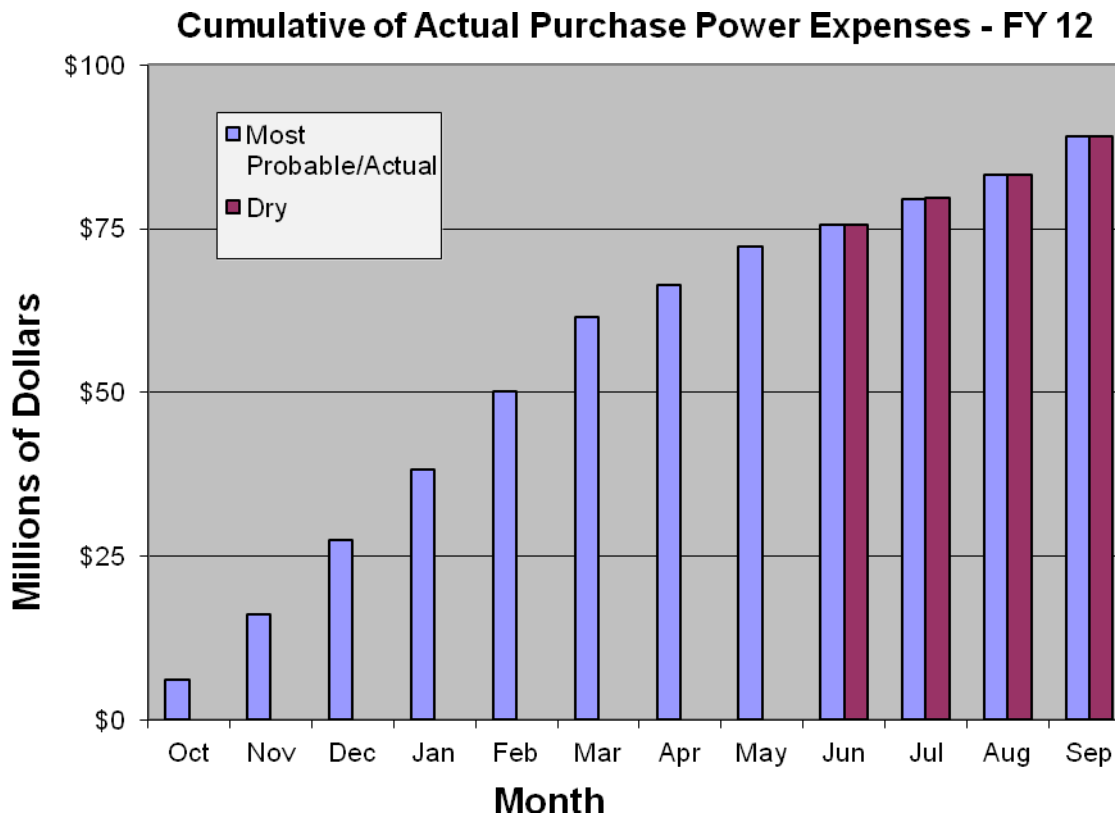


# Hydro Conditions and Purchase Power Monthly Outlook June 29, 2012

## Western Summary

- The most probable forecast of net generation for FY 2012 is 26,836 Gigawatthours (GWh) or 97 percent of average. October through May generation was 103 percent of average.
- The lower level forecast of generation for FY 2012 is 26,801 GWh or 97 percent of average.
- The purchased power for FY 2012 is expected to range between 1,800 and 1,801 GWh.
- The average price for purchase power across all hydro projects and off-peak and on-peak periods is expected to be \$49/MWh. This price compares to \$59/MWh last year.
- Purchase power expenses for FY 2012 are forecast to be approximately \$89 million.
- October through May purchases totaled over \$72 million – compared to \$82 million for the same period last year.



## Upper Great Plains Region

**Storage:** Primarily due to the lack of normal spring precipitation, stream-flows into Canyon Ferry during May were 94 percent of average. The snow water content in the mountain snowpack in the Missouri River Basin upstream of Canyon Ferry is about 75% of average. The June 1 water supply forecast indicates the June-July runoff into Canyon Ferry is expected to equal 763,000 acre-feet (73% of average). Based on the current conditions, storage in Canyon Ferry to the Missouri River below Holter Dam is expected to be maintained at or above 4,100 through the rest of the year. Streamflows into Bighorn Lake during May were 78% of average. Mountain snowpack in the Bighorn Basin is 55 percent of average. Based on the June 1 water supply forecast and the planned releases out of Boysen and Buffalo Bill Reservoirs, the June-July runoff into Bighorn Lake is expected to equal 336,000 acre-feet (47% of average).

As of June 21, 2012, the storage level at [Canyon Ferry](#) was 1,905,576 acre feet and the active conservation pool is 100.0% full. Storage at [Yellowtail](#) is 963,824 acre feet and the active conservation pool is 94.4% full.

**COE Runoff:** Normally, July 1 marks the end of the snowpack, but this year it is almost gone. Forecast run-off actually increased slightly to 89%. Even so, the forecasted generation dropped to 9,706 from 9,769. The dry weather in the plains may cause a shorter navigational season.

