WESTERN AREA POWER ADMINSTRATION
HYDRO CONDITIONS AND PURCHASE POWER REPORT
October 2022-Final

Total

	Generation (Megawatt-Hours [MWh])				Purchase Power (MWh)	Purchase Power Expenses (Dollars)		
	Projected Dry	Most Probable	Average	Actual	Actual	Projected Dry	Most Probable	Actual
Oct 21	1,467,161	1,477,997	1,974,250	1,510,797	313,064	$15,851,765	$15,225,185	$17,578,739
Nov 21	1,228,617	1,160,110	1,870,443	1,133,988	591,945	$24,125,267	$23,271,118	$28,611,372
Dec 21	1,082,403	1,088,536	1,826,740	1,103,958	576,289	$14,608,047	$13,892,164	$20,685,110
Jan 22	1,327,335	1,320,351	1,927,315	1,262,076	495,669	$11,939,550	$11,857,033	$19,848,159
Feb 22	1,214,591	1,204,685	1,785,979	1,147,882	466,488	$12,510,942	$12,547,403	$16,963,820
Mar 22	1,528,794	1,525,539	1,962,317	1,452,443	364,554	$11,197,405	$10,862,263	$9,654,531
Apr 22	1,620,869	1,695,665	2,289,248	1,594,483	265,992	$7,926,516	$6,825,294	$10,990,522
May 22	1,811,090	1,955,120	2,711,203	1,745,029	214,524	$5,874,853	$4,704,334	$10,019,712
Jun 22	1,911,761	1,919,690	2,861,885	1,775,032	226,949	$7,608,471	$7,196,108	$12,615,170
Jul 22	2,046,390	2,096,379	3,079,276	1,927,034	239,128	$14,819,592	$10,195,501	$15,235,251
Aug 22	1,944,820	1,946,489	2,923,448	1,890,508	208,098	$9,908,084	$9,391,784	$18,072,589
Sep 22	1,635,592	1,685,844	2,363,186	1,622,412	195,153	$27,094,747	$25,063,428	$29,903,865
Total	18,819,423	19,076,406	27,575,290	18,165,641	4,157,853	$163,465,238	$151,031,615	$210,178,839
	Actual generation as a percentage of average:			65.9%			Cost per MWh:	$50.55

Western Area Power Administration (WAPA) generated a total of 18,166 gigawatt-hours (GWh) from October through September of fiscal year 2022, or 65.9 percent of average. Actual purchase power data is currently available from October through August for all of WAPA's Regions, and during this period total purchase power was 3,963 GWh and total purchase power expenses were $180,274,974 which equates to $45.49 per MWh overall.

The following pages indicate WAPA's regional snowpack, lake/reservoir inflow and storage, generation and purchase power expenses. Snowpack is reported as snow water equivalent, which is the depth of water that theoretically would result if the entire snowpack melted instantaneously.

The monthly purchase power numbers in this report are used by WAPA's regions as a forecasting tool; therefore, they do not reflect energy imbalance transactions and other such information that cannot be forecasted. Furthermore, the purchase power numbers have not been verified for financial auditing purposes. Consequently, these numbers will vary from those reported in WAPA's year-end financial statements, and the latter should be considered the definitive source for WAPA's purchase power data.

