WEST YOST

Water. Engineered.

2025 Safe Yield Reevaluation

Workshop #2: Scenario Design Part 1

October 24, 2023

Welcome and Introductions

Meeting objectives

Develop understanding of scope and schedule of 2025 Safe Yield Reevaluation (2025 SYR), scenario design process, and expected future engagement from the stakeholders and peer reviewers

Gather feedback on drivers of water demand and supply plans (Water Plans)

Agenda

- Background
- Projection Scenarios for the 2025 SYR
- Drivers of Water Demand and Supply Plans (Water Plans)
- Historical Data and Prior Projections
- Next Steps and Schedule

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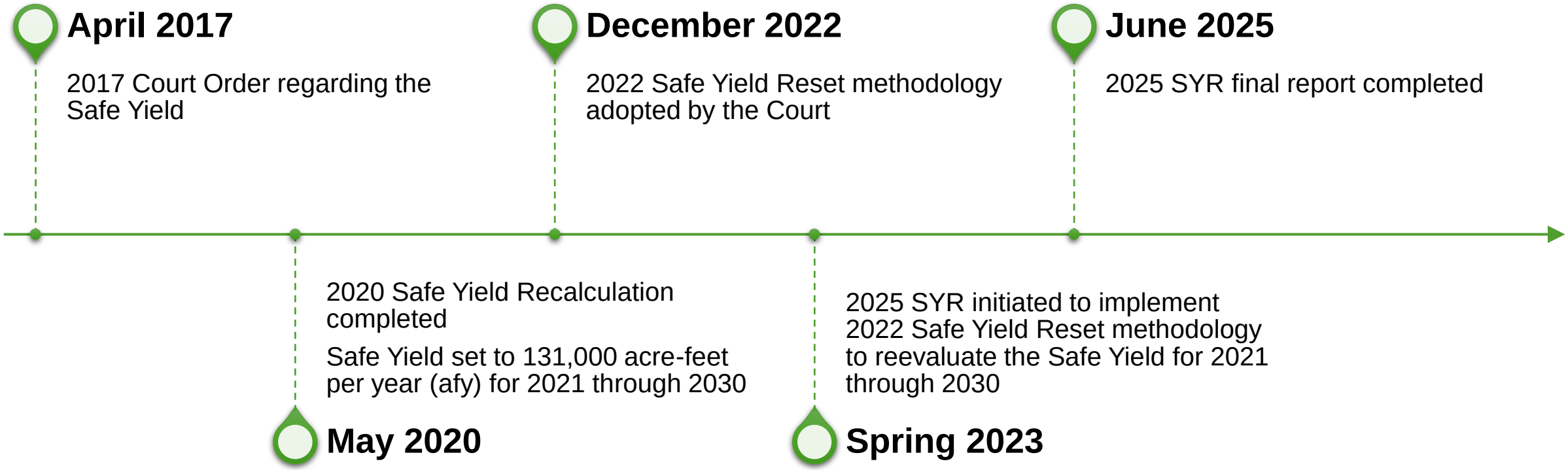
How did we get here?



2025 SYR process

- Update hydrogeologic conceptual model
- Generate calibrated realizations (2025 CVM)
- Develop projection realizations
- Simulate projection realizations
- Evaluate simulation results and calculate Safe Yield
- Develop 2025 SYR report
- Reset Safe Yield (if necessary)

2025 SYR timeline

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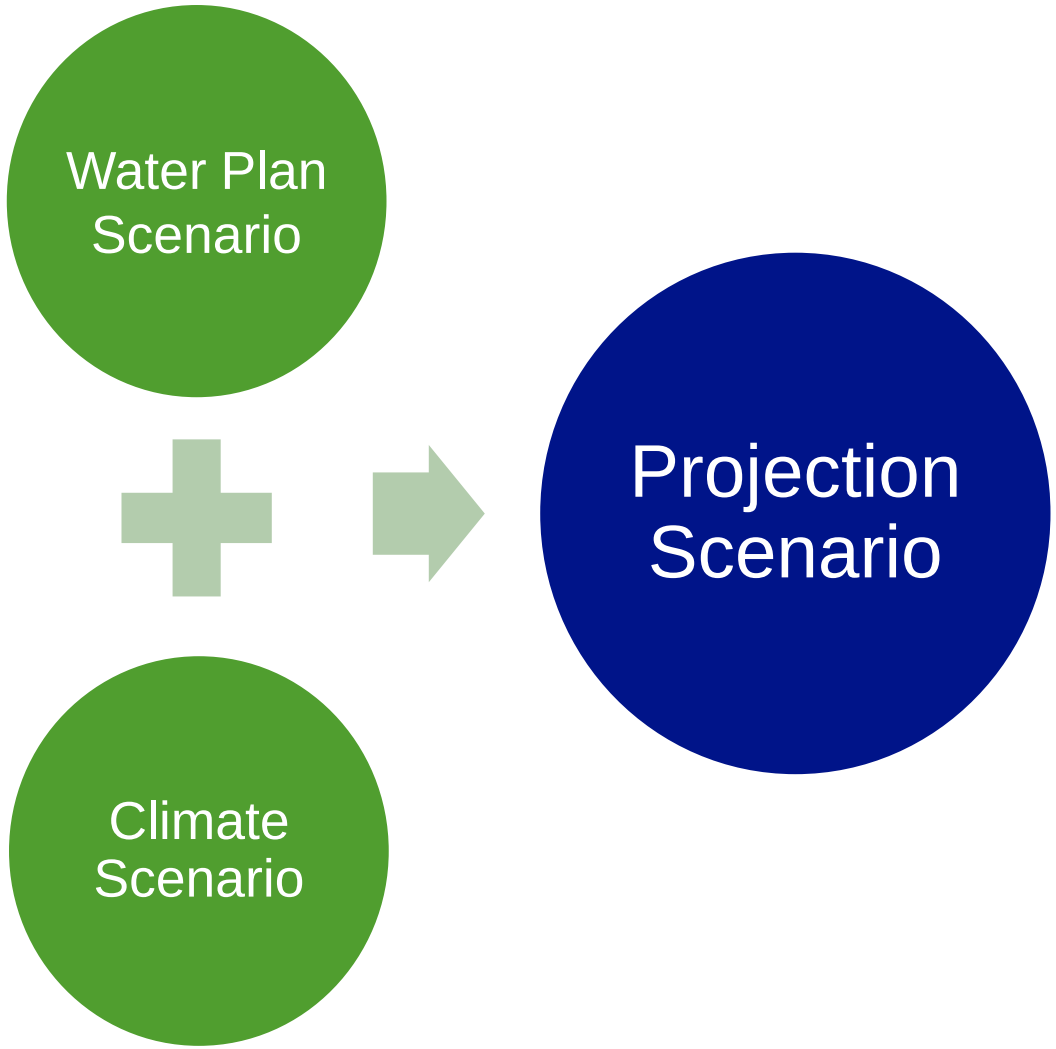
What is a projection scenario?

