Update on California WaterFix Business Case

July 12, 2016

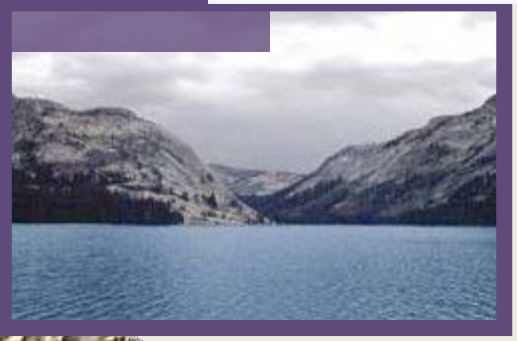
Santa Clara Valley Water District

Imported water provides 55% of our supply

Shasta Lake
Federal Central Valley Project

Lake Oroville
State Water Project

Hetch Hetchy
San Francisco



Sacramento-San Joaquin River Delta

Our water sources...

55% District imported water
- 40% through Delta to replenish groundwater and supply water to drinking water treatment plants
- 15% from Hetch Hetchy system

40% local water
- natural groundwater
- from reservoirs to groundwater
- from reservoirs to drinking water treatment plants

5% recycled water

100% TOTAL SUPPLIES

Based on average values from 2010 to 2014.

WaterFix Financial Analysis

Santa Clara Valley Water District

Key Points

- WaterFix costs for the District: $470M-$1,200M (present value)
- WaterFix water supply for the District: preserves 40,000 acre-feet per year of CVP and SWP supply
- WaterFix cost effectiveness to the District: WaterFix performs better than or comparably to other options

California WaterFix capital and O&M costs ($ millions)

(in 2014 dollars)

WaterFix Component	Capital Costs	O&M Costs	Total
New Facilities	$14,943	$1,456	$16,399
Mitigation and monitoring (over 50 years)	$557 - $817	$220	$777 - $1,037
Total	$15,500 - $15,760	$1,676	$17,176 - $17,436

Cost allocation assumptions

- Cost split 50/50 or 60/40 between SWP and CVP
- District share of SWP costs: 2.5%
- District share of CVP costs:
  - Low estimate: 2.7%
  - Conveyance pumping estimate: 4.1%
  - High estimate: 7.5%

Financing assumptions

- Costs are financed through 6 series of bond issuances, each amortized over 35 years
- Financing interest rate is fixed at 5%
- Present value analysis assumes a discount rate of 4.5%
- O&M is not financed but instead is paid as incurred.

[1] Thomson Reuters Municipal Market Data AAA yield curve (AAA MMD) represents the market benchmark yield for AAA rated state general obligation bonds.

Range of Undiscounted WaterFix costs ($ millions)

	Capital Costs in Constant 2014 Dollars	Fully Financed Cost, Undiscounted	Undiscounted O&M	Total Undiscounted Cost
Total WaterFix Costs	**$15,760**	**$39,417**	**$4,440**	**$43,857**
Estimated District Share				
Low	**$425**	**$1,065**	**$425**	**$1,490**
High	**$1,180**	**$2,955**	**$640**	**$3,595**
Conveyance Pumping	**$645**	**$1,615**	**$485**	**$2,100**

Range of Present Value WaterFix costs ($ millions)

	Present Value Costs		
	Fully Financed Capital Costs 4.5% Discount Rate	O&M Costs Incurred Over 50 Years	Total Present Value Costs
Total WaterFix Costs	**$14,405**	**$880**	**$15,285**
Estimated District Share			
Low	**$390**	**$80**	**$470**
High	**$1,080**	**$125**	**$1,205**
Conveyance Pumping	**$590**	**$95**	**$685**

