WESTERN AREA POWER ADMINSTRATION
HYDRO CONDITIONS AND PURCHASE POWER REPORT
June 2016

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 15	1,434,895	1,538,279	1,966,014	1,612,157	265,079	$13,412,993	$10,002,458	$7,273,130
Nov 15	1,378,403	1,448,916	1,852,469	1,385,316	416,430	$16,197,285	$14,195,619	$9,530,629
Dec 15	1,325,629	1,506,717	1,755,293	1,497,975	492,619	$19,371,552	$13,648,145	$10,145,106
Jan 16	1,709,435	1,760,027	1,882,890	1,735,645	273,084	$9,493,892	$5,902,813	$6,561,179
Feb 16	1,365,511	1,491,899	1,746,941	1,516,513	368,677	$12,320,267	$8,662,264	$7,423,788
Mar 16	1,696,021	1,715,754	1,987,844	1,769,248	361,467	$9,989,905	$8,226,674	$6,922,281
Apr 16	1,811,037	1,901,810	2,228,272	1,872,005	272,707	$6,805,196	$5,615,210	$4,236,684
May 16	1,931,786	2,108,664	2,639,022	2,093,613				
Jun 16								
Jul 16								
Aug 16								
Sep 16								
Total	12,652,718	13,472,063	16,058,745	13,482,471	2,450,062	$87,591,091	$66,253,183	$52,092,797
	Actual generation as a percentage of average:			84.0%			Cost per MWh:	$21.26

Western Area Power Administration (WAPA) generated a total of 13,482 gigawatt-hours (GWh) during October through May of fiscal year 2016, or 84.0 percent of the average. Actual purchase power data is currently available from October through April for all of WAPA's Regions, and during this period total purchase power was 2,450 GWh and total purchase power expenses were $52,092,797, which equates to $21.26 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 15	0.20	0.80	514.42	535.00	15.01	12.29	248,012	340,194	382,430	379,732	71,798	$6,704,081	$2,989,589	$2,100,360
Nov 15	1.80	3.90	474.23	421.00	14.91	11.93	230,952	316,064	388,155	340,308	106,233	$7,549,826	$4,237,967	$2,748,918
Dec 15	4.00	7.90	362.96	294.00	14.86	11.54	270,310	443,456	437,962	472,018	38,014	$7,692,571	$1,952,432	$1,129,176
Jan 16	11.50	11.20	361.45	300.00	14.98	11.33	355,138	441,000	457,394	481,075	35,898	$4,412,679	$619,112	$1,067,937
Feb 16	15.10	13.40	392.01	396.00	15.99	11.22	265,647	347,936	390,580	400,465	51,902	$5,024,221	$1,432,878	$1,531,914
Mar 16	18.90	17.10	666.27	553.00	16.77	11.02	272,465	293,073	390,170	355,405	110,494	$5,517,603	$2,975,893	$2,915,399
Apr 16	19.40	17.50	1,057.14	814.00	16.74	11.01	250,695	277,986	397,861	382,353	33,650	$3,468,325	$1,850,278	$606,969
May 16	7.90	9.80	2,337.68	2,294.00	16.30	12.12	320,070	401,349	501,886	469,786	10,396	$2,044,585	$0	$204,590
Jun 16														
Jul 16														
Aug 16														
Sep 16														
Total							2,213,290	2,861,058	3,346,438	3,281,142	458,385	$42,413,890	$16,058,149	$12,305,263
							Actual generation as a percentage of average:			98.0%			Cost per MWh:	$26.84

Lake/Reservoir Levels

Lake Powell's elevation was 3,604 feet at the end of May, about 96 feet below the maximum reservoir level and about 114 feet above the minimum generation level. As of June 12, storage volume for Lake Powell was 12,814,000 acre-feet, which is about 53 percent of capacity.

Weather and Other Conditions

No unusual conditions reported.

