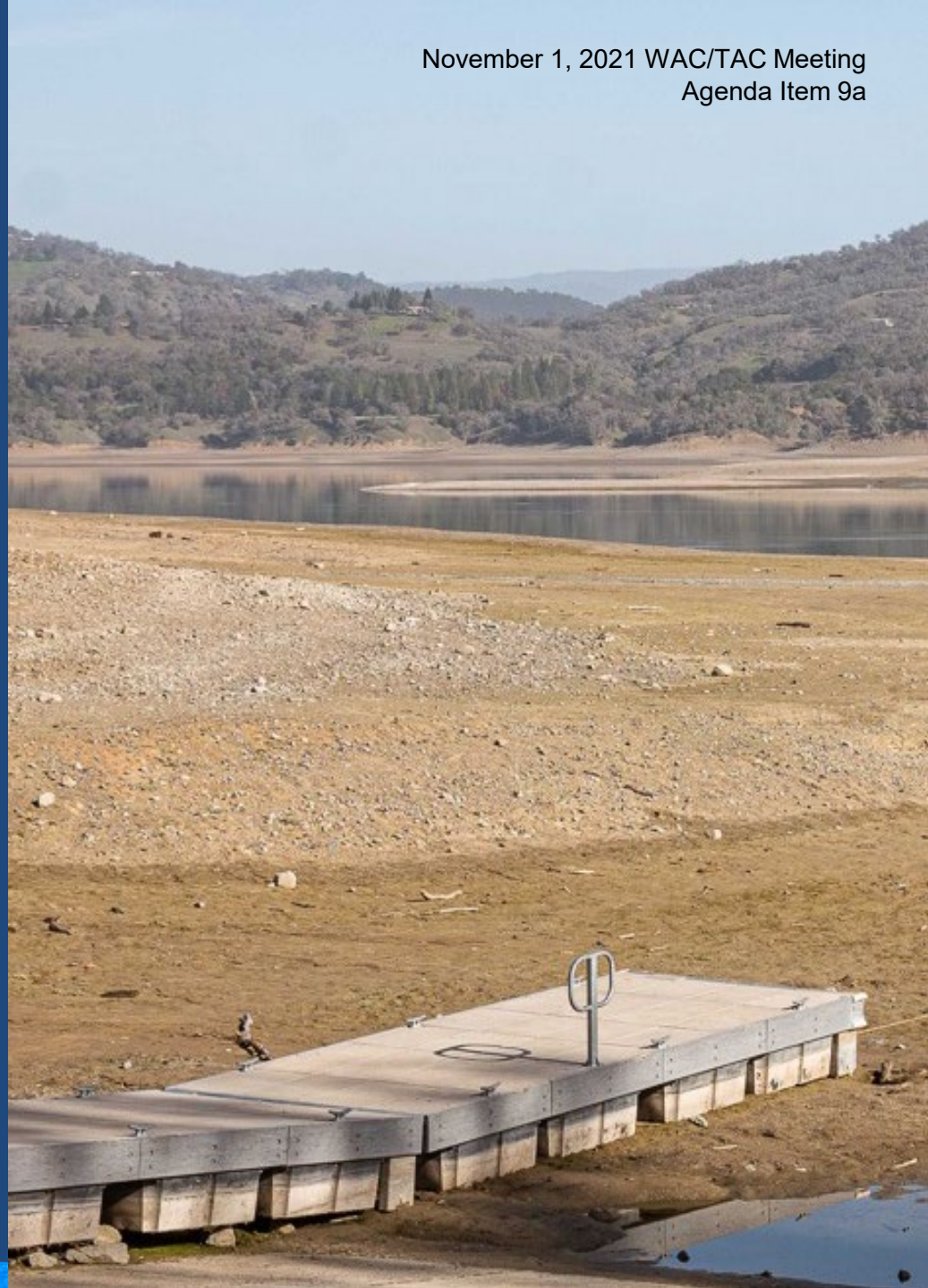
