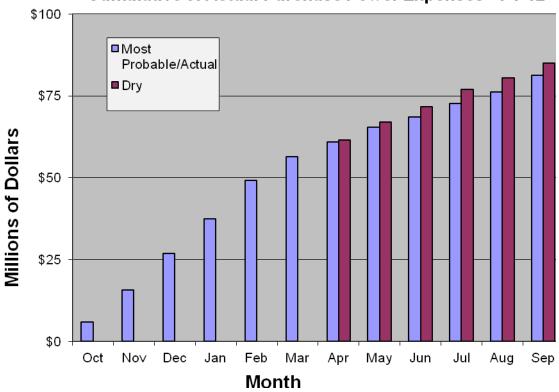
# Hydro Conditions and Purchase Power Monthly Outlook April 30, 2012

# Western Summary

- The most probable forecast of net generation for FY 2012 is 27,146 Gigawatthours (GWh) or 99 percent of average. October through March generation was 106 percent of average.
- The lower level forecast of generation for FY 2012 is 26,870 GWh or 98 percent of average.
- The purchased power for FY 2012 is expected to range between 1,637 and 1,786 GWh.
- The average price for purchase power across all hydro projects and off-peak and on-peak periods is expected to be \$50/MWh. This price compares to \$61/MWh last year.
- Purchase power expenses for FY 2012 are forecast to range between \$81 and \$85 million.
- October through March purchases totaled over \$56 million compared to \$70 million for the same period last year.

# **Cumulative of Actual Purchase Power Expenses - FY 12**



### **Upper Great Plains Region**

**Storage**: Due to the open-mild winter, stream-flows into Canyon Ferry during March were 111 percent of average. Mountain snowpack conditions in the Missouri River Basin upstream of Canyon Ferry have improved to about 94% of average. Based on the April 1 water supply forecast, the April - July runoff into Canyon Ferry is expected to equal 1,808,500 acre-feet (94% of average). Based on the current conditions, releases out of Canyon Ferry to the Missouri River below Holter Dam are expected to be gradually increased to near 6,000 or higher to control the anticipated spring snowmelt. Streamflows into Bighorn Lake during March were 107% of average. Mountain snowpack in the Bighorn Basin is 86 percent of average. Based on the April 1 water supply forecast and the planned releases out of Boysen and Buffalo Bill Reservoirs, the April - July runoff into Bighorn Lake is expected to equal 1,064,000 acre-feet (93% of average).

As of April 22, 2012, the storage level at <u>Canyon Ferry</u> was 1,559,938 acre feet and the active conservation pool was 82.5% full. Storage at <u>Yellowtail</u> was 802,980 acre feet and the active conservation pool was 78.7% full.

**COE Runoff**: The COE reports a rapidly diminishing snowpack and have lowered their forecast. The lack of moisture in the spring and the unusually moderate temperatures have reduced the snowpack and lowered the tributaries. This may have a significant effect on generation this year. Estimated generation for 2012 has not significantly changed and stands at 9,946 GWh. Normal is 10,000.

<u>Snow pack</u> The March forecasted runoff for calendar year 2012 has been lowered to 23.4 MAF. This runoff would be 94% of normal runoff. As of April 11, 2012, the mountain snowpack in the reach above Fort Peck is 95% of the average snowpack for this date. Mountain snowpack in the reach between Fort Peck and Garrison is 82% of the average snowpack for this date.

**FY Generation**: The six main stem power plants generated 738 million kilowatt hours of electricity in March. 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**: Springtime and warmer weather typically signals excess generation in relation to the lower demand. This is true again this year as the prices for power have dropped dramatically to around \$12 for off peak and about \$18 for on peak power.

#### **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.

Severe drought conditions now prevail in the Colorado River and North Platte River headwaters due to disappointing snow pack accumulation this winter. Moderate drought conditions in the Arkansas River basin do not materially impact LAP generation. The overall LAP reservoir storage remains higher than it was at this time last year and above average in all three river basins. The snowpack is now below average in all three river basins and well below average in the Colorado River

headwaters and the upper North Platte basin. The reservoir inflows over the winter (October through March) were above average in all three basins but are forecast to be well below average in the Colorado River headwaters and the upper North Platte basin and slightly below average in the Bighorn basin this spring. The latest National Weather Service forecast calls for temperatures in the May through July period to be more likely above normal in Colorado and southern Wyoming. Precipitation is as likely to be above normal as below normal in Colorado and Wyoming.

