

# **California WaterFix Hearing Part 2 Rebuttal**

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# Presentation Outline

- **Petitioner modeling demonstrates that the WaterFix does not negatively affect Projects' abilities to meet obligations**
- **CVP operations to meet all regulations and obligations benefit from flexibility in managing multiple storage facilities**
- **Hard storage requirements reduce CVP flexibility**
- **Rebuttal to specific protestant proposals**
  - **NMFS 2017 Draft Proposed Amendment to the Shasta RPA**
  - **Modified American River Flow Management Standard**
  - **Trinity storage and flow conditions**

# NMFS Draft Proposed Amendment (DPA)

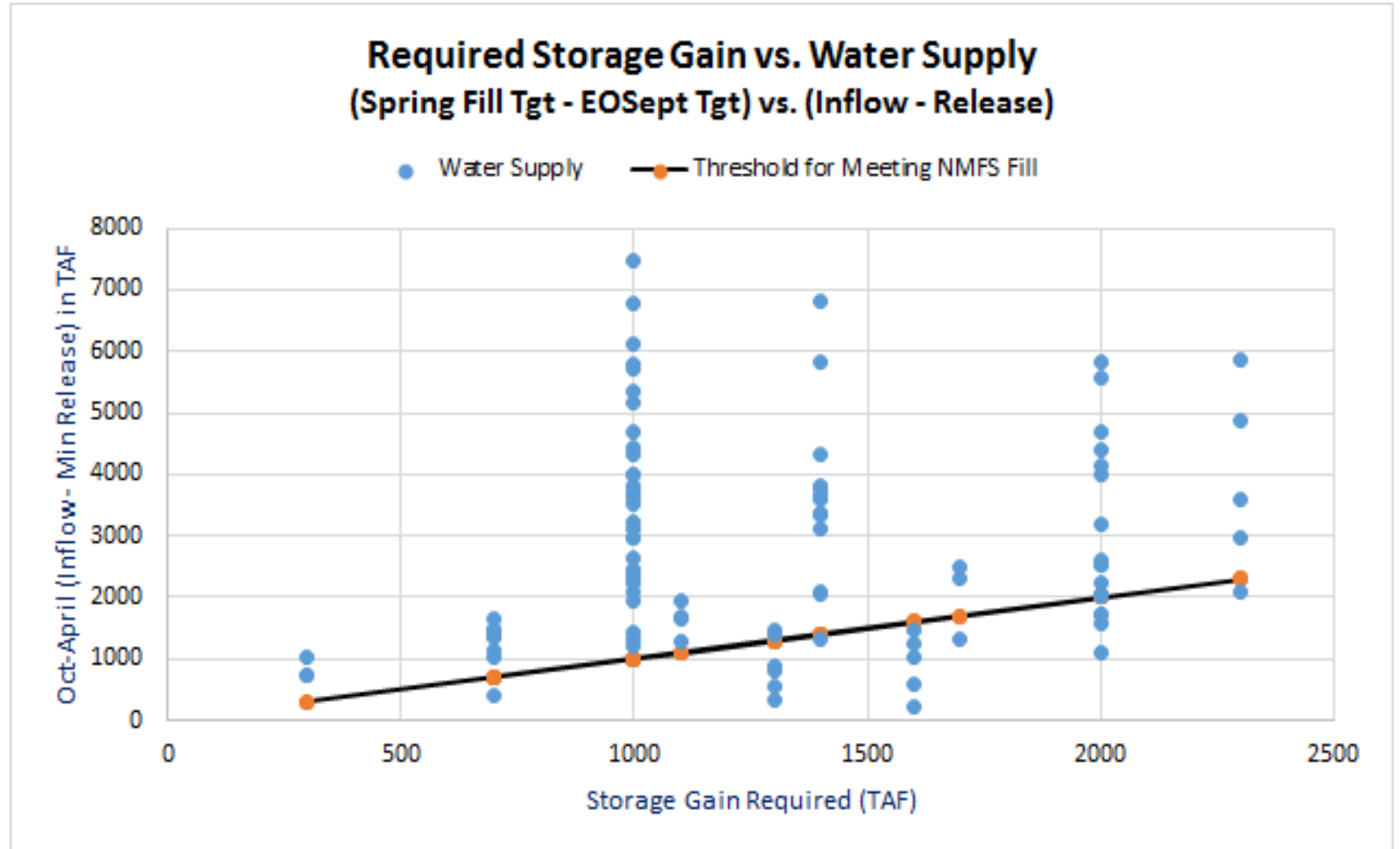
- Provisions of the NMFS DPA that are the focus of Part 2 rebuttal
  - Spring storage (fill) targets
  - September carryover storage targets
  - Limits on April and May Keswick releases

	Minimum Storage April 1 - May 31 no less than	End of Sept Storage no less than	April Keswick Release Limit
	(MAF)	(MAF)	(CFS)
Wet	4.2	3.2	8000
Abv Normal	4.2	3.2	6500
Blw Normal	4.2	2.8	6000
Dry	3.9	2.2	6000
Critical	3.5	1.9	4000

# NMFS DPA

- Hydrology does not support the ability to meet spring fill targets
- Even if September targets *are* met
- Even with minimal Oct-Apr releases
- Shortfalls vary by hydrology scenario

