

WESTERN AREA POWER ADMINISTRATION
HYDRO CONDITIONS AND PURCHASE POWER REPORT
March 2020

	Generation (Megawatt-Hours [MWh])				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Projected Dry	Most Probable	Average	Actual		Projected Dry	Most Probable	Actual
Oct 19	3,234,188	2,557,218	1,905,123	2,547,426	167,584	\$8,232,725	\$3,634,722	\$4,039,531
Nov 19	2,916,091	2,321,588	1,744,440	2,242,597	226,842	\$6,958,854	\$3,094,132	\$6,712,448
Dec 19	2,742,006	1,826,992	1,739,496	1,779,560	284,850	\$12,700,352	\$5,611,408	\$8,242,672
Jan 20	2,966,530	1,926,745	1,885,817	1,788,047	254,216	\$9,907,656	\$6,032,484	\$7,422,120
Feb 20	3,567,534	2,261,069	1,721,387	1,798,829				
Mar 20								
Apr 20								
May 20								
Jun 20								
Jul 20								
Aug 20								
Sep 20								
Total	15,426,349	10,893,612	8,996,263	10,156,460	933,492	\$37,799,587	\$18,372,745	\$26,416,771
	Actual generation as a percentage of average: 112.9%					Cost per MWh: \$28.30		

Western Area Power Administration (WAPA) generated a total of 10,156 gigawatt-hours (GWh) during October through February of fiscal year 2020, or 112.9 percent of the average. Actual purchase power data is currently available from October through January for all of WAPA’s Regions, and during this period total purchase power was 933 GWh and total purchase power expenses were \$26,416,771, which equates to \$28.30 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 19	1.90	1.30	514.42	265.00	15.01	13.03	247,024	402,923	382,430	389,492	57,894	\$5,712,150	\$1,470,094	\$1,620,344
Nov 19	4.80	4.70	474.23	404.00	14.91	12.86	241,664	386,154	388,155	378,475	70,539	\$5,110,150	\$1,581,991	\$2,312,315
Dec 19	8.10	8.40	362.96	353.00	14.86	12.60	279,537	463,233	437,962	465,261	36,300	\$6,299,733	\$1,046,122	\$1,035,644
Jan 20	11.50	12.10	361.45	277.00	14.98	12.28	329,144	451,898	457,394	444,843	59,569	\$5,112,308	\$1,657,329	\$1,488,034
Feb 20	15.10	15.70	392.01	288.00	15.99	12.01	285,980	392,973	390,580	382,355	67,140	\$4,550,403	\$1,638,298	\$1,440,824
Mar 20														
Apr 20														
May 20														
Jun 20														
Jul 20														
Aug 20														
Sep 20														
Total							1,383,349	2,097,181	2,056,521	2,060,426	291,442	\$26,784,745	\$7,393,834	\$7,897,161

Actual generation as a percentage of average: 100.2%

Cost per MWh: \$27.10

Lake/Reservoir Levels

Lake Powell's elevation was 3,603 feet at the end of February, about 97 feet below the maximum reservoir level and about 113 feet above the minimum generation level. The storage volume for Lake Powell was 12.0 million acre-feet (MAF) at the end of February, or about 50 percent of capacity.

Weather and Other Conditions

Forecasted water year 2020 inflow again decreased slightly to about 8.48 MAF (about 79 percent of average) with the forecasted annual release remaining at 8.23 MAF; however, there is still a great deal of uncertainty around these forecasts.



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 19	1.90	1.30	60.21	34.00	19.92	12.38	327,200	329,395	377,088	330,202	15,083	\$294,158	\$294,158	\$447,125
Nov 19	4.80	4.70	55.46	116.00	19.97	12.61	296,000	290,135	362,492	287,607	18,264	\$427,033	\$427,033	\$949,591
Dec 19	8.10	8.40	73.34	117.00	20.11	13.12	184,850	116,990	366,538	116,854	55,017	\$2,216,576	\$2,216,576	\$2,806,967
Jan 20	11.50	12.10	93.42	75.00	20.27	13.47	207,550	159,910	389,375	220,912	51,548	\$1,705,683	\$1,705,683	\$2,612,459
Feb 20	15.10	15.70	108.62	67.00	20.31	13.66	273,750	394,620	387,932	305,060	77,174	\$653,885	\$653,885	\$1,098,389
Mar 20														
Apr 20														
May 20														
Jun 20														
Jul 20														
Aug 20														
Sep 20														
Total							1,289,350	1,291,050	1,883,425	1,260,636	217,086	\$5,297,335	\$5,297,335	\$7,914,531

Actual generation as a percentage of average: 66.9%

Cost per MWh: \$36.46

Lake/Reservoir Levels

Lake Mead's elevation was 1,096 feet at the end of February, about 123 feet below the full storage level and about 146 feet above the minimum generation level. Lake Mead's elevation peaked at 1,096 feet in February and is projected to drop to a minimum elevation of 1,080 feet in September. This large fluctuation in elevation, despite the Lower Basin Drought Contingency Plan being implemented, is due primarily to the forecast that Lake Powell will only release 8.23 MAF to Lake Mead for water year 2020. Lake Mead has enjoyed releases from Lake Powell of 9 MAF for the last five years.

Weather and Other Conditions

The Desert Southwest Region's (DSWR) hydrology is mostly dependent on the Colorado River Basin snowpack and precipitation above Lake Powell. The precipitation is currently 89 percent of average and the snowpack is 103 percent of median.

