Hydro Conditions and Purchase Power Monthly Outlook January 31, 2012

Western Summary

- The most probable forecast of net generation for FY 2012 is 27,899 Gigawatthours (GWh) or 101 percent of average. October through December generation was 110 percent of average.
- The lower level forecast of generation for FY 2012 is 26,767 GWh or 97 percent of average.
- The amount of power purchased for FY 2012 is expected to range between 1,343 and 1,768 GWh.
- The average price for purchase power across all hydro projects and off-peak and on-peak periods is expected to be \$55/MWh. This price compares to \$59/MWh last year.
- Purchase power expenses for FY 2012 are forecast to range between \$74 and \$85 million.
- October through December purchases totaled \$25 million compared to \$34 million for the same period last year.



Cumulative of Actual Purchase Power Expenses - FY 12

Upper Great Plains Region

Storage: Even though precipitation was below average, stream-flows into Canyon Ferry during December were 108% of average. Mountain snowpack conditions in the Missouri River Basin upstream of Canyon Ferry are about 78% of average. Based on the January 1 water supply forecast, the April - July runoff into Canyon Ferry is expected to equal 1,526,200 acre-feet (80% of average). Based on the current conditions, releases out of Canyon Ferry to the Missouri River below Holter Dam are expected to be maintained at or above the minimum fishery flow of 4,100 cfs through early spring. Stream-flows into the Bighorn Basin during December were 103% of average. Based on current hydrologic and climatic conditions and the planned releases out of Boysen and Buffalo Bill Reservoirs, the forecasted April - July runoff into Bighorn Lake is estimated to be about 1,131,400 acre-feet (99% of average).

As of January 18, 2012, the storage level at <u>Canyon Ferry</u> was 1,608,636 acre-feet and the active conservation pool is 85.0% full. Storage at <u>Yellowtail</u> is 884,204 acre-feet and the active conservation pool is 86.6% full.

COE Runoff: Release levels at Ft. Peck and Garrison have been lowered in anticipation of the river freezing over. The stages below Garrison rose 7 feet as the river froze over January 14. A watch is on at Oahe in case freezing starts to occur. Oahe may be restricted and also forced to generate at times to keep ice from forming. Releases are expected to rise at Ft. Peck and Garrison after the river is completely frozen. The COE is still predicting an above average runoff this year, though it is only expected to be 107% of normal. Estimated generation for 2012 has been reduced to 9,897 GWh

<u>Snow pack</u> The January 1 forecasted runoff for calendar year 2012 is 26.5 MAF. This runoff would be 107% of normal runoff. As of January 1, 2012, the mountain snowpack in the reach above Fort Peck is 79% of the average snowpack for this date. Mountain snowpack in the reach between Fort Peck and Garrison is 96% of the average snowpack for this date. The snowpack for the North Platte River Basin is currently 75% of average and the snowpack for the South Platte River Basin is 86% of average. Missouri River Basin mountain snowpack normally peaks near April 15.

FY Generation: The six main stem power plants generated 870 million kilowatt hours of electricity in December. Total energy production for 2011 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: As we continue into the winter months, and with plenty of generation on line, the prices are holding steady at mid-twenties for off-peak power and mid- to upper-thirties 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. While the LAP area is considered to be drought free, conditions are abnormally dry in the Colorado River headwaters and the upper North Platte basin due to disappointing snow pack accumulation so far this winter. The overall LAP reservoir storage is still higher than it was at this time last year and near or above average in all three river basins. The reservoir inflows from October through December were above average in all three basins. The snowpack is well below average in the Colorado River headwaters and the upper North Platte basin and normal in the Bighorn Basin. The latest National Weather Service forecast calls for temperatures in the February through April period to be more likely above normal in Colorado with equal chances of being above or below normal in Wyoming. Precipitation is more likely to be below normal in Colorado with equal chances of being above or below normal in Wyoming.

				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		% of	end of		% of	January		% of
	December	average	average	December	average	average	forecast	average	average
СВТ	679.9	661.1	103%	177.2	124.2	143%	760.6	618.3	123%
North Platte	1,987.0	1,355.4	147%	209.9	143.8	146%	1,082.0	789.3	137%
Bighorn	1,978.0	1,917.9	103%	172.4	155.0	111%	1,330.0	1,213.1	110%
TOTAL	4,644.9	3,934.4	118%	559.5	423.0	132%	3,172.6	2,620.7	121%
	Net At Plant Generation Projections (GWh)								
	Most Probable Case median inflow			Reasonable Minimum Case			Reasonable Maximum Case		
				lower decile inflow			upper decile inflow		
	January		% of	January		% of	January		% of
	projection	average	average	projection	average	average	projection	average	average
Winter 11-12	576.6	738.9	78%	557.7	738.9	75%	611.3	738.9	83%
Summer 12	1,608.6	1,218.8	132%	1,235.0	1,218.8	101%	1,742.0	1,218.8	143%
TOTAL 2012	2,185.2	1,957.7	112%	1,792.7	1,957.7	92%	2,353.3	1,957.7	120%

LAP generation will be well below average this winter. An extended CBT outage restricted all CBT generation other than at Green Mountain in November and December. There are 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 is higher than in recent drought years but still below average. At this early date, the LAP generation is expected to be above average in the late spring and early summer and near average later in the season. 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.

