Santa Clara Valley Water District

File No.: 16-0417

Agenda Date: 1/31/2017
Item No.: 2.1.

BOARD AGENDA MEMORANDUM

SUBJECT:
Update on the 2017 Water Supply Master Plan and Potential Storage Options.

RECOMMENDATION:
A. Receive information on the updated long-term water supply outlook;
B. Receive and discuss risk assessment results;
C. Discuss the level of service goal;
D. Receive and discuss information on preliminary project and portfolio analyses; and
E. Receive and discuss information on potential storage options.

SUMMARY:

The Board received information on and discussed staff's approach to preparing the 2017 Water Supply Master Plan (WSMP) on September 27, 2016. At the time, staff presented the scope and schedule for preparing the WSMP, draft planning objectives/assessment criteria, and a list of projects that would be considered during the planning process. Since that time, staff has updated the long-term water supply outlook, conducted a risk assessment, developed an alternative scenario against which to evaluate projects and portfolios, defined costs and yields for various projects, began evaluating different portfolios of projects, and convened three expert panel meetings. This memorandum summarizes staff's work since the last Board update on the WSMP, requests Board input on staff work to date, and provides an update on next steps.

Long-Term Water Supply Outlook

One of the first steps in planning is to identify and assess what gaps need to be filled. For long-term water supply planning, this equates to assessing water supply reliability under future demand and supply scenarios and comparing it to a level of service goal. The baseline long-term water supply outlook assumes that retailer demands increase according to the projections in the retailers' 2015 Urban Water Management Plans, the Fisheries and Aquatic Habitat Collaborative Effort (FAHCE) flow and release requirements are implemented according to the FAHCE Settlement Agreement, future imported water deliveries are subject to the same operating requirements/regulations that are in place today, and that the District's 2012 Water Supply and Infrastructure Master Plan is fully implemented. The 2012 Water Supply and Infrastructure Master Plan includes completion of dam seismic retrofit projects before 2025, construction of 24,000 acre-feet per year (AFY) of potable reuse

capacity by 2025, and 99,000 AFY of water conservation savings by 2030.

Staff used the District's water supply system model, Water Evaluation and Planning (WEAP), to assess water supply reliability at five-year increments through 2040. The model incorporates the District's Water Shortage Contingency Plan (WSCP). The WSCP identifies when the District should call on the community to reduce water use in response to drought or other water shortages. The WSCP is based on end of year groundwater storage since this reflects the general health of the District's water supply system. The plan has five levels of shortage ranging from Stage 1 (Normal) when short-term water use reductions are not required, up to Stage 5 (Emergency), which can be triggered by an immediate crisis. One of the methods the District uses to assess long-term reliability is to consider the number of years (over the 94-year simulation in the WEAP model) with shortages, as well as the severity of those shortages. Table 1 shows modeled reliability for this baseline scenario at five-year intervals through 2040.

Table 1. Modeled Reliability in the Baseline Scenario

Parameter	2020	2025	2030	2035	2040
Average Annual Supply (Acre-Feet, AF)	374,800	414,700	423,900	431,300	440,000
Normal Year Demand (AF)	361,400	383,400	401,500	418,500	435,000
Maximum Level of Shortage (% of Normal Year Demand)	Stage 3 (15%)	Stage 2 (10%)	Stage 3 (15%)	Stage 3 (15%)	Stage 3 (15%)
Number of Years with Shortage (over 94 years)	11	5	6	8	13
Number of Years with Stage 2 (10%) Shortages	6	5	4	4	7
Number of Years with Stage 3 (15%) Shortages	5	0	2	4	6

Shortages of up to 15 percent are modeled, even though average annual supplies exceed demands in each of the modeled scenarios. The District stores excess supplies in times of plenty for use in times of need. Supplies are stored in the local groundwater subbasins, reservoirs, and Semitropic Groundwater Bank. While those stored supplies are generally sufficient for a single dry year, they are depleted during extended droughts. As they are depleted, the District calls for short-term water use reductions to preserve groundwater storage and avoid adverse impacts such as land subsidence.