# September-to-Spring



# NMFS DPA

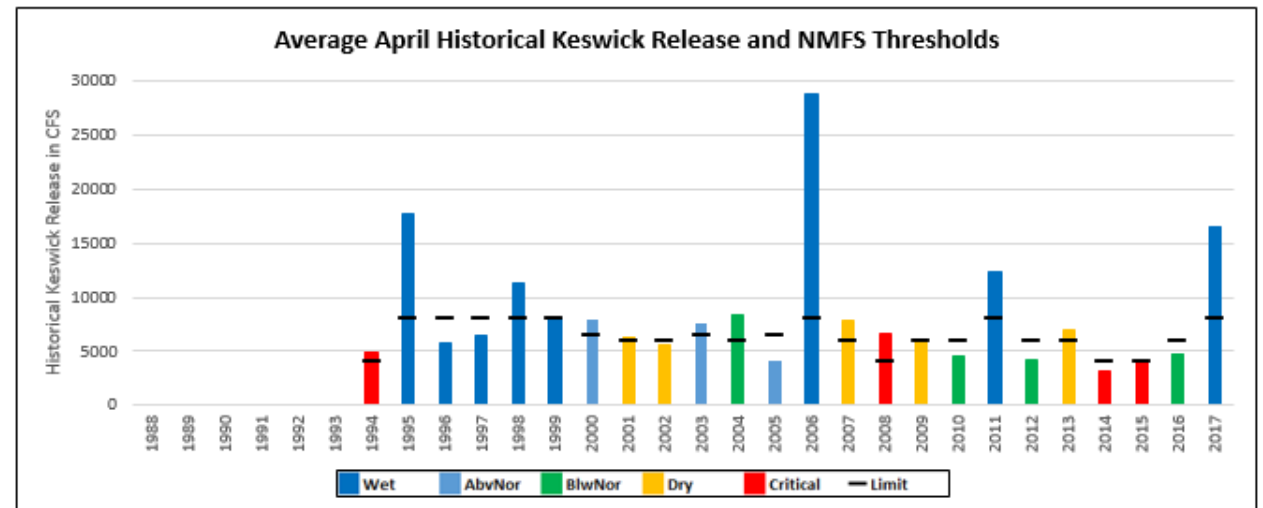
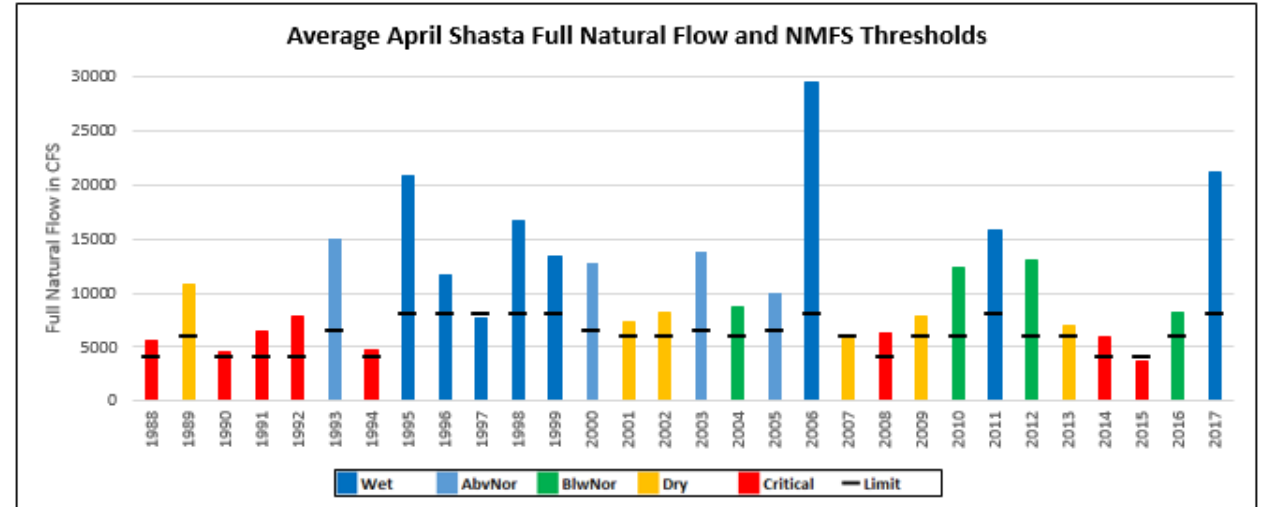
# Meeting Sept Carryover

Year	WY Type	Spring Target	Over Spring Tgt By	Missed Sept Target By	Month Fell Below Sept Target	Controlling factor															
						June			July			August			September						
1922	Wet	4200	352	-438	Sep		WS			NDO	WS			NDO	WS			X2			
1927	AN	4200	352	-339	Aug		WS			NDO		WQ		NDO	WS			X2			
1928	AN	4200	310	-855	Jul	X2			WQ	NDO		WQ		NDO				X2			
1938	Wet	4200	301	-280	Sep		WS			NDO	WS			NDO	WS			X2			
1941	Wet	4200	352	-82	Sep		WS			NDO				NDO	WS			X2			
1942	Wet	4200	352	-170	Sep		WS			NDO	WS			NDO	WS			X2			
1943	Wet	4200	352	-564	Sep	X2	WS			NDO		WQ		NDO				X2			
1946	AN	4200	53	-727	Jul	X2	WS			NDO		WQ		NDO				X2			
1951	AN	4200	177	-585	Aug		WS		WQ	NDO		WQ		NDO				X2			
1953	Wet	4200	352	-163	Sep					FC	NDO			NDO				X2			
1954	AN	4200	346	-251	Sep	X2				NDO		WQ		NDO				X2			
1956	Wet	4200	352	-230	Sep		WS			NDO				NDO				X2			
1957	AN	4200	352	-158	Sep	X2	WS			NDO		WQ		NDO				X2			
1958	Wet	4200	352	-25	Sep					FC	NDO			NDO			FC	X2			
1963	Wet	4200	331	-461	Sep	X2	WS			NDO		WQ		NDO	WS			X2			
1965	Wet	4200	348	-217	Sep	X2	WS			NDO		WQ		NDO	WS			X2			
1966	BN	4200	217	-158	Aug	X2				NDO		WQ		NDO					NDO		
1971	Wet	4200	352	-154	Sep		WS			NDO		WQ		NDO	WS			X2			
1973	AN	4200	232	-348	Aug	X2				NDO		WQ		NDO	WS			X2			
1975	Wet	4200	352	-90	Sep		WS			NDO				NDO	WS			X2			
1978	AN	4200	352	-113	Sep		WS			NDO		WQ		NDO	WS			X2			
1980	AN	4200	45	-155	Aug		WS			NDO	WS			NDO	WS			X2		WS	
1984	Wet	4200	275	-498	Sep	X2	WS			NDO		WQ		NDO	WS			X2			
1996	Wet	4200	352	-177	Sep		WS			NDO		WQ		NDO	WS			X2			
1999	Wet	4200	352	-236	Sep	X2	WS			NDO		WQ		NDO	WS			X2			
2000	AN	4200	349	-264	Aug	X2				NDO		WQ		NDO				X2			
2003	AN	4200	352	-213	Sep		WS			NDO		WQ		NDO				X2			

# NMFS DPA

# Keswick Flow Limits

- April limits are mostly lower than full natural flow
- Flood control would require violations



# NMFS Draft Proposed Amendment

- **Proposed as a condition for WaterFix permit approval**
- **WaterFix analysis does not show an impact to Shasta storage**
- **Proponents have not analyzed any impact of the DPA**
- **DPA is unrelated to WaterFix; criteria are infeasible**
  
- **Reclamation has presented analysis to NMFS**
- **2018 temperature management plan (approved by NMFS) is not consistent with the DPA**
- **Consultation continues**

