

Environmental Water Account

Evolution of Strategies and Practices for Acquisition, Storage, and Conveyance

EWA Workshop Presentation

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EWA Purpose and Need

- Flexible and immediate strategy to protect at-risk native fish species
- Contribute to the recovery of these species
- Allow timely water management
- Improve water supply reliability
- No uncompensated water loss

How EWA Works

- EWA Agencies decide to reduce pumping at Banks PP and Tracy PP in Delta to protect fish (Dec-June)
- EWA Agencies purchase replacement water and return it to the CVP and SWP (Jul-Sep, mostly)
- EWA Agencies try to provide multiple benefits as water is delivered

EWA Initial Implementation

- *Acquisition* Strategies and Practices
 - ROD signed August 2000
 - EWA to be effective 2001 Water Year
 - Went shopping for willing sellers
 - Goal to purchase 185 TAF plus part of 200 TAF south of Delta stored water
 - \$67.5 million budget

EWA Initial Implementation

- Acquisition Strategies and Practices
 - Signed first agreement, bought first water December 2000
 - Signed 12 additional agreements in 2001
 - Bought 105 TAF upstream of Delta, 231 TAF south of Delta for total of 336 TAF in 2001 WY, \$60.1 million, melded cost \$179/AF

EWA Years 2-4

- Acquisition Strategies and Practices
 - In 2002, bought 240 TAF from 3 sellers \$28.3 million, melded rate of \$118/AF
 - In 2003, bought 215 TAF from 5 sellers \$31.0 million, melded rate of \$144/AF
 - In 2004, bought 155 TAF from 3 sellers \$19.6 million, melded rate of \$126/AF

EWA Acquisition Summary Table

EWA Assets Acquired	2001	2002	2003	2004_{a/}
SWRCB Year Classification	Dry	Dry	AN	BN
SWP/CVP SOD Ag Allocations, %	39 / 49	70 / 70	90 / 75	65 / 65
Water Purchases	TAF	TAF	TAF	TAF
Sources upstream of Delta	105	142	70	120
Sources in export area	231	98	145	35
Total purchases	336	240	215	155
Operational Assets (e.g. E:I flexibility)	48	83	91	<1
Losses _{b/}	-17	-51	-16	-28 _{c/}
Total Net Assets Obtained	367	272	290	127
Assets Carried Over from Prior Year		77	58	0
Total Assets Available for WY	367	349	348	127
Average price/acre-foot	\$179/AF	\$118/AF	\$ 144/AF	\$126/AF

