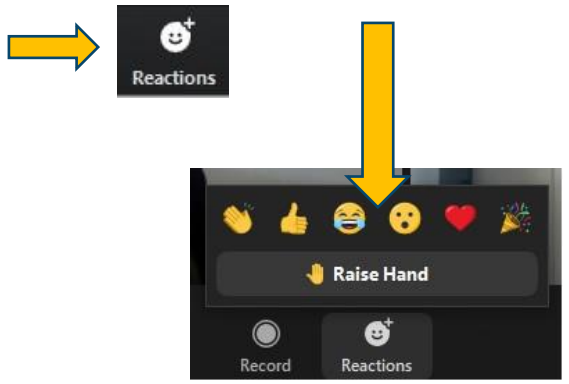
Meeting Instructions While We Gather

- You have been muted upon entry
- Please feel free to **Unmute** yourself to say "Hi" and test your sound connection
- Please **Mute** yourself during meeting when you are not talking
- **During the meeting, BAWSCA staff will mute your sound and video if necessary**

- The **Raise Hand** feature will be used for Board questions
- ***NEW*** To get the **Raise Hand** button, Click on **Reactions** button at the bottom of your screen and Select **Raise Hand**



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BAWSCA
Bay Area Water Supply & Conservation Agency

"A multicounty agency authorized to plan for and acquire supplemental water supplies, encourage water conservation and use of recycled water on a regional basis."

[BAWSCA Act, AB2058 (Papan-2002)]

Board Policy Committee Meeting

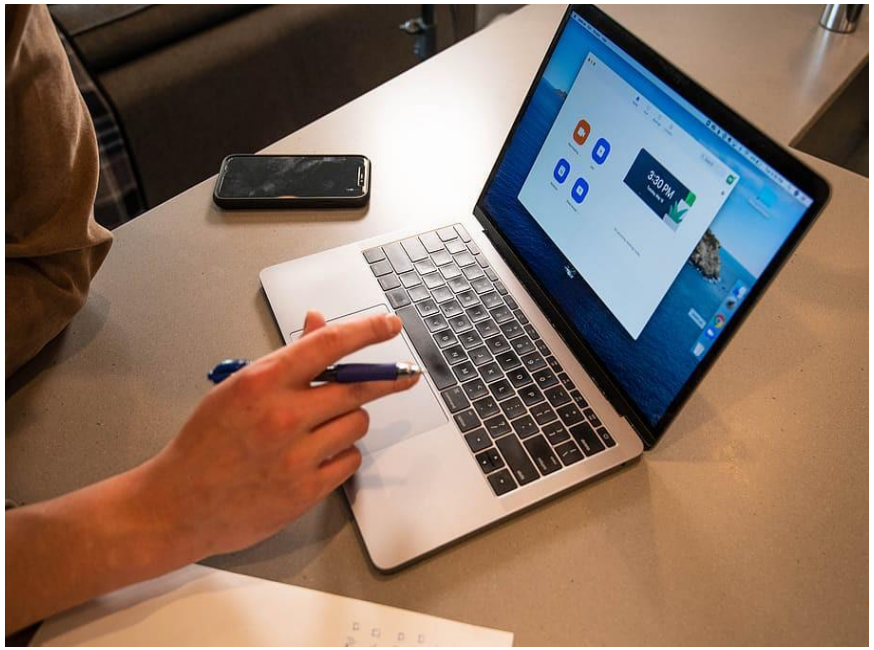
December 8, 2021

BAWSCA
Bay Area Water Supply & Conservation Agency

Consent Calendar

A. Approval of Minutes from October 13, 2021 Meeting

B. Adoption of Resolution 2021-06 Declaring that BPC Meetings Will Continue to be Held via Teleconference



Comments by the Chair

Public Comment on Items Not on the Agenda

Special Report from SFPUC

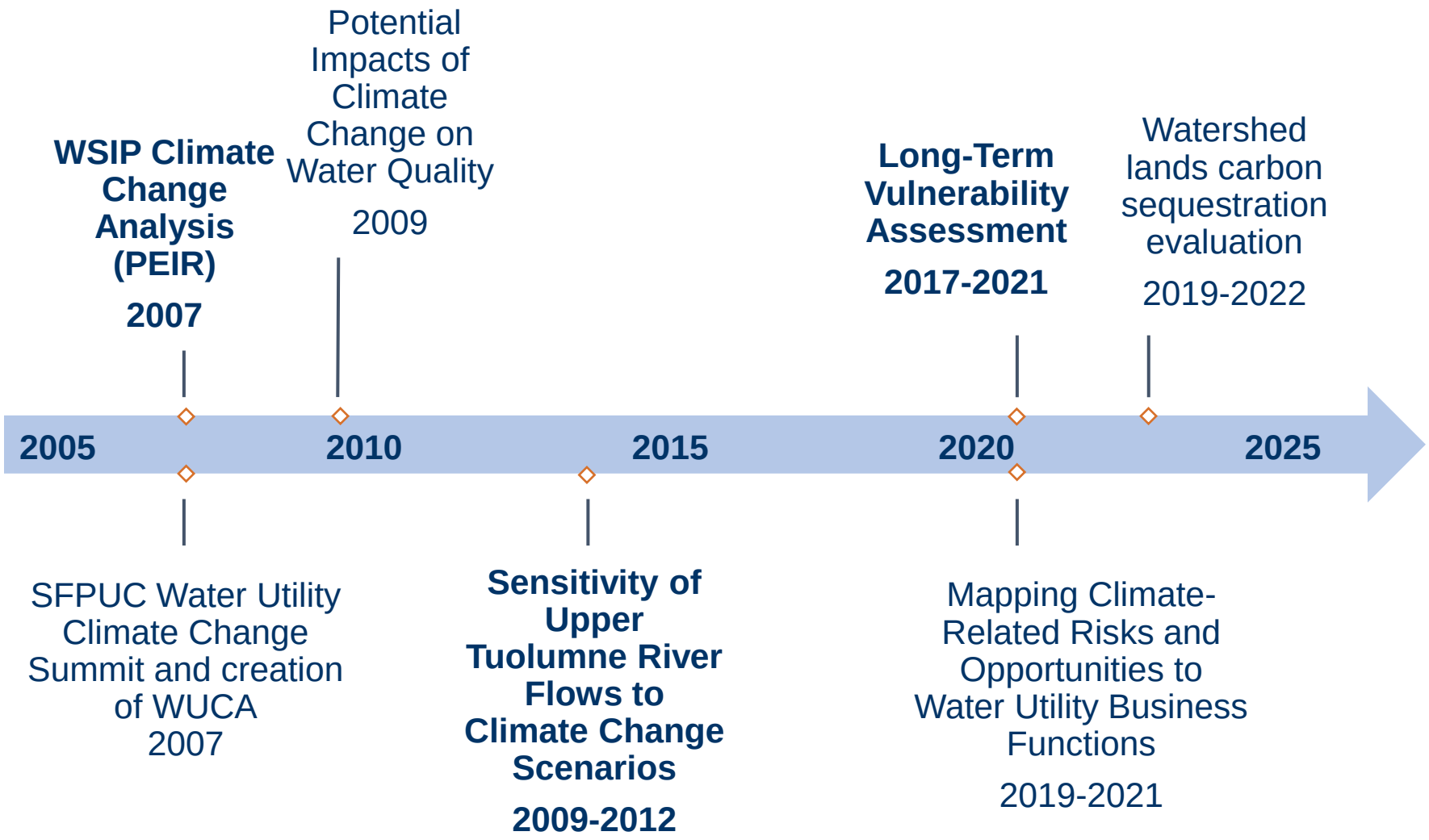
Long-term Vulnerability Assessment for the Regional Water System

