Santa Rosa Water Supply Alternatives Plan

Proposed Resiliency Goal, Supply Options, Evaluation Criteria, and Study Methodology

RESILIENCY GOAL

Diversify and increase city potable water supplies to reduce dependence on Sonoma Water, particularly during Sonoma Water supply shortages or disruption in delivery, in order to meet 30 percent of city's water demand with city supplies.

This would provide ability to:

- Mitigate Droughts
    - Meet 30% of city's water demand with city supplies to reduce the impacts of Sonoma Water supply shortages (e.g., due to drought). Strict limits on landscape irrigation in severe droughts (prohibited in shortages worse than 40%).
    - City supply projection: 7,500 acre-feet per year by 2045.

- Mitigate Natural Disasters and Catastrophic Events
    - Provide about half of normal potable water demand for domestic/indoor use with city supplies to ensure public health and safety during Sonoma Water service disruption. Critical facilities and functions (e.g., hospitals, firefighting) would be prioritized. Landscape irrigation would be prohibited.
    - City supply projection: 9 million gallons per day by 2045.

- Mitigate Peak Day Demand
    - Meet 30% of peak month average day demand for potable water with city supplies to reduce dependency on Sonoma Water.
    - City supply projection: 9 million gallons per day by 2045.

Rationale

- Is specific enough to support meaningful feasibility analysis.
- Provides guidance to support decision making regarding magnitude of resiliency portfolio.
- Increases city potable water supply resiliency and reduces demand on Sonoma Water supplies.
- Would mitigate shortages in Sonoma Water supply and interruptions in service.
- Increases ability to meet a portion of peak day demand using local supply.
- Could be achieved over time with a mix of supplies.
- Allows for adjustments to volume target if demands are lower/higher than anticipated (percentage-based goals).
- Integrates input from the Water Team, Community, Stakeholder Group, and Board of Public Utilities.

SUPPLY OPTIONS

Study will include

- Description of each source
- Potential supply capacity (acre-feet per year and million gallons per day)
- Limiting factors for supply
- Proposed/likely source/facility location
- Components to be constructed
- Considerations (e.g., permitting)

Groundwater	Add groundwater extraction wells
	Convert emergency wells to production wells
	Add Aquifer Storage and Recovery wells
	Regional groundwater extraction wells
	Regional Aquifer Storage and Recovery
Purified Recycled	Produce at Laguna Treatment Plant (LTP) for direct use
	Produce at satellite location for direct use
	Produce at LTP or satellite for indirect use • Inject into groundwater via ASR wells before use • Add to Lake Ralphine (or alternate) before use • Add to Russian River or Lake Sonoma (or alternate) before use
	Regional purified recycled water project
Nonpotable Recycled	Expand nonpotable recycled water service
Desalination	Brackish desalination (likely Regional)
	Ocean desalination (Santa Rosa or Regional project)
Surface/ Stormwater	Capture excess winter flows from Santa Rosa creeks, Laguna de Santa Rosa, and/or Sonoma Water/Russian River (or alternative locations/sources), • Inject and store in aquifer for later potable use • Store in enlarged Lake Ralphine (or alternate) and construct water treatment plant for later potable use
Efficiency Programs	Add aggressive incentives for efficiency programs to reduce demand (continue existing programs into future)

Rationale

- Retains a broad diversity of options.
- Includes City and Regional projects.
- Includes expanded efficiency incentives to reduce demand over time.
- Integrates input from the Water Team, Community, Stakeholder Group, and Board of Public Utilities.

EVALUATION CRITERIA

The following evaluation criteria are proposed for assessing the water supply options:

Criterion	Proposed Evaluation Metric
Cost effectiveness	Quantitative calculation of life-cycle costs, based on future scenarios per the project goals (e.g., five-year drought occurring on average every 10 years).
Scalability	Qualitative assessment of ability to provide sufficient supply to satisfy goals, i.e., achieve desired level of service for each scenario; secondarily, ability to scale further to address future uncertainty.
Resiliency	Qualitative assessment of performance in the face of future uncertainty; for example, future regulations, energy costs, hydrology. The best options will suffer only modest degradation of performance if future conditions are worse than anticipated while inferior options will show marked degradation if planning assumptions aren't met.
Equity	Qualitative assessment of any disproportionate impacts on vulnerable communities.
Environmental performance	Qualitative assessment of potential environmental impacts not already included in permitting/regulatory compliance (e.g., level of GHG emissions).
Legal, permitting, and regulatory	Qualitative assessment of complexity/effort to address legal issues (e.g., water rights), obtain necessary permits, and comply with regulations
City control and interagency coordination	Qualitative assessment of level of City control and coordination with potential partner agencies, if any (e.g., agreements needed for regional projects).
Multi-benefit	Qualitative assessment of benefits provided in addition to water supply.

Rationale

- Captures key considerations that differentiate projects.
- Consolidates criteria where appropriate.
- Removes criteria that would pose a fatal flaw if not met.
- Removes criteria that did not need to stand alone (e.g. ,different types of costs).
- Integrates input from the Water Team, Community, Stakeholder Group, and Board of Public Utilities.

STUDY METHODOLOGY

The following methodology is proposed for conducting a detailed analysis of supply options.

1. Screen all supply options.
    - Use two key criteria: high-level assessment of cost effectiveness and scalability.
    - Screening will provide transparent reasoning for why certain supply options advance for further consideration (or not).
    - Screening will also yield a manageable "short list" of options for detailed analysis.
2. Use defined metrics for each criterion for scoring.
3. Assign weight to each criterion to inform scoring process.

Criterion	Proposed Evaluation Metric	Weight
Cost effectiveness	Life cycle cost effectiveness for key scenarios ($/acre-foot) (quantitative)	High
Scalability	Ability to meet goals, and secondarily to increase production later, without undue effort/cost increase (qualitative)	High
Resiliency	Performance in the face of uncertainty (qualitative)	High
Equity	Level of disproportionate impact on vulnerable communities (qualitative)	High
Environmental performance	Magnitude of potential impact (qualitative)	High
Legal, permitting, and regulatory	Level of complexity and effort to address (qualitative)	Med
City control and interagency coordination	Level of City control and coordination with potential partner agencies, if any (qualitative)	Med
Multi-benefit	Benefits provided in addition to water supply (qualitative)	Med

Rationale

- Uses screening process to identify any non-starter options.
- Emphasizes key considerations such as cost, resiliency, and equity via weighting.
- Enables comparisons based on qualitative factors such as permitting/regulatory considerations.
- Provides enough detail for meaningful comparison, given level of available information.
- Integrates input from the Water Team, Community, Stakeholder Group, and Board of Public Utilities.