WESTERN AREA POWER ADMINSTRATION
HYDRO CONDITIONS AND PURCHASE POWER REPORT
February 2023

	Generation (Megawatt-Hours [MWh])				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 22	1,471,054	1,281,310	2,016,884	1,312,652	195,951	$ 15,852,897	$ 9,880,231	$ 13,903,450
Nov 22	1,134,982	1,182,145	1,855,262	1,276,441	322,030	$ 20,513,204	$ 15,163,852	$ 18,426,107
Dec 22	968,994	1,037,489	1,806,685	1,047,546	635,103	$ 25,803,693	$ 20,016,256	$ 63,858,131
Jan 23	1,008,125	1,262,843	1,908,943	1,146,877				
Feb 23								
Mar 23								
Apr 23								
May 23								
Jun 23								
Jul 23								
Aug 23								
Sep 23								
Total	4,583,156	4,763,787	7,587,774	4,783,515	1,153,084	$ 62,169,793	$ 45,060,339	$ 96,187,687
	Actual generation as a percentage of average:			63.0%			Cost per MWh:	$83.42

Western Area Power Administration (WAPA) generated a total of 4,784 gigawatt-hours (GWh) from October through January of fiscal year 2023, or 63.0 percent of average. Actual purchase power data is currently available from October through December for all of WAPA's Regions, and during this period total purchase power was 1,153 GWh and total purchase power expenses were $96,187,687, which equates to $83.42 per MWh overall.

The following pages indicate WAPA's regional snowpack, lake/reservoir inflow and storage, generation, and purchase power expenses. Snowpack is reported as snow water equivalent, which is the depth of water that theoretically would result if the entire snowpack melted instantaneously.

The monthly purchase power numbers in this report are used by WAPA's regions as a forecasting tool; therefore, they do not reflect energy imbalance transactions and other such information that cannot be forecasted. Furthermore, the purchase power numbers have not been verified for financial auditing purposes. Consequently, these numbers will vary from those reported in WAPA's year-end financial statements, and the latter should be considered the definitive source for WAPA's purchase power data.

Colorado River Storage Project

	Snowpack (Inches in Snow Water Equivalent)		Lake/Reservoir Inflow (Thousand Acre-Feet)		Lake/Reservoir Content (Million Acre-Feet)		Generation (MWh)				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Median	Actual	Average	Actual	Average	Actual	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 22	1.00	1.20	514.42	437.00	15.01	5.83	218,843	271,947	392,070	250,183	16,261	$ 0	$ 0	$ 886,454
Nov 22	4.30	3.80	474.23	349.00	14.91	5.72	115,541	232,979	379,493	225,788	12,799	$ 0	$ 0	$ 854,554
Dec 22	7.80	8.80	362.96	281.00	14.86	5.53	143,368	265,055	449,721	253,334	24,410	$ 0	$ 0	$ 5,147,050
Jan 23	11.20	15.10	361.45	361.00	14.98	5.45	46,967	306,090	457,656	237,467	17,955	$ 0	$ 0	$ 2,199,458
Feb 23														
Mar 23														
Apr 23														
May 23														
Jun 23														
Jul 23														
Aug 23														
Sep 23														
Total							524,719	1,076,071	1,678,940	966,772	71,425	$ 0	$ 0	$ 9,087,516
							Actual generation as a percentage of average:			57.6%			Cost per MWh:	$127.23

Lake/Reservoir Levels

End of January storage volume for Lake Powell was 5.46 million acre-feet (MAF) or about 23 percent of capacity. Lake Powell reservoir inflow for January was 361,000 acre-feet or 107 percent of average. Lake Powell elevation at the end of January was about 3,523 feet, or about 177 feet from maximum reservoir level and 33 feet from the minimum generation level.

Weather and Other Conditions

Purchases in December were primarily because Lake Powell release volumes were reduced by 50,000 acre-feet after energy offers were already made to the customers, and costs were exacerbated by high energy prices experienced in December and January. In an effort to protect Lake Powell elevations, the Bureau of Reclamation will operate as if it is a 7.0 MAF release year until April, and then they will reevaluate whether hydrologic conditions allow for balancing releases above 7.0 MAF for the remainder of water year (WY) 2023. Reclamation is currently considering implementing experiments beginning in June 2023 that may result in a significant proportion of water being released through bypass at Glen Canyon Dam. If Reclamation decides to implement these experiments, the Colorado River Storage Project's (CRSP) purchase power costs for the remainder of WY 2023 could exceed $75 million if current energy price forecasts are realized.

Note: CRSP's purchase power data for October through December includes upward adjustments to the values reported last month.

