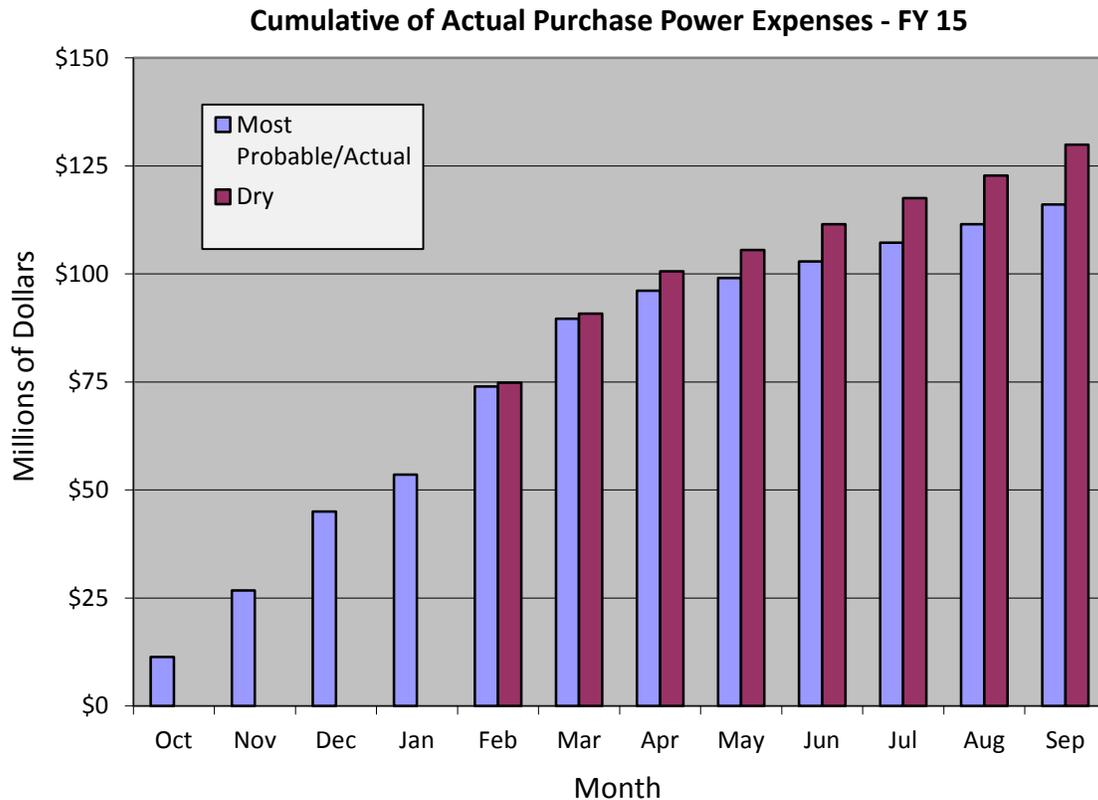


# Hydro Conditions and Purchase Power Monthly Outlook February 2015

## Western Summary

- The most probable forecast of net generation for fiscal year (FY) 2015 is 25,184 gigawatt-hours (GWh) or 93 percent of average. October through January generation was 92 percent of average.
- The lower level forecast of generation for FY 2015 is 24,043 GWh or 89 percent of average.
- The amount of power purchased for FY 2015 is expected to range between 2,088 and 2,627 GWh.
- The average price for purchase power across all hydro projects and off-peak and on-peak periods is expected to range between \$49/megawatt-hour (MWh) and \$56/MWh for FY 2015 – compared to an actual average price of \$50/MWh for FY 2014.
- Purchase power expenses are forecast to range between \$116 and \$130 million for FY 2015 – compared to actual purchase power expenses of \$226 million in FY 2014.
- October through December purchases totaled \$54 million – compared to \$99 million for the same timeframe the year before.



## Upper Great Plains Region

Corps of Engineers Report: A January thaw was responsible for larger than normal runoff during the month. As of February 1, the system storage rose slightly and the forecasted energy production was increased along with releases. The February forecast runoff for 2015 is 25.5 million acre-feet (MAF), slightly above the average of 25.2 MAF. System storage peaked in September 2014 with 61.3 MAF and has since dropped to 56.5 MAF as of February 1, 2015. This is still slightly above the Base Flood Control level of 56.1 MAF.

Snowpack: The snow pack at Yellowtail and Canyon Ferry started out below normal this fall but was 99 percent at the end of January. The main stem snowpack as of February 1 is 93 percent above Fort Peck and 96 percent on the reach from Fort Peck to Garrison. Only a light plains snow pack has accumulated in the Dakotas.