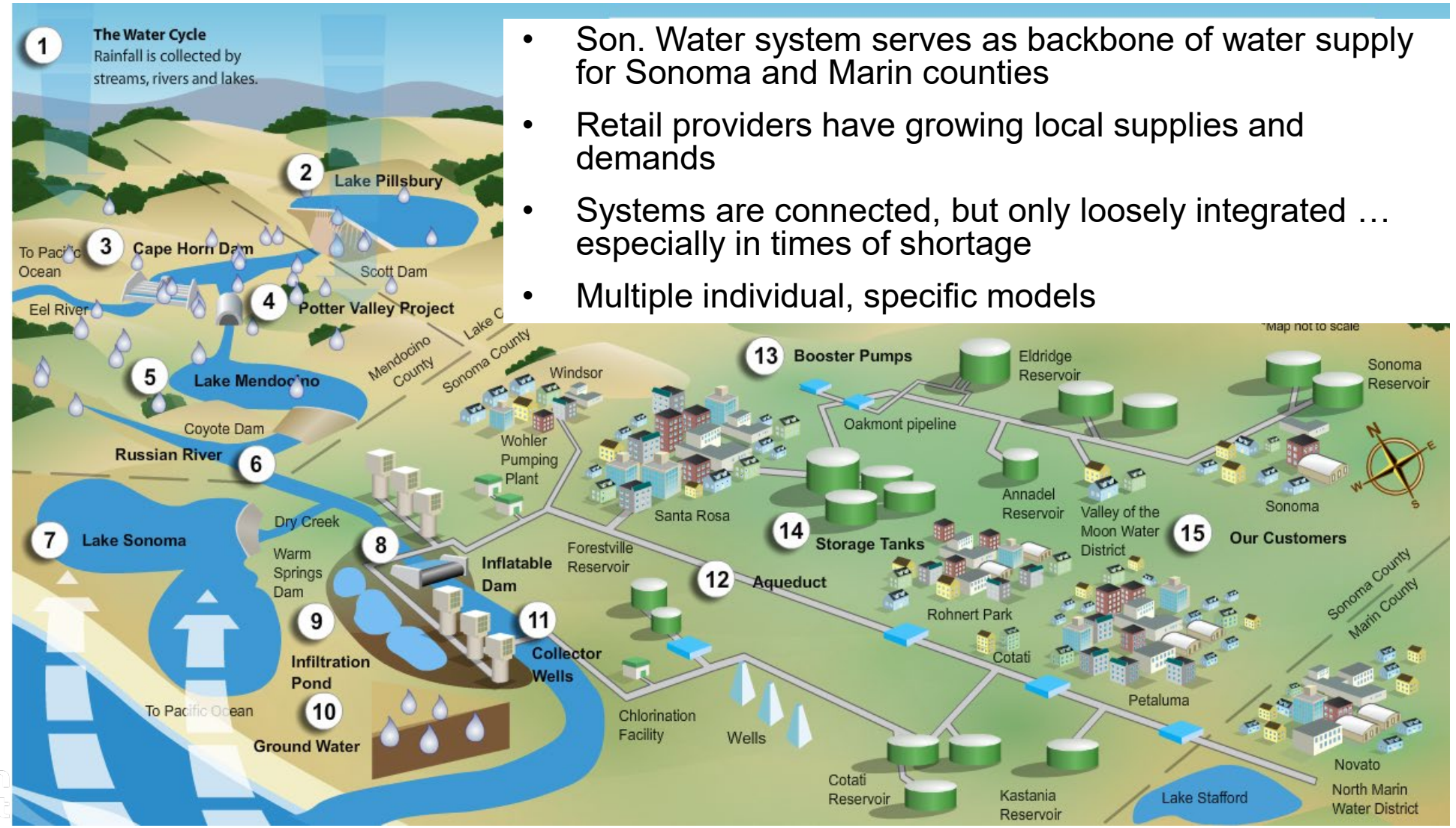
Regional Water Supply Resiliency Study

