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

	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	309,915	$14,667,625	$9,521,646	$7,774,585
Nov 16	1,383,358	1,355,599	1,760,444	1,389,326	430,035	$16,259,488	$12,897,315	$10,213,154
Dec 16	1,328,808	1,461,830	1,702,290	1,591,771	411,464	$18,684,123	$12,067,535	$10,552,769
Jan 17	1,491,887	1,745,023	1,873,622	1,855,506	411,553	$12,363,090	$9,284,807	$10,074,733
Feb 17	1,398,791	1,649,920	1,721,646	1,734,010	440,843	$11,517,410	$7,943,048	$8,246,029
Mar 17	1,925,710	2,008,918	1,965,516	2,193,546	253,197	$9,056,101	$5,158,661	$4,892,690
Apr 17	2,364,984	2,543,514	2,174,480	2,532,826	49,855	$6,389,186	$2,097,912	$981,977
May 17	2,665,575	2,932,309	2,508,027	2,891,132	131,029	$3,467,957	$3,434,907	$2,909,556
Jun 17	2,768,173	3,078,396	2,621,548	2,966,706	25,541	$3,457,260	$1,190,198	$1,494,457
Jul 17	2,851,670	3,016,252	2,859,659	2,883,856	71,949	$3,405,663	$1,485,892	$3,047,618
Aug 17	2,569,845	2,779,607	2,617,268	2,664,513				
Sep 17								
Total	22,063,819	23,997,794	23,680,467	24,131,146	2,535,383	$99,267,903	$65,081,921	$60,187,567
Actual generation as a percentage of average:				101.9%			Cost per MWh:	$23.74

Western Area Power Administration (WAPA) generated a total of 24,131 gigawatt-hours (GWh) during October through August of fiscal year 2017, or 101.9 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 2,535 GWh and total purchase power expenses were $60,187,567, which equates to $23.74 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	18.90	22.00	666.27	1,110.00	16.77	11.36	272,465	405,609	390,170	458,176	29,840	$5,517,603	$1,111,921	$644,587
Apr 17	19.40	21.00	1,057.14	1,607.00	16.74	12.15	250,695	404,074	397,861	427,891	10,935	$3,468,325	$93,697	$210,181
May 17	7.90	11.00	2,337.68	2,377.00	16.30	13.67	320,070	572,228	501,886	553,204	86,530	$2,044,585	$1,990,190	$1,455,945
Jun 17	0.00	1.00	2,668.50	3,115.00	16.00	15.41	337,289	607,167	585,467	592,541	2,885	$2,301,440	$22,746	$44,051
Jul 17	0.00	1.10	1,093.88	1,073.00	15.88	15.39	436,357	505,605	612,093	556,270	4,635	$708,807	$70,408	$97,798
Aug 17	0.00	1.00	496.08	446.00	15.68	14.95	429,891	556,396	554,076	555,562	3,979	$1,004,331	$3,076	$67,921
Sep 17														
Total							3,416,827	4,971,017	5,098,074	5,171,987	497,913	$46,428,468	$11,688,670	$11,933,929
							Actual generation as a percentage of average:			101.4%			Cost per MWh:	$23.97

Lake/Reservoir Levels

Lake Powell's elevation was 3,631 feet at the end of August, about 69 feet below the maximum reservoir level and about 141 feet above the minimum generation level. The storage volume for Lake Powell was 14.95 million acre-feet at the end of August, which is about 61 percent of capacity.

Weather and Other Conditions

Lake Powell elevation peaked for water year 2017 at 3,635 feet in August, and will decrease to an elevation of about 3,630 feet by the end of the water year.