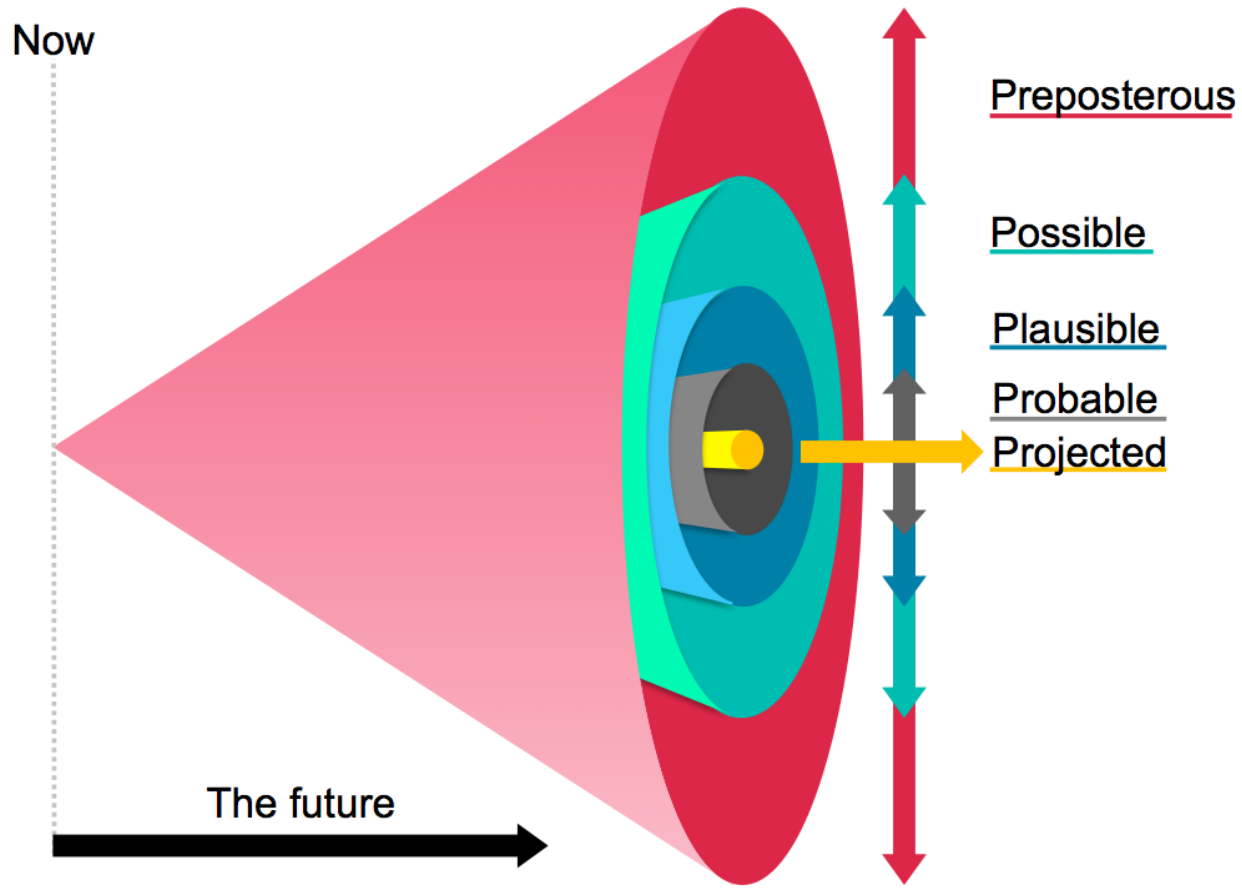


Why do we need multiple projection scenarios?

- By simulating multiple possible futures, we can better understand the effect of ***predictive uncertainty*** on the Safe Yield and basin behaviors
- Helps quantify risk of Material Physical Injury and adverse impacts

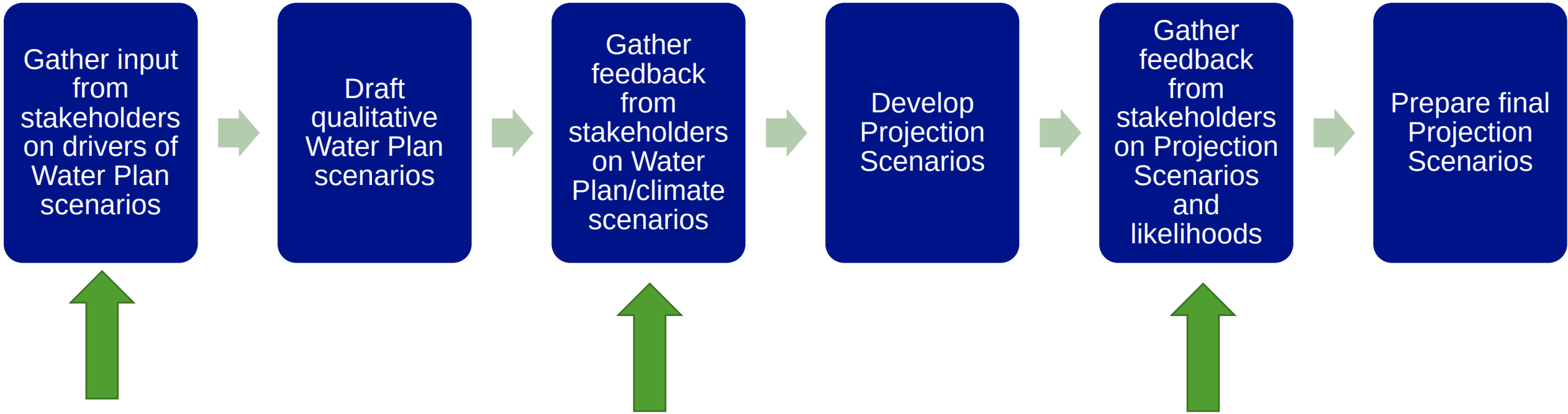
Goal for developing projection scenarios

- Anticipating 3-5 scenarios that cover the possible range of Water Plans
- Develop additional scenarios for the evaluation of climate extremes (related study)



