

WESTERN AREA POWER ADMINISTRATION
HYDRO CONDITIONS AND PURCHASE POWER REPORT
February 2021

	Generation (Megawatt-Hours [MWh])				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Projected	Most	Average	Actual	Actual	Projected	Most	Actual
	Dry	Probable				Dry	Probable	
Oct 20	1,637,082	1,684,470	1,967,791	1,707,748	330,036	\$9,229,116	\$5,582,203	\$9,801,302
Nov 20	1,413,902	1,470,313	1,822,863	1,442,689	480,048	\$10,118,812	\$9,271,720	\$12,556,811
Dec 20	1,276,475	1,369,784	1,800,527	1,367,249	639,892	\$15,963,137	\$14,553,135	\$16,561,267
Jan 21	1,403,979	1,511,519	1,933,074	1,456,026				
Feb 21								
Mar 21								
Apr 21								
May 21								
Jun 21								
Jul 21								
Aug 21								
Sep 21								
Total	5,731,438	6,036,086	7,524,255	5,973,712	1,449,976	\$35,311,066	\$29,407,058	\$38,919,380

Actual generation as a percentage of average: 79.4% Cost per MWh: \$26.84

Western Area Power Administration (WAPA) generated a total of 5,974 gigawatt-hours (GWh) during October through January of fiscal year 2021, or 79.4 percent of the 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 1,450 GWh and total purchase power expenses were \$38,919,380, which equates to \$26.84 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 is melted instantaneously.

The monthly purchase power numbers indicated herein are used by WAPA’s Regions as a forecasting tool, and 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 20	1.30	0.80	514.42	78.00	15.01	10.98	247,024	352,623	382,430	352,623	96,196	\$5,712,150	\$2,456,473	\$2,993,074
Nov 20	4.80	3.40	474.23	261.00	14.91	10.62	241,664	310,304	388,155	310,304	136,279	\$5,110,150	\$4,484,250	\$4,502,668
Dec 20	8.10	6.30	362.96	169.00	14.86	10.13	279,537	345,778	437,962	345,778	156,942	\$6,299,733	\$5,425,491	\$5,473,649
Jan 21	11.50	8.60	361.45	198.00	14.98	9.64	329,144	364,153	457,394	358,646	140,939	\$5,112,308	\$4,064,075	\$4,072,438
Feb 21														
Mar 21														
Apr 21														
May 21														
Jun 21														
Jul 21														
Aug 21														
Sep 21														
Total							1,097,369	1,372,858	1,665,941	1,367,351	530,356	\$22,234,342	\$16,430,289	\$17,041,828

Actual generation as a percentage of average: 82.1%

Cost per MWh: \$32.13

Lake/Reservoir Levels

End of January storage volume for Lake Powell was 9.6 million acre-feet or 39 percent of capacity. Lake Powell reservoir inflow for the most recent historical month (January 2021) was 198,000 acre-feet or 55 percent of average. End of January Lake Powell elevation was about 3,576 feet, 124 feet from maximum reservoir level, and 86 feet from the minimum generation level.

Weather and Other Conditions

The Upper Colorado River Basin is currently experiencing a protracted drought that began in 2000 with hydrologic conditions over the last several months being some of the driest on record. Dry conditions have resulted in low reservoir conditions that reduce power head greatly reducing power generation. Due to the dry hydrologic conditions, purchase power estimates for FY 2021 are expected to be very high.



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 20	1.30	0.80	59.65	35.00	19.82	12.25	407,200	384,190	377,268	391,920	27,216	\$498,024	\$498,024	\$1,510,510
Nov 20	4.80	3.40	55.47	56.00	19.86	12.28	361,600	360,155	362,391	355,236	21,032	\$800,684	\$800,684	\$1,098,412
Dec 20	8.10	6.30	73.06	60.00	20.00	12.46	217,750	256,520	365,340	266,410	24,797	\$1,639,676	\$1,639,676	\$1,208,261
Jan 21	11.50	8.60	93.00	74.00	20.16	12.78	274,050	299,265	388,937	296,996	33,596	\$907,204	\$907,204	\$1,391,031
Feb 21														
Mar 21														
Apr 21														
May 21														
Jun 21														
Jul 21														
Aug 21														
Sep 21														
Total							1,260,600	1,300,130	1,493,936	1,310,563	106,641	\$3,845,588	\$3,845,588	\$5,208,214

Actual generation as a percentage of average: 87.7%

Cost per MWh: \$48.84

Lake/Reservoir Levels

Aggregate system storage for the Lower Colorado River Basin, or Lakes Mead, Mohave and Havasu, was 12.78 million acre-feet at the end of January, or 44.7 percent of the Lower Basin capacity

Weather and Other Conditions

The Desert Southwest Region's (DSWR) 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 76 percent of average and the snowpack is currently 87 percent of average.

Note: DSWR's projected dry and most probable generation data are reported from studies conducted by the U.S. Bureau of Reclamation.