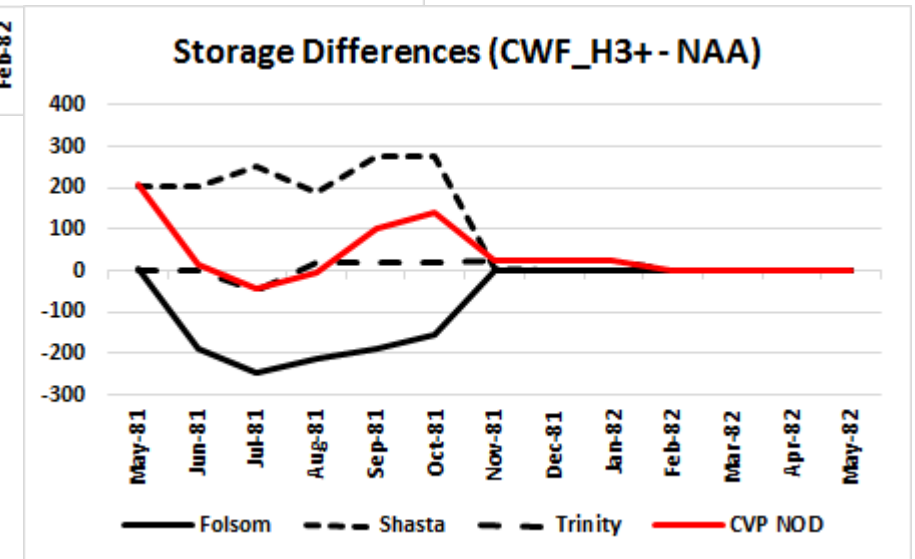
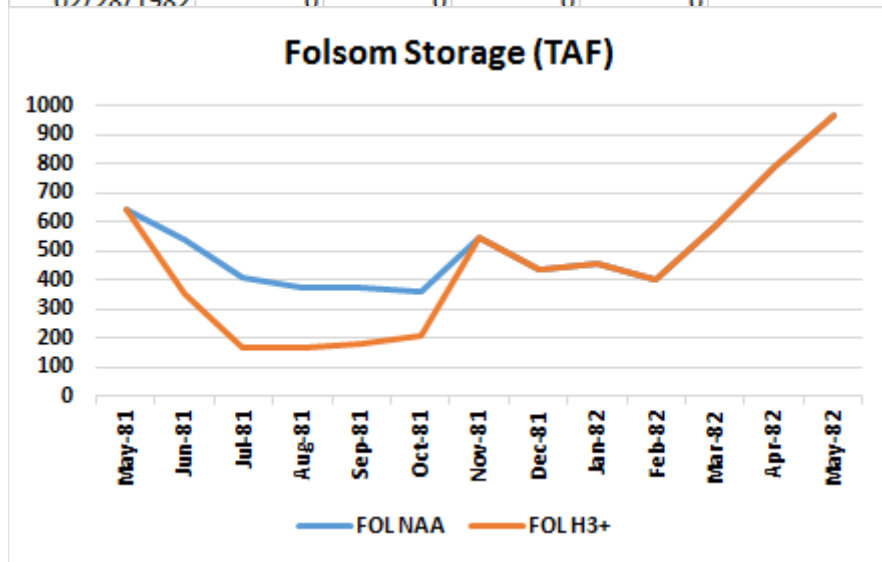
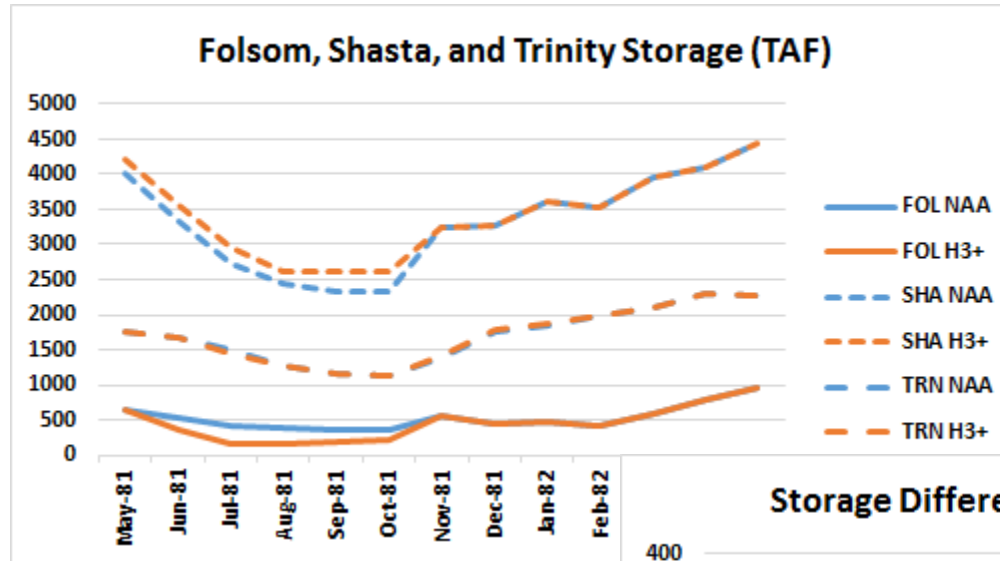
# Assessment of Differences (CWF\_H3+ vs. NAA)

- **Model differences are not all a direct response to CWF diversion**
- **New CalSim logic for the WaterFix**
  - Physical implementation – diversion, capacity, bypass criteria, etc...
  - Proposed criteria – HORG, OMR, Delta outflow, etc...
- **NO new CalSim logic for everything else**
  - Allocation logic – wsi/di, export estimate
  - Reservoirs – flood control, power cap, setting levels, balancing goals...
  - WaterFix related – CVP/SWP split, North/South exports
- **Model focus – isolating WaterFix impact on CVP/SWP obligations**



# Folsom Differences in 1981-82

	Differences (CWF_H3+ minus NAA)			
	Folsom	Shasta	Trinity	CVP NOD
05/31/1981	5	205	1	211
06/30/1981	-190	204	1	15
07/31/1981	-245	251	-47	-41
08/31/1981	-212	187	18	-7
09/30/1981	-190	276	18	104
10/31/1981	-153	276	18	141
11/30/1981	0	3	24	27
12/31/1981	0	0	24	24
01/31/1982	0	0	24	24
02/28/1982	0	0	0	0