The District's current reliability level of service goal is to develop supplies to meet 100 percent of demands in normal years and at least 90 percent of demands in drought years. This equates to having the maximum level of shortage be Stage 2 or 10 percent. Except in the 2025 scenario, the maximum level of shortage in the water supply outlook is Stage 3 or 15%. In other words, in year 2040, the District would not achieve the current reliability level of service goal in up to six of 94 modeled years.

Risk Analysis

Understanding risks associated with the water supply outlook is another important step in water supply planning. Staff conducted a Strengths, Weakness, Opportunities, and Threats (SWOT) exercise in August 2016. A copy of the SWOT exercise results are in Attachment 1. The information was used to evaluate different risks to water supply reliability. Some of the key risks that were identified include changes in demands due to multiple factors; changes in supplies because of climate change; regulatory uncertainty related to the Delta, instream recharge operations, and potable reuse; development and land use (impacts can be both positive and negative); and funding. Overinvesting and investing too early were identified as risks to making effective and efficient investments in supply reliability. The two greatest vulnerabilities, or risks with the highest likelihood and consequence, are reductions in Delta-conveyed imported water supplies and uncertain demand projections.

Staff identified an imported water vulnerability that involves the current trend of additional regulations resulting in reduced imported water deliveries, as a trending scenario. This scenario includes additional requirements for outflows through the Delta to San Francisco Bay. As a result, average annual imported water deliveries are approximately 129,000 AFY, which is about 47,000 AFY less than the Baseline Scenario average annual deliveries of approximately 176,000 AFY.

Staff also analyzed a demand vulnerability based on retailers' projected 2020 demands after implementation of the "20x2020" requirements in SBx7-7 of 2009 and updated regional growth projections through 2040. This demand scenario reflects the current trend of low growth rates in demands. The 2040 demand in this scenario is approximately 402,000 AF, which is about 33,000 AF less than the Baseline Scenario's 2040 demand of approximately 435,000 AF.

Staff combined the trending imported water and demands scenarios into a "Trending" Scenario that was compared to the Baseline Scenario described on Page 1. Table 2 compares reliability in 2040 under the Baseline Scenario and the Trending Scenario. In the Trending Scenario, average annual supplies do not meet demands. As a result, the District would need call for short-term water use reductions more often, and shortages of up to Stage 4 (30%) are projected to occur. It is important to note that the analysis in Table 2 reflects potential 2040 conditions. While imported water deliveries may decrease over time, the timing of reductions is uncertain and would likely occur over an extended period of time.

Table 2. Baseline and Trending Scenario Reliability Comparison

Parameter	2040 Baseline	2040 Trending
Average Annual Supply (Acre-Feet, AF)	440,000	391,000
Normal Year Demand (AF)	435,000	402,000
Maximum Level of Shortage (% of Normal Year Demand)	Stage 3 (15%)	Stage 4 (30%)
Number of Years with Shortage (over 94 years)	13	22
Number of Years with Stage 2 (10%) Shortages	7	16
Number of Years with Stage 3 (15%) Shortages	6	4
Number of Years with Stage 4 (30%) Shortages	0	2

Staff will evaluate how different water supply portfolios, or combinations of projects, perform in meeting the reliability level of service goal under the Baseline Scenario as well as different risk scenarios such as the Trending Scenario.

It is likely that there will be a set of “no regrets” projects, such as cost-effective water conservation and demand management activities, that are appropriate regardless of the scenario. However, other projects may only be appropriate under certain scenarios or when combined with other projects. For instance, dry year transfers or options may make sense in the Baseline Scenario because Delta exports are subject to the same regulations as are currently in place and the District is currently able to obtain such transfers. However, in the Trending Scenario, where Delta exports are constrained, transfers would be less effective unless they were combined with another project..

Level of Service Goal

The level of service goal is a key driver for the level of additional investment the District will need to make in reliability. Higher levels of service require more investments in reliability. Lower levels of service require fewer investments in reliability. The Board acknowledged this and requested additional discussion on the level of service goal at its September 27, 2016 meeting.