Alternatives Analysis

Santa Clara Valley Water District

Water Master Plan strategy

Secure existing supplies and infrastructure

Optimize the use of existing supplies and infrastructure

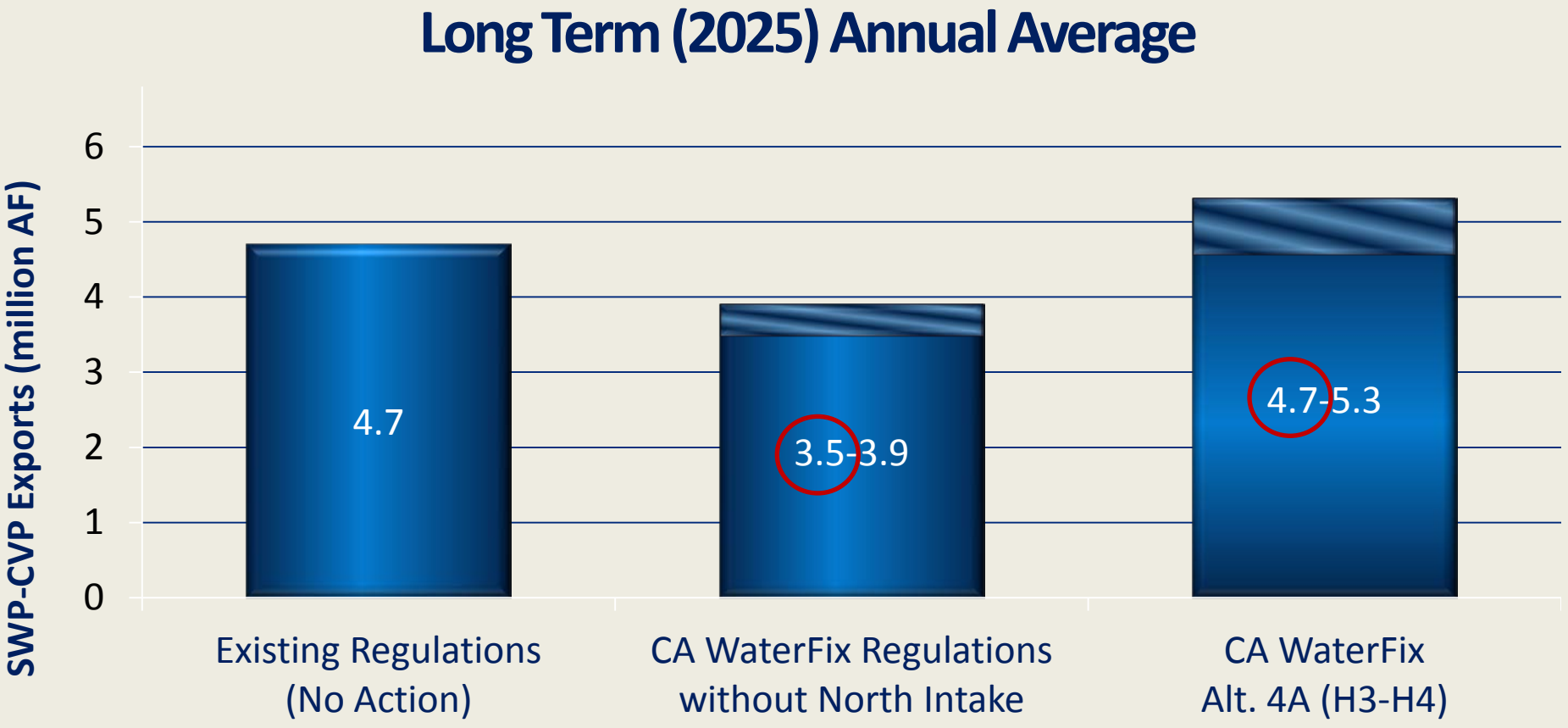
Increase water recycling and conservation

Meet drought year needs, adapt to climate change, manage uncertainty

Future Baseline

- Includes the following 2012 Water Master Plan elements:
  - Dam seismic retrofits
  - Rinconada Treatment Plant Improvements
  - 30,000 AFY of non-potable recycling
  - 20,000 AFY of potable reuse capacity
  - 99,000 AFY of water conservation savings
  - Pipeline connecting Lexington Reservoir to the Vasona Pumping Plant
  - 4,000 AFY of additional North County recharge capacity
  - 12,000 AF of transfers/dry year options in critical dry years
- Assumes the “High Outflow Scenario”

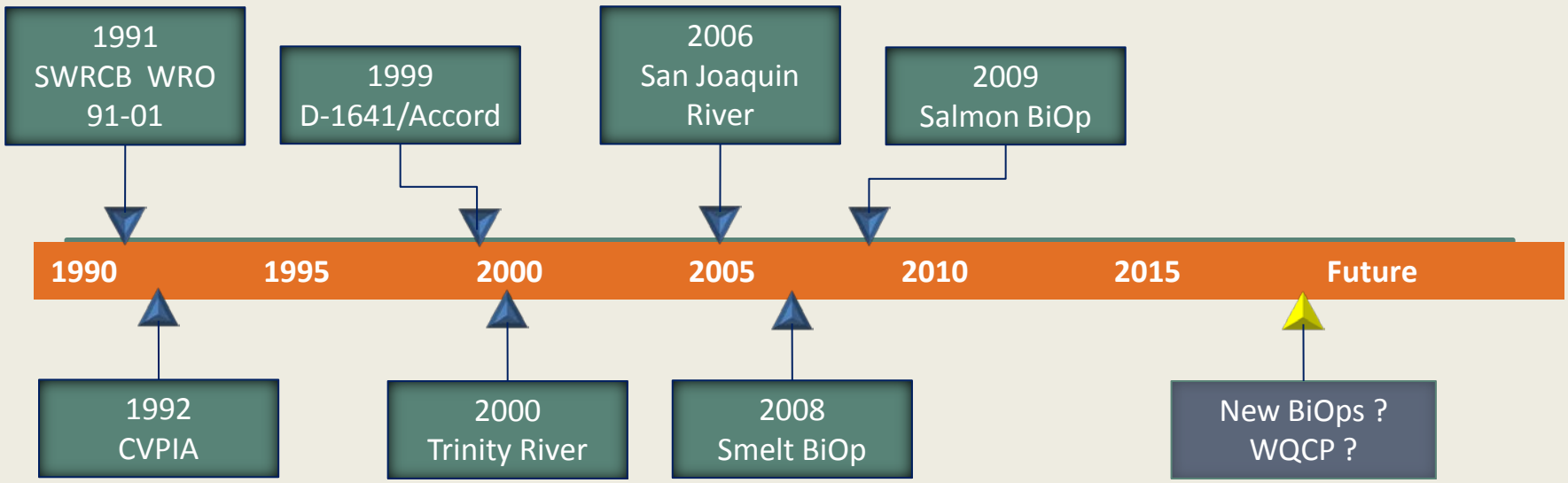
State & federal exports (million acre-ft/yr)