BAWSCA Policy Board Committee
12/08/2021

Objective of presentation

- The purpose of this meeting is to share and discuss the findings of the Long-term Vulnerability Assessment

History of SFPUC Climate Change Analysis



Research Collaboration

LTVA is a research collaboration of the San Francisco Public Utilities Commission, the University of Massachusetts—Amherst, the National Center for Atmospheric Research, and Deltares made possible by the Water Research Foundation and funded by the San Francisco Public Utilities Commission.

This work was led by Principal Investigator Dr. Casey Brown at the University of Massachusetts—Amherst, Hydrosystems Research Group (HRG). HRG are experts in improving society's readiness to face water and climate risk.

The goal of the LTVA was to assess “to what extent climate change will be a threat to the Regional Water System in comparison to, or in combination with, other external drivers of change over the next 50 years (2020-2070).”

Findings suggest that climate change is not the single most important factor but will likely exacerbate the impacts of other potential risks to system reliability.

Areas of Vulnerability Assessed

CLIMATE
and Hydrology

Climate change has the potential to reduce source water availability and could lead to severe and prolonged droughts. For this study, climate change is limited to changes in mean annual precipitation and mean annual temperature in SFPUC watersheds and service area.

INSTREAM
Flow Requirements

New or increased instream flow requirements can reduce source water availability at RWS reservoirs. This study evaluated two proposed and two potential IFRs and their impact on system reliability.

INCREASING
Demands

Water system reliability is highly sensitive to changes in demand. For this study, baselines for the total service area demand and RWS only demands were studied at increased demands of 15%, 30%, and 45%.

DEGRADED
Raw Water Quality

Changes in precipitation and watershed ecosystems can degrade the quality of our source water and limit our ability to utilize Hetch Hetchy water along with constricting water system operations. This study examined impacts should long duration filtration of Hetch Hetchy water be required due to degraded raw water quality.

FINANCIAL
Limitations

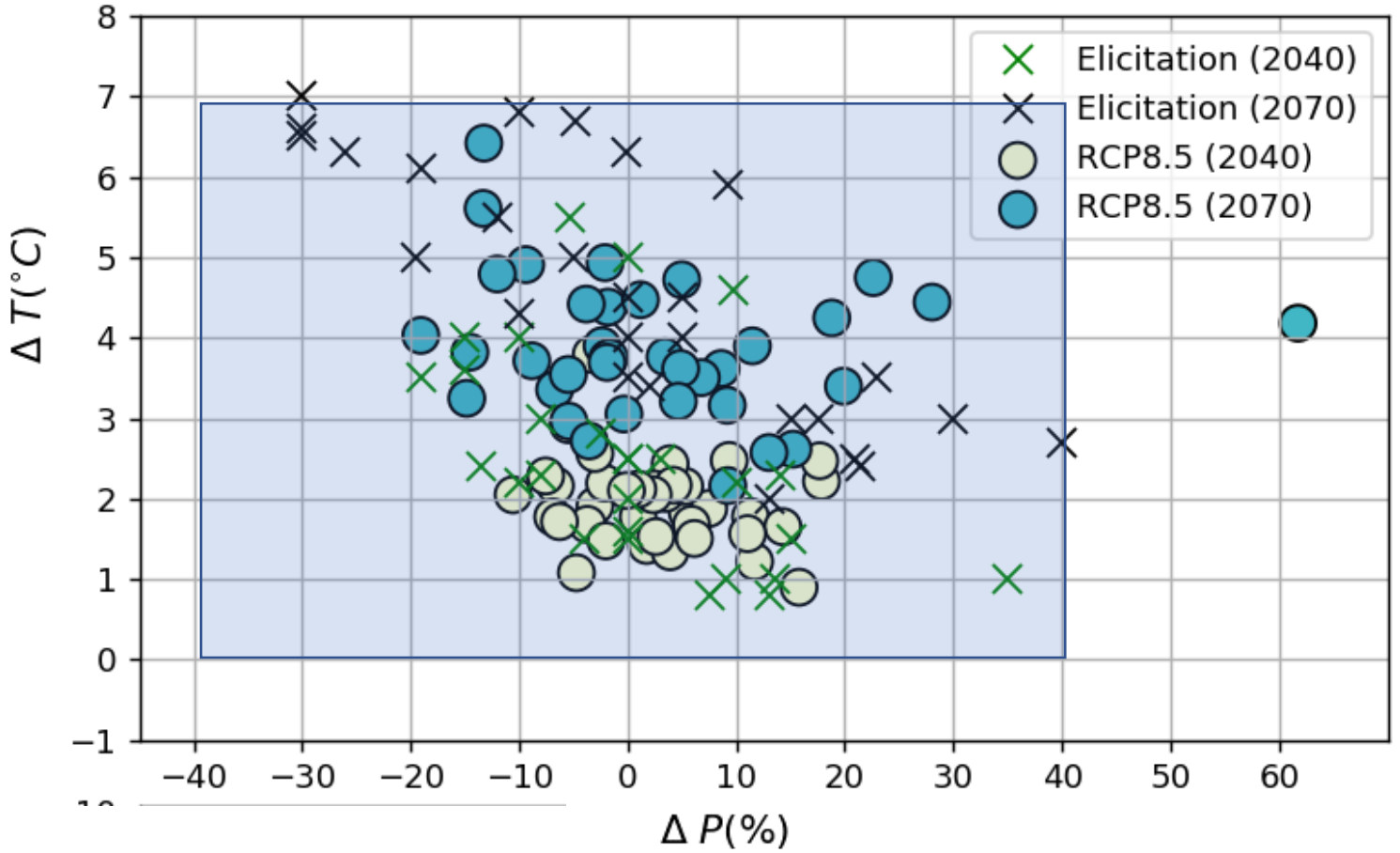
Adaptation can be costly and may result in financial impacts on consumers. This study examines the impact of increases in capital investment and the absolute cost of water on rates, against customer tolerance for rate increases.