Bird peaking is in full operation at Garrison and Ft.Randall.

Estimated generation for 2012 dipped slightly and is now estimated to be 9,769 GWh. Normal is 10,000.

**[Snow pack](#)** The June 1 forecasted runoff for calendar year 2012 has been lowered to 22.2 MAF. This runoff would be 89% of normal runoff. As of June 1, 2012, the mountain snowpack in the reach above Fort Peck is 87% of the average snowpack for this date. Mountain snowpack in the reach between Fort Peck and Garrison is 70% of the average snowpack for this date. The mountain snowpack above Fort Peck peaked on April 9 at 97% of the normal April 15<sup>th</sup> peak. The mountain snowpack in the reach between Fort Peck and Garrison peaked on March 22<sup>nd</sup> at 88% of the normal April 15<sup>th</sup> peak.

**FY Generation:** The six main stem power plants generated 894 million kilowatt hours of electricity in May. Total energy production for 2012 was earlier forecasted to reach 14.1 billion kWh, but has been reduced to around 11.1 billion kWh. The long-term average is approximately 10 billion kWh.

**Purchase Power:** Prices have been ranging from \$13 off peak to mid teens on peak.

## Rocky Mountain Region

The Loveland Area Projects (LAP) reside in both the Upper Missouri and Upper Colorado basins. Hydrologic conditions can vary from one river basin and watershed to another. The three LAP watersheds are the Bighorn River Basin in Wyoming, the North Platte River Basin in Colorado and Wyoming, and the headwaters of the Colorado River Basin in Colorado.

Extreme drought conditions prevail in the Colorado River and North Platte River headwaters due to low snowmelt runoff and a lack of spring precipitation. The snowmelt runoff typically occurs earlier in a dry year than in a normal year and that is true of this year. The snowpack was well below average in the Bighorn Basin at the start of the month and almost completely melted in the North Platte Basin and Colorado River headwaters. The overall LAP reservoir storage remains higher than it was at this time last year and above average in all three rivers due to carryover storage and the early runoff. The March and April reservoir inflows were above average in all three basins but, after the early runoff, inflows were well below average in May and are forecast to be well below average from June through September. The latest National Weather Service forecast calls for temperatures in the July through September period to be more likely above normal in Colorado and Wyoming while precipitation is just as likely to be above normal as below normal.

LAP Water Conditions At-A-Glance									
	Reservoir Storage 1,000 acre-feet			Snowpack inches snow water equivalent			Most Probable Reservoir Inflow 1,000 acre-feet (April - July)		
	end of May	average	% of average	end of May	average	% of average	June forecast	average	% of average
<b>CBT</b>	748.1	688.6	109%	1.5	108.5	1%	301.0	595.0	51%
<b>North Platte</b>	2,042.1	1,732.7	118%	18.8	183.0	10%	280.0	770.0	36%
<b>Bighorn</b>	1,960.1	1,807.1	108%	105.7	171.5	62%	828.8	1,409.7	59%
<b>TOTAL</b>	4,750.3	4,228.4	112%	126.0	463.0	27%	1,409.8	2,774.7	51%
Net At Plant Generation Projections (GWh)									
	Most Probable Case median inflow			Reasonable Minimum Case lower decile inflow			Reasonable Maximum Case upper decile inflow		
	June projection	average	% of marketed	June projection	average	% of marketed	June projection	average	% of marketed
<b>Winter 11-12</b>	583.8	726.2	80%	583.8	726.2	80%	583.8	726.2	80%
<b>Summer 12</b>	1,228.7	1,211.1	101%	1,213.6	1,211.1	100%	1,277.7	1,211.1	105%
<b>TOTAL 2012</b>	1,812.5	1,937.3	94%	1,797.4	1,937.3	93%	1,861.5	1,937.3	96%

LAP generation was well below average from October through April and above average in May. LAP generation is now expected to be slightly above average in all months through September, except for July, as releases are made to meet heavy water demands. July generation will be below average. Reclamation does not plan to curtail Adams Tunnel imports and associated CBT generation in August as a means to improve the water clarity of Grand Lake this year. Reservoir spills and associated plant bypasses with surplus generation are not expected this summer.

### Colorado River Storage Project Management Center

The total storage volume for the CRSP main stem reservoirs is 20,772,000 acre feet, which is about 67 percent of the total main stem reservoir storage capacity. Main stem reservoir inflows for the most recent historical month (May, 2012) were about 40 percent of average. Lake Powell elevation currently is about 3,636 feet, which is 64 feet from maximum reservoir level. That elevation is the expected high point for the water year as runoff has peaked and is dropping. The current runoff forecast for April through July, 2012 into Lake Powell is about 2.0 million acre feet or 28% of

average. The inflow forecast has continued to decrease as very dry conditions have prevailed in the basin this spring and summer.

Projected SLCA/IP net generation for Fiscal Year 2012 is 5,498 GWh as compared to 5,937 GWh based on the long-term historical average generation.