Envisioning the future for strategic planning - Goal Atlas

Process to develop projection scenarios



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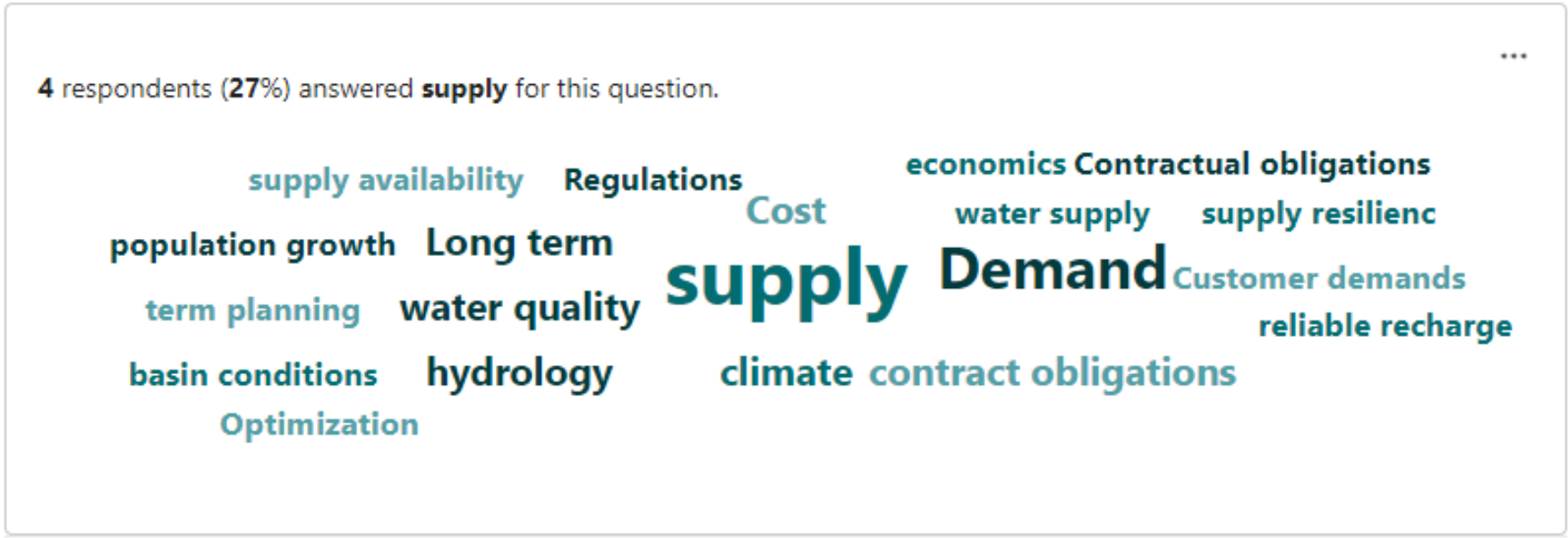
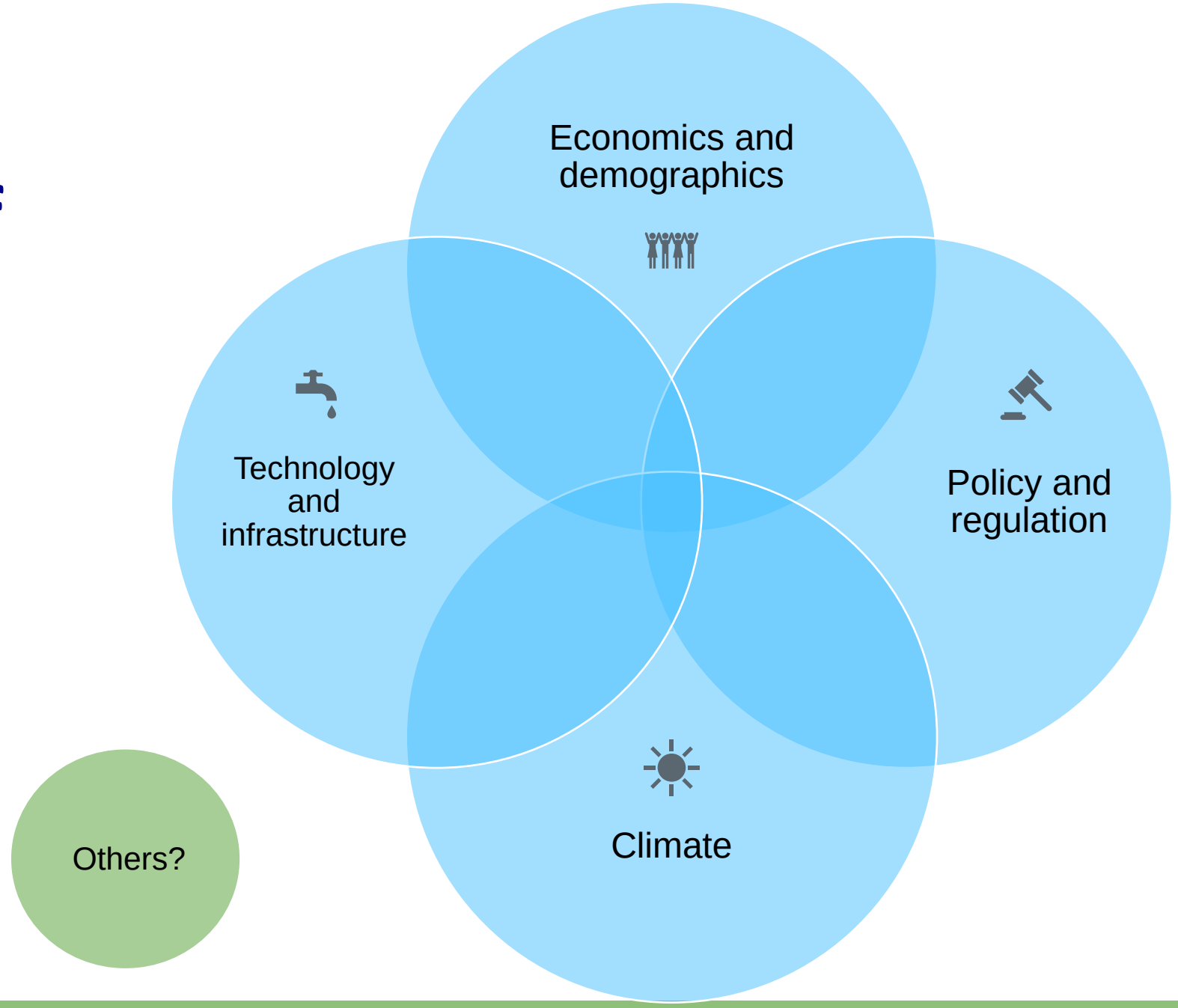
What are the primary drivers of Water Plans?