Colorado River Storage Project

CRSP

	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 21	1.00	1.80	514.42	317.00	15.01	7.18	242,049	256,726	382,430	256,726	142,576	$ 8,536,794	$ 8,536,794	$ 8,536,794
Nov 21	4.30	3.10	474.23	346.00	14.91	7.02	231,017	222,180	388,155	222,180	194,078	$ 12,149,771	$ 12,149,771	$ 12,149,771
Dec 21	7.80	9.20	362.96	266.00	14.86	6.71	266,495	258,749	437,962	258,749	10,490	$ 377,626	$ 377,626	$ 377,626
Jan 22	11.20	11.60	361.45	249.00	14.98	6.34	305,964	286,573	457,394	284,608	6,540	$ 488,669	$ 488,669	$ 243,924
Feb 22	14.80	13.60	392.01	215.00	15.99	6.01	273,210	234,241	390,580	229,398	7,963	$ 302,244	$ 494,159	$ 275,617
Mar 22	18.30	16.40	666.27	329.00	16.77	5.81	287,133	259,395	390,170	249,982	10,984	$ 369,878	$ 322,700	$ 349,510
Apr 22	18.70	14.90	1,057.14	594.00	16.74	5.79	275,958	259,854	397,861	235,717	21,913	$ 191,270	$ 185,635	$ 1,051,098
May 22	7.20	4.60	2,337.68	1,382.00	16.30	6.35	317,792	367,576	475,860	352,268	5,985	$ -	$ -	$ 287,632
Jun 22	0.00	0.10	2,668.50	1,284.00	16.00	6.88	333,043	340,881	534,248	344,909	29,093	$81,633	$81,633	$1,864,555
Jul 22	0.00	0.00	1,093.88	491.00	15.88	6.21	361,716	377,113	536,434	369,986	15,615	$ -	$ -	$ 1,166,015
Aug 22			496.08	368.00	15.68	5.94	372,619	389,690	558,659	389,285	19,181	$ -	$ -	$ 1,338,044
Sep 22			405.88	245.00	15.38	5.80	306,310	294,484	449,558	307,345	6,569	$ -	$ -	$ 482,967
Total							3,573,307	3,547,463	5,399,309	3,501,153	470,987	$ 22,497,885	$ 22,636,987	$ 28,123,553
							Actual generation as a percentage of average:			64.8%			Cost per MWh:	$59.71

Lake/Reservoir Levels

End of September storage volume for Lake Powell was 5.80 million acre-feet (MAF) or about 24 percent of capacity. Lake Powell reservoir inflow for September was 245,000 acre-feet or 71 percent of average. Lake Powell elevation at the end of September was about 3,529 feet, or about 171 feet from maximum reservoir level and 39 feet from the minimum generation level.

Weather and Other Conditions

Dry conditions persist throughout the Colorado River Basin with much below average reservoir inflows forecasted for WY2023. Lake Powell will be in the Lower Elevation Balancing Tier for water year 2023 which requires Lake Powell to balance with Lake Mead while releasing between 7.0 and 9.5 million acre-feet of water. To help protect Lake Powell elevations, Reclamation will operate as if it is a 7.0 million acre-feet release year until April. In April, they will reevaluate whether hydrologic conditions will allow for balancing releases above 7.0 million acre-feet.

Desert Southwest Region

DSWR

	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 21	1.00	1.80	60.11	81.00	19.69	11.00	303,950	309,595	376,487	311,252	20,015	$ 1,502,607	$ 1,502,607	$ 1,408,142
Nov 21	4.30	3.10	55.20	43.00	19.74	10.92	321,100	311,600	361,868	319,154	12,568	$ 1,583,400	$ 1,583,400	$ 1,079,568
Dec 21	7.80	9.20	72.87	65.00	19.85	9.64	257,800	243,900	363,944	251,578	37,736	$ 2,353,714	$ 2,353,714	$ 2,961,911
Jan 22	11.20	11.60	92.36	65.00	20.04	11.18	308,250	311,340	388,038	314,878	16,791	$ 1,310,313	$ 1,310,313	$ 1,084,371
Feb 22	14.80	13.60	106.49	61.00	20.08	11.16	288,300	312,730	386,047	307,920	676	$ 370,667	$ 370,667	$ 42,247
Mar 22	18.30	16.40	102.47	42.00	19.89	10.81	499,150	517,895	526,266	517,460	6,664	$ 1,192,504	$ 1,192,504	$ 474,056
Apr 22	18.70	14.90	82.53	32.00	19.70	10.29	521,150	529,910	568,974	529,857	4,327	$ 942,889	$ 942,889	$ 422,378
May 22	7.20	4.60	57.31	9.00	19.78	9.82	538,150	545,995	570,729	549,589	12,753	$ 1,412,587	$ 1,412,587	$ 1,276,082
Jun 22	0.00	0.10	26.08	18.00	19.95	9.49	456,750	441,275	534,902	447,279	33,696	$ 3,127,103	$ 3,127,103	$ 3,866,761
Jul 22	0.00	0.00	66.46	73.00	19.85	9.36	413,350	410,370	543,439	409,565	55,041	$ 3,568,013	$ 3,568,013	$ 3,957,045
Aug 22	0.00	0.00	99.53	186.00	19.74	9.55	319,200	286,620	505,366	292,001	80,084	$ 6,926,453	$ 6,926,453	$ 9,094,052
Sep 22	0.00	0.00	86.37	120.00	19.63	9.50	287,600	280,815	427,574	282,690	88,001	$ 21,257,789	$ 21,257,789	$ 22,088,599
Total							4,514,750	4,502,045	5,553,634	4,533,223	368,352	$ 45,548,039	$ 45,548,039	$ 47,755,212
							Actual generation as a percentage of average:			81.6%			Cost per MWh:	$129.65

