MARIN WATER

Marin Water Drought Resiliency Update

TECHNICAL ADVISORY COMMITTEE

March 3, 2025

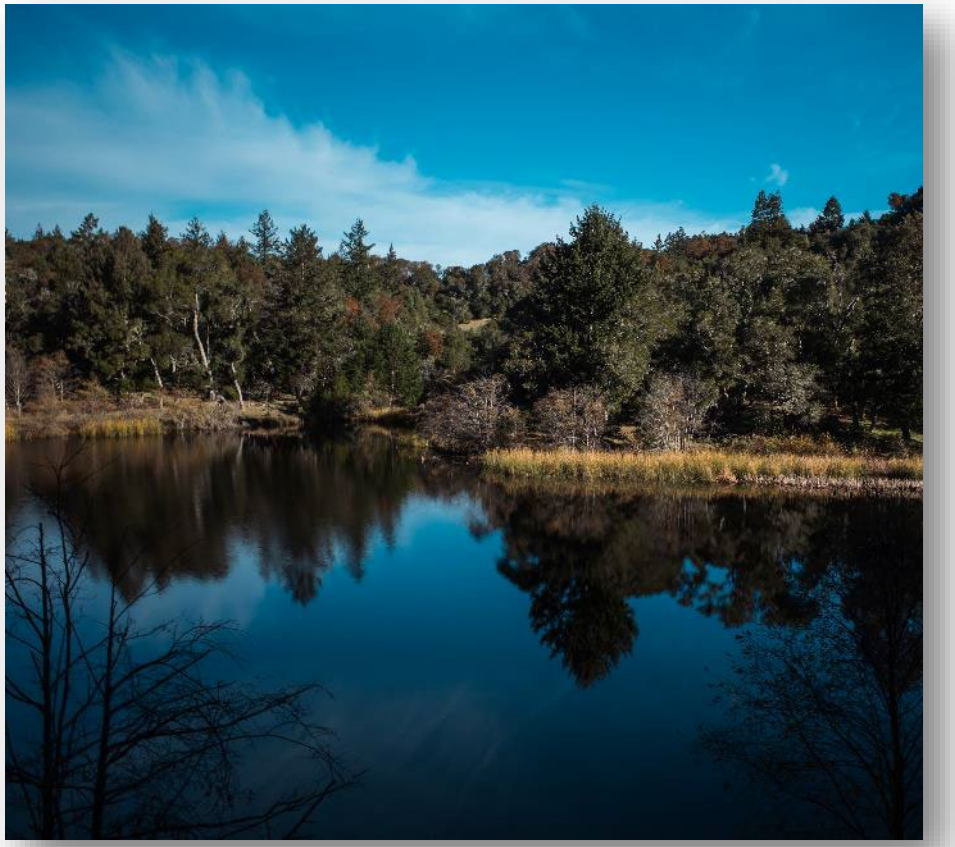
Overview

- Background
- Winter Water Resiliency Project
- Water Supply Agreement
- Next Steps