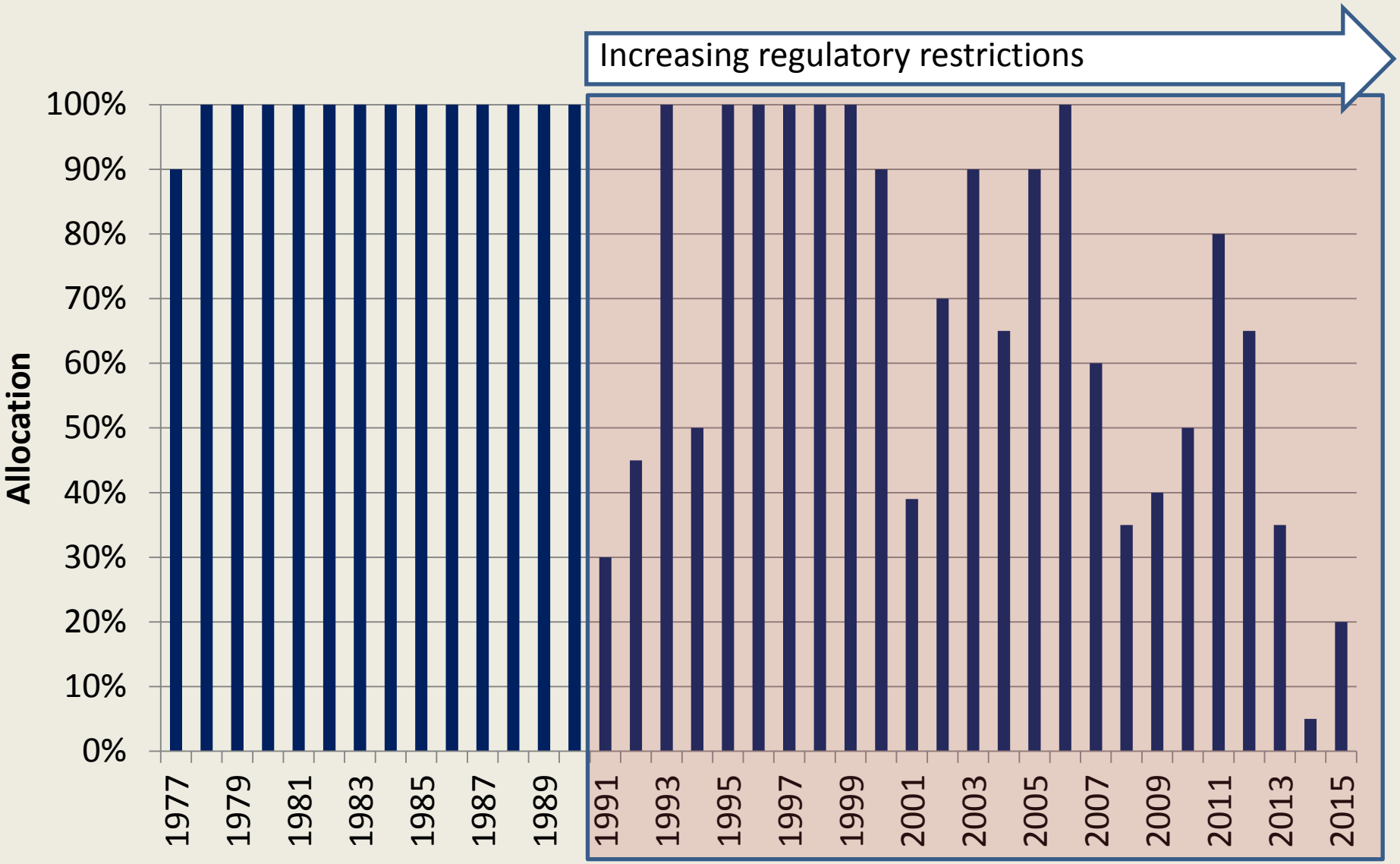
Values used in the Alternatives analysis

Data based on hydrological period (1922-2003); indicates average annual SWP & CVP water supply with climate change in 2025
Existing Regulations = No Action Alternative in 2025
BDCP Regulations without Northern Intake = the operational criteria under the BDCP which includes additional South Delta operational constraints and enhanced spring outflow compared to existing regulations

