results are similar to the results reported in the Risk Ranking Report. The notable difference is that the risk ranking for Pacheco Reservoir is lower than last year's result, probably due to increased certainty in funding and additional information on project benefits. In general, projects with lower yields have less risk, because the consequence of not delivering is low. Projects with higher yields and higher probabilities of not succeeding have higher risk rankings. The results are summarized in the following table.

Project	**Risk Ranking**
California WaterFix - Federal Side	Extreme
California WaterFix - State Side Only	High
No Regrets - Complete Package	Medium
No Regrets - Advanced Metering Infrastructure	Low
No Regrets - Graywater Rebate Program Expansion	Low
No Regrets - Leak Repair Incentives	Low
No Regrets - Model Water Efficient New Development Ordinance	Medium
No Regrets - Stormwater/Ag Land Recharge	Low
No Regrets - Stormwater/Rain Barrels and Cisterns	Low

No Regrets - Stormwater/Rain Gardens	Low
No Regrets - Stormwater/San Jose	Low
No Regrets - Stormwater/Saratoga	Low
Pacheco Reservoir	Medium
Potable Reuse and/or Additional Non-Potable Reuse	Medium
South County Recharge	Low
Transfer-Bethany Pipeline	Medium

A number of different approaches or strategies will meet the District's water supply reliability goals, but there are tradeoffs. Some projects perform better during droughts and a changed climate, but are expensive. Other projects may be relatively inexpensive, but do not contribute to drought reliability or are high risk. Some projects have significant benefits for the environment or other interests, but relatively little water supply benefit. Some projects types are preferred more than others by the community. Stakeholders all agree that 1) water supply reliability is important, 2) we should maximize water conservation, water reuse, and stormwater capture, and 3) we need to keep water rates affordable. Based on stakeholder input, technical analyses, and the climate of uncertainty, staff's recommendations are intended to provide a framework for balancing multiple needs and interests while making effective and efficient investment decisions.

Recommended Water Supply Strategy

The Board adopted the "Ensure Sustainability" strategy in 2012 as part of the Water Supply and Infrastructure Master Plan. The "Ensure Sustainability" strategy is comprised of three elements:

1) Secure existing supplies and infrastructure,
2) Expand the water conservation and reuse, and
3) Optimize the use of existing supplies and infrastructure.

Together these elements protect and build on past investments in water supply reliability, leverage those investments, and develop alternative supplies and demand management measures to manage risk and meet future needs, especially during extended droughts in a changing climate. Staff recommends that the Board continue with the "Ensure Sustainability" strategy, combined with the District's Asset Management and Infrastructure Reliability programs, as it provides a pathway to a sustainable water supply system. The following discussion describes the three elements of the recommended strategy and how different potential projects could support them.

1. Secure Existing Supplies and Infrastructure

   The District should secure existing supplies and facilities for future generations because they are, and will continue to be, the foundation of the county's water supply system. Existing supplies include about 55,000 acre-feet per year (AFY) of natural groundwater recharge, 85,000 AFY of local surface water supplies, about 20,000 AFY of recycled water, 55,000 AFY of San Francisco Public Utilities Commission (SFPUC) deliveries, and 160,000 AFY of

combined Central Valley Project (CVP) and State Water Project (SWP) imported supplies. These baseline supplies are conveyed, treated, and stored in a complex and integrated system of water supply infrastructure.

Key ongoing projects and programs that support this strategic element include the Fisheries and Aquatic Habitat Collaborative Effort (FAHCE), dam retrofits, pipeline maintenance and other asset management activities, and the Rinconada Water Treatment Plant Reliability Project. These and similar projects support securing our local supplies and infrastructure and are considered baseline projects.

Projects and programs that could support securing existing imported water supplies and infrastructure include:

- California WaterFix (SWP and/or CVP sides),
- Dry Year Options/Transfers,
- Sites Reservoir, and
- Water Contract Purchases.

Staff recommends that the Master Plan include at least 60,000 AFY of SFPUC deliveries and 150,000 AFY of CVP/SWP supplies. These numbers are based on modeling how much of these supplies are needed to meet a goal of meeting at least 80 percent of normal year demands in drought years and assume other elements of the recommended strategy are implemented.

The 60,000 AFY of SFPUC deliveries is within existing SFPUC contract amounts with its Santa Clara County customers, but may need to be revised based on how the State Water Resources Control Board implements recent changes to the Bay Delta Water Quality Control Plan. The Board decided to participate in California WaterFix on May 8, 2018, which would secure up to about 170,000 AFY of CVP/SWP water supplies.

2. Increase Water Conservation and Reuse

Master Plan analyses show that demand management, stormwater capture, and water reuse are critical elements of the water supply strategy. They perform well under current climate conditions and late century climate change. Water recycling and reuse provide local supplies that are not hydrologically dependent, so they are resilient to extended droughts when the District most needs additional supplies. They make efficient use of existing supplies, so they are sustainable and consistent with a “One Water” approach. In addition, these activities are broadly supported by stakeholders.

A more diverse portfolio of supplies will also be more resilient to risks and uncertainties, including climate change, than a portfolio with increased reliance on imported water supplies. Imported supplies are particularly vulnerable to climate change and regulatory actions like the Bay Delta Water Quality Control Plan. Furthermore, State policy, as stated in the Delta Reform Act of 2009 (Water Code Section 85021), is to “*reduce reliance on the Delta in*

meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts."

The analysis for the Master Plan assumes that non-potable recycled water use will increase by about 13,000 AFY consistent with projections in the water retailers' 2015 Urban Water Management Plans and that long-term water conservation programs will achieve 99,000 AFY of savings by 2030. Other programs and projects that contribute to increasing water reuse and conservation include:

- Countywide Water Reuse Master Plan Projects,
- Local Land Fallowing,
- Morgan Hill Recycled Water,
- No Regrets Package of Water Conservation and Stormwater Capture Projects,
- Potable Reuse: Ford Pond,
- Potable Reuse: Injection Wells,
- Potable Reuse: Los Gatos Ponds,
- Refinery Recycled Water Exchange,
- Bay Area Brackish Water Treatment, and
- Stormwater: Saratoga #2.

Staff plans to include the "No Regrets" package of water conservation and stormwater projects in the Master Plan. The Board approved moving this package of projects into planning in September 2017 and the FY 19 budget includes $1 million for beginning implementation of the "No Regrets" package. Attachment 3, a memo presented to the Board's Water Conservation and Demand Management Committee on October 31, 2018, describes the implementation approach for the "No Regrets" package. The "No Regrets" package should reduce future demands by about 10,000 AFY and increase water supplies by about 1,000 AFY by 2040.

Staff recommends that the Master Plan include at least 24,000 AFY of additional reuse by 2040. This could be potable reuse and/or non-potable recycled water (purple pipe). Staff believes that additional reuse, along with the "No Regrets" package, is vital to the long-term sustainability of water supply reliability in the county. As described above, water reuse and conservation are local drought resistant supplies that are resilient to climate change.

The Board approved pursuing a public-private partnership for up to 24,000 AFY of potable reuse (with Los Gatos Ponds as the likely location) in December 2017. Like other major projects being considered, there are challenges and uncertainty with this project. However, there are alternatives to the project and there is time to address the challenges. Additional water reuse projects, both potable and non-potable, and governance options will be evaluated through the Countywide Water Reuse Master Plan, which is scheduled for completion in 2019.

A pre-feasibility study of the Refinery Recycled Water Exchange project is scheduled for completion in Winter 2018. The Refinery Recycled Water Exchange project would be a partnership with Central Contra Costa Sanitary District and Contra Costa Water District that would increase recycled water deliveries in Contra Costa County and provide in-lieu surface water to the District.

3. Optimize the Use of Existing Supplies and Infrastructure

This element of the strategy includes projects that increase the District's ability to use existing supplies and infrastructure. The District's existing supplies are more than sufficient to meet current and future needs in wet and above normal years. In some years, supplies exceed needs and additional facilities would increase flexibility and the ability to use or store those excess supplies. Additional infrastructure could increase the District's ability to respond to outages and respond to challenges such as droughts and water quality problems. Projects that support this element of the recommended water supply strategy include:

- Anderson Reservoir Expansion,
- Calero Reservoir Expansion,
- Church Avenue Pipeline,
- Groundwater Banking,
- Lexington Pipeline,
- Los Vaqueros Reservoir Expansion,
- North County Recharge,
- Pacheco Reservoir Expansion,
- South County Recharge: Butterfield Channel,
- South County Recharge: San Pedro Ponds,
- South County Water Treatment Plant,
- Transfer-Bethany Pipeline portion of Los Vaqueros Reservoir Expansion,
- Uvas Pipeline, and
- Uvas Reservoir Expansion.

Staff is planning to include a South County recharge project (either Butterfield Channel or San Pedro Ponds) in the Master Plan, because groundwater modeling indicates the need for additional recharge capacity. Pacheco Reservoir is consistent with the Board's priority to actively pursue efforts to increase water storage opportunities. Both the Transfer-Bethany Pipeline portion of the Los Vaqueros Reservoir Expansion and the Pacheco Reservoir Expansion increase the District's water supply operations flexibility and increase emergency water storage. The State, in approving funding of at least half the Pacheco Reservoir Expansion and Los Vaqueros Reservoir Expansion projects' construction costs (in 2015$), recognized those projects also provide ecosystem improvements, recreation opportunities, and/or flood protection benefits.

The three projects - South County Recharge, Pacheco, and Transfer-Bethany Pipeline - would provide a combined average annual yield of about 5,000 AFY, increase system flexibility,

and/or emergency supply.

In summary, staff is recommending that the Board reaffirm the “Ensure Sustainability” strategy, because it:

- Protects existing assets,
- Leverages past investments,
- Meets new demands with water reuse and conservation,
- Supports “One Water” approach,
- Develops local and regional supplies to reduce reliance on the Delta,
- Increases flexibility, and
- Increases resiliency to climate change.

The three elements of the recommended strategy work together to provide a framework for providing a sustainable and reliable water supply. Furthermore, they strike a balance between protecting what we have, investing for the future, and making the most of the water supply system.

Water Supply Reliability Level of Service Goal

The water supply reliability level of service goal is important because it guides long-term water supply planning efforts and informs Board decisions regarding investments. The current level of service, which was approved by the Board in June 2012, is an interpretation of Board Policy E-2 that “there is a reliable, clean water supply for current and future generations.” The current goal is to “develop water supplies designed to meet at least 100 percent of average annual water demand identified in the District’s Urban Water Management Plan during non-drought years and at least 90 percent of average annual water demand in drought years.” Staff is recommending a water supply reliability level of service goal to “develop water supplies designed to meet 100 percent of demands identified in the Master Plan in non-drought years and at least 80 percent of average annual water demand in drought years.”

Staff recommends using the Master Plan demand projection because it is closer to historic trends than the Urban Water Management Plan projection and will be reviewed and updated annually as part of Master Plan monitoring. Staff recommends updating the level of service goal for planning for drought reliability to meeting 80 percent of demands because it strikes a balance between minimizing shortages and the costs associated with the higher level of service. Furthermore, the community was able to reduce water use as much as 28 percent in 2015, indicating that shortages in the range of 20 percent are manageable. The recommendation for reducing the level of service to meeting 80 percent of demands in droughts is consistent with the following:

- **April 2017 Telephone Survey of Santa Clara County Voters re: Water Conservation**: The survey results (Attachment 4) indicate that voters see the need to invest in a more reliable water supply and the majority are open to small rate increases, but oppose large increases.
- **Stakeholder Input**: Staff conducted two stakeholder workshops in January 2018 (Attachment

5). During the workshops, staff discussed an interim level of service goal of meeting 85 percent of demands in drought years. Some stakeholders were interested in a lower level of service goal with planned mandatory water use restrictions to force more efficient water use. Others expressed interest in a lower level of service goal to reduce costs. Others thought the interim level of service goal was about right, and one retailer preferred the existing Board-approved goal. Stakeholders were concerned about overinvesting and impacts on water rates and affordability.

- **Incremental Costs**: The incremental costs of increasing the level of service from meeting 80 percent of demands in drought years to meeting 90 percent of demands in drought years exceed the value of benefits achieved by the increase. The present value lifecycle cost (in 2017 dollars) of additional projects that are needed to increase the level of service from 80 percent to 90 percent range from about $90 million to over $450 million. However, the present value (in 2017 dollars) of the benefits of fewer shortages over the lifecycle of the projects range from $0 to about $300 million. In other words, few projects provide incremental benefits that are worth the incremental cost of increased reliability.
- **Frequency of Shortage**: Modeling indicates that most scenarios that achieve the recommended level of service goal have shortages in less than 10 percent of years. Scenarios that meet 90 percent of demands in droughts years typically have shortages in less than five percent of years, which is a very high level of water supply reliability. By comparison, the District has called for mandatory water use reductions in about 30 percent of the last 30 years.
- **Planning for Uncertainty:** The water supply planning model evaluates water supply conditions under a variety of scenarios, but it cannot anticipate every potential scenario and there is inherent uncertainty in projections. For example, staff is using a demand projection that is based on current water use trends and growth projections. State efforts on “making water conservation a California way of life” or initiatives like Climate Smart San Jose could drive water use lower. On the other hand, climate change could result in more extended droughts, which continue to be our greatest water supply challenge. The recommended level of service strikes a balance between overinvesting in new supplies that may not be needed and underinvesting in supplies needed to manage future extreme conditions. In addition, uncertainty will be managed through annual review of the Master Plan and its assumptions and periodic updates to reflect changed conditions.
- **Regional Agencies’ Goals:** Staff reviewed the water supply reliability goals for other Bay Area water agencies, including Alameda County Water District, Zone 7 Water Agency, East Bay Municipal Utility District, Contra Costa Water District, San Francisco Public Utilities Commission, and Marin Municipal Water District. The water supply reliability level of service goals for these agencies ranged from meeting 75 percent to 90 percent of demands during droughts, with the median being 85 percent.

Agency	District Equivalent
Alameda County Water District	Meet at least 90% of demands during droughts
Zone 7 Water Agency	Meet at least 85% of demands during droughts
East Bay Municipal Utility District	Meet at least 85% of demands during droughts

Contra Costa Water District	Meet at least 85% of demands during droughts
San Francisco Public Utilities Commission	Meet at least 80% of demands during droughts
Marin Municipal Water District	Meet at least 75% of demands during droughts

Staff previously evaluated goals of 80, 85, and 90 percent as part of the Master Plan update. The projects, and therefore costs, needed to achieve the 80 and 85 percent levels of reliability were almost the same in numerous scenarios that were evaluated. However, increasing the level of reliability from 80 or 85 percent to 90 percent required significant additional investment. Staff is recommending the 80 percent level of reliability rather than 85% because it better aligns with the Water Shortage Contingency Plan (WSCP) stages in the "Making Water Conservation a California Way of Life" legislation, the Board's current call for a 20 percent reduction in water use compared to 2013, and was exceeded during 2015.

The recommended level of service is intended to be used for long-term planning purposes and guiding associated long-term investments. While long-term planning considers a range of hydrologic conditions, uncertainties, and risks, the actual level of service in a particular year will depend on actual conditions and could be affected by hydrologic conditions, short-term outages, and extreme situations.

The Water Conservation and Demand Management Committee concurred with staff's recommended updates to the level of service goal at its June 25, 2018 meeting. The Committee did request that staff further elaborate on the State water conservation requirements and uncertainty and their relationship with the level of service goal. That is part of the monitoring and assessment plan discussed below.

The projects already approved by the Board for planning (California WaterFix (SWP and CVP), 24,000 AFY of reuse, the "No Regrets" package of additional water conservation and stormwater capture projects, Transfer-Bethany Pipeline, and Pacheco Reservoir), along with South County Recharge, exceed the recommended level of service goal. However, it is unlikely that all the projects would be implemented and delivering their assumed benefits by Year 2040, the planning horizon for this Master Plan. Staff also evaluated a subset of the potential Master Plan projects (SWP side of California WaterFix (no CVP side), 24,000 AFY of reuse, the "No Regrets" package, and South County Recharge). This subset of projects, as well as others, meets the recommended level of service goal. The present value of the lifecycle benefits range from about $2.48 billion to $2.7 billion. The present value lifecycle costs (2017$) to the District from the two scenarios range from about $1.6 billion to $2.45 billion.

The water rate impacts associated with different scenarios are not included at this point because the impacts depend on the timing of project implementation and the project funding mechanisms. Additional information on the range of potential water rate impacts will be included in the draft Water Supply Master Plan 2040 report, along with a schedule for project implementation. It is important to note that not all the Master Plan projects need to be implemented in the near future. Project phasing will allow the District to implement projects to align with supply and demand projections, as well

manage cash flow and impacts on rates.

Scenario	Without Projects (Basecase)	With Some Projects Approved for Planning	With All Projects Approved for Planning
Minimum Drought Reliability	Meets 50% of demands	Meets 80% of demands	Meets 90% of demands
Present Value Benefits (2017$)	Not applicable	$2,480,000,000	$2,700,000,000
Present Value Cost to District (2017$)	Not applicable	$1,600,000,000	$2,450,000,000
Benefit:Cost Ratio	Not applicable	1.6	1.1

Monitoring and Assessment Plan (MAP) Approach

A primary purpose of the Master Plan is to inform investment decisions. Therefore, a critical piece of the water supply plan is a process to monitor and report to the Board on the demands, supplies, and status of projects and programs in the Master Plan so the Board can use that information in its annual strategic planning sessions, which inform the annual water rate setting, Capital Improvement Program (CIP), and budget processes. Monitoring will identify where adjustments to the Master Plan might be needed to respond to changed conditions. Such adjustments could include accelerating and delaying projects due to changes in the demand trend, changing projects due to implementation challenges, adding projects due to lower than expected supply trends, etc. This section describes the Monitoring and Assessment Plan (MAP) approach for the Master Plan.

The first step in the MAP is to develop an implementation schedule for the Master Plan based on Board direction on the recommended water supply strategy and Master Plan projects. The implementation schedule will consider how projects should be timed to meet reliability goals, costs, cash flow, rate impacts, and other needs and opportunities. The schedule will include anticipated start and completion dates for planning, permitting design, and construction, and major decision points. Staff will monitor the status of all these components and plans to report to the Board on Master Plan implementation at least annually.

The second step of the MAP is to manage unknowns and risks through regular monitoring and assessment. Master Plan monitoring and assessment will build on regular reports on projects and annual water supply conditions and will look at how all the different deviations from schedule affect the long-term water supply reliability outlook. Staff will also evaluate how changing external factors such as changes in policy, regulations, and scientific understanding affect the long-term water supply reliability outlook. Examples of external factors include policies and regulations affecting the Delta (e.g., Bay Delta Water Quality Control Plan) and land use decisions.

Another external factor that the District will be monitoring closely is the state's effort to make water conservation a California way of life. There are various components to the effort, including requiring

that all urban water retailers in the state establish an urban water use objective (i.e. a water budget for their service area). Much of the methodology on how to calculate that objective will be determined over the next few years, so it is still to be determined how that may affect the District's long-term water supply reliability outlook. However, the District already has an aggressive water conservation target out to 2030 that will be further expanded with implementation of the No Regrets package of projects. Staff estimates that water conservation savings will be equivalent to over 20 percent of what water use would be in 2040 without conservation savings.

Staff will also identify and monitor the status of projects that could serve as alternative projects should changes to the Master Plan be needed. Examples of such projects include Sites Reservoir, groundwater banking, and shallow groundwater reuse. Staff will also continue to track and participate in projects currently in development, such as the Refinery Recycled Water Exchange project. Ideally, the District will be able to keep all project opportunities open at minimum cost. Realistically, keeping some opportunities open will be costly.

The third step of the MAP is to report to the Board on Master Plan implementation on at least an annual basis, usually during the summer. In addition, the Board will receive reports on specific projects and pertinent policy and regulatory developments as needed. If changes to or decisions about the Master Plan, Master Plan projects, or other projects appear needed, staff will develop recommendations for the Board based on how decisions would affect the level of service, costs and rate impacts, risk management, and relationships between projects. Staff will also describe how projects relate to each other and stakeholder input. The intent is for staff to provide as complete a picture as possible to inform the Board's strategic planning and investment decisions and to incorporate the Board's decisions into the CIP, budget, and water rate setting processes.

The fourth step of the Map is to adjust projects as necessary upon approval by the Board. It is more likely than not that projects, both existing and new projects, will evolve and change over time. The path we are on today will look different in the future, near and distant. We cannot forecast the future and identify a specific response for every possible scenario. However, having a balanced, diverse, and sustainable water supply will help us adapt to future challenges and a strong monitoring and assessment plan (MAP) will help us stay on top of challenges and uncertainties and our options for managing them.

This paragraph illustrates how the MAP would work, in the context of the Master Plan's inclusion of 24,000 AFY of reuse. The placeholder project for implementing the 24,000 AFY of reuse is the Los Gatos Ponds Potable Reuse Project, which has a current CIP construction estimate of about $215 million (District share of construction cost; private partner would pay difference) and a completion date of 2027, followed by P3 water service agreement costs and post-P3 agreement term operations, maintenance, and replacement costs. If the Master Plan were prepared today, staff would use the CIP budget and schedule, as well as estimated post-construction costs, in Step 1 of the MAP - developing the implementation schedule. Step 2 would include ongoing evaluation of the project in light of ongoing discussions with wastewater producers, the Countywide Water Reuse Master Plan, the Recycled Water Exchange Pre-Feasibility Study and other potential reuse project analyses, and the Board's direction on water rates. As part of Step 3, staff would report to the Board on the status of the Los Gatos Ponds Potable Reuse Project and other projects, as well water supplies, demands,

financial considerations, any pertinent regulatory changes, etc. Based on the information, staff could recommend that the Board adjust the scope, schedule, and/or budget for the Los Gatos Ponds project or consider alternative projects. For example, if demands remain low, finances are a concern, and/or there is a lack of progress securing wastewater for treatment, the Board could choose to delay the project. Based on the Board's direction, staff would adjust the CIP, budget, and water rate forecast as part of Step 4 of the MAP. Then, the annual MAP process would restart. This same analysis would be performed for all the projects in the Master Plan on at least an annual basis.

Next Steps

The next steps for the Master Plan are to prepare a draft Master Plan 2040 based on Board direction. Staff anticipates having a draft Master Plan ready for Board and stakeholder review in March 2019. The intent is to have at least two workshops - one with water retailers and one with other stakeholders. Additional presentations may be made at Board advisory committees. Staff plans to present a final Master Plan to the Board in June 2019.

Staff anticipates returning to Board in the next six months on several projects that are currently in development and will require Board deliberation on next steps. These projects include, but are not limited to, Sites Reservoir, Los Vaqueros Reservoir, and California WaterFix Long-Term Transfers. Staff will incorporate the Board's input on the Master Plan's water supply strategy and level of service into these presentations.

FINANCIAL IMPACT:
There is no financial impact associated with this item. The water supply reliability level of service goal and water supply strategy help inform Board investment decisions but do not commit the District to a specific course of action regarding projects. Rather, it affirms the District's commitment to balance the costs and benefits of investments in long-term water supply reliability.

CEQA:
The recommended action does not constitute a project under CEQA because it does not have a potential for resulting in direct or reasonable foreseeable indirect physical change in the environment. The water supply reliability level of service goal and water supply strategy help inform Board investment decisions, but do not commit the District to a specific course of action regarding projects. All projects that are planned for implementation will go through environmental review consistent with CEQA.

ATTACHMENTS:
Attachment 1: Risk Ranking Report
Attachment 2: Project List
Attachment 3: No Regrets Memo
Attachment 4: 2017 Survey Results
Attachment 5: 2018 Stakeholder Workshops Summary

Attachment 6: PowerPoint

UNCLASSIFIED MANAGER:
Jerry De La Piedra, 408-630-2257

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WATER SUPPLY MASTER PLAN 2017 – PROJECT RISKS

9/8/2017

Results of Pairwise and Traditional Risk Analyses

Contents

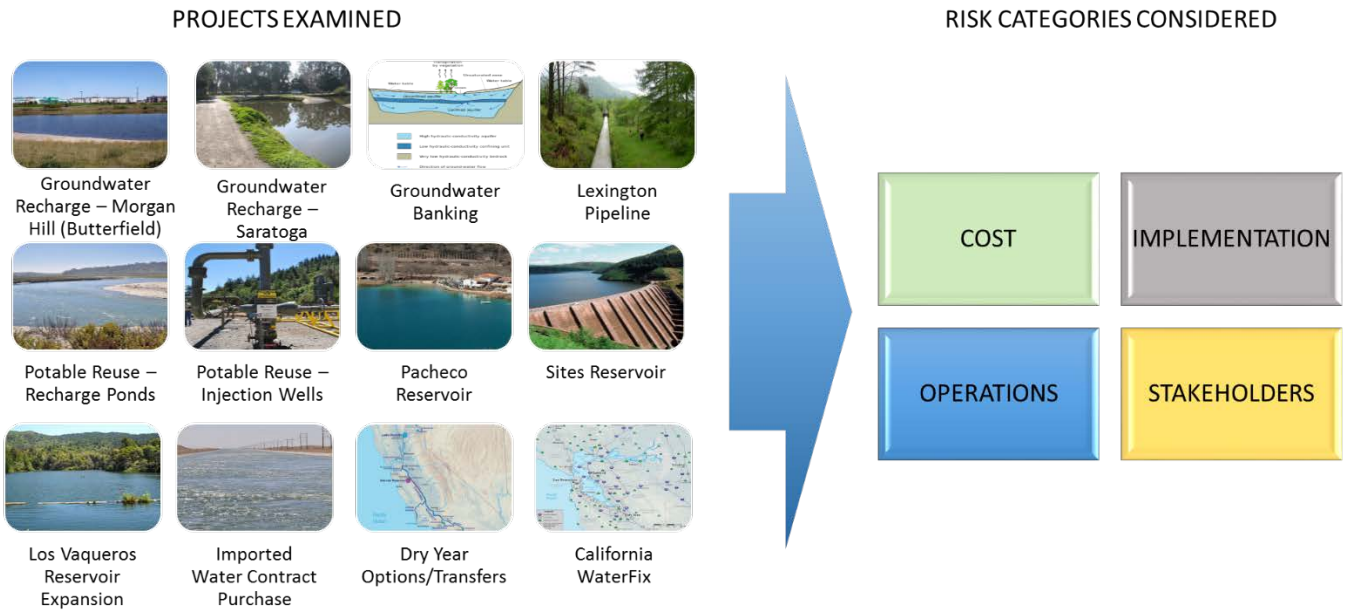
Appendices

OVERVIEW

Santa Clara Valley Water District (District) staff conducted a risk analysis of the projects being considered for inclusion in the 2017 Water Supply Master Plan (WSMP; Figure 1). The WSMP is the District's strategy for providing a reliable and sustainable water supply in a cost-effective manner. The WSMP process includes assessing the existing water supply system, estimating future supplies and demands, identifying and evaluating projects to fill gaps between supplies and demands, and recommending a strategy for long-term water supply reliability. This risk analysis helps evaluate the types, severity, and likelihood of risk associated with each WSMP project so that the District Board of Directors and community better understand the uncertainties associated with each project's ability to meet future water demands.

This report summarizes the results of the risk analysis developed to quantitatively assess the types and level of risk impacting each project. Project descriptions and cost estimates are in Appendix A - Project Descriptions. Appendix B details the methodology used to conduct the risk analysis.

FIGURE 1. PROJECTS AND RISK CATEGORIES – PROJECTS BEING CONSIDERED FOR THE 2017 WSMP AND THE TYPES OF RISK INCLUDED IN THE RISK ANALYSIS.



RISK CATEGORIES

During an Expert Panel meeting on June 8, 2017, staff and panel experts discussed different types of project risks. Afterwards, staff grouped the risks into four risk categories: Cost, Implementation, Operations, and Stakeholders. The types (or elements) of risk are summarized in Table 1 by risk category. At four meetings, one for each risk category, District subject matter experts discussed risk elements within the risk category and then conducted pairwise and traditional risk analyses of the 2017 WSMP projects. Many risks spanned the categories, but the aspects of the risk were distinct in each meeting. For example, the capital costs risk was considered during the Cost and Stakeholders risk meetings, but the Costs meeting considered the uncertainty of the capital cost estimates for each project while the Stakeholders meeting considered whether higher capital costs could result in greater stakeholder opposition. Table 1 summarizes the risks by risk category.

TABLE 1. RISK ELEMENTS BY CATEGORY. SUBJECT MATTER EXPERTS IN EACH RISK CATEGORY MET TO ASSESS PROJECT RISK WITH CONSIDERATION OF THE RISK ELEMENTS WITHIN EACH RISK CATEGORY. SEPARATE MEETINGS WERE HELD FOR EACH RISK CATEGORY.

Risk Category	Risk Elements
Costs	• Capital costs, including quality of cost estimate • Costs of regulatory compliance • Match requirements and cost-sharing • Counter-party risk/ability of partners to pay costs • Stakeholders and rate payer ability to pay • Financing and funding security • Scheduling issues • Economic fluctuations and instability • Potential for stranded assets
Implementation	• Phasing potential • Project duration and schedule • Reoperation requirements • Land availability • Constructability (e.g., structural issues, technology) • Managerial capacity (knowledge and resource availability) • Range of implementation options • Regulatory requirements • Project planning maturity
Operations	• Climate change • Yield variability and reliability • Operating Partnerships • Uncertainty of long-term operations and maintenance costs • Project inter-dependency • Environmental and water quality regulations • Control • Appropriate infrastructure • Redundancy • Emergency operations/asset failures
Stakeholders	• Public support • Permitting risks • Media • Internal stakeholder concerns • External stakeholder opposition • Environmental/special interest groups • Partnership risks • Government stakeholders • Costs

PAIRWISE RISK ANALYSIS

A pairwise risk analysis provides a quantitative approach for ranking projects by risk. Having projects ranked by riskiness improves the District Board's and community's ability to compare projects' ability to meet future needs. To complete the risk assessment, the project team assembled five to six subject matter experts from the District into four groups, one group for each risk category. The team chose District experts that had knowledge specific to their assigned risk category. Then, the subject matter experts compared each project against another project using the pairwise matrix in Table 2. The crossed-out boxes represent duplicate comparisons or compare the project against itself. The subject matter experts each determined which of the two projects being compared was a higher risk for the risk category. For example, the first comparison is Morgan Hill (Butterfield) Recharge and Groundwater Banking. If someone determined that Groundwater Banking has more risk, they would enter a "G" for Groundwater Banking

PAIRWISE RISK ANALYSIS BY RISK ELEMENT

Tables 3a-d provide the results of the pairings by risk category. Each project is represented by an abbreviation and the numbers indicate how many people chose it as the higher risk. For example, all six participants assessing cost risks thought that Imported Water Contract Purchase was higher risk than Morgan Hill (Butterfield) Recharge, so the associated cell is filled with "I6." Alternatively, two of the six participants thought Imported Water Rights Purchase (I) was higher risk than Groundwater Banking (G), so the associated cell is filled with "I2 G4."

TABLE 2. PAIRWISE COMPARISON MATRIX. EACH SUBJECT MATTER EXPERT COMPLETED THE PAIRWISE ANALYSIS BY ENTERING THE LETTER ASSOCIATED WITH THE HIGHER RISK PROJECT IN EACH EMPTY CELL.

* Morgan Hill (Butterfield) Recharge Pond

	Dry Year Options/ Transfers **D**	Lexington Pipeline **LX**	Ground-water Recharge-Saratoga **SP**	Ground-water Recharge - Morgan Hill* **B**	Ground-water Banking **G**	Sites Reservoir **S**	Los Vaqueros Reservoir Expansion **L**	Potable Reuse – Los Gatos Ponds **PL**	Potable Reuse – Ford Pond **PF**	Potable Reuse – Injection Wells **PI**	Imported Water Contract Purchase **I**	Pacheco Reservoir **PR**	California Water Fix **C**
Dry Year Options/ Transfers **D**	X												
Lexington Pipeline **LX**	X	X											
Groundwater Recharge-Saratoga **SP**	X	X	X										
Groundwater Recharge - Morgan Hill* **B**	X	X	X	X									
Groundwater Banking **G**	X	X	X	X	X								
Sites Reservoir **S**	X	X	X	X	X	X							
Los Vaqueros Reservoir Expansion **L**	X	X	X	X	X	X	X						
Potable Reuse – Los Gatos Ponds **PL**	X	X	X	X	X	X	X	X					
Potable Reuse – Ford Pond **PF**	X	X	X	X	X	X	X	X	X				
Potable Reuse – Injection Wells **PI**	X	X	X	X	X	X	X	X	X	X			
Imported Water Contract Purchase **I**	X	X	X	X	X	X	X	X	X	X	X		
Pacheco Reservoir **P**	X	X	X	X	X	X	X	X	X	X	X	X	
California WaterFix C	X	X	X	X	X	X	X	X	X	X	X	X	X

TABLE 3A-D. PAIRWISE COMPARISON RESULTS. THE TABULATED RESULTS FOR THE COST (A), IMPLEMENTATION (B), OPERATION (C), AND STAKEHOLDER (D) PAIRWISE ANALYSIS. EACH LETTER PRESENTS A PROJECT AS SHOWN IN THE HEADER ROW AND COLUMN. THE NUMBER FOLLOWING THE LETTERS IN EACH CELL REPRESENTS THE NUMBER OF EXPERTS WHO THINK THE ASSOCIATED PROJECT IS RISKIER.

a.

COST RISKS	Dry Year Options/ Transfers **D**	Lexington Pipeline **LX**	Ground-water Recharge Saratoga **SP**	Ground-water Recharge - Morgan Hill* **B**	Ground-water Banking **G**	Sites Reservoir **S**	Los Vaqueros Reservoir Expansion **L**	Potable Reuse – Los Gatos Ponds **PL**	Potable Reuse – Ford Pond **PF**	Potable Reuse – Injection Wells **PI**	Imported Water Contract Purchase **I**	Pacheco Reservoir **PR**	California WaterFix **C**
Dry Year Options/ Transfers **D**	X	D2 LX2	D2 SP2	D2 B2	D2 G2	D0 S4	D0 L4	D1 PL3	D1 PF3	D1 PI3	D2 I2	D0 PR4	D0 C4
Lexington Pipeline **LX**	X	X	LX3 SP1	LX4 B0	LX1 G3	LX0 S4	LX0 L4	LX0 PL4	LX0 PF4	LX0 PI4	LX2 I2	LX0 PR4	LX0 C4
Groundwater Recharge-Saratoga **SP**	X	X	X	SP4 B0	SP1 G3	SP0 S4	SP0 L4	SP0 PL4	SP0 PF4	SP0 PI4	SP1 I3	SP0 PR4	SP0 C4
Groundwater Recharge - Morgan Hill* **B**	X	X	X	X	B0 G4	B0 S4	B0 L4	B0 PL4	BO PF4	B0 PI4	B0 I4	B0 PR4	B0 C4
Groundwater Banking **G**	X	X	X	X	X	G1 S3	G0 L4	G0 PL4	G0 PF4	G0 PI4	G1 I3	G0 PR4	G0 C4
Sites Reservoir **S**	X	X	X	X	X	X	S3 L1	S3 PL1	S3 PF1	S3 PI1	S3 I1	S0 PR4	S0 C4
Los Vaqueros Reservoir Expansion **L**	X	X	X	X	X	X	X	L3 PL1	L3 PF1	L3 PI1	L2 I2	L0 PR4	L0 C4
Potable Reuse – Los Gatos Ponds **PL**	X	X	X	X	X	X	X	X	PL1 PF3	PL0 PI4	PL2 I2	PL0 PR4	PL0 C4
Potable Reuse – Ford Pond **PF**	X	X	X	X	X	X	X	X	X	PF0 PI4	PF2 I2	PF0 PR4	PF0 C4
Potable Reuse – Injection Wells **PI**	X	X	X	X	X	X	X	X	X	X	PI2 I2	PI0 PR4	PI0 C4
Imported Water Contract Purchase **I**	X	X	X	X	X	X	X	X	X	X	X	I0 PR4	I0 C4
Pacheco Reservoir **P**	X	X	X	X	X	X	X	X	X	X	X	X	PR1 C3
California WaterFix C	X	X	X	X	X	X	X	X	X	X	X	X	X

* Morgan Hill (Butterfield) Recharge Pond

b.