Desert Southwest Region

	Snowpack (Inches in Snow Water Equivalent)		Lake/Reservoir Inflow (Thousand Acre-Feet)		Lake/Reservoir Content (Million Acre-Feet)		Generation (MWh)				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Median	Actual	Average	Actual	Average	Actual	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 22	1.00	1.20	60.81	94.00	19.94	9.44	403,200	143,050	374,715	226,279	26,405	$ 2,587,690	$ 2,587,690	$ 2,636,428
Nov 22	4.30	3.80	54.39	18.00	19.94	9.37	315,600	252,200	361,456	328,466	17,711	$ 2,208,802	$ 2,208,802	$ 1,753,563
Dec 22	7.80	8.80	72.64	63.00	20.01	9.49	209,550	145,820	362,198	216,036	45,046	$ 3,847,693	$ 3,847,693	$ 13,754,789
Jan 23	11.20	15.10	92.45	104.00	19.90	9.70	222,150	191,405	385,753	196,764	64,435	$ 4,018,823	$ 4,018,823	$ 13,284,477
Feb 23														
Mar 23														
Apr 23														
May 23														
Jun 23														
Jul 23														
Aug 23														
Sep 23														
Total							1,150,500	732,475	1,484,122	967,545	153,597	$ 12,663,008	$ 12,663,008	$ 31,429,257
							Actual generation as a percentage of average:			65.2%			Cost per MWh:	$204.62

Lake/Reservoir Levels

Aggregate system storage for the Lower Colorado River Basin, or Lakes Mead, Mohave, and Havasu, was 9.70 MAF at the end of January, or 34 percent of the Lower Basin capacity. The Lower Basin tributary inflow into Lake Mead for January was 104,000 acre-feet, or about 118 percent of the five-year average for the month. The total side inflow into Lake Mead for WY 2023 is projected to be 795,000 acre-feet, which represents a 3 percent increase over last year and 61 percent of the normal annual side inflow. Lake Mead's elevation at the end of January was 1,046.97 feet, or 172.67 feet below full storage elevation and 96.97 feet above the minimum generation elevation for Hoover Dam. Lake Mead's current peak elevation for WY 2023 occurred in January at 1,046.97 feet (19.8 feet below the WY 2022 peak elevation) and the minimum elevation of 1,031.89 feet is projected to occur in June.

Weather and Other Conditions

The Desert Southwest Region's hydrology, or the Lower Colorado River Basin, is mostly dependent on the Colorado River Basin snowpack and precipitation above Lake Powell. The precipitation is currently 120 percent of average and the snowpack is 131 percent of median.

Rocky Mountain Region

	Snowpack (Inches in Snow Water Equivalent)		Lake/Reservoir Inflow (Thousand Acre-Feet)		Lake/Reservoir Content (Million Acre-Feet)		Generation (MWh)				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Median	Actual	Average	Actual	Average	Actual	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 22	0.00	0.20	142.20	127.20	3.90	3.71	46,425	61,900	97,400	50,264	105,370	$ 10,707,550	$ 4,716,720	$ 7,487,439
Nov 22	3.70	3.10	123.80	105.80	3.89	3.71	44,513	59,350	110,000	47,809	117,764	$ 10,119,341	$ 4,486,824	$ 8,815,650
Dec 22	11.80	11.00	101.70	95.40	3.90	3.64	67,688	90,250	123,500	54,084	120,394	$ 9,118,069	$ 3,379,154	$ 18,057,020
Jan 23	20.30	24.10	100.50	102.70	3.88	3.65	100,538	134,050	122,100	101,230	40,185	$ 5,914,777	$ 2,063,458	$ 5,244,225
Feb 23														
Mar 23														
Apr 23														
May 23														
Jun 23														
Jul 23														
Aug 23														
Sep 23														
Total							259,163	345,550	453,000	253,387	383,713	$ 35,859,736	$ 14,646,156	$ 39,604,334
							Actual generation as a percentage of average:			55.9%			Cost per MWh:	$103.21

Lake/Reservoir Content

At the end of January, reservoir inflows were at 102 percent of average and storage is at 95 percent of average.

Weather and Other Conditions

LAP's hydrologic conditions can vary from one river basin and watershed to another. The snowpack is slightly above average for both the Wyoming area and the Colorado East Slope area. The latest National Weather Service forecast indicates March through May temperatures will have equal probability to be either above or below average in northern Colorado and Wyoming. The same forecast indicates precipitation will have an equal chance to be above or below average for the Wyoming area and is leaning to below average in Colorado. Spring generation in the Colorado River Basin, the North Platte Basin and the Bighorn Basin is forecasted to be average.