Staff has not yet completed its analysis of portfolios and how those portfolios perform under different scenarios. However, based on the analysis completed to date, staff has begun to bracket the costs to the District associated with providing different levels of reliability in the Baseline and Trending scenarios. Table 3 shows the upper range of future investments, beyond those already included in the Capital Improvement Plan and water rate forecast, that would be needed to achieve different levels of service. These costs range from none up to about $3,000 million. If these investments were made now, North County water rates in Fiscal Year 2033 could increase by $972/AF over the current projection of $2,859/AF and South County water rates in Fiscal Year 2033 could increase by $737/AF over the current projection of $806/AF.

Table 3. Range of Future Water Supply Reliability Investments

Scenario	**Range of District Costs** (2016$)	
	Baseline Scenario	Trending Scenario
Current Level of Service (Stage 2 or 10% Shortage)	Up to $700 million	Up to $3,000 million
Stage 3 or 15% Shortage	None	Up to $1,200 million

The economic loss to the community associated with a 10 percent shortage is about $40 million, while the cost for a 15 percent shortage is about $400 million[1] based on analysis performed for the 2012 Water Supply and Infrastructure Master Plan. However, the District’s cost for improving water supply reliability from a 15 percent maximum shortage to 10 percent maximum shortage increases District costs between $700 million and $3,000 million. Therefore, to avoid a community cost of $360 million associated with a 15 percent shortage instead of a 10 percent shortage, the District would incur a cost of up to $1,800 million (i.e. the difference in cost to increase water supply reliability from

15 percent shortage to 10 percent shortage in the Trending Scenario). The shortage costs have not been updated since 2012, so they may be somewhat low. However, the District is in the process of updating this analysis as part of the Expedited Purified Water Program. In addition, the District will be conducting a survey over the next few weeks to better understand the community's willingness to pay for various levels of reliability.

The timing and magnitude of additional investments will depend on the level of service, as well has how demands and supplies change over time. While the District will likely need to make some investment decisions over the next year, such as whether to invest in California WaterFix, many other decisions can be deferred. In other words, even if the Board decides to invest in a portfolio that achieves the current level of service and avoids shortages/calls for water use reductions of greater than 10 percent in the Trending Scenario, those investments can be phased in over time as they are needed.

Water Supply Alternatives

The next step in the planning process involves the identification of projects and portfolios for filling the gap between the water supply outlook and the level of service goal. Staff evaluated over 20 projects for their ability to meet the level of service goal and other objectives in the Baseline Scenario. The projects, which are summarized in Attachment 2, include:

- Water Conservation and Demand Management - Advanced metering infrastructure, gray water rebate program expansion, local land fallowing, model new development ordinance, rain barrel rebate program, and rain garden rebate program
- New or Expanded Storage - Sites Reservoir, Los Vaqueros Reservoir Expansion, groundwater banking, Anderson Reservoir Expansion, Pacheco Reservoir Expansion, Calero Reservoir Expansion, and Uvas Reservoir Expansion
- Additional Recharge Capacity in South County
- California WaterFix
- Raw Water Pipelines to Increase Operational Flexibility
- Morgan Hill Recycled Water
- Additional North County Potable Reuse
- Regional Desalination
- Stormwater Capture and Reuse - Centralized and Decentralized
- Transfers
- Imported Water Contract Purchase

Specific sites for agricultural land flooding for recharge were not identified, but would have similar benefits and costs as stormwater capture and reuse. Options for increasing San Francisco Public Utilities Commission (SFPUC) water deliveries to Santa Clara County is an on-going topic that is currently being evaluated through SFPUC's planning processes, the Bay Area Regional Reliability project, and potable reuse feasibilities studies. These processes have not yet identified specific options, but options will be evaluated as they are developed. Shallow groundwater reuse was re-evaluated, but was not carried forward due to concerns related to water quality, impacts on the

environment, and infrastructure requirements. Del Valle Reservoir re-operations are being evaluated through a collaborative process with Alameda County Water District and Zone 7, but the benefits of such re-operations currently focus on short-term yields and water quality improvements. If a project is identified that would increase long-term water supply yields, staff will evaluate the project.

Baseline Scenario Analysis

None of the individual projects analyzed could achieve the current level of service goal in the Baseline Scenario analysis. Staff are currently in the process of developing portfolios of projects to achieve the current level of service goal, meet the planning objectives (see Attachment 3 for the Planning Objectives), and/or address risks. The portfolios that have been evaluated to date in the Baseline Scenario are summarized in Table 4 and discussed below.

