

**WESTERN AREA POWER ADMINISTRATION**  
**HYDRO CONDITIONS AND PURCHASE POWER REPORT**  
**February 2020**

	Generation (Megawatt-Hours [MWh])				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Projected Dry	Most Probable	Average	Actual		Projected Dry	Most Probable	Actual
<b>Oct 19</b>	3,234,188	2,557,218	1,905,123	2,547,426	167,584	\$8,232,725	\$3,634,722	\$4,039,531
<b>Nov 19</b>	2,916,091	2,321,588	1,744,440	2,242,597	226,842	\$6,958,854	\$3,094,132	\$6,712,448
<b>Dec 19</b>	2,742,006	1,826,992	1,739,496	1,779,560	284,850	\$12,700,352	\$5,611,408	\$8,242,672
<b>Jan 20</b>	2,966,530	1,926,745	1,885,817	1,788,047				
<b>Feb 20</b>								
<b>Mar 20</b>								
<b>Apr 20</b>								
<b>May 20</b>								
<b>Jun 20</b>								
<b>Jul 20</b>								
<b>Aug 20</b>								
<b>Sep 20</b>								
<b>Total</b>	11,858,815	8,632,542	7,274,876	8,357,631	679,276	\$27,891,931	\$12,340,262	\$18,994,651
	Actual generation as a percentage of average: 114.9%					Cost per MWh: \$27.96		

Western Area Power Administration (WAPA) generated a total of 8,358 gigawatt-hours (GWh) during October through January of fiscal year 2020, or 114.9 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 679 GWh and total purchase power expenses were \$18,994,651, which equates to \$27.96 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														
Mar 20														
Apr 20														
May 20														
Jun 20														
Jul 20														
Aug 20														
Sep 20														
<b>Total</b>							1,097,369	1,704,207	1,665,941	1,678,071	224,302	\$22,234,342	\$5,755,536	\$6,456,337

Actual generation as a percentage of average: 100.7%

Cost per MWh: \$28.78

### Lake/Reservoir Levels

Lake Powell's elevation was 3,605 feet at the end of January, about 95 feet below the maximum reservoir level and about 115 feet above the minimum generation level. The storage volume for Lake Powell was 12.3 million acre-feet (MAF) at the end of January, or about 50 percent of capacity.

### Weather and Other Conditions

Forecasted water year 2020 inflow decreased slightly from the January forecast to about 8.64 MAF (about 80 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														
Mar 20														
Apr 20														
May 20														
Jun 20														
Jul 20														
Aug 20														
Sep 20														
<b>Total</b>							1,015,600	896,430	1,495,493	955,575	139,912	\$4,643,450	\$4,643,450	\$6,816,142

Actual generation as a percentage of average: 63.9%

Cost per MWh: \$48.72

### Lake/Reservoir Levels

Lake Mead's elevation was 1,095 feet at the end of January, about 125 feet below the full storage level and about 145 feet above the minimum generation level. Lake Mead's elevation is projected to peak at 1,097 feet in February and then drop to a minimum elevation of 1,080 feet in September, a maximum fluctuation in lake elevation of about 17 feet. This large fluctuation 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 94 percent of average and the snowpack is 113 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														
Mar 20														
Apr 20														
May 20														
Jun 20														
Jul 20														
Aug 20														
Sep 20														
<b>Total</b>							4,437,683	532,522	382,259	390,559	278,518	\$4,300,361	\$2,651,672	\$7,716,458

Actual generation as a percentage of average: 102.2%

Cost per MWh: \$27.71

### Lake/Reservoir Content

Reservoir inflows were 113 percent of average at the end of January.

### 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 latest National Weather Service forecast indicates March through May temperatures will most likely to be at or below average in Colorado and Wyoming. The same forecast indicates precipitation will be average for all of LAP. Spring generation in the Colorado River Basin is forecasted to be above average due to storage movement. 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														
Mar 20														
Apr 20														
May 20														
Jun 20														
Jul 20														
Aug 20														
Sep 20														
<b>Total</b>							352,000	447,000	573,000	591,995	200,993	\$1,326,076	\$1,326,076	\$3,097,869

Actual generation as a percentage of average: 103.3%

Cost per MWh: \$15.41

### Lake/Reservoir Content

As of January 31, reservoir storage for the water year was 133 percent of the 15-year average for Trinity, 123 percent for Shasta, 115 percent for Folsom, and 136 percent for New Melones. Accumulated inflow for the same date was 54 percent of the 15-year average for Trinity, 81 percent for Shasta, 63 percent for Folsom, and 90 percent for New Melones.

### Weather and Other Conditions

November had 32 percent of average precipitation, December had 121 percent, and January had 55 percent. The Bureau of Reclamation is doing its best to conserve storage while still meeting their instream flow requirements and Delta water quality requirements. 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	*	\$1,950,317	\$2,027,011	*
Feb 20														
Mar 20														
Apr 20														
May 20														
Jun 20														
Jul 20														
Aug 20														
Sep 20														
<b>Total</b>							4,956,162	5,052,383	3,158,183	4,741,430	62,622	\$5,295,358	\$3,996,011	\$1,372,051

Actual generation as a percentage of average: 150.1%

Cost per MWh: \$21.91

### Lake/Reservoir Content

As of February 20, the active conservation pools for the Canyon Ferry and Yellowtail Dams were 80.8 percent and 85.8 percent full, respectively.

### Weather and Other Conditions

The January runoff was 185 percent of normal. Runoff was above average at Fort Peck, Fort Randall, Garrison, Gavins Point, and Oahe. Snow pack reports show 96 percent of average above Fort Peck and 96 percent of average in the Fort Peck to Garrison reach. The U.S. Drought Monitor shows portions of the upper Missouri River Basin and western Kansas being impacted by abnormally dry conditions. March through April runoff potential is very high due to the very wet soil moisture 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, 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.*