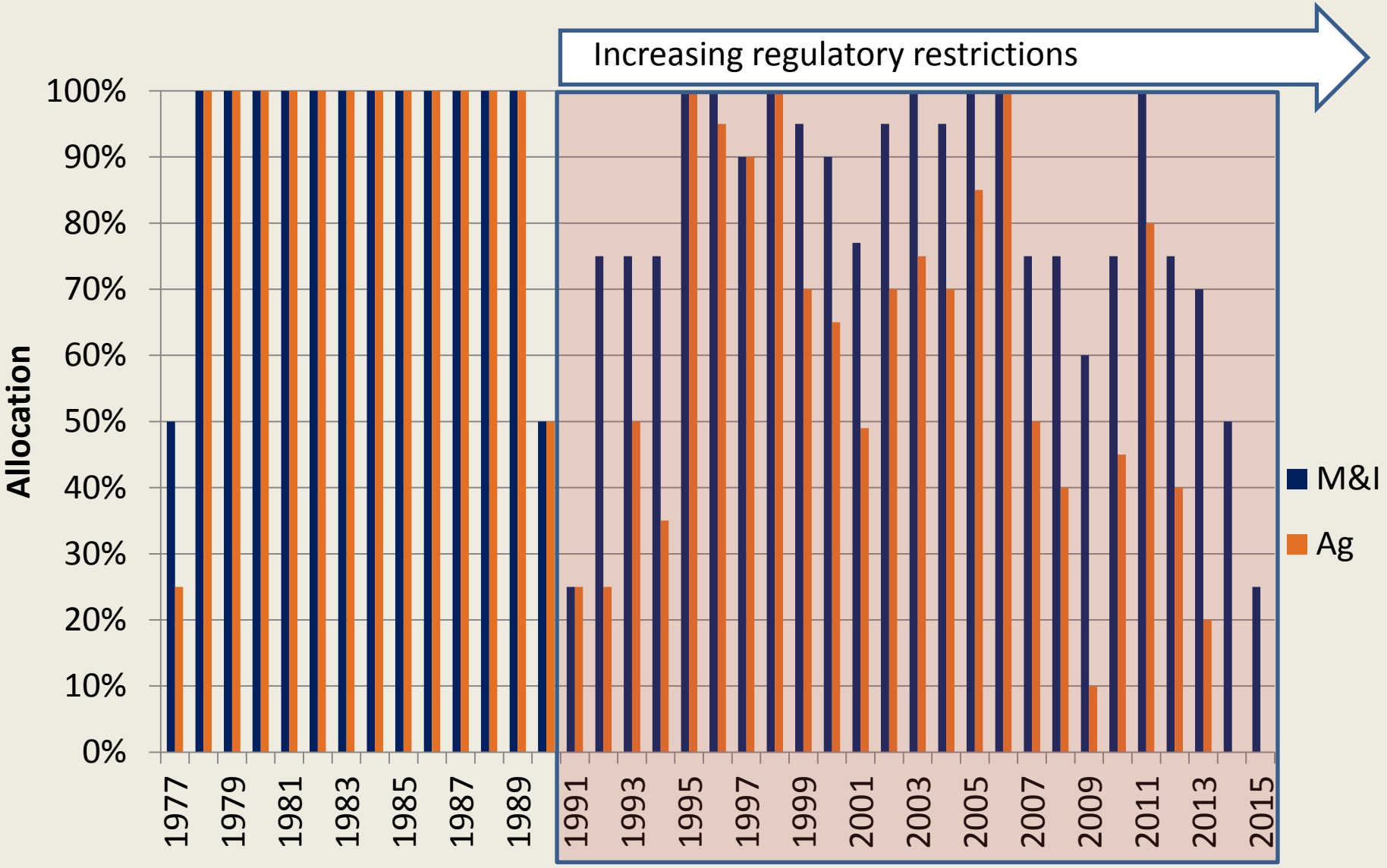
History of regulatory restrictions



Historical SWP water supply allocations



Historical CVP water supply allocations



Preliminary water supply options

- WaterFix, High Outflow Scenario (HOS): 40,000 AFY of additional SWP/CVP supplies compared to the Future Baseline
- Additional Potable Reuse: 25,000 AFY of additional potable reuse on top of already planned 20,000 AFY in Water Master Plan (same as the maximum capacity being considered in the Expedited Purified Water Program)
- Additional Water Conservation: 32,000 AFY of additional conservation by 2035 on top of already planned 99,000 AFY in Water Master Plan
- Additional Transfers: 31,000 AF of transfers in critical years and 38,000 AF of transfers in dry years, on top of 12,000 AF of transfers in critical years already assumed in Water Master Plan
- Additional Contract Supply: 64,000 AFY of SWP contract on top of the existing 100,000 AFY contractual supply assumed in Water Master Plan

Criteria evaluated – provide safe, clean water

1. Meets annual water supply targets
2. Maintains groundwater storage
3. Maintains storage in Semitropic Groundwater Bank
4. Secures existing imported water supplies
5. Provides locally controlled drought supplies
6. Adapts to climate change
7. Improves potable water quality

Criteria evaluated – other considerations

8. Improves the environment
9. Reduces reliance on the Delta
10. Provides statewide benefits
11. Reduces greenhouse gas emissions
12. Allows for phased implementation
13. Cost