Table 4. Baseline Scenario Analyses Summary

Portfolio	Description	Maximum Level of Shortage	Number of Years with Shortages	Number of Years with Stage 3 (15%) Shortages	Lifecycle Cost (2016 $)
n/a	Baseline Scenario	Stage 3 (15%)	13	7	n/a
B1	All Water Use Efficiency	Stage 3 (15%)	8	5	$500 million
B2	All Water Use Efficiency and Groundwater Banking	Stage 3 (15%)	7	2	$600 million
B3	Los Vaqueros Reservoir Expansion and 15,000 AFY of Additional Potable Reuse Capacity	Stage 3 (15%)	6	2	$1,500 million
B4	All Water Use Efficiency and 15,000 AFY of Additional Potable Reuse Capacity	Stage 3 (15%)	6	1	$1,700 million
B5	All Water Use Efficiency and Sites Reservoir	Stage 2 (10%)	6	0	$700 million
B6	Pacheco Reservoir and 15,000 AFY of Additional Potable Reuse Capacity	Stage 2 (10%)	4	0	$2,700 million

- Portfolio B1 - All Water Use Efficiency. This portfolio includes all water conservation and

demand management programs, recycled water, and stormwater capture. This project reduces the number of years when the level of service goal is missed from six to five over the 94 years of modeled hydrology. Most of the projects and programs in this portfolio are relatively cost-effective, reduce reliance on the Delta, maximize water use efficiency, allow for phased implementation, adapt to climate change, and protect the natural environment. Staff plans to carry the most cost-effective options forward in future portfolios.

- Portfolio B2 - All Water Use Efficiency and Groundwater Banking. Groundwater banking does not provide a lot of average yield, but, in the Baseline Scenario, it helps manage existing supplies for dry year yield. This portfolio maximizes water use efficiency, has a relatively low life-cycle cost, allows for phased implementation, and adapts to climate change. This portfolio would reduce the number of years when the current level of service goal is not achieved from seven to two years over the 94 years of modeled hydrology. Banking is less effective in scenarios where there is little excess wetter year supply and/or transfer capacity is limited due to Delta pumping constraints.
- Portfolio B3 - Los Vaqueros Reservoir Expansion and 15,000 AFY of Additional Potable Reuse Capacity. The Los Vaqueros Reservoir Expansion project includes expanding Los Vaqueros Reservoir from 160,000 AF to up to 275,000 AF and constructing a pipeline that connects Contra Costa Water District (CCWD) facilities to the South Bay Aqueduct. The project would enable the District to bank water in Los Vaqueros for drought yield and, potentially, capture additional Delta surplus supplies. This would be a regional project. The 15,000 AFY of potable reuse capacity would be in addition to the 24,000 AFY that was included in the 2012 Water Supply and Infrastructure Master Plan and is currently being planned as Phase 1 of the Expedited Purified Water Program. Both the projects could provide drought year supply, though modeling indicates there would still be two years over the 94 years of modeled hydrology when the current level of service goal is not achieved. This project allows for phased implementation and adapts to climate change.
- Portfolio B4 - All Water Use Efficiency and 15,000 AFY of Additional Potable Reuse Capacity. In this portfolio, the current level of service goal is missed in one of 94 years of modeled hydrology. This project reduces reliance on the Delta, maximizes water use efficiency, maximizes District influence of supplies and operations, allows for phased implementation, and adapts to climate change.
- Portfolio B5 - All Water Use Efficiency and Sites Reservoir. Sites Reservoir is a proposed 1,810,000 AF north-of-Delta off-stream reservoir in the Sacramento Valley. The reservoir would collect winter flood flows (surplus flows) from the Sacramento River and release them later in the year for water supply and environmental benefits. The project would deliver additional Delta-conveyed supplies to the District in all year types. The combination of additional supplies from Sites Reservoir and reduced demands from the water use efficiency projects would enable the District to meet the current level of service goal. This portfolio maximizes water use efficiency, has a relatively low life-cycle cost, and provides environmental benefits to the Delta and Sacramento River. Staff is still evaluating how this project would perform in a scenario with more Delta outflow requirements and/or the California WaterFix.
- Portfolio B6 - Pacheco Reservoir and 15,000 AFY of Additional Potable Reuse Capacity. The Pacheco Reservoir project would replace the existing 6,000 AF reservoir owned by Pacheco Pass Water District with a 130,000 AF reservoir. This portfolio achieves the current level of service goal with local projects, improves treated water and groundwater quality, and improves

our ability to adapt to climate change. Some of the concerns with this portfolio are the relatively high life-cycle cost, implementation complexity, potential impacts on aquatic habitat, and increases in greenhouse gas emissions.