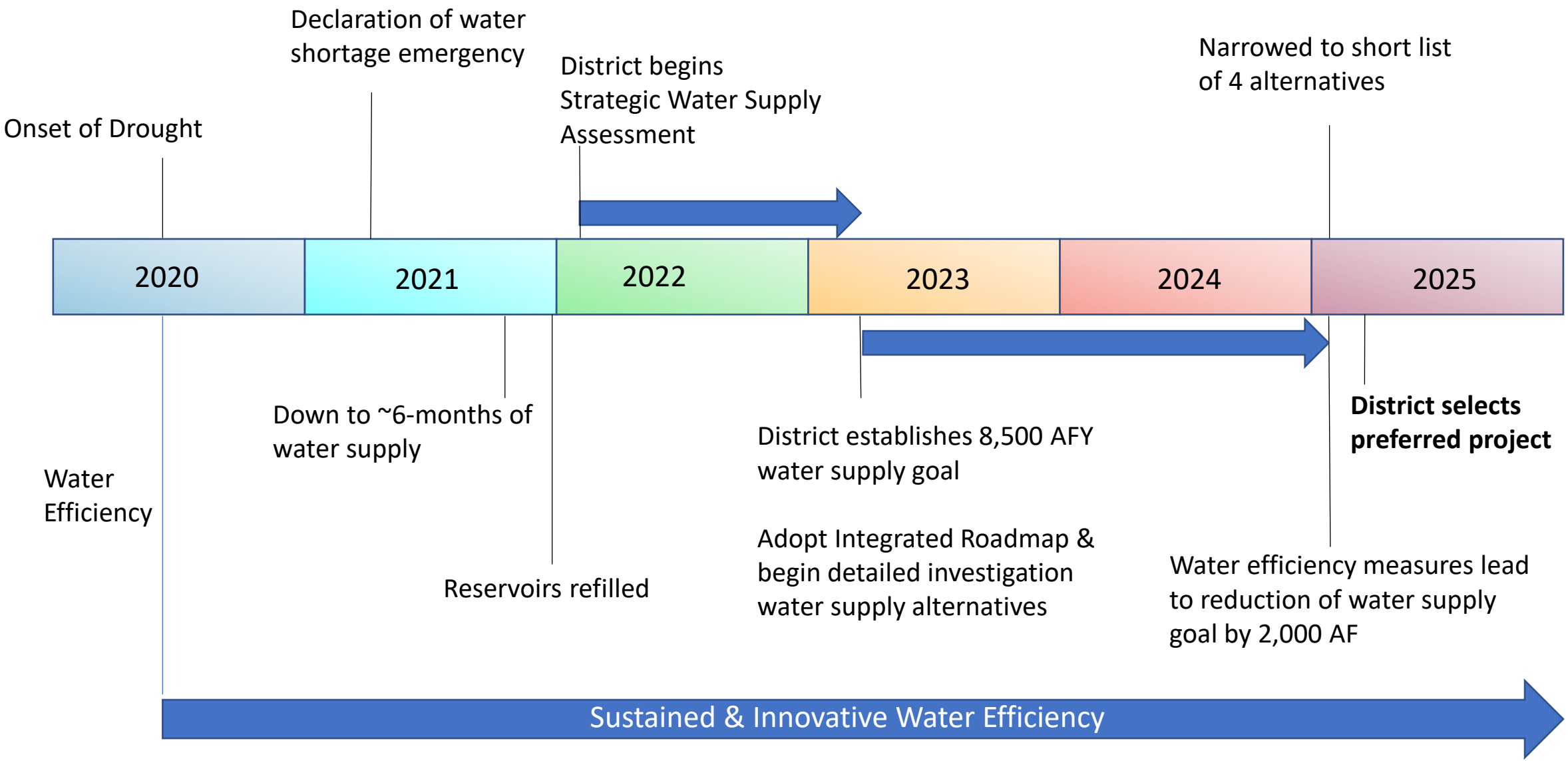
Background - Marin Water Overview

Mission: Marin Water manages the lands, water, and facilities in our trust to provide reliable, high-quality water and adapt and sustain these precious resources for the future.

- 147-square-mile service area including 22,000 Acres of watershed lands, covering central and southern Marin ~190,000+ people served, very little growth
  - San Rafael, Mill Valley, Fairfax, San Anselmo, Ross, Larkspur, Corte Madera, Tiburon, Belvedere, Sausalito, unincorporated Marin County
- 7 local reservoirs provide ~75% of water supply with ~25% provided by water from Sonoma
- Potable demand ~23,000 AFY