IMPLEMENTATION RISKS	Dry Year Options/ Transfers **D**	Lexington Pipeline **LX**	Groundwater Recharge-Saratoga **SP**	Groundwater Recharge - Morgan Hill* **B**	Groundwater Banking **G**	Sites Reservoir **S**	Los Vaqueros Reservoir Expansion **L**	Potable Reuse – Los Gatos Ponds **PL**	Potable Reuse – Ford Pond **PF**	Potable Reuse – Injection Wells **PI**	Imported Water Contract Purchase **I**	Pacheco Reservoir **PR**	California WaterFix **C**
Dry Year Options/ Transfers **D**	X	D1 LX3	D2 SP2	D3 B1	D4 G0	D0 S4	D0 L4	D1 PL3	D0 PF4	D0 PI4	D4 I0	D0 PR4	D0 C4
Lexington Pipeline **LX**	X	X	LX3 SP1	LX3 B1	LX3 G1	LX1 S3	LX1 L3	LX1 PL3	LX1 PF3	LX1 PI3	LX3 I1	LX0 PR4	LX0 C4
Groundwater Recharge-Saratoga **SP**	X	X	X	SP3 B1	SP2 G2	SP2 S2	SP1 L3	SP1 PL3	SP0 PL4	SP0 PI4	SP3 I1	SP0 PR4	SP0 C4
Groundwater Recharge - Morgan Hill* **B**	X	X	X	X	B3 G1	B0 S4	B0 L4	B0 PL4	B0 PF4	B0 PI4	B3 I1	B0 PR4	B0 C4
Groundwater Banking **G**	X	X	X	X	X	G0 S4	G0 L4	G0 PL4	G0 PI4	G0 PI4	G3 I1	G0 PR4	B0 C4
Sites Reservoir **S**	X	X	X	X	X	X	S3 L1	S4 PL0	S3 PF1	S4 PI0	S4 I0	S0 PR4	S0 C4
Los Vaqueros Reservoir Expansion **L**	X	X	X	X	X	X	X	L3 PL1	L2 PF2	L3 PI1	L4 I0	L1 PR3	L0 C4
Potable Reuse – Los Gatos Ponds **PL**	X	X	X	X	X	X	X	X	PL3 PF1	PL0 PI4	PL4 I0	PL0 PR4	PL0 C4
Potable Reuse – Ford Pond **PF**	X	X	X	X	X	X	X	X	X	PF1 PI3	PF4 I0	PF0 PR4	PF0 C4
Potable Reuse – Injection Wells **PI**	X	X	X	X	X	X	X	X	X	X	PI2 I2	PI0 PR4	PI0 C4
Imported Water Contract Purchase **I**	X	X	X	X	X	X	X	X	X	X	X	I0 PR4	I0 C4
Pacheco Reservoir **P**	X	X	X	X	X	X	X	X	X	X	X	X	PR0 C4
California WaterFix C	X	X	X	X	X	X	X	X	X	X	X	X	X

* Morgan Hill (Butterfield) Recharge Pond

c.

OPERATION RISKS	Dry Year Options/ Transfers **D**	Lexington Pipeline **LX**	Ground-water Recharge-Saratoga **SP**	Ground-water Recharge - Morgan Hill* **B**	Ground-water Banking **G**	Sites Reservoir **S**	Los Vaqueros Reservoir Expansion **L**	Potable Reuse – Los Gatos Ponds **PL**	Potable Reuse – Ford Pond **PF**	Potable Reuse – Injection Wells **PI**	Imported Water Contract Purchase **I**	Pacheco Reservoir **PR**	California Water Fix **C**
Dry Year Options/ Transfers **D**	X	D3 LX2	D4 SP1	D4 B1	D3 G2	D0 S5	D2 L3	D3 PL2	D3 PF2	D2 PI3	D4 I1	D1 PR4	D0 C4
Lexington Pipeline **LX**	X	X	LX5 SP0	LX5 B0	LX0 G5	LX0 S5	LX0 L5	LX0 PL5	LX0 PF5	LX0 PI5	LX2 I3	LX0 PR5	LX0 C5
Groundwater Recharge-Saratoga **SP**	X	X	X	SP1 B4	SP0 G5	SP0 S5	SP0 L5	SP0 PL5	SP0 PF5	SP0 PI5	SP0 I5	SP0 PR5	SP0 C5
Groundwater Recharge - Morgan Hill* **B**	X	X	X	X	B0 G5	B0 S5	B0 L5	B0 PL5	B0 PF5	B0 PI5	B2 I3	B0 PR5	B0 C5
Groundwater Banking **G**	X	X	X	X	X	G0 S5	G0 L5	G3 PL2	G3 PF2	G1 PI4	G2 I3	G0 PR5	G0 C5
Sites Reservoir **S**	X	X	X	X	X	X	S5 L0	S5 PL0	S5 PF0	S4 PI1	S5 I0	S4 PR1	S0 C5
Los Vaqueros Reservoir Expansion **L**	X	X	X	X	X	X	X	L5 PL0	L5 PF0	L4 PI1	L5 I0	L5 PR0	L0 C4
Potable Reuse – Los Gatos Ponds **PL**	X	X	X	X	X	X	X	X	PL3 PF2	PL1 PI4	PL3 I2	PL0 PR5	PL0 C5
Potable Reuse – Ford Pond **PF**	X	X	X	X	X	X	X	X	X	PF0 PI5	PF3 I2	PF0 PR5	PR0 C5
Potable Reuse – Injection Wells **PI**	X	X	X	X	X	X	X	X	X	X	PI4 I1	PI0 PR5	PI0 C5
Imported Water Contract Purchase **I**	X	X	X	X	X	X	X	X	X	X	X	I0 PR5	I0 C5
Pacheco Reservoir **P**	X	X	X	X	X	X	X	X	X	X	X	X	PR0 C5
California WaterFix **C**	X	X	X	X	X	X	X	X	X	X	X	X	X

* Morgan Hill (Butterfield) Recharge Pond

d.

STAKE-HOLDER RISKS	Dry Year Options/ Transfers **D**	Lexington Pipeline **LX**	Ground-water Recharge-Saratoga **SP**	Ground-water Recharge - Morgan Hill* **B**	Ground-water Banking **G**	Sites Reservoir **S**	Los Vaqueros Reservoir Expansion **L**	Potable Reuse – Los Gatos Ponds **PL**	Potable Reuse – Ford Pond **PF**	Potable Reuse – Injection Wells **PI**	Imported Water Contract Purchase **I**	Pacheco Reservoir **PR**	California WaterFix **C**
Dry Year Options/ Transfers **D**	X	D1 LX2	D1 SP2	D1 B2	D1 G2	D1 S2	D1 L2	D1 PL2	D1 PF2	D1 PI2	D2 I1	D0 PR3	D0 C3
Lexington Pipeline **LX**	X	X	LX2 SP1	LX3 B0	LX1 G2	LX0 S3	LX0 L3	LX1 PL2	LX1 PF2	LX1 PI2	LX1 I2	LX0 PR3	LX0 C3
Groundwater Recharge-Saratoga **SP**	X	X	X	SP3 B0	SP1 G2	SP0 S3	SP0 L3	SP0 PL3	SP0 PF3	SP0 PI3	SPI I2	SP0 PR3	SP0 C3
Groundwater Recharge - Morgan Hill* **B**	X	X	X	X	B1 G2	B0 S3	BO L3	B0 PL3	B0 PF3	B0 PI3	B2 I1	B0 PR3	B0 C3
Groundwater Banking **G**	X	X	X	X	X	G1 S2	G1 L2	G1 PL2	G1 PF2	G1 PI2	G2 I1	G0 PR3	G0 C3
Sites Reservoir **S**	X	X	X	X	X	S3 S0	S2 L1	S2 PL1	S2 PF1	S2 PI1	S2 I1	S0 PR3	S0 C3
Los Vaqueros Reservoir Expansion **L**	X	X	X	X	X	X	X	L1 PL2	L1 PF2	L1 PI2	L2 I1	L0 PR3	L0 C3
Potable Reuse – Los Gatos Ponds **PL**	X	X	X	X	X	X	X	X	PL1 PF2	PL0 PI3	PL2 I1	PI0 PR3	PL0 C3
Potable Reuse – Ford Pond **PF**	X	X	X	X	X	X	X	X	X	PF0 PI3	PF2 I1	PF0 PR3	PF0 C3
Potable Reuse – Injection Wells **PI**	X	X	X	X	X	X	X	X	X	X	PI2 I1	PI0 PR3	PI0 C3
Imported Water Contract Purchase **I**	X	X	X	X	X	X	X	X	X	X	X	I0 PR3	I0 C3
Pacheco Reservoir **P**	X	X	X	X	X	X	X	X	X	X	X	X	PR0 C3
California WaterFix C	X	X	X	X	X	X	X	X	X	X	X	X	X

* Morgan Hill (Butterfield) Recharge Pond

PAIRWISE RANKING RESULTS

Table 4 shows the pairwise ranking results. The letter designation represents the riskier project based on the results of the four subject matter expert groups combined. The percentage indicates the amount of agreement between the four groups. 100% indicates that all four risk groups agree the project was riskier. Where 75 percent is indicated, three of four teams ranked it higher risk (where 75%* is noted, the result was three of four, and one tie). Where 66% is indicated, two of three groups agreed and a tie in the fourth group. Finally, 50 percent indicates an even split between the four risk categories. Most the comparisons had agreement among the four categories.

TABLE 4. PAIRWISE RANKING RESULTS

ALL RISK CATEGORIES	Dry Year Options/ Transfers **D**	Lexington Pipeline **LX**	Ground-water Recharge-Saratoga **SP**	Ground-water Recharge - Morgan Hill* **B**	Ground-water Banking **G**	Sites Reservoir **S**	Los Vaqueros Reservoir Expansion **L**	Potable Reuse – Los Gatos Ponds **PL**	Potable Reuse – Ford Pond **PF**	Potable Reuse – Injection Wells **PI**	Imported Water Contract Purchase **I**	Pacheco Reservoir **PR**	California WaterFix **C**
Dry Year Options/ Transfers **D**	X	LX 66%	D/SP 50%	D/B 50%	D 66%	S 100%	L 100%	PL 75%	PF 75%	PI 100%	D 75%	PR 100%	C 100%
Lexington Pipeline **LX**	X	X	LX 100%	LX 100%	G 75%	S 100%	L 100%	PL 100%	PF 100%	PI 100%	I 66%	PR 100%	C 100%
Groundwater Recharge-Saratoga **SP**	X	X	X	SP 75%*	G 75%*	S 75%*	L 100%	PL 100%	PF 100%	PI 100%	I 75%	PR 100%	C 100%
Groundwater Recharge - Morgan Hill* **B**	X	X	X	X	G 75%	S 100%	L 100%	PL 100%	PF 100%	PI 100%	B/I 50%	PR 100%	C 100%
Groundwater Banking **G**	X	X	X	X	X	S 100%	L 100%	PL 75%	PF 75%	PI 100%	G/I 50%	PR 100%	C 100%
Sites Reservoir **S**	X	X	X	X	X	X	S 100%	S 100%	S 100%	S 100%	S 100%	PR 75%	C 100%
Los Vaqueros Reservoir Expansion **L**	X	X	X	X	X	X	X	L 75%	L/PF 50%	L 75%	L 75%*	PR 100%	C 100%
Potable Reuse – Los Gatos Ponds **PL**	X	X	X	X	X	X	X	X	PL/PF 50%	PI 100%	PL 75%*	PR 100%	C 100%
Potable Reuse – Ford Pond **PF**	X	X	X	X	X	X	X	X	X	PI 100%	PF 75%*	PR 100%	C 100%
Potable Reuse – Injection Wells **PI**	X	X	X	X	X	X	X	X	X	X	PI 50%	PR 100%	C 100%
Imported Water Contract Purchase **I**	X	X	X	X	X	X	X	X	X	X	X	PR 100%	C 100%
Pacheco Reservoir **P**	X	X	X	X	X	X	X	X	X	X	X	X	C 100%
California WaterFix **C**	X	X	X	X	X	X	X	X	X	X	X	X	X

* Morgan Hill (Butterfield) Recharge Pond

From the pairwise analysis results, California WaterFix is the riskiest project being considered, followed by the surface water reservoirs and potable reuse using injection wells. The two potable reuse projects using recharge ponds are tied, as are groundwater banking and the Lexington Pipeline. The least risky projects are the groundwater recharge projects.

TABLE 5. PAIRWISE COMPARISON RISK RANKING. Project pairwise rank determined using the count of comparisons for which each project was determined as the riskiest. The total votes by experts lists the sum of the raw scores for each project.

PAIRWISE TOTALS	PAIRWISE RANK	TOTAL VOTES BY EXPERTS
California WaterFix C	13	187
Pacheco Reservoir PR	12	165
Sites Reservoir S	11	146
Los Vaqueros Reservoir Expansion L	9	130
Potable Reuse – Injection Wells PI	10	120
Potable Reuse – Ford Road PF	8	96
Potable Reuse – Los Gatos Ponds PL	8	93
Groundwater Banking G	6	62
Imported Water Contract Purchase I	3	61
Dry Year Options/Transfers D	4	58
Lexington Pipeline LX	6	58
Groundwater Recharge - Saratoga SP	2	38
Groundwater Recharge Morgan Hill (Butterfield) B	1	23

RISK SEVERITY AND LIKELIHOOD ANALYSIS

The four risk category teams also assessed the severity and likelihood of risk for each project. The goal of this risk scoring exercise is to help determine how much riskier one project is compared to another and to identify if the risk is primarily from the likelihood that the risk materializes, the severity of the outcome if the risk materializes, or both. The methodology and risk scoring criteria are included in Appendix B. Each risk category expert scored the risk severity and likelihood for each project on a scale from 1 to 4, with four (4) being the highest magnitude of risk. The definitions are summarized in Table 6. Table 7 presents the sum of the median score for each of the risk categories by project, from highest to lowest risk. The relative ranking of risk using the severity and likelihood is the same as when the pairwise results are used. Figure 2. Risk Matrix. illustrates the severity and likelihood analysis results in a risk matrix.

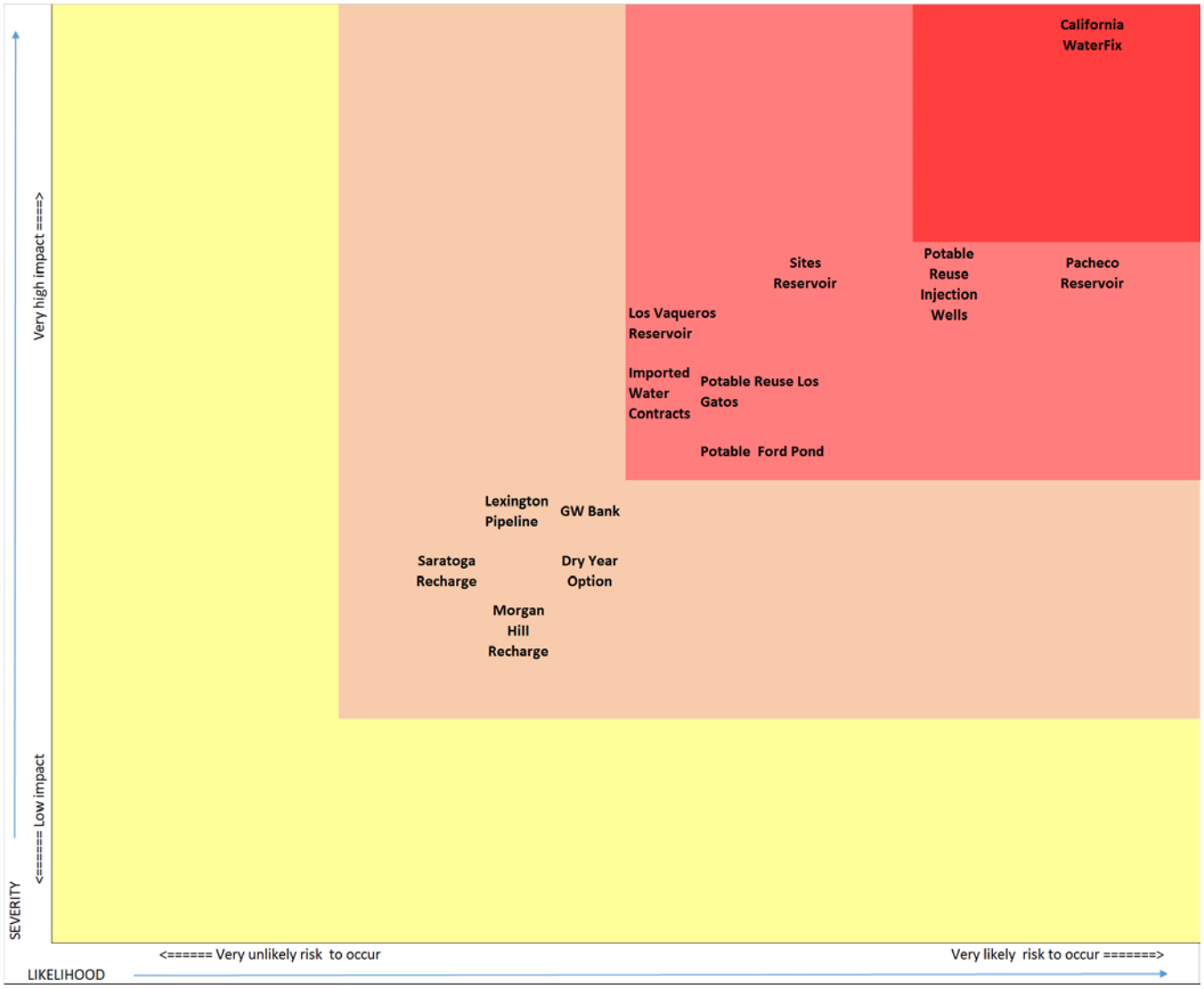
TABLE 6. RISK SEVERITY AND LIKELIHOOD DEFINITIONS

Severity	1. Low= low to no effect on project 2. Medium = minor to modest impacts 3. High = significant or substantial impacts 4. Very High = extreme potential impacts
Likelihood	1. Very Unlikely = Risks will not materialize 2. Unlikely = Risks probably will not materialize 3. Likely = Risks probably will materialize 4. Very Likely = Almost certain risks will materialize

TABLE 7. RISK SEVERITY AND LIKELIHOOD RESULTS

Project	Severity Score (Max. of 16)	Likelihood Score (Max of 16)
California WaterFix C	16	15
Pacheco Reservoir PR	12	15
Sites Reservoir S	12	11
Potable Reuse – Injection Wells PI	12	13
Los Vaqueros Reservoir Expansion L	11	9
Potable Reuse – Ford Road PF	9	10
Potable Reuse -Los Gatos Ponds PL	10	10
Groundwater Banking G	8	8
Lexington Pipeline LX	8	7
Dry year options/transfers D	7	8
Imported Water Contract Purchase I	10	9
Groundwater Recharge -Saratoga SP	7	6
Groundwater Recharge Morgan Hill (Butterfield) B	6	7

FIGURE 2. RISK MATRIX. LIKELIHOOD OF PROJECT IMPACT INCREASES UPWARD ALONG THE VERTICAL AXIS AND SEVERITY INCREASES ALONG THE HORIZONTAL AXIS. SEE TABLE 9 FOR THE RAW DATA USED TO DEVELOP THIS FIGURE.



TOTAL PROJECT RISK CALCULATION

Staff calculated the total project risk for each category by weighting the pairwise ranking by the severity and likelihood (equation 1).

Equation 1

$$Risk_{category} = (1 + \frac{Severity + Likelihood}{8}) \times Pairwise\ Ranking$$

The severity and likelihood score is divided by eight (the maximum possible combined score) to represent severity and likelihood as a portion of the maximum possible combined score. This proportion is then added to one (1) so that the pairwise analysis remains the primary driver of the order of risk, and then the severity and likelihood is a multiplicative factor that acts on the risk ranking. If the severity and likelihood is significant, it will substantially increase the total risk score. If the severity and likelihood score are small, there will be little impact on the total risk score. Alternatively, not adding one (1) to the severity and likelihood proportion would result in the severity and likelihood decreasing the ranking number unless the severity and likelihood proportion equals one. Then the risk score was normalized by dividing by the maximum possible score and multiplying by 100 to convert to a percentage value. The project risks for each category are in Figures 3 through 6. The combined total project risk is in Figure 7.

FIGURE 3. WEIGHTED COST RISK

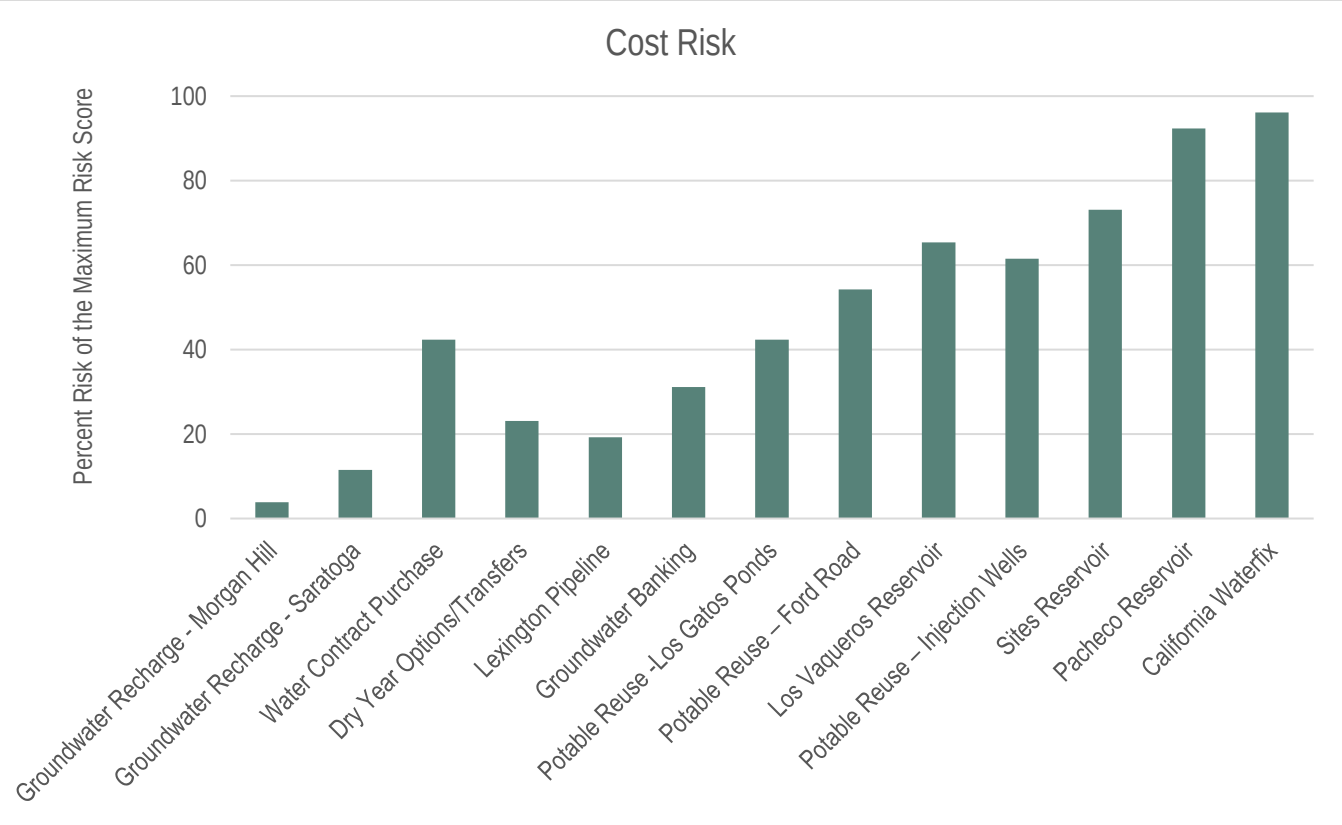


FIGURE 4. WEIGHTED IMPLEMENTATION RISK

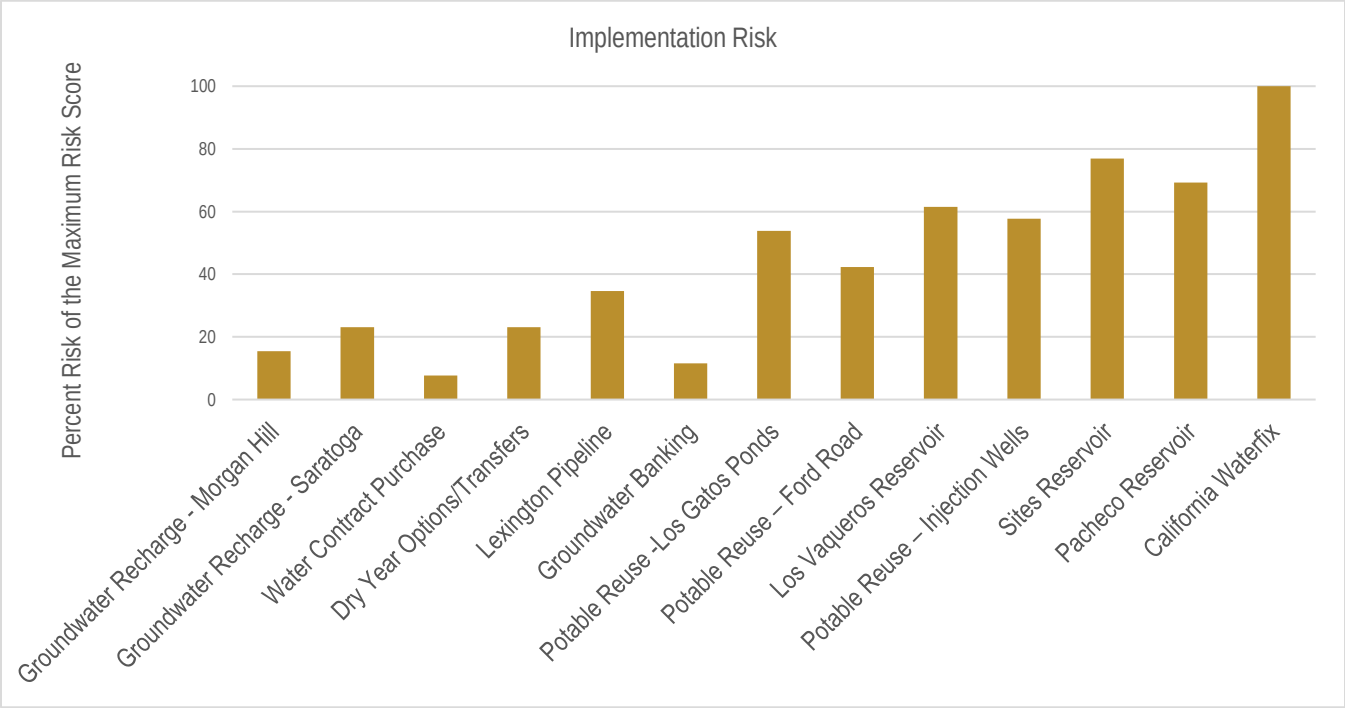


FIGURE 5. WEIGHTED OPERATIONS RISK

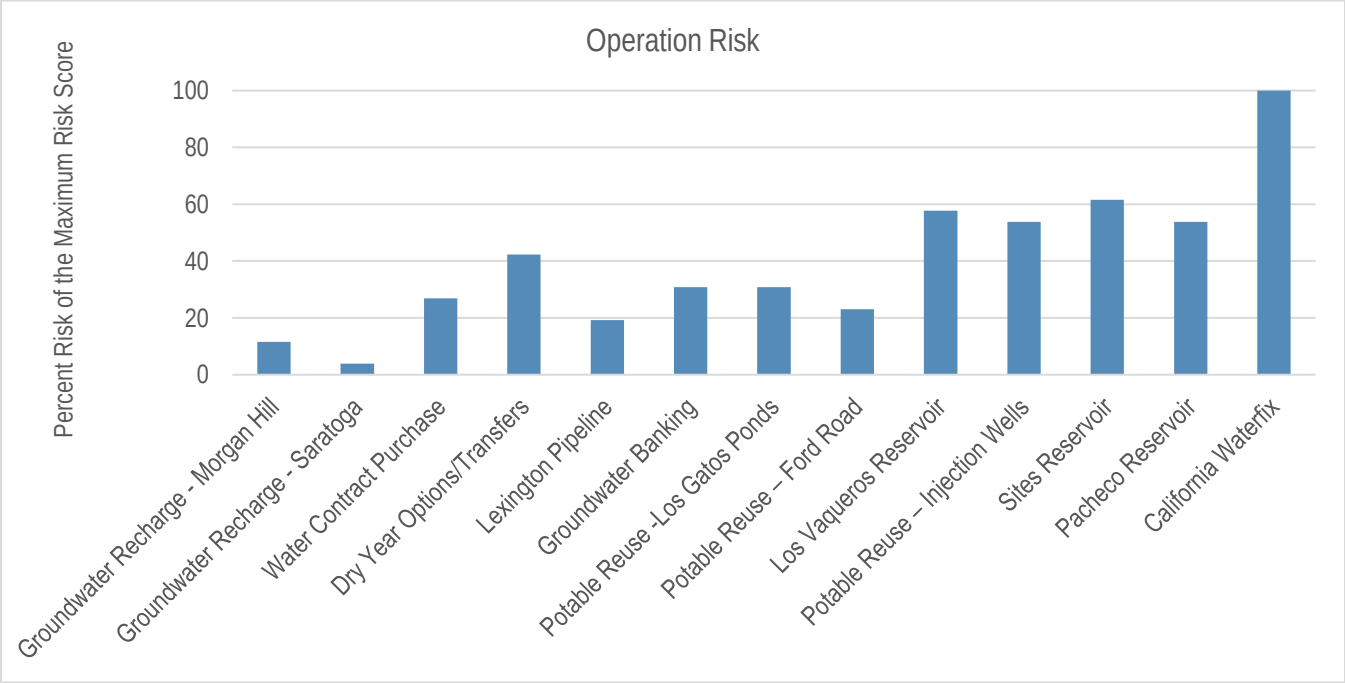


FIGURE 6. WEIGHTED STAKEHOLDER RISK

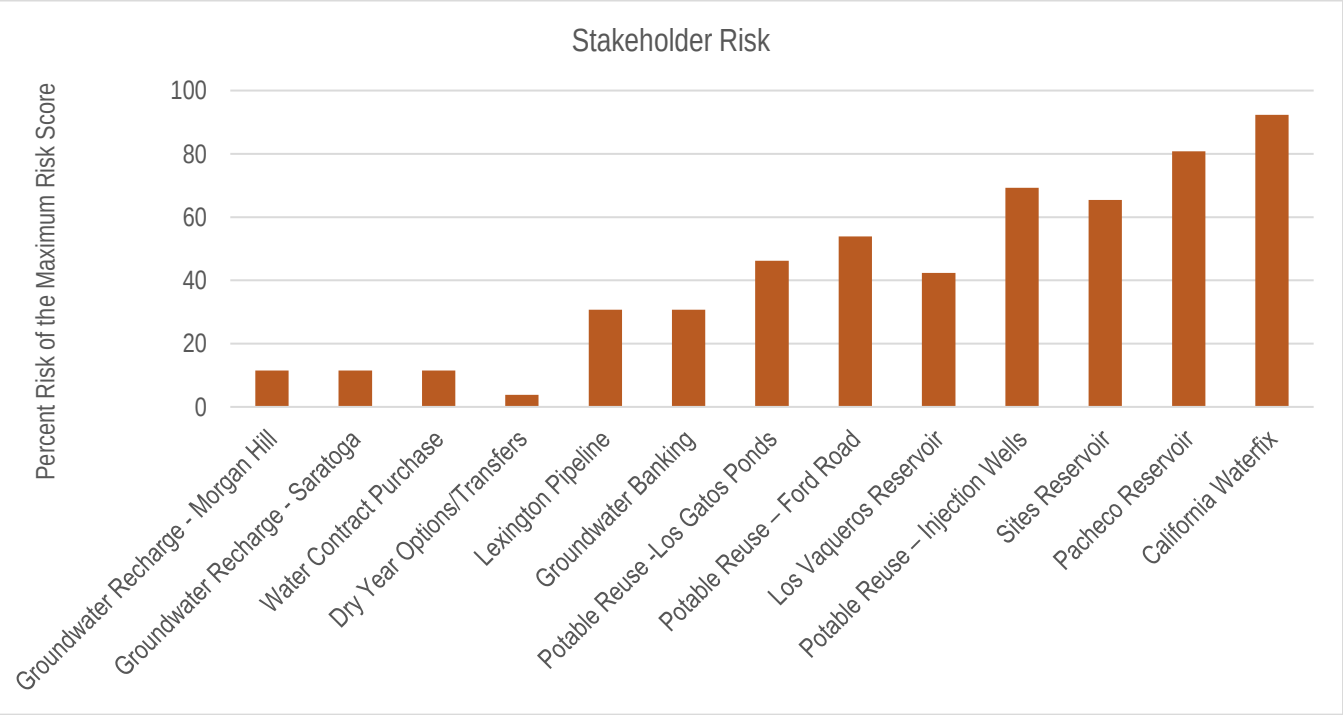
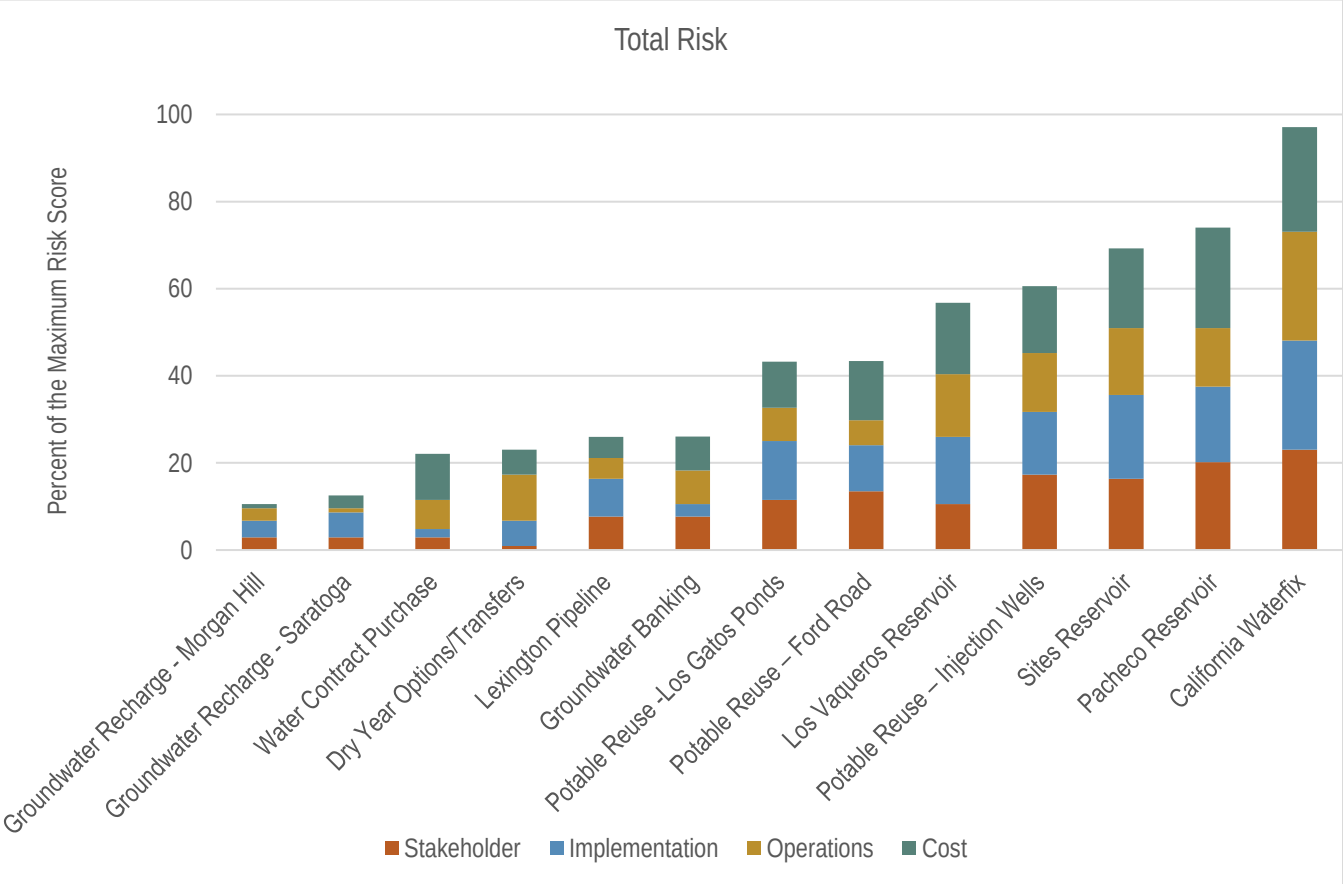


FIGURE 7. TOTAL WEIGHTED PROJECT RISK



PROJECT RISK SUMMARY AND CONCLUSIONS

California WaterFix and the three surface water reservoirs (Pacheco, Sites, and Los Vaqueros) are among the highest risk projects based on this analysis. California WaterFix and Sites Reservoir risk is distributed relatively evenly among the four categories, while Pacheco has more cost risk and Los Vaqueros has less stakeholders risk compared to the other risk categories.