Staff will identify additional portfolios that achieve the level of service goal and/or better meet other objectives such as minimizing life-cycle costs and flexibility.

Trending Scenario Analysis

Staff also evaluated some of the reservoir projects, additional potable reuse, and/or California WaterFix in the Trending Scenario, where Delta-conveyed imported water supplies are anticipated to be constrained. The shortages associated with the various options are summarized in Table 5.

Table 5. Trending Scenario Analysis Summary

Portfolio	Description	Maximum Level of Shortage	Number of Years with Shortage	Number of Years with Stage 3 (15%) Shortages	Lifecycle Cost (2016$)
n/a	Trending Scenario	Stage 4 (30%)	22	6	n/a
T1	Anderson Reservoir	Stage 4 (30%)	18	3	$1,900 million
T2	Pacheco Reservoir	Stage 4 (30%)	17	5	$1,500 million
T3	15,000 AFY of Additional Potable Reuse Capacity	Stage 3 (15%)	6	5	$1,200 million
T4	California WaterFix	Stage 3 (15%)	4	1	$1,800 million
T5	California WaterFix and Pacheco Reservoir	Stage 2 (10%)	2	0	$3,300 million
T6	California WaterFix and 15,000 AFY of Additional Potable Reuse Capacity	Stage 2 (10%)	2	0	$3,000 million

In this analysis, neither the Anderson nor Pacheco Reservoir projects (T1 and T2, respectively) reduced the maximum level of water shortage of Stage 4 (30 percent) and only modestly reduced the frequency of shortage. These two projects do not yield much, if any, new water. Instead, they help manage excess supplies. Since demands exceed supplies in this scenario, there is not much excess supply. Therefore, the projects provide minimum benefit.

Additional potable reuse capacity (T3) and California WaterFix (T4) both reduced the maximum level of shortage and the frequency of shortage. Both of these projects increase the amount of water supply in the system in normal and wet years, and potable reuse increases the amount of water in dry years. As a result, there is a significant improvement in supply reliability, even though the

District's current level of service is not achieved. California WaterFix also meets the objective of securing existing supplies, because, in the Trending Scenario, it restores Delta-conveyed supplies to about the current levels and helps maintain the District's ability to use Semitropic supplies and transfers.

Combining California WaterFix with either Pacheco Reservoir (T5) or additional potable reuse capacity (T6) in the Trending Scenario achieves the District's current level of service goal of shortages not exceeding 10 percent. California WaterFix provides additional water in most year types, especially in wetter years. Pacheco Reservoir improves the ability to manage those wetter year supplies. California WaterFix combined with additional potable reuse capacity works well because both the projects produce water, with California WaterFix producing more water in the wetter years and potable reuse producing more water in the drier years. In the wettest years, these portfolios may produce more water than the District can use or store.

Staff was unable to analyze Sites Reservoir or Los Vaqueros Reservoir Expansion in the Treading Scenario because the projects have not yet been modeled in an equivalent scenario by those project proponents. We anticipate having additional Los Vaqueros modeling results in the next couple of months and evaluate its performance with other projects and programs.

Storage Projects

Staff is evaluating several storage projects - Sites Reservoir, Los Vaqueros Reservoir expansion, groundwater banking, Anderson Reservoir expansion, Pacheco Reservoir expansion, Calero Reservoir expansion, and Uvas Reservoir expansion. None of these individual projects will achieve the reliability level of service goal by themselves, but they could provide valuable benefits when combined with other projects. The projects are summarized in Table 6 and discussed below.

