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September 28, 2018

Via Electronic Submittal (eFile)

Kimberly D. Bose, Secretary
FEDERAL ENERGY REGULATORY COMMISSION
888 – 1st Street, N.E.
Washington, D.C. 20426-0001

Subject: Yuba River Development Project
FERC Project No. 2246-065 – California
Follow-up from August 29, 2018, FPA Section 10(j) Meeting; Additional Information Regarding Water Cost

Dear Secretary Bose:

This letter provides to the Federal Energy Regulatory Commission (FERC or Commission) additional information regarding YCWA's estimate of projected lost revenue costs related to Federal Power Act (FPA) Section 10(j) flow recommendations by the California Department of Fish and Wildlife (CDFW), and the United States Department of the Interior, Fish and Wildlife Service (USFWS). YCWA agreed to provide this additional information at the August 29, 2018, FPA Section 10(j) meeting in Sacramento, California.

BACKGROUND

At the Section 10(j) meeting, CDFW and USFWS asked FERC staff for the basis of the "3M to $50M[h]" cost shown under "Annual Cost" on Item #4, "Maintain minimum streamflow in lower Yuba River to conserve salmonid and ecosystem function," in Table 4-3, "Cost of proposed and recommended measures for the Yuba River Development Project (Source: staff)," on page 4-16 of FERC's May 2018, Draft Environmental Impact Statement (DEIS).[1] FERC staff said the cost was from YCWA, as indicated in footnote h to the table, which states "YCWA estimated a cost in its ready for environmental analysis notice reply comments filed October 10, 2017."

Appendix 7, Response to Comments on Flow Requirements for the Yuba River Downstream of Englebright Dam (YCWA Proposed Condition AR3), in YCWA's October 10, 2017, filing notes that neither CDFW nor USFWS provided a cost estimate for its Section 10(j) flow recommendations. YCWA provided cost estimates for complete flow recommendations (i.e., not by individual component) for four sources of lost revenue: 1) power generation; 2) water supply shortages (reimbursements to its Member Units for groundwater pumping costs); 3) surface water transfers; and 4) groundwater substitution water transfers. Table 1 summarizes the lost revenue estimates in Appendix 7 of YCWA's October 10, 2017, filing.

[1] The "$3M to $50M" cost also appears under "Levelized Annual Cost" on Item #8, "Maintain minimum streamflows below Narrows 2 Powerhouse and narrows 2 full bypass," in Table 5-1, "Fish and wildlife agency recommendations for the Yuba River Development Project (Source: staff)," on page 5-50 of the DEIS.

Table 1. YCWA estimated lost revenue for implementation of CDFW's and USFWS's flow recommendations.

Lost Revenue as Compared to Base Case	Levelized Annual Cost over 30 Years	Worst Case Year
Power Generation[1]	$375,737	$7,000,000 (2009)
Water Shortages[2] (Reimbursements to Member Units for Groundwater Pumping)	$145,000	$2,700,000 (year not stated)
Water Transfers (combined surface and groundwater substitution)[3]	Not provided	$40,000,000 (2014)

[1] Page 48 in Appendix 7 of YCWA's October 10, 2017, filing.
[2] Page 46 in Appendix 7 of YCWA's October 10, 2017, filing.
[3] Page 47 in Appendix 7 of YCWA's October 10, 2017, filing.

During the FPA Section 10(j) meeting, agencies expressed a concern that YCWA overestimated the costs of lost revenue to water transfers, and YCWA said it would file with FERC additional information regarding these estimated costs.

ADDITIONAL INFORMATION

The information provided in YCWA's October 10, 2017, filing for lost revenue for implementation of CDFW's and USFWS's FPA Section 10(j) flow recommendations (CDFW recommended flows) included modeling results for power generation, water supply shortages, and analysis of impacts to recent year (2013 and 2014) actual transfers that would occur with implementation of the flow recommendations. To provide a complete and consistent annual time series for these costs for this response, modeling results for power generation and water supply shortages were already available from the modeling used to prepare YCWA's October 10, 2017, filing. In the YCWA October 10, 2017, filing, the information used for water transfers was actual measurement and accounting data. For water transfer data used in this document, YCWA completed an analysis for the entire period of model simulation of water year 1970 to 2010 using YCWA's relicensing Water Balance/Operations Model results from four modeling scenarios. Three of the modeling scenarios were provided in previous YCWA filings. These three scenarios are the Base Case,[2] YCWA's Proposal,[3] and the CDFW-USFWS-FWN Combined flow proposal,[4] each of which was provided in YCWA's October 10, 2017, filing. The fourth modeling scenario is a new model run, which is included in Attachment 1 to this letter and is named "YRDPM V1.48 1644 Interim for Transfers.dss", that is needed to calculate annual surface water transfer volumes as the flow difference with the other two scenarios. This fourth scenario is the transfer baseline and is defined from which transfer flows are measured. This is the flow difference in the Yuba River at Marysville between the baseline and either of the other two scenarios. This baseline modeling scenario is similar to the Base Case model submitted with YCWA's Amended FLA, except that the Yuba Accord minimum flow requirements on the lower Yuba River are replaced with the SWRCB's RD-1644 Interim flow requirements.