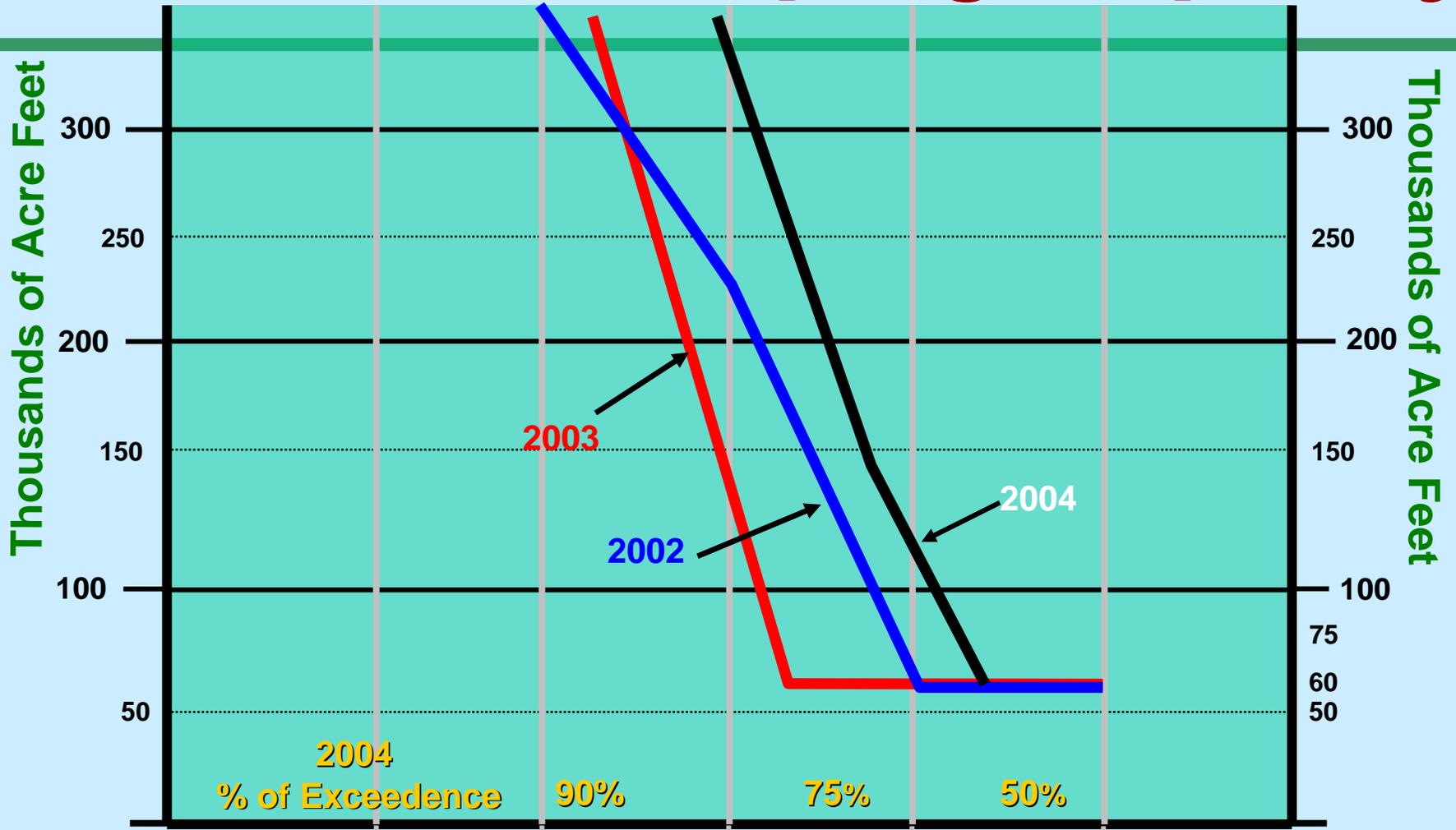
EWA Acquisition Table Footnotes

- a/ Numbers for water year 2004 are preliminary
 - b/ Includes carriage water associated with EWA Delta transfers, San Joaquin River tributary conveyance losses, and water spilled from Lake Oroville during flood control operations.
 - c/ Based on assumed carriage losses and operational losses in 2004. Actual losses are not known until EWA transfers are concluded and operations/Delta water quality modeling is completed.
- Unit prices are for purchased water only.

EWA Strategies and Practices

- Acquisition Strategies and Practices
 - In 2002, began spreadsheet models of EWA's Delta capacity as function of project demands on Banks
 - EWA has dedicated 500 cfs (~60 TAF) at Banks July-September
 - In wet years, projects use all remaining Banks transfer season capacity; in dry years, EWA gets some added capacity

EWA Delta Pumping Capacity



D 1641 Year Type
Approx.