Estimated purchase power expenses for firming during the fiscal year 2012 are about \$19.2 million as compared to about \$14.5 million based on long-term median historical releases. Purchase power availability in the region is abundant and purchase prices are low compared to the recent past, which is helping to reduce firming purchase costs. However, electricity costs are rising with the summer heat.

### **Desert Southwest Region**

**Current Aggregate Storage (Mead, Mohave & Havasu):** 15.837 MAF (16.296 MAF Apr-2012), 20.965 MAF (61-Year Historical Avg).

The Lake Mead end of May 2012 elevation was 1,119.38 ft. (4.55 ft. lower than end of April 2012 elevation ), or about 100.26 ft. below full storage elevation of 1,219.64 ft. and 69.38 ft. above the minimum generation elevation for Hoover of 1,050 ft.

Lake Mead's elevation peaked at 1,134.18 ft in January of WY 2012 (18.14 ft. above the WY 2011 peak elevation of 1,116.04 ft.), and is projected to drop to a minimum elevation of 1,113.61 ft. in September of WY 2012, a maximum fluctuation in lake elevation of 20.57 ft.

The Lake Powell operational tier for WY 2012 is the Equalization Tier. Total releases from Lake Powell are projected to be 9.463 MAF for WY 2012 (actual of 12.518 MAF for WY 2011). The projected 2012 April – July unregulated inflow into Lake Powell is 28% of average (actual of 162% of average for 2011).

**Basin Snow Pack and Precipitation:** DSW hydrology is mostly dependent on the Colorado River Basin snow pack and precipitation above Lake Powell. The WY 2012 year-to-date precipitation is currently 70% of average. The current snowpack is 0% of average.

**Lower Basin Runoff:** The lower basin tributary inflow into Lake Mead for May 2012 was 14 KAF. The projected side inflow into Lake Mead for WY2012 is 653 KAF which represents a 44% decrease from last year's actual of 1,157 KAF, and represents 50% of the normal annual side inflow of 1.3 MAF.

**Forecast WY12 Generation:** 5,397 GWh compared to 5,651 GWh (Historical Average). The projected Hoover and Parker-Davis generation for WY 2012 is 96% of the average historical generation.

**Wholesale Power Market Conditions:** The May market prices in the Desert Southwest averaged about \$26/MWh firm on-peak, \$17/MWh firm off-peak compared to \$21/MWh firm on-peak, \$15/MWh firm off-peak for the previous month.

## Sierra Nevada Region

The total storage of the four major CVP reservoirs is 9.991 million-acre-feet, compared to 8.802 MAF last year. Accumulated inflow for the water year-to-date is 82 percent of the 15-year average for Trinity, 71 percent for Shasta, 88 percent for Folsom and 84 percent for Melones.

The Northern Sierra Eight Station index averages slightly more than 50 inches of precipitation per water year. We are currently at 39.55 inches or 79 percent of average. This water year started out with October recorded precipitation totaling 3.91 inches, which is above average for that month. November recorded precipitation totaled 2.69 inches, or less than 50 percent of average. December came in at 0.32 inches, making it one of the fifth worst since 1921. January ended at 85 percent of its monthly average. February ended at 3.0 inches, which is only 36 percent of average. March ended at 235 percent of its monthly average. April ended at 165 percent of its monthly average, while May ended at 23 percent. June averages nearly 1 inch and we are currently at 114 percent of average for this month.

The snowpack is assumed to reach its peak April 1<sup>st</sup>. Therefore, snow water equivalents are reported as a percentage of this average. As of April 1<sup>st</sup>, the North was at 77 percent, the Central at 51 percent and the South at 38 percent of this average. As of June 14<sup>th</sup>, there is no snowpack left. The Sacramento River Index (SRI) forecast of water supply based upon May 1<sup>st</sup> conditions is “critical” for the 90 percent exceedence and “dry” for the 50 percent exceedence case. The State of California bases water year type declarations on May 1<sup>st</sup> conditions at the 50 percent exceedence level of the Sacramento Valley 40-30-30 (SVI) which at 6.9 makes this year is “below normal.” This index takes carryover storage into account unlike the SRI.

The average projection of net generation is again taken from the latest modeling using the update to our customers’ “Green Book.” This average, at 3.34 GWh, is less than the 3.63 GWh from the CVPIA PEIS planning studies. Under the Post 2004 Marketing Plan, net generation, after Project Use load, First Preference Customer load and sub-control area reserve requirement, becomes the Base Resource which is allocated among the Base Resource, Variable Resource and Full Load Service Customers. This past fiscal year ended at 109 percent of that average. Reclamation forecasts are based upon March 1<sup>st</sup> conditions, which were based upon water supply forecasts of “critical” for the 90 percent exceedence and “critical” for the 50 percent exceedence. These forecasts would be 92 percent and 91 percent of this “Green Book” average net generation. Temperatures are mild and Reclamation has been able to cut releases to rivers, yet combined with cuts to project use pumping in the Delta and withdrawals from San Luis Reservoir off-stream storage, base resource remains high.