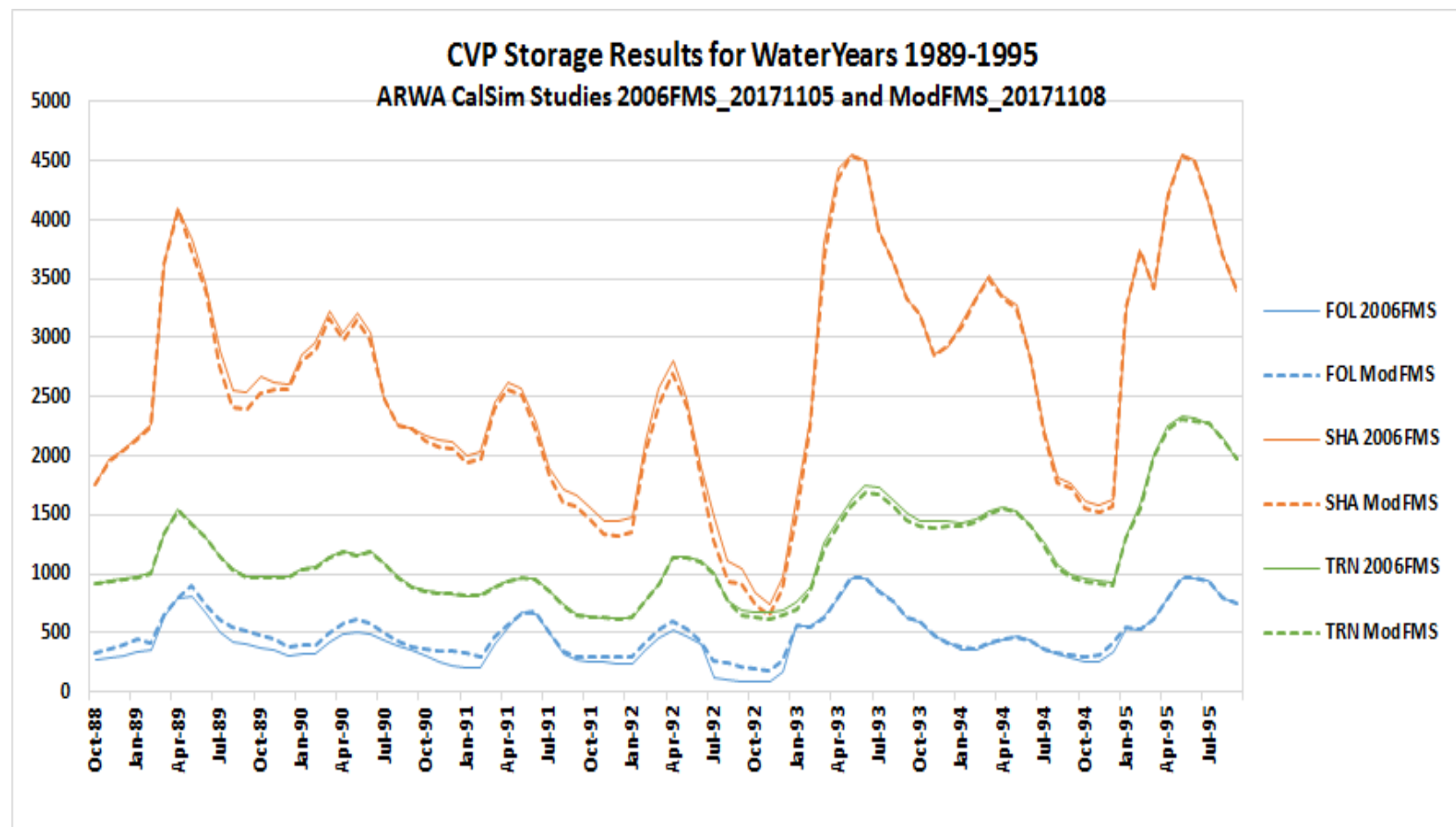
# American River Modified Flow Management Standard

- Proposed as a condition for WaterFix permit approval
- WaterFix analysis does not show an impact to Folsom storage
- ModFMS is unrelated to WaterFix and has no impact on it
- ModFMS has re-directed impacts to other CVP operations
  
- ARWA has not analyzed ModFMS with the WaterFix

# ModFMS

- Higher Folsom storage in dry period
- Lower storage in Shasta and Trinity

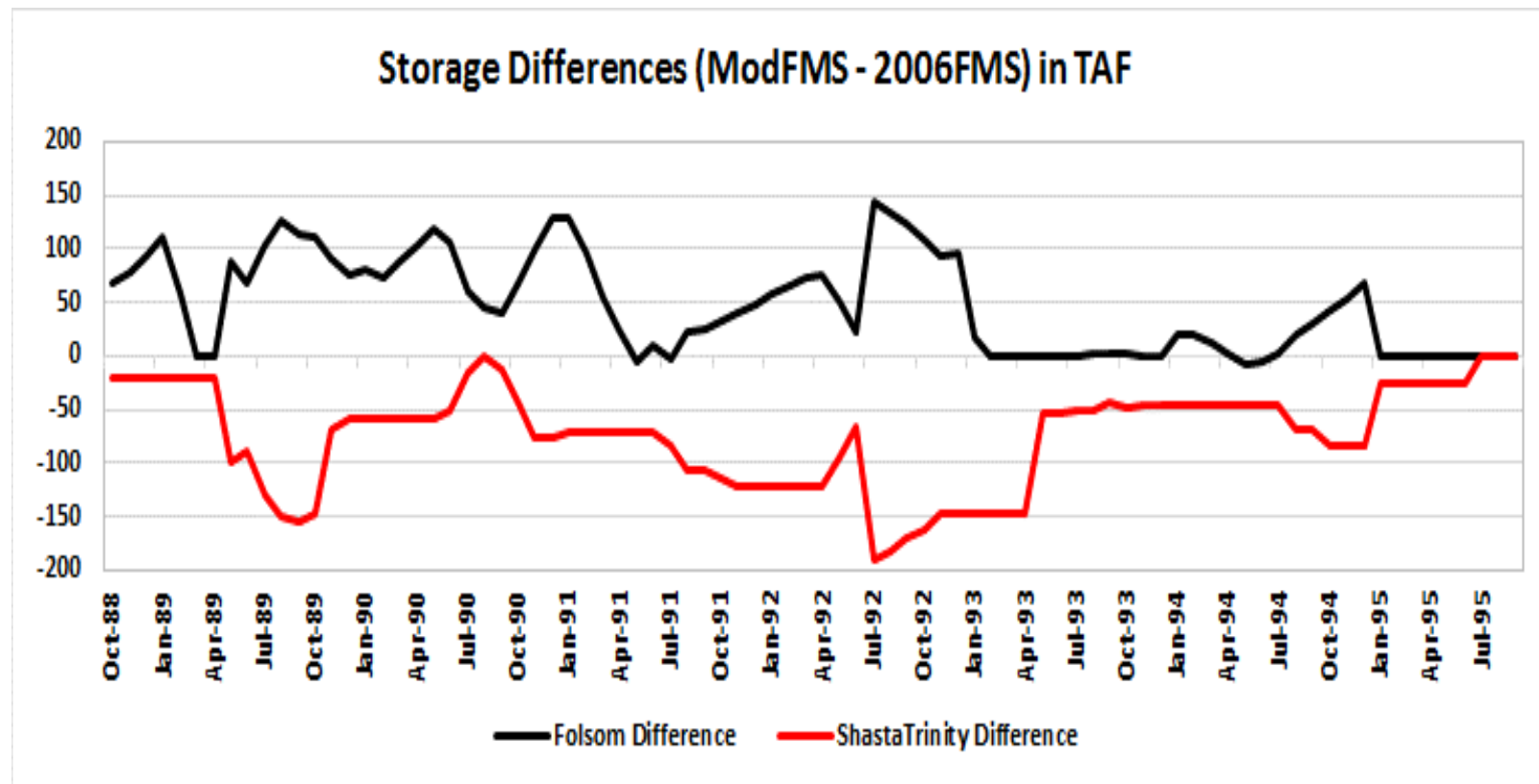
# Re-directed Impacts



# ModFMS

- Higher Folsom storage in dry period
- Lower storage in Shasta and Trinity
- “Mirror Image” effect