INFRASTRUCTURE
Failures

Infrastructure is key to meeting the delivery obligations of any water system. This study examines how five infrastructure failure scenarios interact with and impact other areas of vulnerability.

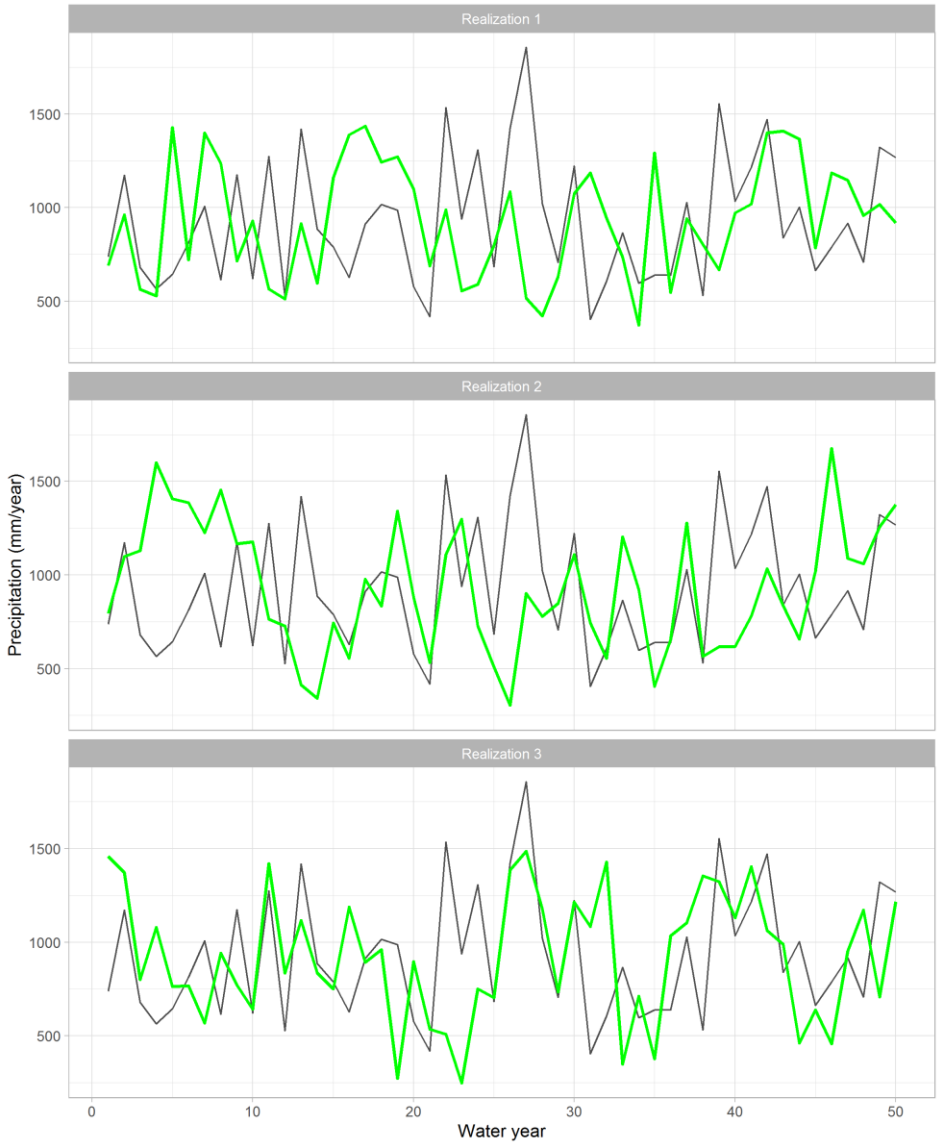
Climate Change – Large uncertainty in climate projections

- For the stress test, the warming in mean annual temperature varies from 0 to 7 °C and the change in mean annual precipitation varies between -40% and +40% of historical conditions.
- The historical baseline is from 1986 to 2005.



Natural Climate Variability – 500 years of simulation

To represent natural variability of climate, we used **9 sequences of 50 years from a stochastic weather generator** and **a historical sequence 1961-2011**



Natural Climate Variability + Climate Change

Type of uncertainty	Sampling range	Sample size
Natural climate variability	Stochastic realizations	10 realizations
Changes in mean annual precipitation (%)	-40 % to 40 % with 5% increments	17 change factors
Changes in mean annual temperature (°C)	0 to 7°C with 1°C increments	8 change factors
TOTAL		1360 climate scenarios

