Western Area Power Administration
Hydro Conditions and Purchase Power Report
March 2016

Western-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	273,603	$13,412,993	$10,002,458	$7,576,439
Nov 15	1,378,403	1,448,916	1,852,469	1,385,316	433,893	$16,197,285	$14,195,619	$10,102,495
Dec 15	1,325,629	1,506,717	1,755,293	1,497,975	519,702	$19,371,552	$13,648,145	$11,006,080
Jan 16	1,709,435	1,760,027	1,882,890	1,735,645	297,093	$9,493,892	$5,902,813	$7,045,364
Feb 16	1,365,511	1,491,899	1,746,941	1,516,513	143,174	$12,320,267	$8,662,264	$3,873,728
Mar 16								
Apr 16								
May 16								
Jun 16								
Jul 16								
Aug 16								
Sep 16								
Total	7,213,874	7,745,836	9,203,606	7,747,606	1,667,464	$70,795,990	$52,411,299	$39,604,106
Actual generation as a percentage of average:				84.2%			Cost per MWh:	$23.75

Western Area Power Administration (Western) generated a total of 7,748 gigawatt-hours (GWh) during October through February of fiscal year 2016, or 84.2 percent of the average. For the same period, total purchase power was 1,667 GWh and total purchase power expenses were $39,604,106, which equates to $23.75 per MWh.

The following pages indicate Western'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	408.80	636.00	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	510.71	420.00	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	474.22	465.00	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	363.30	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	362.24	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														
Apr 16														
May 16														
Jun 16														
Jul 16														
Aug 16														
Sep 16														
Total							1,370,059	1,888,650	2,056,521	2,073,598	303,845	$31,383,377	$11,231,978	$8,578,305
							Actual generation as a percentage of average:			100.8%			Cost per MWh:	$28.23

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. Current storage volume for Lake Powell is 11,200,000 acre-feet, which is about 46 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														
Apr 16														
May 16														
Jun 16														
Jul 16														
Aug 16														
Sep 16														
Total							1,634,100	1,698,185	1,905,965	1,692,183	4,336	$269,308	$454,746	$147,546
									Actual generation as a percentage of average:	88.8%			Cost per MWh:	$34.03

Lake/Reservoir Levels

Lake Mead's elevation was 1,084 feet at the end of February, about 135 feet below full storage level and about 34 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 WY 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	85,616	$2,329,286	$2,339,186	$2,380,387
Nov 15			120.30	107.00	3.85	4.44	65,000	65,300	81,138	65,774	96,455	$3,053,655	$3,043,755	$2,568,247
Dec 15	246.40	205.10	98.80	98.40	3.82	4.42	105,900	106,200	103,195	107,384	91,229	$2,202,853	$2,192,953	$2,481,846
Jan 16	417.90	393.40	96.20	101.70	3.80	4.41	127,800	128,400	113,267	126,958	52,779	$1,476,948	$1,463,748	$1,182,038
Feb 16	849.60	818.20	95.00	110.00	3.80	4.44	118,200	120,600	101,392	113,311	33,187	$620,631	$544,731	$716,101
Mar 16														
Apr 16														
May 16														
Jun 16														
Jul 16														
Aug 16														
Sep 16														
Total							503,600	506,900	483,075	499,538	359,266	$9,683,373	$9,584,373	$9,328,619
									Actual generation as a percentage of average:	103.4%			Cost per MWh:	$25.97

Lake/Reservoir Content

The overall reservoir content at the end of February was 117 percent of average.

Weather and Other Conditions

While the Loveland Area Projects area is mostly drought free parts of the Bighorn Basin are now considered to be in a state of drought. The snowpack is average for the Colorado-Big Thompson Project, below average in the North Platte Basin, and well below average in the Bighorn Basin. The latest National Weather Service forecast indicates April through June temperatures are more likely to be above normal in Wyoming and western and north central Colorado, and just as likely to be above as below normal in eastern and south central Colorado. The precipitation is more likely to be above normal in both Colorado and Wyoming.

Note: The Rocky Mountain Region's (RMR) more 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	5.86	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	14.13	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	15.01	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														
Apr 16														
May 16														
Jun 16														
Jul 16														
Aug 16														
Sep 16														
Total							264,000	294,000	768,000	241,247	296,110	$8,054,708	$8,054,708	$9,160,059
							Actual generation as a percentage of average:			31.4%			Cost per MWh:	$30.93

Lake/Reservoir Content

As of March 15, accumulated inflow for the water year was 145 percent of the 15-year average for Trinity, 121 percent for Shasta, 127 percent for Folsom, and 114 percent for New Melones. The overall reservoir content at the end of February was 70 percent of average.

Weather and Other Conditions

As of March 15, cumulative precipitation of the Northern Sierra Eight Station Index is at 115 percent of average for the date, and 98 percent of the water year average. Forecasts began in December and are updated monthly based upon conditions as of the 1st of each month. The March 1, 2016 forecast is "critical" for the dry (90 percent) and "dry" for the most probable (50 percent) exceedence cases.

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	0	$5,365,845	$5,375,085	$0
Mar 16														
Apr 16														
May 16														
Jun 16														
Jul 16														
Aug 16														
Sep 16														
Total							3,442,115	3,358,101	3,990,046	3,241,040	703,907	$21,405,224	$23,085,494	$12,389,577
									Actual generation as a percentage of average:	81.2%			Cost per MWh:	$17.60

Lake/Reservoir Content

As of March 21, the active conservation pools for the Canyon Ferry and Yellowtail Dams were 78.0 percent and 81.3 percent full, respectively.

Weather and Other Conditions

Warmer-than-normal temperatures in February resulted in early melting of the plains snowpack, and the February actual system runoff was 170 percent of average above Sioux City. As of March 1, snowpack was at 88 percent above Fort Peck and 75 percent 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. UGPR's financial reports are in the process of being finalized, so its reported purchase power data may change.