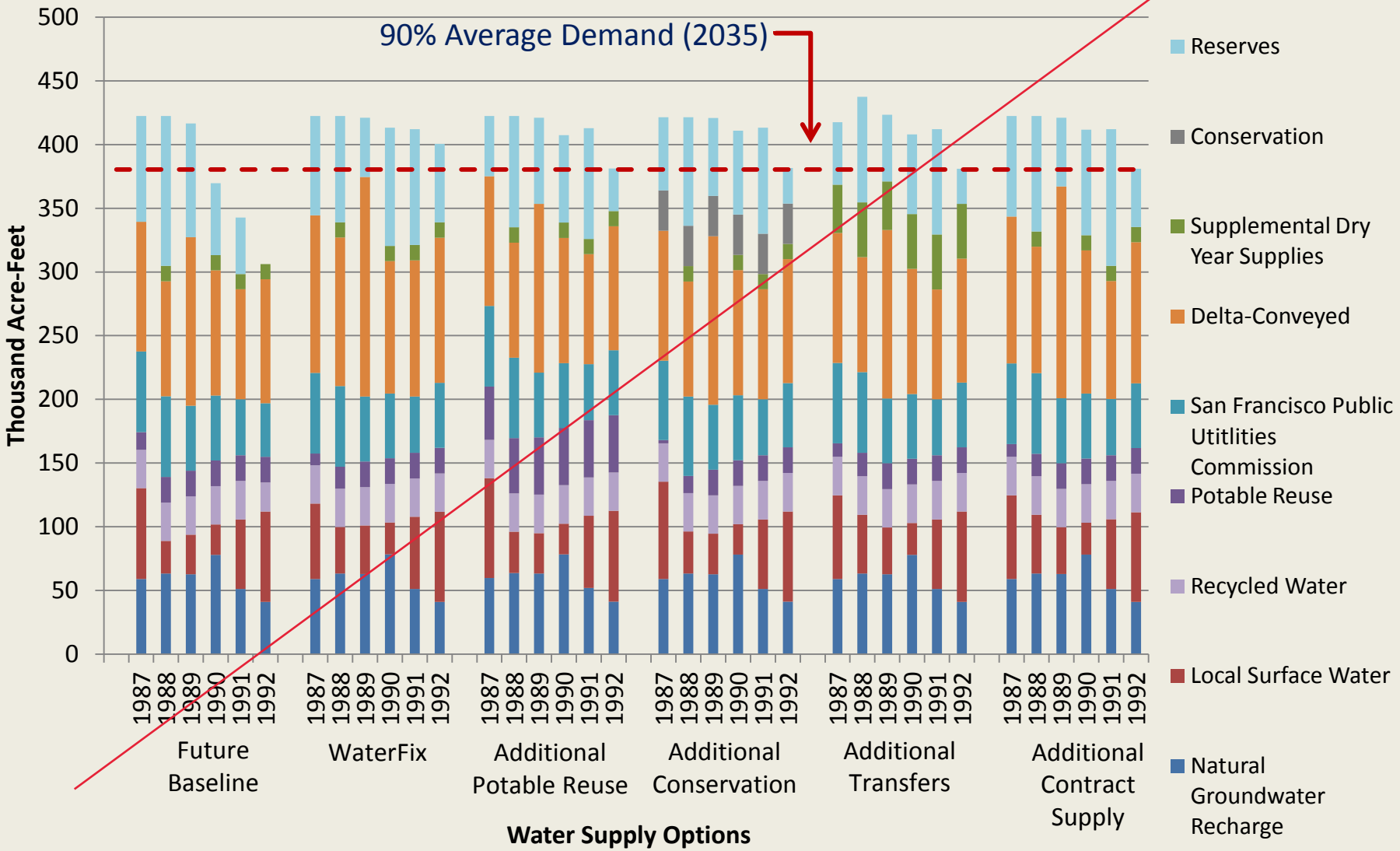
Alternatives analysis – safe, clean water

Option	Provide Safe, Clean Water						
	1. Meets Annual Water Supply Targets	2. Maintains ground-water Storage	3. Maintains Semitropic Storage	4. Secures Existing Imported Water Supplies	5. Provides Locally Controlled Drought Supplies	6. Adapts to Climate Change	7. Improves Water Quality
California WaterFix, high outflow scenario	●	●	●	●	◖	●	●
Additional Potable Reuse	●	●	◖	◖	●	●	○
Additional Conservation	●	●	◖	◖	●	●	◖
Additional Transfers	●	●	◖	◖	◖	◖	◖
Additional Contract Supply	●	●	●	◖	◖	◖	◖

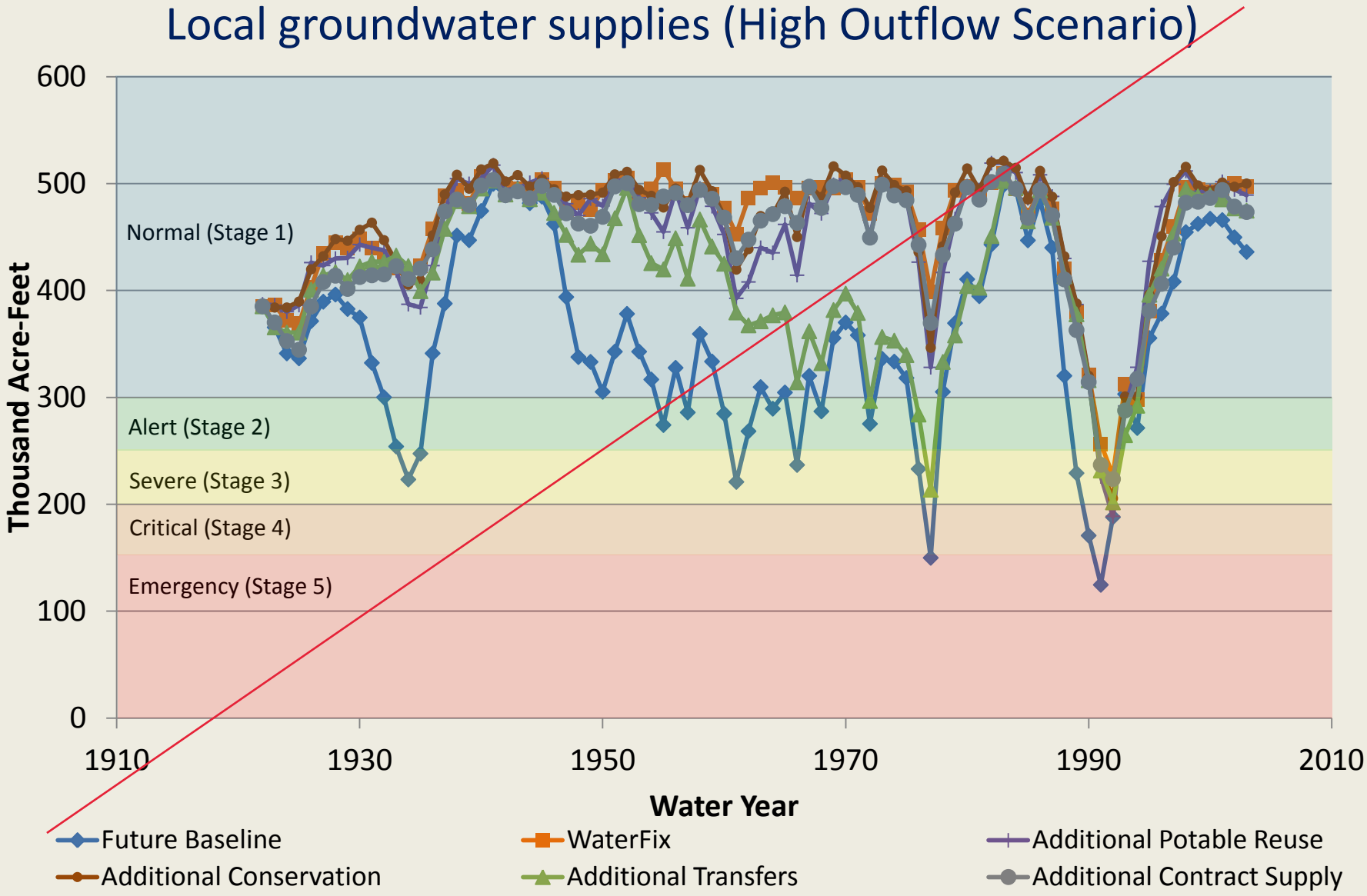
● Most effective ○ Moderately effective ◖ Ineffective