Critical
<25%

Dry
35%

Below
Normal
60%

Above
Normal
85%

Wet
100%

SWP Delivery

Environmental Water Account

DWR

USBR

USFWS

NOAA Fisheries

DFG

EWA Strategies and Practices

- Acquisition Strategies and Practices
 - North of Delta water less costly
 - Purchase strategy seeks to maximize EWA's Banks capacity
 - Maximize north of Delta purchases
 - Reservoir purchases favored
 - Groundwater substitution also a source
 - Crop idling possible, not yet used

EWA Strategies and Practices

- Acquisition Strategies and Practices
 - Use options and flexible purchases to tailor actual deliveries to Banks capacity as close as possible
 - Seek late decision dates to allow maximum savings
 - Seek additional sellers to diversify sources and expand water market

EWA Strategies and Practices

- Acquisition Strategies and Practices
 - Currently scale some purchase agreements to SWP allocation
 - Are starting to negotiate multi-year agreements with sellers
 - Most upstream-of-Delta EWA agreements coordinated with dry year program to allow multiple benefits

EWA Strategies and Practices

- Acquisition Strategies and Practices
 - In 2002, prepared a formal acquisition strategy document; done annually
 - In 2002, developed additional spreadsheet purchase models
 - In 2003, developed a long-term EWA Operations Model to help size EWA and evaluate potential assets, strategies

EWA Strategies and Practices

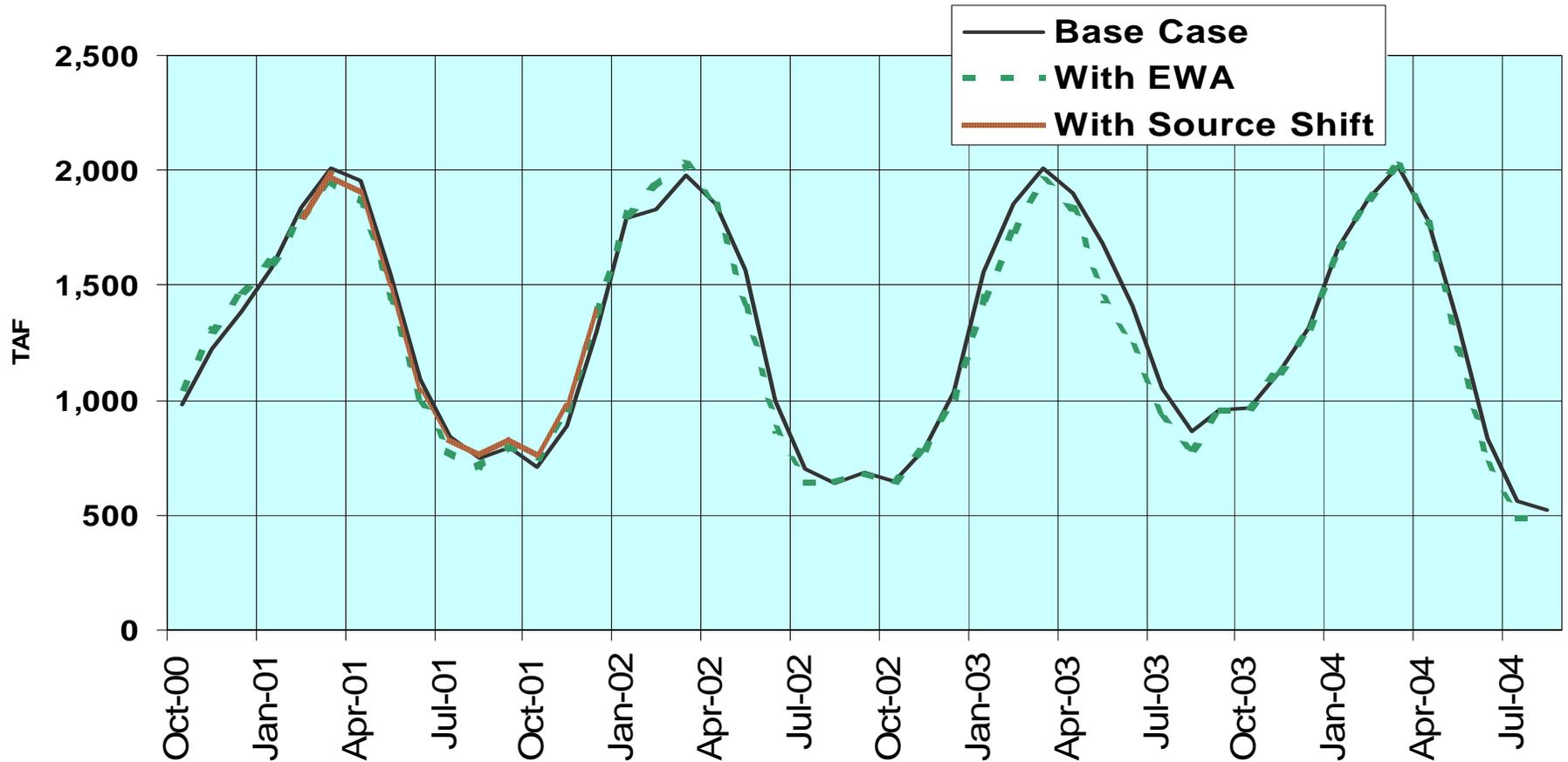
- *Storage* Strategies and Practices
 - EWA incurs debts December-June
 - EWA returns water to projects July-September, sometimes later
 - Sellers provide some storage until transfers begin in July
 - EWA can store assets in SWP and CVP reservoirs