Table 6. Storage Project Summary

	District Lifecycle Cost (2016$)	**Average Annual Yield (AF)**	**Average Annual Drought Yield (AF)**	**Cost/AF**
Anderson Reservoir Expansion	$1,900 million	10,000	20,000	$10,000
Pacheco Reservoir Expansion	$1,500 million	6,000	24,000	$11,000
Calero Reservoir Expansion	$510 million	3,000	5,000	$8,500
Uvas Reservoir Expansion	$450 million	500	1,000	$46,000
Los Vaqueros Reservoir Expansion	$340 million	2,000	7,000	$9,500
Sites Reservoir	$230 million	16,000	40,000	$1,000
Groundwater Banking	$90 million	500	2,000	$5,000

Sites Reservoir -If the District partners in this project, we could typically receive additional Delta-conveyed supplies in the Baseline Scenario in all year types. The additional dry year supplies would be valuable in addressing our greatest challenge, which is droughts, but the additional wet year supplies would need to be carefully managed to avoid potential losses. Since Site Reservoir performs similar to a new all year water source in our analysisit could be effective when combined with additional storage that would help manage the wet year supplies.

Los Vaqueros Reservoir Expansion - If the District partners in this project, we could bank up to 35,000 AF of water in the reservoir for emergency and drought supply. In addition, the District would be able to utilize Contra Costa Water District's ability to capture surplus flows of up to 95,000 AFY. In the Baseline Scenario, this project is valuable because it provides additional conjunctive use capacity to manage wet year supplies, including those generated by other projects such as potable reuse or recycling, and delivers additional dry year supplies. The District is working with Contra Costa Water District to analyze how this project would perform in the Trending Scenario.

Groundwater Banking - Staff is exploring different groundwater banking options. In this scenario, the District would purchase 50,000 AF of additional south-of-Delta groundwater banking capacity. Additional capacity could be purchased. In the Baseline Scenario, groundwater banking helps manage existing supplies for more drought year yield. In the Trending Scenario, it is valuable when combined with projects that generate wetter year supplies that can be banked for use in droughts. California WaterFix would improve the ability to move water to South-of-Delta pumps and exchange water, which supports groundwater banking.

Anderson Reservoir Expansion - This project would expand Anderson Reservoir from 100,000 AF to about 190,000 AF, allowing for some additional capture of local runoff and improved management of existing supplies. Anderson Reservoir is already connected to the Central Valley Project at Coyote Pumping Plant. In the Baseline Scenario, the project helps manage existing supplies for more drought year yield and water quality benefits. In the Trending Scenario, it is valuable when it is combined with projects that generate wetter year supplies that can be banked for use in droughts.

Pacheco Reservoir Expansion - This project would replace Pacheco Pass Water District's existing 6,000 AF reservoir with a 130,000 AF reservoir. After accounting for Pacheco Pass Water District's water rights, instream flow requirements, and other reservations, the District would have 100,000 AF of storage in the reservoir. The project would also include additional pipelines and pump stations to connect the reservoir to the Pacheco Conduit. The District would transfer water from San Luis Reservoir into the new Pacheco Reservoir when in-county demands are otherwise met and take water from Pacheco Reservoir when there are unmet in-county demands. The benefits of this reservoir are associated with better ability to manage existing supplies and improved water quality from being able to manage around low-point conditions in San Luis Reservoir. In the Trending Scenario, this project is valuable when it is combined with projects that general wetter year supplies that can be banked for use in droughts.

Calero Reservoir - This project would expand Calero Reservoir from about 10,000 AF to 24,000 AF. This project would have similar benefits as Anderson Reservoir, but on a smaller scale.

Uvas Reservoir - This project would expand Uvas Reservoir from about 10,000 AF to 15,000 AF. The Uvas watershed is a very productive watershed and the reservoir often spills. This project would enable the District to capture additional wet weather flows. However, given that the District's greatest challenge is droughts and the increase in storage is relatively small, the benefits of this project are relatively small in the Baseline Scenario. In the Trending Scenario, where there is less imported water delivered to the county, the value of the wet weather yield of this project may be higher.

In summary, none of the individual storage projects can meet the reliability level of service goal without being combined with other projects. Some of the storage projects improve the District's ability to conjunctively manage its supplies, some provide additional water supply, and some do both. The value of the individual projects depends on the projects they are partnered with and the scenario in which they are considered. Other considerations for storage projects include costs and potential environmental impacts and permitting issues for in-stream reservoirs. Staff plans to proceed with evaluating additional portfolios that include minimizing costs while providing similar levels of reliability and other benefits.