Criterion 1. Meets annual water supply targets

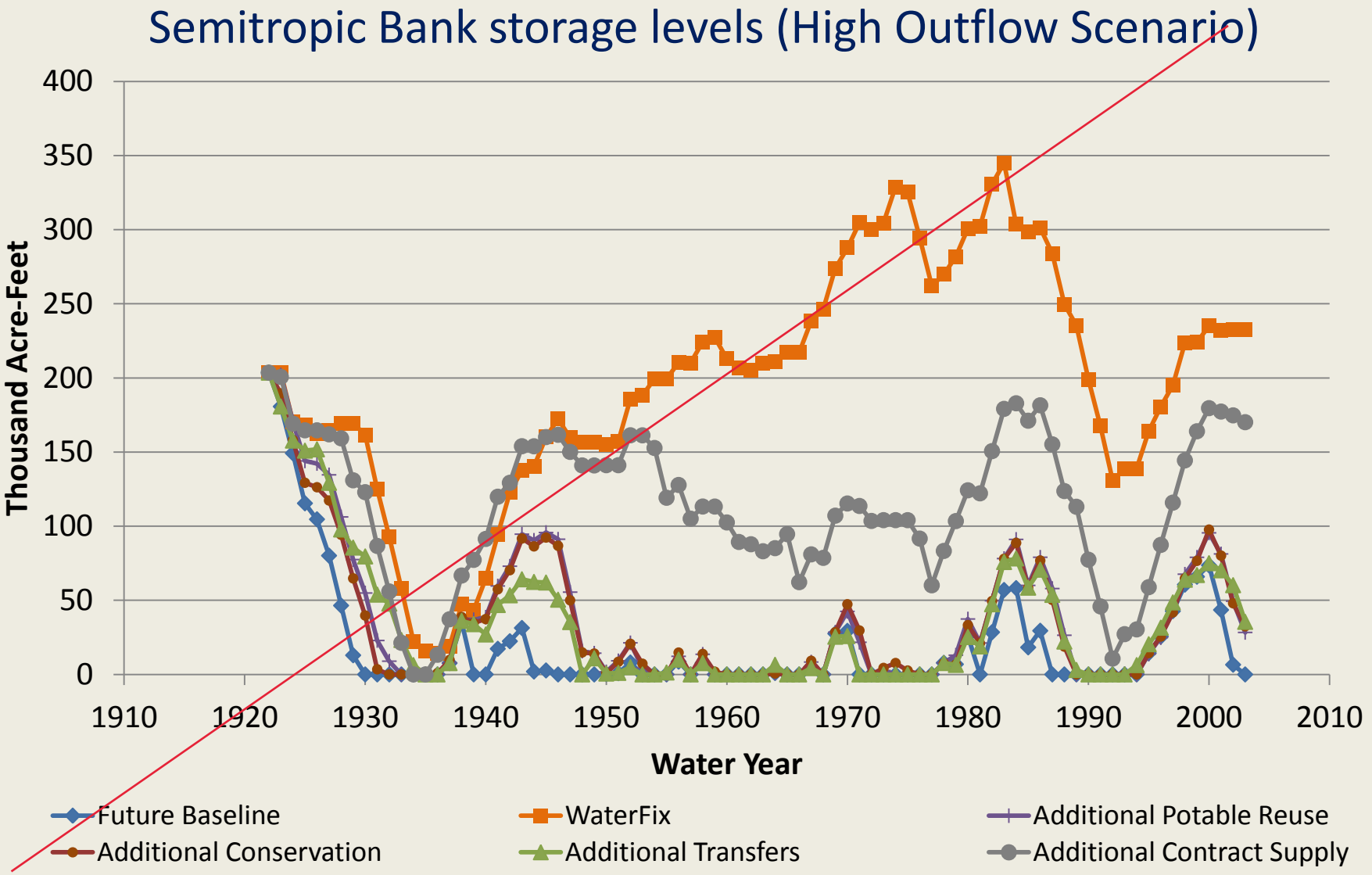
Drought Year Water Supply Options(High Outflow Scenario)