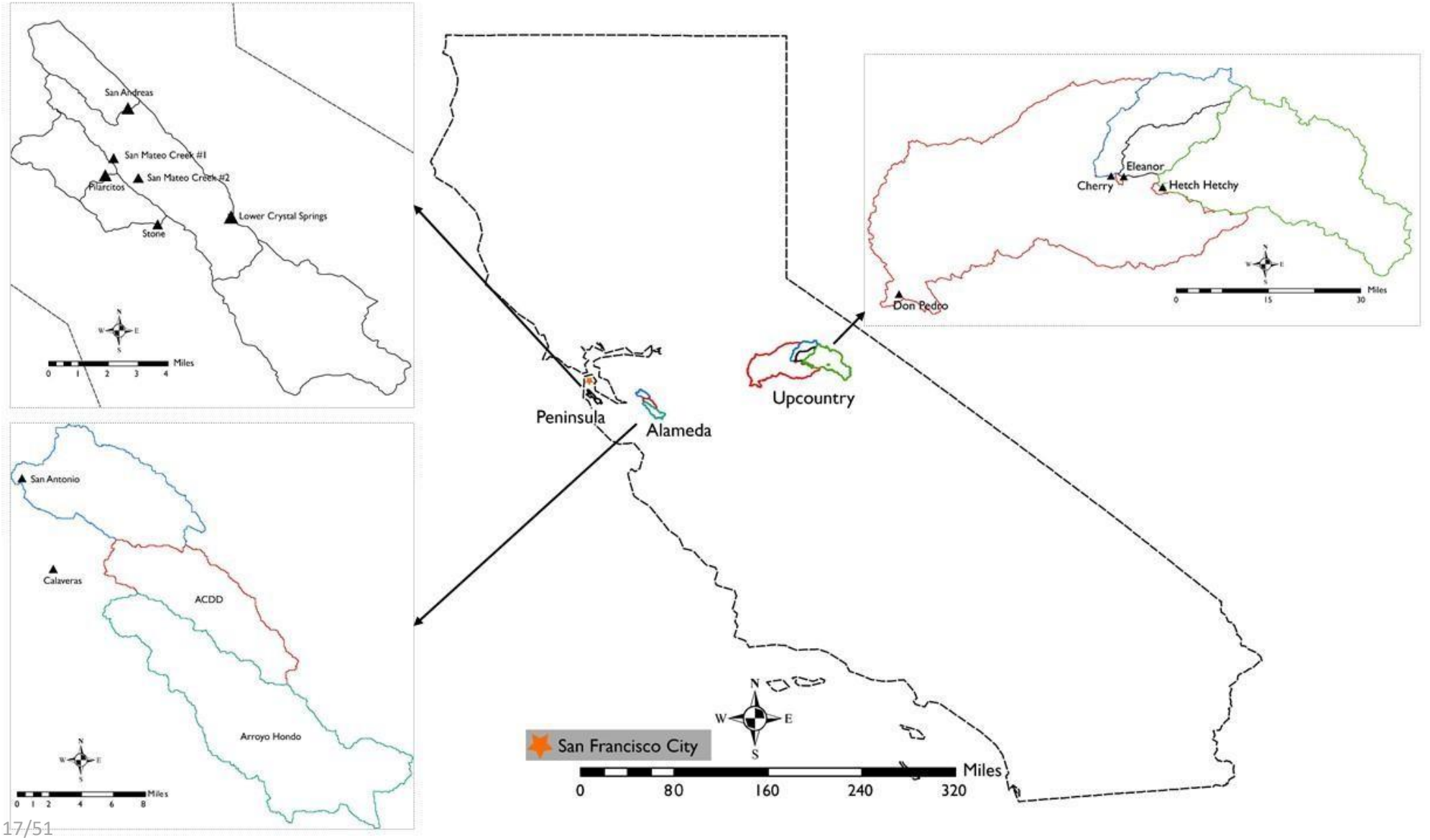
Climate projections – Some findings

- Future climate is deeply uncertain, while climate projections provide an indication of signals from the available climate simulations.

- **By 2040,** the full range of projected changes in mean annual temperature varies between **+1°C and +5.5°C** and precipitation varies between **-20% and +35%** compared to 1986-2005 baseline.

- **By 2040**, in the Upcountry region, the **median** projections are **+2°C warming** and **0% change in mean annual precipitation.** Most projections and expert elicitations of warming are between +1°C and +4°C and for precipitation change between -5% and +5%.

LTVA Hydrologic Simulation Models



Hydrology and Water Supply – Some findings

- In the Upcountry region, warming has a small effect on annual inflow volumes but affects timing of spring runoff.
- +2°C warming leads to a spring runoff arrival 10 days prior to the baseline temperature conditions.
- **By 2040**, in the Upcountry region, the **median projections** do not result in significant changes to **mean annual WAC volume (~ - 8 TAF).** The same is true **by 2070 RCP8.5 (~ -17 TAF).**
- A **5% decrease in mean annual precipitation** causes a near **doubling of the frequency of drought** with water deficit as severe as that experienced during the **1987-1992** drought, one of the worst on record.

Hydrology and Water Supply – Some findings

- **By 2040**, in the **East Bay and Peninsula** regions, the **median projections** lead to a **decrease of mean annual flow** of 9% (Arroyo Hondo) and 7% (Crystal Springs) and by **2070 RCP8.5**, of 15% (Arroyo Hondo) and 14% (Crystal Springs)
- **At a baseline demand of 227 mgd, the RWS can sustain warming of +4°C and -5% change in precipitation** before failing to meet performance targets on delivery reliability, frequency of 20% rationing, storage reliability and duration of rationing.
- The RWS is vulnerable to short and very severe drought, like the 1976-77 historical drought.

Demand and Water Supply – Some findings

- Demand change is a major driver of future RWS performance.
- **An increase by 15% (265 mgd) will lead to failing to meet the rationing frequency targets in current climate.**
- **At 265 mgd demand, the rationing frequency targets would only be met if there is an increase in precipitation of 10%.** The RWS configuration considered in this study is not based on the completed WSIP2018.

Turbidity and TOC – Some findings

- In general, **raw water quality deterioration in the Hetch Hetchy water supply for turbidity and TOC as a result of mean climate changes does not appear to be a major concern.**
- However, changes in daily intensity of precipitation events was not directly evaluated.

IFR and Water Supply – Some findings

- **The State amended WQCP causes a significant increase in frequency of rationing.**
- At a demand of 227 mgd, rationing occurs 1 out of 20 years on average and with the State amended WQCP, it becomes 1 out of 6 years on average.
- An equivalent increase in frequency of rationing is observed with a decrease of 15% in mean annual precipitation from severe climate change.