[2] The Base Case Scenario was included in Attachment A to YCWA's October 10, 2017 filing as Scenario 11.
[3] YCWA's proposal was included in Attachment A to YCWA's October 10, 2017 filing as Scenario 12.
[4] The CDFW-USFWS-FWN Combined proposal was included in Attachment A to YCWA's October 10, 2017 filing as Scenario 13.

Table 2 provides a summary of the results of the analysis for the period water year 1970 to 2010 using the CDFW-USFWS-FWN Combined flow proposal model scenario, along with use of the Base Case model for comparison.

Table 2. Lost revenue compared to the Base Case related to power generation, reimbursements for groundwater pumping and water transfers by water year for implementation of CDFW's and USFWS's FPA Section 10(j) flow recommendations.

Water Year	Lost Revenue (2016 $)				
	Power Generation	Water Supply Shortages	Surface Water Transfers	Groundwater Substitution Transfers	Total
1970	(94,879)	(2,606,288)	0	--	(2,701,167)
1971	(8,942,638)	(429,927)	(1,341,190)	--	(10,713,755)
1972	(1,173,932)	--	(341,005)	--	(1,514,937)
1973	(3,400,654)	--	(936,277)	--	(4,336,931)
1974	(5,314,408)	--	(943,351)	--	(6,257,760)
1975	(1,648,319)	--	(273,012)	--	(1,921,330)
1976	(1,845,173)	--	(4,912,864)	--	(6,758,037)
1977	109,040	313,365	--	--	422,406
1978	(1,545,772)	(47,620)	(1,125,006)	--	(2,718,397)
1979	(1,445,799)	--	(1,450,530)	--	(2,896,329)
1980	(1,374,791)	--	(814,956)	--	(2,189,747)
1981	802,489	--	88,449	--	890,938
1982	(3,262,377)	--	(685,662)	--	(3,948,039)
1983	(4,328,835)	--	--	--	(4,328,835)
1984	(461,414)	--	(587,255)	--	(1,048,669)
1985	(2,473,267)	--	(29,203)	--	(2,502,470)
1986	(4,256,858)	--	247,847	--	(4,009,011)
1987	(2,088,238)	--	(3,079,579)	--	(5,167,817)
1988	(88,856)	--	(3,413,418)	(39,900,000)	(43,402,274)
1989	(1,482,273)	--	757,163	--	(725,111)
1990	(1,299,880)	--	(8,738,727)	--	(10,038,607)
1991	(1,340,561)	--	(3,631,489)	--	(4,972,050)
1992	288,071	--	(14,554,936)	--	(14,266,865)
1993	(6,777,521)	--	(1,643,312)	--	(8,420,833)
1994	711,731	--	308,714	(14,250,000)	(13,229,555)
1995	(4,639,135)	--	(92,847)	--	(4,731,982)
1996	(3,943,824)	--	(585,086)	--	(4,528,910)
1997	1,896,680	(771,618)	15,701	--	1,140,763
1998	(5,786,296)	(152,207)	(0)	--	(5,938,503)
1999	(2,482,895)	--	(606,185)	--	(3,089,080)
2000	(1,645,537)	--	(526,918)	--	(2,172,456)
2001	(2,528,366)	--	(4,237,872)	--	(6,766,239)
2002	2,918,208	--	(1,034,105)	--	1,884,103
2003	(7,624,068)	--	413,853	--	(7,210,215)
2004	(903,475)	(1,808,419)	162,691	(24,000,000)	(26,549,203)
2005	(4,801,244)	(357,274)	0	--	(5,158,518)
2006	(596,673)	--	(1,267)	--	(597,940)
2007	602,735	(676,739)	(3,674,560)	(26,250,000)	(29,998,564)
2008	(3,165,035)	(148,014)	(6,541,920)	--	(9,854,969)
2009	(5,428,778)	--	(2,777,189)	--	(8,205,967)
2010	(1,550,992)	--	(265,295)	--	(1,816,287)
Annual Average	**(2,253,995)**	**(163,042)**	**(1,630,502)**	**(2,546,341)**	**(6,593,882)**

Table 2 shows periodic, significant lost revenue due to water supply shortages that also affect groundwater substitution transfers, lost revenue from power generation, and surface water transfers from 1970 to 2010. To provide a comprehensive assessment of the CDFW recommended flows

compared to YCWA's AFLA, the CDFW-USFWS-FWN Combined flow proposal modeling results are also compared to the AFLA modeling results in Table 3.