Uncertainties related to future regulatory requirements for the California WaterFix may affect project operations and impact water supply yields. Although significant contingencies have been included in the cost estimates, there could be cost overruns due to the size and complexity of the construction project. Additionally, opposition from vocal stakeholders and potential legal challenges could lead to schedule delays and changes in proposed operations that impact the project's water supply benefit.

Sites Reservoir would depend on Sacramento River flows and Pacheco Reservoir would store Delta-conveyed supplies (along with local water), causing uncertainty in the amount of water that either reservoir will supply. Future environmental regulations and hydrologic changes could significantly affect the modeled yields from the reservoirs. In addition, both reservoirs will likely have significant environmental mitigation requirements that could further reduce the water supply and increase the project costs.

In contrast to Sites, California WaterFix, and Los Vaqueros, the risk analysis results suggest that the Pacheco Reservoir cost-related risk is more significant than the stakeholders, implementation, and operations risks. The cost risks are based on concerns that Pacheco partners have less financial resources and the project has less secure funding sources compared to Sites, California WaterFix, or Los Vaqueros. In addition, the cost estimate for construction and operations/maintenance could increase considerably since the project is in the early phases of planning.

The analysis shows that Los Vaqueros Reservoir has a relatively low risk compared to the other reservoir proposals and California WaterFix, with 12 percent less total risk than the next riskiest reservoir (Sites Reservoir). Risk experts from each of the risk categories commented that Los Vaqueros has been expanded before with little opposition, on time, and on budget. In addition, experts from the costs group noted that there are several potential cost-sharing partners that are financially reliable. There are potential implementation and operation complexities due to the large number of partners.

The analysis also shows that potable reuse using injection wells is riskier than potable reuse using recharge ponds. Injection wells are a relatively new technology compared to recharge ponds and recharge pond operations, maintenance, and costs are better understood. However, experts were concerned that Ford Ponds will require decommissioning several retailer wells, potentially being a stakeholder acceptance and project implementation issue. General potable reuse concerns included public acceptance, poor cost estimates for advanced purification systems, and unknown regulatory requirements. However, experts thought it is less risky than reservoirs or California WaterFix because the water will be a drought-proof, reliable, local supply and that the current socio-political environmental surrounding potable reuse as a water supply will help improve public perception.

Groundwater banking and Lexington Pipeline both had the same amount of total risk. However, compared to Lexington Pipeline, groundwater banking had higher cost and operations risks and lower implementation risks. Since the District already participates in groundwater banking with Semitropic Water Storage District (Semitropic), stakeholders are familiar banking and the associated costs risks. In addition, implementation risks and operations risks are like those with Semitropic in that there needs to be exchange capacity in dry years and the storage is not in-county. While those risks exist, they are relatively small compared to other projects

since the District has experience planning for and mitigating those risks. However, the new potential banking partners will need to build infrastructure to be able to bank District water.

In contrast to groundwater banking, most of the risk associated with Lexington Pipeline is implementation risk. The implementation concern is the ability to build the pipeline through urban areas and potentially complex geologies. Since the pipeline would be locally maintained and operated, there are less operational and cost-related risks. The main cost risk associated with Lexington Pipeline is the construction cost. In contrast, the District would not control the groundwater banking operations and costs would be a recurrent negotiation.

Imported water contract purchase and dry year transfer risks are primarily associated with cost and operation. The contract purchase option is a permanent transfer of SWP Table A contractual water supplies, which are subject to the same regulatory restrictions and delivery uncertainties as our current imported water supplies. In addition, the SWP South Bay Aqueduct has conveyance limits that could make it difficult to receive additional Table A contract water during higher allocation years. In contrast, dry year transfers can only be delivered during specific months. However, if dry year transfers are available, there is little risk that the District will not receive the purchased transfer water. Imported water contract purchase and dry year transfer are both lower risk relative to most other projects since neither require construction, reducing their implementation and cost risks. However, stakeholder experts suggested that it may have poor optics to buy more Table A water when we already do not receive 100 percent of our contract allotment and that it may be difficult to find someone interested in selling their Table A water contract. Similarly, dry year transfers may not be available for purchase when needed.

The Morgan Hill (Butterfield) recharge channel and Saratoga recharge pond were the lowest risk projects because they are less costly than other projects, are local, and the District has successfully completed similar projects. Morgan Hill (Butterfield) recharge channel is currently owned by Morgan Hill and actively used for stormwater conveyance during the winter. To use the channel for recharge as planned, the District will need to coordinate operations with Morgan Hill and extend the District's Madrone Pipeline to the channel. The chief concern with Saratoga recharge pond is identifying and purchasing a suitable property for recharge.

In general, the lowest risk projects are those that are locally controlled or similar to already completed projects. Imported water rights purchase, dry year transfer, and groundwater banking are current practices, so the District is prepared for the uncertainties associated with those projects. Similarly, Morgan Hill (Butterfield) recharge channel is similar to the Madrone recharge channel and is locally controlled. Potable reuse is the newest technology the District is considering, but the facilities are locally controlled and the District is currently testing potable reuse to confirm its operational capabilities. Experts did find potable reuse with recharge ponds to be lower risk than potable reuse with injection wells. The District has experience managing recharge ponds, consistent with the conclusion that lower risk projects are those that are most similar to existing District projects. Projects that require substantial construction and cost-sharing are higher risk, such as California WaterFix and the Pacheco, Sites, and Los Vaqueros Reservoirs.

This risk assessment helps provide the Board of Directors and external stakeholders more thorough understanding of each proposed project. Understanding project risks and how these risks may materialize can help determine which projects to invest in and what project-related issues to prepare for in the future as project development proceeds.

Appendix A: Project and Program Descriptions (as of September 2017)

Project	Pros	Cons	Average Annual Yield (AFY)[1]	Present Value Cost to District (2017)	Cost/AF
California WaterFix: Constructs two 40-foot diameter tunnels at least 100 feet below ground surface capable of diverting up to 9,000 cubic feet-per-second from the Sacramento River and delivering it to the federal and state pumps. Alternative to conveying water all Central Valley Project and State Water Project supplies through the Delta. Would require environmental flow and water quality criteria be met.	• Secures existing Delta-conveyed supplies • Upgrades aging infrastructure • Protects the environment through less impactful diversions • Improves reliability of other Delta-conveyed supplies and transfers • Protects water quality	• Implementation complexity • Long-term operational uncertainty • Stakeholder opposition • Financing uncertainty	41,000	$620 million	$600
Dry Year Options / Transfers: Provides 12,000 AF of State Water Project transfer water during critical dry years. Amount can be increased or decreased. Can also include long-term option agreements.	• Provides supply in critical years when needs are greatest • Allows for phasing • Can implement in larger increments • Complements all other projects	• Subject to Delta-restrictions • Increases reliance on Delta • Cost volatility • Uncertainty with willing sellers	2,000	$100 million	$1,400

[1] The average annual yield of many projects depends on which projects they are combined and the scenario being analyzed. For example, groundwater banking yields is higher in portfolios that include wet year supplies. Similarly, they would be lower in scenarios where demands exceed supplies and excess water is unavailable for banking.

Project	Pros	Cons	Average Annual Yield (AFY)[1]	Present Value Cost to District (2017)	Cost/AF
Groundwater Banking: Provides 120,000 AF of banking capacity for Central Valley Project and State Water Project contract water. Sends excess water to a groundwater bank south of the Delta during wet years and times of surplus for use during dry years and times of need. Annual put and take capacities of 30,000 AFY. Project more effective in portfolios that include new supplies.	• Significantly reduces drought shortages when paired with projects with all-year supply • Allows for phasing	• Subject to Delta restrictions • Uncertainty with Sustainable Groundwater Management Act implementation	2,000	$170 million	$3,900
Groundwater Recharge – Morgan Hill Recharge: Extends the Madrone Pipeline from Madrone Channel to Morgan Hill's Butterfield Channel and Pond near Main Street. Would need to be operated in conjunction with the City's stormwater operations.	• Optimizes the use of existing supplies • Conjunctive use strategy • Helps drought recovery • Local project	• Minimal impact on drought shortages • North County locations limited • Potential siting conflicts with existing land uses	2,000	$20 million	$400
Groundwater Recharge – Saratoga: Constructs a new groundwater recharge facility in the West Valley, near the Stevens Creek pipeline.			1,000	$50 million	$1,300

Project	Pros	Cons	Average Annual Yield (AFY)[1]	Present Value Cost to District (2017)	Cost/AF
Lexington Pipeline: Constructs a pipeline between Lexington Reservoir and the raw water system to provide greater flexibility in using local water supplies. The pipeline would allow surface water from Lexington Reservoir to be put to beneficial use elsewhere in the county, especially when combined with the Los Gatos Ponds Potable Reuse project which would utilize the capacity of the Los Gatos recharge ponds where most water from Lexington Reservoir is currently sent. In addition, the pipeline will enable the District to capture some wet-weather flows that would otherwise flow to the Bay.	• Optimizes the use of existing local supplies • Increases local flexibility • Complements potable reuse	• Water quality issues will require pre-treatment/management • Minimal reduction in drought shortages	3,000	$90 million	$1,000

Project	Pros	Cons	Average Annual Yield (AFY)[1]	Present Value Cost to District (2017)	Cost/AF
Los Vaqueros Reservoir: Secures an agreement with Contra Costa Water District and other partners to expand the off-stream reservoir by 110,000 AF (from 160 TAF to 275 TAF) and construct a new pipeline (Transfer-Bethany) connecting the reservoir to the South Bay Aqueduct. Assumes District's share is 35,000 AF of storage, which is used to prorate costs. Emergency storage pool of 20,000 AF for use during droughts. District would also receive Delta surplus supplies when there is capacity to take. Average yield for District about 3,000 AFY. Assumes sales of excess District supplies to others. Transfer-Bethany Pipeline provides about ¾ of the project benefits at ¼ of the cost.	• Provides drought supplies • Improved transfer/exchange capacity • Allows for phasing (Transfer-Bethany Pipeline provides significant benefit) • Complements projects with all-year supply • Supports regional reliability • Public and agency support	• Operational complexity • Institutional complexity	3,000	$40 million	$400
Pacheco Reservoir: Enlarges Pacheco Reservoir to 140,000 AF. Assumes local inflows and ability to store Central Valley Project supplies in the reservoir. Construction in collaboration with Pacheco Pass Water District and San Benito County Water District. Potential other partners.	• Locally controlled • Addresses San Luis Reservoir Low-Point problem • Provides flood protection • Provides cold water for fisheries • Increases operational flexibility	• Impacts to cultural resources • Long-term operational uncertainty • Increases long-term environmental commitments • May require use of Delta-conveyed supplies to meet environmental commitments • Stakeholder opposition	6,000	$450 million	$2,700

Project	Pros	Cons	Average Annual Yield (AFY)[1]	Present Value Cost to District (2017)	Cost/AF
Potable Reuse – Ford Pond: Constructs potable reuse facilities for 5,000 AFY of groundwater recharge capacity at/near Ford Ponds.	• Local supply • Not subject to short or long term climate variability • Allows for phasing	• Reverse osmosis concentrate management for injections wells and Los Gatos Ponds projects • Uncertainty with agreements with San Jose • Injection well operations complex • Potential public perception concerns	3,000	$190 million	$2,500
Potable Reuse – Injection Wells: Constructs (or expands in conjunction with the Los Gatos Ponds project) potable reuse facilities for 5,000 to 15,000 AFY of groundwater injection capacity.			5,000 – 15,000	$290 million - $860 million	$2,000
Potable Reuse -Los Gatos Ponds: Constructs facility to purify water treated at wastewater treatment plants for groundwater recharge. Potable reuse water is a high-quality, local drought-proof supply that is resistant to climate change impacts. Assumes 24,000 AFY of advanced treated recycled water would be available for groundwater recharge at existing recharge ponds in the Los Gatos Recharge System.			19,000	$990 million	$1,700

Project	Pros	Cons	Average Annual Yield (AFY)[1]	Present Value Cost to District (2017)	Cost/AF
Sites Reservoir: Establishes an agreement with the Sites JPA to build an off-stream reservoir (up to 1.8 MAF) north of the Delta that would collect flood flows from the Sacramento River and release them to meet water supply and environmental objectives. Assumes District's share is 24,000 AF of storage, which is used to prorate yields from the project. The project would be operated in conjunction with the SWP and CVP. In some years, District would receive less Delta-conveyed supply with the project than without the project.	• Off-stream reservoir • Improves operational flexibility of Statewide water system	• Increases reliance on the Delta • Subject to Delta risks • Long-term operational uncertainty • Operational complexity • Institutional complexity	8,000	$170 million	$800
Water Contract Purchase: Purchase 20,000 AF of SWP Table A contract supply from other SWP agencies.	• Provides all year supply	• Increases reliance on the Delta • Subject to Delta risks • Willing sellers' availability	12,000	$360 million	$800

APPENDIX B. WSMP 2017 PROJECT RISK ANALYSIS METHODOLOGY

CONTENTS

The following staff participating in the risk analysis:

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BACKGROUND:

At the expert panel meeting on June 8, 2017, a panel member suggested that the Water Supply Planning team conduct a risk assessment on the projects being considered as part of the WSMP. A participant at the expert panel meeting suggested using a Paired Comparison Analysis. The WSMP project team and expert panel brainstormed elements of project risk, which the technical team then used to create risk categories that encompassed the risk elements. After the meeting, the project team identified internal subject matter experts for each risk category to participate in the paired comparison risk assessment. The project team then decided to combine the paired comparison risk analysis with a traditional risk ranking (severity and likelihood) to better understand the relative magnitude of each risk. This provides a detailed explanation of the methodology employed. The results and conclusions are presented in the September 8, 2017, *WSMP 2017 – PROJECT RISKS: Results of Pairwise and Traditional Risk Analyses.*

RISK CATEGORIES

The WSMP project team reviewed the risk elements brainstormed during the expert panel meeting and grouped them into four risk categories: stakeholder, implementation, operations, and cost (Table 1). The risk categories reflect the different stages of a project where risk can occur. Each project requires approval or support from a diverse set of stakeholders, ranging from the public to the Board of Directors. This may be needed only at the beginning of a project, or throughout as is the case with regulatory approval. Once a project is supported by stakeholders, the project enters the planning/implementation phase. Implementation risks capture risks that occur during planning, design, permitting, and construction. The cost risk category encompasses elements of uncertainty associated with the initial cost estimates through the uncertainty associated with recurring operations and maintenance costs during the project's lifespan. Once the project is implemented, issues associated with project operations will need to be addressed throughout the lifespan of the project. An example of a potential recurring operations issue is the need to re-operate as environmental regulations or climate changes.

Once the project team determined the risk categories, they reviewed risk management references to ensure they were presenting a comprehensive assessment of risk. During the literature review, the technical team found a risk category structure named POET that is analogous to their risk categorization (TRW, Inc.). POET categories include political, operational, economic, and technical, and is used to assess challenges and opportunities associated with programs, customer challenges, and strategies, regardless of the size and complexity.

- Political: Assess and articulate associated leadership, mission/business decision drivers, organizational strengths/weaknesses, policies, governance, expectation management (e.g., stakeholder relationship), program management approach, etc.
- Operational: Obtain and evaluate mission capabilities, requirements management, operational utility, operational constraints, supporting infrastructure and processes, interoperability, supportability, etc.
- Economic: Review capital planning and investment management capabilities, and assess the maturity level of the associated processes of budgeting, cost analysis, program structure, acquisition, etc.
- Technical: Assess and determine the adequacy of planned scope/scale, technical maturity/obsolescence, policy/standards implementation, technical approach, etc.

The risk categories determined by the project team have slightly different names than the POET categories, but they cover very similar content.

Table 1: Risk Category and Risk Elements.

Risk Category	Risks
Costs	• Capital costs, including quality of cost estimate • Costs of regulatory compliance • Match requirements and cost-sharing • Counter-party risk • Stakeholders and rate payer perspective and ability to pay • Financing and funding security • Scheduling issues • Economic fluctuations and instability • Stranded assets
Implementation	• Phasing potential • Required time table • Reoperation requirements • Land availability • Constructability (e.g., structural issues, technology) • Managerial capacity (knowledge and resource availability) • Range of implementation options • Regulatory requirements • Project planning maturity
Operations	• Climate change • Yield variability and reliability • Operating Partnerships • Uncertainty of long-term operations and maintenance costs • Project inter-dependency • Environmental and water quality regulations • Control • Appropriate infrastructure • Redundancy • Emergency operations/asset failures
Stakeholders	• Public support • Permitting risks • Media • Internal stakeholder concerns • External stakeholder opposition • Environmental/special interest groups • Partnership risks • Government stakeholders • Costs

WSMP PROJECT RISK ASSESSMENT

After a review of risk assessment methodologies, the project team determined that while a pairwise comparison provides the relative risk ranking of projects, it does not indicate how much riskier one project is in comparison to one of lower rank. To quantify the magnitude of risk, the project team decided to add an evaluation of risk severity and likelihood.

To complete the risk assessment, the project team assembled five to six subject matter experts from the District into four groups, one group for each risk category. The team chose District experts that had knowledge specific to their assigned risk category (Table 1). At each of the four risk assessment meetings, the following agenda was followed:

1) Projects were discussed to the experts could understand the projects sufficiently to perform their analysis.
2) District experts reviewed and brainstormed additional elements of risk associated with the category.
3) District experts independently completed a pairwise comparison.
4) A meeting facilitator tallied the pairwise comparisons during the meeting and the District experts discussed some of the project comparisons where experts had disagreements.
5) District experts independently completed the risk magnitude assessment, which was tallied afterwards.

After this assessment was completed, the project team added four additional projects to the list. This required the analysis to be conducted again with the added projects. The same process was followed for the second analysis, with the following exceptions:

- A subset of the same staff was used in the second analysis, with four to five experts per category.
- The subject matter experts did not meet in person for the second analysis, so there was not the same level of discussion or ability to ask questions about projects as during the first analysis.

PAIRED COMPARISON

The subject matter experts received a matrix of the projects where they could complete their paired comparisons (Table 2A). Each expert compared one project to another and identified which project between the two is of greater risk for the risk category being evaluated. The project team then tabulated the results during the meeting for the first phase (Table 2B- All results), and the experts discussed some of the project comparisons where there was not consensus. Given time constraints, not all paired comparisons with disagreements could be discussed; instead, the project team selected the most significant disagreements for discussion. For the second phase, the experts were provided the same information and forms, and they completed the assessments on their own.

Table 2A: Pairwise Template

OPERATIONS Risk	Butterfield Recharge Pond **B**	Groundwater Banking South of Delta **G**	Sites Reservoir **S**	Los Vaqueros Reservoir Expansion **L**	Potable Reuse – Ford Road **PF**	Potable Reuse – Injection Wells **PI**	Imported Water Rights Purchase **I**	Pacheco Reservoir **PR**	California Waterfix **C**
Butterfield Recharge Pond **B**	X								
Groundwater Banking South of Delta **G**	X	X							
Sites Reservoir **S**	X	X	X						
Los Vaqueros Reservoir Expansion **L**	X	X	X	X					
Potable Reuse – Ford Road **PF**	X	X	X	X	X				
Potable Reuse – Injection Wells **PI**	X	X	X	X	X	X			
Imported Water Rights Purchase **I**	X	X	X	X	X	X	X		
Pacheco Reservoir **P**	X	X	X	X	X	X	X	X	
California Waterfix **C**	X	X	X	X	X	X	X	X	X

Table 2B: Pairwise Results

	Butterfield Recharge Pond **B**	Groundwater Banking South of Delta **G**	Sites Reservoir **S**	Los Vaqueros Reservoir Expansion **L**	Potable Reuse – Ford Road **PF**	Potable Reuse – Injection Wells **PI**	Imported Water Rights Purchase **I**	Pacheco Reservoir **PR**	California Waterfix **C**
Butterfield Recharge Pond **B**	X	G5	S5	L5	PF5	PI5	I4 B1	PR5	C5
Groundwater Banking South of Delta **G**	X	X	S5	L3 G2	PF3 G2	PI2 G3	I2 G3	PR5	C5
Sites Reservoir **S**	X	X	X	S5	S5	PI1 S4	S5	PR5	C5
Los Vaqueros Reservoir Expansion **L**	X	X	X	X	PF1 L4	PI1 L4	I1 L4	PR5	C5
Potable Reuse – Ford Road **PF**	X	X	X	X	X	PI5	I3 PF2	PR5	C5
Potable Reuse – Injection Wells **PI**	X	X	X	X	X	X	I3 PI2	PR5	C5
Imported Water Rights Purchase **I**	X	X	X	X	X	X	X	PR5	C5
Pacheco Reservoir **P**	X	X	X	X	X	X	X	X	C4 PR1
California Waterfix **C**	X	X	X	X	X	X	X	X	X

RISK SCORING METHODOLOGY

Following the pairwise comparison, the experts scored the risk severity and likelihood for individual projects (Table 3). The goal of this risk scoring exercise is to help determine how much riskier one project is from another and to identify if the risk is primarily from the likelihood that the risk materializes, the severity of the outcome if the risk

did materialize, or both. For example, it is unlikely that an earthquake would destroy a dam, but if it did, the results could be catastrophic for life and property (low likelihood, high severity). However, when completing this exercise, experts considered all the risk elements discussed during the pairwise comparison activity to determine one project risk rating for severity and one for likelihood. The ranking criteria for each risk category is explained in detail in the next section.

Table 3: Risk Scoring Template

	Severity of Implementation Risk Impact 1-4, 1 - Low Severity 4 - High severity	**Likelihood of Implementation Risk Impact 1-4, 1 - Very unlikely 4 - Very likely within timeframe**
Butterfield Recharge Pond		
Groundwater Banking South of Delta		
Sites Reservoir		
Los Vaqueros Reservoir Expansion		
Potable Reuse – Ford Road		
Potable Reuse – Injection Wells		
Imported Water Rights Purchase		
Pacheco Reservoir		
California Waterfix		

The scores from this exercise were multiplied by the ordered ranking from the pairwise analysis to determine total risk. The following section provides detailed methods for the total risk calculation.

An example of how the subject matter experts could consider risk rating was provided, but not relied upon due to the many different sub-elements of risk to consider.

EXAMPLE:

Rank the **likelihood** of a stakeholder risk adversely impacting the project

1 = Very unlikely – Support available within 5 to 10 years

2 = Unlikely – appropriate support will Probably be garnered within 5 to 10 years

3 = Likely - Probably will NOT get support within 5 to 10 years

4 = Very likely - Almost certain NOT to get needed support within 5 to 10 years

Rank the **severity** of a stakeholder risk adversely impacting the project:

1 = Low – Stakeholder support exists or lack of support will not affect project success

2 = Medium –Potential for stakeholder issues to impact project success

3 = High – Potential for stakeholder issues to significantly impact project success

4 = Very High – Likely that lack of stakeholder support would result in project failure

TOTAL PROJECT RISK CALCULATION

The project team calculated category risk for each project by weighting the pairwise ranking by the severity and likelihood (equation 1). Then, the category risks were summed to obtain each project's total risk.

Equation 1

$$Risk_{category} = (1 + \frac{Severity + Likelihood}{8}) \times Pairwise\ Ranking$$

The severity and likelihood score is divided by eight (the maximum possible combined score) to represent severity and likelihood as a portion of the maximum possible combined score. The technical team then added that proportion to one (1) so that the pairwise analysis remains the primary driver of the order of risk, and then the severity and likelihood is a multiplicative factor that acts on the risk ranking. If the severity and likelihood is significant, it will substantially increase the total risk score. If the severity and likelihood score are small, there will be little impact on the total risk score. Alternatively, not adding one (1) to the severity and likelihood proportion would result in the severity and likelihood decreasing the ranking number unless the severity and likelihood proportion equals one.

CONCLUSION

The risk assessment methods were easy to apply to the projects and provided a robust and multi-variant method assess risks associated with each project. However, explaining the methods clearly to the subject matter experts was needed. Since the second phase of review with the added project did not include discussions or the opportunity to ask questions, it may have been subject to less project understanding by the experts.

The results are discussed in September 8, 2017, *WSMP 2017 – PROJECT RISKS: Results of Pairwise and Traditional Risk Analyses.*

Water Supply Master Plan Update 2018
Potential Projects (as of December 2018)

Projects with Preliminary Cost and Yield Estimates				
Project	**District Lifecycle Cost (Present Value, 2017)[1]**	**Average Annual Yield (AFY)[2]**	**Cost/AF**	**Relative Risk[3]**
Anderson Reservoir Expansion: Increases reservoir storage by 100,000 AF to about 190,000 AF, increasing the District's ability to capture and store local runoff. Planning for reconstruction of Anderson Reservoir to meet seismic standards is currently underway. Consideration of also expanding the reservoir would likely delay the required work.	$1.2 billion	10,000	$5,000	---
Bay Area Brackish Water Treatment: Secures a partnership with other Bay Area agencies to build a brackish water treatment plant in Contra Costa County. District would receive up to 5 MGD of water in critical dry years. There are concerns about the complexity of permitting a desalination plant and the availability of water rights during dry periods when such a facility would be most needed. This project will require collaboration among multiple agencies and requires partners for moving forward. The District is a member of Bay Area Regional Reliability and will continue to work on regional solutions to water reliability.	$80 million	1,000	$2,900	---
Calero Reservoir Expansion: Expands Calero Reservoir storage by about 14,000 AF to 24,000 AF. Planning and design for Calero Reservoir Seismic Retrofit project is currently underway. Consideration of also expanding the reservoir would likely delay the required work.	$180 million	3,000	$2,200	---

[1] The District Lifecycle Cost (Present Value, 2017$) includes capital, operations, maintenance, rehabilitation, and replacement costs, as applicable, for a 100-year period, discounted back to 2017 dollars. All costs are subject to change pending additional planning and analysis.

[2] The average annual yield of many projects depends on which projects they are combined with and the scenario being analyzed. For example, groundwater banking yields are higher in portfolios that include wet year supplies. Similarly, they would be lower in scenarios where demands exceed supplies and excess water is unavailable for banking.

[3] District staff complete risk ranking analyses in September 2017 and December 2018. Not all the potential projects were included in the analysis. "---" indicates the project was not included in either of the risk ranking analysis.

Water Supply Master Plan Update 2018
Potential Projects (as of December 2018)

Projects with Preliminary Cost and Yield Estimates				
Project	**District Lifecycle Cost (Present Value, 2017)[1]**	**Average Annual Yield (AFY)[2]**	**Cost/AF**	**Relative Risk[3]**
California WaterFix: Constructs alternative conveyance (one or two tunnels) capable of diverting up to 9,000 cubic feet-per-second from the Sacramento River and delivering it to the federal and state pumps. This would result in less impactful diversions, help maintain existing deliveries, improve the ability to do transfers, and protect water quality from sea level rise. The project has implementation complexity, uncertainty, and stakeholder opposition.	$620 million	41,000	$600	High - Extreme
Church Avenue Pipeline: Diverts water from the Santa Clara Conduit to the Church Avenue Ponds. The Morgan Hill recharge projects provide the same or better yields at a lower cost.	$30 million	1,000	$900	---
Dry Year Options / Transfers: Provides 12,000 AF of State Water Project transfer water during critical dry years. Amount can be increased or decreased. Can also include long-term option agreements. There are uncertainties with long-term costs and ability to make transfers in critical dry years.	$100 million	2,000	$1,400	Low
Groundwater Banking: Provides 120,000 AF of banking capacity for Central Valley Project and State Water Project contract water. Sends excess water to a groundwater bank south of the Delta during wet years and times of surplus for use during dry years and times of need. Amount could be increased or decreased. There are uncertainties with the ability to make transfers in critical dry years and Sustainable Groundwater Management Act implementation.	$60 million	2,000	$1,300	Low

Water Supply Master Plan Update 2018
Potential Projects (as of December 2018)

Projects with Preliminary Cost and Yield Estimates				
Project	**District Lifecycle Cost (Present Value, 2017)[1]**	**Average Annual Yield (AFY)[2]**	**Cost/AF**	**Relative Risk[3]**
Lexington Pipeline: Constructs a pipeline between Lexington Reservoir and the raw water system to provide greater flexibility in using local water supplies. The pipeline would allow surface water from Lexington Reservoir to be put to beneficial use elsewhere in the county and increase utilization of existing water rights, especially in combination with the Los Gatos Ponds Potable Reuse project. In addition, the pipeline will enable the District to capture some wet-weather flows that would otherwise flow to the Bay. Water quality issues would require pre-treatment/management. An institutional alternative could include an agreement to use some of the District's Lexington Reservoir water right at San Jose Water Company's Montevina Water Treatment Plant.	$90 million	3,000	$1,000	Low
Local Land Fallowing: Launches program to pay growers not to plant row crops in critical dry years. This would primarily save water in the South County. The South County recharge projects have similar or greater yields at a lower cost and are more consistent with County land use policy and grower interests.	$50 million	1,000	$2,400	---
Los Vaqueros Reservoir: Secures an agreement with Contra Costa Water District and other partners to expand the off-stream reservoir by 115 TAF (from 160 TAF to 275 TAF) and construct a new pipeline (Transfer-Bethany) connecting the reservoir to the South Bay Aqueduct. Assumes District's share is 30 TAF of storage, which includes an emergency storage pool of 20 TAF for use during droughts. Would require funding and operating agreements with multiple parties, likely including formation of a Joint Powers Authority.	$90 million	2,000	$1,200	Medium
Morgan Hill Recycled Water: Constructs a 2.25 MGD scalping plant in Morgan Hill. Would need to replace a lower cost recycled water project in Gilroy due to capacity constraints on the system.	$80 million	3,000	$1,100	---

Water Supply Master Plan Update 2018
Potential Projects (as of December 2018)

Projects with Preliminary Cost and Yield Estimates				
Project	**District Lifecycle Cost (Present Value, 2017)[1]**	**Average Annual Yield (AFY)[2]**	**Cost/AF**	**Relative Risk[3]**
No Regrets Package	$100 million	11,000	$400	Medium
Advanced Metering Infrastructure (AMI): Implements a cost share program with water retailers to install AMI throughout their service area. AMI would alert customers of leaks and provide real-time water use data that allows users to adjust water use.	$30 million	4,000	$200	Low
Graywater Rebate Program Expansion: Expand the District's existing rebate program for laundry-to-landscape graywater systems. Potentially could include a direct installation program and/or rebates for graywater systems that reuse shower and sink water.	$1 million	< 1,000	$2,200	Low
Leak Repair Incentive: Provides financial incentivizes homeowners to repair leaks.	$2 million	< 1,000	$7,800	Low
New Development Model Ordinance: Encourages municipalities to adopt an ordinance for enhancing water efficiency standards in new developments. Components include submetering multi-family residences, onsite water reuse (rainwater, graywater, black water), and point-of use hot water heaters.	$1 million	5,000	$100	Medium
Stormwater - Agricultural Land Recharge: Flooding or recharge on South County agricultural parcels during the winter months.	$10 million	1,000	$1,000	Low
Stormwater - Rain Barrels: Provides rebates for the purchase of a rain barrels.	$40 million	< 1,000	$15,100	Low
Stormwater - Rain Gardens: Initiates a District rebate program to incentivize the construction of rain gardens in residential and commercial landscapes.	$10 million	< 1,000	$2,800	Low
Stormwater - San Jose: Constructs a stormwater infiltration system in San Jose. Assumes 5 acres of ponds. Potential partnership with City of San Jose.	$4 million	1,000	$100	Low
Stormwater – Saratoga #1: Constructs a stormwater infiltration system in Saratoga. Assumes 5 acres of ponds. Assumes easement rather than land purchase. Close to Stevens Creek Pipeline, so could also potentially be used as a percolation pond.	$4 million	< 1,000	$1,100	Low

Water Supply Master Plan Update 2018
Potential Projects (as of December 2018)

Projects with Preliminary Cost and Yield Estimates				
Project	**District Lifecycle Cost (Present Value, 2017)[1]**	**Average Annual Yield (AFY)[2]**	**Cost/AF**	**Relative Risk[3]**
Pacheco Reservoir: Enlarges Pacheco Reservoir to about 140,000 AF. Assumes local inflows and ability to store Central Valley Project supplies in the reservoir. Construction would be in collaboration with Pacheco Pass Water District and San Benito County Water District. The project would be operated to provide water for fisheries downstream of the reservoir and increase in-county storage. Other potential benefits could include managing water quality impacts from low-point conditions in San Luis Reservoir and downstream flood protection. Potentially significant environmental and cultural impacts are associated with the project.	$470 million	6,000	$2,700	Medium
Potable Reuse – Ford Pond: Constructs potable reuse facilities for 4,000 AFY of groundwater recharge capacity at/near Ford Ponds. Potable reuse water is a high-quality, local drought-proof supply that is resistant to climate change impacts. The project would require agreements with the City of San Jose and may require moving existing water supply wells.	$290 million	3,000	$2,800	Medium
Potable Reuse – Injection Wells: Constructs potable reuse facilities for 15,000 AFY of groundwater injection capacity. Potable reuse water is a high-quality, local drought-proof supply that is resistant to climate change impacts. The injection wells could be constructed in phases and be connected to the pipeline carrying purified water to the Los Gatos Ponds. The project would require agreements with the City of San Jose and reverse osmosis concentrate management. Injection well operations are more complex than recharge pond operations.	$1.2 billion	12,000	$3,100	High

Water Supply Master Plan Update 2018
Potential Projects (as of December 2018)

Projects with Preliminary Cost and Yield Estimates				
Project	**District Lifecycle Cost (Present Value, 2017)[1]**	**Average Annual Yield (AFY)[2]**	**Cost/AF**	**Relative Risk[3]**
Potable Reuse - Los Gatos Ponds: Constructs a facility to purify water treated at wastewater treatment plants for groundwater recharge. Potable reuse water is a high-quality, local drought-proof supply that is resistant to climate change impacts. Assumes up to 24,000 AFY of advanced treated recycled water would be available for groundwater recharge at existing recharge ponds in the Los Gatos Recharge System. Some of the outstanding issues with the project are reverse osmosis concentrate management and agreements with the City of San Jose.	$1.2 billion	19,000	$2,000	Medium
Saratoga Recharge: Constructs a new groundwater recharge facility in the West Valley, near the Stevens Creek pipeline. Would help optimize the use of existing supplies. Land availability and existing land uses limit potential project locations.	$50 million	1,000	$1,300	Low
Sites Reservoir: Establishes an agreement with the Sites JPA to build an off-stream reservoir (up to 1,800 TAF) north of the Delta that would collect flood flows from the Sacramento River and release them to meet water supply and environmental objectives. Assumes District's share is 24 TAF of storage, which is used to prorate yields from the project. The project would be operated in conjunction with the SWP and CVP, which improves flexibility of the statewide water system but would be subject to operational complexity. The project would increase reliance on the Delta.	$250 million	8,000	$1,200	High
South County Recharge – Butterfield Channel: Extends the Madrone Pipeline from Madrone Channel to Morgan Hill's Butterfield Channel and Pond near Main Street. Would help optimize the use of existing supplies. Would need to be operated in conjunction with the City's stormwater operations.	$20 million	2,000	$400	Low