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 19	0.00	0.50	140.00	161.80	3.87	4.16	958,083	114,970	104,469	105,869	53,942	\$1,842,801	\$1,486,854	\$1,436,710
Nov 19	3.90	9.10	123.80	151.50	3.83	4.78	905,908	108,709	71,586	73,486	90,100	\$1,066,471	\$729,908	\$2,582,110
Dec 19	11.90	14.30	100.70	123.10	3.79	4.75	1,236,250	148,350	105,136	107,536	78,461	\$483,802	\$24,510	\$2,320,018
Jan 20	19.70	22.20	99.50	110.20	4.92	4.71	1,337,442	160,493	101,067	103,667	56,015	\$907,287	\$410,401	\$1,377,620
Feb 20	27.90	30.60	98.00	117.10	3.73	4.67	1,972,450	236,694	100,751	103,051	27,562	\$0	\$0	\$622,733
Mar 20														
Apr 20														
May 20														
Jun 20														
Jul 20														
Aug 20														
Sep 20														
Total							6,410,133	769,216	483,010	493,610	306,080	\$4,300,361	\$2,651,672	\$8,339,191

Actual generation as a percentage of average: 102.2%

Cost per MWh: \$27.25

Lake/Reservoir Content

Reservoir inflows were 119 percent of average at the end of February.

Weather and Other Conditions

Hydrologic conditions for the Loveland Area Projects (LAP) area can vary from one river basin and watershed to another. LAP is currently drought free. The snowpack is 98 percent of average in Colorado and 130 percent of average in Wyoming. The latest National Weather Service forecast indicates April through June temperatures have equal chances to be above or below average in Colorado and Wyoming, and precipitation will be average for all of LAP. Spring generation in the Colorado River Basin is forecast to be below average in April and May due to storage already moved and awaiting runoff. Spring generation in the Bighorn and North Platte River Basins will be average.

Note: The Rocky Mountain Region's (RMR) most recent reported actual generation and purchase power data are provisional values.



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 19	N/A	N/A	335.00	349.00	5.51	7.84	195,000	190,000	163,000	287,596	40,285	\$383,616	\$383,616	\$508,746
Nov 19	22.22	2.00	381.00	356.00	5.47	7.63	83,000	93,000	104,000	156,862	47,391	\$355,200	\$355,200	\$864,154
Dec 19	27.27	9.00	960.00	692.00	5.84	7.78	42,000	57,000	143,000	110,113	53,378	\$355,200	\$355,200	\$738,876
Jan 20	27.91	12.00	844.00	736.00	6.19	7.97	32,000	107,000	163,000	37,424	59,939	\$232,060	\$232,060	\$986,093
Feb 20	28.21	11.00	1,533.00	378.00	6.81	7.95	46,000	266,000	195,000	103,091	48,897	\$209,420	\$209,420	\$673,863
Mar 20														
Apr 20														
May 20														
Jun 20														
Jul 20														
Aug 20														
Sep 20														
Total							398,000	713,000	768,000	695,086	249,889	\$1,535,496	\$1,535,496	\$3,771,731

Actual generation as a percentage of average: 90.5%

Cost per MWh: \$15.09

Lake/Reservoir Content

As of February 29, reservoir storage for the water year was 126 percent of the 15-year average for Trinity, 111 percent for Shasta, 92 percent for Folsom, and 127 percent for New Melones. Accumulated inflow for the same date was 47 percent of the 15-year average for Trinity, 69 percent for Shasta, 49 percent for Folsom, and 72 percent for New Melones.

Weather and Other Conditions

February only had 0.02 inches of precipitation for the month, which is the driest February on the index going back to 1921. The snowpack is assumed to reach its peak by April 1, and as of February 29 the statewide average snow water equivalent was 11 inches which is only 39 percent of the April 1 average. The Sacramento River Index forecast for 50 percent exceedence is "dry" and the 90 percent exceedence is "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 19	1.20	2.60	7,972.00	18,502.03	56.14	62.49	1,506,881	1,519,930	878,137	1,434,267	380	\$0	\$0	\$26,606
Nov 19	3.80	4.20	7,334.00	17,463.46	55.06	59.17	1,389,518	1,443,590	818,207	1,346,166	548	\$0	\$0	\$4,278
Dec 19	7.10	6.80	6,422.00	10,075.10	54.46	58.43	999,369	1,041,419	686,859	979,796	61,694	\$3,345,041	\$1,969,000	\$1,341,167
Jan 20	10.30	10.20	6,641.00	8,781.15	54.18	57.66	1,060,394	1,047,444	774,981	981,201	27,145	\$1,950,317	\$2,027,011	\$957,914
Feb 20	13.10	13.80	6,281.00	9,216.01	54.50	57.74	989,354	970,782	647,124	905,272	*	\$2,292,804	\$2,420,706	*
Mar 20														
Apr 20														
May 20														
Jun 20														
Jul 20														
Aug 20														
Sep 20														
Total							5,945,516	6,023,165	3,805,308	5,646,702	89,767	\$7,588,163	\$6,416,717	\$2,329,965

Actual generation as a percentage of average: 148.4%

Cost per MWh: \$25.96

Lake/Reservoir Content

As of March 20, the active conservation pools for the Canyon Ferry and Yellowtail Dams were 77.2 percent and 84.3 percent full, respectively.

Weather and Other Conditions

The February runoff was 224 percent of normal. Runoff from plains snowmelt has begun entering the system and is expected to continue over the next few weeks. Snowpack reports show 105 percent of average snow water equivalent above Fort Peck and 105 percent of average in the Fort Peck to Garrison reach. The U.S. Drought Monitor shows only small areas of the upper Missouri River Basin being impacted by abnormally dry conditions, primarily in the far mid-western regions of Montana.

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, and so the projected dry and most probable purchase power expenses are not included for that month in order to allow for a meaningful comparison between the total amounts.