Water Advisory Committee
November 1, 2021

Jay Jasperse, Sonoma Water
Chief Engineer & Director of Groundwater Management



Complex Inter-Connected System



- Son. Water system serves as backbone of water supply for Sonoma and Marin counties
- Retail providers have growing local supplies and demands
- Systems are connected, but only loosely integrated … especially in times of shortage
- Multiple individual, specific models

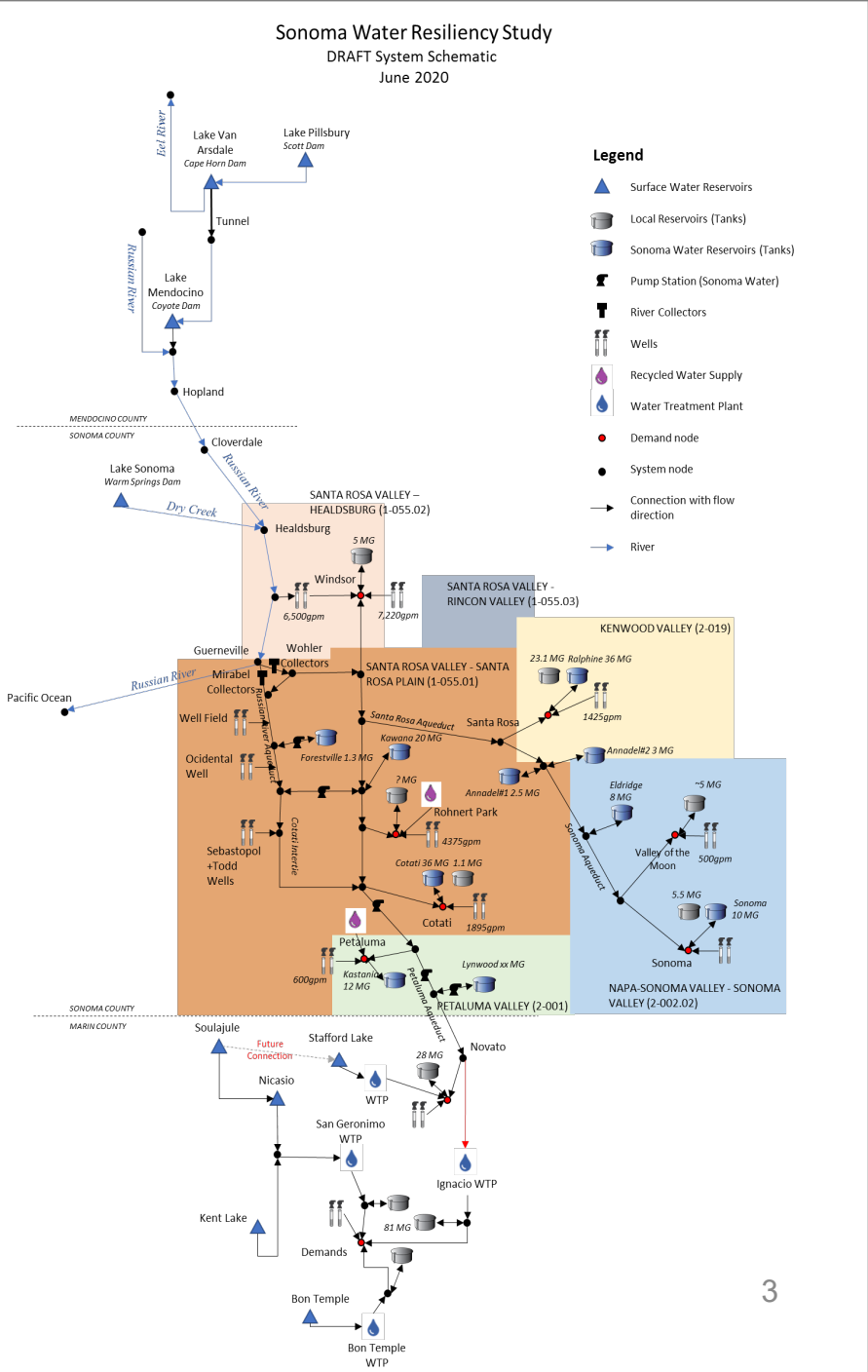
Sonoma Water Resiliency Study

Resiliency Study seeks to:

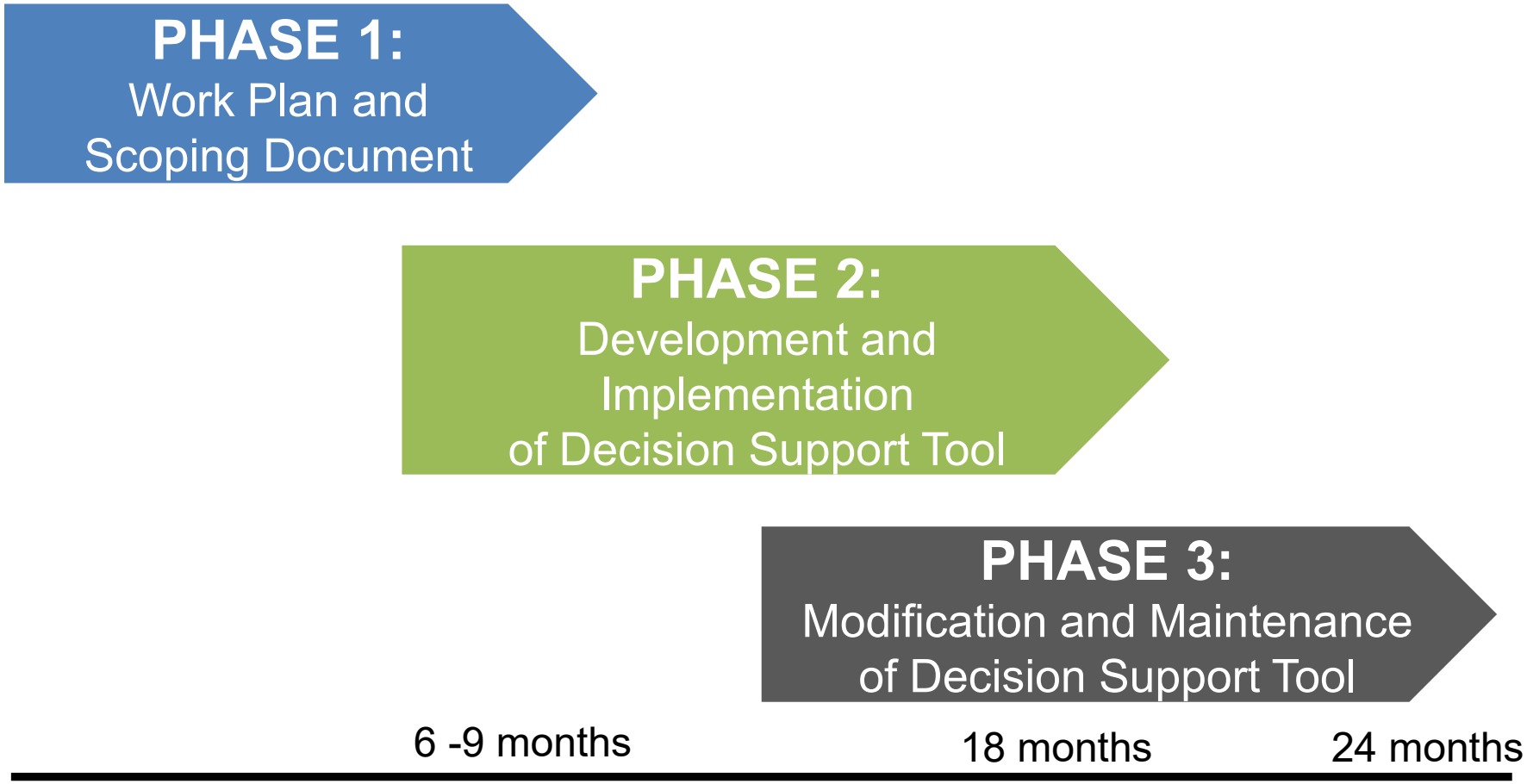
- ID key factors impacting regional water supply resiliency,
- evaluate the current levels of resiliency without jurisdictional constraints,
- develop decision support framework model & process
- ID opportunities to improve regional resilience in the future

First of a kind look at the Integrated Regional System

- Russian River & Potter Valley Project (Eel River)
- Sonoma Water “backbone” system
- 9 retail customer systems/ & 6 groundwater basins
- local supplies & recycled water
- multiple risk drivers



Resiliency Study Project Overview



Sonoma Water

Work Plan for Phase 2 Outlines Tasks

Due to Drought: Elected to fast-track drought scenarios ahead of other shortage scenarios (e.g., seismic)

- Task 1- Confirm and Develop Scenarios
- Task 2- Develop Regional and Sub Regional Resiliency Metrics
- Task 3- Develop Decision Support Model