Infrastructure failure narratives

Name	Summary of the aftermath for the system	Duration
Water quality	High turbidity or TOC levels in Hetch Hetchy water leads to requiring filtration at the Sunol Valley Water Treatment Plant at a rate of 90 mgd (276 AF/day).	60 days
New dam safety regulations combined with aging infrastructure (wear and tear)	Hetch Hetchy storage is reduced by 20%.	All years of the simulation
Major failure at the Moccasin switchyard	San Joaquin pipelines are shut down.	365 days
Earthquake along the Calaveras fault	The Sunol Valley Water Treatment Plant (SVWTP) is offline. The San Joaquin pipelines capacity is reduced to 120 mgd (368 AF/day) during the first 30 days and then 160 mgd (491AF/day) during the last 30 days.	60 days
Major Fire across Crystal Springs reservoirs watersheds	Harry Tracy Water Treatment Plant is shut down.	365 days

Infrastructure failures – Some findings

- **Failures related to importing water from the Upcountry are most important, especially when compounded** with a reduction in ability to treat local water and/or a low local emergency storage reserve preceding the event.
- Decreases in precipitation and increases in demand exacerbate the vulnerability of the RWS to the infrastructure failures explored.
- The **unplanned outage of HTWTP indicated less vulnerability** to water supply. Water shortage are only observed if demand increases by 30% or more and/or precipitation decrease significantly.
- The system could be vulnerable to other infrastructure failures or combination of failures that were not explored in this assessment.

Finance – Some findings

- If major capital investment is required to add additional supply to the system as a result of climate change or IFRs, **demand would need to increase significantly to mitigate substantial increases in the price** of water.
- For example, if annual capital expenditures increased from a baseline of $350M to $525M, demand would have to increase by 30% in order to maintain existing prices or else prices would rise by about 50%.

The main findings are

- Climate change is not the single most important factor but will likely exacerbate the impacts of other potential risks to system reliability.
- The RWS is most vulnerable to changes in demand and new instream flow requirements.
- At a baseline demand of 227 mgd, the RWS can sustain a climate change scenario of up to +4°C warming and -5% change in precipitation before failing to meet reliability goals. However, reliability goals at that demand can no longer be met with the implementation of the new State Water Quality Control Plan instream flow requirements.
- Similarly, a demand increase of 15% would result in failure to meet reliability goals under current climate.

What next

- WRF webinar

- Evaluate Alternative Water Supply using the LTVA modeling tools.
- Improve hydrologic simulation models
- Establish baseline indicators and monitoring systems to track for vulnerability signals and anticipate tipping points before they occur

Action Calendar

Mid-Year Work Plan Review Identifies Need for Scope Change in Response to Increasing Drought Conditions

- Implementation of Work Plan on schedule and on budget
  - Table 1 presents a status update on FY 2021-22 Work Plan
- Four changes to the Work Plan scope are proposed
  1. **Scope Deletion**: Delay scoping for an update to Strategy to FY 2022-23
     - Will enable staff resources to be allocated to drought support
     - Allocated funds to be reprogrammed to support Tier 2 Plan Update
  2. **Scope Addition**: Increase level of staff-led drought support provided to members & their customers
     - Necessary response in light of worsening drought conditions and requests from Member Agencies
  3. **Scope Addition**: Facilitate negotiation and adoption of a WSA amendment related to the transfer of minimum purchase obligations
     - Final negotiations in late FY 2020-21 delayed, resulting in task completion being carried over to FY 2021-22
  4. **Scope Deletion**: Delay scoping for an update to WCDB for FY 2022-23
     - Will enable staff resources to be allocated to drought support
     - Allocated funds to be reprogrammed to support Tier 2 Plan Update

Reliable Water Supply (1 of 5)

STATUS	BAWSCA OBJECTIVE & FY 2019-20 WORK PLAN ITEM
1. Facility Reliability: Monitor the SFPUC's WSIP, 10-Year CIP, and Asset Management Program	
✓	a. Monitor WSIP scope, cost, and schedule
✓	b. Review and monitor SFPUC's Regional 10-Year Capital Improvement Program
○	c. Review and monitor SFPUC's Asset Management Program
✓	d. Promote increased emergency response coordination between member agencies, SFPUC, Valley Water and others.

! Needs Attention **○ Experiencing Delay** **✓ Complete/On Track** **★ Extraordinary Result/Effort**

Reliable Water Supply (2 of 5)

STATUS	BAWSCA OBJECTIVE & FY 2019-20 WORK PLAN ITEM
2. Long-Term Supply Solutions: Implement BAWSCA's Strategy	
✓	a. Refresh & update BAWSCA's Regional Water Demand and Conservation Projections Study.
!	b. Complete scoping activity for an update to BAWSCA's Long-Term Reliable Water Supply Strategy (Strategy). ***Proposed Scope Deletion:*** *Delay scoping for an update to Strategy to FY 2022-23*
✓	c. Participate in development of BARR Phase 2
✓	d. Complete PREP Phase 3 feasibility study
✓	e. Promote the continued sustainable use of San Mateo Plain Groundwater Basin
✓	f. Facilitate development of other local water supply options
✓	g. Utilize BAWSCA Reliability Model to support evaluation of water supply reliablity

! **Needs Attention** ○ **Experiencing Delay** ✓ **Complete/On Track** ★ **Extraordinary Result/Effort**

Reliable Water Supply (3 of 5)

STATUS	BAWSCA OBJECTIVE & FY 2019-20 WORK PLAN ITEM
3. Near-term Supply Solutions: Water Conservation and Drought Response	
✓!	a. Provide staff-only drought support to members and their customers ***Proposed Scope Addition:*** *Increase level of staff-led drought support provide dtomembers and their customers.*
✓	b. Represent member agency interests in regional and statewide discussions on the development of and compliance with California's "Making Water Conservation a Way of Life" requirements
✓	c. Provide regional coordination to support member agency Advanced Metering Infrastructure (AMI) implementation and data management
✓	d. Implement BAWSCA's core water conservation programs
✓	e. Implement BAWSCA's subscription water conservation programs
✓	f. Administer new irrigation hardware rebate program
✓	g. Administer new residential self-audit tool
✓	h. Develop lead repair and training certification program for implementation in FY 2022-23
✓	i. Represent member agencies in regional and State-level discussions related to water conservation-related regulations

! Needs Attention ○ Experiencing Delay ✓ Complete/On Track ★ Extraordinary Result/Effort

Reliable Water Supply (4 of 5)