				LAP Water	Conditions	At-A-Glance			
	Re	servoir Stora	ge	Snowpack			Most Probable Reservoir Inflow		
	1,	000 acre-fee	et	inches snow water equivalent			1,000 acre-feet (April - July)		
	end of		% of	end of		% of	April		% of
	March	average	average	March	average	average	forecast	average	average
СВТ	714.5	629.3	114%	229.5	488.2	47%	343.0	595.0	58%
North Platte	2,167.5	1,492.6	145%	242.9	434.3	56%	350.0	770.0	45%
Bighorn	1,917.2	1,739.1	110%	352.2	394.0	89%	1,334.3	1,409.7	95%
TOTAL	4,799.2	3,861.0	124%	824.6	1,316.5	63%	2,027.3	2,774.7	73%
			Ne	et At Plant Ger	neration Pro	ojections (GV	Vh)		
	Most Probable Case			Reasonable Minimum Case			Reasonable Maximum Case		
	median inflow			lower decile inflow			upper decile inflow		
	April		% of	April		% of	April		% of
	projection	average	marketed	projection	average	marketed	projection	average	marketed
Winter 11-12	583.8	726.2	80%	583.8	726.2	80%	583.8	726.2	80%
Summer 12	1,224.2	1,211.1	101%	1,138.1	1,211.1	94%	1,475.6	1,211.1	122%
TOTAL 2012	1,808.0	1,937.3	93%	1,721.9	1,937.3	89%	2,059.4	1,937.3	106%

LAP generation was well below average over the winter. An extended CBT outage restricted all CBT generation other than at Green Mountain in November and December. There were minimum releases from Seminoe and Pathfinder reservoirs this winter due to high carryover storage in the downstream Glendo Reservoir. The winter release from Bighorn Lake was higher than in recent drought years but still below average. LAP generation is expected to be below or near average in all months through September except for one. May generation is expected to be above average. The generation may, however, fall well below average in August if Reclamation and other entities decide to curtail Adams Tunnel imports and associated CBT generation as a means to improve the water clarity of Grand Lake. Reservoir spills and associated plant bypasses are not expected this spring and summer.

# Colorado River Storage Project Management Center

The total storage volume for the CRSP main stem reservoirs is 20,719,000 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 (March, 2012) were about 89 percent of average. Lake Powell elevation currently is about 3,636 feet, 64 feet from maximum reservoir level. The current runoff forecast for April through July, 2012 into Lake Powell is 49% of average.

Projected SLCA/IP net generation for Fiscal Year 2012 is 5,510 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 \$17 million as compared to about \$17 million based on long—term median historical releases. Purchase power availability in the region is abundant and purchase prices are quite low compared to the recent past, which is helping to reduce firming purchase costs.

# **Desert Southwest Region**

Current Aggregate Storage (Mead, Mohave & Havasu): 16.770 MAF (17.120 MAF Feb-2012), 20.977 MAF (61-Year Historical Avg).

The Lake Mead end of March 2012 elevation was 1,129.41 ft. (3.65 ft. lower than end of February 2012 elevation), or about 90.2 ft. below full storage elevation of 1,219.61 ft. and 79.41 ft. above the minimum generation elevation for Hoover of 1,050 ft.

Lake Mead's elevation peaked at 1134.18 ft in January of WY 2012 (18.14 ft. above the WY 2011 peak elevation of 1116.04 ft.), and is projected to drop to a minimum elevation of 1114.3 ft. in September of WY 2012, a maximum fluctuation in lake elevation of 19.88 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 49% 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 76% of average. The current snowpack is 43% of average.

**Lower Basin Runoff:** The lower basin tributary inflow into Lake Mead for March 2012 was 43 KAF. The projected side inflow into Lake Mead for WY2012 is 733 KAF which represents a 36.6% decrease from last year's actual of 1157 KAF, and represents 56.4% of the normal annual side inflow of 1.3 MAF.

**Forecast WY12 Generation**: 5,416 GWh compared to 5,650 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 March market prices in the Desert Southwest averaged about \$23/MWh firm on-peak, \$17/MWh firm off-peak compared to \$26/MWh firm on-peak, \$20/MWh firm off-peak for the previous month.

# Sierra Nevada Region

The total storage of the four major CVP reservoirs is 9.580 million-acre-feet, compared to 9.199 MAF last year. Accumulated inflow for the water year-to-date is 72 percent of the 15-year average for Trinity, 66 percent for Shasta, 65 percent for Folsom and 65 percent for Melones. Northern system reservoirs have made significant gains since last month.

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 is currently at 161 percent of its monthly average.

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 April 26<sup>th</sup>, the North is at 60 percent of the April 1<sup>st</sup> average while the Central is at 37 percent and the South at 22 percent. The Sacramento River Index forecast of water supply based upon April 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.

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 89 percent and 88 percent of this "Green Book" average net generation. Some recent record high temperatures resulted greater releases to the Sacramento River for temperature control. Combined with cuts to project use pumping in the Delta and withdrawals from San Luis Reservoir off-stream storage, base resource is now quite high.