Water Supply Master Plan Update 2018
Potential Projects (as of December 2018)

Projects with Preliminary Cost and Yield Estimates				
Project	**District Lifecycle Cost (Present Value, 2017)[1]**	**Average Annual Yield (AFY)[2]**	**Cost/AF**	**Relative Risk[3]**
South County Recharge - San Pedro Ponds: Implements a physical or institutional alternative to enable the ponds to be operated at full capacity without interfering with existing septic systems in the vicinity.	$10 million	1,000	$400	---
South County Water Treatment Plant: Provides in-lieu groundwater recharge by delivering treated surface water to the Cities of Morgan Hill and Gilroy. Would require a connection to the Santa Clara Conduit or other raw water pipeline and pipelines from the plant to the cities' distribution systems. The District owns two properties that could potentially be used for this project. The South County recharge projects provide similar benefits at significantly lower cost.	$110 million	2,000	$2,300	---
Stormwater – Saratoga #2: Constructs a stormwater infiltration system on a parcel in Saratoga. Assumes 5 acres of ponds. Currently zoned as ag land; assumes land purchase. About 0.6 miles from the Stevens Creek Pipeline. The cost-effectiveness is low due to the land purchase requirement. Other stormwater projects are included in the "No Regrets" package.	$50 million	<1,000	$10,700	---
Transfer-Bethany Pipeline: Constructs a pipeline between CCWD's Transfer Facility to Bethany Reservoir that serves the South Bay Aqueduct and the California Aqueduct. Would provide an alternative to through-Delta conveyance of supplies from projects such as the Bay Area Brackish Water Treatment and Refinery Recycled Water Exchange projects. Also, it would facilitate conveyance of Delta surplus supplies or transfers from CCWD and East Bay Municipal Utility District. The pipeline is one element of the larger Los Vaqueros Reservoir Expansion Project. Would require funding and operating agreements with multiple parties, likely including formation of a Joint Powers Authority.	$50 million	1,000	$1,200	Medium

Water Supply Master Plan Update 2018
Potential Projects (as of December 2018)

Projects with Preliminary Cost and Yield Estimates				
Project	**District Lifecycle Cost (Present Value, 2017)[1]**	**Average Annual Yield (AFY)[2]**	**Cost/AF**	**Relative Risk[3]**
Uvas Pipeline: Captures excess water (e.g., water that would spill) from Uvas Reservoir and diverts the water to Church Ponds and a 25 acre-foot pond near Highland Avenue. The new pond would be adjacent to and connected by a pipe to West Branch Llagas Creek. The South County recharge projects provide similar or better yields at a lower cost.	$80 million	1,000	$2,500	---
Uvas Reservoir Expansion: Would expand Uvas Reservoir by about 5,100 AF to 15,000 AF, reducing reservoir spills. Project would be located on Uvas Creek, which currently provides good steelhead habitat. Other water storage options under consideration provide better yield for the cost.	$330 million	1,000	$21,200	---
Water Contract Purchase: Purchase 20,000 AF of SWP Table A contract supply from other SWP agencies. Would increase reliance on the Delta and be subject to willing sellers' availability. Could also include Long-Term Transfers being considered along with California WaterFix.	$360 million	12,000	$800	Medium

Water Supply Master Plan Update 2018 - Project Descriptions (as of August 2018)

Other Potential Projects
Conservation Rate Structures: Many retailers implement conservation rate structures. Given recent court rulings on rate structure, retailers are reluctant to add new conservation rate structures at this time.
Countywide Water Reuse Master Plan: The District is working with local recycled water producers, retailers, and other stakeholders to develop a Countywide Water Reuse Master Plan (CWRMP) that will address key challenges in potable water reuse, including: (1) identification of how much water will be available for potable reuse and non-potable recycled water expansion, (2) evaluation of system integration options, (3) identification of specific potable reuse and recycled water projects, and (4) development of proposals for governance model alternatives including roles and responsibilities. The CWRMP will also incorporate proposed infrastructure upgrades that would improve capacity; analyze seasonal, daily, and hourly demand trends to determine the opportunities to optimize flows during peak periods; update the existing and projected future demands of users and retailers; identify land requirements; and prioritize actions and improvements needed to meet the projected demands, including cost estimates of recommended improvements.
Del Valle Reoperations: This project, as currently envisioned, would allow for more storage in Lake Del Valle, a State Water Project facility in Del Valle Regional Park that is operated by East Bay Regional Park District. The benefits of the additional storage are primarily related to operational flexibility and water quality. The project may not increase long-term water supply yields or drought year yields. Staff is continuing to evaluate Del Valle reoperations in partnership with Alameda County Water District and Zone 7 Water Agency. If long-term water supply benefits are identified, staff will evaluate it as part of the Water Supply Master Plan.
Refinery Recycled Water Exchange: Central Contra Costa Sanitary District (Central San) is a wastewater agency in Contra Costa County. It currently produces about 2,000 acre-feet per year (AFY) of recycled water, but has wastewater flows that could support more than 25,000 AFY of recycled water production. The conceptual program would involve delivering recycled water to two nearby refineries that are currently receiving about 22,000 AFY of CCWD Central Valley Project (CVP) water; in exchange the District would receive some of CCWD's CVP water.
Retailer System Leak Detection/Repair: Recent legislation requires retailers to complete annual water loss audits, which will then be used by the State to establish water loss standards. Staff will reconsider this alternative after the standards are developed.
Shallow Groundwater Reuse: A feasibility study for the recovery and beneficial use of shallow groundwater was completed in 2009. Although potential sites for shallow groundwater reuse were identified, staff has identified several concerns. These concerns include water quality, sustainable yields, and lack of infrastructure for storage and conveyance. In addition, several reuse sites are in areas where recycled water is already delivered for non-potable use. Staff are continuing to look for opportunities to incorporate shallow groundwater reuse into the Water Supply Master Plan.

Water Supply Master Plan Update 2018 - Project Descriptions (as of August 2018)

Other Potential Projects
Shasta Reservoir Expansion: A Feasibility Study and Environmental Impact Statement have been completed for a Shasta Reservoir Expansion. The United States Bureau of Reclamation concluded the project is technically feasible, but that non-federal partners would need to pay for project implementation. State law prohibits Prop 1 storage funding for the project and restricts funding for any studies. Staff will continue to monitor opportunities related to Shasta Reservoir Expansion.
Temperance Flat Reservoir: Temperance Flat Reservoir would be located upstream of Friant Dam on the San Joaquin River. Staff's current analysis is that any water supply benefits to the District from the project would be indirect, largely manifested by lowered requirements for Delta pumping for delivery to the San Joaquin Exchange contractors at the Delta-Mendota Pool.

File No.: 18-0788

Agenda Date: 10/31/2018
Item No.: 4.2.

COMMITTEE AGENDA MEMORANDUM

Water Conservation and Demand Management

SUBJECT:
Water Supply Master Plan "No Regrets" Programs.

RECOMMENDATION:
This is a discussion item and the Committee may provide comments, however, no action is required.

SUMMARY:
This is a status update for the Water Supply Master Plan "No Regrets" package.

BACKGROUND:

The "No Regrets" package of projects and programs is broadly supported by stakeholders, relatively low cost, and can be implemented independently of other projects and programs that might be included in the Water Supply Master Plan. These projects and programs include:

1) Advanced Metering Infrastructure
2) Leak Repair Incentives
3) Graywater Rebate Program Expansion
4) Model Water Efficiency New Development Ordinance
5) Stormwater Capture

The Board approved beginning planning for implementing the No Regrets package at their September 19, 2017 meeting, and an update on this plan's implementation was presented to the Committee on April 30, 2018.

1) ADVANCED METERING INFRASTRUCTURE (AMI)

Staff is developing an Advanced Metering Infrastructure (AMI) Program to encourage the installation of AMI meters, and to maximize their savings potential by pairing the meters with software that will give real-time water data on an accessible online database, leak alerts, and home water use reports.

This program will involve establishing cost sharing agreements with water retailers in Santa

Clara County. To maximize participation and flexibility, the District will offer four options for water retailers, which water retailers may choose to combine. A brief description of the four options currently being considered include:

OPTION 1: New AMI Conversion Combined with Home Water Use Reports

District will rebate 50 percent of the cost of an AMI conversion, up to $70 per conversion. Additionally, District will fund 50 percent of the cost of the software linked to AMI, up to $4.50 per home per year, when combined with home water use reports.

OPTION 2: Existing AMI Combined with Home Water Use Reports

District will rebate $10 per AMI conversion currently in operation annually for seven years. If water retailer had previously received funding from the District for AMI conversion those conversions will not be eligible for additional funding. District will fund 50 percent of the cost of the software linked to AMI, up to $4.50 per home per year, when combined with home water use reports.

OPTION 3: AMI Conversion Only

District will rebate 50 percent of the cost of an AMI conversion, up to $70 per conversion.

OPTION 4: Water Use Reports Only

District will rebate 50 percent of the cost of Home Water Use Reports, up to $4.50 per home per year. No AMI or meter type requirement. The District currently has this program in place.

Staff anticipates implementing this program in November 2018, with cost sharing agreements in place by early 2019.

2) LEAK REPAIR INCENTIVES

Staff anticipate implementing a leak repair incentive program after implementing AMI, in coordination with the water retailers. AMI will provide information on the frequency and magnitude of leaks, as well as customer responses to different levels of leaks. This information will inform how best to design a program by better understanding the severity of the issue and potentially the types of leaks that are occurring. Furthermore, AMI will provide data to help evaluate the effectiveness of leak repair incentives. It could be that a leak repair incentive program would be most effective in disadvantaged communities and/or for very slow leaks that consumers may not be sufficiently motivated to repair on their own.

3) GRAYWATER REBATE PROGRAM EXPANSION

The Board approved the Graywater Installation Program on July 10, 2018. In partnership with the non-profit Ecology Action, a contractor workforce will receive training to install code-compliant graywater systems. Using the trained contractors, up to 100 low-income/underserved Santa Clara County residents will have graywater laundry-to-landscape systems installed by June 30, 2020 or until funding is expended, whichever comes first.

The Graywater Rebate Program application process has been simplified. No pre-inspection is required, and all required documents are listed as a checklist in the online application.

A community-based social marketing campaign is being developed in concert with the Communications Unit to identify key barriers from adopting these systems and parties that may influence their adoption (e.g. external stakeholders such as contractors, other agencies, private vendors, and the public-at-large, etc.). The quantitative and qualitative results from this campaign will help identify ways the District can support graywater use by implementing programs and outreach that directly target identified barriers and influential parties.

Outreach materials and workshops continue to be showcased on valleywater.org and promoted seasonally. An hour-long video of a comprehensive graywater workshop provided by the District in partnership with BAWSCA is nearing completion, which will allow community members to view workshop materials at will.

4) MODEL WATER EFFICIENCY NEW DEVELOPMENT ORDINANCE

The Model Water Efficiency New Development Ordinance has been drafted and is being shared with key groups. The District has hired a consultant to finalize the Model Ordinance, develop an analysis as to why it's needed (including benefit/costs), and to prepare the Model Ordinance for filing with the Building Standards Commission review.

Staff will incorporate stakeholder input and then work with all the Santa Clara County jurisdictions on adoption. The District's role will be to encourage ordinance adoption and implementation and provide technical assistance.

5) STORMWATER CAPTURE

Stormwater capture can have water quality, water supply, flood management, environmental, and community (e.g., aesthetics, recreation, and education) benefits. Included in the "No Regrets" projects are two different scales of stormwater capture projects - "centralized" and "decentralized":

"Centralized" projects are those that capture water from multiple parcels and/or are municipal projects, including "green streets" projects. There are three centralized stormwater "No Regrets" projects - two municipal stormwater capture basins and stormwater recharge on

agricultural land.

“Decentralized” projects focus primarily of keeping stormwater onsite and/or private citizen projects. The “No Regrets” package includes two decentralized programs -rain barrel/cistern rebates and rain garden rebates.

Staff in the Water Utility Enterprise and Watersheds are participating in the development of the Storm Water Resources Plan (SWRP) to develop, prioritize, and plan for “centralized” stormwater projects in the Santa Clara groundwater sub-basin of Santa Clara County. The proposed stormwater projects are located on public lands and capture water from multiple parcels. Through this plan, the Upper Penitencia area has been identified as an area for potential stormwater detention and recharge. In addition, Upper Pentencia has been selected for developing a conceptual project design as part of the SWRP. As part of the SWRP development, hydrologic modeling and a reasonable assurance analysis is being conducted to ensure pollutant load reductions or reduced stormwater impacts will be achieved through the implementation of proposed stormwater projects. A draft of the SWRP has been released to the public and staff for comment. The SWRP is scheduled for completion in December 2018.

In addition to the SWRP, staff are also investigating the potential to use agricultural lands for stormwater recharge. An agricultural land recharge program may help maximize the benefits of existing open space by using the agricultural lands as temporary recharge sites during the wet winter months. An example of this process is in the Central Valley where some almond growers allow their fields to flood during the winter to recharge the aquifer. The planned flooding for groundwater recharge is referred to as flood-managed aquifer recharge (Flood-MAR) and different methods are currently being piloted in the Central Valley and in the lower Pajaro River watershed. Staff are monitoring the pilot projects to determine impacts and benefits to crops, water quality, and water supply. As noted by the California Department of Water Resources (DWR), “complex technical, legal, and institutional barriers and challenges affect the planning and implementation of Flood-MAR projects” including water rights, permitting, and environmental considerations. However, recognizing the broad potential benefits of Flood-MAR, DWR is leading the statewide efforts to evaluate these issued with stakeholders with the goal of expanding Flood-MAR on agricultural lands and working with landscapes throughout California. Staff are engaging in these statewide efforts. Locally, staff are working with the Open Space Authority and Santa Clara County Planning to develop a planning and piloting approach to explore the potential implementation of agricultural land recharge in Santa Clara County.

The District proposes using rebates to encourage water customers to participate in the decentralized stormwater capture programs (Stormwater Capture Rebates). Details of the Stormwater Capture Rebates, for collecting roof water for onsite reuse, are being finalized and are scheduled to be launched by January 1, 2019. Stormwater Capture Rebates, which will be managed within the Landscape Rebate Program, include rain barrels ($35 per unit), cisterns ($0.50 per gallon of storage for both above and underground units), and rain gardens ($1.00 per square foot). We will be working with Communications to advertise the program and will explore partnerships with other water retailers or cities that either have their own programs

currently or may be interested in cost sharing

ATTACHMENTS:
None.

UNCLASSIFIED MANAGER:
Garth Hall, 408-630-2750

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EMC RESEARCH
MARKET & OPINION RESEARCH SERVICES

Santa Clara Valley Water District SM

Telephone Survey of Santa Clara County Voters Re: Water Conservation

Conducted for: Santa Clara Valley Water District

April 2017

Methodology

- Telephone survey of registered voters in Santa Clara County
- Conducted by trained, professional interviewers from March 23 – 28, 2017
- 400 completed interviews
- Margin of error: ± 4.9 percentage points
- Interviews conducted in English, Spanish, Chinese, and Vietnamese

Please note that due to rounding, some percentages may not add up to exactly 100%.

Key Findings

- In spite of the wet winter and potential end to the drought, voters in the Santa Clara Valley Water District still see the need to prepare for the future and invest in a more reliable water supply.
- They do not recall cutting back their water use during the drought as having been much of a challenge.
- A majority are open to a small rate increase of $5-10 per month, but many oppose a larger $20-30 increase.
- Framing the investment as something that would ensure a more reliable water supply is sufficient—adding information on the corresponding use reductions could introduce confusion.
- Specific investments in recycled water for irrigation and industrial uses, storm water capture, and updating aging infrastructure generate the most enthusiasm.

EMC RESEARCH MARKET & OPINION RESEARCH SERVICES

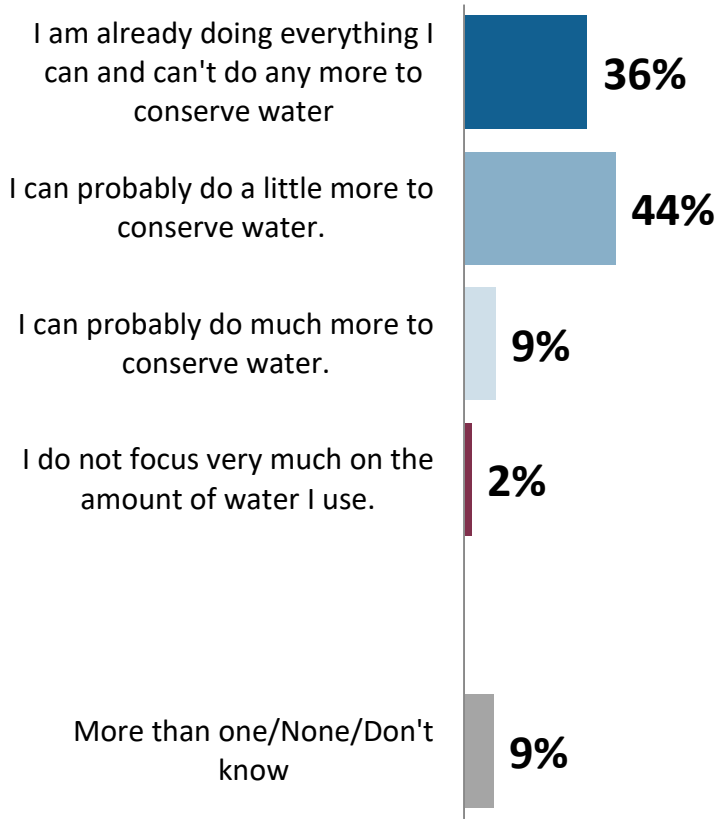
Water Use Reductions

Efforts to Reduce Water Use

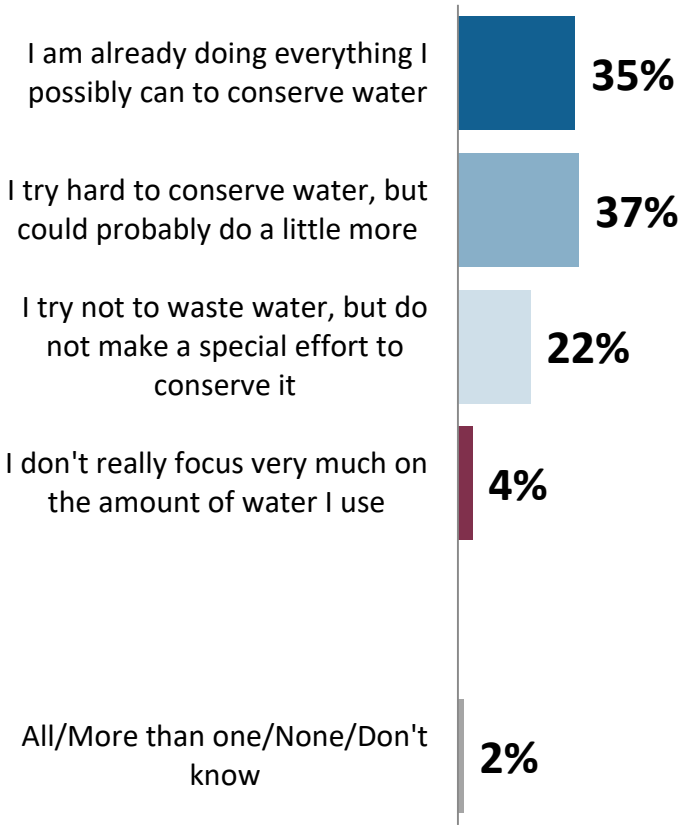
Most report they are still making an effort to conserve water, although the majority could do more. The number who say they're doing everything they can to conserve has not changed since a similar question in 2015.

Which of the following statements best describes your current efforts to reduce your water use?

15-5606 Drought and Drought Policy Survey



2017 Water Conservation Survey

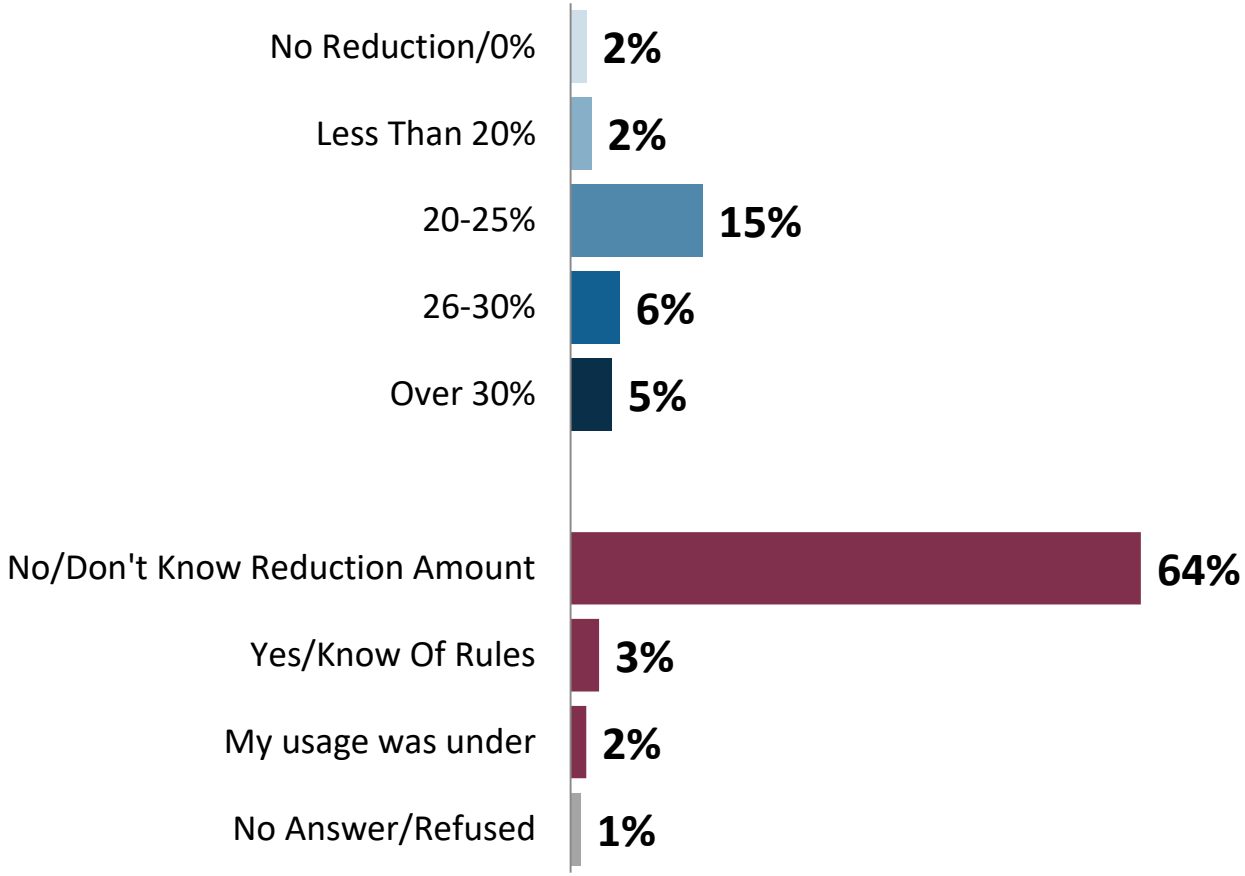


Q3.

Knowledge of Water Use Reduction

Few recall how large of a reduction in water use was called for last summer.

Do you happen to know how much of a reduction in water use your local water agency was calling for last summer during the statewide drought?

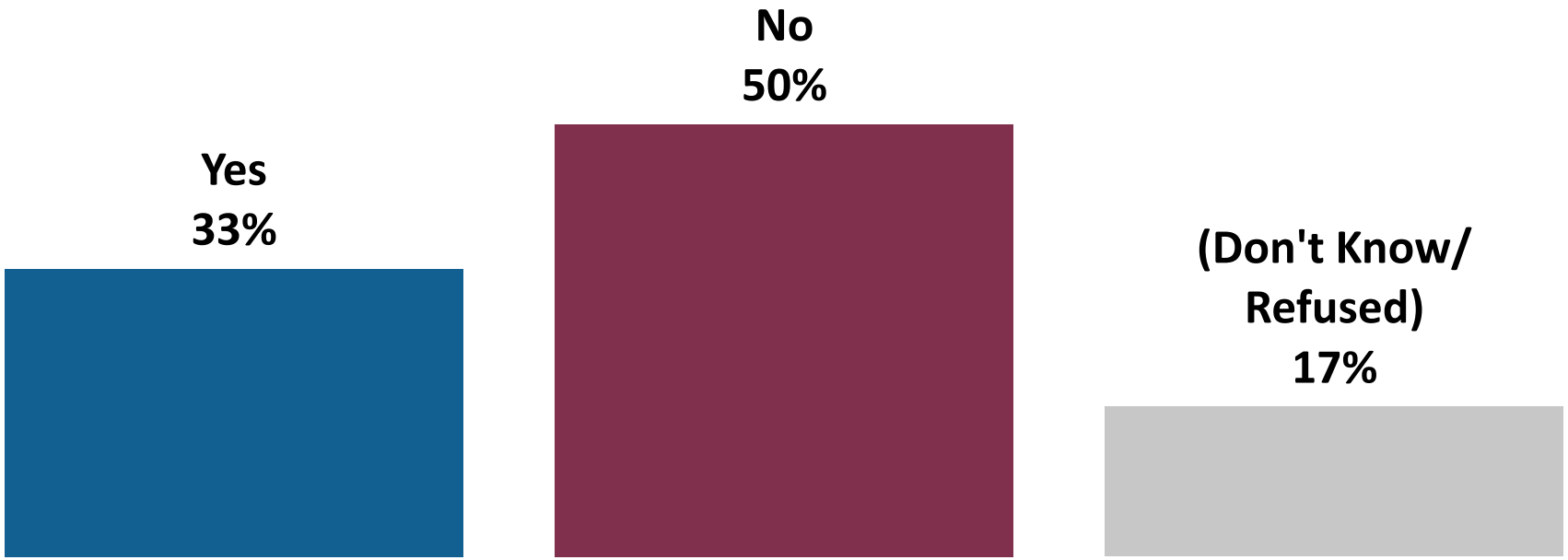


Q4.

Knowledge of Fines

Only a third report that their local agency imposed fines during the drought.

As far as you know, did your local water agency impose any fines or surcharges for using too much water during the statewide drought?

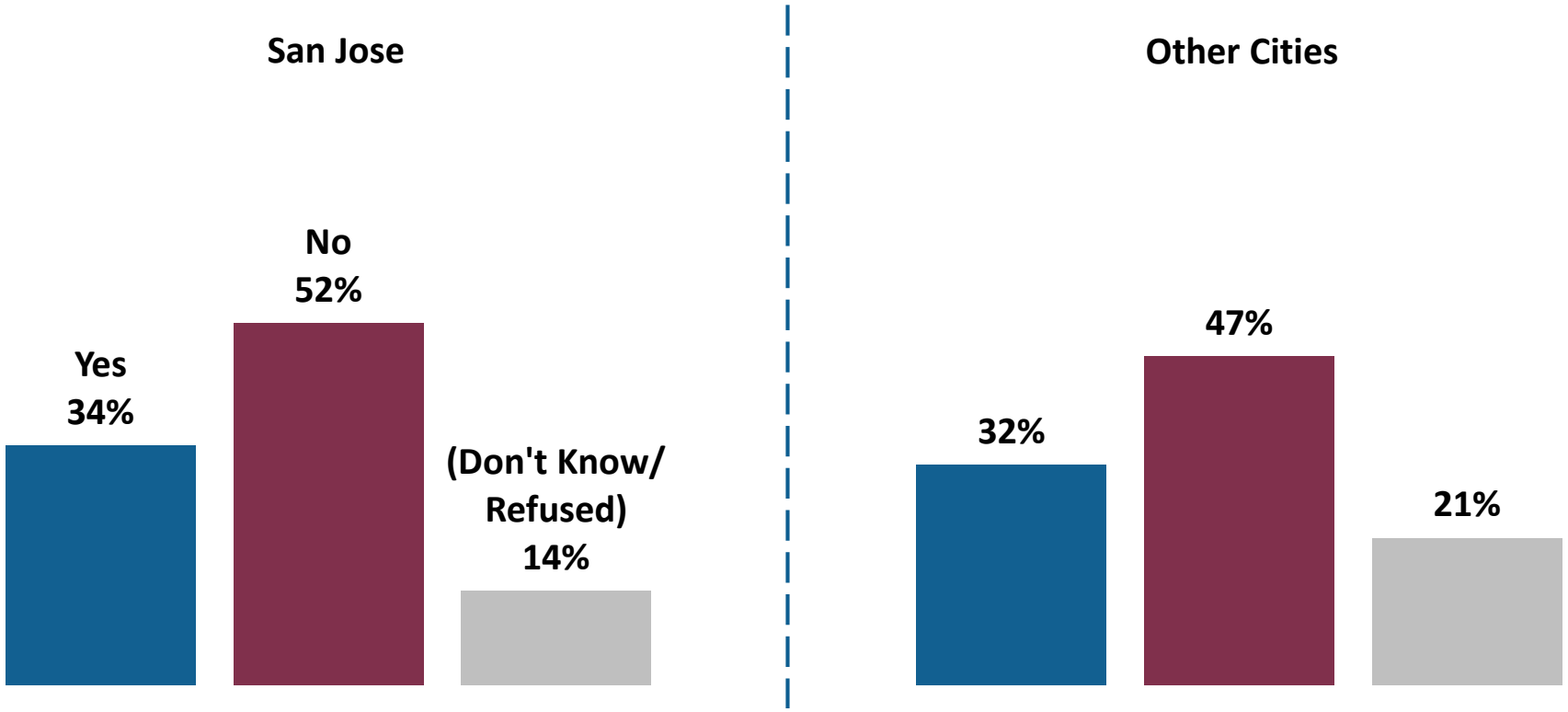


Q5.

Knowledge of Fines by City

Recollection of fines or surcharges is similar in San Jose and other cities.

As far as you know, did your local water agency impose any fines or surcharges for using too much water during the statewide drought?

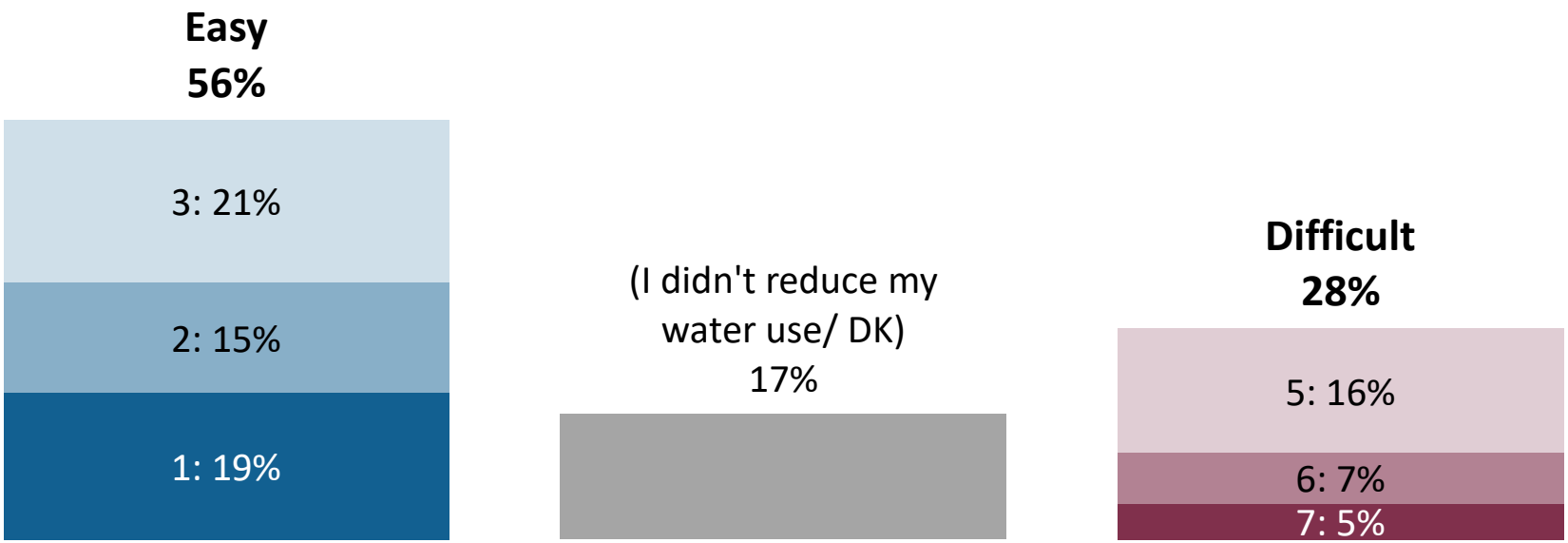


Q5.

Reducing Water Use During the Drought

A majority felt that reducing their water use during the drought was relatively easy.

Thinking about a scale where 1 is very easy and 7 is very difficult, how easy or difficult was it for you to reduce your water use during the drought?



Q6.

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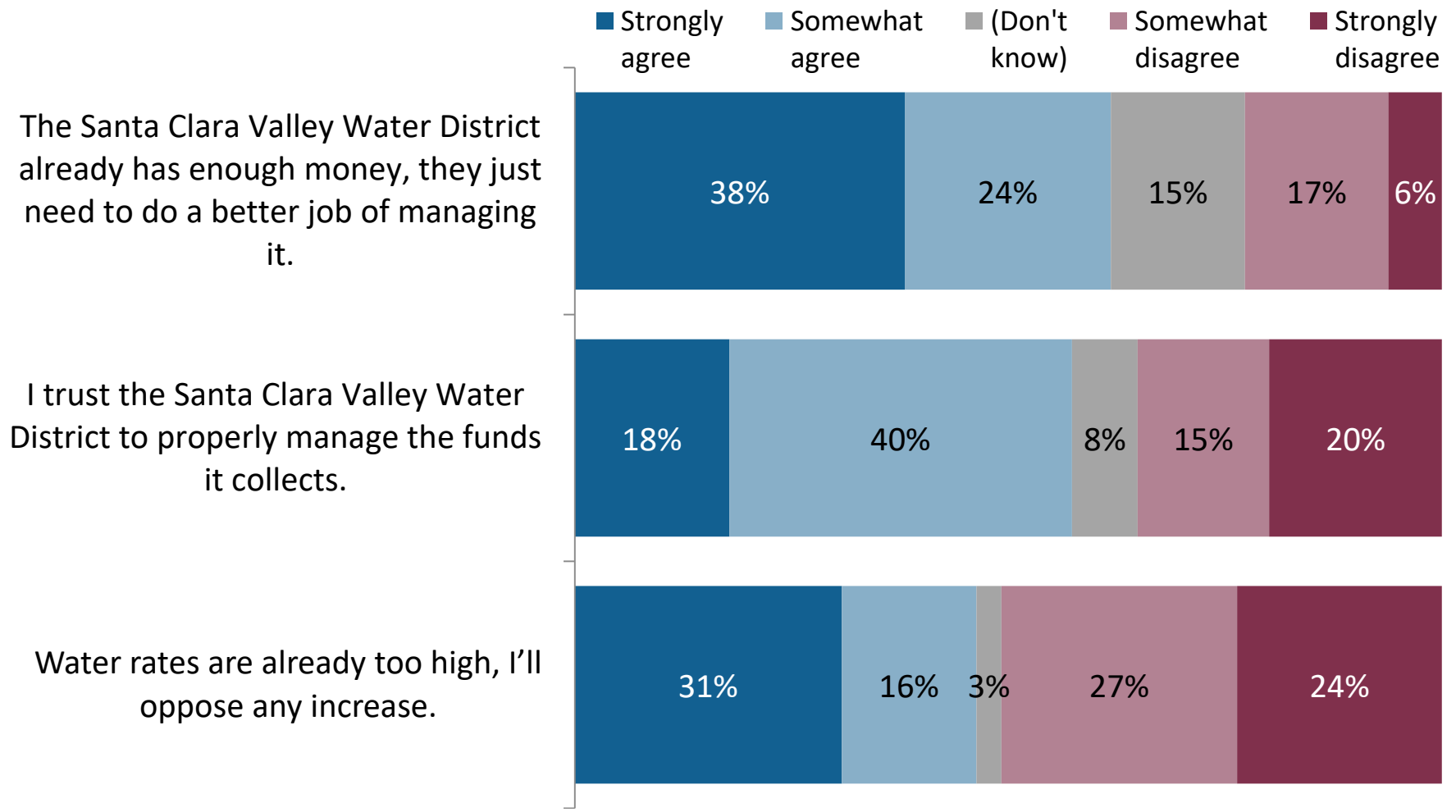
Support for Increased Water Rates

Water Attitudes

While there is widespread agreement that SCVWD already has enough money, most voters also trust the District to spend funds properly and less than a third are strongly opposed to rate increases.

