

**WESTERN AREA POWER ADMINISTRATION  
HYDRO CONDITIONS AND PURCHASE POWER REPORT  
January 2023**

	Generation (Megawatt-Hours [MWh])				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Projected	Most	Average	Actual	Actual	Projected	Most	Actual
	Dry	Probable				Dry	Probable	
<b>Oct 22</b>	1,471,054	1,281,310	2,016,884	1,312,652	189,694	\$ 15,852,897	\$ 9,880,231	\$ 13,513,617
<b>Nov 22</b>	1,134,982	1,182,145	1,855,262	1,274,140	322,801	\$ 20,513,204	\$ 15,163,852	\$ 18,458,308
<b>Dec 22</b>	968,994	1,037,489	1,806,685	1,069,354				
<b>Jan 23</b>								
<b>Feb 23</b>								
<b>Mar 23</b>								
<b>Apr 23</b>								
<b>May 23</b>								
<b>Jun 23</b>								
<b>Jul 23</b>								
<b>Aug 23</b>								
<b>Sep 23</b>								
<b>Total</b>	3,575,031	3,500,944	5,678,831	3,656,146	512,495	\$ 36,366,100	\$ 25,044,083	\$ 31,971,925

Actual generation as a percentage of average: 64.4% Cost per MWh: \$62.38

Western Area Power Administration (WAPA) generated a total of 3,656 gigawatt-hours (GWh) from October through December of fiscal year 2023, or 64.4 percent of average. Actual purchase power data is currently available from October through November for all of WAPA’s Regions, and during this period total purchase power was 512 GWh and total purchase power expenses were \$31,971,925, which equates to \$62.38 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	10,004	\$ 0	\$ 0	\$ 545,359
Nov 22	4.30	3.80	474.23	349.00	14.91	5.72	115,541	232,979	379,493	225,788	6,463	\$ 0	\$ 0	\$ 431,517
Dec 22	7.80	8.80	362.96	281.00	14.86	5.50	143,368	265,055	449,721	253,334	17,731	\$ 0	\$ 0	\$ 3,738,728
Jan 23														
Feb 23														
Mar 23														
Apr 23														
May 23														
Jun 23														
Jul 23														
Aug 23														
Sep 23														
<b>Total</b>							477,753	769,981	1,221,284	729,305	34,198	\$ 0	\$ 0	\$ 4,715,604

Actual generation as a percentage of average: 59.7% Cost per MWh: \$137.89

### Lake/Reservoir Levels

End of December storage volume for Lake Powell was 5.53 million acre-feet (MAF) or about 24 percent of capacity. Lake Powell reservoir inflow for December was 281,000 acre-feet or 88 percent of average. Lake Powell elevation at the end of December was about 3,525 feet, or about 175 feet from maximum reservoir level and 35 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 the costs were exacerbated by high energy prices with peak prices averaging well over \$200 per MWh. Dry conditions persist throughout the Colorado River Basin and are forecasted to continue in 2023. Lake Powell will be in the Lower Elevation Balancing Tier for water year (WY) 2023 which requires Lake Powell to balance with Lake Mead while releasing between 7.0 and 9.5 MAF. To help protect Lake Powell elevations, the Bureau of Reclamation will operate as if it is a 7.0 MAF release year until April. In April, they will reevaluate whether hydrologic conditions allow for balancing releases above 7.0 MAF.



## 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	\$ 2,587,690
Nov 22	4.30	3.80	54.39	18.00	19.94	9.37	315,600	252,200	361,456	328,466	24,818	\$ 2,208,802	\$ 2,208,802	\$ 2,208,802
Dec 22	7.80	8.80	72.64	63.00	20.01	9.49	209,550	145,820	362,198	216,036	46,302	\$ 3,847,693	\$ 3,847,693	\$ 3,847,693
Jan 23														
Feb 23														
Mar 23														
Apr 23														
May 23														
Jun 23														
Jul 23														
Aug 23														
Sep 23														
<b>Total</b>							928,350	541,070	1,098,369	770,781	97,525	\$ 8,644,185	\$ 8,644,185	\$ 8,644,185

Actual generation as a percentage of average: 70.2% Cost per MWh: \$88.64

### Lake/Reservoir Levels

Aggregate system storage for the Lower Colorado River Basin, or Lakes Mead, Mohave, and Havasu, was 9.49 MAF at the end of December, or 33.2 percent of the Lower Basin capacity. The Lower Basin tributary inflow into Lake Mead for December was 63,000 acre-feet, or about 92 percent of the five-year average for the month. The total side inflow into Lake Mead for WY 2023 is projected to be 779,000 acre-feet, which represents a 1 percent increase over last year and 60 percent of the normal annual side inflow. Lake Mead’s elevation at the end of December was 1,044.82 feet, or 174.82 feet below full storage elevation and 94.82 feet above the minimum generation elevation for Hoover Dam. Lake Mead’s current peak elevation for WY 2023 occurred in October at 1,046.28 feet (20.5 feet below the WY 2022 peak elevation) and the minimum elevation of 1,025.71 feet is projected to occur in September.