Lake/Reservoir Levels

Aggregate system storage for the Lower Colorado River Basin, or Lakes Mead, Mohave, and Havasu, was 9.50 MAF at the end of September, or 33.2 percent of the Lower Basin capacity. The Lower Basin tributary inflow into Lake Mead for September was 120,000 acre-feet. The total side inflow into Lake Mead for WY 2022 is projected to be 776,000 acre-feet, which represents a 39.3 percent increase over last year's actual of 557,000 acre-feet and 60 percent of the normal annual side inflow of 1.3 MAF. Lake Mead elevation at the end of September was 1,045.03 feet, or 174.61 feet below full storage elevation and 95.03 feet above the minimum generation elevation for Hoover Dam. In order to protect the target elevation at Lake Powell of 3,525 feet, Glen Canyon Dam has been withholding a total of 0.35 MAF of water from Lake Mead from January through April. This initial cutback in Lake Powell releases did not preserve Lake Powell elevation of 3,525 feet. Therefore, the decision was made that the Lake Powell releases for WY 2022 will be reduced by a total of 480,000 acre-feet from 7.48 MAF to 7.0 MAF.

Weather and Other Conditions

The Desert Southwest Region's hydrology, or the Lower Colorado River Basin, is mostly dependent on the Colorado River Basin snowpack and precipitation above Lake Powell. The precipitation is currently 83 percent of average.

Rocky Mountain Region

RMR

	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 21	0.00	0.00	133.50	131.00	3.89	3.72	52,479	70,240	97,400	69,420	84,307	$ 3,934,516	$ 3,330,640	$ 5,618,676
Nov 21	2.10	4.40	124.70	98.60	3.91	3.75	48,828	66,514	110,000	41,979	110,921	$ 4,255,035	$ 3,636,010	$ 6,664,567
Dec 21	11.50	8.10	102.40	54.90	3.89	3.72	81,875	96,903	123,500	102,082	90,136	$ 3,319,239	$ 2,808,298	$ 4,461,154
Jan 22	20.00	22.60	100.30	91.60	3.87	3.67	128,841	124,479	122,100	107,479	62,989	$ 1,270,606	$ 1,388,367	$ 2,449,014
Feb 22	28.40	29.80	98.80	81.60	3.87	3.68	117,035	116,879	111,600	103,544	34,071	$ 2,293,170	$ 2,306,606	$ 1,364,155
Mar 22	38.10	35.00	160.60	134.40	3.90	3.75	76,295	85,157	128,900	74,501	73,185	$ 2,203,333	$ 1,964,061	$ 2,449,471
Apr 22	52.00	41.50	251.80	207.60	4.00	3.91	74,432	95,555	144,600	68,937	101,793	$ 3,110,763	$ 2,498,205	$ 6,561,672
May 22	45.00	43.20	752.00	614.00	4.30	4.17	168,269	206,964	196,800	146,337	36,283	$ 861,805	$ -	$ 2,142,948
Jun 22	13.08	18.75	1,175.00	1,162.60	4.851	4.788	214,765	256,652	246,200	220,800	11,504	$ 695,474	$ -	$ 235,771
Jul 22	0.00	0.00	539.60	392.20	4.576	4.428	204,169	249,777	261,200	235,907	23,787	$ 7,316,524	$ 2,664,546	$ 1,707,899
Aug 22	0.00	0.00	184.40	166.40	4.04	3.94	201,664	211,942	214,800	221,395	6,837	$ 942,566	$ 356,706	$ 767,522
Sep 22	0.00	0.00	126.70	109.20	3.78	3.72	111,148	136,683	141,600	115,878	52,653	$ 3,772,437	$ 1,755,143	$ 3,579,766
Total							1,479,799	1,717,745	1,898,700	1,508,258	688,466	$ 33,975,468	$ 22,708,582	$ 38,002,615
							Actual generation as a percentage of average:			79.4%			Cost per MWh:	$55.20

Lake/Reservoir Content

At the end of September reservoir inflows were at 86% of average, and storage is at 96% of average.