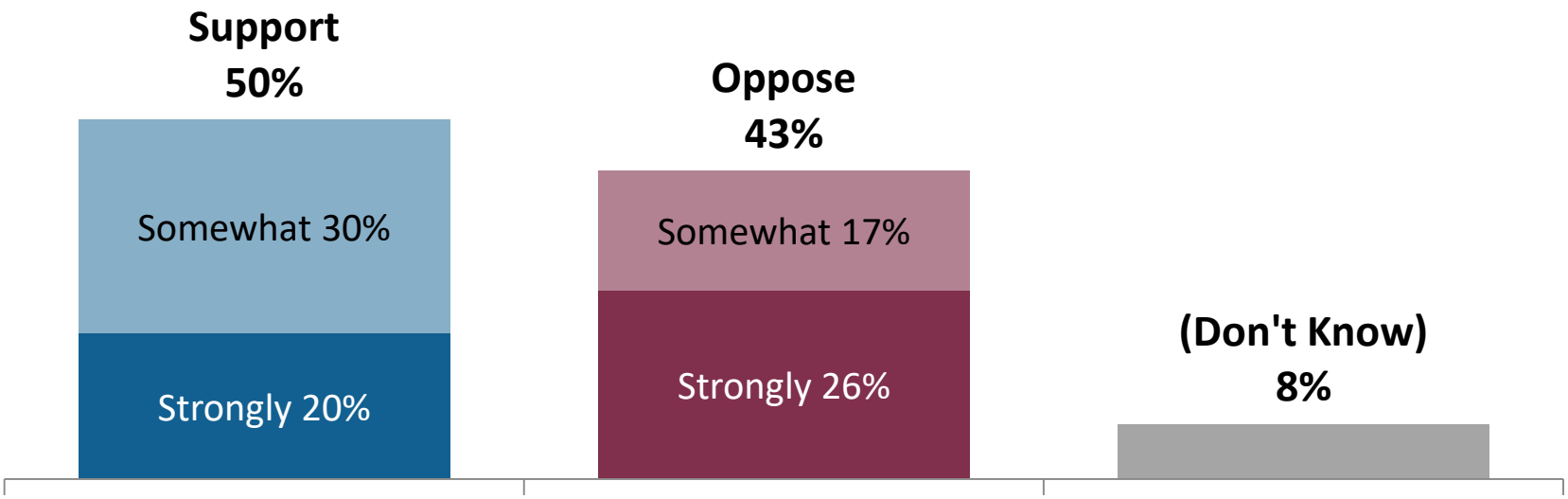


Q12-14. Please tell me whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree with each of the following statements.

Initial Support for Increase

Before hearing any details, half at least somewhat support increasing water rates to ensure a more reliable supply of water.

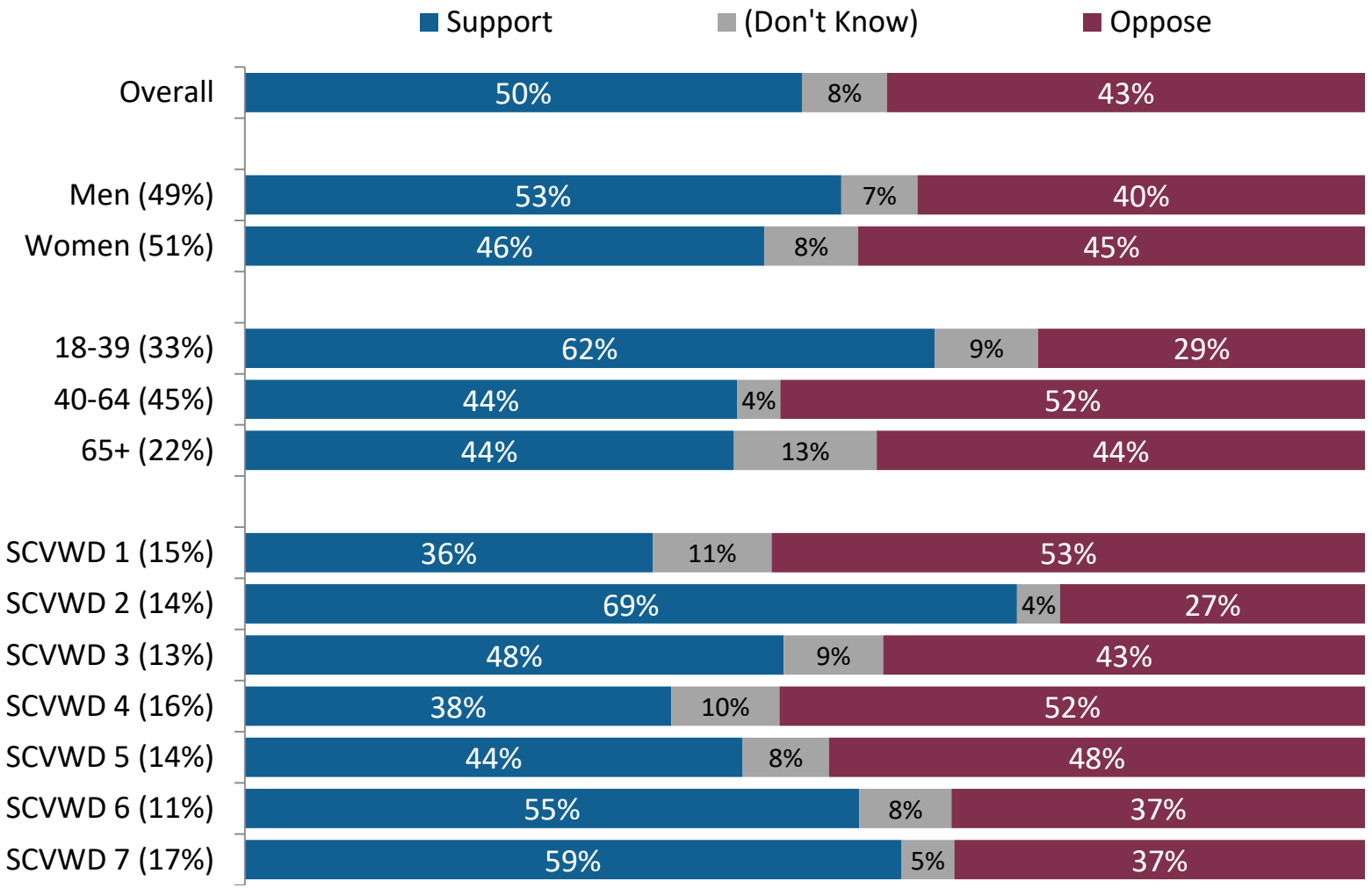
In general, would you say you support or oppose modest increases in water rates to ensure a more reliable supply of water for our future?



Q7.

Initial Support by Subgroup

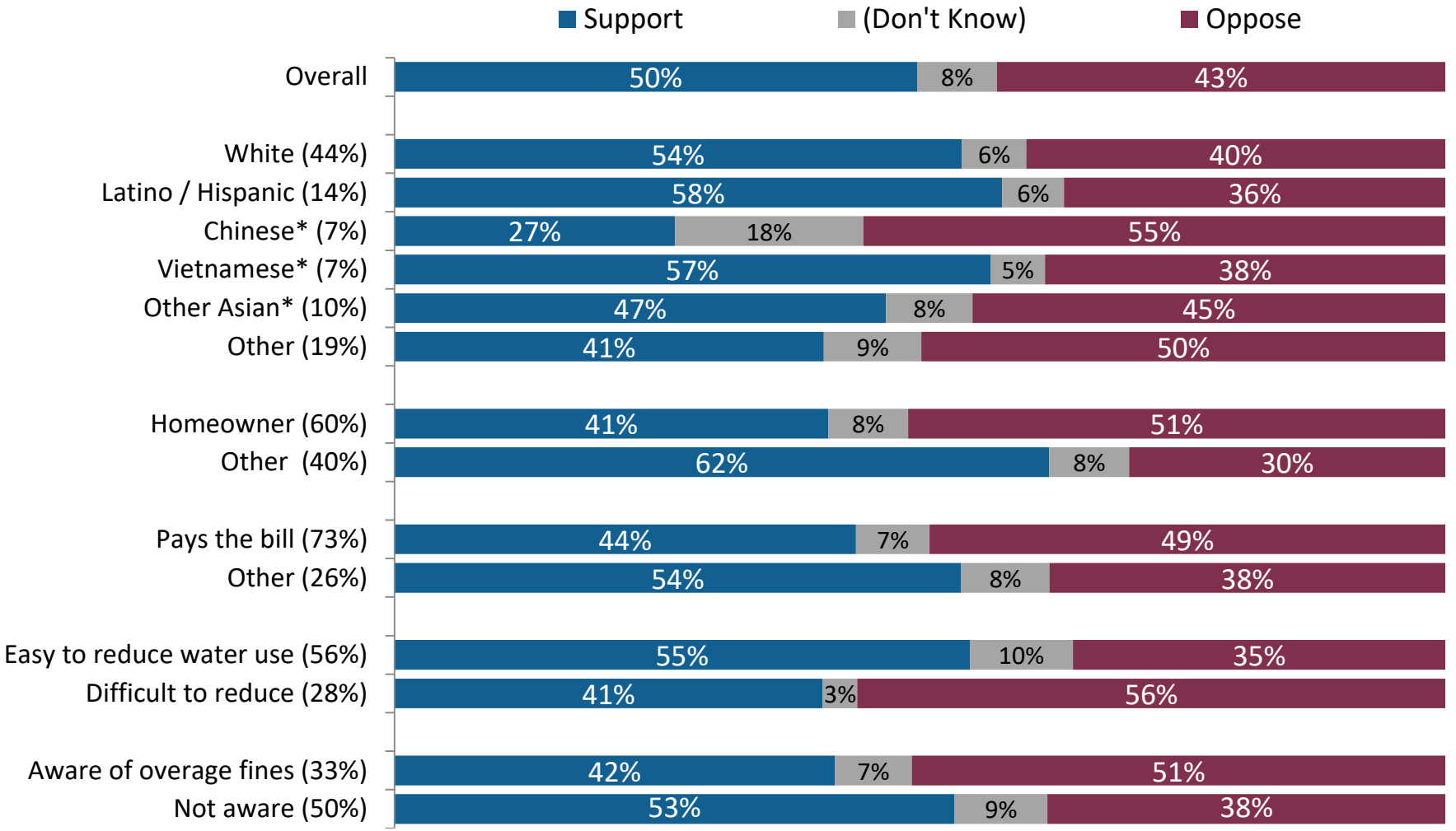
Younger voters are likely to support increased rates to ensure a more reliable supply of water. Support varies considerably by geography.



Q7. In general, would you say you support or oppose modest increases in water rates to ensure a more reliable supply of water for our future?

Initial Support by Subgroup

Homeowners and water bill-payers are more likely to oppose modest rate increases, as are those wo found it harder to reduce their water use during the drought.



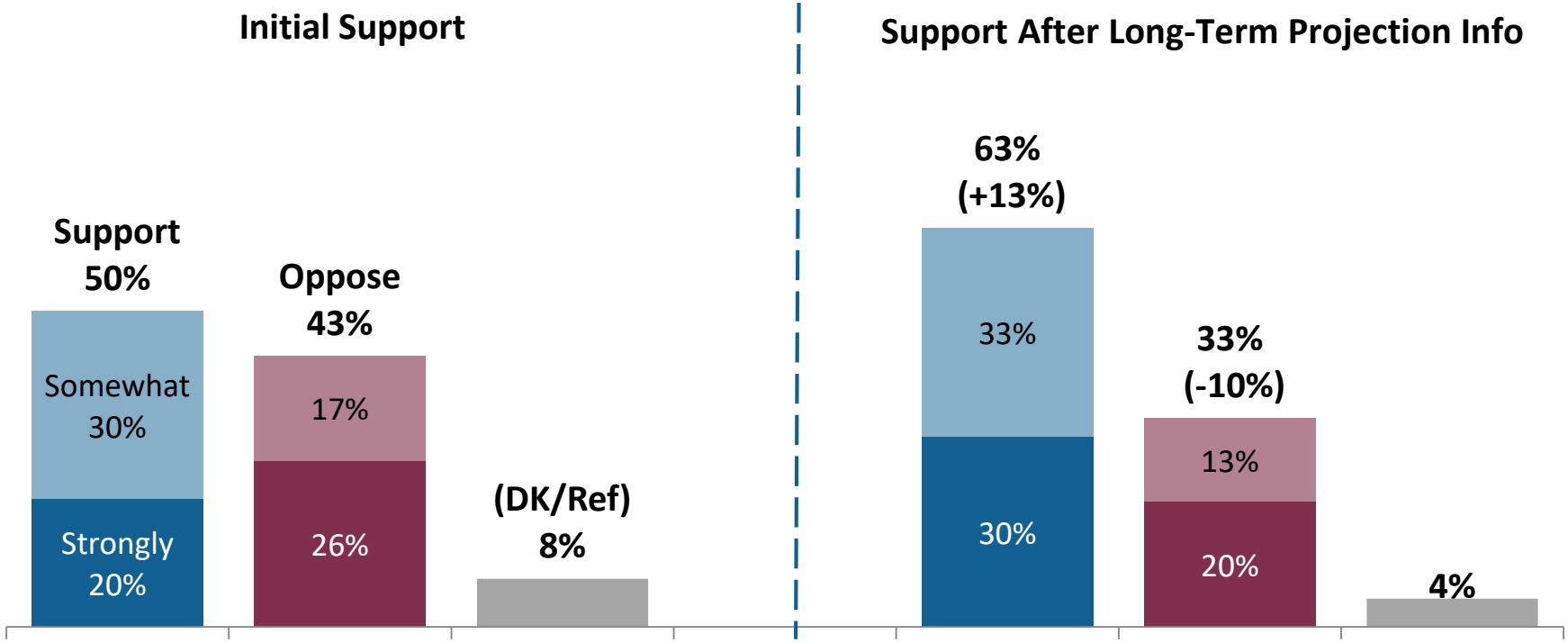
**use caution when generalizing the results among these groups due to small sample sizes*

Q7. In general, would you say you support or oppose modest increases in water rates to ensure a more reliable supply of water for our future?

Support After Long-Term Projection Information

Support increases to well over a majority once voters hear more information about the need for investments in water supply reliability.

Despite the recent rain, our local water suppliers are continuing to evaluate long-term water supply needs for our area given future challenges such as droughts, climate change, and population growth. Projections show that in future drought years we may have to cut back water use by up to 30%. To prepare for water shortages during drought years, local water agencies are planning to invest in projects that would ensure a more reliable water supply like expanding reservoirs, expanding the use of recycled water and increasing storm water reuse. These investments would increase water rates for local residents, but would mean that customers would not have to make such significant cuts in water use during drought years.

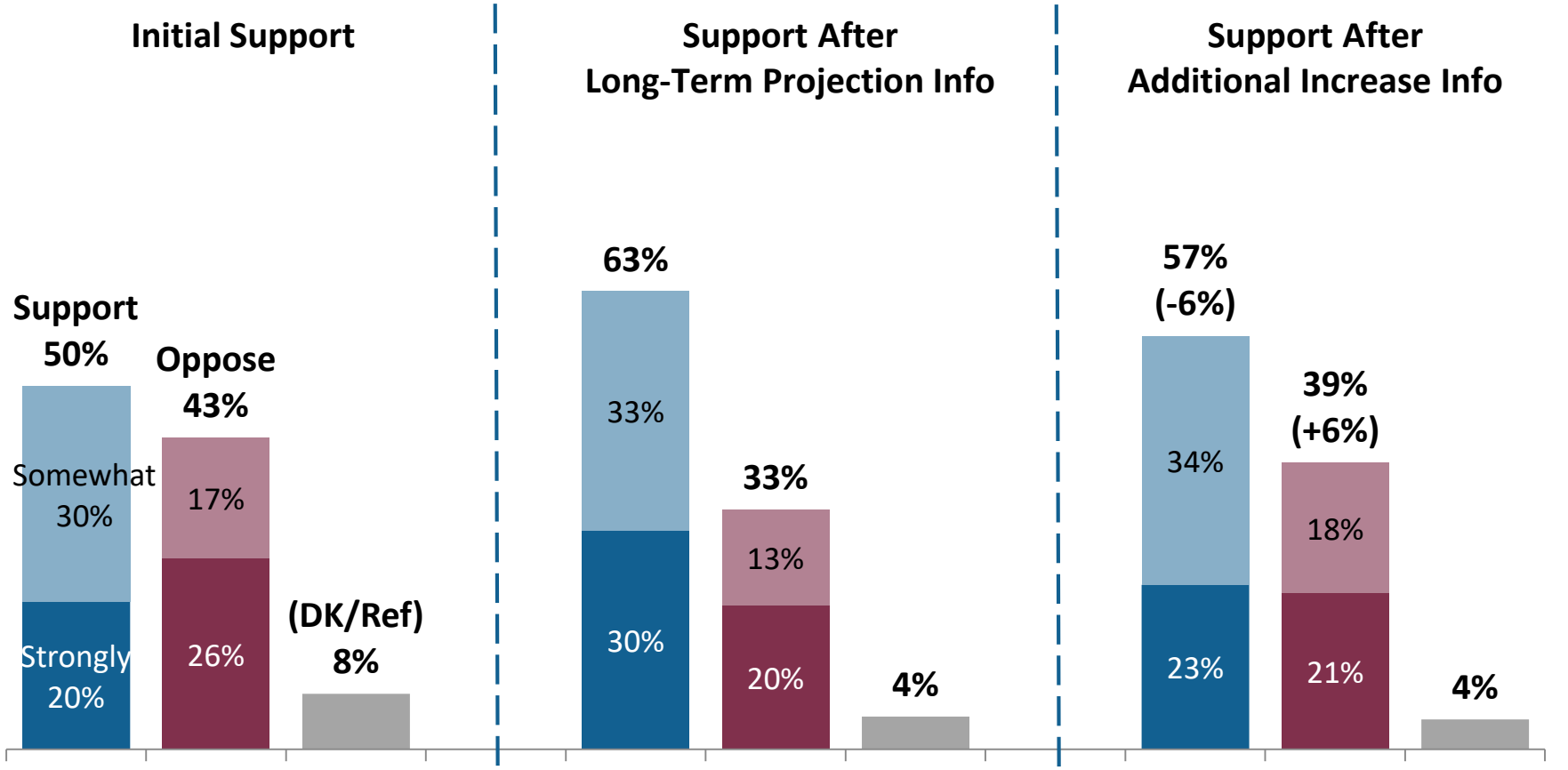


Q8. Given what you've heard, would you say you support or oppose modest increases in water rates to ensure a more reliable supply of water for our future?

Support After Additional Increase Information

Support decreases slightly after voters learn that these increases would come on top of other increases that are already planned, but a majority remains supportive.

Rate increases to further improve water supply reliability would be in addition to already planned increases, primarily for maintaining and improving existing infrastructure.



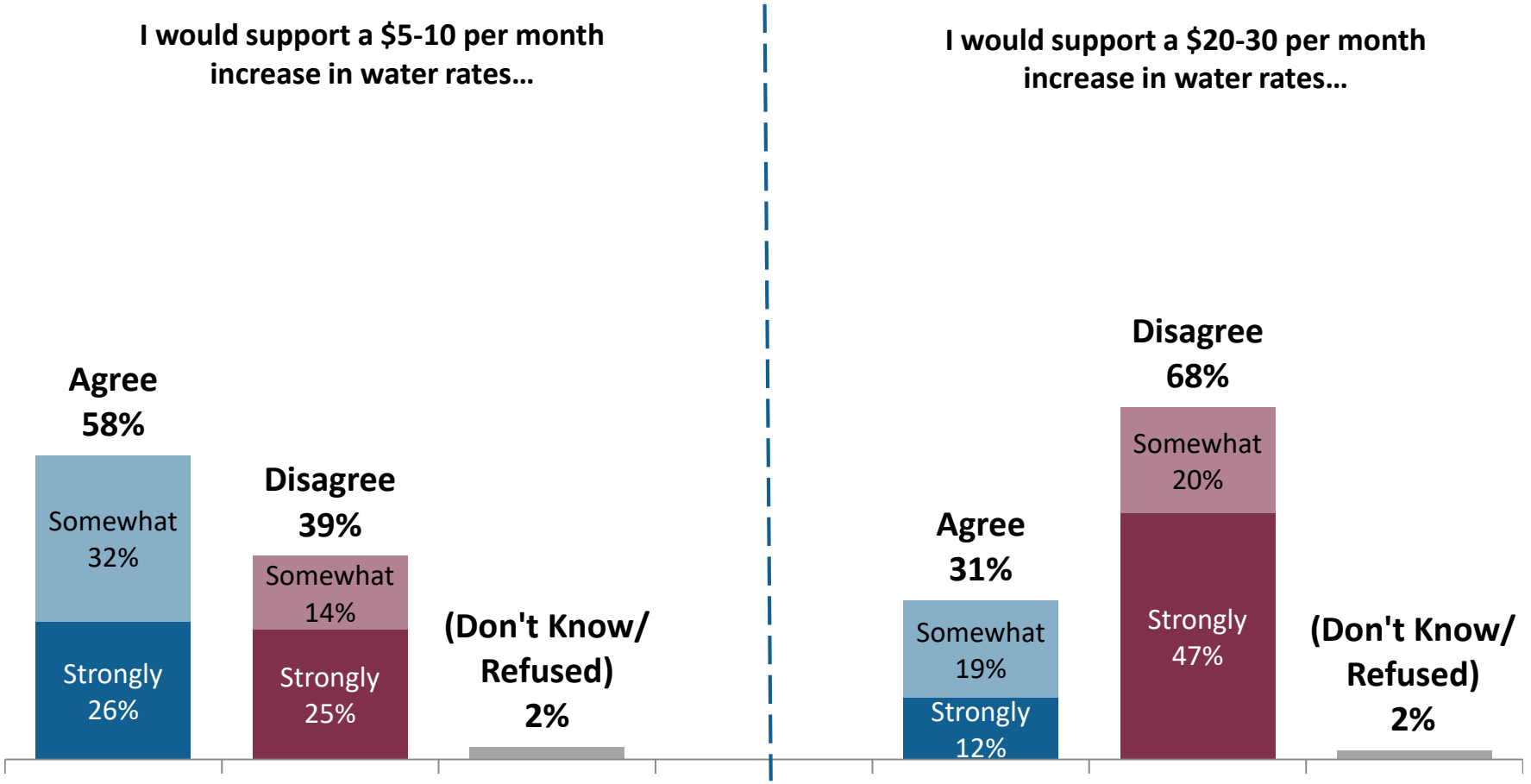
Q9. Given what you've heard, would you say you support or oppose modest increases in water rates to ensure a more reliable supply of water for our future?

EMC RESEARCH
MARKET & OPINION RESEARCH SERVICES

Attitudes Toward Specific Increases

Attitudes Towards Water Rates Increase

A majority would support a $5-10 per month increase. Twenty to $30 is a much harder sell.



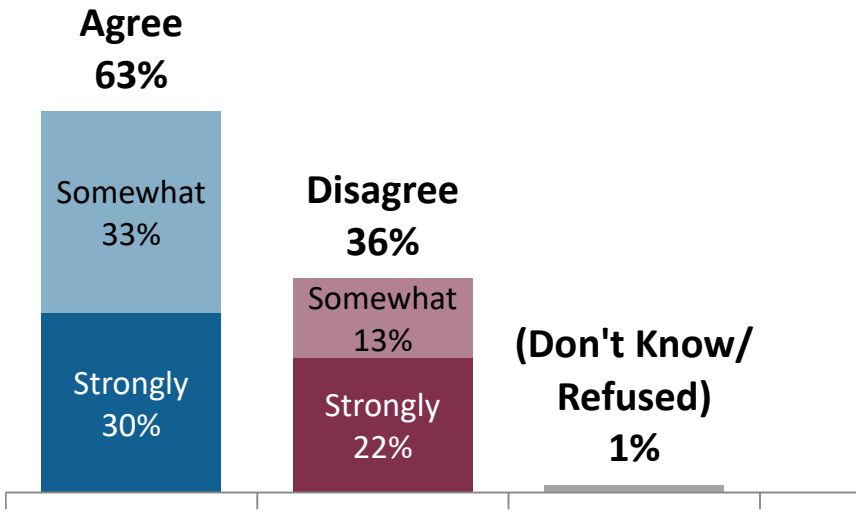
Q10-11. Please tell me whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree with each of the following statements.

Attitudes Toward a $5 to $10 Increase

Those who hear an increase amount only are more open to a $5-10 increase than those who also hear about the corresponding tradeoff in cutbacks.

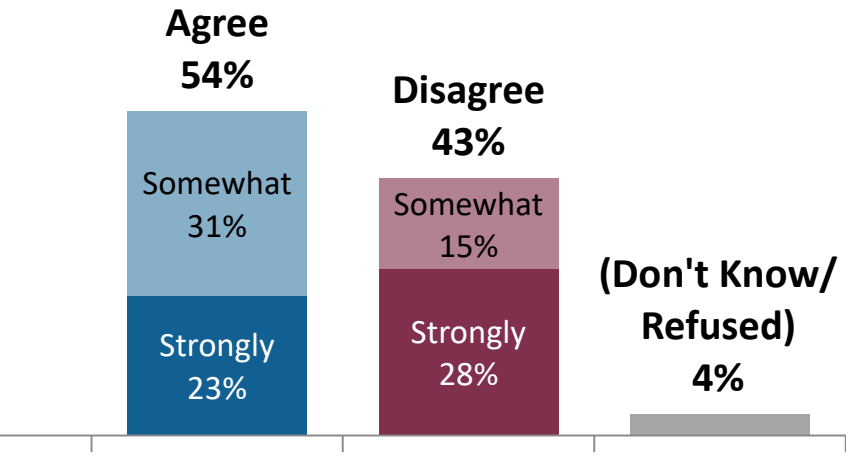
Rate Increase Only
n=200, MoE=±6.9%

In order to ensure a more reliable supply of water for our area, I would support a $5-10 per month increase in water rates now to invest in infrastructure for the future.



Percent Reduction and Rate Increase
n=200, MoE=±6.9%

In order to avoid having to reduce my water use by more than 20% during drought years, I would support a $5-10 per month increase in water rates now to invest in infrastructure for the future.



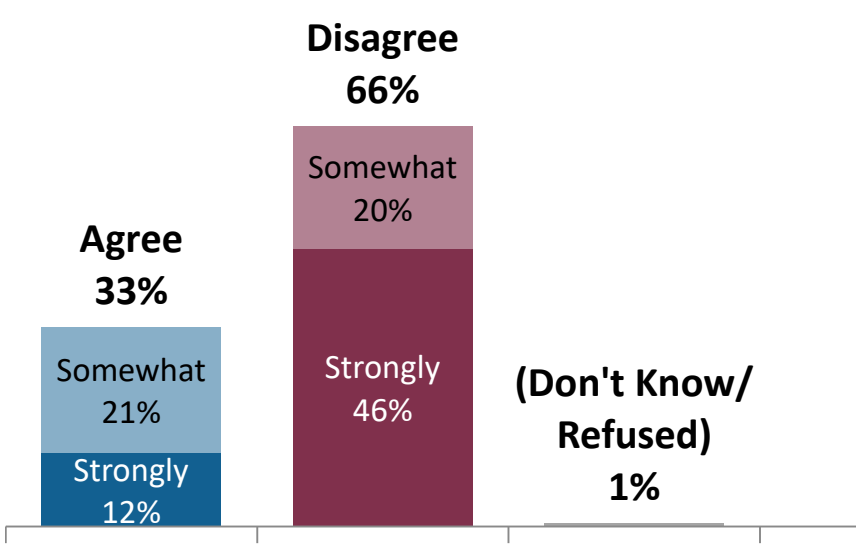
Q11. Please tell me whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree with each of the following statements.

Attitudes Toward a $20 to $30 Increase

Including the reduction tradeoff does not make a $20-30 increase more palatable.

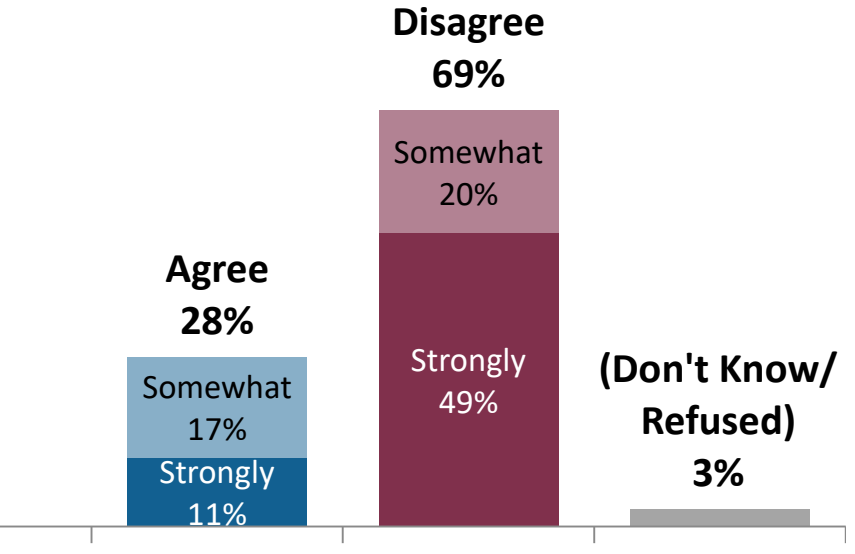
Rate Increase Only
n=200, MoE=±6.9%

In order to ensure a more reliable supply of water for our area, I would support a $20-30 per month increase in water rates now to invest in infrastructure for the future.



Percent Reduction and Rate Increase
n=200, MoE=±6.9%

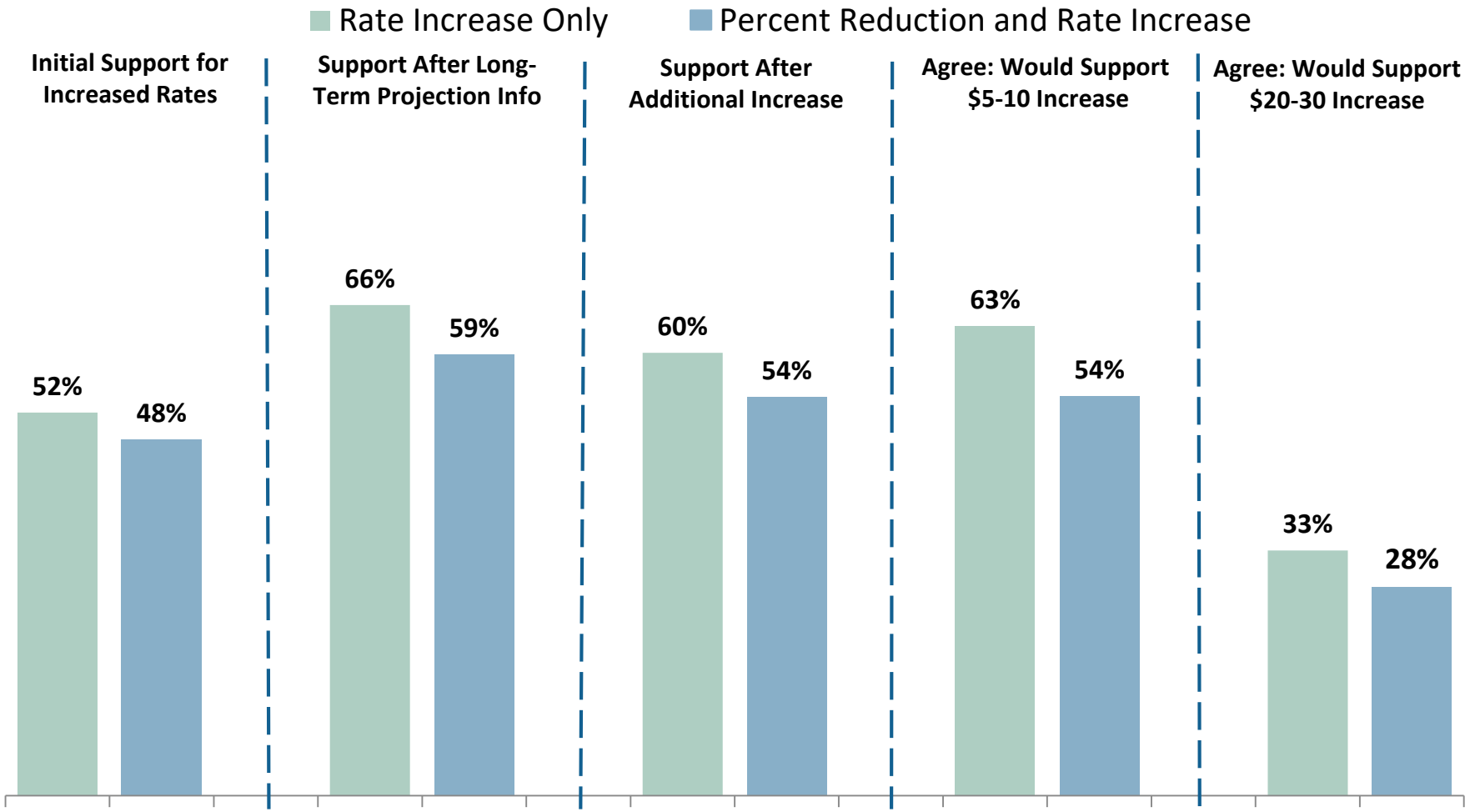
In order to avoid having to reduce my water use by more than 10% during drought years, I would support a $20-30 per month increase in water rates now to invest in infrastructure for the future.



Q10. Please tell me whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree with each of the following statements.