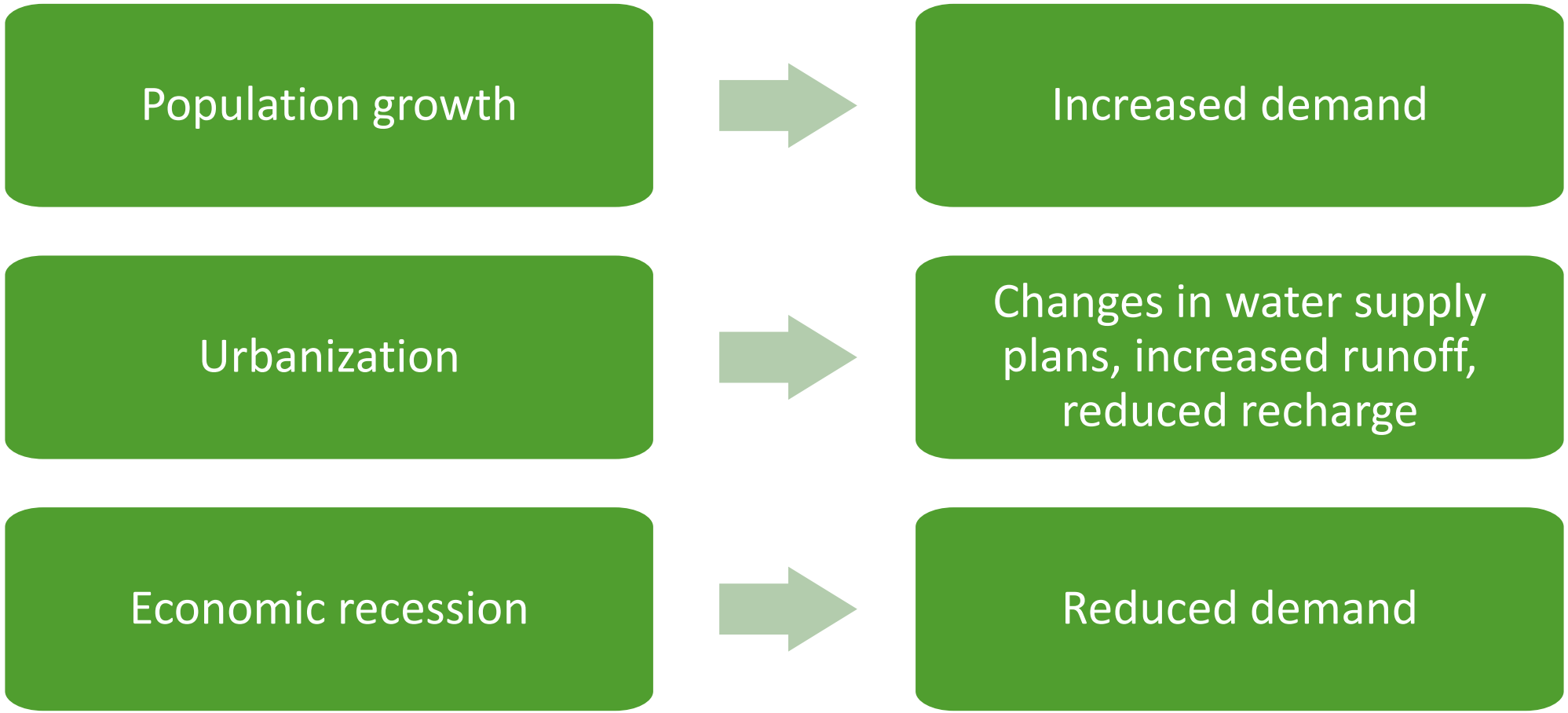
Primary drivers of Water Plans



Questions for each driver

1. How does the driver affect Water Plans?
2. How do the stakeholders quantify the driver and its impact on Water Plans?
3. What are the current projections of the driver and its impact(s) on Water Plans?
4. What is the uncertainty in these projections?