Preparing scenarios, metrics, and DSM development

- Task 4- Conduct Baseline Model Simulations

Evaluating baseline level of resilience

- Task 6- Develop Adaptation Strategies
- Task 7- Conduct Model Simulations with Adaptation Strategies
- Task 8- Evaluate and Prioritize Adaptation Strategies

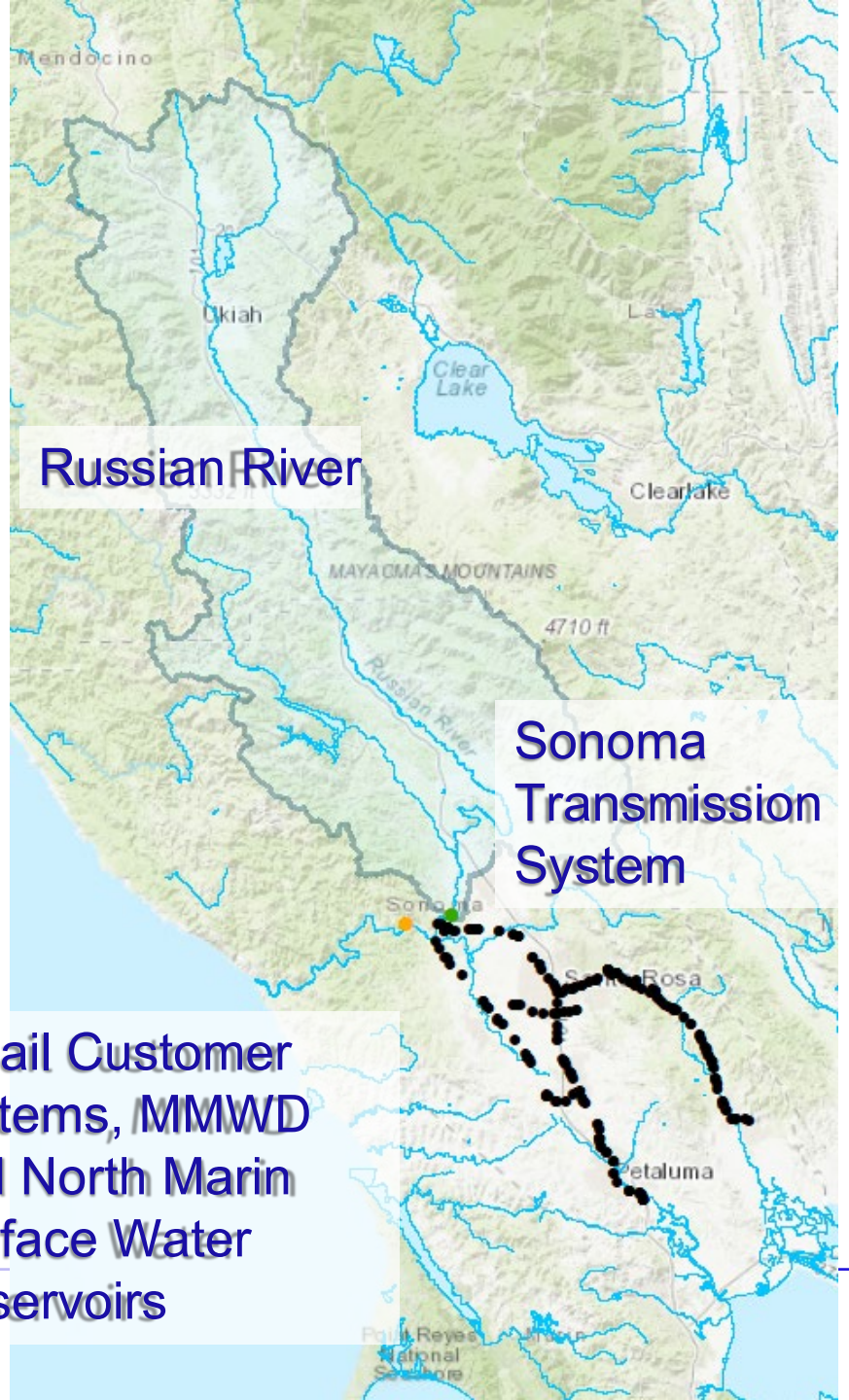
Developing and evaluating adaptation strategies to improve resilience

