

WESTERN AREA POWER ADMINISTRATION
HYDRO CONDITIONS AND PURCHASE POWER REPORT
January 2022

	Generation (Megawatt-Hours [MWh])				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 21	1,467,161	1,477,997	1,974,251	1,510,346	313,064	\$15,851,765	\$15,225,185	\$17,623,879
Nov 21	1,228,617	1,160,110	1,870,443	1,133,465	591,945	\$24,125,267	\$23,271,118	\$28,124,884
Dec 21	1,082,403	1,088,536	1,826,740	1,103,958				
Jan 22								
Feb 22								
Mar 22								
Apr 22								
May 22								
Jun 22								
Jul 22								
Aug 22								
Sep 22								
Total	3,778,181	3,726,643	5,671,434	3,747,769	905,009	\$39,977,032	\$38,496,303	\$45,748,763
	Actual generation as a percentage of average: 66.1%					Cost per MWh: \$50.55		

Western Area Power Administration (WAPA) generated a total of 3,748 gigawatt-hours (GWh), or 66% of average, from October through December 2021. Between October and November 2021, total purchase power was 905,009 megawatt-hours (MWh), and total purchase power expenses were \$45,748,763, which equates to \$50.55 per MWh.

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 21	1.00	1.80	514.42	317.00	15.01	7.18	242,049	256,726	382,430	256,726	142,576	\$ 8,536,794	\$ 8,536,794
Nov 21	4.30	3.10	474.23	346.00	14.91	7.02	231,017	222,180	388,155	222,180	194,078	\$ 12,149,771	\$ 12,149,771	\$ 12,149,771
Dec 21	7.80	9.20	362.96	266.00	14.86	6.71	266,495	258,749	437,962	258,749	10,490	\$ 377,626	\$ 377,626	\$ 377,626
Jan 22														
Feb 22														
Mar 22														
Apr 22														
May 22														
Jun 22														
Jul 22														
Aug 22														
Sep 22														
Total							739,562	737,655	1,208,547	737,655	347,144	\$ 21,064,191	\$ 21,064,191	\$ 21,064,191

Actual generation as a percentage of average: 61.0% Cost per MWh: \$60.68

Lake/Reservoir Levels

End of December storage volume for Lake Powell was 6.7 million acre-feet or about 29% of capacity. Lake Powell reservoir inflow for December was 266,000 acre-feet or 83% of average. Lake Powell elevation at the end of December was about 3,537 feet, 163 feet from maximum reservoir level and 47 feet from the minimum generation level.

Weather and Other Conditions

Although there has been some improvement in water supply forecasts recently, drought is expected to persist throughout most of the Upper Colorado River Basin. CRSP implemented a new rate, WAPA-199, in December 2021. Under this rate, WAPA will provide customers with only forecasted available energy from the CRSP project. This should cause purchases of power to meet contractual obligations to drop to zero megawatt-hours starting in January 2022, but as there is still uncertainty regarding hydrology, there may be some energy purchases in any given month. Customers can still request WAPA purchase power on their behalf on a monthly pass-through basis, although this is not expected to be reflected in the monthly hydropower conditions reports.



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 21	1.00	1.80	60.11	81.00	19.69	11.00	303,950	309,595	376,487	311,252	20,015	\$ 1,502,607	\$ 1,502,607
Nov 21	4.30	3.10	55.20	43.00	19.74	10.92	321,100	311,600	361,868	319,154	12,568	\$ 1,583,400	\$ 1,583,400	\$ 593,080
Dec 21	7.80	9.20	72.87	65.00	19.85	9.64	257,800	243,900	363,944	251,578	37,736	\$ 2,353,714	\$ 2,353,714	\$ 2,961,911
Jan 22														
Feb 22														
Mar 22														
Apr 22														
May 22														
Jun 22														
Jul 22														
Aug 22														
Sep 22														
Total							882,850	865,095	1,102,299	881,984	70,319	\$ 5,439,721	\$ 5,439,721	\$ 5,008,273

Actual generation as a percentage of average: 80.0%

Cost per MWh: \$71.22

Lake/Reservoir Levels

Aggregate system storage for the Lower Colorado River Basin, or Lakes Mead, Mohave and Havasu, was 9.6 million acre-feet (MAF) at the end of December 2021, or 37% of the Lower Basin capacity. The Lower Basin tributary inflow into Lake Mead for August 2021 was 65,000 acre-feet. The total side inflow into Lake Mead for Water Year 2022 is expected to be 868,000 acre-feet, which represents a 56% increase over last year's actual of 558,000 acre-feet and 67% of the normal annual side inflow of 1.3 MAF. Lake Mead elevation at the end of December 2021 was 1,066.39 feet, or about 116.39 feet above the minimum generation elevation for Hoover Dam.