Criterion 2. Maintains groundwater storage



Criterion 3. Maintains Semitropic storage



Alternatives analysis – other considerations

Option	Other Considerations					Present Value of Incremental Cost	
	8. Improves the Environment	9. Reduces Reliance on the Delta	10. Provides Statewide Benefits	11. Reduces Greenhouse Gas Emissions	12. Allows for Phased Implementation	13a. Cost per Acre Foot of Potential Project Yield	13b. Cost per Acre Foot of Portfolio Yield
California WaterFix, high outflow scenario	●	◖	●	○	◖	$295 - $755	$350 - $1,005
Additional Potable Reuse	○	●	◖	◖	●	$1,085	$1,700
Additional Conservation	○	●	◖	●	●	$1,205	$990
Additional Transfers	◖	◖	◖	○	●	$690	$755
Additional Contract Supply	◖	◖	◖	○	◖	$650	$805

● Most effective ○ Moderately effective ◖ Ineffective

Cost comparison

Option	Undiscounted Cost ($ millions)			Present Value Cost ($ millions)		
	Capital	O&M	Total Cost	Capital	O&M	Total PV Cost
WaterFix - SCVWD share						
•Low cost allocation	1,065	425	1,490	390	80	470
•High cost allocation	2,955	640	3,595	1,080	125	1,205
•Conveyance pumping allocation	1,615	485	2,100	590	95	685
Additional Potable Reuse	1,100	905	2,005	520	295	815
Additional Conservation	0	1,545	1,545	0	615	615
Additional Transfers	0	1,825	1,825	0	450	450
Additional Contract Supply	850	1,875	2,725	410	465	875

Cost comparison

Option	Potential Average Project Yield (AF per year)	Optimized Average Yield (HOS) (AF per year)	Total Cost per AF Potential Project Yield ($/AF)		Adjusted Cost per AF Optimized Yield ($/AF)	
			Undiscounted	Present Value	Undiscounted	Present Value
WaterFix - SCVWD share						
•Low cost allocation	40,000	28,000	930	295	940	350
•High cost allocation			2,245	755	2,820	1,005
•Conveyance pumping allocation			1,315	430	1,485	540
Additional Potable Reuse	25,000	15,000	2,675	1,085	4,190	1,700
Additional Conservation	15,000	15,000	3,030	1,205	2,410	990
Additional Transfers	13,000	11,000	2,810	690	3,075	755
Additional Contract Supply	27,000	20,000	2,020	650	2,435	805

WaterFix and Potable Reuse analysis

Option	Total Undiscounted Cost (a) ($ millions)	Total PV Cost (a) ($ millions)
WaterFix - SCVWD share (Conveyance Pumping Allocation)		
WaterFix, No Baseline Potable Reuse	**2,100**	**685**
WaterFix with 20,000 AFY Baseline Potable Reuse	**3,100**	**1,055**
WaterFix, No Potable Reuse Baseline, with Supplemental Transfers (23 TAF in dry and 8 TAF in critical years)	**2,870**	**830**
Additional Potable Reuse Option (45,000 AFY of Potable Reuse, No WaterFix)	**3,005**	**1,185**

WaterFix and Potable Reuse analysis

Option	Potential Average Project Yield (AF per year)	Average Incremental Portfolio Yield (HOS) (AF per year)	Total Cost per AF Potential Project Yield ($/AF)		Cost per AF Portfolio Yield ($/AF)	
			Undiscounted	Present Value	Undiscounted	Present Value
WaterFix - SCVWD share (Conveyance Pumping Allocation), combinations:						
• WaterFix, No Baseline Potable Reuse*	40,000	39,000	1,315	430	1,345	440
• WaterFix with 20,000 AFY Baseline Potable Reuse	60,000	47,000	1,410	480	1,720	585
• WaterFix, No Potable Reuse Baseline, with Supplemental Transfers (23 TAF in dry and 8 TAF in critical years)	46,000	44,000	1,560	450	1,630	470
Additional Potable Reuse Option (45,000 AFY of Potable Reuse, No WaterFix)	45,000	35,000	2,225	880	2,860	1,130

* Does not meet water supply planning criterion #1

Summary

- WaterFix costs for the District: $470M-$1,200M (present value)
- WaterFix water supply for the District: preserves 40,000 acre-feet per year of CVP and SWP supply
- WaterFix cost effectiveness to the District: WaterFix performs better than or comparably to other options