- Task 9- Prepare Resiliency Study Report
- Task 10- Stakeholder Engagement
- Task 11- Project Management

Report preparation, stakeholder engagement, and project management

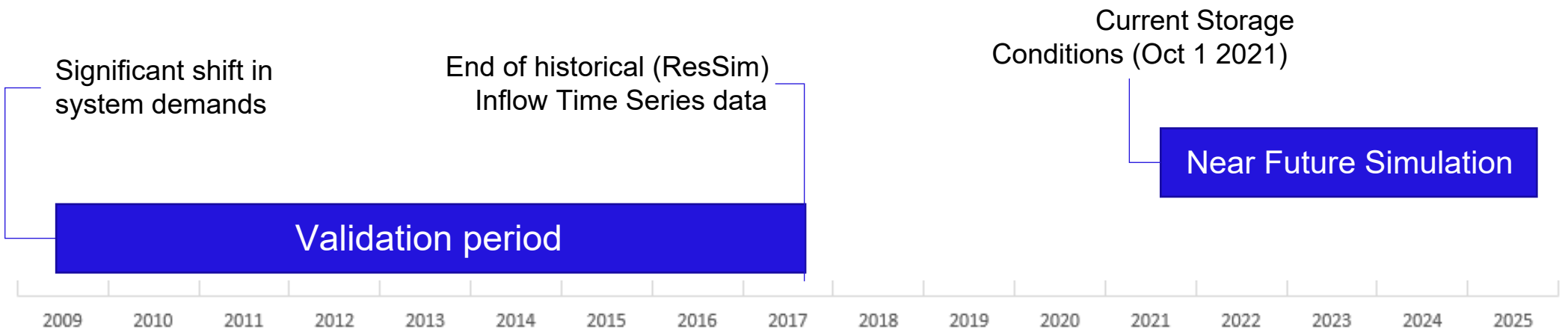
Decision Support Model

- Model that Integrates 3 major systems,
  - Russian River and Potter Valley Project
  - Sonoma Transmission System
  - Retail Customer Systems
- Main Model Inputs
  - Reservoir and River flows
  - Member agency demands
  - Maximum Member Agency local supplies available
- Model rules delivers supplies to member agencies
  - Rules decide priority of supplies used by member agencies

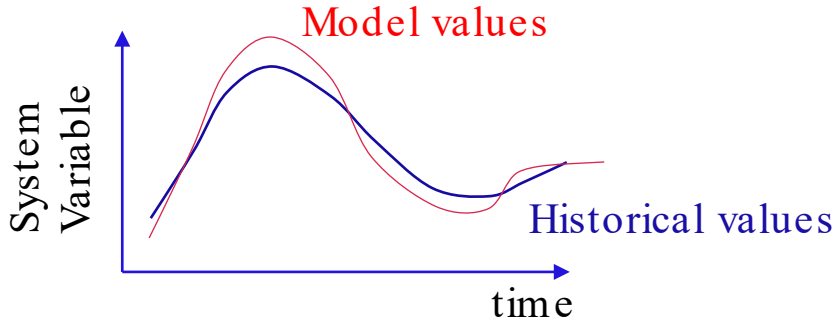


Model Validation Assumptions

- Member Agencies groundwater, recycled water, and surface wate**supplies** were set to what was**delivered** to member agencies in the past.
- Historical inflow to the system provided by ResSim model and historical inflow to MMWD reservoirs also provided by MMWD GoldSim Model.
- Historical Member agencies model demands set as historical Member Agency deliveries.