Colorado River Storage Project Management Center

The total storage volume for the CRSP main stem reservoirs is 21,270,000 acre feet, which is about 69 percent of the total main stem reservoir storage capacity. Main stem reservoir inflows for the most recent historical month (December, 2011) were about 99 percent of average. Lake Powell elevation currently is about 3,638 feet, 62 feet from maximum reservoir level. Reservoir releases were high in December as Reclamation sought to complete equalization release from Glen Canyon

for WY2011, but were reduced in January when the first runoff forecast for 2012 turned out much lower than average.

Projected SLCA/IP net generation for Fiscal Year 2012 is 5,468 GWh as compared to 5,937 GWh based on the long-term historical average generation. The CRSP MC extended additional hydro power (AHP) to customers during the winter season 2011/2012, but in early January rescinded the February and March allocations due to the low forecast. Cutbacks in releases from dams has meant an increase in purchases to firm the AHP allocations.

Estimated purchase power expenses for firming during the fiscal year 2012 are about \$11.9 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 low compared to recent years.

Desert Southwest Region

Current Aggregate Storage (Mead, Mohave & Havasu): 16.767 MAF (16.011 MAF Nov-2011), 21.002 MAF (61-Year Historical Avg).

The Lake Mead end of December 2011 elevation was 1,132.83 ft. (7.01 ft. higher than end of November 2011 elevation), or about 86.78 ft. below full storage elevation of 1,219.61 ft. and 82.83 ft. above the minimum generation elevation for Hoover of 1,050 ft.

Lake Mead's elevation is projected to peak at 1,134.43 ft in February of WY 2012 (18.39 ft. above the WY 2011 peak elevation of 1,116.04 ft.), and drop to a minimum elevation of 1,116.43 ft. in September of WY 2012, a maximum fluctuation in lake elevation of 18 ft.

The Lake Powell operational tier for WY 2012 is the Equalization Tier. Total releases from Lake Powell are projected to be 9.464 MAF for WY 2012 (actual of 12.518 MAF for WY 2011). The projected 2012 April – July unregulated inflow into Lake Powell is 71% of average (actual of 162% of average for 2011).

Basin Snow Pack and Rainfall: DSW hydrology is mostly dependent on the Colorado River Basin snow pack/runoff above Lake Powell. The WY 2012 year-to-date precipitation is currently 77% of average. The current snowpack is 63% of average.

Lower Basin Runoff: The lower basin tributary inflow into Lake Mead for December 2011 was 84 KAF. The projected side inflow into Lake Mead for WY2012 is 792 KAF which represents a 31.5% decrease from last year's actual of 1157 KAF, and represents 60.9% of the normal annual side inflow of 1.3 MAF.

Forecast WY12 Generation: 5,317 GWh compared to 5,648 GWh (Historical Average). The projected Hoover and Parker-Davis generation for WY 2012 is 94.1% of the average historical generation.

Wholesale Power Market Conditons: The December market prices in the Desert Southwest averaged about \$32/MWh firm on-peak, \$25/MWh firm off-peak compared to \$34/MWh firm on-peak, \$24/MWh firm off-peak for the previous month.

Sierra Nevada Region

The total storage of the four major CVP reservoirs is 7. 414 million-acre-feet, compared to 7.271 MAF last year. Accumulated inflow for the water year-to-date is 33 percent of the 15-year average for Trinity, 54 percent for Shasta, 51 percent for Folsom and 90 percent for Melones. New Melones is approximately 5 thousand-acre-feet above flood control level.

The Northern Sierra Eight Station index averages slightly more than 50 inches of precipitation per water year. This water year started out with October recorded precipitation totaling 3.91 inches, which is above average for this month. November recorded precipitation totaled 2.69 inches, which is less than 50 percent of average. December came in at 0.32 inches, making it one of the fifth worst since 1921. January was looking equally bad until after the 20th when the storm systems left the cumulative total at nearly double what it had been. Still, conditions dried up and warmed up again quickly.

Water year type forecasting begins in December, but snow surveying doesn't begin until January. The snowpack is assumed to reach its peak April 1st. Therefore, snow water equivalents are reported as a percentage of this average. As of January 24th, the North is at 24 percent, the Central is at 18 percent and the South is at 25 percent of this average. The Sacramento River Index forecast of water supply based upon January 1st conditions is "critical" for the 90 percent exceedence and "dry" for the 90 percent exceedence case.

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 ended at 109 percent of that average. Reclamation forecasts are based upon December 1st conditions, which were based upon water supply forecast of "dry" for the 90 percent exceedence and "below normal" for the 50 percent exceedence. These forecasts would be 99 percent and 114 percent of this "Green Book" average net generation.