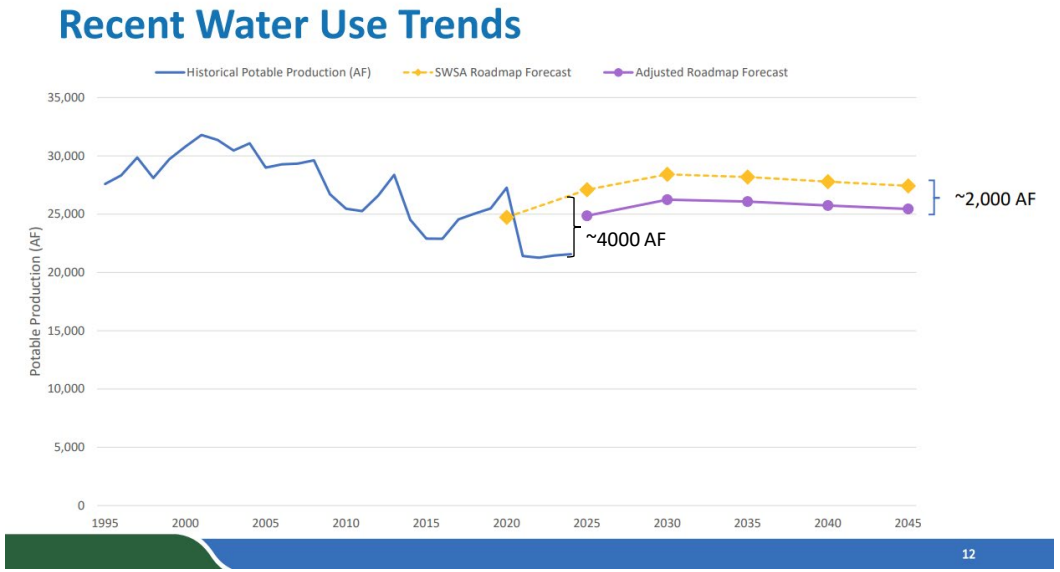


Background


Onset of Drought
Declaration of water shortage emergency
District begins Strategic Water Supply Assessment
Narrowed to short list of 4 alternatives
2020
2021
2022
2023
2024
2025
Water Efficiency
Down to ~6-months of water supply
Reservoirs refilled
District establishes 8,500 AFY water supply goal
Adopt Integrated Roadmap & begin detailed investigation water supply alternatives
Water efficiency measures lead to reduction of water supply goal by 2,000 AF
District selects preferred project
Sustained & Innovative Water Efficiency

Water Efficiency As Water Supply

- Over the past 4-years the District has taken an aggressive approach to driving water efficiency
  - New and innovative incentives and programs
  - Creative, targeted and sustained approach to public education and engagement
- Going forward we strive to gain additional savings through implementation of the comprehensive and innovative Water Efficiency Master Plan