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	18.90	22.00	102.80	99.00	20.40	13.00	558,800	504,200	531,483	496,001	12,330	$72,840	$391,582	$330,814
Apr 17	19.40	21.00	84.98	94.00	20.25	12.70	524,735	524,735	571,605	537,707	4,094	$93,243	$93,243	$112,012
May 17	7.90	11.00	59.42	40.00	20.36	12.45	487,280	487,280	571,204	491,336	22,788	$595,658	$595,658	$777,754
Jun 17	0.00	1.00	26.38	18.00	20.56	12.26	467,615	467,615	537,300	466,470	8,885	$582,202	$582,202	$687,310
Jul 17	0.00	1.10	66.54	88.00	20.47	12.27	462,330	462,330	548,865	465,914	14,972	$904,397	$904,397	$1,130,449
Aug 17	0.00	1.00	99.68	94.00	20.34	12.41	362,615	362,615	512,355	370,861	36,996	$2,334,718	$2,334,718	$2,158,555
Sep 17														
Total							4,359,235	4,278,630	5,173,151	4,294,726	144,377	$5,761,820	$5,956,836	$6,822,746
							Actual generation as a percentage of average:			83.0%			Cost per MWh:	$47.26

Lake/Reservoir Levels

Lake Mead's elevation was 1,081 feet at the end of August, about 138 feet below the full storage level and about 131 feet above the new minimum generation level of 950 feet. Lake Mead started the water year with a minimum elevation of 1,076 feet in October and 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 precipitation was 109 percent of average at the end of August.

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	38,607	$1,918,912	$1,768,512	$975,668
Nov 16			120.30	145.10	3.85	4.72	57,639	59,762	78,718	56,073	83,260	$3,104,240	$3,033,840	$2,118,600
Dec 16	268.10	160.50	98.80	106.40	3.82	4.69	91,252	93,448	101,061	102,574	66,034	$2,601,536	$2,534,336	$1,890,923
Jan 17	417.90	452.40	96.60	114.70	3.79	4.67	108,118	110,236	111,274	127,252	26,448	$2,062,592	$1,995,392	$1,050,702
Feb 17	849.60	1,170.80	96.30	173.50	3.79	4.79	97,795	99,700	99,585	129,713	-1,530	$1,254,624	$1,193,824	$28,939
Mar 17	1,105.20	1,524.90	159.00	293.50	4.13	4.70	124,712	136,697	118,178	191,665	-12,237	$785,728	$401,728	-$225,351
Apr 17	1,342.80	1,552.90	250.20	462.40	3.85	4.50	135,854	164,886	138,114	246,662	-10,909	$1,295,328	$367,328	-$170,788
May 17	1,231.50	1,441.80	696.50	1,120.10	4.19	4.41	217,579	252,286	197,941	245,430	-868	$0	$0	$35,885
Jun 17	304.70	579.90	1,124.80	2,054.20	4.76	5.78	231,289	311,890	244,139	300,898	-18,731	$0	$0	-$102,860
Jul 17			519.90	875.80	4.59	5.45	221,682	261,731	254,121	264,905	8,888	$1,290,592	$10,592	$823,470
Aug 17			186.90	247.00	4.99	4.02	177,845	192,238	201,774	186,761	20,798	$1,067,520	$606,720	$1,038,160
Sep 17														
Total							1,557,533	1,781,372	1,627,773	1,942,119	199,760	$15,381,072	$11,912,272	$7,463,348
							Actual generation as a percentage of average:			119.3%			Cost per MWh:	$37.36

Lake/Reservoir Content

The overall reservoir content at the end of August was 80.6 percent of average.