STATUS	BAWSCA OBJECTIVE & FY 2019-20 WORK PLAN ITEM
4. Take Actions to Protect Members' Water Supply Interests in the Administration of the 2009 WSA	
✓	a. Monitor SFPUC's development of new supplies through its Alternative Water Supply Planning Program
✓	b. Protect members' water supply interests to ensure that SFPUC meets its legal and contractual obligations
✓	c. Adopt temporary extension of existing Tier 2 Plan that expires Dec. 2021
✓	d. Initiate development of an updated Tier 2 Plan
✓	e. Protect members' water supply and financial interests in SFPUC's required 2028 decisions
✓!	***f. Proposed Scope Addition:*** *Facilitate negotiations and member adoption of a WSA amendment related to the transfer of minimum purchase obligations*
5. Protect Members' Interests in a Reliable Water Supply	
✓	a. Participate in SWRCB Bay Delta Plan Update
✓	b. Participate in the Don Pedro Project/La Grange Project FERC licensing process

! **Needs Attention** ○ **Experiencing Delay** ✓ **Complete/On Track** ★ **Extraordinary Result/Effort**

Reliable Water Supply (5 of 5)

STATUS	BAWSCA OBJECTIVE & FY 2019-20 WORK PLAN ITEM
6.	**Pursue Grant Opportunities Independently and in Coordination with Regional Efforts**
✓	a. Pursue and use grant funds for water conservation programs and for regional supply projects and programs
✓	b. Pursue, with regional partners, grant funding to support studies that aim to improve regional water supply reliability
✓	c. Investigate potential for grant funds to support the implementation of the Strategy
7.	**Reporting and Tracking of Water Supply and Conservation Activities**
✓	a. Complete BAWSCA FY 2019-20 Annual Survey
✓	b. Complete BAWSCA FY 2019-20 Annual Water Conservation Report
✓	c. In partnership with member agencies, operate and maintain BAWSCA's Water Conservation Database ***Proposed Scope Deletion:*** *Delay scoping for an update to WCDB to FY 2022-23*

! Needs Attention **○ Experiencing Delay** **✓ Complete/On Track** **★ Extraordinary Result/Effort**

High Quality Water (1 of 1)

STATUS	BAWSCA OBJECTIVE & FY 2019-20 WORK PLAN ITEM
8. <u>Support Member Agencies in Receiving Reliable Communication of Water Quality Issues</u>	
✓	a. Coordinate member agency participation in Joint Water Quality Committee
✓	b. Relay important water quality information to BAWSCA member agencies
✓	c. Review and act on, if necessary, State legislation affecting water quality regulations

! Needs Attention **○ Experiencing Delay** **✓ Complete/On Track** **★ Extraordinary Result/Effort**

Fair Price (1 of 1)

STATUS	BAWSCA OBJECTIVE & FY 2019-20 WORK PLAN ITEM
9. Perform Matters that Members Delegated to BAWSCA in the WSA	
✓	a. Administer the WSA with SF to protect the financial interests of member agencies.
✓	b. Administer bonds issued by BAWSCA to retire capital debt owed to San Francisco
★	c. Work on the authorization and execution of the refunding a portion of BAWSCA's bonds
10. Maintain Community Allies and Contacts with Environmental Interests	
✓	a. Maintain close relationships with BAWSCA's local legislators and allies
✓	b. Maintain a dialogue with responsible environmental and other groups
✓	c. Maintain effective communications with member agencies, customers, & others
✓	d. In conjunction with San Francisco, conduct or co-sponsor tours of the water system
11. Manage the Activities of the Agency Professionally and Efficiently	
✓	a. Initiate a Student Internship Program
✓	b. Implement Board policy directives for management of BAWSCA's unfunded pension liability obligations

! Needs Attention **○ Experiencing Delay** **✓ Complete/On Track** **★ Extraordinary Result/Effort**

No Changes to General Reserve are Recommended at This Time

- Current General Reserve balance is $758,794 and reflects
  - Approved transfer of $281,676 to BAWSCA's Operating Fund to fund the FY 2021-22 approved budget, and
  - Deposit of $43,727 of FY 2020-21 unspent funds
- For FY 2020-21, BAWSCA's operating expenses of $3,860,044 were $499,085 under its final budget of $4,359,129
- While the BAWSCA was well under budget during the fiscal year, the amount available to transfer to the General Reserve is based on the "actual" revenue of $3,903,771, including interest income of $22,191, in excess of the "actual" expenses totaling $3,860,044
  - Net difference of $43,727 is considered excess revenues available to be transferred to the General Reserve
  - Unspent funds at end of FY 2020-21 were $200,000 less than the estimated amount included in the funding plans for the current fiscal year
- This level of General Reserve represents 16% of the approved Operating Budget
  - Outside the General Reserve guidelines for budgetary purposes of 20% to 35% of the annual operating expense
- No changes to General Reserve are recommended at this time
- CEO monitoring agency spending and potential risk areas and will update Chair and Board regularly
- This issue will need to be addressed in FY 2022-23 Work Plan, budget and funding discussions

Recommended Action

That the Committee recommend Board approval of the modifications to Work Plan items 2b, 3a, 4f, and 7c for a revised FY 2021-22 Work Plan.

Request for Authorization for Technical Consultant Support for Tier 2 Plan Update

- Tier 2 Plan Update included in adopted FY 2021-22 Work Plan and Budget
  - Board and WMRs have determined that the current Tier 2 Plan is no longer sufficient
  - Tier 2 Plan Update necessary to account for service area changes
- Request for Proposal (RFP) process initiated in October
- One proposal received from Woodard & Curran (W&C) teamed with Hazen & Sawyer as a subconsultant
- W&C Proposal was reviewed by selected review panel
  - BAWSCA staff, Cal Water staff, and staff from an outside agency familiar with this work type (San Diego County Water Authority)
- Review Panel unanimously agreed that W&C's proposal was deemed highly acceptable
  - The scope proposed coupled with the knowledge and expertise of the consultant team were deemed excellent by the reviewers

BAWSCA Worked with W&C to Refine Scope

- W&C's original scope spanned two fiscal years and did not estimate number of meetings with member agencies in FY 2022-23
- BAWSCA requested the following revisions to the W&C scope
  - Scope be broken up into work for FY 2021-22 and FY 2022-23
  - Work in FY 2021-22 is termed as Phase 1 of the Tier 2 Plan Update
  - Work in FY 2022-23 will be termed as Phase 2 of the Tier 2 Plan Update
  - W&C was asked to incorporate their optional tasks (which focused on the use of the BAWSCA's Regional Reliability Hydraulic Model) into the scope of work
- W&C agreed to BAWSCA's request for scope modifications
- An adjusted scope of work was provided to BAWSCA on November 30, 2021 and is reflected in this recommended action