Sierra Nevada Region

	Snowpack (Inches in Snow Water Equivalent)		Lake/Reservoir Inflow (Thousand Acre-Feet)		Lake/Reservoir Content (Million Acre-Feet)		Generation (MWh)				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Median	Actual	Average	Actual	Average	Actual	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 22	N/A	N/A	322.00	189.00	4.94	2.82	63,000	68,000	163,000	56,344	38,052	$ 2,102,450	$ 2,102,450	$ 2,162,501
Nov 22	N/A	N/A	398.00	243.00	4.92	2.76	30,000	15,000	104,000	22,059	38,127	$ 2,036,081	$ 2,036,081	$ 2,185,091
Dec 22	26.25	14.70	822.00	891.00	5.25	3.34	13,000	0	143,000	19,020	44,132	$ 2,102,450	$ 2,102,450	$ 3,658,267
Jan 23	26.33	33.70	1,121.00	2,356.00	5.65	4.82	0	0	163,000	25,336	43,928	$ 2,874,940	$ 2,874,940	$ 0
Feb 23														
Mar 23														
Apr 23														
May 23														
Jun 23														
Jul 23														
Aug 23														
Sep 23														
Total							106,000	83,000	573,000	122,759	164,239	$ 9,115,921	$ 9,115,921	$ 8,005,858
							Actual generation as a percentage of average:			21.4%			Cost per MWh:	$48.75

Lake/Reservoir Content

As of January 31, reservoir storage was 57 percent of the 15-year average for Trinity, 97 percent for Shasta, 116 percent for Folsom, and 74 percent for New Melones. Accumulated inflow was 121 percent of the 15-year average for Trinity, 117 percent for Shasta, 191 percent for Folsom, and 190 percent for New Melones.

Weather and Other Conditions

November had 4.26 inches of precipitation or 69 percent of the monthly average, December had 15.83 inches or 180 percent of average, and January had 17.46 inches or 197 percent of average. Conditions have been drier recently. The cumulative total for WY 2023 is at 37.46 inches or 75 percent of average. The statewide snowpack is assumed to reach its peak on April 1, and at the end of January the snowpack was at 128 percent of this average. Based on February 1 conditions, the Sacramento Valley 40-30-30 index at the 50 percent exceedence level is "above normal" while the 90 percent exceedence level is "dry."

Note: The Sierra Nevada Region's average generation is based upon long-term modeling done for its "Green Book." The region does not project purchase power expenses for dry conditions, and its most probable expenses are based upon term purchases of 35 to 65 percent of projected power needs, with the difference being left to day-ahead markets after project pumping and generation have been scheduled.

Upper Great Plains Region

	Snowpack (Inches in Snow Water Equivalent)		Lake/Reservoir Inflow (Thousand Acre-Feet)		Lake/Reservoir Content (Million Acre-Feet)		Generation (MWh)				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Median	Actual	Average	Actual	Average	Actual	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 22	1.20	0.00	7,972.00	6,662.59	56.14	48.67	739,586	736,413	989,699	729,582	9,863	$ 455,207	$ 473,370	$ 730,628
Nov 22	3.80	4.10	7,334.00	5,908.08	55.06	47.47	629,328	622,616	900,312	652,319	135,629	$ 6,148,980	$ 6,432,145	$ 4,817,249
Dec 22	7.10	7.90	6,422.00	4,608.00	54.46	47.01	535,389	536,364	728,266	505,072	401,121	$ 10,735,481	$ 10,686,959	$ 23,241,005
Jan 23	10.30	10.50	6,664.00	5,662.09	54.34	47.16	638,471	631,298	780,434	586,079	*			*
Feb 23														
Mar 23														
Apr 23														
May 23														
Jun 23														
Jul 23														
Aug 23														
Sep 23														
Total							2,542,774	2,526,691	3,398,711	2,473,052	546,613	$ 17,339,668	$ 17,592,474	$ 28,788,882
							Actual generation as a percentage of average:			72.8%			Cost per MWh:	$52.67

Lake/Reservoir Content

The yearly runoff forecast for the Missouri River Basin as of February 1 was 21.1 MAF or 82 percent of average. Runoff above Sioux City for January was 0.96 MAF or 85 percent of average. System storage as of February 21 was 46.0 MAF.

Weather and Other Conditions

On February 22, the mountain snow water equivalent in the total above Fort Peck reach was 12.6 inches or 105 percent of average, and the mountain snow water equivalent in the Fort Peck to Garrison reach was 11.1 inches or 102 percent of average. The normal peak for both reaches occurs on or around April 17. A half inch to more than an inch of precipitation fell across parts of Wyoming, Colorado, northern and eastern Kansas, southern and eastern Nebraska, and southeast South Dakota. The rest of the region received little to no precipitation. Moderate to exceptional drought was trimmed in a few areas of northwestern and eastern Kansas and adjacent parts of Nebraska, while abnormal dryness and severe drought were trimmed in southern Colorado. No change was made to the drought areas in the rest of the region.

Note: The Upper Great Plains Region reports 50 percent share of Yellowtail Dam generation while Rocky Mountain Region reports the snowpack, inflow, content, and remaining share of generation. Asterisks indicate that actual purchase power data is not available for the month.