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 15	0.20	0.80	59.90	119.00	20.40	12.01	339,700	319,060	379,926	319,537	1,105	$0	$36,896	$36,896
Nov 15	1.80	3.90	53.51	41.00	20.44	11.95	312,250	338,035	363,256	330,812	136	$25,378	$131,780	$4,408
Dec 15	4.00	7.90	73.77	42.00	20.57	12.23	288,100	310,990	373,314	318,054	1,795	$243,930	$165,592	$60,635
Jan 16	11.50	11.20	93.00	90.00	20.71	12.52	359,550	343,440	397,807	341,451	995	$0	$120,478	$34,984
Feb 16	15.10	13.40	109.40	81.00	20.74	12.56	334,500	386,660	391,662	382,329	305	$0	$0	$10,623
Mar 16	18.90	17.10	102.88	31.00	20.54	12.32	546,500	546,625	531,952	545,047	1,466	$72,029	$0	$50,284
Apr 16	19.40	17.50	84.78	69.00	20.36	12.04	566,300	575,135	572,023	563,595	1,741	$0	$0	$59,386
May 16	7.90	9.80	59.92	51.00	20.48	11.79	526,800	475,675	572,254	481,582	8,377	$118,258	$226,470	$283,143
Jun 16														
Jul 16														
Aug 16														
Sep 16														
Total							3,273,700	3,295,620	3,582,194	3,282,407	15,920	$459,595	$681,216	$540,359
							Actual generation as a percentage of average:			91.6%			Cost per MWh:	$33.94

Lake/Reservoir Levels

Lake Mead's elevation was 1,074 feet at the end of May, about 146 feet below full storage level and about 24 feet above the minimum generation level.

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 2016 precipitation is currently 99 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 15			138.60	117.70	3.85	4.44	86,700	86,400	84,083	86,111	77,092	$2,329,286	$2,339,186	$2,077,078
Nov 15			120.30	107.00	3.85	4.44	65,000	65,300	81,138	65,774	78,992	$3,053,655	$3,043,755	$1,996,381
Dec 15	246.40	205.10	98.80	98.40	3.82	4.42	105,900	106,200	103,195	107,384	64,146	$2,202,853	$2,192,953	$1,620,872
Jan 16	417.90	393.40	96.20	101.70	3.80	4.41	127,800	128,400	113,267	126,958	28,770	$1,476,948	$1,463,748	$697,853
Feb 16	849.60	818.20	95.00	110.00	3.80	4.44	118,200	120,600	101,392	113,311	12,140	$620,631	$544,731	$344,197
Mar 16	1,065.10	1,012.90	158.40	145.20	3.83	4.49	134,300	155,500	120,394	117,455	21,467	$493,482	$0	$457,223
Apr 16	1,341.70	1,422.60	253.10	339.90	3.85	4.71	140,800	169,700	140,578	119,364	40,028	$1,174,107	$217,107	$695,188
May 16	1,271.50	1,400.90	694.10	1,056.30	4.18	5.33	222,300	272,000	197,442	247,263	20,966	$0	$0	$457,787
Jun 16														
Jul 16														
Aug 16														
Sep 16														
Total							1,001,000	1,104,100	941,489	983,620	343,601	$11,350,962	$9,801,480	$8,346,579
							Actual generation as a percentage of average:			104.5%			Cost per MWh:	$24.29

Lake/Reservoir Content

The overall reservoir content at the end of May was 128 percent of average.

Weather and Other Conditions

The Loveland Area Projects (LAP) area continues to be drought free except for parts of the Bighorn Basin. The snowpack peaked above average in the Colorado-Big Thompson Project Upper Colorado River Headwaters and in the North Platte River Basin, and while the peak snowpack in the Bighorn Basin was below average it nonetheless peaked well above last year. The latest National Weather Service forecast indicates June through August temperatures are more likely to be above normal, and precipitation is just as likely to be above as below normal in the LAP area.