Economics and demographics – Effects on Water Plans

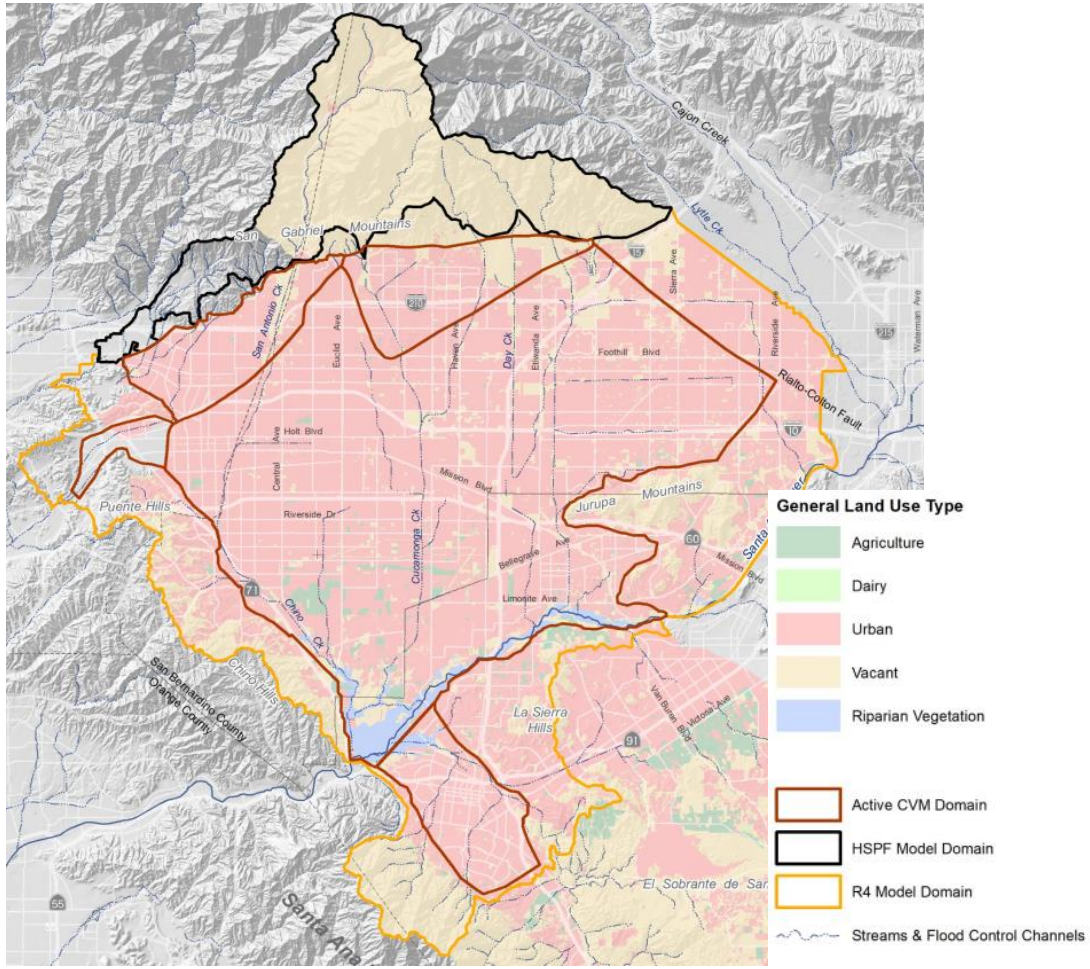


Economics and demographics – Quantifying projected impacts

- Projections based on:
  - Historical trends
  - Planning data from other sources (e.g., SCAG, cities)
- *Total demand =*

  (demand per customer) X

  (number of customers)



Projected 2040 land use used in the 2020 Safe Yield Recalculation

Economics and demographics – Projections and uncertainty

- Projected population growth varies by city
  - IEUA service area: 0.85 percent annual increase 2020 through 2045[1]
- Land use buildout expected to occur around 2040
- Projections generally do not quantify or discuss uncertainty

[1] *IEUA's 2020 Urban Water Management Plan*

What are the biggest sources of uncertainty regarding the impact of economics and demographics on Water Plans?

1. What are the biggest sources of uncertainty regarding the impact of economics and demographics on Water Plans?

More Details

Technology and infrastructure – Effects on Water Plans

Improvements in water efficiency (e.g., low-flow appliances, leak detection)	→	Reduced demand
Improvements in treatment/ pumping/conveyance capacity	→	Increased supplies
New stormwater capture/ recharge infrastructure	→	Increased supplies

Technology and infrastructure – Quantifying projected impacts

The Chino Basin Desalters (Chino Desalters | IEUA)

- Projections based on:
  - Capital Improvement Plans/infrastructure planning
  - Anticipated adoption of new technologies
  - Anticipated responses to policy/regulation
  - Recharge Master Planning

Technology and infrastructure – Projections and uncertainty

- Agencies generally assume further reductions in per capita water use
- Agencies are planning to build new/replacement infrastructure to reduce water losses and increase the ability to pump, treat, and convey water across the basin.
- Uncertainty exists in timing of infrastructure development
  - Generally, less uncertainty than other drivers of Water Plans

What are the biggest sources of uncertainty regarding the impact of technology and infrastructure on Water Plans?

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More Details

Policy/regulation – Effects on Water Plans

Water Conservation Act of 2009 (Senate Bill [SB] X7-7)	→	Reduced demands
Model Water Efficient Landscape Ordinance (MWELO)	→	Reduced landscape irrigation demands
Assembly Bill (AB) 1668 and SB 606	→	Reduced demands

Policy/regulation – Quantifying projected impacts

- Policies and regulations that directly affect Water Plans generally have specific, measurable objectives
  - SB X7-7 (20 percent reduction in per capita water use)
  - Model Water Efficient Landscape Ordinance
  - AB 1668 and SB 606
- Other policies and regulations indirectly affect Water Plans (e.g., land use regulation, environmental requirements)
- Urban Water Management Plans (UWMPs) are required to discuss impacts of policy/regulation on Water Plans

Policy/regulation – Projections and uncertainty

- To meet 2035 water use efficiency standards, IEUA member agencies would need to reduce potable use by 6 to 27 percent from historical water use[2]
- Significant uncertainty in timing, enforcement, and responses to legislation

[2] *Based on public data compiled by IEUA*

What are the biggest sources of uncertainty regarding the impact of policy/regulation on Water Plans?

1. What are the biggest sources of uncertainty regarding the impact of policy/regulation on Water Plans?

More Details

Climate – Effects on Water Plans

Hotter and drier climates

- Increased demand
- Less reliable imported/surface water
- Reduced groundwater recharge

Increasing frequency and severity of acute climate hazards (e.g., severe weather, wildfires, landslides, extreme heat)

Potential for disruptions in supplies and demands

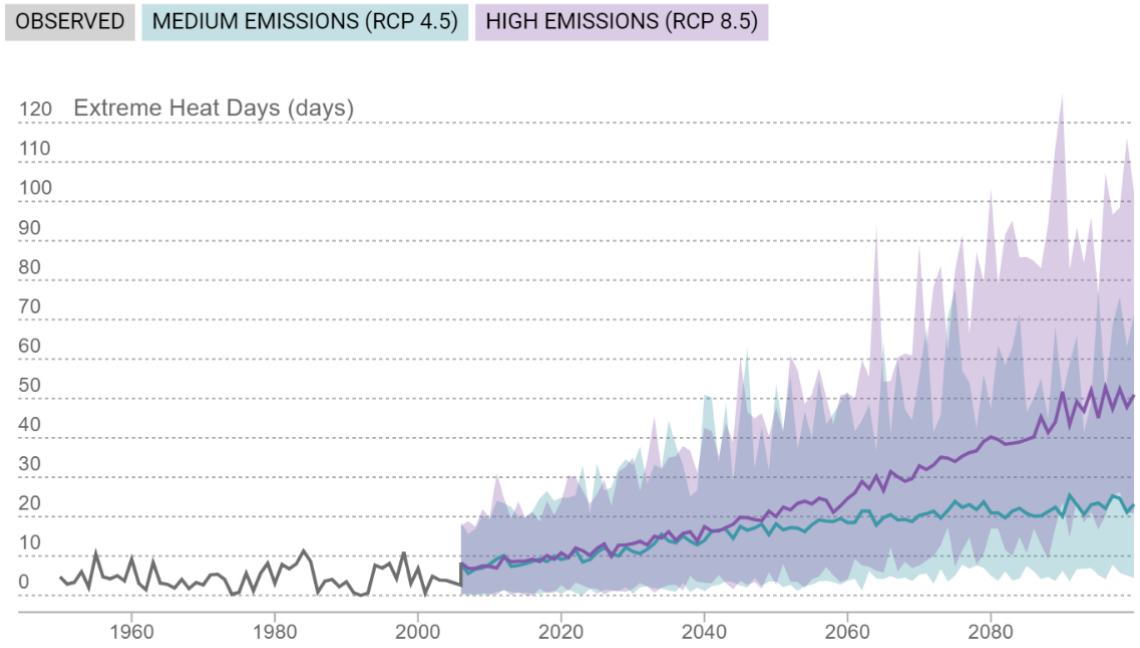
Climate – Quantifying projected impacts

Surface water supplies (such as water from Day Creek) are expected to become more variable in the future.