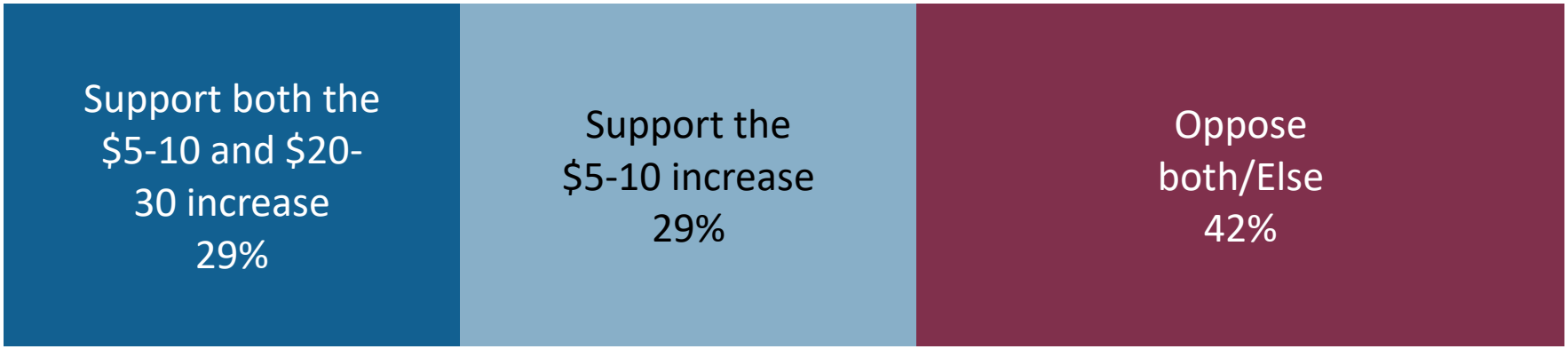
Support and Attitudes - Rate Increase Only

Although we don't see that explaining the limit on cutbacks is helpful, note that those who heard about the reduction targets were less supportive of rate increases throughout.



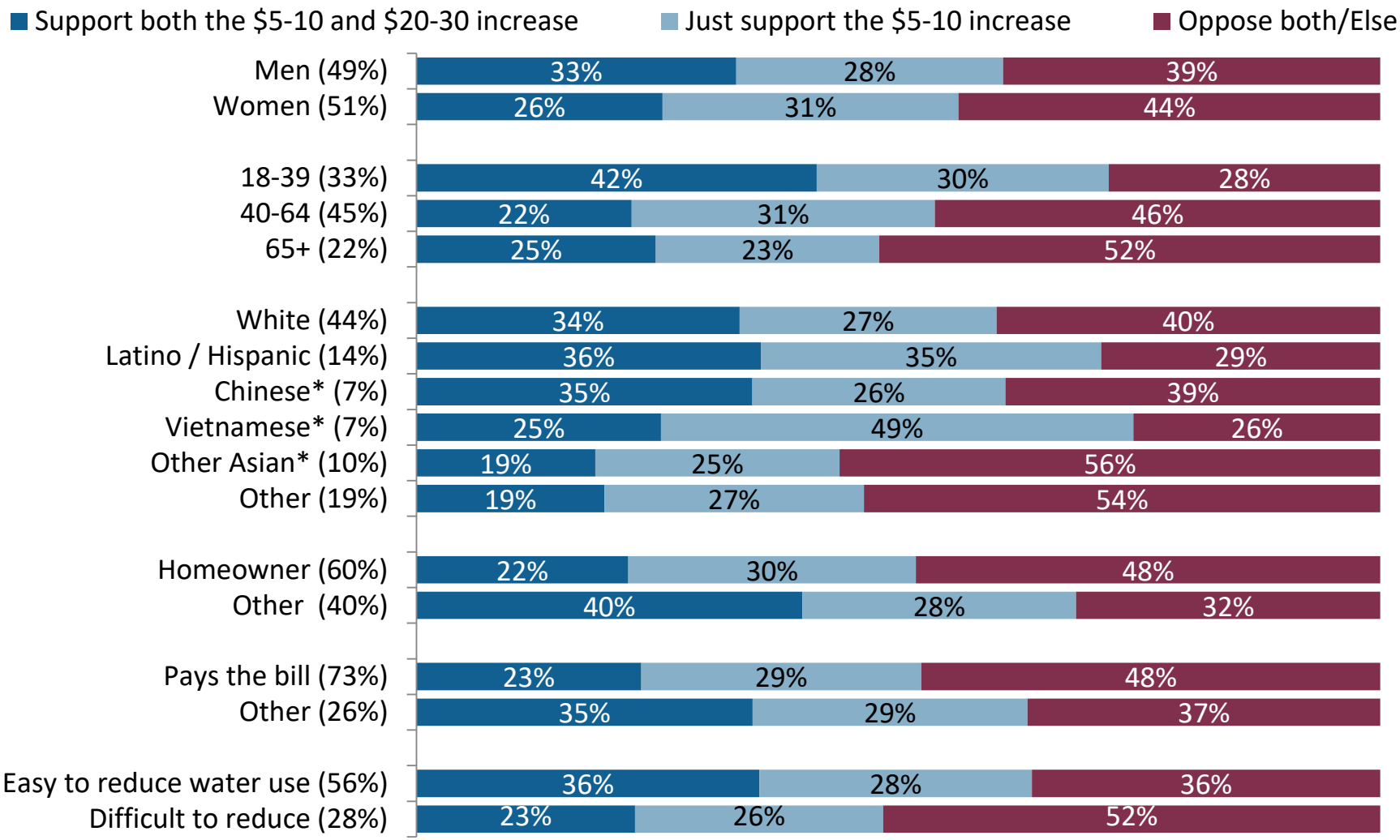
Support Segmentation: Increase in Water Rates

Just under a third support both increase amounts. The same number support the smaller increase only.



Support Segmentation by Subgroup

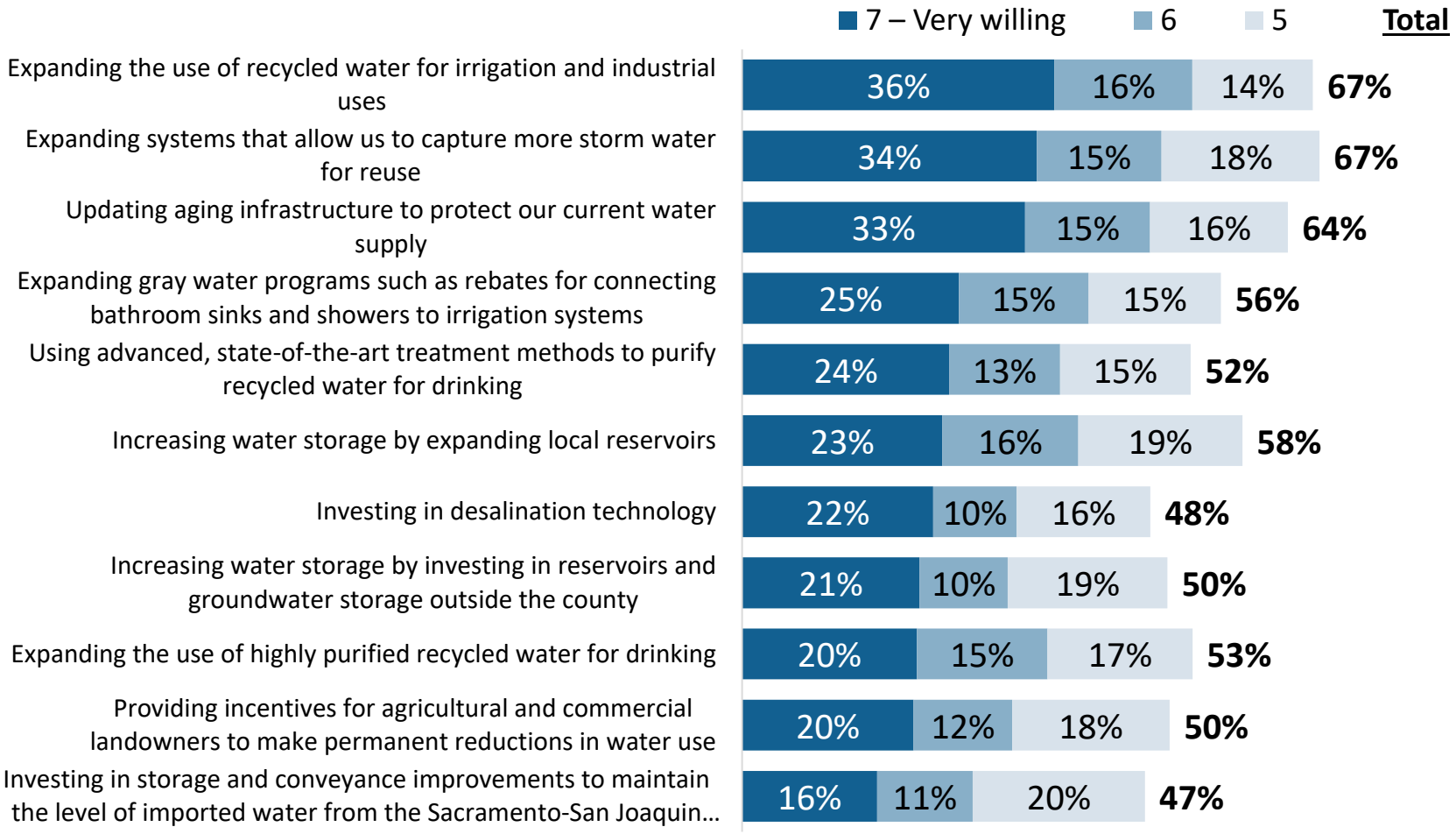
Younger voters and renters are most likely to be supportive of both increases.



**use caution when generalizing the results among these groups due to small sample sizes*

Willingness to Pay for Specific Improvements

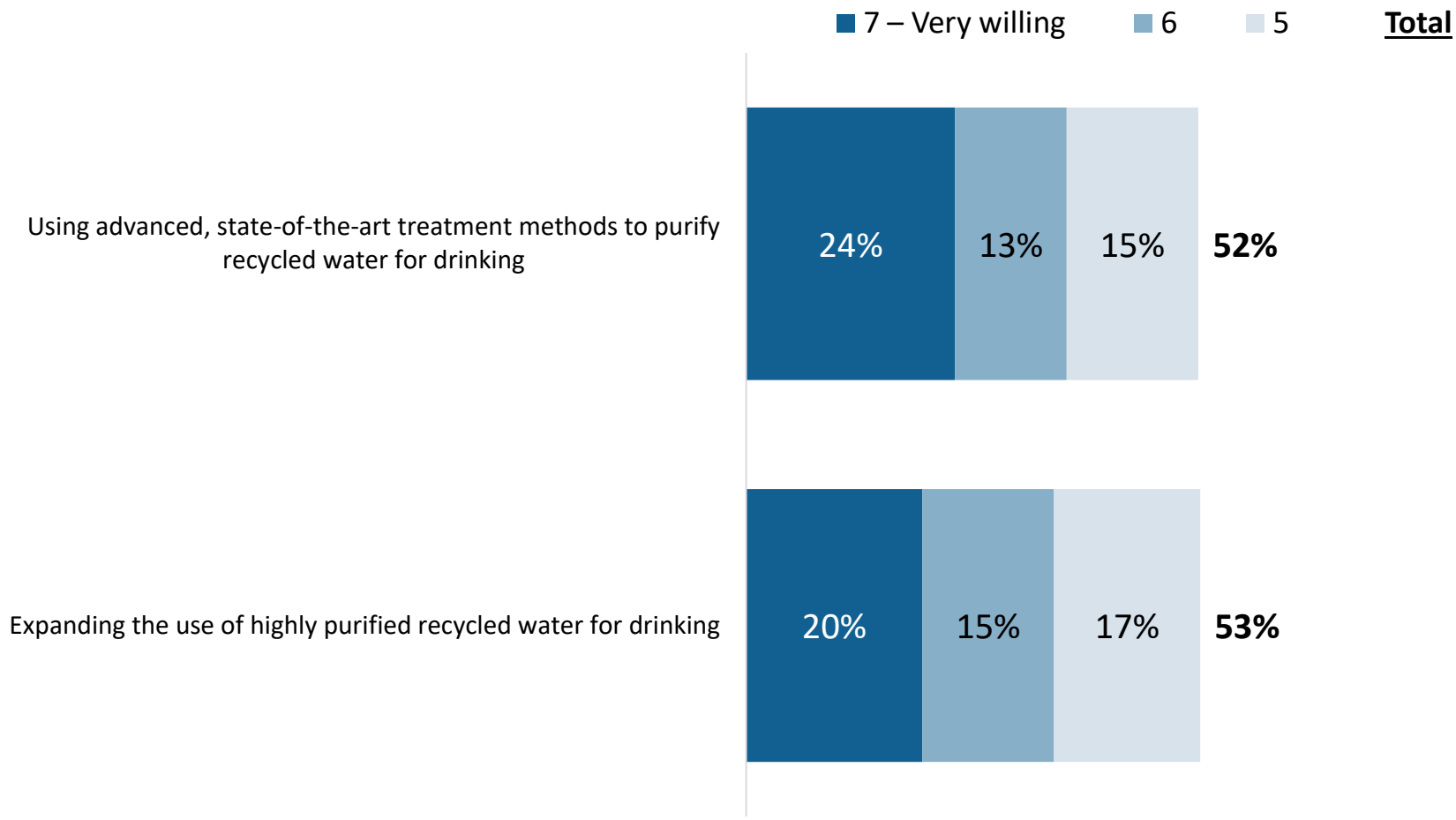
Expanding purple water use and storm water capture and updating aging infrastructure are the specific improvements for which voters are most willing to pay increased rates.



Q15-Q25. I'm going to read you a list of improvements the Santa Clara Valley Water District could make to ensure a more reliable supply of water. These improvements could potentially lead to changes in water rates. For each one, please indicate your willingness to pay increased rates for each type of improvement. Please use a scale from 1 to 7, where 1 means you are not at all willing to pay higher water rates for that item, and 7 means you are very willing to pay higher water rates for that item.

Willingness to Pay for Potable Reuse

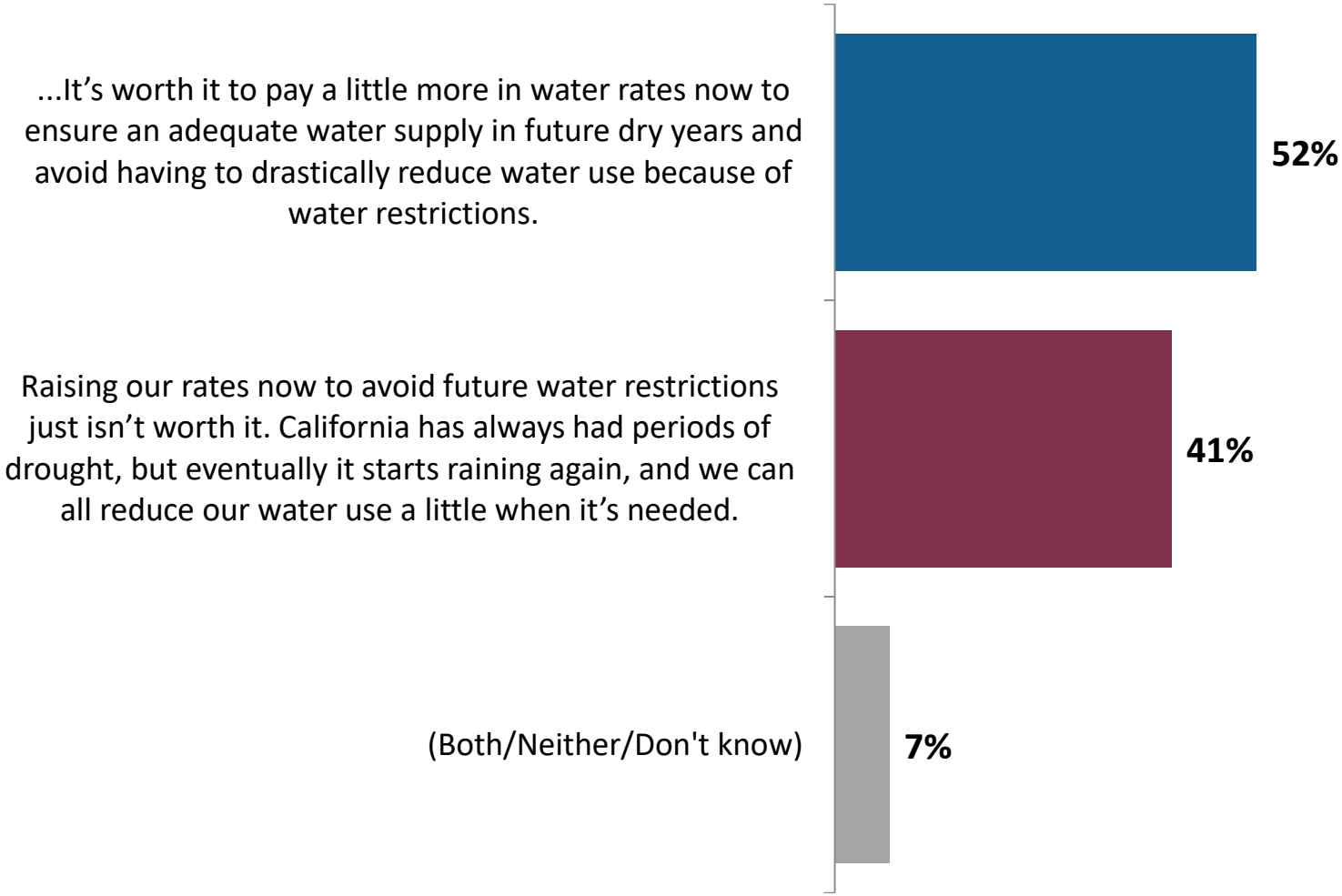
State-of-the-art treatment of recycled water for drinking generates slightly more enthusiasm than highly purified recycled water.



Q15-Q25. I'm going to read you a list of improvements the Santa Clara Valley Water District could make to ensure a more reliable supply of water. These improvements could potentially lead to changes in water rates. For each one, please indicate your willingness to pay increased rates for each type of improvement. Please use a scale from 1 to 7, where 1 means you are not at all willing to pay higher water rates for that item, and 7 means you are very willing to pay higher water rates for that item.

Forced Choice: Worth Investing Now?

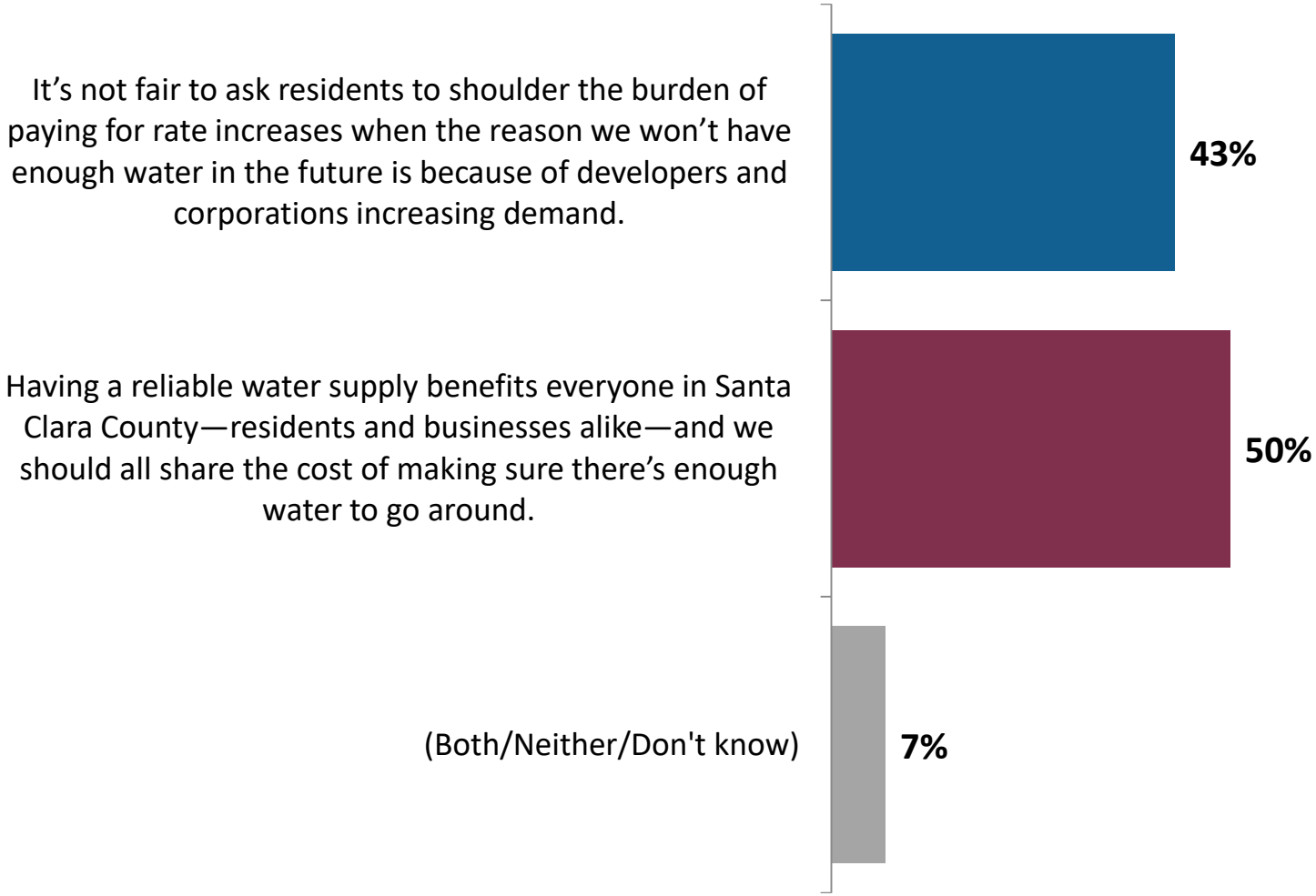
Just about half agree that it's worth it to pay more now to be prepared for future dry years and avoid big water restrictions later.



Q26. Now I'd like to read you a pair of statements. Please tell me whether the first one or the second one is closer to your opinion.

Forced Choice: Cost Sharing

Half feel that residents and businesses should all share the cost of ensuring an adequate water supply, while slightly fewer say it's not fair for residents to shoulder the burden.



Q27. Now I'd like to read you a pair of statements. Please tell me whether the first one or the second one is closer to your opinion.

Contacts

Ruth Bernstein
510-550-8922
ruth@emcresearch.com

Jessica Polsky
510-550-8933
jessica@emcresearch.com

Sianna Ziegler
206-204-8045
sianna@emcresearch.com

January 2018 Stakeholder Workshops Summary

Participants

Bay Area Water Supply and Conservation Agency
California Water Service
City of Milpitas
City of Morgan Hill
City of Mountain View
City of San Jose
City of Santa Clara
Individual Residents
Joint Venture Silicon Valley
League of Women Voters
Midpeninsula Regional Open Space District
Restore the Delta
San Jose Water Company
Sierra Club Loma Prieta Chapter
SPUR
Sustainable Silicon Valley

Two participants provided written comments (enclosed) with copies to the Board or a request to share with the Board.

Question/Comment	Response at Workshop
Demands	
Retailers noted that UWMP projections are high, and actual demands have been flat, but WSMP projections (i.e. Trending Scenario) show increasing demand.	Trying to find balance. Don't want to overestimate or underestimate.
Have we looked at the impacts of increasing rates on water use?	
Need to add San Jose/Santa Clara interruptible contracts to contingency plan. Potential for increased demands on SCVWD system.	
Population increases are not driving demands. Decline in Delta supplies are not because of increasing demands.	
Level of Service/Droughts	
Should look at a lower level of service (mandatory restrictions and conservation targets combined with incentives) to force more efficient use of water. Look at Santa Monica's self-sufficiency goals.	
Should look at a lower level of service to reduce the level of investment needed. Should look at level as low as meeting 70% of demands during droughts.	
Don't want to invest in a higher level of service if the District is going to call for water use reductions/short-term conservation that is inconsistent with its Water Shortage Contingency Plan.	

Question/Comment	Response at Workshop
Need to be careful about lowering the level of service. If it is too low, people will want to wheel water into the county using the District's facilities.	
Describe cost of shortage during last drought – make part of the story.	
How do we deal with Statewide mandates that may exceed what is actually needed during droughts?	Participate in regulatory process; communicate that we've made investments to avoid having to mandate extreme reductions; communicate that we have been effective at water conservation programs and building a portfolio with investments in water use efficiency and water reuse.
Enhance cooperation between elected officials at the beginning of droughts. Can reduce impacts on rates by implementing earlier water shortage contingency plan actions.	
Look at frequency as well as magnitude of shortages.	We do, but difficult to present to most stakeholders.
Projects	
Agricultural Water Use Efficiency – Lost opportunity to not have a project dealing with agricultural water use efficiency.	
California WaterFix – Unclear how California Water Fix protects existing supplies and boosts water supply reliability.	
California WaterFix – Look at scenarios/portfolios that don't include California WaterFix. Specifically, look at potable reuse, water conservation, recycling, stormwater capture, leak reduction, and technology/innovation. Stakeholders mixed on looking at new dams.	
California WaterFix – How will costs and yields be affected by moving forward with a single tunnel? Would the project still include three new intakes in the North Delta?	
California WaterFix – Costs seem unrealistically low and yields seem unrealistically high.	

Question/Comment	Response at Workshop
Conservation - Why not do more?	We already have done the low-hanging fruit and are working on the stuff in the middle. However, water conservation programs are voluntary and there are some people we won't be able to reach no matter how much money we offer. We have direct installation programs that people don't utilize. But, we are also looking for new technology and innovation. We offer grants through the Safe Clean Water Program to support developing new program.
Desal/Brackish Groundwater Treatment	South Bay desal and shallow groundwater treatment not necessarily feasible. Regional desal seems like best option at this time, but needs to be a cooperative project. Still on BARR list and still on SCVWD list.
Groundwater Banking – Need to be more transparent about the issues with getting Semitropic water back in 2015. The lack of exchange capacity can be a significant issue.	
Land Fallowing during droughts.	Benefits primarily in Gilroy, less benefit in Morgan Hill where needs are greater in drought. On the list of potential projects.
New Dam in Coyote Watershed for Flood Protection	The water supply benefits of new storage seem relatively low, especially when operated primarily for other benefits (fisheries, flood protection, etc). Will forward to One Water team since the benefits would primarily be flood protection.
Onsite Reuse and Water Use Efficiency – Distributed reuse and water use efficiency across sectors (including commercial and industrial) can add sustainability to local water supply reliability and reduce the costs of projected shortfall. Includes rainwater capture and landscape retrofits.	
Onsite Reuse and Water Use Efficiency – When people use rain barrels and do onsite reuse, they will better realize the value of water and use it more carefully.	
Pacheco Reservoir – Need to clarify where the water supply yield is coming from. Is it from the Pacheco Creek watershed or surplus CVP supplies? Also, when is water going to local fishery and Refuges.	
Pacheco Reservoir - Why is the yield so low from such a large reservoir? Costs seem out of proportion to yield.	We're assuming a lot of the local runoff is going to fishery releases. Some of the benefit of the project is associated with reoperations/additional flexibility.

Question/Comment	Response at Workshop
Pacheco Reservoir – Would like to have more specific information on when the District is losing water because San Luis Reservoir spills.	
Pacheco Reservoir – Wouldn't moving from San Luis Reservoir to Pacheco Reservoir transfer the algae problem to Pacheco Reservoir?	
Pacheco Reservoir – Staff needs to be clear with Board that the project needs to be combined with multiple other projects in order to meet the reliability target.	
Potable Reuse – Los Gatos – Need to make sure the Board is aware of the downside of P3, especially since there will be excess capacity in wet years and will need to ramp down production at the plant.	
Potable Reuse – Los Gatos – Seems like it is pretty certain to happen. Why not use that as the baseline for all portfolios? California WaterFix not as certain.	Since we don't have agreements and permits in place, there is still some uncertainty.
Potable Reuse should be characterized as low risk.	
No Regrets Package – Meets ecosystem and environmental justice objectives.	
Non-Potable Recycled Water – Interested in seeing expanded recycled water. Where is recycled water in the plan?	Assuming retailer projections for recycled water from the Urban Water Management Plans. Need to add the Countywide Water Reuse Master Plan and existing plans/studies to the project list.
Recycled and Purified Water – The Countywide Water Reuse Master Plan should be completed before finalizing the Water Supply Master Plan to avoid a "cart before the horse" situation. Overall goal for water reuse should be as much as possible.	The purpose of the Water Supply Master Plan is to define the District's strategy for providing a reliable and sustainable water supply, which includes defining the preferred mix of water supplies and demand management for the future. The Countywide Water Reuse Master Plan will define how to achieve the water reuse goals established by the Water Supply Master Plan.
Reservoir Storage – Need to consider flood control storage in reassessing yield from our local reservoirs.	
Shallow Groundwater – Should look at reusing water from dewatering sites.	
SFPUC – They have high rates and high reliability in droughts. Can we get water from them?	They are actually looking for additional drought year supplies.

Question/Comment	Response at Workshop
Surface Water Storage Projects – It seems like a stretch to say dams have ecosystem benefits. Maybe label the objective as "Prop 1 Ecosystem Benefits."	
Costs and Water Rates	
Should not make decisions about projects based on unit costs (cost/AF). Unit costs don't tell the whole story and can be used to force decisions to implement unsustainable projects.	
The District's strategy should be scalable and flexibility, so it can be implemented as needed with climate change and supply and demand changes.	
Most expensive supply is the water you don't have.	
What is/is not included in the water rates forecast?	The baseline scenario includes California WaterFix, Potable Reuse (up to 45,000 AFY), No Regrets, and Transfer-Bethany Pipeline.
Not clear to public that all the projects the District has on its list are needed now and for future droughts. We shouldn't overinvest. Are we planning on a gold-plated Cadillac when we really just need a Volkswagen?	
Need to have simple and clear explanation of what is needed and why.	
Staff seems to have a good handle on appropriate investment levels. Concerned that some may want unnecessary expensive projects.	
Staff should make it clear that adding expensive projects isn't needed to meet future needs at this time. In other words, show that the costs of adding projects does not result in commensurate increasing is reliability.	
Need to show the rate impacts of the different projects and portfolios.	
Need to make sure that investments are made at the appropriate time. Don't build a project now that isn't needed for 40 years.	
The District should consider how it wants the public to perceive its actions. When the District sets rates, is it demonstrating that it is conscientious with regard to minimizing rate increases or will it appear that the District is spending unnecessarily.	

Question/Comment	Response at Workshop
Proposed rate increases are substantial and don't leave room for retailer needs in their systems.	
Don't propose a $2 billion CIP if there is only a $1 million budget.	
Need to have sustainable rates as well as a reliable water supply. The rates don't seem sustainable.	
Timing is important. Some of these projects can wait.	
Very difficult to justify 10% rate increases, essentially doubling rates over next 10 years, after they already doubled last 10 years. And some of these projects will have costs past Darin's forecast, are rates going to double again in the next 10 year window. This is not sustainable.	
Haven't adequately considered the effect of increased rates on demands. Rates are going up and demands are going down.	
Affordability needs to be a consideration. Discrepancy between the effect of rate increases on the east side vs. west side.	
Break out rate impacts without Prop 1 Water Storage Investment Program funding.	
Lower income people are hit harder by rate increases, but not drought surcharges.	
Do newcomers pay for new water requirements? Are there development fees?	Something at least one Board member is really interested in. Challenging because 1) new development doesn't appear to be increasing water use and 2) SCVWD is not a land use agency.
Are impact fees included in the costs of projects?	No, but will consider potential sources of revenue in developing the financing plan.
Other	
Staff should explain why "previously considered" projects were cut from the project list.	None of the projects are off the list forever. Some do not make sense at this time because 1) there are lower cost and/or more effective projects that achieve the same purpose or 2) there are issues with feasibility at this time. Staff will try to improve the descriptions on the project list.
Add a risk column to project summary table.	
Provide incentives to local urban growers who provide fresh produce to low income families via community gardening projects.	

Question/Comment	Response at Workshop
Should include ongoing recycled and purified water studies on the project list, e.g., Sunnyvale and Palo Alto partnerships, South County Recycled Water Master Plan. Should also consider direct potable reuse.	
Does the District have a recycled water target?	Yes, 10 percent of supply by 2025.
Would like to see information on the Countywide Water Reuse Master Plan on the District web site.	
Do not appear to be trying to reduce reliance on Delta. Please document how reduced reliance is measured. Disagree that reduced reliance means a lower percent of Delta water in the portfolio - believe it should be a reduction in water from the delta.	
People want to reduce water use so there is more water in the Delta and in creeks.	
Please put workshop materials on website.	
The District should do more meetings like this.	

From:	Patrick Ferraro
To:	Tracy Hemmeter
Cc:	Jerry De La Piedra; Board of Directors; Barbara Keegan; Katja
Subject:	Re: SCVWD Water Supply Master Plan Workshop Presentation
Date:	Monday, January 22, 2018 12:46:21 PM
Attachments:	image001.png WSMP Update 2018 01 12.pptx

Thanks Tracy and Jerry.

The workshop was well worth attending and I complement you both for fielding many tough questions and concerns about the track that the DRAFT Master Plan implies.

I want to re-state my concern that conducting a **Water Reuse Master Plan** should be completed before the finalization of the Water Supply Master Plan.Otherwise, the product will be a classic " cart-before-the-horse"

I was greatly encouraged last month by the "No Drop Left Behind" seminar sponsored by Sustainable Silicon Valley at the Mt. View Microsoft campus. Industry engagement in distributed reuse and water use efficiency can add substantially to local water supply reliability and reduce the projected costs of shortfalls. The same applies to domestic reuse, rainwater capture and landscape retrofits.

Affordability has become a greater concern for county residents and business, as evidenced by the well-organized resistance to San Jose Water Company's recent rate increase requests to the CPUC and the damage done during their administrative approach to implementing the mandated use reduction during the last drought. But again, I object to decision making based on unit costs developed to force decisions to implement unsustainable projects.

The "One Water" approach requires that the issue of flood control storage be a major consideration for re-assessing the yield from our local water resources. Also, the discussion has skipped the costs and benefits of direct potable reuse, which of course has the added risk of lack of public acceptance. The benefits to improving Delta water quality by blending with product water from the purification plants and reducing the need for Delta water make this project worth considering now.

Thanks again for your hard work and public service to our local communities.

Never Thirst!

Pat Ferraro, Former Director, SCVWD

On Mon, Jan 22, 2018 at 9:12 AM, Tracy Hemmeter <themmeter@valleywater.org> wrote:

> Hi all,
>
> Thanks to those of you that could attend the Water Supply Master Plan workshop on 1/12/18. I'm still working on updating our web page to have more current information, but thought I should at least get you the presentation from the workshop. There are some project specific slides at the end that I didn't use during the presentation, but I thought they

might be interesting.

Please let me know if you want to be removed this distribution list.

Thank you,

Tracy

TRACY HEMMETER

SENIOR PROJECT MANAGER
Water Supply Planning and Conservation
Santa Clara Valley Water District

5750 Almaden Expressway, San Jose, CA 95118
(408) 630-2647
themmeter@valleywater.org

From: AlMeg
To: Tracy Hemmeter
Cc: AlMeg
Subject: material for consideration: Re: Santa Clara Valley Water District staff are holding a workshop on Friday, January 12 10AM-12Noon
Date: Wednesday, January 10, 2018 11:24:43 AM
Attachments: image001.png
AG.MG commnt memo re 2017 Wat Supp Mast Plan .docx
WaterFix memo for Oct 17_2017 SCVWD mtg.docx

Hello, Tracy,

I just received your notice as a "forward", and would appreciate your seeing that my e-mail is added to your list of recipients, so that in the future, advance notice will be provided to my husband and me We look forward to participating in Friday's meeting

My husband and I re-submit the two attached documents (our memos, concerning water supply and the related WaterFix, previously submitted to the SCVWD Board) for inclusion in tomorrow's meeting and consideration by SCVWD staff, the Board and the public

Thank you

Best regards,

Meg Giberson
amgibr-lwv@yahoo com

From: Tracy Hemmeter [mailto themmeter@valleywater org]
Sent: Thursday, December 28, 2017 8:28 AM
Cc: Nina Hawk <NHawk@valleywater org>; Garth Hall <ghall@valleywater org>; Jerry De La Piedra <GDeLaPiedra@valleywater org>; Rick Callender <rcallender@valleywater org>; Rachael Gibson <rgibson@valleywater org>; Paul Randhawa <PRandhawa@valleywater org>
Subject: SCVWD Water Supply Master Plan Workshop - 1/12/18

Santa Clara Valley Water District (District) staff are holding a workshop on Friday, January 12, 2018, to get input on different water supply strategies that are being considered for the District s Water Supply Master Plan The Water Supply Master Plan is the District s strategy for providing a reliable and sustainable water supply into the future in a cost-effective manner At this workshop, staff will go over projected future water supplies and demands, describe the new projects being considered for the Water Supply Master Plan, and present potential water supply strategies for stakeholder discussion and input The input will be presented to the District Board as part of the next Water Supply Master Plan update, probably in February 2018 The most recent update provided to the Board is available by clicking here I have also attached a summary of the projects that we are currently including in the potential water supply strategies

Workshop time and location:

- Date: Friday, January 12, 2018
- Time: 10:00 am to Noon
- Location: District Headquarters Boardroom, 5700 Almaden Expressway, San Jose, 95118

Please RSVP so we can make sure we have appropriate number handouts and seats

Happy New Year!