Weather and Other Conditions

LAP's hydrologic conditions can vary from one river basin and watershed to another. The latest National Weather Service forecast indicates November through January temperatures will most likely be above average in Wyoming and Colorado. The same forecast indicates precipitation has equal chances for either above and below average for Southern Wyoming and all of Colorado. Northern Wyoming will be above average precipitation. Winter generation in the Colorado River Basin, the North Platte Basin and the Big Horn Basin is forecasted to be below average due to unit maintenance schedules.

Sierra Nevada Region

SNR

	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 21	N/A	N/A	333.00	426.00	5.08	2.82	117,000	77,000	163,000	137,694	51,331	$ 1,207,080	$ 1,207,080	$ 1,537,704
Nov 21	N/A	N/A	400.00	485.00	5.05	3.04	72,000	17,000	104,000	0	58,622	$ 1,164,725	$ 1,164,725	$ 1,617,308
Dec 21	28.00	15.40	793.00	789.00	5.35	3.58	0	0	143,000	5,795	54,276	$ 1,207,080	$ 1,207,080	$ 1,678,780
Jan 22	27.89	15.90	966.00	791.00	5.79	3.91	0	24,000	163,000	4,659	58,925	$ 1,451,450	$ 1,451,450	$ 1,842,960
Feb 22	28.04	15.70	1,175.00	440.00	6.34	3.99	55,000	75,000	195,000	33,597	32,514	$ 1,353,528	$ 1,353,528	$ 1,576,174
Mar 22	27.95	10.90	1,409.00	490.00	7.00	4.06	110,000	60,000	207,000	57,896	38,525	$ 1,510,450	$ 1,510,450	$ 1,856,983
Apr 22	30.00	7.50	1,237.00	595.00	7.38	4.26	113,000	133,000	288,000	72,269	30,960	$ 699,260	$ 699,260	$ 1,174,405
May 22	3.00	1.20	1,011.00	588.00	7.30	4.28	148,000	148,000	442,000	111,064	33,662	$ 721,150	$ 721,150	$ 1,324,300
Jun 22	0.00	0.00	698	365	6.906	4.084	188,000	188,000	440,000	111,665	43,374	$ 699,260	$ 699,260	$ 1,713,832
Jul 22	N/A	N/A	605	268	6.190	3.649	179,000	189,000	524,000	141,100	46,129	$ 1,152,450	$ 1,152,450	$ 3,172,005
Aug 22	N/A	N/A	127.00	256.00	5.57	3.28	146,000	166,000	402,000	98,707	47,161	$ 1,188,474	$ 1,188,474	$ 3,615,770
Sep 22			298.00	277.00	5.17	3.03	103,000	128,000	269,000	41,815	43,057	$ 1,129,800	$ 1,129,800	$ 3,446,673
Total							1,231,000	1,205,000	3,340,000	816,261	538,536	$ 13,484,707	$ 13,484,707	$ 24,556,894
							Actual generation as a percentage of average:			24.4%			Cost per MWh:	$45.60

Lake/Reservoir Content

As of September 30th, reservoir storage was 44 percent of the 15-year average for Trinity, 65 percent for Shasta, 79 percent for Folsom, and 51 percent for New Melones. Accumulated inflow was 49 percent of the 15-year average for Trinity, 63 percent for Shasta, 73 percent for Folsom, and 61 percent for New Melones. Sacramento River remains at minimum instream flow, while the Stanislaus ramped up briefly to meet critical year Vernalis flow requirement. Folsom Reservoir on the American River remained at relative high release to keep the Delta balanced while State and Federal pumping was minimal.

Weather and Other Conditions

July averages 0.17 inches but only 0.04 inches were recorded which is 24 percent of average. August averages 0.26 inches, but 0.18 were recorded which is 70 percent of average. September averages 0.78 inches, but 1.58 inches were received which is over 200 percent of average. Based on May 1 conditions, the Sacramento Valley index at the 50 percent exceedance level is 4.5 or “critical,” while the 90 percent exceedance level is 4.3 or “critical.”