ADDITIONAL SLIDES

Santa Clara Valley Water District

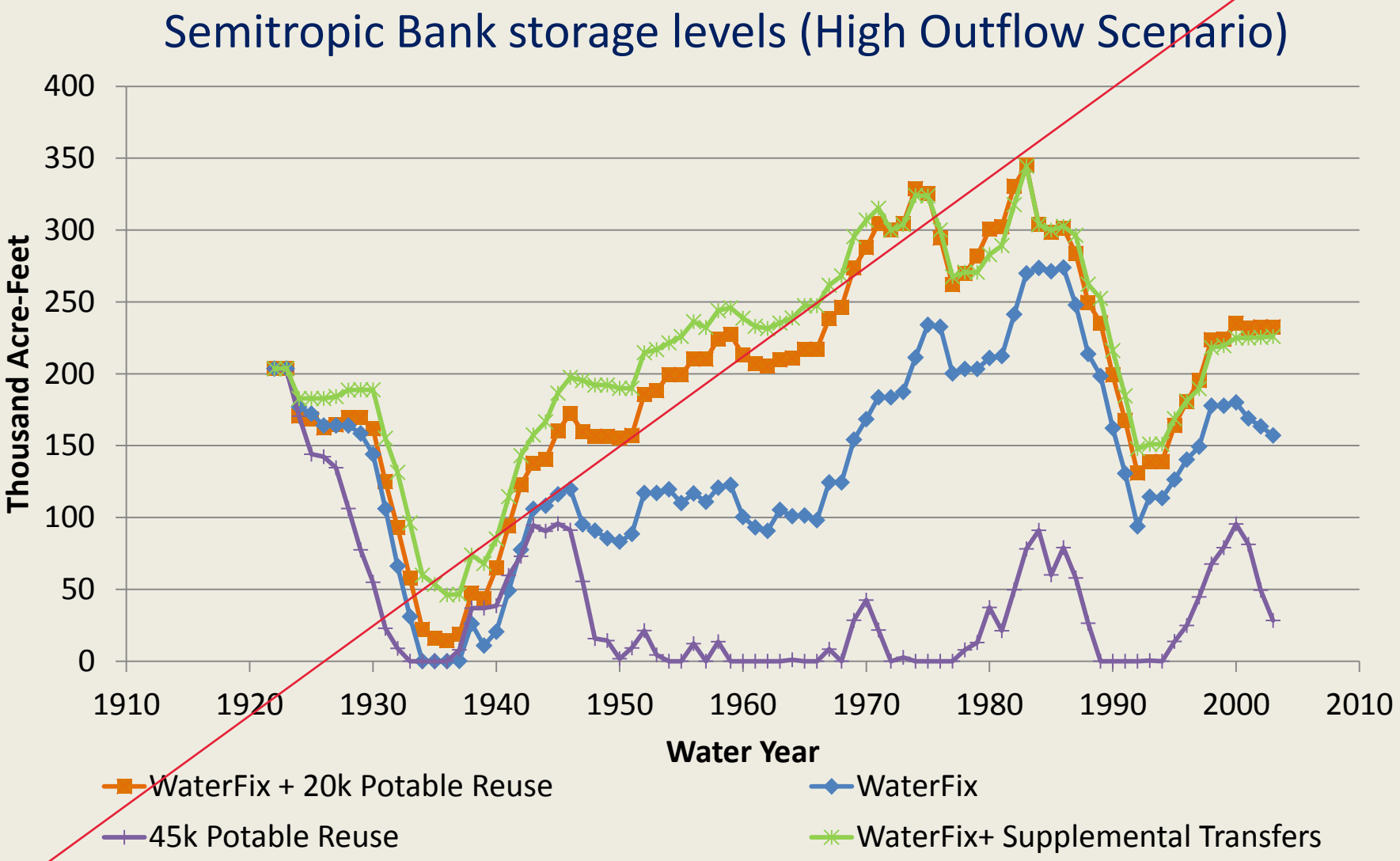
Groundwater charge and SWP tax increase (FY 2028-29)

	Incremental Cost Increase (FY 2028-29)						
	WaterFix Cost Scenario			Additional Potable Reuse	Additional Conservation	Additional Transfers	Additional Contract Supply
	Low	High	Conveyance Pumping	Incremental to Baseline			
M&I groundwater charge increase ($/AF)							
north county	**$66**	**$316**	**$137**	**$436**	**$306**	**$144**	**$0**
south county	**$3**	**$229**	**$64**	**$0**	**$60**	**$76**	**$0**
SWP tax increase, average single family ($/yr)							
north county	**$28**	**$22**	**$27**	**$0**	**$0**	**$0**	**$112**
south county	**$22**	**$17**	**$21**	**$0**	**$0**	**$0**	**$86**
Total increase per average household ($/month)							
north county	**$5**	**$13**	**$7**	**$15**	**$11**	**$5**	**$9**
south county	**$2**	**$9**	**$4**	**$0**	**$2**	**$3**	**$0**

Conservation Cost Components

Activity	Average Water Savings (AF/Yr)	Undiscounted Cost		Present Value Costs	
		O&M ($ millions)	Cost per AF Yield ($/AF)	O&M ($ millions)	Cost per AF Yield ($/AF)
Conservation Program Total	15,000	1,545	3,030	615	1,205
Baseline Programs	175	10	2,070	5	745
Home Reports	2,300	185	2,395	45	590
Turf Replacement	3,760	585	4,645	260	2,040
Residential Irrigation Controller	220	25	3,710	10	1,620
Commercial Irrigation Controller	710	60	2,425	25	1,010
Large Landscape Water Budgets	595	35	1,805	10	580
Sub-meter Installation	2,385	235	2,900	90	1,135
High Efficiency Irrigation Nozzles	525	45	2,500	20	1,045
Rotary Nozzles With Check Valves	170	15	2,890	5	1,190
Advanced Metering Infrastructure - AMI	4,160	350	2,515	145	1,045

Criterion 3. Maintains Semitropic storage



All scenarios assume no base potable reuse, but includes 12 TAF Critical Year Transfers .