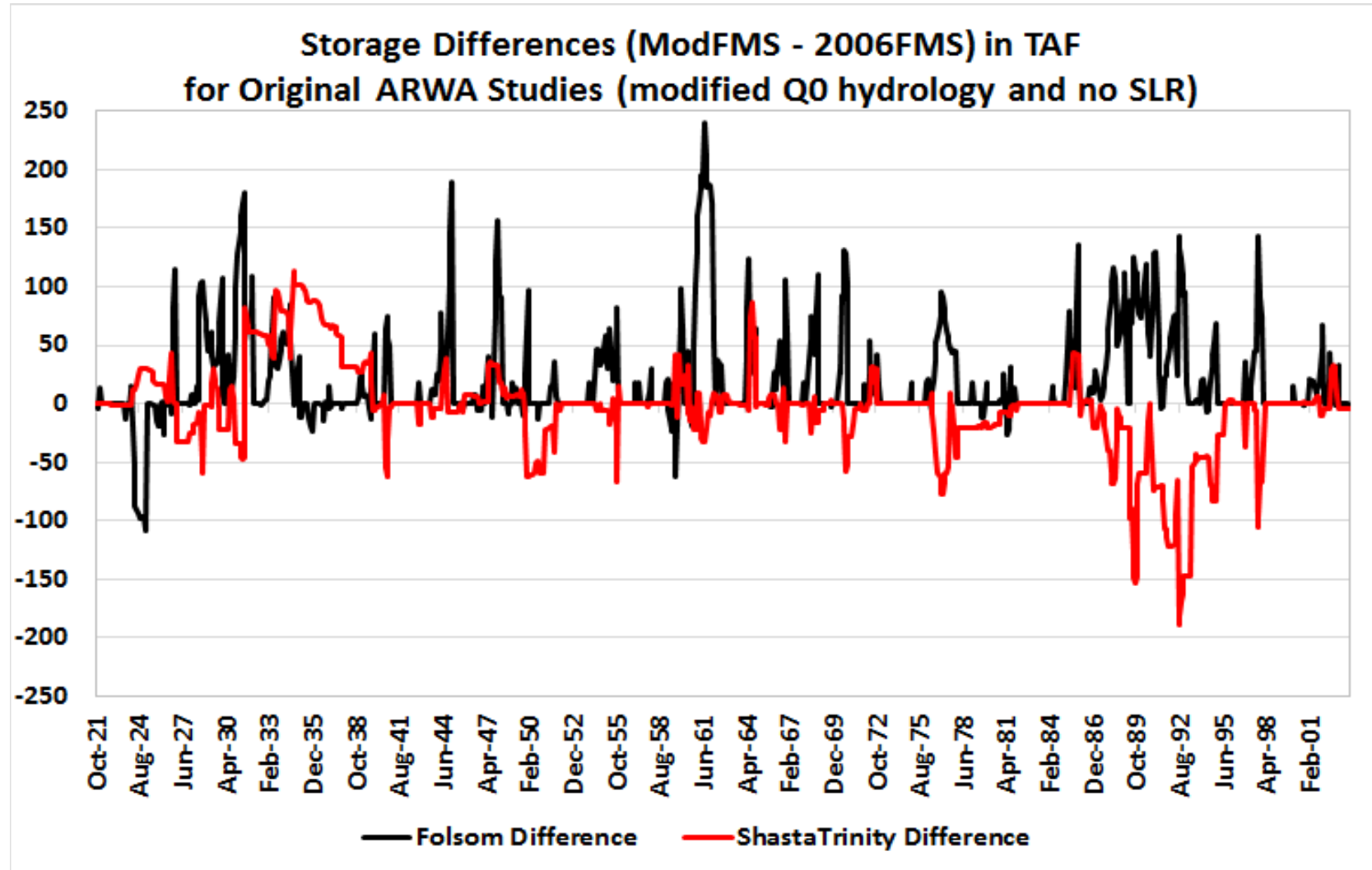
# Re-directed Impacts



# ModFMS

- Full period of record contains multiple instances of CVP storage tradeoffs

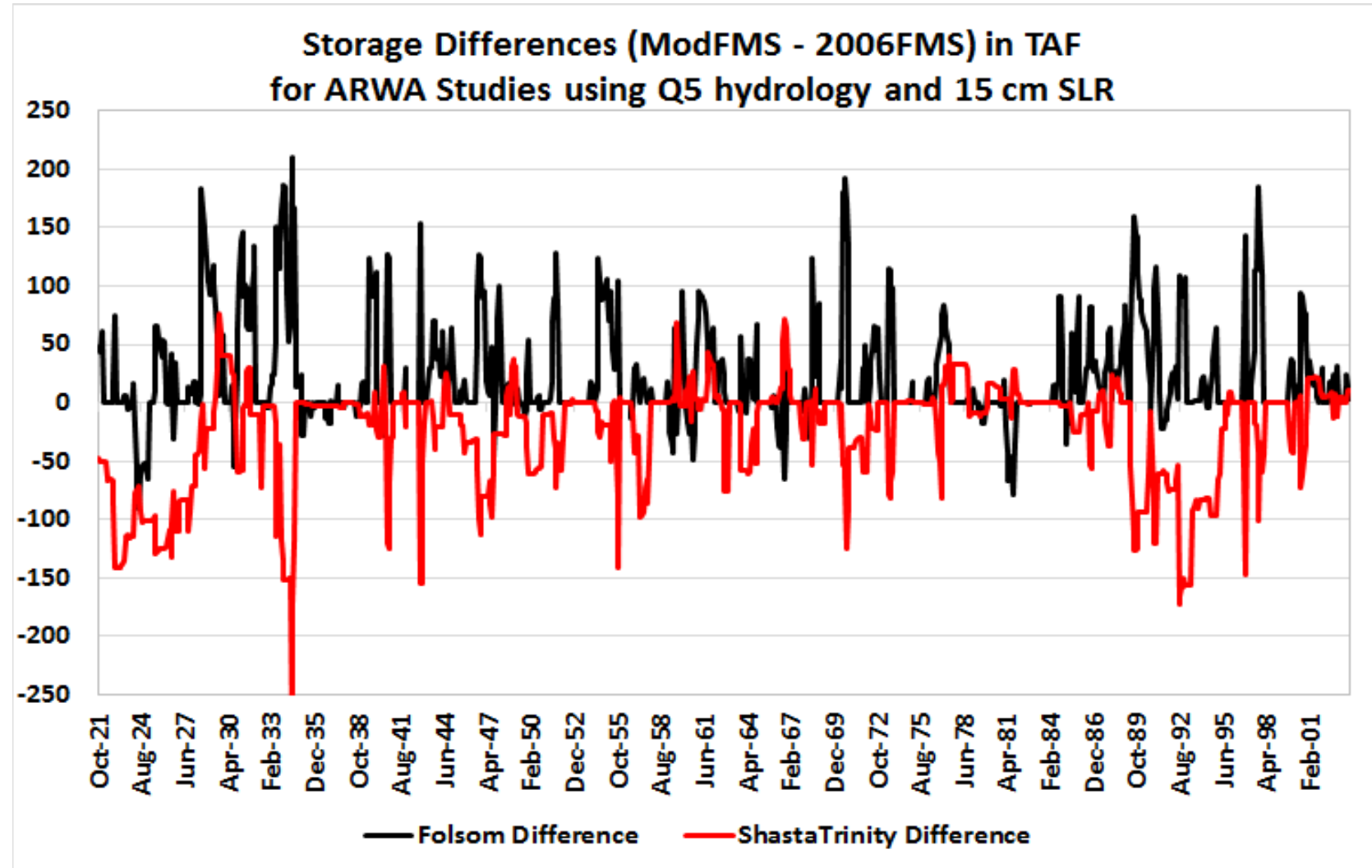
# Re-directed Impacts



# ModFMS

- Full period of record contains numerous instances of CVP storage tradeoffs
- Response to ELT inputs raises concerns about sensitivity to hydrology