Note: The Sierra Nevada Region’s average generation is based upon long-term modeling done for its "Green Book." The region 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

UGPR

	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 21	1.20	0.80	7,972.00	6,835.65	56.14	50.80	751,683	764,436	954,934	735,705	14,835	$ 670,768	$ 648,064	$ 477,423
Nov 21	3.80	2.20	7,334.00	5,259.62	55.06	49.68	555,672	542,816	906,420	550,675	215,756	$ 4,972,336	$ 4,737,212	$ 7,100,158
Dec 21	7.10	6.60	6,422.00	4,350.10	54.46	49.29	476,232	488,984	758,334	485,754	383,651	$ 7,350,388	$ 7,145,446	$ 11,205,639
Jan 22	10.30	9.20	6,641.00	5,176.51	54.18	49.32	584,281	573,959	796,783	550,451	350,424	$ 7,418,511	$ 7,218,233	$ 14,227,890
Feb 22	13.10	10.40	6,281.00	4,456.74	54.50	49.34	481,046	465,835	702,752	473,424	391,264	$ 8,191,334	$ 8,022,443	$ 13,705,627
Mar 22	15.80	12.10	8,151.00	5,846.20	56.20	49.64	556,216	603,092	709,981	552,604	235,196	$ 5,921,239	$ 5,872,548	$ 4,524,511
Apr 22	14.90	14.10	8,041.00	6,990.70	57.06	49.49	636,328	677,346	889,814	687,703	106,999	$ 2,982,334	$ 2,499,305	$ 1,780,969
May 22	6.30	8.30	9,654.00	6,671.78	58.35	50.23	638,879	686,585	1,025,814	585,771	125,841	$ 2,879,311	$ 2,570,597	$ 4,988,750
Jun 22	0.50	0.10	11,746.00	8,874.12	60.54	52.91	719,204	692,882	1,106,535	650,379	109,282	$ 3,005,001	$ 3,288,112	$ 4,934,251
Jul 22	0.00	0.00	10,694.00	8,265.24	60.49	53.61	888,155	870,119	1,214,203	770,476	98,556	$ 2,782,605	$ 2,810,492	$ 5,232,287
Aug 22	0.00	0.00	9,716.00	7,893.65	58.91	51.86	905,337	892,237	1,242,623	889,120	54,835	$850,591	$920,151	$3,257,201
Sep 22	0.09	0.00	8,629.00	7,607.38	57.38	50.10	827,534	845,862	1,075,454	874,684	4,873	$934,721	$920,696	$305,860
Total							8,020,567	8,104,153	11,383,647	7,806,746	2,091,512	$ 47,959,138	$ 46,653,299	$ 71,740,566
							Actual generation as a percentage of average:			68.6%			Cost per MWh:	$34.30

Lake/Reservoir Content

The yearly runoff forecast for the Missouri River Basin as of Oct 1 was 19.5 MAF or 76 percent of average. Runoff above Sioux City for September was .551 MAF or 47 percent of average. System storage as of October 18 is 48.2 MAF.

Weather and Other Conditions

On July 3, the mountain snow water equivalent in the total above Fort Peck reach is 0.0 inches. The mountain snow water equivalent in the Fort Peck to Garrison reach is 0 inches. The "Total above Fort Peck" reach peaked on April 29 at 13.5" SWE and 85% of the normal peak. The "Fort Peck to Garrison" reach peaked on May 3 at 13.4" SWE and 92% of the normal peak. The 30 to 120-day SPI along with soil moisture indicators supported expansion of moderate drought (D1) throughout northern and eastern North Dakota. Based on a consensus of indicators, severe drought (D2) was added to central North Dakota. Severe (D2) to extreme (D3) drought was expanded slightly across east-central Nebraska based on SPI at multiple time scales and soil moisture. Impact reports from these areas of South Dakota include: zero soil moisture down to three feet in several areas. The 90- to 180- day outlook shows equal chances of above or below normal temperatures and precipitation.

Note: The Upper Great Plains Region reports 50 percent share of Yellowtail Dam generation while Rocky Mountain Region reports the snowpack, inflow, content, and remaining share of generation. Asterisks indicate that actual purchase power data is not available for the month.