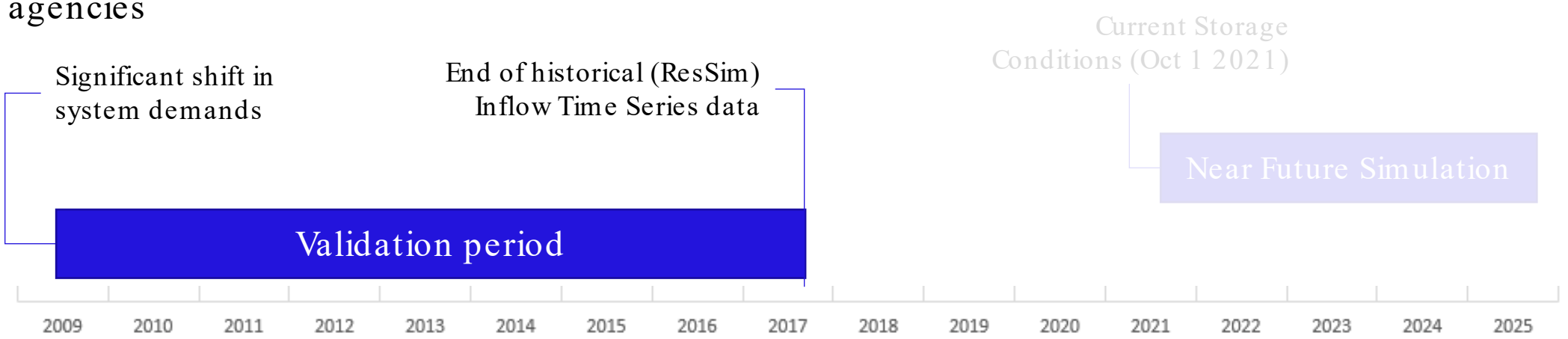


Model Validation Results



- Validation = Comparison between Model results and historical values (storage, deliveries and flows)
- Checks:
  - Russian River Storage Operation - Mendocino and Sonoma storages
  - Russian River diversions - Collectors
  - Member agency deliveries
  - Split of groundwater, recycled water and local surface water delivered to agencies

Status: Complete



Survey of Range of Drought Management Options

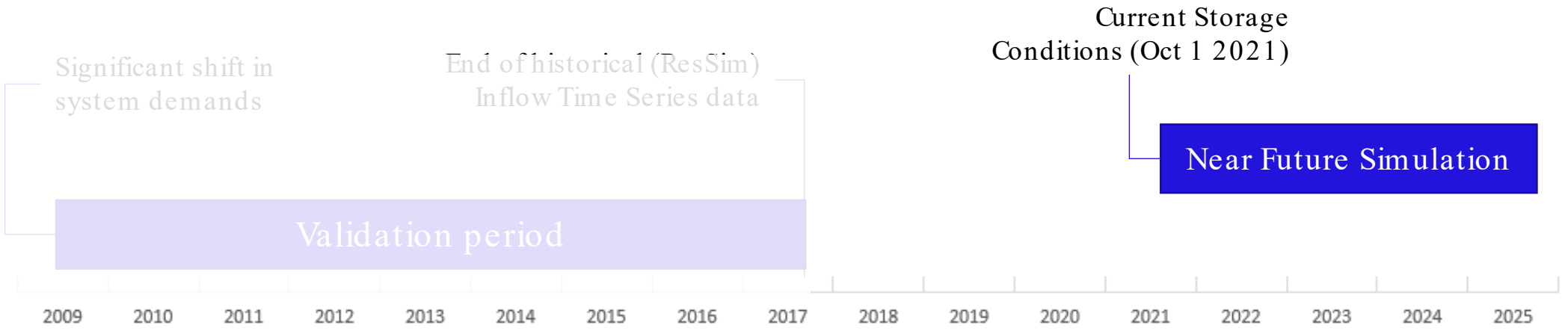
- Jacobs met with most retail customers to develop initial ideas on range of drought management options
- Synthesized options into 4 major categories
  - Increase supply
  - Reduce demand
  - Improve operations
  - Modify policy and regulations

Drought Scenario Forecasting

- Drought Scenarios:
  - 2020-2021 drought plus 1976-1980 (includes 1976-1977 drought)
  - 20 Climate forecasts per California 4th Climate Assessment

Status: In process

- Identify drought impacts
- Re-run model with drought mitigation programs/projects



Evaluation Criteria for Comparing Drought Mitigation Options

- Performance
  - Reduction in projected shortage
  - Storage levels above thresholds
  - Benefits to regional system
- Evaluation Criteria
  - Cost
  - Timing for Implementation
  - Environmental impacts
  - Feasibility
  - Energy use
  - Permitting Legal
- Performance, cost, and timing criteria will be evaluated quantitatively (with ranges)
- Other criteria will be evaluated qualitatively

Next Steps

Work with TAC:

- Finalize assumptions for selected drought management options
- Decision Support Model simulations and assessment of drought options
- Technical memorandum on drought assessment

Sonoma Water