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 124% of average, and the snowpack is 122% of the 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 21	0.00	0.00	133.50	131.00	3.89	3.72	52,479	70,240	97,400	69,420	84,307	\$ 3,934,516	\$ 3,330,640	\$ 5,618,676
Nov 21	2.10	4.40	124.70	98.60	3.91	3.75	48,828	66,514	110,000	41,979	110,921	\$ 4,255,035	\$ 3,636,010	\$ 6,664,567
Dec 21	11.50	8.10	102.40	54.90	3.89	3.72	81,875	96,903	123,500	102,082	90,136	\$ 3,319,239	\$ 2,808,298	\$ 4,461,154
Jan 22														
Feb 22														
Mar 22														
Apr 22														
May 22														
Jun 22														
Jul 22														
Aug 22														
Sep 22														
Total							183,182	233,657	330,900	213,481	285,364	\$11,508,790	\$9,774,948	\$16,744,397

Actual generation as a percentage of average: 64.5% Cost per MWh: \$58.68

Lake/Reservoir Content

At the end of December 2021, reservoir inflows were 54% of average and reservoir storage was at 96% of average.

Weather and Other Conditions

LAP’s hydrologic conditions can vary from one river basin and watershed to another. As of the end of January, the snowpack is below average in Wyoming and average along Colorado’s East Slope. The latest National Weather Service forecast indicates February through April temperatures will most likely be at or warmer than average in Colorado and equal probability for below and above average in Wyoming. The same forecast indicates precipitation will have an equal chance to be above or below average for Wyoming and below average for all of Colorado. Winter generation in the Colorado River Basin, the North Platte Basin and the Big Horn Basin is forecasted to be below average due to unit outages and low snowpack last year.



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 21	N/A	N/A	333.00	426.00	5.08	2.82	117,000	77,000	163,000	137,694	51,331	\$ 1,207,080	\$ 1,207,080	\$ 1,537,704
Nov 21	N/A	N/A	400.00	485.00	5.05	3.04	72,000	17,000	104,000	0	58,622	\$ 1,164,725	\$ 1,164,725	\$ 1,617,308
Dec 21	28.00	15.40	793.00	789.00	5.35	3.58	0	0	143,000	5,795	54,276	\$ 1,207,080	\$ 1,207,080	\$ 1,678,780
Jan 22														
Feb 22														
Mar 22														
Apr 22														
May 22														
Jun 22														
Jul 22														
Aug 22														
Sep 22														
Total							189,000	94,000	410,000	143,489	164,229	\$3,578,885	\$3,578,885	\$4,833,792

Actual generation as a percentage of average: 35.0%

Cost per MWh: \$29.43

Lake/Reservoir Content

As of December 31, reservoir storage was 55% of the 15-year average for Trinity, 57% for Shasta, 156% for Folsom and 72% for New Melones. Accumulated inflow was 106% of the 15-year average for Trinity, 101% for Shasta, 137% for Folsom and 119% for New Melones. End of water year carryover storage was quite low. Base Resource Energy has been largely unavailable since the end of October.

Weather and Other Conditions

November's precipitation was 3.05 inches and December's precipitation was 14.41 inches, or 164% of average. There was also significant snowfall in the Sierra Nevada Mountain range. Based on January 1 conditions, the Sacramento River Index forecast for 50% exceedance at 7.5 is below normal while the 90% exceedance at 5.6 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% 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 21	1.20	0.80	7,972.00	6,835.65	56.14	50.80	751,683	764,436	954,934	735,254	14,835	\$ 670,768	\$ 648,064
Nov 21	3.80	2.20	7,334.00	5,259.62	55.06	49.68	555,672	542,816	906,420	550,152	215,756	\$ 4,972,336	\$ 4,737,212	\$ 7,100,158
Dec 21	7.10	6.60	6,422.00	4,350.10	54.46	49.29	476,232	488,984	758,334	485,754	*	\$ 7,350,388	\$ 7,145,446	*
Jan 22														
Feb 22														
Mar 22														
Apr 22														
May 22														
Jun 22														
Jul 22														
Aug 22														
Sep 22														
Total							1,783,587	1,796,236	2,619,688	1,771,160	230,591	\$ 12,993,492	\$ 12,530,722	\$ 7,577,581

Actual generation as a percentage of average: 67.6%

Cost per MWh: \$32.86

Lake/Reservoir Content

The yearly runoff forecast for the Missouri River basin as of January 1 was 21.7 million acre-feet (MAF) or 84% of average. Runoff above Sioux City for October was .76 MAF or 97% of average. System storage as of January 18 is at 47.8 MAF.

Weather and Other Conditions

On January 17, the mountain snow water equivalent in the total above Fort Peck reach is 8.2 inches, or 90% of average. The mountain snow water equivalent in the Fort Peck to Garrison reach is 7.1 inches, or 89% of average. The normal peak for both reaches occurs near April 15. The U.S. Drought Monitor shows large areas of the upper Basin continue to be impacted by drought. Moderate and severe drought conditions are occurring in west North and South Dakotas. Northern Montana is experiencing extreme drought.

The 90- to 180-day precipitation averages outlook shows equal chances for above normal and below normal precipitation and temperatures.

Note: The Upper Great Plains Region reports 50% 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.

