WESTERN AREA POWER ADMINSTRATION
HYDRO CONDITIONS AND PURCHASE POWER REPORT
September 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	1,612,146	261,540	$13,412,993	$10,002,458	$7,167,945
Nov 15	1,378,403	1,448,916	1,852,469	1,385,304	412,848	$16,197,285	$14,195,619	$9,444,682
Dec 15	1,325,629	1,506,717	1,755,293	1,497,963	492,619	$19,371,552	$13,648,145	$10,145,106
Jan 16	1,709,435	1,760,027	1,882,890	1,735,632	273,084	$9,493,892	$5,902,813	$6,561,179
Feb 16	1,365,511	1,491,899	1,746,941	1,516,502	368,677	$12,320,267	$8,662,264	$7,375,098
Mar 16	1,696,021	1,715,754	1,987,844	1,769,235	332,183	$9,989,905	$8,226,674	$6,512,520
Apr 16	1,811,037	1,901,810	2,228,272	1,871,997	261,063	$6,805,196	$5,615,210	$3,974,380
May 16	1,931,786	2,108,664	2,639,022	2,093,597	207,284	$5,978,443	$3,101,610	$3,824,730
Jun 16	1,977,210	2,187,855	2,718,068	2,458,933	113,816	$5,973,780	$4,365,429	$2,613,101
Jul 16	2,254,628	2,372,142	2,951,134	2,568,745	124,870	$5,577,027	$4,055,432	$3,673,660
Aug 16	2,126,275	2,195,698	2,730,139	2,318,352				
Sep 16								
Total	19,010,831	20,227,757	24,458,086	20,828,405	2,847,984	$105,120,342	$77,775,653	$61,292,401
Actual generation as a percentage of average:				85.2%			Cost per MWh:	$21.52

Western Area Power Administration (WAPA) generated a total of 20,828 gigawatt-hours (GWh) during October through August of fiscal year 2016, or 85.2 percent of the average. Actual purchase power data is currently available from October through July for all of WAPA's Regions, and during this period total purchase power was 2,848 GWh and total purchase power expenses were $61,292,401, which equates to $21.52 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	0.00	0.90	2,668.50	2,907.00	16.00	13.76	337,289	476,473	585,467	543,789	0	$2,301,440	$0	$0
Jul 16	0.00	0.90	1,093.88	595.00	15.88	13.58	436,357	508,082	612,093	604,720	88	$708,807	$0	$1,647
Aug 16	0.00	0.90	496.08	253.00	15.68	13.09	429,891	488,585	574,470	565,084	1,416	$1,004,331	$0	$26,626
Sep 16														
Total							3,416,827	4,334,198	5,118,468	4,994,735	459,889	$46,428,468	$16,058,149	$12,333,536
							Actual generation as a percentage of average:			97.6%			Cost per MWh:	$26.82

Lake/Reservoir Levels

Lake Powell's elevation was 3,614 feet at the end of August, about 86 feet below the maximum reservoir level and about 124 feet above the minimum generation level. The storage volume for Lake Powell was 13,091,000 acre-feet at the end of August, which is about 54 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	0.00	0.90	26.60	15.00	20.69	11.67	461,050	472,185	538,244	479,488	12,982	$354,423	$352,116	$459,822
Jul 16	0.00	0.90	66.04	71.00	20.59	11.74	442,200	437,695	549,987	436,658	19,303	$753,146	$695,161	$768,259
Aug 16	0.00	0.90	99.79	106.00	20.46	11.88	391,150	363,910	514,205	376,935	27,002	$1,174,078	$1,174,078	$1,086,290
Sep 16														
Total							4,568,100	4,569,410	5,184,630	4,575,488	75,207	$2,741,242	$2,902,571	$2,854,730
							Actual generation as a percentage of average:			88.3%			Cost per MWh:	$37.96

