

**WESTERN AREA POWER ADMINISTRATION
HYDRO CONDITIONS AND PURCHASE POWER REPORT
February 2017**

Agency-wide

	Generation (Megawatt-Hours [MWh])				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Projected <u>Dry</u>	Most <u>Probable</u>	<u>Average</u>	<u>Actual</u>	<u>Actual</u>	Projected <u>Dry</u>	Most <u>Probable</u>	<u>Actual</u>
Oct 16	1,315,017	1,426,426	1,875,967	1,427,953	334,479	\$14,667,625	\$9,521,646	\$8,321,897
Nov 16	1,383,358	1,355,599	1,760,441	1,389,319	435,683	\$16,259,488	\$12,897,315	\$10,321,160
Dec 16	1,328,808	1,461,830	1,702,288	1,591,517	418,448	\$18,684,123	\$12,067,535	\$10,681,879
Jan 17	1,491,887	1,784,763	1,873,619	1,855,506				
Feb 17								
Mar 17								
Apr 17								
May 17								
Jun 17								
Jul 17								
Aug 17								
Sep 17								
Total	5,519,071	6,028,618	7,212,315	6,264,296	1,188,610	\$49,611,236	\$34,486,496	\$29,324,936
	Actual generation as a percentage of average: 86.9%					Cost per MWh: \$24.67		

Western Area Power Administration (WAPA) generated a total of 6,264 gigawatt-hours (GWh) during October through January of fiscal year 2017, or 86.9 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 1,189 GWh and total purchase power expenses were \$29,324,936, which equates to \$24.67 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 16	1.30	0.20	514.42	381.00	15.01	12.68	248,012	340,536	382,430	384,045	64,165	\$6,704,081	\$1,491,591	\$1,683,280
Nov 16	4.80	2.60	474.23	383.00	14.91	12.31	230,952	315,541	388,155	334,804	127,238	\$7,549,826	\$2,850,078	\$3,213,841
Dec 16	8.10	8.50	362.96	300.00	14.86	11.80	270,310	445,186	437,962	460,079	48,822	\$7,692,571	\$1,292,373	\$1,282,528
Jan 17	11.50	16.00	361.45	359.00	14.98	11.36	355,138	431,244	457,394	455,508	57,227	\$4,412,679	\$1,231,482	\$1,678,096
Feb 17														
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							1,104,413	1,532,507	1,665,941	1,634,436	297,452	\$26,359,156	\$6,865,525	\$7,857,745

Actual generation as a percentage of average: 98.1%

Cost per MWh: \$26.42

Lake/Reservoir Levels

Lake Powell's elevation was 3,596 feet at the end of January, about 104 feet below the maximum reservoir level and about 106 feet above the minimum generation level. The storage volume for Lake Powell was 11,359,000 acre-feet at the end of January, which is about 47 percent of capacity.

Weather and Other Conditions

The upper Colorado River Basin experienced higher than average precipitation in January and the first part of February, which resulted in a significant increase of the forecasted April-July inflow into Lake Powell for water year 2017. Current projections indicate Lake Powell elevation will increase about 46 feet from the end of January elevation, which corresponds to an increase of about 4.8 million acre-feet in storage.

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 16	1.30	0.20	60.29	79.00	20.40	11.75	282,630	282,630	378,811	290,888	5,020	\$165,459	\$165,459	\$165,459
Nov 16	4.80	2.60	54.10	78.00	20.31	11.90	345,830	373,020	363,391	374,705	1,919	\$90,031	\$64,805	\$65,277
Dec 16	8.10	8.50	73.53	63.00	20.44	12.31	254,600	268,015	372,094	277,597	13,258	\$388,103	\$289,603	\$510,168
Jan 17	11.50	16.00	93.88	126.00	20.59	12.80	284,450	292,965	395,966	255,068	21,520	\$535,169	\$535,169	\$800,974
Feb 17														
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							1,167,510	1,216,630	1,510,262	1,198,259	41,717	\$1,178,762	\$1,055,036	\$1,541,878

Actual generation as a percentage of average: 79.3%

Cost per MWh: \$36.96

Lake/Reservoir Levels

Lake Mead's elevation was 1,086 feet at the end of January, about 134 feet below full storage level and about 36 feet above the minimum generation level. Lake Mead's elevation is forecasted to peak at approximately 1,089 feet in February, and is forecasted to drop to a minimum elevation of approximately 1,075 feet in June.

Weather and Other Conditions

The Desert Southwest Region's hydrology is mostly dependent on the Colorado River Basin snowpack and precipitation above Lake Powell. The water year 2017 precipitation is currently 139 percent of average. This year's snowpack is certainly promising. If the above-average snowpack continues, equalization releases from Lake Powell might be imposed in April 2017 which could possibly provide Lake Mead with an additional 1 to 2 million acre-feet this year.