Table 3. Lost revenue compared to the YCWA's AFLA related to power generation, reimbursements for groundwater pumping and water transfers by water year for implementation of CDFW's and USFWS's FPA Section 10(j) flow recommendations.

Water Year	Lost Revenue (2016 $)				
	Power Generation	Water Supply Shortages	Surface Water Transfers	Groundwater Substitution Transfers	Total
1970	(399,296)	(2,606,288)	(3,174)	--	(3,008,757)
1971	(7,481,458)	(429,927)	(1,252,337)	--	(9,163,721)
1972	(170,094)	--	(368,322)	--	(538,416)
1973	(1,495,952)	--	(1,170,711)	--	(2,666,663)
1974	(808,408)	--	(18,486)	--	(826,894)
1975	(364,183)	--	(25,749)	--	(389,932)
1976	(264,220)	--	(2,399,665)	--	(2,663,885)
1977	(571,721)	1,469	--	--	(570,252)
1978	(506,900)	54,592	(568,783)	--	(1,021,092)
1979	(777,124)	--	(1,368,996)	--	(2,146,119)
1980	(731,422)	--	(361,967)	--	(1,093,389)
1981	1,634,392	--	29,551	--	1,663,943
1982	(2,827,253)	--	(229,835)	--	(3,057,088)
1983	(598,267)	--	-	--	(598,267)
1984	92,535	--	(409,160)	--	(316,625)
1985	(973,244)	--	(2,444)	--	(975,688)
1986	(2,996,302)	--	71,200	--	(2,925,103)
1987	(676,429)	--	-	--	(676,429)
1988	480,622	--	(2,233,252)	(39,900,000)	(41,652,630)
1989	(1,297,939)	--	(232,239)	--	(1,530,178)
1990	19,550	--	(8,605,557)	--	(8,586,007)
1991	(1,246,284)	--	(2,536,190)	--	(3,782,475)
1992	743,151	--	(14,679,330)	--	(13,936,179)
1993	(5,919,603)	--	(1,415,090)	--	(7,334,692)
1994	1,534,448	--	178,294	(14,250,000)	(12,537,258)
1995	(2,685,978)	--	(13,565)	--	(2,699,544)
1996	(2,755,440)	--	(382,055)	--	(3,137,494)
1997	1,413,275	(771,618)	10,941	--	652,598
1998	(3,069,333)	(152,207)	(2,630)	--	(3,224,170)
1999	(969,955)	--	(470,770)	--	(1,440,726)
2000	(632,865)	--	(533,802)	--	(1,166,667)
2001	(601,717)	--	17,034	--	(584,683)
2002	2,566,673	--	(61,067)	--	2,505,606
2003	(5,876,735)	--	(215,863)	--	(6,092,598)
2004	145,421	(1,808,419)	(264,023)	(24,000,000)	(25,927,021)
2005	(3,856,175)	(357,274)	0	--	(4,213,448)
2006	409,818	--	(116)	--	409,702
2007	1,211,456	(676,739)	(6,193,201)	(26,250,000)	(31,908,483)
2008	(2,448,280)	(148,014)	(6,692,922)	--	(9,289,216)
2009	(4,053,820)	--	(2,479,460)	--	(6,533,280)
2010	(569,476)	--	(106,463)	--	(675,939)
Annual Average	**(1,155,476)**	**(168,157)**	**(1,341,224)**	**(2,546,341)**	**(5,211,199)**

Power generation costs, including ancillary benefits, are from the data submitted with YCWA's October 10, 2017, filing, and are described in Appendix 6 "Modeling Approach". Unit costs for water supply shortages was $35 per acre-foot that YCWA used for payments in 2015, and YCWA used in its October 10, 2017, filing. Unit costs for water transfers used the current prices in the

Yuba Accord Water Purchase Agreement between YCWA and CDWR, Amendment 5, and range from $50 per acre-foot in a wet water year type to $300 per acre-foot in a critical water year type. Unit costs for groundwater substitution transfer water reflect the past five years of prices paid to YCWA under the Yuba Accord Water Purchase Agreement, which were $400 per acre-foot in 2018, a below normal water year type; $475 per acre-foot in 2014, a critical water year; and $665 per acre-foot in 2015, a critical water year and third year of drought conditions. These prices were used on a water year type basis for each year of simulation, with the average of below normal and critical year prices used for the dry year price for groundwater substitution.