Weather and Other Conditions

The Loveland Area Projects (LAP) area remained drought free during August, but the trend was for drier conditions in some areas. The latest National Weather Service forecast indicates that August through October temperatures are more likely to be above normal, and the precipitation is just as likely to be above as below normal in Wyoming and eastern Colorado while more likely to be above normal west of the Continental Divide in Colorado. Colorado-Big Thompson Project 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	32,534	$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	28.22	46.00	1,553.00	2,574.00	7.46	8.61	290,000	330,000	207,000	399,223	26,567	$539,460	$539,460	$642,682
Apr 17	25.77	42.00	1,380.00	2,758.00	7.88	9.29	431,000	426,000	288,000	426,215	20,089	$499,500	$499,500	$555,974
May 17	27.87	17.00	1,303.00	2,259.00	7.91	9.66	526,000	516,000	442,000	617,375	11,820	$519,480	$519,480	$582,074
Jun 17	0.00	2.00	804.00	1,320.00	7.49	9.51	537,000	522,000	440,000	469,577	31,382	$519,480	$519,480	$845,693
Jul 17			451.00	623.00	6.71	8.98	539,000	564,000	524,000	438,703	40,530	$499,500	$499,500	$899,558
Aug 17			350.00	452.00	6.05	8.34	445,000	515,000	402,000	420,428	42,722	$539,460	$539,460	$708,381
Sep 17														
Total							3,289,000	3,665,000	3,071,000	3,855,094	393,198	$7,594,206	$7,594,206	$9,856,494
							Actual generation as a percentage of average:			125.5%			Cost per MWh:	$25.07

Lake/Reservoir Content

As of August 31, accumulated inflow for the water year was 171 percent of the 15-year average for Trinity, 184 percent for Shasta, 286 percent for Folsom, and 277 percent for New Melones. Reservoir storage as of the same date was 122 percent of the 15-year average for Trinity, 137 percent for Shasta, 149 percent for Folsom, and 154 percent for New Melones.

Weather and Other Conditions

As of August 31, cumulative precipitation of the Northern Sierra Eight Station Index was at 186 percent of average for the date. While there was no measurable precipitation in July, August had 0.06 inches. The May 1 forecast for the 50 percent exceedence case is the basis for the official year type declaration, which is "wet" for this water year.

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 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	358,448	$4,759,045	$4,738,596	$5,997,559
Mar 17	15.80	14.80	8,219.00	7,544.34	56.08	59.94	679,733	632,412	718,685	648,481	196,697	$2,140,470	$2,713,970	$3,499,958
Apr 17	15.10	16.00	8,052.00	9,087.27	56.95	60.50	1,022,700	1,023,820	778,900	894,351	25,646	$1,032,790	$1,044,144	$274,598
May 17	6.60	6.50	9,692.00	10,815.22	58.22	61.97	1,114,646	1,104,515	794,995	983,787	10,759	$308,233	$329,579	$57,898
Jun 17	0.60	0.20	11,809.00	12,545.36	60.45	63.67	1,194,980	1,169,724	814,641	1,137,220	1,120	$54,138	$65,770	$20,263
Jul 17			10,764.00	10,522.78	60.42	63.24	1,192,301	1,222,587	920,579	1,158,064	2,924	$2,367	$995	$96,343
Aug 17			9,775.00	9,460.01	58.83	62.04	1,154,495	1,153,358	947,063	1,130,901	*	$62,490	$64,611	*
Sep 17														
Total							9,441,225	9,301,775	8,710,469	8,867,220	1,404,629	$29,110,856	$31,478,522	$28,084,067
							Actual generation as a percentage of average:			101.8%			Cost per MWh:	$19.99

Lake/Reservoir Content

As of September 13, the active conservation pools for the Canyon Ferry and Yellowtail Dams were 82.9 percent and 98.1 percent full, respectively.

Weather and Other Conditions

The August runoff in the upper basin was 129 percent of normal. Runoff at Fort Peck was 78 percent of normal, with Oahe and Fort Randall well above normal due to 150 percent of average precipitation. Drought conditions are present in all states of the Missouri River Basin and over a majority of the upper Basin. In Montana, 90 percent of the state is impacted by drought, and 40 percent is impacted by Extreme (D3) and Exceptional (D4) Drought with the most severe conditions present over the northeastern quarter of the state. In North Dakota, 60 percent of the state is impacted by drought, and 22 percent is impacted by D3 and D4 Drought mostly in the western half. In South Dakota, 69 percent of the state is impacted by drought, and 6 percent is impacted by D3 and D4 Drought with the most severe conditions in north central South Dakota. Two units at Fort Randall remain out of service due to cable tray replacements.

Note: The Upper Great Plains Region 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.