Water Supply Alternatives Summary

As previously described, staff have analyzed both projects and portfolios (collection of projects) to meet the District's level of service goal. No individual project is sufficient to meet the Board's current level of service goal of having supplies meet 90 percent of demands in drought years. Staff anticipates that cost-effective water conservation and demand management programs should be included as "no regrets" options. Additional potable reuse capacity works well in portfolios in both the Baseline and Trending Scenarios. Anderson and Pacheco Reservoir expansion projects need to be combined with other projects that deliver additional supply to be effective in the Trending Scenario. California WaterFix works well in the Trending Scenario, because it improves Delta-conveyed imported water deliveries to almost the amounts in the Baseline Scenario and maintains the District's ability to use Semitropic supplies and transfers. Projects that rely on Delta-conveyed imported water, such as additional recharge capacity in the Upper Llagas System and Pacheco Reservoir, will do better in the Trending Scenario when they are combined with California WaterFix.

All the Portfolios include maintaining existing supplies and infrastructure, expanding water conservation savings to 99,000 AFY by 2030, and implementing 24,000 AFY of potable reuse capacity. The District should be able to meet its current level of service goal with these planned investments and 2025 demand levels.

Some projects may necessitate early decision-making. The most notable of these is California WaterFix. The District will likely be asked to make a decision regarding this project within the next six months. The District will also likely need to make decisions about any storage projects that receive Prop 1 Water Storage Investment Program funding within a year to 18 months. These projects may include Sites Reservoir, Los Vaqueros Reservoir Expansion, Del Valle Reservoir, and/or any local reservoir project the District includes in a grant application. Staff will continue to evaluate portfolios that include these and other projects to identify portfolios that perform well under a variety of scenarios, minimize costs, and maximize other benefits.

Expert Panel Input

The Board approved single-source agreements for the Expert Panel members at its November 8, 2016 Board meeting. The Expert Panel consists of Ms. Paula Landis (retired Executive Director of the California Water Commission), Mr. David Mitchell (principal at M. Cubed), and Dr. Ed Maurer (water resources engineering professor at Santa Clara University). Staff has met with the Expert Panel three times. For the WSMP update, the panel has provided input to staff on the project scope and approach, cost-effectiveness calculations, evaluating variability and risk, risk assessment, portfolio development, and portfolio comparisons. Some of the input has been very technical, e.g., the merits of different statistical methods for analyzing variability, but other input has been more strategic. Highlights of the input to date include:

- The importance of looking at portfolios of projects rather than individual projects,
- The need to assess the value of the projects and portfolios for their ability to achieve the District's objectives rather than just ranking them by cost per acre-foot,
- There are multiple types of risk - cost risks, implementation risks, yield risks,
- The magnitude of risks and their potential impact on portfolio performance need to be considered, and
- The importance of being consistent with assumptions and methods between analyses - the Water Supply Master Plan, California WaterFix business case, Expedited Purified Water Program, and other planning efforts should use the assumptions and methods to ensure an apples-to-apples comparison.

Staff has been able to incorporate or is in the process of incorporating the Expert Panel's input on the WSMP. The panel has been supportive of staff's work to date and staff looks forward to the Expert Panel's insights as we move forward with water supply portfolio refinement.

Next Steps

The next steps in the WSMP process are to continue to develop and refine portfolios based on the Board's input and then bring preferred portfolios to the Board for consideration. Staff anticipates returning to the Board in April 2017 to get additional input on portfolios and then in June 2017 with preferred portfolios (see the updated schedule in Attachment 4). Then, staff will develop a recommended implementation program and compile the WSMP for Board consideration.

FINANCIAL IMPACT:

There is no financial impact associated with this item.

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

ATTACHMENTS:
Attachment 1: WSMP Strength/Weakness Analysis
Attachment 2: Summary of Projects
Attachment 3: Planning Objectives
Attachment 4: Updated WSMP Schedule
Attachment 5: PowerPoint

UNCLASSIFIED MANAGER:
Garth Hall. 408-630-2750