### 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 126 percent of average and the snowpack is 144 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	3.90	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	84,027	120,394	\$ 9,118,069	\$ 3,379,154	\$ 18,057,020
Jan 23														
Feb 23														
Mar 23														
Apr 23														
May 23														
Jun 23														
Jul 23														
Aug 23														
Sep 23														
<b>Total</b>							158,625	211,500	330,900	182,100	343,528	\$ 29,944,959	\$ 12,582,698	\$ 34,360,109

Actual generation as a percentage of average: 55.0% Cost per MWh: \$100.02

### Lake/Reservoir Content

At the end of December reservoir inflows were at 94 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 about average for both the Wyoming area and the Colorado East Slope area. The latest National Weather Service forecast indicates February through April temperatures will have equal probability to be either above or below average in Colorado and Wyoming. The same forecast indicates precipitation will have an equal chance to be above and below average for the Wyoming area and is leaning to below average in Colorado. Winter generation in the Colorado River Basin, the North Platte Basin and the Bighorn Basin is forecasted to be average.

*Note: The Rocky Mountain Region's most recent reported actual generation is an estimated value.*



## 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	344.00	224.00	4.90	2.77	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	876.00	910.00	5.25	3.34	13,000	0	143,000	19,020	44,132	\$ 2,102,450	\$ 2,102,450	\$ 3,658,267
Jan 23														
Feb 23														
Mar 23														
Apr 23														
May 23														
Jun 23														
Jul 23														
Aug 23														
Sep 23														
<b>Total</b>							106,000	83,000	410,000	97,423	120,311	\$ 6,240,981	\$ 6,240,981	\$ 8,005,858

Actual generation as a percentage of average: 23.8% Cost per MWh: \$66.54

### Lake/Reservoir Content

As of December 31, reservoir storage was 44 percent of the 15-year average for Trinity, 65 percent for Shasta, 140 percent for Folsom, and 56 percent for New Melones. Accumulated inflow was 45 percent of the 15-year average for Trinity, 66 percent for Shasta, 137 percent for Folsom, and 112 percent for New Melones.

### Weather and Other Conditions

October had 0.01 inches of precipitation, November had 4.26 inches or 69 percent of average for the month, and December had 15.83 inches or 180 percent of average for the month. Due to an "atmospheric river," Folsom Reservoir, which has the highest refill potential of the four storage reservoirs, had to spill for flood control. The statewide snowpack is assumed to reach its peak on April 1, and at the end of December the snowpack was at 56 percent of this average.

*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	650,018	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	496,937	*			*
Jan 23														
Feb 23														
Mar 23														
Apr 23														
May 23														
Jun 23														
Jul 23														
Aug 23														
Sep 23														
<b>Total</b>							1,904,303	1,895,393	2,618,278	1,876,537	145,492	\$ 6,604,187	\$ 6,905,515	\$ 5,547,877

Actual generation as a percentage of average: 71.7% Cost per MWh: \$38.13

### Lake/Reservoir Content

The yearly runoff forecast for the Missouri River Basin as of December 31 was 19.3 MAF or 75 percent of average. Runoff above Sioux City for December was 0.85 MAF or 109 percent of average. System storage as of January 24 was 45.7 MAF.

### Weather and Other Conditions

On January 29, the mountain snow water equivalent in the total above Fort Peck reach was 10.2 inches or 106 percent of average, and the mountain snow water equivalent in the Fort Peck to Garrison reach was 8.6 inches or 98 percent of average. The normal peak for both reaches occurs on or around April 17. A half inch or more of precipitation fell across parts of Kansas, eastern Colorado, southeast Wyoming and Nebraska. Parts of northwest Nebraska, western Colorado, Wyoming, South Dakota, and Montana received less than half an inch of precipitation. Moderate to extreme (D1-D3) drought and abnormal dryness (D0) areas contracted in Kansas, Colorado, and Wyoming where snowpack is above normal and soil moisture conditions are improving. The 90- to 180-day averages outlook shows below normal temperatures and average to above normal precipitation.

*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.*