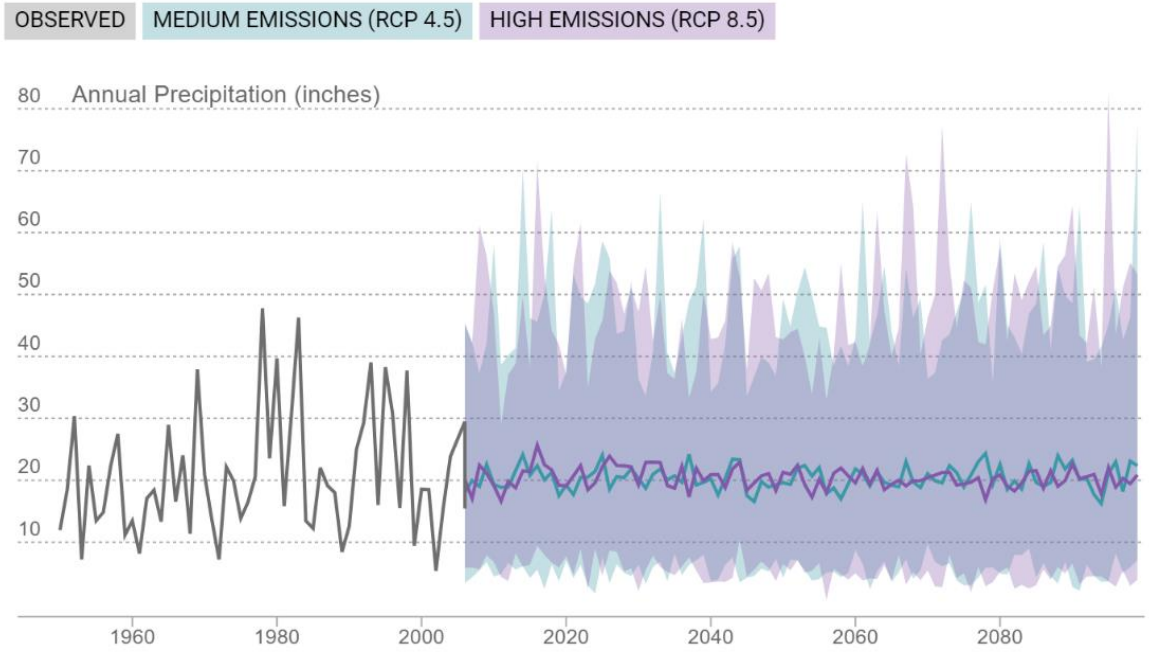
- UWMPs require addressing water supply risks due to drought
  - Incorporate Metropolitan Water District's projections for imported water availability during drought
- Some agencies apply "climate factor" for future demands
  - Change in demands due to temperature increase

Climate – Projections and uncertainty

Extreme Heat Days (> 98°F)



Annual Precipitation



[Local Climate Change Snapshot (cal-adapt.org)]

What are the biggest sources of uncertainty regarding the impact of climate on Water Plans?

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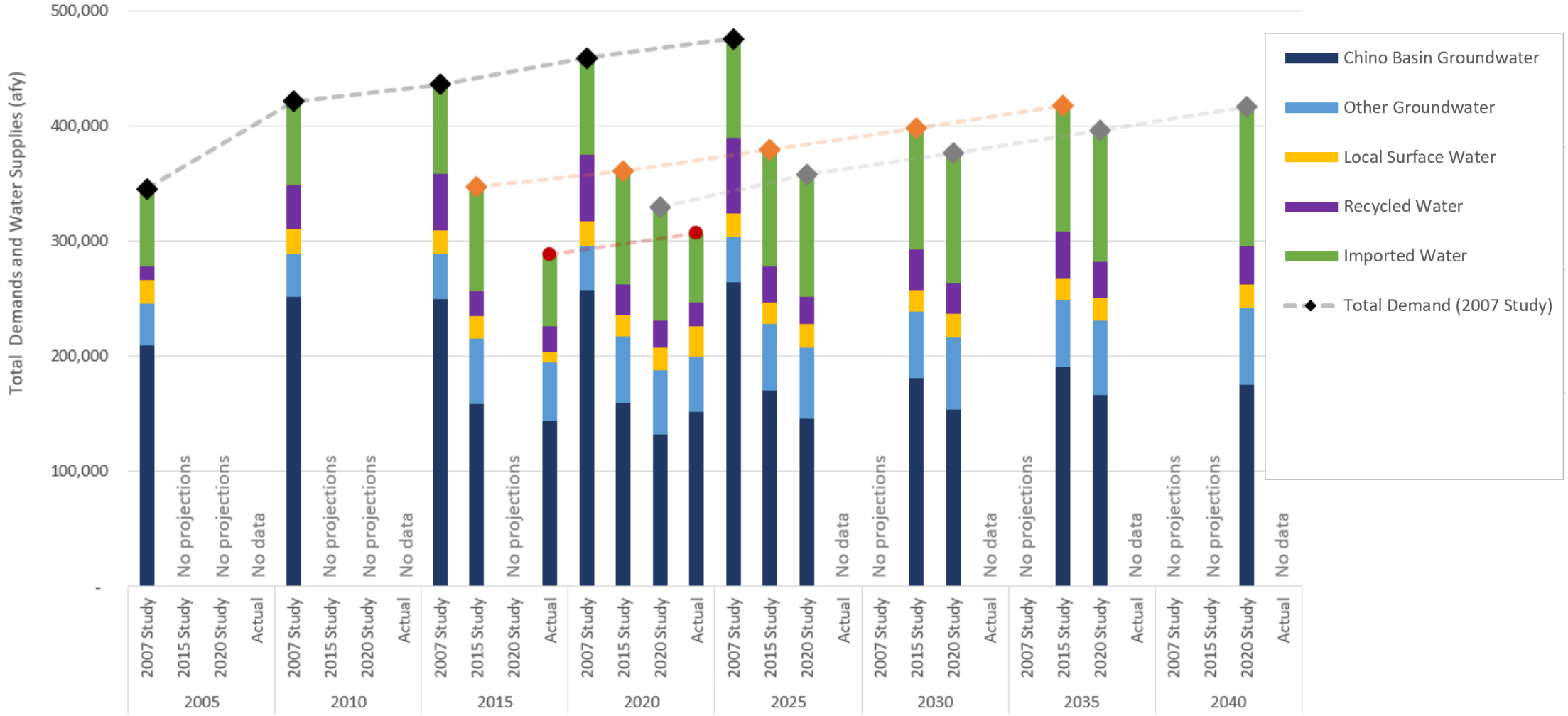
Projected versus actual water supplies in the Chino Basin