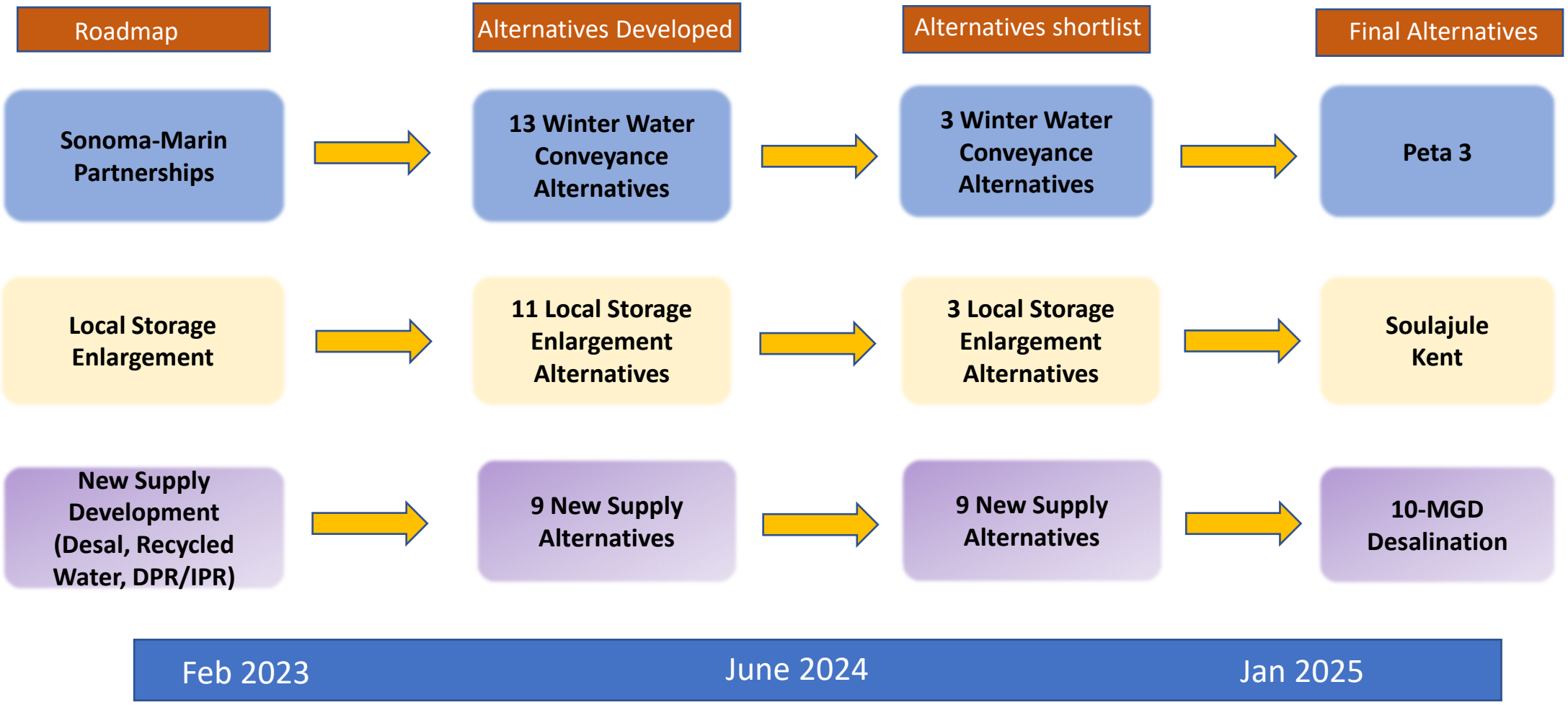


Due to District's Water Efficiency efforts, supported by the community, customers achieved a water savings of 4,000 AFY leading to a supply goal reduction of 2,000 AFY

Roadmap Project Alternatives That Have Been Evaluated

Alternative	Dry-year yield (AFY)	Avg Annual cost ($M)	Average $/dry-year AF
Water Efficiency Full Costs incl. AMI	1,700	3.1	**$5,750**
Sewage Agency of Southern Marin	80	0.3	$13,200
San Quentin Prison	120	2.1	$55,750
Peacock Gap	300	0.7	**$7,200**
Direct Potable Reuse (TWA)	3,800	18.4	$15,200
Direct Potable Reuse (RWA)	7,500	34.3	$14,400
Indirect Potable Reuse	7,500	39.8	$16,700
Desalination - 5 MGD	5,300	27.7	$16,300
Desalination - 10 MGD	10,600	40.3	**$11,800**
Desalination - 15 MGD	16,000	51.4	$10,100
Nicasio Spillway Modification	750	0.3	$1,100
Soulajule Dam Raise	5,000	11.8	**$7,400**
Kent Dam Raise	5,000	11.8	**$7,400**
Upper Nicasio Dam Raise	5,000	15.7	$9,800
Peta-3	3,800	7.1	**$5,900**
Peta-4	4,600	9.6	$6,500
Cotati-3	8,100	16.3	$6,250