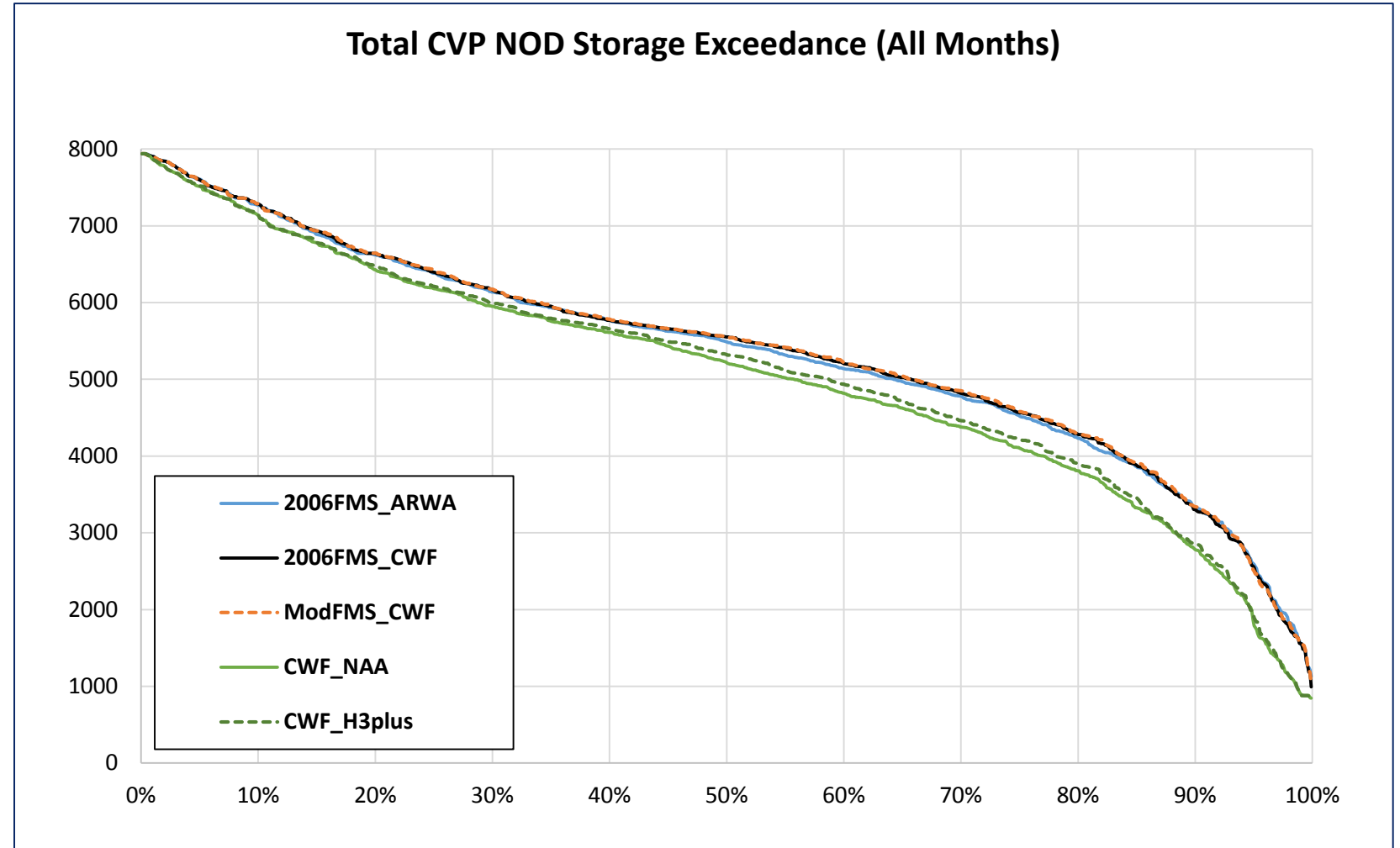
# Re-directed Impacts



# ModFMS

- Proposed to safeguard Folsom from WaterFix impacts
- ModFMS does not change total CVP storage
- Folsom increases
- Shasta/Trinity decrease