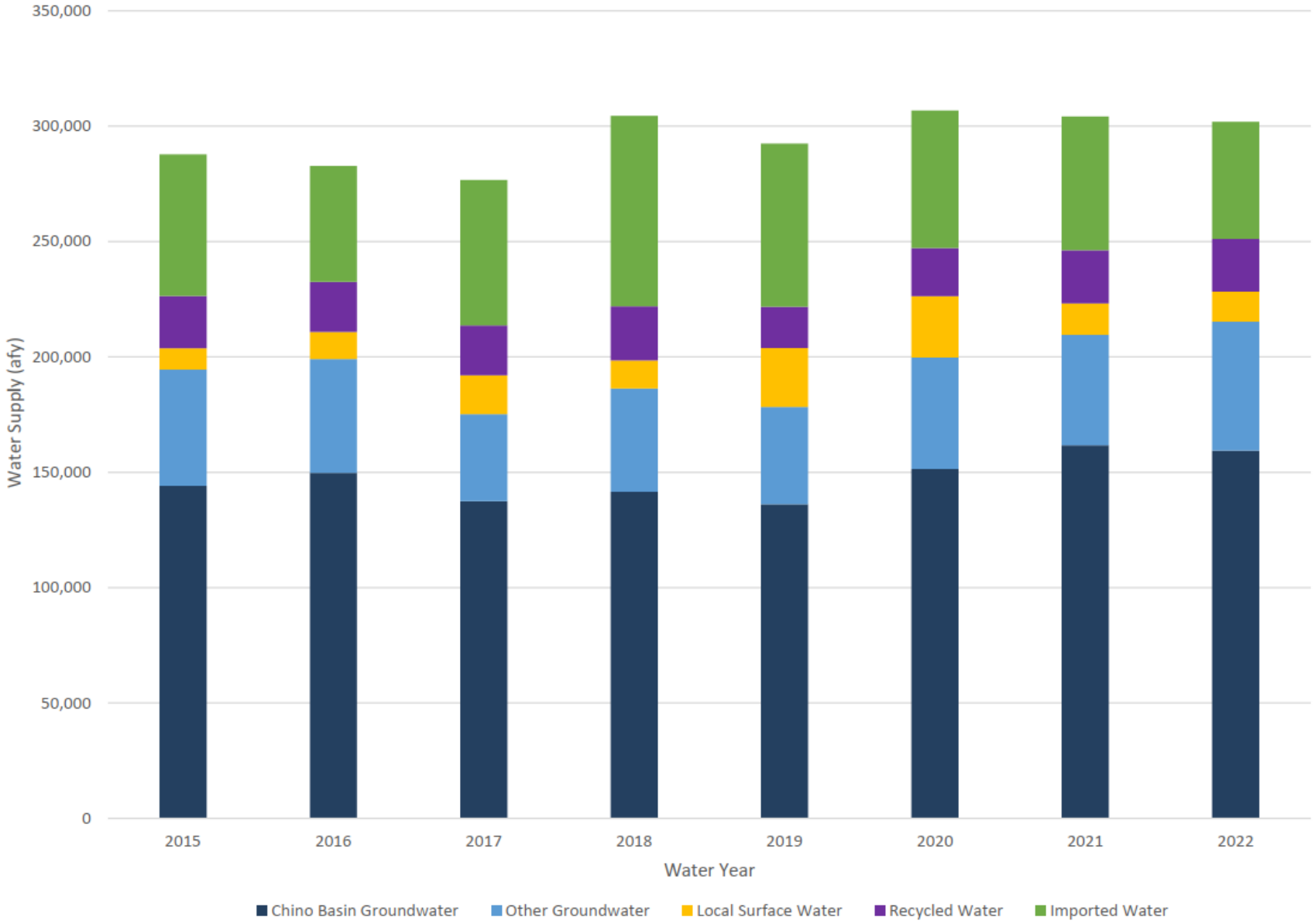


2007 Study: 2007 CBWM Groundwater Model Documentation and Evaluation of the Peace II Projection Description
2015 Study: 2013 Chino Basin Groundwater Model Update and Recalculation of the Safe Yield Pursuant to the Peace Agreement
2020 Study: 2020 Safe Yield Recalculation Final Report

Takeaways from comparison of prior projections to actual supplies

- Projected water demands increase over time
- The total demands in each Water Plan projection are less than the projected demands from the prior study
- Projected water demands from all three studies were greater than the actual demands in 2015 and 2020

Historical water-supply data



Takeaways from review of historical supplies (Water Year 2015 through 2022)

- Slight increasing trend over the eight-year period
- Water supplies vary depending on hydrologic conditions
  - Wet years (2017, 2019): **62%** groundwater, **31%** imported/surface water
  - Dry years (all others): **67%** groundwater, **25%** imported/surface water

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Next Steps

Stakeholders review Scenario Design TM #1 (on Watermaster website)

Compile feedback from stakeholders on drivers of Water Plans (*email Garrett Rapp at grapp@westyost.com by December 1, 2023*)