Recap of Alternatives Process



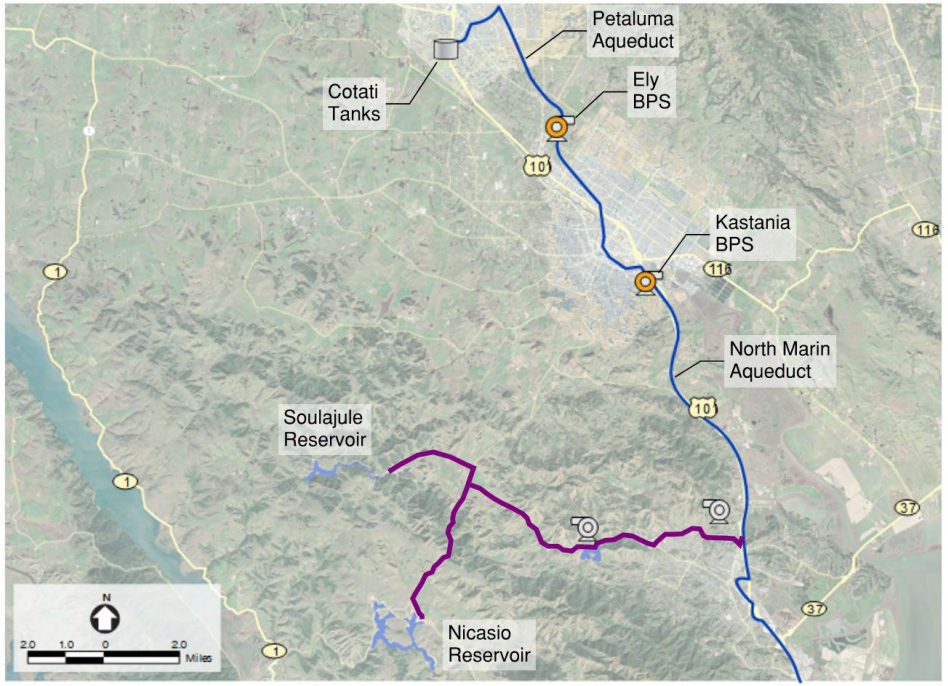
Final Alternatives

	Reliability & Sustainability	Flexibility & Resiliency	Schedule & Implementation	Water Quality	Environment	Social Steward ship	Economic & Financial
Desalination 10 MGD	Availability of source water is excellent Provides 10,600 AFY	• Operational flexibility reduced by need to run at all times • System resilience improved • Complexity of operation increased	• Regulatory complexity • Implementation timeframe 5 to 7 years min • Litigation likely	Source water may create public concerns over water quality	• Brine discharge • High energy use (although no GHG impact) • Concerns for impingement and entrainment of aquatic species	Inequity in consumption of water	• High capital costs • High O&M costs • All new infrastructure that needs frequent and costly cyclic replacement • Capital $350 M - $520M
Local Storage Kent	Up to 5 ,000 AFY in scenario drought	• Low complexity • Increases resilience • Increases operational flexibility	• Project implementation > 10 years • Potential constructability concerns, extended construction duration and risk	Provides same water quality as existing reservoirs	Environmental mitigation is possible to offset increased size of reservoir	No impacts to private land	• Capital $519M • Long lifecycle of project would result in low cost of water in long run
Local Storage Soulajule	Up to 5 ,000 AFY in scenario drought	• Low complexity • Increases resilience • Increases operational flexibility	• Project implementation > 10 years • Litigation Likely	Provides same water quality as existing reservoirs.	Environmental mitigation is possible to offset increased size of reservoir	Loss of structures, inundation of farmland used for grazing	• Capital $485M • Long lifecycle of project would result in low cost of water in long run
Conveyance Peta-3	3,800- to 8,100 AFY increase in dry year water supply	• Highly flexible and used only when needed • Could have synergies with future storage projects • Regional benefits	• Could be online in as few as 4 years • Phaseable	Provides same water quality as existing SCWA supply.	Minimal or no long-term impacts	Pipeline must traverse conservation easement but use appears compatible	• Costs may be phased • Capital $168M - $405M • PETA-3 is $168M for initial phase

Low	Medium	High
Poor	Good	Best

Conveyance of Winter Water

- New 36” pipeline (13 miles) and pump station would be built to convey water from the North Marin Aqueduct to Nicasio
- Dry-year yield would initially be ~3.8 TAF, with future phases increasing yield to as high as 10 TAF
- The concept of operations is based on capturing winter atmospheric river runoff and storing it in a reservoir



Winter Water defined here as water above minimum in-stream flow requirements in the Russian River that occur as a result of precipitation events during the period October to May.

Winter Water Project Benefits

- Water supply resiliency for Marin Water
- Regional benefits:
  - Winter Water benefits all of SW customers during drought – during winter months water demand is low, in drought conservation efforts drive this demand even lower and banking some of this water brings water into the system that otherwise would go unused
  - Allocation of water during a drought is based on local supplies and project would increase Marin's local supply presumably reducing Marin's allocation and making more water available to contractors
- Open to partnering with other agencies interested in banking water:
  - Buying in to the capital project, understanding that the project cost is significant and timing is critical
  - Participation in later phases on an as needed basis may be possible

