WESTERN AREA POWER ADMINSTRATION
HYDRO CONDITIONS AND PURCHASE POWER REPORT
March 2017

Agency-wide

	Generation (Megawatt-Hours [MWh])				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 16	1,315,017	1,426,426	1,875,969	1,427,953	334,086	$14,667,625	$9,521,646	$8,311,130
Nov 16	1,383,358	1,355,599	1,760,444	1,389,326	435,683	$16,259,488	$12,897,315	$10,321,160
Dec 16	1,328,808	1,461,830	1,702,290	1,591,771	418,448	$18,684,123	$12,067,535	$10,681,879
Jan 17	1,491,887	1,745,023	1,873,622	1,855,506	418,457	$12,363,090	$9,284,807	$10,229,253
Feb 17	1,398,791	1,649,920	1,721,646	1,734,010				
Mar 17								
Apr 17								
May 17								
Jun 17								
Jul 17								
Aug 17								
Sep 17								
Total	6,917,862	7,638,798	8,933,970	7,998,567	1,606,674	$61,974,326	$43,771,303	$39,543,422
Actual generation as a percentage of average:				89.5%			Cost per MWh:	$24.61

Western Area Power Administration (WAPA) generated a total of 7,999 gigawatt-hours (GWh) during October through February of fiscal year 2017, or 89.5 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 1,607 GWh and total purchase power expenses were $39,543,422, which equates to $24.61 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	334,811	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	460,333	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	15.10	21.00	392.01	555.00	15.99	11.22	265,647	387,432	390,580	393,646	61,657	$5,024,221	$1,531,108	$1,555,701
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							1,370,059	1,919,939	2,056,521	2,028,343	359,109	$31,383,377	$8,396,633	$9,413,446
							Actual generation as a percentage of average:			98.6%			Cost per MWh:	$26.21

Lake/Reservoir Levels

Lake Powell's elevation was 3,594 feet at the end of February, about 106 feet below the maximum reservoir level and about 104 feet above the minimum generation level. The storage volume for Lake Powell was 11.2 million acre-feet (MAF) at the end of February, which is about 46 percent of capacity.

Weather and Other Conditions

The upper Colorado River Basin experienced higher than average precipitation in February. The March 1 April-July inflow forecast was 145 percent of average; however, conditions have dried out in the upper Colorado River Basin and the March mid-month April-July inflow forecast was reduced to 138 percent of average.

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	253,225	395,966	255,068	21,520	$535,169	$535,169	$800,974
Feb 17	15.10	21.00	110.31	148.00	20.62	13.11	328,350	292,965	390,077	268,179	2,595	$0	$0	$83,974
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							1,495,860	1,469,855	1,900,339	1,466,437	44,312	$1,178,762	$1,055,036	$1,625,852
							Actual generation as a percentage of average:			77.2%			Cost per MWh:	$36.69

Lake/Reservoir Levels

Lake Mead's elevation was 1,090 feet at the end of February, about 130 feet below full storage level and about 40 feet above the minimum generation level. Lake Mead started the water year with a minimum elevation of 1,076 feet in October and it reached a peak elevation of 1,090 feet in February.

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 123 percent of average.

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 16			138.60	177.30	3.85	4.66	93,769	98,500	82,866	90,186	62,778	$1,918,912	$1,768,512	$1,512,213
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	33,352	$2,062,592	$1,995,392	$1,205,222
Feb 17	849.60	1,170.80	96.30	173.50	3.79	4.79	97,795	99,700	99,585	129,713	19,023	$1,254,624	$1,193,824	$474,331
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							448,572	461,646	473,504	505,798	277,079	$10,941,904	$10,525,904	$7,438,405
							Actual generation as a percentage of average:			106.8%			Cost per MWh:	$26.85

Lake/Reservoir Content

The overall reservoir content at the end of February was 126 percent of average.

Weather and Other Conditions

The snowpack remains well above average across the Loveland Area Projects (LAP) area even though there has been loss of lower-elevation snow due to recent warm weather, and none of the high-elevation areas from which LAP snowmelt originates are considered to be in drought status. The overall LAP reservoir storage at the end of February was above average and higher than it was at the same time last year, and the March forecasts of most probable reservoir inflows from spring runoff were well above average in all river basins. The latest National Weather Service forecast indicates April through June temperatures are more likely to be above normal in Colorado and southern Wyoming.

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	32,534	$499,500	$499,500	$643,343
Feb 17	27.78	45.00	1,339.00	5,725.00	6.71	7.68	139,000	300,000	195,000	439,436	19,673	$479,520	$479,520	$579,856
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							521,000	792,000	768,000	1,083,573	220,087	$4,477,326	$4,477,326	$5,622,133
									Actual generation as a percentage of average:	141.1%			Cost per MWh:	$25.55

Lake/Reservoir Content

As of February 28, accumulated inflow for the water year was 234 percent of the 15-year average for Trinity, 228 percent for Shasta, 414 percent for Folsom, and 337 percent for New Melones. Reservoir storage as of the same date was 119 percent of the 15-year average for Trinity, 119 percent for Shasta, 81 percent for Folsom, and 111 percent for New Melones. The Shasta and Folsom Reservoirs are no longer spilling for flood control, while the Trinity and New Melones Reservoirs respectively gained nearly 500 thousand acre-feet (kAF) and nearly 600 kAF in February.

Weather and Other Conditions

As of February 28, cumulative precipitation of the Northern Sierra Eight Station Index was at 214 percent of average for the date. The forecast based upon March 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	868,863	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	826,179	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	648,173	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	745,987	632,199	273,824	$4,853,151	$5,023,264	$5,901,618
Feb 17	12.90	12.70	6,300.00	5,706.99	54.34	58.54	568,000	569,823	646,404	503,036	*	$4,759,045	$4,738,596	*
Mar 17														
Apr 17														
May 17														
Jun 17														
Jul 17														
Aug 17														
Sep 17														
Total							3,082,371	2,995,359	3,735,606	2,914,416	809,035	$25,510,368	$27,259,451	$18,137,448
							Actual generation as a percentage of average:			78.0%			Cost per MWh:	$22.42

Lake/Reservoir Content

As of March 20, the active conservation pools for the Canyon Ferry and Yellowtail Dams were 79.5 percent and 81.8 percent full, respectively. Reservoir system storage rose to 56.97 MAF, above the Base Flood Control level of 56.1 MAF.

Weather and Other Conditions

Warmer weather in February melted much of the plains snowpack and produced an above-average runoff of 219 percent, with the runoff mainly originating from the lower part of the Missouri River Basin. Snowpack accumulations have increased to 97 percent of average above Fort Peck and 132 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.