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 15			316.00	204.00	5.29	2.34	91,000	136,000	163,000	128,332	56,293	$1,820,820	$1,820,820	$1,871,992
Nov 15	3.57	2.00	386.00	210.00	5.24	2.21	79,000	99,000	104,000	38,675	57,583	$1,727,548	$1,727,548	$1,877,190
Dec 15	9.43	10.00	1,017.00	553.00	5.76	2.47	64,000	54,000	143,000	47,723	61,018	$1,803,740	$1,803,740	$1,949,075
Jan 16	17.70	20.00	1,032.00	1,653.00	6.18	3.96	15,000	0	163,000	6,638	63,436	$1,393,030	$1,393,030	$1,846,712
Feb 16	24.71	21.00	1,017.00	1,084.00	6.72	4.69	15,000	5,000	195,000	19,879	57,780	$1,309,570	$1,309,570	$1,615,090
Mar 16	27.91	24.00	1,455.00	2,955.00	7.45	6.62	30,000	75,000	207,000	162,709	47,458	$1,399,243	$1,399,243	$1,560,088
Apr 16	22.03	13.00	1,272.00	1,208.00	7.86	7.18	135,000	230,000	288,000	192,803	43,336	$659,936	$659,936	$889,087
May 16	25.00	2.00	1,210.00	921.00	7.83	7.01	245,000	295,000	442,000	322,579	37,097	$665,440	$665,440	$780,525
Jun 16														
Jul 16														
Aug 16														
Sep 16														
Total							674,000	894,000	1,705,000	919,338	424,001	$10,779,327	$10,779,327	$12,389,759
							Actual generation as a percentage of average:			53.9%			Cost per MWh:	$29.22

Lake/Reservoir Content

As of May 31, accumulated inflow for the water year was 129 percent of the 15-year average for Trinity, 110 percent for Shasta, 117 percent for Folsom, and 111 percent for New Melones. Reservoir storage as of the same date was 75 percent of 15-year average for Trinity, 111 percent for Shasta, 103 percent for Folsom, and 44 percent for New Melones.

Weather and Other Conditions

As of May 31, cumulative precipitation of the Northern Sierra Eight Station Index was at 115 percent of average for the date, and 113 percent of the water year average. The May 1, 2016 forecast for the 50 percent exceedence case is the basis for the official year type declaration, which is "below normal" for this water year.

Note: The Sierra Nevada Region's (SNR) average projection of generation is taken from the latest modeling using the update to its customers' "Green Book." SNR does not project purchase power expenses for dry conditions, and its most probable projected expenses are based upon term purchases of 70-75 percent of projected power needs with the difference being left to day-ahead markets after project pumping and generation are 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 15	1.20	0.40	8,092.00	5,998.12	55.94	59.52	669,483	656,625	956,575	698,445	58,791	$2,558,807	$2,815,967	$1,186,804
Nov 15	3.80	2.90	7,411.00	5,642.70	54.83	58.73	691,201	630,517	915,920	609,747	173,486	$3,840,879	$5,054,569	$2,903,732
Dec 15	7.10	7.00	6,468.00	5,109.00	54.23	58.41	597,319	592,071	697,821	552,796	327,646	$7,428,458	$7,533,428	$5,385,348
Jan 16	10.30	9.50	6,658.00	6,634.00	53.94	57.73	851,947	847,187	751,422	779,523	143,984	$2,211,235	$2,306,445	$2,913,693
Feb 16	12.90	11.50	6,291.00	6,046.50	54.25	58.30	632,165	631,703	668,307	600,529	246,550	$5,365,845	$5,375,085	$3,921,964
Mar 16	15.80	15.00	8,226.00	5,636.40	56.02	58.46	712,756	645,556	738,328	588,632	180,582	$2,507,548	$3,851,538	$1,939,287
Apr 16	15.10	11.00	8,061.00	6,579.20	56.91	59.23	718,242	648,989	829,810	613,890	153,952	$1,502,829	$2,887,889	$1,986,054
May 16	6.60	4.30	9,699.00	6,872.50	58.18	61.10	617,617	664,640	925,440	572,402	*	$3,150,160	$2,209,700	*
Jun 16														
Jul 16														
Aug 16														
Sep 16														
Total							5,490,728	5,317,285	6,483,624	5,015,964	1,284,991	$28,565,760	$32,034,620	$20,236,882
							Actual generation as a percentage of average:			77.4%			Cost per MWh:	$15.75

Lake/Reservoir Content

As of June 20, the active conservation pools for the Canyon Ferry and Yellowtail Dams were 100 percent and 91.2 percent full, respectively.

Weather and Other Conditions

The May actual system runoff was 136 percent of normal above Sioux City. Heavy spring rains fell in the lower Missouri River valley causing increased inflows, and the rains soaked the lower basin causing continued curtailments of upstream hydro generation. The increased runoff will not provide more generation this year but will maintain full reservoir levels heading into next year. As of June 1, snowpack was at 68 percent of average above Fort Peck and 68 percent of average between Fort Peck and Garrison.

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.