

**WESTERN AREA POWER ADMINISTRATION
HYDRO CONDITIONS AND PURCHASE POWER REPORT
January 2018**

	Generation (Megawatt-Hours [MWh])				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 17	1,730,649	1,783,328	1,806,598	1,829,010	190,778	\$6,365,563	\$3,865,878	\$3,641,734
Nov 17	1,660,557	1,805,533	1,648,787	1,740,440	247,472	\$6,131,948	\$5,002,523	\$5,637,764
Dec 17	1,491,799	1,801,088	1,650,745	1,765,969				
Jan 18								
Feb 18								
Mar 18								
Apr 18								
May 18								
Jun 18								
Jul 18								
Aug 18								
Sep 18								
Total	4,883,005	5,389,948	5,106,130	5,335,420	438,250	\$12,497,511	\$8,868,400	\$9,279,498
Actual generation as a percentage of average:				104.5%	Cost per MWh: \$21.17			

Western Area Power Administration (WAPA) generated a total of 5,335 gigawatt-hours (GWh) during October through December of fiscal year 2018, or 104.5 percent of the 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 438 GWh and total purchase power expenses were \$9,279,498, which equates to \$21.17 per MWh.

The following pages indicate WAPA's Regional snowpack, lake/reservoir inflow and content, generation, and purchase power expenses, among other things. Snowpack is reported as snow water equivalent, which is the depth of water that theoretically would result if the entire snowpack is melted instantaneously.

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 17	1.30	0.70	514.42	449.00	15.01	14.53	248,012	389,938	382,430	430,186	28,274	\$3,545,634	\$1,146,330	\$583,418
Nov 17	4.80	2.60	474.23	387.00	14.91	14.33	230,952	370,900	388,155	385,035	64,772	\$3,484,280	\$1,392,536	\$1,497,035
Dec 17	8.10	4.60	362.96	299.00	14.86	14.07	270,310	499,967	437,962	492,421	19,156	\$2,604,643	\$472,737	\$508,199
Jan 18														
Feb 18														
Mar 18														
Apr 18														
May 18														
Jun 18														
Jul 18														
Aug 18														
Sep 18														
Total							749,275	1,260,805	1,208,547	1,307,642	112,202	\$9,634,558	\$3,011,604	\$2,588,652

Actual generation as a percentage of average: 108.2%

Cost per MWh: \$23.07

Lake/Reservoir Levels

Lake Powell's elevation was 3,623 feet at the end of December, about 77 feet below the maximum reservoir level and about 133 feet above the minimum generation level. The storage volume for Lake Powell was 14.07 million acre-feet at the end of December, which is about 60 percent of capacity.

Weather and Other Conditions

Current inflow forecasts into Lake Powell are very dry, with April-July inflows currently forecasted at 54 percent of average. With the current dry conditions in the Upper Colorado River Basin, purchase power estimates for fiscal year 2018 have increased about \$2 million since the first estimates were made in October.

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 17	1.30	0.70	59.90	45.00	20.15	12.26	321,455	321,455	378,173	327,168	622	\$0	\$0	\$15,967
Nov 17	4.80	2.60	53.75	40.00	20.20	12.29	373,825	373,825	363,506	373,021	6,160	\$96,950	\$96,950	\$238,885
Dec 17	8.10	4.60	72.83	44.00	20.32	12.30	271,905	271,905	371,404	316,487	10,262	\$246,131	\$246,131	\$384,325
Jan 18														
Feb 18														
Mar 18														
Apr 18														
May 18														
Jun 18														
Jul 18														
Aug 18														
Sep 18														
Total							967,185	967,185	1,113,083	1,016,676	17,044	\$343,081	\$343,081	\$639,177

Actual generation as a percentage of average: 91.3%

Cost per MWh: \$37.50

Lake/Reservoir Levels

Lake Mead's elevation was 1,083 feet at the end of December, about 137 feet below the full storage level and about 133 feet above the minimum generation level. Lake Mead's elevation is projected to reach a peak elevation of 1,088 feet in February and drop to a minimum elevation of 1,076 feet in June.

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 was 59 percent of average at the end of December. The total side inflow into Lake Mead for water year 2018 is projected to be 699 thousand acre-feet, which represents a 29.7 percent decrease from last year and a 54 percent decrease from the normal annual amount.