For groundwater substitution transfer volumes that would be reduced due to CDFW's and USFWS's recommended flows, YCWA used a simple assumption that if there were water supply shortages in a year, there would be no groundwater pumping. This approach significantly underestimates the impact of the CDFW's recommended flow because it does not consider the need to include more frequent water supply shortages in groundwater management decisions due to greater pumping of groundwater for local irrigation shortages with these flows which would not be available for use in groundwater substitution transfers.

The surface water transfer amounts are from a direct comparison of water balance/operations model results for the CDFW's recommended flows, with Transfer baseline model results that includes RD-1644 interim flow requirements (i.e., model runs CDFW-USFWS-FWN Combined flow proposal in YCWA's October 10, 2017, filing and YRDPM V1.48 1644 Interim for Transfers provided with this letter), which is the transfer base case for calculation of transfer flows. The transfer flows were filtered through the Bay-Delta balanced conditions using CalSim II[5] data for 1970 to 2003 and SACWAM[6] existing condition version 1.03 for 2004 to 2010.

As shown in Table 2, CDFW's and USFWS's recommended flows would result in a range of annual revenue changes compared to the Base Case of an increase of $1.9 million to a decrease of $41.7 million, and an average annual revenue loss for the entire period of $5.2 million. Four of the 41 years of analysis have positive revenue, mostly due to increase power generation in those years due to the higher flow requirements of the CDFW recommended flows, over 90 percent of those years have lost revenue greater than $2 million in 75percent of those years. This summary does not capture all the costs that would occur with the CDFW's and USFWS's recommended flows. The method used in this analysis to capture transfer revenue losses underestimates the volume of transfer water because the filter of delta balanced conditions used is a monthly time step and the actual accounting for transfers is done on a daily time step. Modeling completed in preparation for the Yuba Accord Environmental Impact Report (EIR) indicated an average annual

[5] CalSim II is a water resource planning model developed jointly by the California Department of Water Resources and U.S. Bureau of Reclamation to simulated cooperative operations of the California State Water Project (SWP) and Federal Central Valley Project (CVP). The CalSim II simulation used for this analysis includes CVP and SWP operations with physical, regulatory, and water supply demands, consistent with existing conditions, using historical hydrology from water years 1922 through 2003. The scenario used for this analysis was the Existing Conditions scenario from DWR's 2015 Delivery Capability Report.

[6] SacWAM is a water resource planning model developed by the California State Water Resources Control Board (SWRCB). SacWAM is intended to be similar to CalSim II, but has a period of record of 1922 through 2015. The simulation used for this analysis had generally consistent assumptions for the level of development as the CalSim II simulation.

transfer volume of less than 70,000 acre-feet per year, but actual results over the 11 year the Yuba Accord has been active have been an average transfer volume of over 90,000 acre-feet and indicates the lost transfer revenue would be higher than shown in the table. Another area of underestimation of lost revenue is for water supply delivery charges. YCWA receives some of its revenue from metered water usage payments by its Member Units and the summary does not include the reduction in revenues in water shortage years due to lower metered diversions in those years.

If you have any questions regarding this letter, please contact me.

Sincerely,

Curt Aikens
General Manager

Attachment 1: YCWA's Operations Model – Fourth Scenario: (1 Microsoft Excel file at 700KB and 1 DSS file at 4.9MB)

cc: Alan Mitchnick, FERC DC
Parties on FERC's Official Service List for the Yuba River Development Project Relicensing, FERC Project No. 2246-042
Relicensing Participants on YCWA's Yuba River Development Project's Relicensing E-Mail Contact List (via e-mail)

Attachment 1

YCWA's Operations Model – Fourth Scenario

(Due to the file type of the contents of this attachment, they will be) submitted to FERC via hardcopy disc

To request a copy of Attachment 1, please contact YCWA.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary of the Federal Energy Regulatory Commission in this proceeding (Yuba River Development Project, FERC Project No. 2246-065).

Dated in Sacramento, CA, this 28th day of September 2018.

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