EWA Strategies and Practices

- Storage Strategies and Practices
 - EWA has stored water in San Luis, Oroville, and Folsom Reservoirs
 - EWA has lost water to spills from reservoirs when they have filled
 - In 2002, EWA exchanged water in San Luis as it filled, receiving 50% back after the reservoir's high point

EWA San Luis Storage Practices

San Luis Reservoir Levels Base Case and With EWA



EWA Strategies and Practices

- **Storage Strategies and Practices**
 - EWA employs source shifting to protect San Luis Reservoir users from water quality issues
 - EWA is working to expand its storage mechanisms
 - EWA can use virtual storage with exchange agreements: water given to contractors, returned later

EWA Strategies and Practices

- Storage Strategies and Practices
 - EWA negotiating dry-wet exchange for 2005 with MWDSC
 - EWA can also pursue groundwater banking, but it is expensive and limited in the rate of recharge and extraction
 - EWA could partner in south-of-Delta storage facilities

EWA Strategies and Practices

- *Conveyance* Strategies and Practices
 - EWA seeks to move water to the Delta in a fish-friendly pattern
 - EWA primarily uses Banks to deliver water at O'Neill Forebay
 - Energy and conveyance costs are tracked
 - EWA seeks to have transfer water moved only when it can be delivered

EWA Strategies and Practices

- **Conveyance Strategies and Practices**
 - Crop idling water may be made available when it cannot be pumped in the Delta
 - EWA would seek to back up that water into an upstream CVP or SWP reservoir until the summer transfer season begins
 - Groundwater substitution water may need to be backed up as well

EWA Strategies and Practices

- **Summary**
 - EWA Agencies implemented the EWA promptly in 2000
 - For the past four years, EWA assets have been acquired, managed, and delivered to replace Delta pumping foregone, augment streamflow, and increase Delta outflow

EWA Strategies and Practices

- Summary
 - Tailoring purchases to Banks capacity has increased the cost-effectiveness of EWA acquisitions
 - The use of options and flexible purchases has also increased cost-effectiveness

EWA Strategies and Practices

- **Summary**
 - Spreadsheet analysis and modeling have increased the effectiveness of asset acquisition and management
 - Exchanges will improve the ability to protect EWA assets from spill
 - Multi-year agreements are expected to increase cost-effectiveness

EWA Strategies and Practices

- Summary
 - Diversification of EWA assets and coordination with other programs will help increase the overall size of the water market
 - Future evolution of the EWA will require increased sophistication

EWA Web Resources

- EWA Purchase Contracts Data:
 - <http://www.watertransfers.water.ca.gov/>
 - Select “Past Water Transfers”
- EWA Accounting, Operations, Acquisition Strategy, Protocols:
 - <http://www.woco.water.ca.gov/calfedops/>
 - Select desired year under “Operations”

EWA Strategies and Practices

- Questions?

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