Phase I Scope of Work Can Be Funded with the Adopted FY 2021-22 Budget

- Cost of Phase 1 is greater than what is included in the adopted FY 2021-22 Budget
  - FY 2021-22 budget includes $75,000 budget allocation
  - W&C proposed cost for Phase 1 of the Tier 2 Plan Update is $98,000
- BAWSCA has reviewed the proposed Phase 1 work effort and associated costs and believes they are appropriate
- Funds available to reallocate within overall adopted FY 2021-22 Budget
  - As noted in the FY 2021-22 mid-year review, two work efforts have been delayed
  - Monies are proposed to be reallocated from those delayed work efforts to cover the additional costs of Phase 1 of the Tier 2 Plan Update
- As originally proposed by W&C, total cost for Tier 2 Plan Update was $168, 753
  - Once Phase 1 work is underway, BAWSCA will re-evaluate the level of continued engagement needed in FY 2022-23 to complete the Tier 2 Plan Update
  - This information will inform the FY 2022-23 Work Plan and associated budget requirements
  - BAWSCA will amend the agreement with W&C to perform Phase 2 of the Tier 2 Plan Update following Board approval of the FY 2022-23 Work Plan and Budget

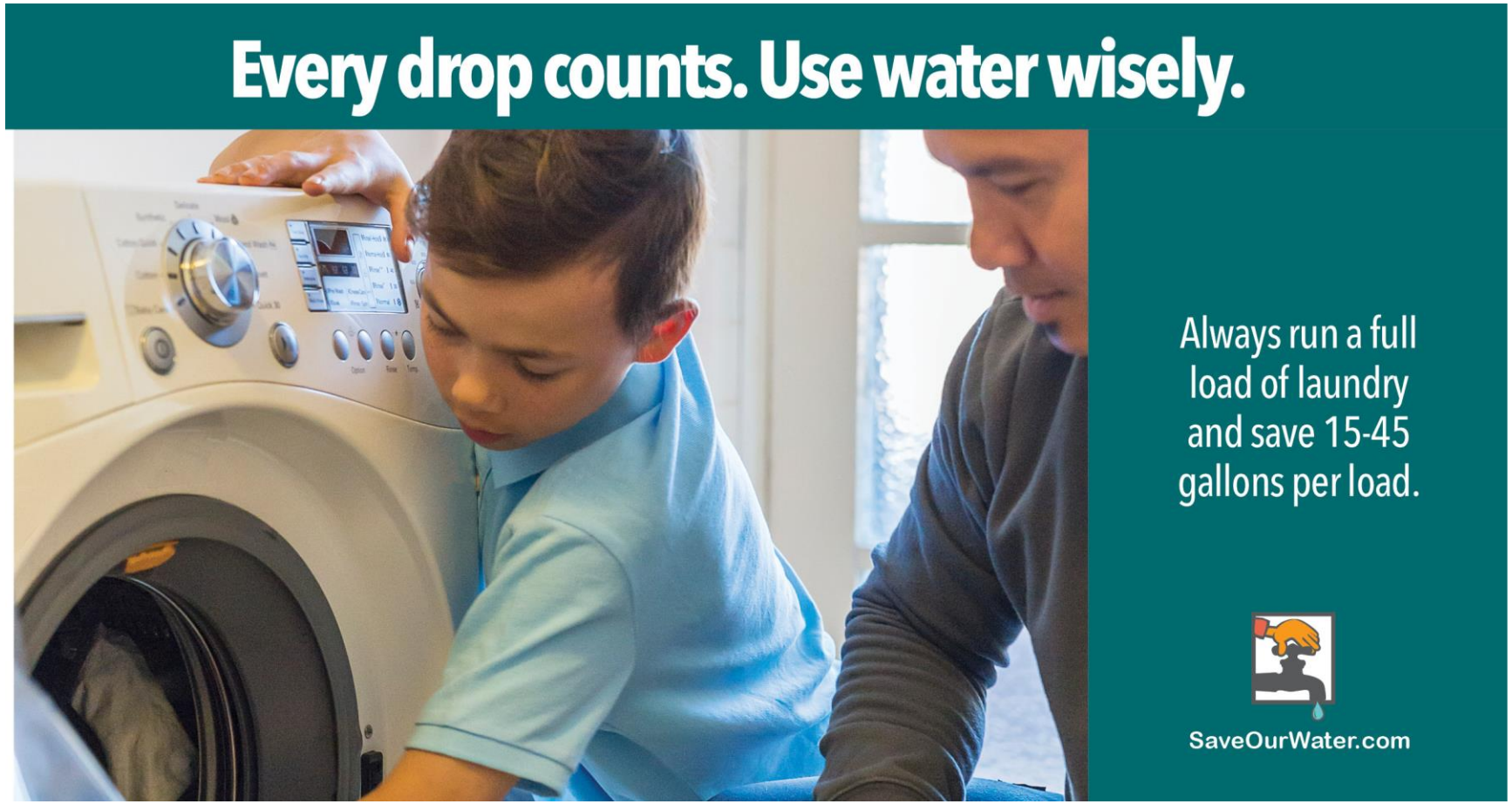
Tier 2 Plan Update – Phase 1 Schedule

- Proposed schedule for the Phase 1:
  - Project Kick-off: Late January 2022
  - Background research and data review (Task 2): February 2022
  - Establishment of policy objectives (Task 3): March - April 2022
  - Development of Draft Tier 2 Plan options (Task 4): May - June 2022
- Regular updates will be provided to Board on progress