# Sensitivity Studies



# ModFMS

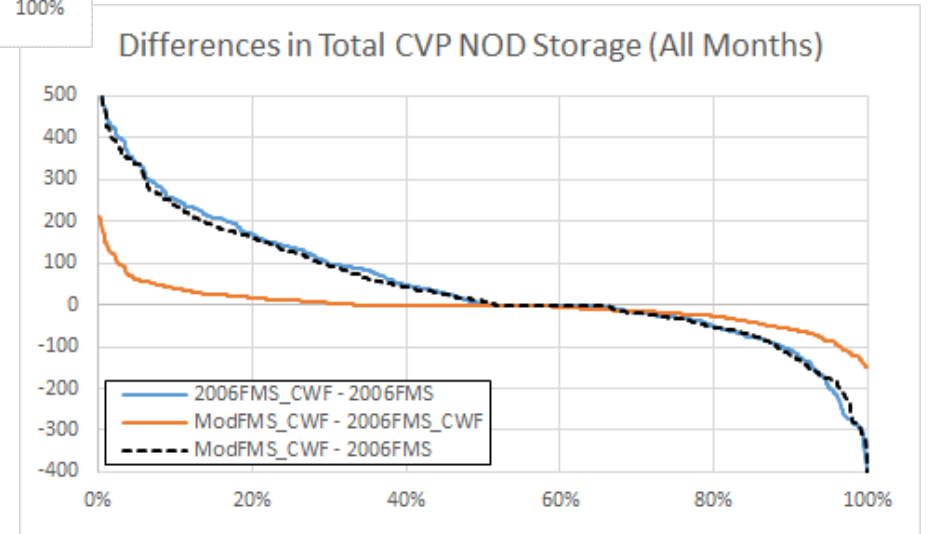
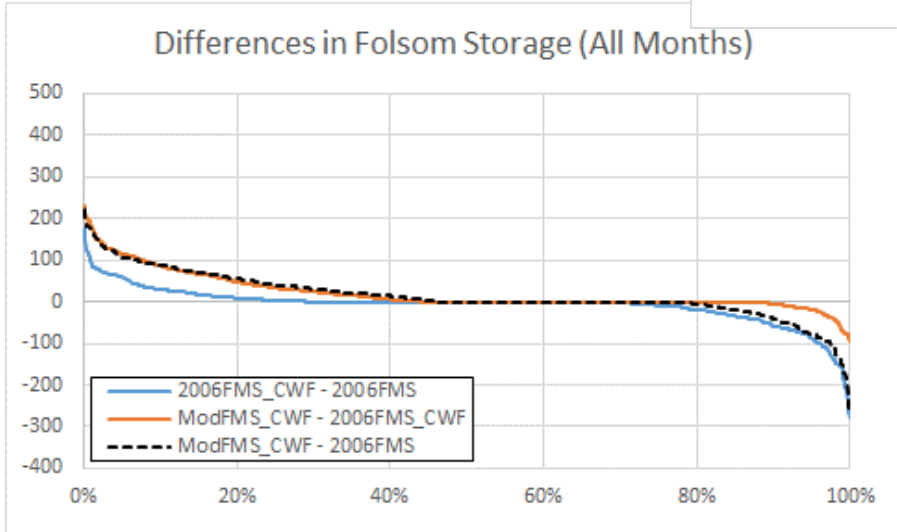
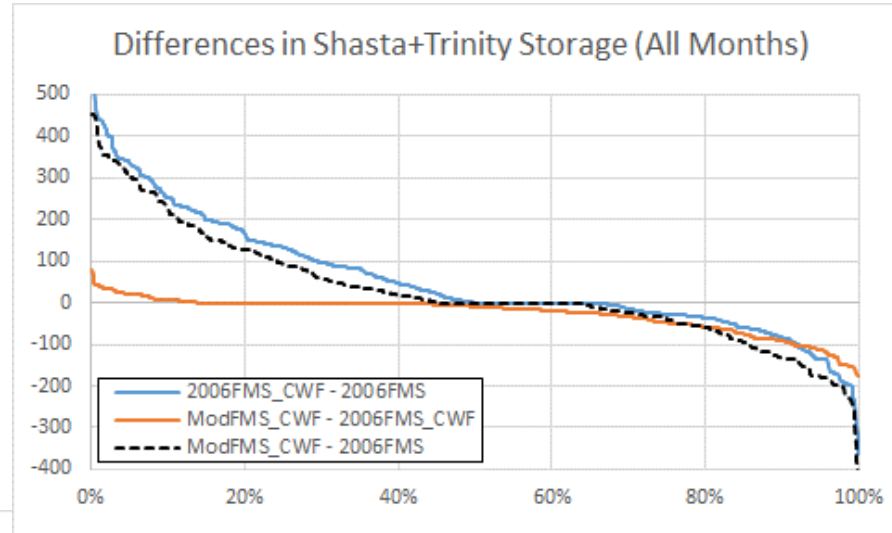
# Sensitivity Studies

	ARWA Hydrology w No SLR		Q5 Hydrology w 15 cm SLR		Petitioner
	2006FMS_CWF - 2006FMS	ModFMS_CWF - 2006FMS_CWF	2006FMS_CWF - 2006FMS	ModFMS_CWF - 2006FMS_CWF	CWF_H3+ - NAA
	(taf)	(taf)	(taf)	(taf)	(taf)
Total Delta Outflow	-236	0	-244	0	-237
Req'd Delta Outflow	-18	5	-121	-6	-126
North Delta Diversion	2641	0	2576	3	2532
Shasta	22	-5	45	-16	43
Folsom	-7	21	-6	21	-5
Trinity	9	-4	10	-11	20
Oroville	46	-2	49	-3	49
CVP San Luis	33	-6	24	-1	31
SWP San Luis	64	0	71	2	66
Nimbus Release	1	-1	0	-2	-1
Banks Export	241	-2	247	4	239
Jones Export	-20	2	-15	1	-17
Total Export	221	0	232	4	222
CVP NOD Delivery	-2	1	-3	-2	0
CVP SOD Delivery	-9	1	-6	0	-7
SWP NOD Delivery	18	0	12	1	11
SWP SOD Delivery	96	1	99	2	96

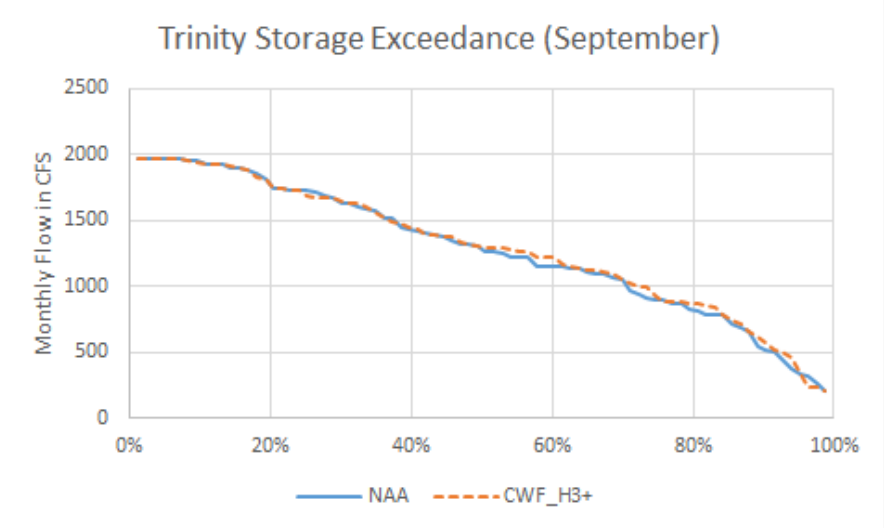
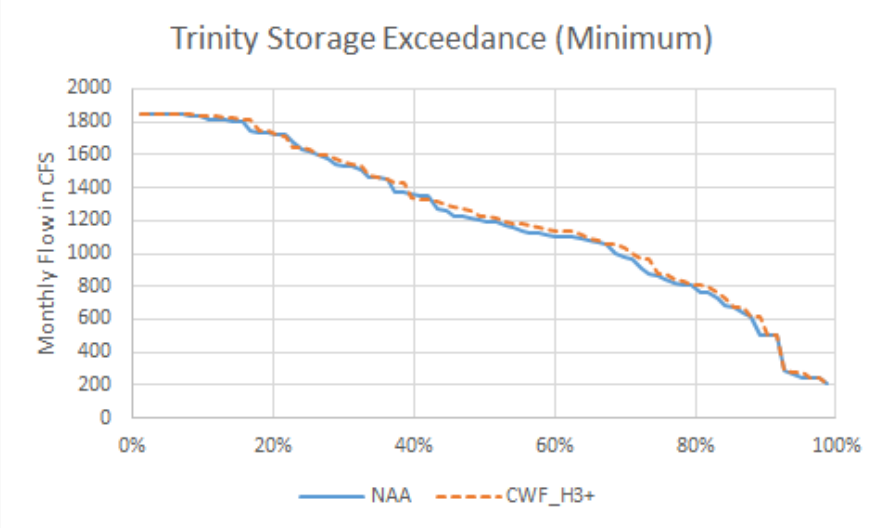
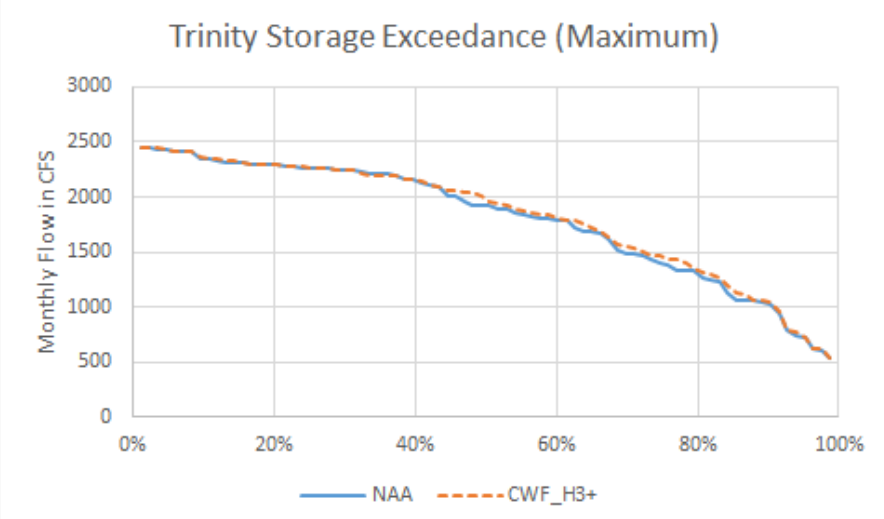