Lake/Reservoir Levels

Lake Mead's elevation was 1,075 feet at the end of August, about 144 feet below full storage level and about 25 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 94 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	73,553	$2,329,286	$2,339,186	$1,971,893
Nov 15			120.30	107.00	3.85	4.44	65,000	65,300	81,138	65,774	75,410	$3,053,655	$3,043,755	$1,910,434
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	$295,507
Mar 16	1,065.10	1,012.90	158.40	145.20	3.83	4.49	134,300	155,500	120,394	117,455	-7,817	$493,482	$0	$47,462
Apr 16	1,341.70	1,422.60	253.10	339.90	3.85	4.71	140,800	169,700	140,578	119,364	28,384	$1,174,107	$217,107	$432,884
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	10,109	$0	$0	$246,978
Jun 16	301.50	464.80	1,105.70	1,388.30	4.74	5.82	205,800	269,500	242,477	316,354	20,861	$172,095	$0	$606,406
Jul 16			521.10	290.10	4.45	5.35	233,700	268,000	255,437	246,991	40,377	$934,923	$0	$1,386,263
Aug 16			188.60	118.60	4.00	4.80	205,200	224,400	203,695	177,520	42,428	$196,680	$0	$1,180,209
Sep 16														
Total							1,645,700	1,866,000	1,643,098	1,724,485	388,361	$12,654,660	$9,801,480	$10,396,761
							Actual generation as a percentage of average:			105.0%			Cost per MWh:	$26.77

Lake/Reservoir Content

The overall reservoir content at the end of August was 120 percent of average.

Weather and Other Conditions

Drought conditions have returned to some parts of the Bighorn and Platte River basins with a more extensive area considered abnormally dry. The year to date reservoir inflow is above average across the Loveland Area Projects (LAP) area and well above average in the North Platte River basin. The LAP reservoir storage at the end of August was above average in all three basins but, overall, slightly less than at the end of last August. The latest National Weather Service forecast indicates October through December 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			749.00	537.00	7.38	6.54	280,000	320,000	440,000	353,394	39,345	$659,936	$659,936	$800,734
Jul 16			432.00	353.00	6.57	5.76	290,000	315,000	524,000	422,571	37,314	$1,112,590	$1,112,590	$1,114,377
Aug 16			344.00	308.00	5.91	5.08	210,000	240,000	402,000	333,359	45,888	$1,150,782	$1,150,782	$1,175,100
Sep 16														
Total							1,454,000	1,769,000	3,071,000	2,028,662	546,549	$13,702,635	$13,702,635	$15,479,970
							Actual generation as a percentage of average:			66.1%			Cost per MWh:	$28.32

Lake/Reservoir Content

As of August 31, accumulated inflow for the water year was 116 percent of 15-year average for Trinity, 105 percent for Shasta, 112 percent for Folsom, and 105 percent for New Melones. Reservoir storage as of the same date was 69 percent of the 15-year average for Trinity, 121 percent for Shasta, 69 percent for Folsom, and 43 percent for New Melones.

Weather and Other Conditions

As of August 31, cumulative precipitation of the Northern Sierra Eight Station Index was at 115 percent of average for the date, and 116 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	698,434	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	609,735	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	552,784	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	779,510	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	600,518	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	588,619	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	613,882	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	572,386	141,305	$3,150,160	$2,209,700	$2,309,494
Jun 16	0.60	0.00	11,819.00	7,634.60	60.38	61.91	693,071	649,697	911,880	765,908	40,628	$2,485,887	$3,353,377	$746,139
Jul 16			10,827.00	7,228.20	60.36	61.13	852,371	843,365	1,009,617	857,805	27,788	$2,067,561	$2,247,681	$403,114
Aug 16			9,829.00	6,943.40	58.77	59.69	890,035	878,803	1,035,769	865,454	*	$83,271	$307,901	*
Sep 16														
Total							7,926,204	7,689,149	9,440,889	7,505,035	1,494,712	$33,202,478	$37,943,578	$23,695,629
							Actual generation as a percentage of average:			79.5%			Cost per MWh:	$15.85

Lake/Reservoir Content

As of September 15, the active conservation pools for the Canyon Ferry and Yellowtail Dams were 80.4 percent and 88.6 percent full, respectively.

Weather and Other Conditions

Dry conditions continued across the plains this summer, which caused below-average inflows again in August. The August actual system runoff was 76 percent of normal.

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.