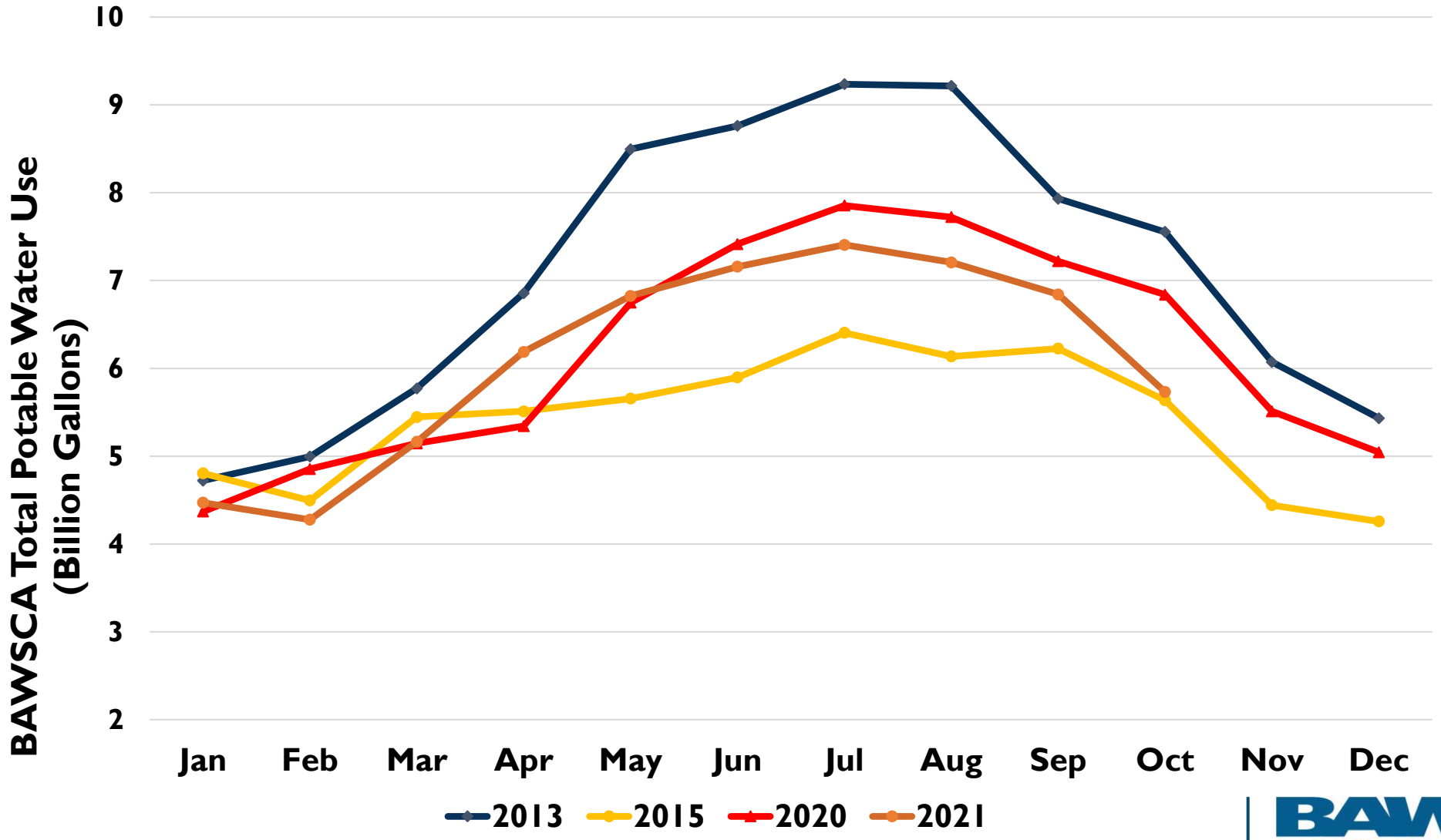
Recommended Action

That the BPC recommend the Board authorize the CEO/General Manager to negotiate and execute a contract between BAWSCA and Woodard & Curran subject to legal counsel's final review, for an amount not to exceed $98,000 to provide technical services toward the Tier 2 Plan Update.

CEO Reports


Every drop counts. Use water wisely.
Always run a full load of laundry and save 15-45 gallons per load.
SaveOurWater.com

BAWSCA October 2021 Total Potable Water Use 24% Less Than October 2013



BAWSCA
Bay Area Water Supply & Conservation Agency

BAWSCA Focused on Protecting Water Users Interests

- Bay-Delta Plan Efforts continue
  - SWRCB holding a meeting on December 8th where the Bay-Delta Plan implementation schedule and steps is being discussed
  - VA discussions moving slowly with the participants (discussions with San Jaoquin River tributaries may or may not continue within that venue – status somewhat uncertain)
  - Secretaries made it clear that they "maintain hope" that a multi-party agreement with the SF and others is still possible
- BAWSCA pressing State, SFPUC, and Districts for "bold creative leadership" to resolve this challenge with renewed discussions/negotiations on a voluntary agreement for the Tuolumne River
- BAWSCA moving forward on multiple fronts
  - Legal action remains on course
  - Pressing for negotiations on a voluntary agreement with State, SF, and others
  - TRVA remains a potential viable alternative, though State Board's receptivity is unclear
  - SFPUC Alternative Water Supply Program initiated to develop new supplies as needed
  - Working to identify other avenues for legislative support to protect water customers
- BAWSCA remains actively engaged with legislative and other allies

Internship Program

- In October 2021, BAWSCA signed a contract with Eastside College Preparatory School (ECPS) to support the implementation of the BAWSCA Internship Program
  - BAWSCA's aim for the Internship Program is to provide the intern with valuable work experience and skills necessary for them to be successful in the water resources field
- ECPS is a private 6-year combined middle and high school in East Palo Alto and supports its graduates from the transition to college through the launch of their careers:
  - Alumni Services offers college success and career development programs
  - Career Pathways Program (CPP) includes career coaching services and an internship program that is focused predominantly on college students
- BAWSCA will be working with ECPS in the coming months to identify potential candidates for BAWSCA's internship program which will begin in Summer 2022

FY 2022-23 Work Plan and Operating Budget Preparation Has Begun

- BAWSCA's budget process begins with an assessment of long-term critical issues and major challenges
  - Long-term view allows identification of critical results and associated timeline
  - Forms basis for FY 2022-23 Work Plan and Results to be Achieved
- Long-term critical issues and major challenges will be presented to Board in January as part of Budget Planning Session
- Input from Board will inform Draft Work Plan presented to BPC in February 2022
- Draft FY 2022-23 Work Plan and Budget will be presented to Board in March 2022

Closed Session

Comments by Committee Members

Next Meeting and Adjournment

Next BPC Meeting

- February 9, 2022
- Time: 1:30 pm
- Location: TBD

BAWSCA
Bay Area Water Supply & Conservation Agency