Tracy

TRACY HEMMETER
SENIOR PROJECT MANAGER
Water Supply Planning and Conservation
Santa Clara Valley Water District
5750 Almaden Expressway San Jose CA 95118
(408) 630-2647
themmeter@valleywater.org

TO: Honorable Members of the Santa Clara Valley Water District Board

FROM: Alan and Meg Giberson, ratepayers

RE: **2017 Water Supply Master Plan**

DATE: September 19, 2017

The Delta Reform Act of 2009 mandated reducing reliance on the Delta eight years ago. Water Code § 85021. The Water Supply Master Plan and update of 2012 and 2015 could have included these "no regret" projects, and more.

However, SCVWD's 2017 Water Supply Master Plan (current draft) still looks to increase imports through WaterFix, seeking a projected 41,000 afy from WaterFix (more even than the 39,000 afy projected shortfall that was identified last week in the SCVWD 9/12/2017 staff packet "modeled long-term average" graphic).

Too much time and money have been spent on WaterFix tunnels, a project that is fraught and tainted by too many unknowns and behind-the-scenes negotiations, dodgy ownership and payment options. It is time to look to local and regional projects for the "shortfall" water and put a hold—preferably permanent—on WaterFix.

Strategies to reduce reliance on imported water such as conservation, recycling and stormwater capture can more than compensate for projected future delivery shortfalls (even without WaterFix).

Singapore, for example, with a population three times that of Santa Clara County, currently meets 40% of its water demand (~192,640 afy) with recycled water. By 2060 Singapore expects to meet up to 55% of its demand. Recycled water has allowed industries there to reduce their costs because of the high level of purity in the recycled water.

Creative local solutions acknowledging our situation should be pursued. Some of Santa Clara County is at or below sea level, where buildings' lower levels are impacted by infiltrating water: basements of both residences and businesses need to be fitted out with pumps to remove the continuing inflow of water. At a recent SCVWD hearing, Roger Castillo, a local RCD director, pointed to the obvious: the water that pump stations remove from downtown buildings could be pumped to the upper watersheds to replenish the system. Palo Alto residents complained several years ago about large new construction that required ongoing pumping of basements—which then lowered the groundwater level for their areas. The same basement pumping situations are occurring elsewhere in this county.

Demand and supply can be managed through thoughtful, proactive, investments in projects that will benefit the health of our economy, our Bay and our community, as well as those of the Delta. What has been proposed in the "No Regrets Package" is a good start, but needs to be

pursued more intensively. Growing population doesn't have to mean increases in water use. Strategies that involve less imported water can meet reasonable demands.

The time factor also should be accounted for. The "no regrets" package can be started immediately, with costs and construction overseen by our local authorities, with foreseeable benefits to our economy. The WaterFix will not be operational for well over a decade, with as-yet-undetermined costs and uncertain product, but whose costs will require more ratepayer/taxpayer dollars immediately.

A State Water Resources Control Board policy established a mandate (in 2009) to increase the use of recycled water in California:

> We strongly encourage local and regional water agencies to move toward clean, abundant, local water for California by emphasizing appropriate water recycling, water conservation, and maintenance of supply infrastructure and the use of stormwater (including dry-weather urban runoff) in these plans; these sources of supply are drought-proof, reliable, and minimize our carbon footprint and can be sustained over the long-term.

The SCVWD should consider the following examples of conservation and recycling projects that have been successfully planned or successfully implemented by others, as projects to emulate.

Water conservation—we are doing well, but could do better: Santa Clara Valley and Santa Clara Valley Water District can meet future demand even without WaterFix.

• There would be a **shortfall** of about **23%** of our modeled long-term average Delta imports in a future with no WaterFix (assuming the 39,000 afy shortfall mentioned in last week's memo) and increased restrictions on water from the Delta; according to SCVWD predictions — future shortfalls could equal 37,000 afy (average year, 2040) to 137,000 afy (drought, 2040)

• Conservation in the recent drought has already saved **28%** according to SCVWD (approximately 84,000 afy);

• conservation predicted in the 2012 Water Master Plan shows that conservation and water recycling strategies will reduce Delta water reliance by **25%**.

Water recycling—we could do more:

• SCVWD looks to only **32,000 acre-feet per year** (afy) of non-potable recycled water by 2040. Current recycle figure for the county is up to **≈15,000 afy**. (population of Santa Clara County ~ 1.9 million)

• **Singapore** (population ~ 5.7 million) recycles wastewater effectively

- recycled currently meets 40% water demand (~**192,640 afy**)
- has allowed industries to reduce their costs because of the high level of purity in the recycled water.

• **Orange County Water District** already recycles **103,000 afy** that it uses to recharge its underground aquifer for drinking water purposes (unit cost $525 with subsidies and $850 without subsidies)

• **LA County Sanitation Districts**, in partnership with Metropolitan Water District, are planning a Regional Recycled Water Program with an eventual production target of up to **168,000 afy**

• The **LADWP** reported in May 2010 that its water recycling/replenishment will use "about 50% less energy than it takes to import water from Northern California and the Colorado River and it will lessen the strain on California's Bay Delta."

• An April 2017 **SCVWD**/EMC **survey** showed many more voter/customers willing to pay for recycled water than were willing to invest in maintaining the level of imported water from the Sacramento-San Joaquin [Delta]

• A survey by the Bay Area Council in 2015 found **88 percent** in **favor** of **expanding recycled water** programs (*See*: http://www.bayareacouncil.org/news/2015-bay-area-council-poll/ .)

• DWR's 2005 Water Plan found that "[t]here is a potential of about **0.9 million to 1.4 million acre-feet annually** of ***additional*** water supply from recycled water by the year 2030."

• Consequences of not cleaning up wastewater could be **fines of $5 billion to $10 billion**, which could be imposed on sewage treatment plants around the Bay for discharging substances that are fouling the Bay (http://www.mercurynews.com/bay-area-news/ci_24630366/san-francisco-bay-waters-are-becoming-clearer-but)

Local stormwater capture could potentially replace a large part of Santa Clara Valley's imported water.

• SCVWD used **imported water to fill its groundwater basins**, even when local water from this past rainy winter could have been used to recharge our local aquifers. (See: http://www.mercurynews.com/2017/03/02/water-district-perc-ponds-pass-on-turbid-water-full-of-sediment/). As SCVWD says, local aquifers hold nearly half the water used in the county and constitute a vast storage capacity (> 2 times local reservoirs).

• "**Groundwater basins** are the only thing that even approximate in size of storage [what] we're going to lose when we lose our snowpack in the decades to come." (Felicia Marcus, SWRCB Chair, speaking at a GGU water law conference, Jan. 2015)

• **Los Angeles** has proposed long-term stormwater capture of **179,000** acre-feet/year (conservative estimate) **to 258,000 acre-feet/year (afy)** (aggressive estimate) by 2099. Santa Clara Valley receives about the same amount of precipitation as LA and should prepare the same aggressive program.

• LA might even capture **up to 300,000 afy stormwater** says Dr. Richard Luthy, a Stanford professor of civil and environmental engineering and the director of the National Science Foundation's Engineering Research Center.
https://mavensnotebook.com/2016/08/18/stormwater-capture-treatment-and-recharge-for-urban-water-supply/

• The October 2014 stormwater capture bill signed by Gov. Brown points to the opportunity to capture **more than 600,000 afy** within the Bay Area and Southern California.

Population growth, other areas' experience has shown, does not mean greater water demand (although population growth appears to be SCVWD stated reason for greater projected demand).

• In fact, **LA** population **grew by one million** while water **demand** stayed at about the **same level** for the **past 45 years** or so. **https://www.newsdeeply.com/water/articles/2016/11/08/how-water-use-has-declined-with-population-growth (Also see: Urban Water Demand in California to 2100: Incorporating Climate Change (Aug. 2012) http://pacinst.org/wp-content/uploads/2014/04/2100-urban-water-efficiency.pdf)**

• **San Francisco** Public Utilities Commission saw **water use drop 17 percent** for its retail customers between 2005 and 2015 while **population increased by 10 percent**.

• SCVWD in its 2012 Water Master Plan looked to a population growth of only 600,000 people by 2035 (ABAG projection) yet **claimed** that growth will result in an **increase** in water demands of **94,000 afy** by 2035

Leaks account for a lot of lost water:

• "Studies suggest that leak detection surveys could reduce annual water losses by **260,000 gallons per mile surveyed**, at a cost of $300 per mile." Oct. 2016, *The Cost of Alternative Water Supply and Efficiency Options in California* (Pacific Institute)

• DWR estimates that leaks in water district distribution systems siphon away more than **700,000 acre-feet of water** a year in California—enough to supply 1.4 million homes for a year. Audits of water utilities have found an average loss through leaks of 10 percent of their total supply. [From Governor's 5/9/2016 drought message]

• **Finding leaks in pipes** may get easier -- saving money and water according to an MIT study.
https://www.wateronline.com/doc/finding-leaks-while-they-re-easy-to-fix-0001?vm_tId=2015739&user=92da4b24-340f-483f-abe0-59407f92cf31&utm_source=et_10759433&utm_medium=email&utm_campaign=WOL_08-10-2017&utm_term=92da4b24-340f-483f-abe0-59407f92cf31&utm_content=Finding+Leaks+While+They%2527re+Easy+To+Fix

Local jobs are created by local/regional projects (that can't be outsourced):

• SEIU Local 721—the largest public sector union in Southern California—opposes California WaterFix/tunnels and questions the financial plan and higher costs of WaterFix. Their July 13, 2017 letter enumerates the jobs that environmentally sustainable water capture at the local level can create. SEIU Local 721 supports recycling and stormwater capture (Letter already submitted to SCVWD Board).

• The Sacramento Regional Sanitary upgrade will create up to 600 construction jobs (at peak construction) (see: http://www.kcra.com/article/600-workers-will-build-2b-mega-project-in-sacramento/6419879). Similar projects locally could create local jobs.

Tech: Silicon Valley technology can address many of these water supply issues, by using its ability to innovate, not by promoting an improvident WaterFix project.

Dams are a questionable proposition**:**

• dams and their reservoirs leak or lose billions of gallons of water to evaporation: https://projects.propublica.org/killing-the-colorado/story/arizona-cotton-drought-crisis

• a 2016 algae bloom in San Luis Reservoir became severe, resulting in an advisory level upgraded to "warning" from "caution" http://www.fresnobee.com/news/local/article110480652.html

Conclusion: The proposed WaterFix has too many unknowns and uncertainties; it is not the water solution for Santa County residents and ratepayers. Other, better solutions should be aggressively pursued.

WaterFix unknowns and problem issues, for example, include:

• the **accusation that taxpayer money was "wrongly used"** to plan California water tunnel project according to an Inspector General report (federal), issue covered by the LA Times http://www.latimes.com/local/california/la-me-water-tunnel-funds-20170908-story.html (some $50-80 million, depending on media reporting). Transparency and accountability have been lacking in this process

• whether WaterFix will be **legally considered** part of the SWP—an issue to be decided in "validation action" in Sacramento Court;

• if WF is not found to be part of SWP, then there is **questionable** ability under Water Code to **authorize bonds** to construct, etc.

• who will control project **if "validation action" fails** and DWR is not "owner"

-proposal that Joint Finance JPA, or "designee", could assume ownership, with question of who would control then ("ongoing negotiations, discussions" are being held, in private)

-"In the scenario that DWR does not have the authority, **SWP contractors** that are members of the Finance JPA would have to '**step up' to pay the debt service** for the outstanding Finance JPA Bonds." (from previous SCVWD Bd. Agenda Memo, Item 2.1, § F.1)

• whether State Water Board will allow the change in point of diversion to the proposed northern intakes (if not, the project will not go forward); the continued hearings on that are scheduled to begin in Jan. 2018

• WaterFix project projected **capital costs $16.7 billion,** that may ultimately **cost up to $60 billion or more**, including debt financing

• an ultimate **high cost** to SCVWD ratepayers (risk volatility is inherent in project)

• ultimate **water allocation** amount

-can depend on % from SWP, CVP, etc., regulatory actions, SLR, climate change

-SCVWD looks to approximately **28,000 to 44,300 afy gain** from **WaterFix**

• **opt-in/opt-out** "choices": opt-in for CVP participation in WF; opt-out of SWP participation in WF

• will **ratepayers** of Santa Clara County still have to pay for WaterFix even if SCVWD opts out of participation in SWP part of WaterFix; will SCVWD opt in to participation under CVP?

October 13, 2017

TO: Honorable Members of the Santa Clara Valley Water District Board

FROM: Alan and Meg Giberson

RE: October 17, 2017, SCVWD WaterFix meeting

California WaterFix (CWF or WF) is a fantasy project. The years-long process of "study" has left a "project" that seems no more real than it did 10 years ago because so much about it is unknown. Only 5% to 10% of the project has been designed so far; 90% to 95% of its design has yet to be determined. With its legal status as part of the SWP uncertain, with construction costs unknowable because of WaterFix's incomplete design stage, with as-yet-undeterminable borrowing costs (being dependent in part on whether a JPA or government/state actor will be the borrower), and with uncertain amounts of yield and cost per acre-foot of any WaterFix water, nothing about WaterFix can be relied on.

Currently available information demonstrates that WaterFix is a quagmire not a solution. California residents are being asked to trust, but there is insufficient data with which to verify. Need for this project cannot be demonstrated because local projects and local water sources will yield more reliable water at an equal or lesser cost.

COST will soar; COST OVERRUNS to be expected

CWF costs will rise above what has been promoted; accurate costs of construction and/or resulting cost per acre foot of water have not been—and cannot be— assured. CWF water costs presented to SCVWD board have been low-balled at $600 per acre-foot (per SCVWD projects' cost analysis, 9/19/17, Item 2.1-E, Handout, Attachment 4, revised page 13 of 42). However:

- staff has also labeled WaterFix cost as the riskiest, in a Weighted Cost Risk analysis of thirteen projects (Fig. 3, Attachment 3, SCVWD Item # 2.1, 9/19/17);
- costs will reach $888 to $1427 per acre-foot (in 2033 dollars) according to Kern documents ("Kern document" at https://wrmwsd.com/wp-content/uploads/2017/08/KCWA-CWF-Overview-Public-Version-Complete-9.15.17.pdf, page 72).

Cost overruns have plagued projects in this state and elsewhere. The Bay Bridge and high-speed rail are but two California examples.

The Legislative Analyst's Office also reported in 2009 an "upward expenditure cycle [of the SWP] … due in part to the lack of effective budgetary oversight of the (State Water Project)." The LAO has recommended making the State Water Project's entire budget part of the state budgeting process. Such a process might help CWF's soaring bottom line, but such oversight seems extremely unlikely in view of DWR /CWF activities to date.

Kern Water Agency's consultant 5RMK, while noting that CWF design was only "5 to 10 percent complete", was told to base its estimate on a "design definition" requiring a 10 to 30 percent complete" project. (Kern County Water Agency's Analysis of California WaterFix Impacts—"Kern analysis"—page 27.) With just this minimal information, 5RMK signaled possible WF capital cost increases that could be more than one and one-half times 5RMK's lowest estimate. (Kern Analysis, page 76.)

FAULTY PROJECT DESIGN, reliability jeopardized:

Given the preliminary status of WaterFix design, all cost estimates are guesswork, based on missing and/or inadequate data. Comparisons and estimates cannot be considered reliable, and border on speculation because of so many unknowns.

The ≈35% construction contingency figure reported for WaterFix by both SCVWD[1] and Kern County Water Agency would be drastically low for a large tunneling project such as this, given the "iron law of megaprojects": "over time, over budget, over and over again." Considering the 5% to 10% design stage[2] of WaterFix and the identified weakness of the construction method using concrete segments that are subject to leakage at segment joints, costs will soar with likely tunnel failure; water reliability will be jeopardized.

Initial DWR design documents indicate large segmented concrete tunnels are planned, but without the inner lining that had been considered earlier. (See: Informational comments submitted by Des Jardins for the 10/10/2017 SCVWD meeting, quoting DWR 2010a, p.9.) This cheaper design nearly guarantees leakage from sources such as: 1) seismic activity, 2) subsidence of the soft soils surrounding proposed tunnel placement, 3) long-term degradation of segmental concrete lining, resulting in 4) increased forces pulling the tunnels apart. Consequences will be increased cost to 1) redesign and construct tunnels, or 2) repair, if built as preliminarily designed.

The Des Jardins 10/10/2017 submission cited EMBUD's 2015 comments on the tunnel design:

> Long-term degradation of segmental concrete lining may result in failure of the lining. In the event that the tunnel lining fails and results in a tunnel collapse or blowout, a collapse during operations would result in major ground movement extending to the ground surface and potentially sinkholes or blowout.

[1] SCVWD Sep 12, 2017 Board memo, Section D ("Total WaterFix costs"), Table 1 (Calif. WaterFix Cost Summary) cited "Contingency (36%)" under capital costs (and directly following "construction" costs

[2] Design is at only 5% to 10% stage ("the design definition for California WaterFix currently is between 5 to 10 percent complete", according to https://wrmwsd.com/wp-content/uploads/2017/08/KCWA-CWF-Overview-Public-Version-Complete-9.15.17.pdf

STATE AUDITOR'S REPORT critical of **WATERFIX**:

The State Auditor's Report is critical of WaterFix; it should be heeded as a warning not to proceed with the project. DWR's lack of transparency is not new, and bodes ill for any WaterFix future. The State Auditor's report re WaterFix (October 2017, Report 2016-132) indicates ongoing lax management on the part of DWR, which was responsible for:

- no demonstration of financial viability, incomplete financial analysis, yet "[t]he financial analysis is critical in determining whether water contractors are willing and able to pay for the construction of WaterFix" (State Auditor's Report, pages 34- 35);
- unqualified consulting firm hired, with multi-million dollar CWF contract, but no competitive bid process;
- amended contracts for BDCP consultant costs resulting in cost increases of nearly five times the original amount, with funding or spending "not fully track[ed]" (State Auditor's Report, page 17);
- no finished economic analysis;
- $50 million allegedly misused to pay planning costs;
- planning alone 200%-500% over budget.

With DWR making the critical and final decisions re WaterFix management, WaterFix is a bad choice for Santa Clara Valley ratepayers.

DESIGN AND COST CONSIDERATIONS:

Design and cost considerations coalesce in ballooning costs if WaterFix is allowed to proceed. California already faces a staggering cost of infrastructure maintenance, leak detection and repair. Dams in California, for instance, need expensive upgrades/repairs.

- The same people (DWR) who brought us Oroville—with repair costs rising potentially to $1 billion— have suggested a CWF design that proposes tunnel construction involving demonstrably problematic construction techniques. SWP contractors, such as SCVWD (and ratepayers), may be on the hook for expenses such as the Oroville repair, according to a statement by Gov. Brown's Department of Finance in February this year.
- Of the dams owned by SCVWD, the California Division of Safety of Dams September 2017 report listed four as only "fair", with significant downstream hazards due to extremely high potential for loss of life/infrastructure in the event of dam failure. SCVWD ratepayers will be on the hook for such catastrophic events.
- https://www.eenews.net/stories/1060053463: "The 240-foot Anderson Dam near Morgan Hill … impounds a 90,000-acre-foot reservoir that is threatened by an earthquake on the same fault. If it fails, a deluge would reach the pricey real estate in Morgan Hill in less than 15 minutes. Downtown San Jose would be under 8 feet of water in three hours. The dam's owner, the Santa Clara Valley Water District, has sought to avoid surprises…. But that hasn't kept its price tag from ballooning. The project cost jumped from $200 million to $400 million when new geologic studies concluded the upstream slope of the dam could collapse in an earthquake."

BETTER CHOICE: RELIABLE, DROUGHT-PROOF, CLIMATE-RESILIENT, LOCAL WATER SOURCES

The Pacific Institute notes that **urban water conservation** and **efficiency** measures are less expensive than most new water supply options and are thus the most cost-effective ways to meet current and future water needs. Indeed, many residential and non-residential measures have a "negative cost," which means that they save the customer more money over their lifetime than they cost to implement.

Stormwater capture projects can cost less, and use local water.

- A median cost of $590 per af for large stormwater capture projects is projected by a Pacific Institute study/report. (The Cost of Alternative Water Supply and Efficiency Options in California, Pacific Institute, October 2016)
- UCSC's Dr. Andy Fisher is currently working on distributed stormwater recharge projects in Pajaro Valley ("Pajaro"), which has a similar precipitation pattern to Silicon Valley's. Pajaro receives no imported water; it is dependent on groundwater, which—at over 1 mafy—represents 83-85% of Pajaro's demand. *See*: https://mavensnotebook.com/2017/09/20/dr-andy-fisher-enhancing-groundwater-recharge-with-stormwater/. The recharge initiative has four components: mapping, modeling, field project, monetizing incentives for stakeholders. Similar projects could help recharge Santa Clara Valley's aquifers.
- Work by Dr. Richard Luthy, Stanford, also demonstrates enormous potential for stormwater capture. *See*: https://mavensnotebook.com/2016/08/18/stormwater-capture-treatment-and-recharge-for-urban-water-supply/ Dr. Luthy projects the possibility that LA could boost its aggressive plan for stormwater capture (of 258,000 afy by 2099) **up to 300,000 afy stormwater**.
- Considerable tech expertise is available in Silicon Valley to address these, and similar, water source issues.

Alternate sources:

The averaged cost of $400 per acre-foot of the nine projects listed in SCVWD 9/19/017 Water Supply Master Plan Update demonstrates potential for sourcing water from other than megaprojects such as WaterFix. ("Project and Programs Currently Being Considered for Inclusion in the 2017 Water Supply Master Plan", Attachment 1, page 1 of 9).

- **Landscape conversion** can save up to 2,000,000 acre-feet per year in California, and is one of the lowest cost water supplies (The Cost of Alternative Water Supply and Efficiency Options in California, Pacific Institute, October 2016, page 17, Table 5, "Residential Water Efficiency Measures")
- **Recycled water**

- Recycled water has received **approvals** from numerous groups: Cal. Med. Assoc. (2012 Resolution 119-12); Santa Clara County voters (SCVWD/EMC April 2017 Survey); Bay Area Council 2015 (88 percent of those surveyed favored expanding recycled water programs); NRC/National Academies: Reuse of Municipal Wastewater has Significant Potential to Augment Future U.S. Drinking Water Supplies ("Moreover, new analyses suggest that the possible health risks of exposure to chemical contaminants and disease-causing microbes from wastewater reuse do not exceed, and in some cases may

be significantly lower than, the risks of existing water supplies.") (press release) Also see: http://www8.nationalacademies.org/onpinews/newsitem.aspx?recordid=13303.

- **Various areas and agencies** safely process and use large amounts of recycled water:

• OCWD 103,000 afy (project uses half the energy it would take to pump imported water; cost $525/af with subsidies, $850/af without subsidies);

• Singapore 192,640 afy;

• LA County Sanitation Districts plan up to 168,000 afy. LADWP reported in May 2010 that its water recycling/replenishment will use "about 50% less energy than it takes to import water from Northern California and the Colorado River and it will lessen the strain on California's Bay Delta."

• Del Puerto district (Stanislaus County) will receive 30,600 acre-feet of highly-treated wastewater (recycled water) from Modesto (from a $100 million project) that will supply one-third of the needs for Del Puerto farmers and give them a stable water source; ultimately 59,000 afy is anticipated. http://www.modbee.com/news/state/california/water-and-drought/article30198939.html#storylink=cpy

HIGH RISK: WaterFix was listed as the riskiest project in SCVWD staff's rating of 13 potential water supply projects. Members of the SCVWD board have also repeatedly mentioned being risk-averse; that risk aversion was again cited at the 10/10/2017 SCVWD board meeting. SCVWD and DWR documents have repeatedly reported that the WaterFix design is subject to change. (SCVWD staff reports, along with the Kern consultant 5RMK have identified the same 35% construction contingency.) WaterFix doesn't merit taking that risk.

BORROWING COSTS: If WaterFix is not legally considered part of the SWP (pursuant to a Validation Action in a Sacramento court) issuance of bonds may not be possible as a state action. Financing would then need to be provided through a JPA, which might have to pay higher interest rates than state-backed bonds receive. (And DWR has already had to increase its short-term—and thus more costly— borrowing capacity to pay for Oroville spillway repair work.)

CONCLUSION: A long, 15-year, delay in WaterFix water availability is projected (assuming all goes perfectly for the project, unlikely in view of the problematic design and multiple lawsuits challenging it). Local projects can be built faster and may be less costly, with local control and more reliable water as a result. History does not favor large infrastructure such as WaterFix; water transfer projects haven't been the solutions they were supposed to be. WaterFix is not the fix Santa Clara Valley needs.

Our five-page **memo submitted for the September 19, 2017, SCVWD 2017 Water Supply Master Plan** board hearing is hereby referenced and included in this memo, as if fully set forth herein.

Santa Clara Valley Water District

Water Supply Master Plan Update

January 8, 2019

Presentation Topics

Water Supply Master Plan Update 2040 Status

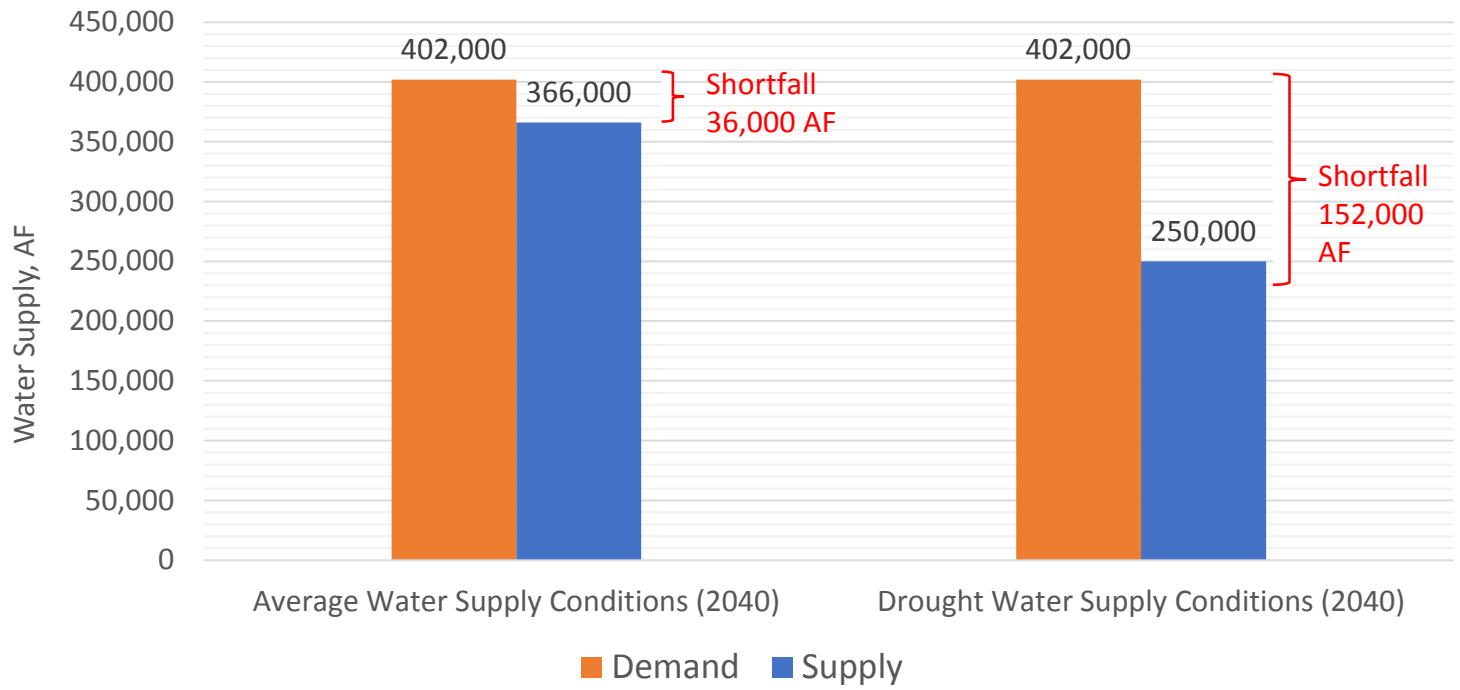
Recommended Water Supply Strategy

Water Supply Reliability Level of Service Goal

RoadMAP (Monitoring and Assessment Plan)

Next Steps

Droughts are, and will be, our greatest challenge to reliability



Many projects have been evaluated for filling the gap







Many strategies for water supply reliability have been evaluated


Sustainability


Regional Flexibility


Local Flexibility


Local Storage


Regional Storage


Statewide Storage


Low Cost


Low Risk


Integrated


And more…

Stakeholder Input Summary

Input	Phone Survey – Likely Voters	Workshop #1 - Environmental, Civic Non-Profits, Individuals	Workshop #2 - Retailers
Water supply reliability important	X	X	X
Expand conservation, recycling, and reuse	X	X	X
Minimize rate increases	X	X	X

Additional takeaways:

- Voters like additional local and regional storage
- Environmental groups and others request reduced reliance on Delta
- Retailers would like better alignment between plans and actions

Updated Risk Analysis

Project	Risk Ranking
California WaterFix – Federal Side	Extreme
California WaterFix – State Side Only	High
No Regrets – Complete Package	Medium
No Regrets - Advanced Metering Infrastructure	Low
No Regrets – Graywater Rebate Program Expansion	Low
No Regrets - Leak Repair Incentives	Low
No Regrets - Model Water Efficient New Development Ordinance	Medium
No Regrets – Stormwater/Ag Land Recharge, San Jose, Saratoga	Low
No Regrets – Stormwater/Rain Barrels, Cisterns, Rain Gardens	Low
Pacheco Reservoir	Medium
Potable Reuse and/or Additional Non-Potable Reuse	Medium
South County Recharge	Low
Transfer-Bethany Pipeline	Medium

Technical Analyses Summary

Imported supplies generally less expensive, but less resilient to climate change and risks

Potable reuse generally more expensive, but more resilient to climate change and risks

Local surface water likely to become more variable in the future

Increasing variability and uncertainty associated with climate change

Projects with the greatest influence on reliability are generally imported water, reuse, and conservation

Based on stakeholder input and technical analyses, staff recommends:

- Reaffirming the 2012 “Ensure Sustainability” Strategy
- Updating the level of service goal
- Continuing regular review of the Water Supply Master Plan through a monitoring and assessment plan (MAP)

2012 Board-Adopted “Ensure Sustainability” Strategy

Secure existing supplies and infrastructure

Expand conservation and reuse

Optimize the system

Element 1: Secure Existing Supplies and Infrastructure

Secure existing infrastructure

- Dam retrofits, pipeline maintenance, treatment plants, other rehab projects

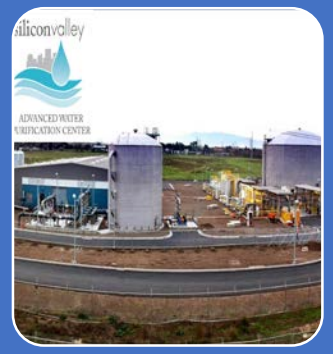
Secure existing local supplies

- FAHCE, recharge capacity, natural groundwater recharge

Secure existing imported supplies

- California WaterFix (CWF)

Element 2: Expand Conservation and Reuse



Expand Reuse

- P3 procurement for up to 24,000 AFY of potable reuse approved in December 2017

Expand Conservation

- "No Regrets" package of water conservation and stormwater projects approved for planning in September 2017

“No Regrets” Package

Program	Status
Advanced Metering Infrastructure (AMI)	Working with retailers on program definition
Graywate Rebate Program Expansion	Working with Ecology Action on direct installations
Leak Repair Incentives	Will be implemented based on AMI results
Model Water Efficient New Development Ordinance	Consultant in process of finalizing model ordinance
Stormwater-Ag Land Recharge	Pilot project being scoped
Stormwater- Rain Barrels and Cisterns	Implementing
Stormwater – Rain Gardens	Implementing
Stormwater – San Jose	Future project
Stormwater - Saratoga	Future project

Element 3: Optimize the system

South County Recharge

- Provides additional recharge capacity to meet future demands

Pacheco Reservoir Expansion

- Increases capacity to store surplus flows
- Consistent with Board priorities

Transfer-Bethany Pipeline (part of Los Vaqueros Project)

- Included in FY 18/19 rate forecast
- Connects multiple regional systems

“Ensure Sustainability” Strategy

- Protects existing assets
- Leverages past investments
- Meets new demands with drought-resilient supplies
- Supports “One Water” approach
- Develops local and regional supplies to reduce reliance on the Delta
- Increases flexibility
- Increases resiliency to climate change

Level of Service Goal Revisions Presented to Water Conservation and Demand Management Committee on June 25, 2018

Develop water supplies designed to meet 100 percent of demands identified in the ~~Urban Water Management Plan~~ Water Supply Master Plan in non-drought years and at least ~~90~~ 80 percent of average annual water demand in drought years.