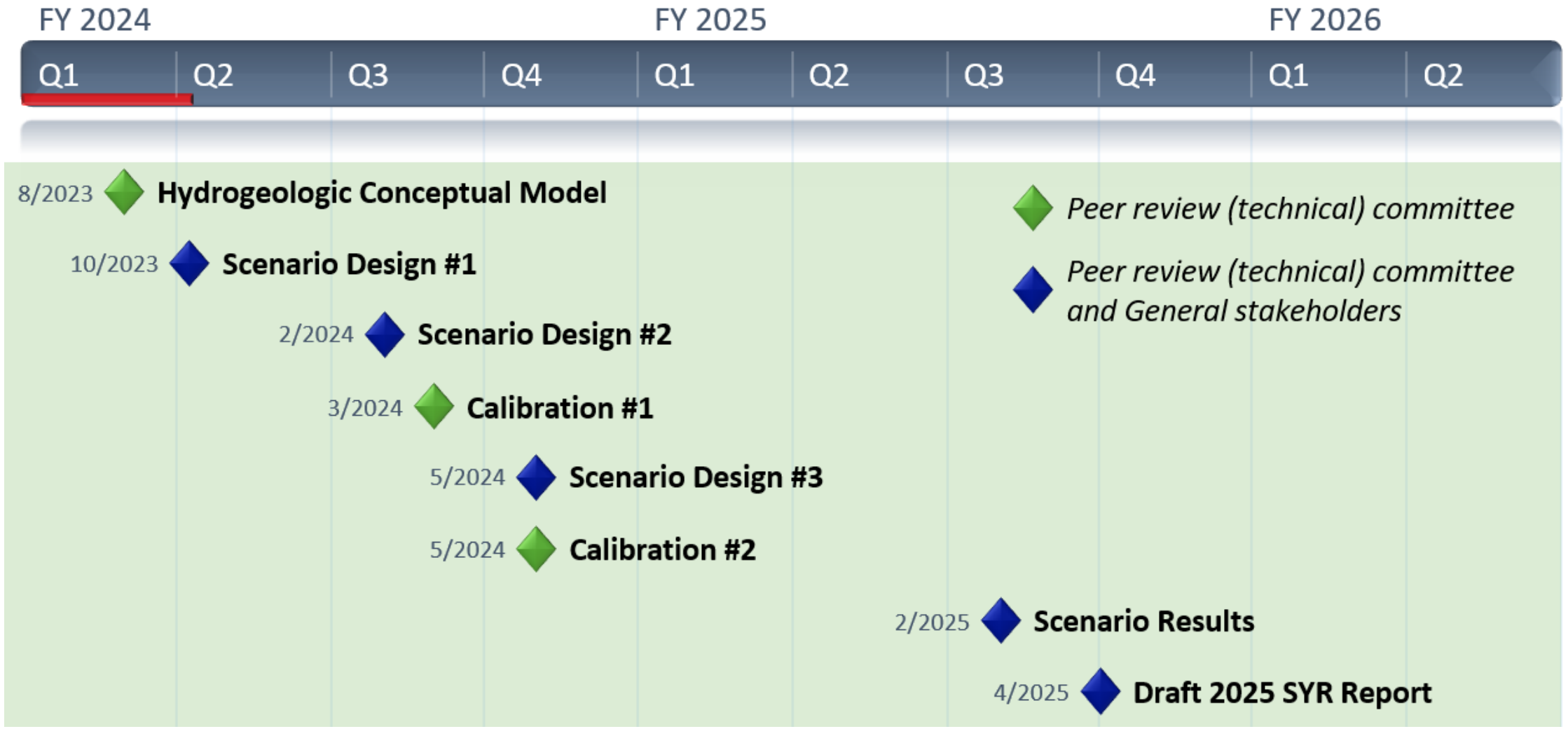
Develop qualitative descriptions of projection scenarios and document in TM

Upcoming workshops:

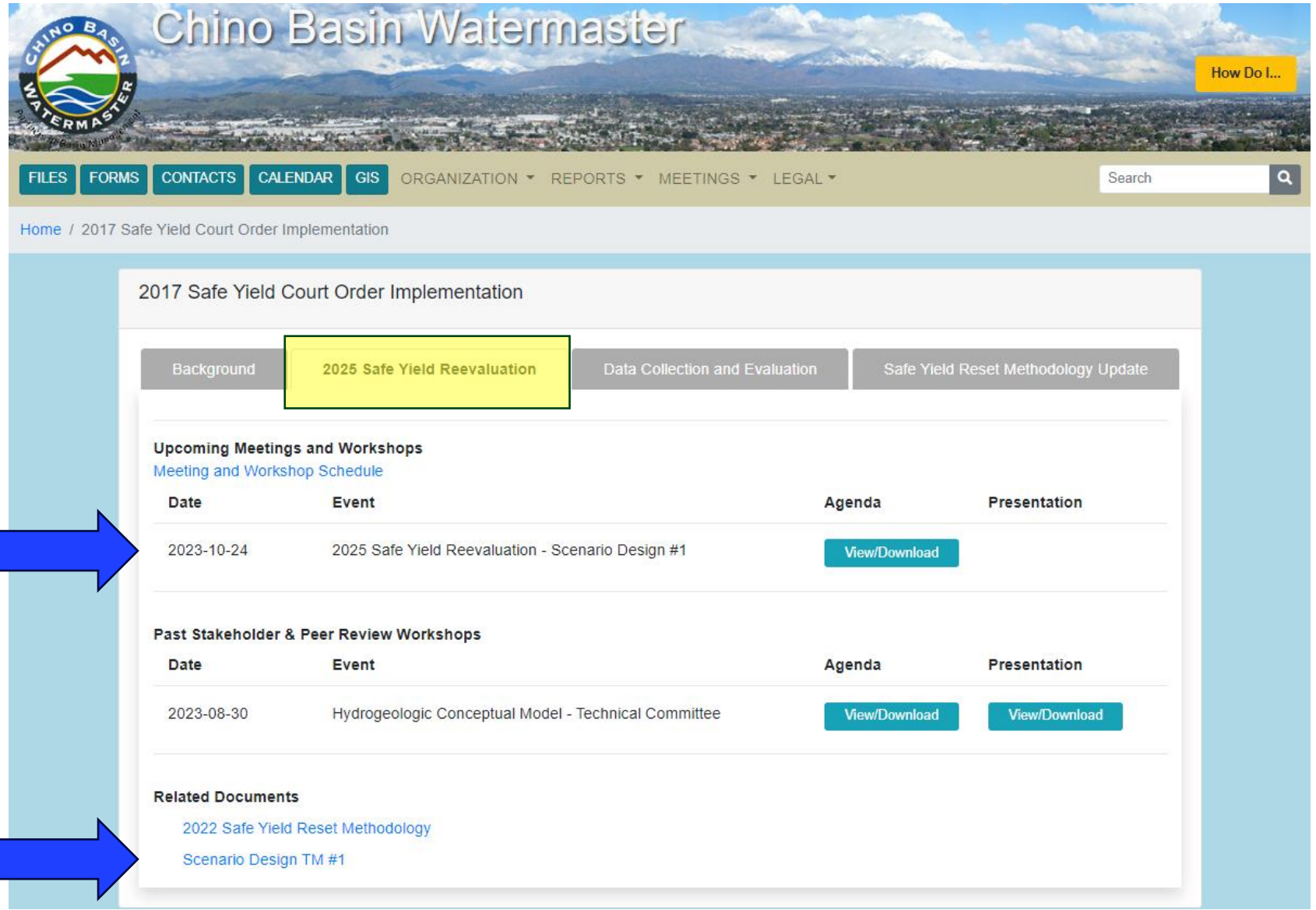
Feb/March 2024: Scenario design workshop #2 (peer reviewers/stakeholders)

March 2024: Calibration workshop #1 (peer reviewers)

2025 SYR Timeline



https://www.cbwm.org/pages/syrm/



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THANK YOU