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 20	0.00	0.00	142.50	95.30	3.85	4.14	97,268	107,268	104,469	73,515	103,847	\$1,853,600	\$1,533,600	\$3,246,505
Nov 20	3.70	4.00	125.30	111.10	3.70	4.02	49,932	59,932	71,586	48,589	124,138	\$1,131,072	\$811,072	\$3,817,277
Dec 20	11.80	8.90	126.10	111.20	3.79	4.11	92,471	102,471	105,136	81,323	99,875	\$1,319,040	\$999,040	\$3,007,865
Jan 21	18.60	20.40	100.40	84.30	3.79	4.08	114,675	124,675	101,067	112,305	65,082	\$1,701,344	\$1,381,344	\$1,576,446
Feb 21														
Mar 21														
Apr 21														
May 21														
Jun 21														
Jul 21														
Aug 21														
Sep 21														
Total							354,346	394,346	382,259	315,732	392,942	\$6,005,056	\$4,725,056	\$11,648,093

Actual generation as a percentage of average: 82.6%

Cost per MWh: \$29.64

Lake/Reservoir Content

At the end of January, reservoir inflows were 84 percent of average and reservoir storage was at 108 percent of average.

Weather and Other Conditions

LAP's hydrologic conditions can vary from one river basin and watershed to another. The snowpack is currently below at average in the Colorado and Wyoming area. March through May temperatures and precipitation are projected to be average in Wyoming and Colorado. Spring generation in the Colorado River Basin is forecasted to be average this spring due to decent storage and storage movement. Spring generation in the North Platte Basin and Big Horn Basin is forecasted to be slightly below 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 20	N/A	N/A	328	256	5.383	5.233	139,000	79,000	163,000	119,699	55,232	\$659,220	\$ 659,220
Nov 20	N/A	N/A	399	283	5.338	5.133	53,000	38,000	104,000	70,365	53,796	\$628,188	\$ 628,188	\$ 1,150,708
Dec 20	27	5	791	303	5.617	5.117	30,000	-	143,000	74,714	55,552	\$654,300	\$ 654,300	\$ 1,302,849
Jan 21	28	12	949	417	6.032	5.223	-	-	163,000	38,018	58,365	\$634,400	\$ 634,400	\$ 1,330,776
Feb 21														
Mar 21														
Apr 21														
May 21														
Jun 21														
Jul 21														
Aug 21														
Sep 21														
Total							222,000	117,000	573,000	302,796	222,945	\$2,576,108	\$2,576,108	\$4,763,396

Actual generation as a percentage of average: 52.8%

Cost per MWh: \$21.37

Lake/Reservoir Content

As of January 31, reservoir storage for the water year was 86 percent of the 15-year average for Trinity, 78 percent for Shasta, 70 percent for Folsom, and 109 percent for New Melones. Accumulated inflow was 25 percent of the 15-year average for Trinity, 59 percent for Shasta, 39 percent for Folsom, and 60 percent for New Melones.

Weather and Other Conditions

October precipitation was zero percent of average (at 0.01 inches), November was 56 percent of average, December was 41 percent of average, and January was 78 percent of average (at 8.8 inches). Reclamation is working to conserve storage while still meeting all its instream flow requirements and Delta water quality requirements. Based upon January 1 conditions, the Sacramento River Index forecast for 50 percent exceedance at 9.8 is "critical" and the 90 percent exceedance at 7.4 is also "critical."

Note: The Sierra Nevada Region's (SNR) average generation is based upon long-term modeling done for its "Green Book." SNR 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 20	1.20	1.80	7,972.00	7,076.94	56.14	58.83	746,590	761,389	940,624	769,992	47,545	\$506,122	\$434,886	\$1,072,149
Nov 20	3.80	3.60	7,334.00	6,581.48	55.06	57.86	707,706	701,922	896,730	658,194	144,803	\$2,448,719	\$2,547,526	\$1,987,746
Dec 20	7.10	5.80	6,422.00	5,580.68	54.46	57.57	656,717	665,015	749,088	599,023	302,726	\$6,050,388	\$5,834,628	\$5,568,644
Jan 21	10.30	8.20	6,641.00	5,891.16	54.18	57.41	686,110	723,426	822,676	650,060	*	\$4,808,232	\$4,051,414	*
Feb 21														
Mar 21														
Apr 21														
May 21														
Jun 21														
Jul 21														
Aug 21														
Sep 21														
Total							2,797,123	2,851,752	3,409,119	2,677,269	495,074	\$13,813,460	\$12,868,454	\$8,628,539

Actual generation as a percentage of average: 78.5%

Cost per MWh: \$17.43

Lake/Reservoir Content

The yearly runoff forecast for the Missouri River basin as of March 1 was 21.6 million acre-feet (MAF) or 84 percent of average and runoff above Sioux City for the month of January was 1.02 MAF (131 percent of average). System storage is at 55.6 MAF and all stored flood waters from the 2020 runoff season were evacuated as of December 21, 2020. On March 1, 2021 the mountain Snow Water Equivalent (SWE) in the “Total above Fort Peck” reach was 12.5 inches or 94 percent of average and the mountain SWE in the “Fort Peck to Garrison” reach was 10.7 inches or 94 percent of average. The normal peak for both reaches is near April 15.

Weather and Other Conditions

The U.S. Drought Monitor shows large areas of the upper Basin continue to be impacted by abnormally dry conditions and drought conditions. Severe Drought conditions are occurring in eastern Montana and western and northern North Dakota, with most of South Dakota experiencing moderate drought and small areas in southeastern Montana and southeastern South Dakota experiencing extreme drought conditions.

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