Winter Water Availability

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Oct	4145	5480	1406	2055	2069	6669	3714	2385	5682	823	4972	35940	13878	3434	66	54	306	17643	3493	482	3353	0	99204
Nov	21443	10141	83207	10173	12204	13670	13398	11928	6634	9440	6295	47775	16876	55658	2169	1251	2223	68783	17841	6490	6775	1813	44995
Dec	28840	14712	411202	690795	371264	218041	575519	91604	29444	19860	19040	354276	12531	607429	3731	410161	75596	259726	15474	39406	93210	5758	197531
Jan	138918	66225	455905	451742	266297	307606	867218	29433	259933	14499	494560	169877	12658	129212	167	34213	357824	1167809	87849	321740	85682	24184	100600
Feb	610498	249777	94580	110668	719425	131665	245168	294038	208731	241220	225289	215222	23048	31717	115360	194083	77718	1044839	20712	875826	33455	29458	14615
Mar	290714	177485	83056	150225	158273	329246	736414	98709	63639	156270	205222	760289	213536	31815	110580	24765	563339	274777	149695	629706	17121	21063	3622
Apr	56612	15483	32245	213005	33386	146528	665084	25465	16844	17360	265228	149291	150221	25666	73706	15350	54455	189269	125383	156007	13794	1482	10792
May	24799	5735	16110	164300	14008	156831	65816	8514	7807	28706	66103	36455	18985	4050	2514	4246	17447	40220	17592	85684	3961	0	1459
Grand Total	1,175,969	545,038	1,177,711	1,792,962	1,576,926	1,310,257	3,172,330	562,075	598,715	488,179	1,286,710	1,769,124	461,733	888,980	308,293	684,124	1,148,907	3,063,066	438,041	2,115,341	257,349	83,756	472,819

*Table summarizes monthly volume of flow in Russian River at Hacienda gage **greater than daily average of 125 CFS**

Minimum Total Flow = 83,756 AF

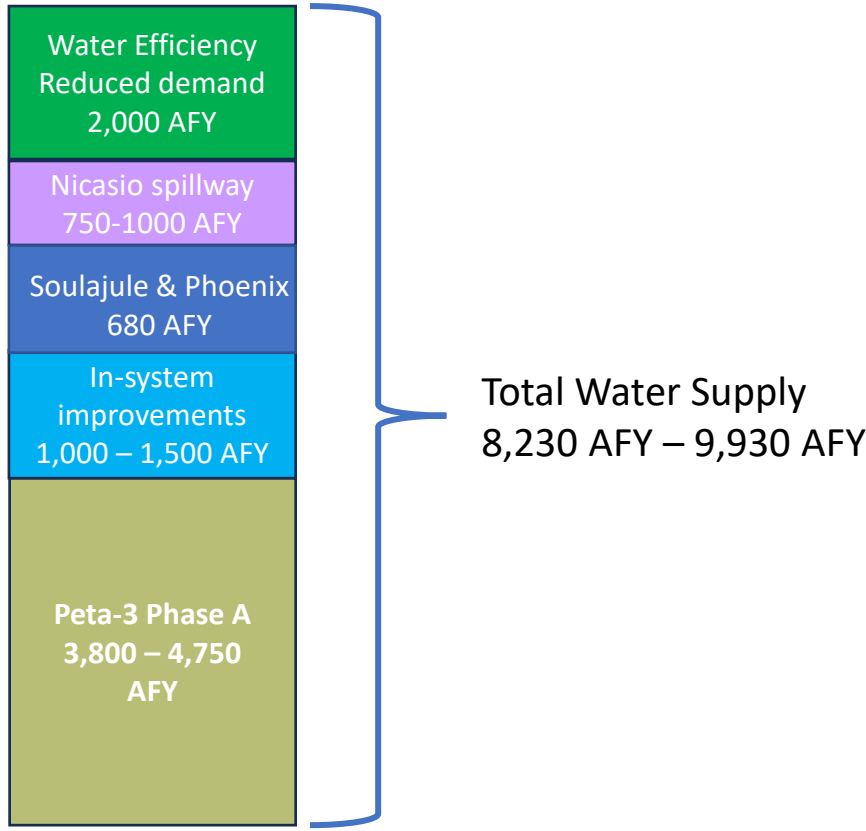
Maximum Total Flow = 3,172,330 AF

Average Total Flow = 1,103,409 AF

Meeting the Water Supply Goal

- SWSA Water Supply Goal - 8,500 AFY

Project	Estimated Water Supply
Water Efficiency reduced demand	2,000 AFY
Nicasio Spillway	750 AFY – 1,000 AFY
Electrification of Soulajule	420 AFY
Phoenix to Bon Tempe	260 AFY
Other In system Improvements	1,000 AFY - 1,500 AFY
Peta 3 Phase A	3,800 AFY – 4,750 AFY
Total Planned Supply	8,230 AFY - 9,930 AFY



Summary & Next Steps

- Multi-year planning effort established need for dry year water supply
- Evaluation of 33 alternatives led to Winter Water project
- RFP for design and environmental documentation
- Consultant selection April/May