# ModFMS

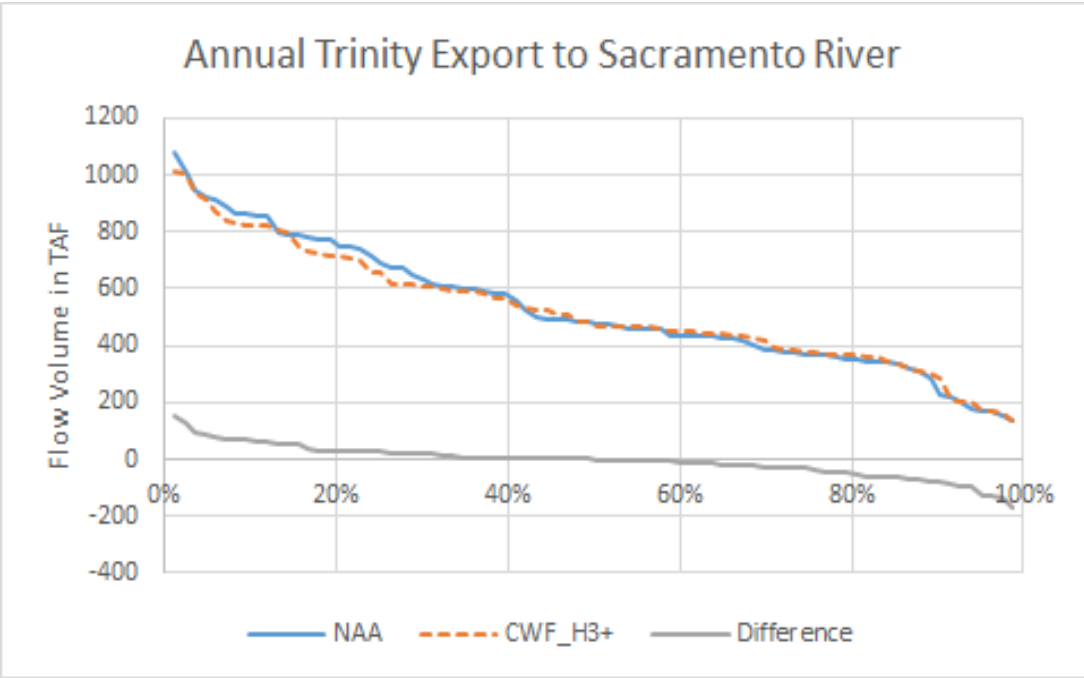
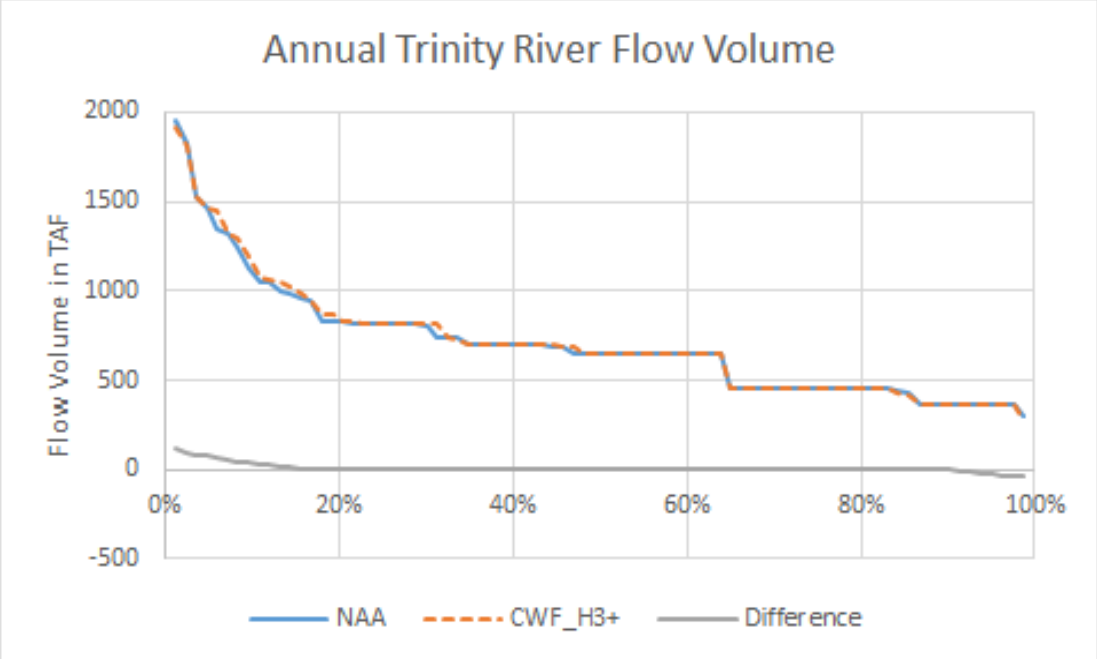
# Sensitivity Studies



# Trinity Reservoir Storage



# Trinity River Release and Export



# Summary

- **Analysis does not show that WaterFix impacts storage**
- **Proposed NMFS DPA is infeasible, and attempts to meet it would severely limit CVP operational flexibility**
- **Proposed ModFMS has re-directed impacts, particularly in drier years, and is sensitive to near term climate and sea level rise**
- **Analysis demonstrates CVP's need for flexibility in addressing its broad range of regulatory and delivery obligations.**