Rationale

- 2017 Telephone Survey
- Stakeholder Input
- Incremental Costs
- Frequency of Shortage
- Planning for Uncertainty
- Benchmarking

Level of Service Goal Benchmarking

Agency	District Equivalent
Alameda County Water District	Meet at least 90% of demands during droughts
Zone 7 Water Agency	Meet at least 85% of demands during droughts
East Bay Municipal Utility District	Meet at least 85% of demands during droughts
Contra Costa Water District	Meet at least 85% of demands during droughts
San Francisco Public Utilities Commission	Meet at least 80% of demands during droughts
Marin Municipal Water District	Meet at least 75% of demands during droughts

Incremental Benefits of Increasing Level of Service

Scenario	Without Projects (Basecase)	With Some Projects Approved for Planning	With All Projects Approved for Planning
Minimum Drought Reliability	Meets 50% of demands	Meets 80% of demands	Meets 90% of demands
Present Value Benefits (2017$)	Not applicable	$2,480,000,000	$2,700,000,000
Present Value Cost to District (2017$)	Not applicable	$1,600,000,000	$2,450,000,000
Benefit:Cost Ratio	Not applicable	1.6	1.1

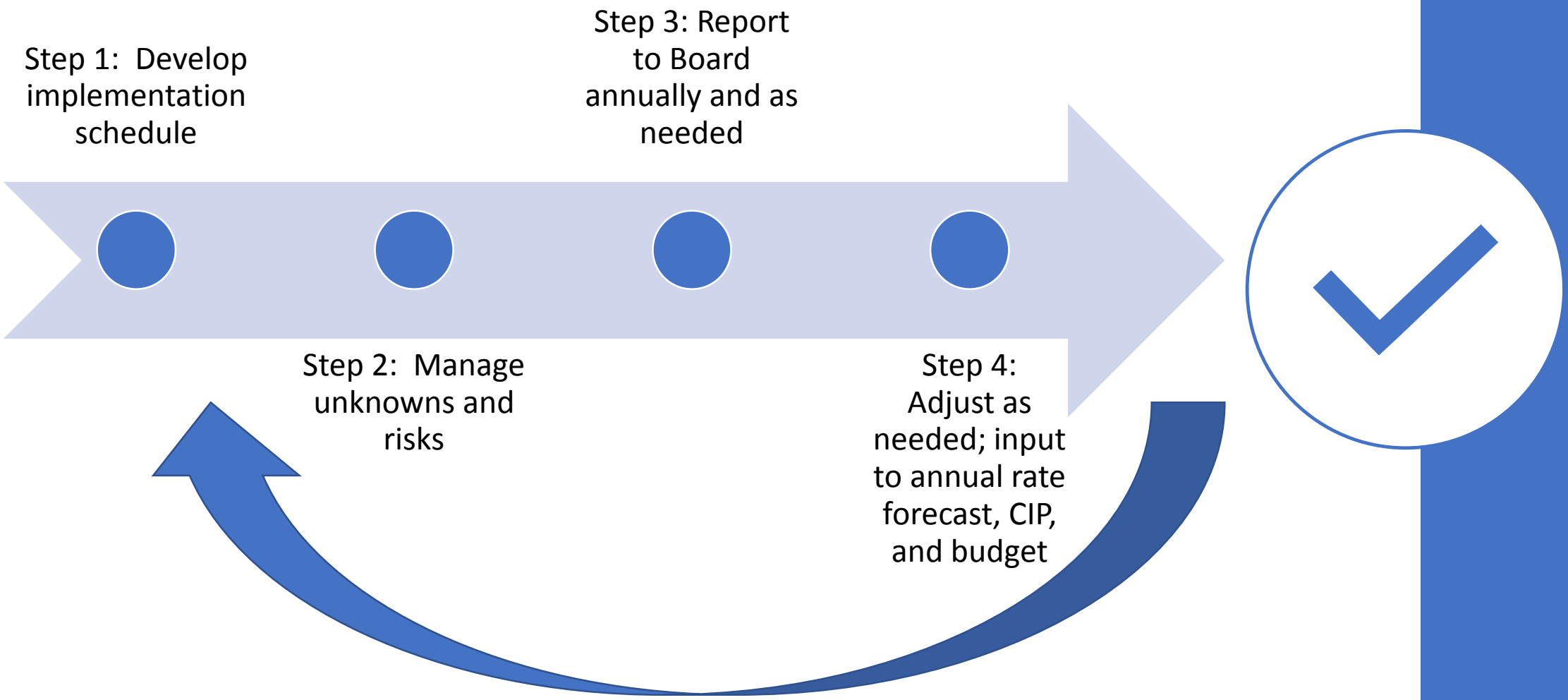
- Baseline Projects

- Baseline Projects
- No Regrets Package
- Potable Reuse
- South County Recharge
- WaterFix (State Side)

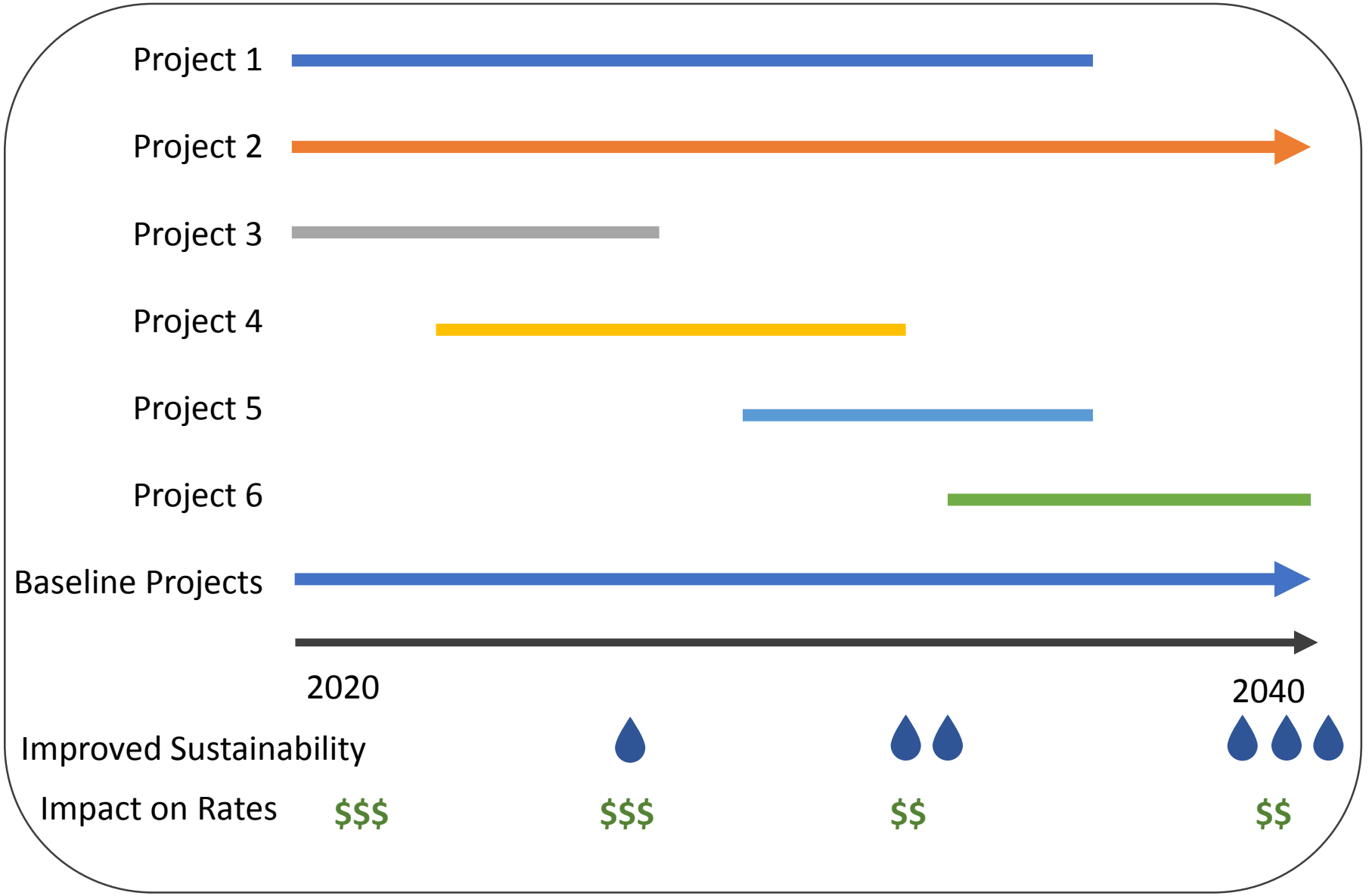
- Baseline Projects
- No Regrets Package
- Potable Reuse
- South County Recharge
- WaterFix (State Side)
- WaterFix (Federal Side)
- Pacheco Reservoir
- Transfer-Bethany Pipeline


Pacheco
Water Reuse
Los Vaqueros
The Road to Water Supply Security
Clear Water Supplies Ahead
50+ miles
New Water Supplies
15+ miles
?
Climate Change
Water Demand
Remaining Uncertainties
Delta Water Quality Plan
WaterFix
ROAD WORK AHEAD
FOG AREA
District Policies
Welcome to Conservation, Outreach & Customer Service
FASTRAK Checkpoint Ahead: Los Vaqueros WaterFix
AMI
5 miles
AMI = Advanced Metering Infrastructure

RoadMAP
(Monitoring and Assessment Plan)



Step 1: Develop Implementation Schedule



Step 2: Manage Unknowns and Risks

Monitoring Category	Example Metrics
Demands	• Water use • Conservation savings • Risks and opportunities
Existing Supplies	• Local surface water availability • Imported water availability • Recycled water use • Risks and opportunities
Ongoing Projects	• Scope • Schedule • Budget • Risks and opportunities
Alternative Projects	• Status • Risks and opportunities
Policies and Regulations	• Impact to water supply reliability/level of service • Risks and opportunities

Step 3: Report to the Board

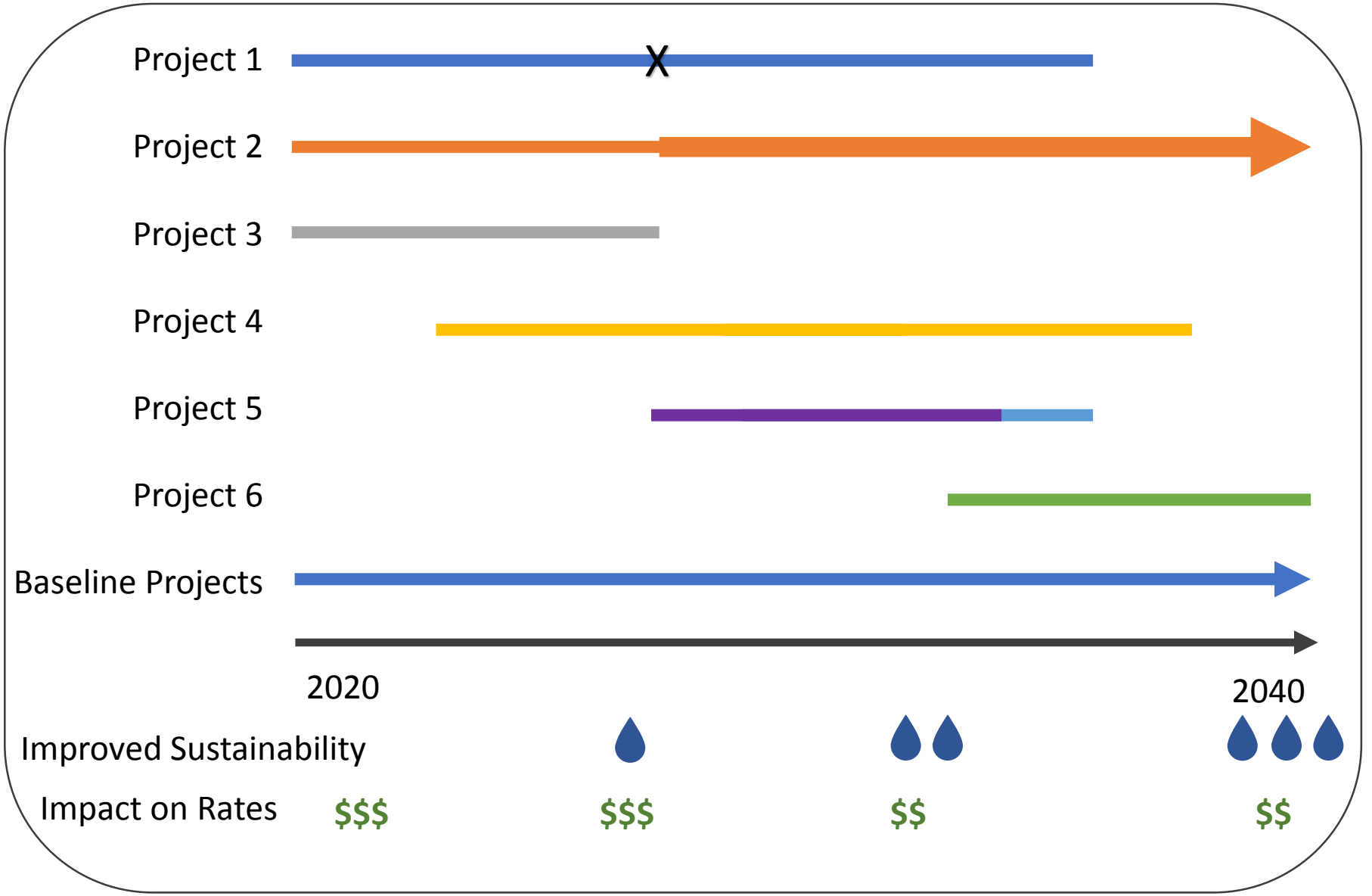
Suggested Master Plan Projects	Alternative or Additive Projects (Partial List)
• No Regrets Conservation and Stormwater • Potable Reuse • South County Recharge*** • WaterFix (State Side) • WaterFix (Federal Side) • Pacheco Reservoir • Transfer-Bethany Pipeline	• Sites Reservoir • Refinery Recycled Water Exchange • Los Vaqueros Reservoir • Countywide Water Reuse Master Plan • California WaterFix Long-Term Transfers • Bay Area Brackish Water Treatment • Lexington Pipeline • North County Recharge • Groundwater Banking • South County Water Treatment Plant • Morgan Hill Recycled Water

Considerations for Moving Projects

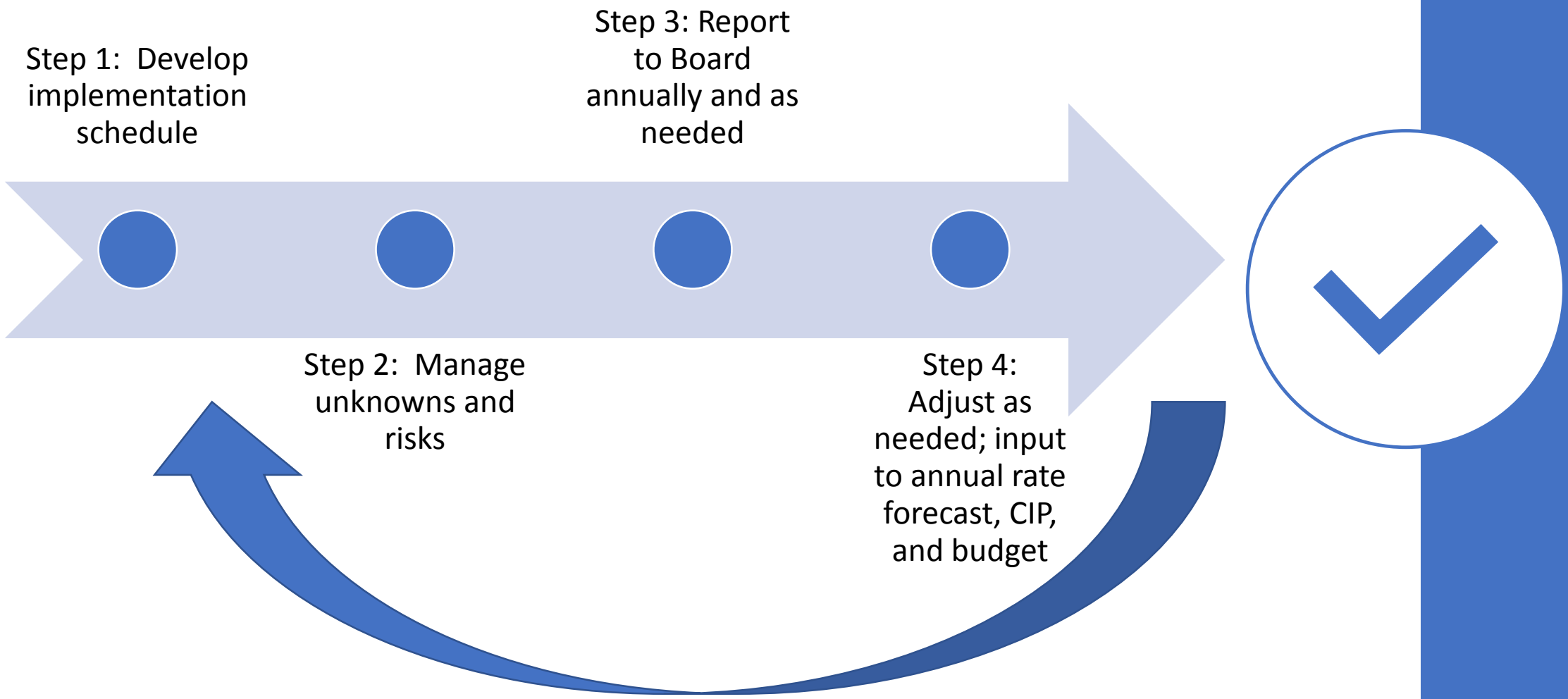
- Change in level of service
- Cost and rate impacts
- Change in risk level
- Relationships between projects
- Needs and opportunities
- Stakeholder input

***Not in 10-year rate forecast

Step 4: Adjust as Needed



RoadMAP
(Monitoring and Assessment Plan)



Next Steps

- Prepare Draft Water Supply Master Plan 2040 – March 2019
- Solicit input on draft Water Supply Master Plan – March – April 2019
- Present Final Water Supply Master Plan – June 2019

Recommendations

- Reaffirm the 2012 “Ensure Sustainability” Strategy
- Approve changing the water supply reliability level of service goal from meeting 90 percent of normal year demands in drought years to meeting 80 percent of demands in drought years
- Provide direction on the monitoring and assessment plan (MAP)
- Direct staff to return with updates on projects with near-term decisions points

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File No.: 19-0066

Agenda Date: 1/14/2019
Item No.: 2.2.

BOARD AGENDA MEMORANDUM

SUBJECT:
Follow-up discussion of the Preliminary Fiscal Year (FY) 2019-20 Groundwater Production Charge Analysis. (Continued from January 8, 2019)

RECOMMENDATION:
Discuss and provide direction on the preliminary FY 2019-20 Groundwater Production Charge analysis prepared by staff.

SUMMARY:
This agenda memo is a follow-up to the January 8, 2019 Work Study Session on Preliminary Fiscal Year (FY) 2019-20 Groundwater Production Charges and the District's Capital Improvement Program, and Board Consideration to Approve the District's Fiscal Years 2020-24 Preliminary Capital Improvement Program (CIP) (Item 5.3). This item specifically focuses on the preliminary FY 2019-20 groundwater production charge analysis and includes additional scenarios for Board consideration. Staff is seeking Board input on the preliminary analysis to incorporate into the development of the groundwater production charge recommendation.

The groundwater production charge recommendation will be detailed in the Annual Report on the Protection and Augmentation of Water Supplies that is planned to be filed with the Clerk of the Board on February 22, 2019. The public hearing on groundwater production charges is scheduled to open on April 9, 2019. It is anticipated that the Board would set the FY 2019-20 groundwater production charges by May 14, 2019, that would become effective on July 1, 2019.

Groundwater Production Charge Projections Presented on January 8, 2019

Staff presented 5 preliminary groundwater charge scenarios on January 8, 2019 for Board review. For North County Municipal and Industrial (M&I) groundwater production, the scenarios ranged from an increase of 4.7% to 8.1% for FY 2019-20, and from 5.7% to 7.7% for South County M&I groundwater production depending on the scenario.

The overall impact of the 5 preliminary analysis scenarios for FY 2019-20 to the average household would be an increase ranging from $2.09 to $3.60 per month in North County and from $0.88 to $1.19 per month in South County.

For references purposes the projects and assumptions included in the original 5 scenarios are listed below:

Scenario 1) Water Supply Master Plan (WSMP) 90% Level of Service
This scenario includes the following projects and assumptions:

- Baseline Projects (according to the WSMP);
- California WaterFix (CWF) (State and Federal side);
- No Regrets Package projects;
- Potable Reuse Phase 1 to produce 24,000 AF (assume operations start in FY 28);
- Pacheco Reservoir Expansion (assumes $485 M Proposition 1 grant);
- Transfer-Bethany Pipeline;
- South County Recharge (assume facilities built beyond FY 2028-29);
- $200M warranty placeholder cost for dams and treatment plant upgrades;
- The Board's CWF Guiding Principle #5.

Scenario 2) Water Supply Master Plan 80% Level of Service (LOS)
Includes the same projects and assumptions as Scenario 1 except as follows:

- CWF Federal side is excluded;
- Transfer-Bethany Pipeline is excluded;
- Pacheco Reservoir Expansion is paid for by a special tax, not water charges.

Scenario 3) Water Supply Master Plan 80% LOS, Reduce Potable Reuse
Includes the same projects and assumptions as Scenario 2 except as follows:

- Potable Reuse Phase 1 capital costs are reduced by 50%, with the remaining 50% assumed to be spent beyond FY 2028-29; the District "pay as you go" contribution is reduced from 30% to 15%; and the Public-Private Partnership (P3) reserve grows to $10 M by FY 2027-28 instead of $20 M;
- Transfer-Bethany Pipeline is included.

Scenario 4) Water Supply Master Plan 80% LOS, Reduce Potable Reuse, No CWF
Includes the same projects and assumptions as Scenario 3 except as follows:

- CWF State side is excluded

Scenario 5) Water Supply Master Plan 80% LOS, Reduce Potable Reuse, Add Los Vaqueros and Sites Reservoirs
Includes the same projects and assumptions as Scenario 4 except as follows:

- CWF State side is included;
- Sites and Los Vaqueros Reservoirs are included.

Board Member Comments on January 8, 2019
Staff captured the following Board member comments on January 8, 2019 in no particular order:

- Scenario 4 should be eliminated as it does not meet the 80% level of service goal (does not meet 80% of average annual water demand in drought years)

- The potential investments in Sites and Los Vaqueros reservoirs should be separated for purposes of the scenarios (include most viable option only)
- Little support for reducing the investment in potable reuse prior to FY 2028-29 and delaying the remaining investment to beyond FY 2028-29
- Support indicated for Scenario 1, which would achieve the 90% level of service goal, although there was also general support indicated for looking at scenarios that would achieve the 80% level of service goal

Additional Scenarios

Scenario 6) Water Supply Master Plan 90% LOS, Pacheco paid by Other Sources
Includes the same projects and assumptions as Scenario 1 except as follows:

- Pacheco Reservoir Expansion is paid for by other sources, not water charges.

Scenario 7) Water Supply Master Plan 80% LOS, Pacheco paid by Other Sources
Includes the same projects and assumptions as Scenario 6 except as follows:

- CWF Federal side is excluded.

Scenario 8) Water Supply Master Plan 80% LOS, Pacheco paid by Other Sources, Add Los Vaqueros Reservoir
Includes the same projects and assumptions as Scenario 7 except as follows:

- Includes investment in Los Vaqueros Reservoir.

Scenario 9) Water Supply Master Plan 80% LOS, Pacheco with $250M WIIN funding, WIFIA loan & Partners Pay 20%
Includes the same projects and assumptions as Scenario 8 except as follows:

- Excludes investment in Los Vaqueros Reservoir;
- Pacheco Reservoir Expansion funding includes $250M Water Infrastructure Improvements to the Nation Act (WIIN) funds, a Water Infrastructure Finance and Innovation Act (WIFIA) loan, partner agencies assumed to pay for 20% of project, remaining balance paid for by water charges or other District revenue sources

For North County Municipal and Industrial (M&I) groundwater production, scenarios 1, 6, 7, 8 and 9 range from an increase of 5.9% to 8.1% for FY 2019-20, and from 6.4% to 7.7% for South County M&I groundwater production depending on the scenario.

The overall impact of Scenarios 1, 6, 7, 8 and 9 for FY 2019-20 to the average household would be an increase ranging from $2.62 to $3.60 per month in North County and from $0.99 to $1.19 per month in South County.

FINANCIAL IMPACT:
This preliminary analysis of the groundwater production charges does not have any direct financial

impact, however, the adopted groundwater production charges will affect the future finances of the Water Utility Enterprise.

CEQA:
CEQA Guidelines Section 15273: CEQA does not apply to establishment or modification of water rates.

ATTACHMENTS:
Attachment 1: PowerPoint

UNCLASSIFIED MANAGER:
Nina Hawk, 408-630-2736
Darin Taylor, 408-630-3068

Preliminary FY 20 Groundwater Production Charge Analysis Continued…

January 14, 2019

Santa Clara Valley Water District

Board Member Comments on January 8, 2019

- **Scenario 4 should be eliminated**
  - **Does not meet 80% level of service goal**
- **Separate potential investments in Sites and Los Vaqueros reservoirs**
  - **include most viable option in scenario**
- **Little support for reducing investment in potable reuse prior to FY 29, & delaying remaining investment to beyond FY 29**
- **Support for Scenario 1, achieves 90% LOS goal**
  - **General support indicated for scenarios that achieve 80% LOS goal**

Financial Analysis: Additional Scenario Assumptions

1) WSMP 90% Level Of Service (LOS)

- Baseline Projects
- CWF (State side)
  - Paid for by water charges, not SWP Tax
- CWF (CVP side)
- No Regrets Package
- Potable Reuse Phase 1 to produce 24KAF by FY 28
  - Based on $690M capital project, District contributes 30% "pay as you go"
  - P3 reserve at $8M in FY 20 growing to $20M by FY 28
- Pacheco Reservoir
- Transfer-Bethany Pipeline
- South County Recharge
  - Timing = beyond FY 29

Also Includes:

- $200M warranty placeholder for dams & WTP's
- Guiding Principle #5

North 8.1%, South 7.7% avg annual incr.

6) WSMP 90% LOS, Pacheco paid by other sources

- Baseline Projects
- CWF (State side)
  - Paid for by water charges, not SWP Tax
- CWF (CVP side)
- No Regrets Package
- Potable Reuse Phase 1 to produce 24KAF by FY 28
  - Based on $690M capital project, District contributes 30% "pay as you go"
  - P3 reserve at $8M in FY 20 growing to $20M by FY 28
- Pacheco Reservoir paid for by other sources
- Transfer-Bethany Pipeline
- South County Recharge
  - Timing = beyond FY 29

Also Includes:

- $200M warranty placeholder for dams & WTP's
- Guiding Principle #5

North 6.4%, South 7.2% avg annual incr.

7) WSMP 80% with Transfer-Bethany Pipeline

- Baseline Projects
- CWF (State side)
  - Paid for by water charges, not SWP Tax
- ~~CWF (CVP side)~~
- No Regrets Package
- Potable Reuse Phase 1 to produce 24KAF by FY 28
  - Based on $690M capital project, District contributes 30% "pay as you go"
  - P3 reserve at $8M in FY 20 growing to $20M by FY 28
- Pacheco Reservoir paid for by other sources
- Transfer-Bethany Pipeline
- South County Recharge
  - Timing = beyond FY 29

Also Includes:

- $200M warranty placeholder for dams & WTP's
- Guiding Principle #5

North 5.9%, South 6.4% avg annual incr.

Financial Analysis: Additional Scenario Assumptions

8) WSMP 80% with Transfer-Bethany Pipeline, + LV

- Baseline Projects
- CWF (State side)
- ~~CWF (CVP side)~~
- No Regrets Package
- Potable Reuse Phase 1 to produce 24KAF by FY 28
  - Based on $690M capital project, District contributes 30% "pay as you go"
  - P3 reserve at $8M in FY 20 growing to $20M by FY 28
- Pacheco Reservoir paid for by other sources
- Transfer-Bethany Pipeline
- South County Recharge
  - Timing = beyond FY 29
- Los Vaqueros

Also Includes:

- $200M warranty placeholder for dams & WTP's
- Guiding Principle #5

North 6.0%, South 6.8% avg annual incr.

9) WSMP 80%, Pacheco w/ $250M WIIN, WIFIA loan & Partners Pay 20%

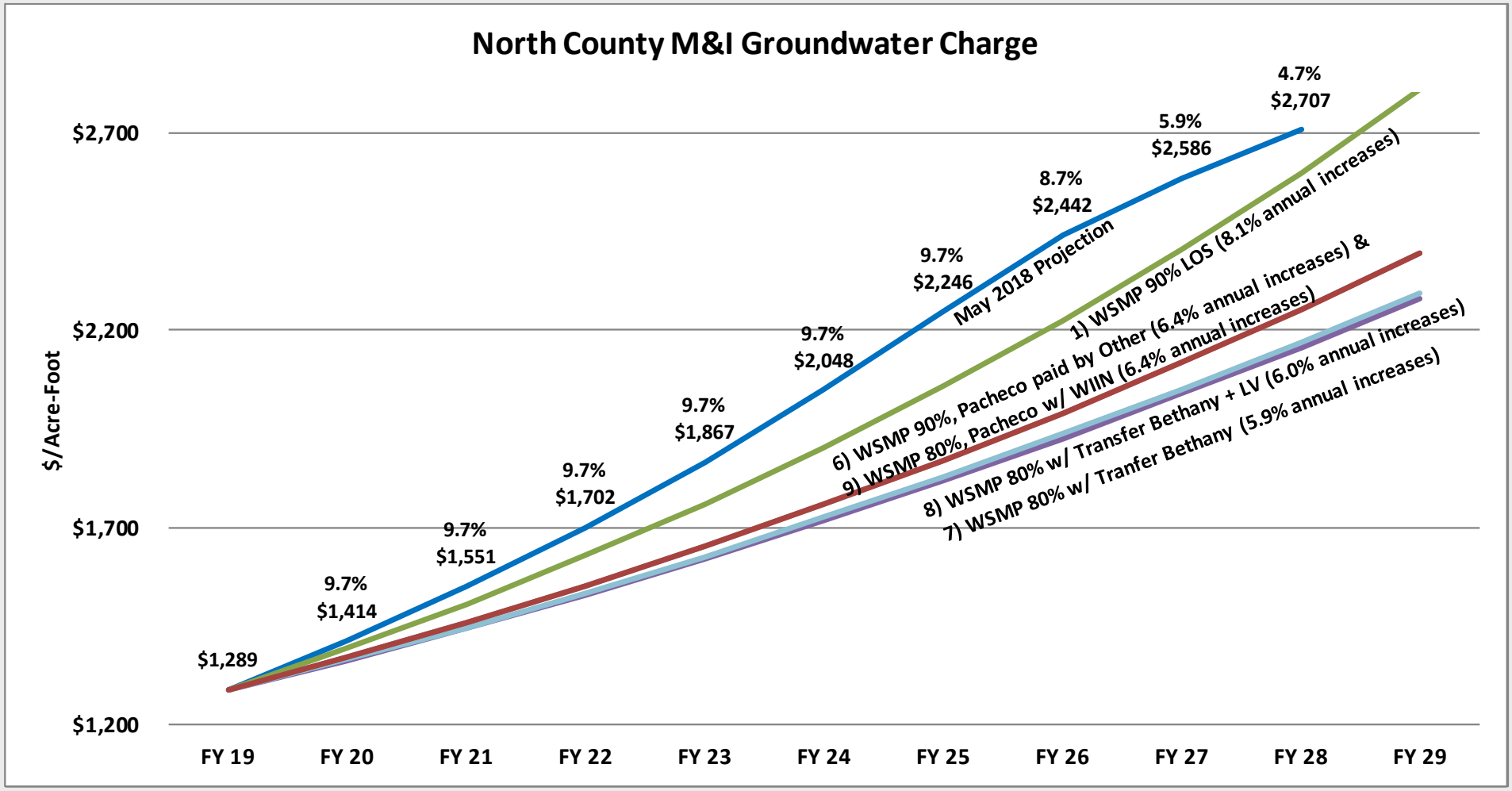
- Baseline Projects
- CWF (State side)
- ~~CWF (CVP side)~~
- No Regrets Package
- Potable Reuse Phase 1 to produce 24KAF by FY 28
  - Based on $690M capital project, District contributes 30% "pay as you go"
  - P3 reserve at $8M in FY 20 growing to $20M by FY 28
- Pacheco Reservoir
  - $250M WIIN funding + WIFIA loan
  - Partner Agencies pay 20% of project
- Transfer-Bethany Pipeline
- South County Recharge
  - Timing = beyond FY 29
- ~~Los Vaqueros~~

Also Includes:

- $200M warranty placeholder for dams & WTP's
- Guiding Principle #5

North 6.4%, South 6.6% avg annual incr.

Financial Analysis: Preliminary
Groundwater Production Charge Projections



Financial Analysis: Preliminary
Water Supply Investment Scenarios

No. County M&I Groundwater Charge Y-Y Growth %

	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29
May 2018	9.7%	9.7%	9.7%	9.7%	9.7%	9.7%	8.7%	5.9%	4.7%	
1) WSMP 90% LOS	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%	8.1%
6) WSMP 90% LOS, Pacheco paid by Other	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%
7) WSMP 80% LOS w/ Xfer Bethany	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.9%	5.8%	5.8%
8) WSMP 80% LOS w/ Xfer Bethany + LV	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	5.8%	5.8%	5.8%
9) WSMP 80% LOS w/ Xfer Bethany + WIIN	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%

So. County M&I Groundwater Charge Y-Y Growth %

	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29
May 2018	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	
1) WSMP 90% LOS	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%
6) WSMP 90% LOS, Pacheco paid by Other	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%
7) WSMP 80% LOS w/ Xfer Bethany	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%	6.4%
8) WSMP 80% LOS w/ Xfer Bethany + LV	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%
9) WSMP 80% LOS w/ Xfer Bethany + WIIN	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%

Financial Analysis: Preliminary
Water Supply Investment Scenarios

No. County Increase per Month per Avg Household*

	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29
May 2018	$4.31	$4.72	$5.18	$5.68	$6.24	$6.84	$6.73	$4.96	$4.19	
1) WSMP 90% LOS	$3.60	$3.89	$4.20	$4.54	$4.91	$5.31	$5.74	$6.20	$6.71	$7.25
6) WSMP 90% LOS, Pacheco paid by Other	$2.84	$3.02	$3.22	$3.42	$3.64	$3.87	$4.12	$4.39	$4.67	$4.97
7) WSMP 80% LOS w/ Xfer Bethany	$2.62	$2.77	$2.94	$3.11	$3.29	$3.49	$3.69	$3.91	$4.07	$4.31
8) WSMP 80% LOS w/ Xfer Bethany + LV	$2.66	$2.82	$2.99	$3.17	$3.36	$3.56	$3.78	$3.87	$4.10	$4.33
9) WSMP 80% LOS w/ Xfer Bethany + WIIN	$2.84	$3.02	$3.22	$3.42	$3.64	$3.87	$4.12	$4.39	$4.67	$4.97

So. County Increase per Month per Avg Household*

	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29
May 2018	$1.19	$1.29	$1.38	$1.49	$1.61	$1.73	$1.86	$2.01	$2.16	
1) WSMP 90% LOS	$1.19	$1.29	$1.38	$1.49	$1.61	$1.73	$1.86	$2.01	$2.16	$2.33
6) WSMP 90% LOS, Pacheco paid by Other	$1.12	$1.20	$1.28	$1.37	$1.47	$1.58	$1.69	$1.82	$1.95	$2.09
7) WSMP 80% LOS w/ Xfer Bethany	$0.99	$1.06	$1.12	$1.19	$1.27	$1.35	$1.44	$1.53	$1.63	$1.73
8) WSMP 80% LOS w/ Xfer Bethany + LV	$1.05	$1.13	$1.20	$1.28	$1.37	$1.46	$1.56	$1.67	$1.78	$1.91
9) WSMP 80% LOS w/ Xfer Bethany + WIIN	$1.02	$1.09	$1.16	$1.24	$1.32	$1.41	$1.50	$1.60	$1.71	$1.82

*** Calculated based on groundwater production charge**

FY 2019-2020 Schedule

Jan 8	Board Meeting: Preliminary Groundwater Charge Analysis
Jan 16	Water Retailers Meeting: Preliminary Groundwater Charge Analysis
Jan 23	Water Commission Meeting: Prelim Groundwater Charge Analysis
Feb 12	Board Meeting: Review draft CIP & Budget development update
Feb 22	Mail notice of public hearing and file PAWS report
Mar 20	Water Retailers Meeting: FY 19 Groundwater Charge Recommendation
Mar 26	Board Meeting: Budget development update
Apr 1	Ag Water Advisory Committee
Apr 2	Landscape Committee Meeting
Apr 9	Open Public Hearing
Apr 10	Water Commission Meeting
Apr TBD	Continue Public Hearing in South County
Apr 23	Conclude Public Hearing
Apr 24-26	Board Meeting: Budget work study session
May 14	Adopt budget & groundwater production and other water charges

Summary of Preliminary Analysis

- **Scenario 1 plus additional scenarios range from 5.9% to 8.1% annual increases in North County M&I groundwater charge, & 6.4% to 7.7% in South County**

- **Potential FY 20 increase ranges from $2.62 to $3.60 per month for the average household in North County, and $0.99 to $1.19 per month in South County**

- **Board direction to be incorporated into Report on Protection and Augmentation of Water Supplies (PAWS) scheduled for release on February 22, 2019**

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Santa Clara Valley Water District

File No.: 19-0067

Agenda Date: 1/14/2019
Item No.: 3.1.

NON-EXHIBIT/CLOSED SESSION ITEM

SUBJECT:

PUBLIC EMPLOYEE PERFORMANCE EVALUATION
Pursuant to Government Code Section 54957(b)(1)
Title: District Counsel

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