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	Most	Average	Actual	Actual	Projected	Most	Actual
							Dry	Probable				Dry	Probable	
Oct 16			138.60	177.30	3.85	4.66	93,769	98,500	82,866	90,186	63,171	\$1,918,912	\$1,768,512	\$1,522,980
Nov 16			120.30	145.10	3.85	4.72	57,639	59,762	78,718	56,073	88,908	\$3,104,240	\$3,033,840	\$2,226,606
Dec 16	268.10	160.50	98.80	106.40	3.82	4.69	91,252	93,448	101,061	102,574	73,018	\$2,601,536	\$2,534,336	\$2,020,033
Jan 17	417.90	452.40	96.60	114.70	3.79	4.67	108,118	110,236	111,274	127,252	49,028	\$2,062,592	\$1,995,392	\$1,233,982
Feb 17														
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							350,778	361,946	373,919	376,085	274,125	\$9,687,280	\$9,332,080	\$7,003,601

Actual generation as a percentage of average: 100.6%

Cost per MWh: \$25.55

Lake/Reservoir Content

The overall reservoir content at the end of January was 123 percent of average.

Weather and Other Conditions

The snowpack remains well above average across the Loveland Area Projects (LAP) area, and none of the high-elevation areas from which LAP snowmelt originates are considered to be in drought status. The February forecasts of most probable reservoir inflows from spring runoff were well above average in all river basins. The overall LAP reservoir storage at the end of January was above average and higher than it was at this time last year. The latest National Weather Service forecast indicates March through May temperatures are more likely to be above normal in Colorado and the precipitation is more likely to be above normal in Wyoming. LAP generation deficits occurred while the Colorado-Big Thompson Project (CBT) was largely unavailable from November through mid-December. No surplus generation is expected until spring, and surpluses are then projected to continue until August when CBT generation will be restricted during a Charles Hansen Feeder Canal siphon repair scheduled from August through mid-November.

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

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 16			336.00	561.00	5.26	4.66	121,000	146,000	163,000	100,955	56,052	\$1,179,286	\$1,179,286	\$1,536,064
Nov 16	4.76	3.00	399.00	706.00	5.21	4.99	104,000	34,000	104,000	42,525	57,080	\$1,139,734	\$1,139,734	\$1,582,259
Dec 16	9.09	6.00	1,046.00	1,621.00	5.72	5.63	79,000	19,000	143,000	115,177	54,748	\$1,179,286	\$1,179,286	\$1,280,611
Jan 17	27.78	30.00	1,167.00	3,436.00	6.13	6.43	78,000	293,000	163,000	385,479	32,535	\$499,500	\$499,500	\$643,343
Feb 17														
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							382,000	492,000	573,000	644,137	200,414	\$3,997,806	\$3,997,806	\$5,042,277

Actual generation as a percentage of average: 112.4%

Cost per MWh: \$25.16

Lake/Reservoir Content

As of January 31, accumulated inflow for the water year was 196 percent of the 15-year average for Trinity, 170 percent for Shasta, 329 percent for Folsom, and 239 percent for New Melones. Reservoir storage as of the same date was 97 percent of the 15-year average for Trinity, 124 percent for Shasta, 94 percent for Folsom, and 75 percent for New Melones. The Shasta and Folsom Reservoirs continue to spill for flood control, while Trinity and New Melones Reservoirs respectively gained 200 and nearly 400 thousand acre-feet in January.

Weather and Other Conditions

As of January 31, cumulative precipitation of the Northern Sierra Eight Station Index was at 193 percent of average for the date. The forecast based upon February 1, 2017, for the 50 percent exceedence case is "wet" as is the 90 percent exceedence case, reflecting continuous storm events.

Note: The Sierra Nevada Region's (SNR) average generation is based upon long-term modeling done for its "Green Book." SNR's projected power 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 16	1.20	0.40	8,092.00	5,601.83	55.94	58.67	569,606	558,761	868,861	561,879	146,071	\$4,699,887	\$4,916,797	\$3,414,114
Nov 16	3.80	1.40	7,411.00	5,690.87	54.83	58.32	644,937	573,277	826,177	581,212	160,538	\$4,375,658	\$5,808,858	\$3,233,177
Dec 16	7.10	5.60	6,468.00	5,454.05	54.23	57.60	633,647	636,181	648,170	636,090	228,602	\$6,822,627	\$6,771,937	\$5,588,539
Jan 17	10.30	7.80	6,659.00	5,727.89	54.03	57.50	666,182	657,318	745,985	632,199	*	\$4,853,151	\$5,023,264	*
Feb 17														
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							2,514,371	2,425,536	3,089,193	2,411,380	535,211	\$20,751,323	\$22,520,856	\$12,235,830

Actual generation as a percentage of average: 78.1%

Cost per MWh: \$22.86

Lake/Reservoir Content

As of February 20, the active conservation pools for the Canyon Ferry and Yellowtail Dams were 76.4 percent and 87.6 percent full, respectively.

Weather and Other Conditions

A mid-month thaw in January produced an average runoff of 151 percent of average. Snowpack accumulations have increased to 83 percent of average above Fort Peck and 117 percent of average on the Garrison to Fort Peck reach.

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