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 17	0.00	1.00	135.50	239.20	3.92	4.72	94,856	104,129	92,921	102,835	73,854	\$1,612,050	\$1,456,780
Nov 17	3.70	3.40	118.80	205.90	3.88	4.72	63,717	94,184	63,235	90,440	69,165	\$980,138	\$1,865,825	\$1,670,392
Dec 17	12.00	12.40	98.00	106.40	3.83	4.68	96,244	104,950	97,078	93,454	80,843	\$614,713	\$1,458,113	\$1,790,660
Jan 18														
Feb 18														
Mar 18														
Apr 18														
May 18														
Jun 18														
Jul 18														
Aug 18														
Sep 18														
Total							254,817	303,262	253,234	286,729	223,862	\$3,206,901	\$4,780,718	\$5,161,907

Actual generation as a percentage of average: 113.2%

Cost per MWh: \$23.06

Lake/Reservoir Content

The overall reservoir content at the end of December was 122 percent of average.

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, although the drought is moving up from the south due to the La Niña weather pattern. The snowpack ranged from below average in the Colorado River Basin to above average in the Bighorn River Basin. The latest National Weather Service forecast indicates February through April temperatures will most likely be at or below average in northwestern Wyoming and will likely be above average in southeast Wyoming and Colorado. The same forecast indicates precipitation will be below average for all of LAP. For LAP as a whole, winter season generation is expected to be about 105 percent of average. Winter generation in the Bighorn River Basin will be above average due to record high inflows during the previous runoff season. Winter generation in the Colorado River Basin is forecasted to be average because of a high volume of water stored in Lake Grandby, and is also forecasted to be average in the North Platte River Basin.

Note: The Rocky Mountain Region's (RMR) most recent reported actual generation and purchase power data are provisional values. RMR previously reported snowpack data as a total for all reservoirs throughout LAP, but is now reporting that data as an average 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 17			339.00	339.00	5.38	7.49	261,000	171,000	163,000	208,470	46,751	\$519,480	\$519,480
Nov 17			416.00	636.00	5.36	7.60	154,000	149,000	104,000	118,897	49,097	\$499,500	\$499,500	\$1,140,296
Dec 17	11.54	3.00	975.00	696.00	5.77	7.48	99,000	104,000	143,000	105,005	54,113	\$499,500	\$499,500	\$1,171,386
Jan 18														
Feb 18														
Mar 18														
Apr 18														
May 18														
Jun 18														
Jul 18														
Aug 18														
Sep 18														
Total							514,000	424,000	410,000	432,371	149,961	\$1,518,480	\$1,518,480	\$3,316,841

Actual generation as a percentage of average: 105.5%

Cost per MWh: \$22.12

Lake/Reservoir Content

As of December 31, accumulated inflow for the water year was 48 percent of the 15-year average for Trinity, 79 percent for Shasta, 105 percent for Folsom, and 107 percent for New Melones. Reservoir storage as of the same date was 122 percent of the 15-year average for Trinity, 123 percent for Shasta, 136 percent for Folsom, and 149 percent for New Melones.

Weather and Other Conditions

As of December 31, cumulative precipitation of the Northern Sierra Eight Station Index was at 67 percent of average for the date. October only had 27 percent of average precipitation but November had 167 percent of average, and then December was the fourth driest on record. However, conditions were improving again in January.

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 17	1.20	1.20	8,050.00	6,477.30	56.01	59.78	805,326	796,806	790,075	760,352	41,277	\$688,399	\$743,287	\$336,335
Nov 17	3.80	4.50	7,375.00	6,901.97	54.92	58.89	838,063	817,624	729,890	773,047	58,278	\$1,071,080	\$1,147,712	\$1,091,157
Dec 17	7.10	8.50	6,442.00	6,415.93	54.32	58.03	754,340	820,267	601,300	758,602	*	\$3,815,497	\$2,930,323	*
Jan 18														
Feb 18														
Mar 18														
Apr 18														
May 18														
Jun 18														
Jul 18														
Aug 18														
Sep 18														
Total							2,397,729	2,434,696	2,121,266	2,292,001	99,555	\$5,574,976	\$4,821,322	\$1,427,492

Actual generation as a percentage of average: 108.0%

Cost per MWh: \$14.34

Lake/Reservoir Content

As of January 15, the active conservation pools for the Canyon Ferry and Yellowtail Dams were 78.1 percent and 88.7 percent full, respectively.

Weather and Other Conditions

The December runoff was 130 percent of normal. Runoff was above average in both the Fort Peck and Garrison reaches, mainly due to warmer than normal temperatures early in the month. Snowpack reports show 118 percent of average above Fort Peck and 134 percent of average in the Fort Peck to Garrison reach. The U.S. Drought Monitor shows that much of the upper Missouri River Basin continues to be impacted by drought, with extreme D3 drought conditions present in northern Montana and western South Dakota while less severe D1 and D2 drought conditions remain over the broader region.

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 data is not available for the month.