Canyon Ferry: As of February 10, 2015, reservoir storage at Canyon Ferry was 1,552.4 thousand acre-feet (kAF) and the active conservation pool was 82.1 percent full. The anticipated inflow for the April-July spring runoff period is forecast to be 1,661.7 kAF or 98 percent of the 30-year average.

Yellowtail: As of February 11, 2015, reservoir storage at Yellowtail is 902,921 acre-feet and the active conservation pool is 88.5 percent full. Streamflows into Bighorn Lake during January were 129 percent of average. On February 1, the Natural Resources Conservation Service measured the snow water content of the mountain snowpack in the Bighorn Basin at 90 percent of average. Based on the February 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 1,015.8 kAF or 94 percent of average.

Generation: The six main stem power plants generated 680 million kilowatt-hours of electricity in December.

Purchase Power: UGPR is in the winter months of the generating season and with loads increasing, prices are expected to be in the low \$30s for off-peak power and the mid \$40s 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.

Moderate drought conditions have returned to the Colorado River headwaters above Lake Powell, but the extreme upper headwaters above Kremmling that supply the Colorado-Big

Thompson Project (CBT) are not yet affected. The snowpack was well below average in the North Platte Basin above Seminoe Dam and average in the Bighorn Basin above Yellowtail Dam and the Upper Colorado River headwaters above Kremmling at the beginning of the month. Reservoir inflows have been well above average since September due to good precipitation this fall and winter. The overall LAP reservoir storage at the end of January was above average with gains in all three basins since the end of last January. The latest National Weather Service forecast indicates March through May temperatures will more likely be above average in western Wyoming and just as likely to be above as below average in eastern Wyoming and Colorado. The same forecast indicates precipitation will more likely be above average in Wyoming and Colorado. The Bureau of Reclamation (Reclamation) is forecasting reservoir inflows to be well below average in the North Platte Basin, below average in the Bighorn Basin, and above average for the CBT.

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 January	average	% of average	beginning of February	average	% of average	February forecast	average	% of average
<b>CBT</b>	813.3	649.9	125%	288.2	289.0	100%	625.0	599.0	104%
<b>North Platte</b>	1,623.3	1,381.3	118%	201.1	272.1	74%	450.0	694.0	65%
<b>Bighorn</b>	2,029.8	1,772.3	115%	249.9	247.0	101%	1,280.0	1,321.1	97%
<b>TOTAL</b>	4,466.4	3,803.5	117%	739.2	808.1	91%	2,355.0	2,614.1	90%
Net At Plant Generation Projections (GWh)									
	Most Probable Case median inflow			Reasonable Minimum Case lower decile inflow			Reasonable Maximum Case upper decile inflow		
	February projection	average	% of average	February projection	average	% of average	February projection	average	% of average
<b>Winter 14-15</b>	533.7	718.0	74%	525.5	718.0	73%	523.0	718.0	73%
<b>Summer 15</b>	1,366.0	1,217.8	112%	1,134.9	1,217.8	93%	1,487.3	1,217.8	122%
<b>TOTAL 2015</b>	1,899.7	1,935.8	98%	1,660.4	1,935.8	86%	2,010.3	1,935.8	104%

The winter season generation is expected to be about 73 percent of average and seasonal energy purchases have been arranged to support LAP firm electric service commitments. CBT Adams Tunnel imports from the west slope and associated generation will be well below normal this winter because the east slope storage space is limited after low water demands last year. Winter reservoir releases and associated generation in the North Platte Basin will be typical of recent operations and the release from Bighorn Lake via the Yellowtail power plant is above average under the latest Bighorn Lake operating criteria. The upcoming summer LAP generation is projected to be between 86 percent and 104 percent of average at this time.

## Colorado River Storage Project Management Center

The total storage volume for the CRSP main stem reservoirs is 16,195 kAF, which is about 52 percent of the total main stem reservoir storage capacity. Main stem reservoir inflows for the most recent historical month (January 2015) were about 109 percent of average. Lake Powell elevation currently is about 3,593 feet, 107 feet from maximum reservoir level and about 103 feet from the minimum generation level. Based on the current forecast, the February 24-Month Study projects Lake Powell elevation will end the water year near 3,597 feet with approximately 11.469 MAF in storage (47 percent capacity). A lack of storms in the Colorado River Basin in January 2015 has lowered the inflow estimates for the April-July runoff period to about 70 percent of average.

Based on the most probable inflow forecast, estimated SLCA/IP net generation for FY 2015 is 4,966 GWh as compared to 5,571 GWh based on the long-term historical average generation.

Purchase power expenses for firming during FY 2015 are estimated at \$18.5 million as compared to about \$21.5 million based on long-term average historical releases. Purchase power availability in the region is good and prices are low for this time of year. Firming purchases for the last month have been averaging in the upper \$20s to low \$30s off-peak and mid to high \$30s on-peak.

### Desert Southwest Region

Current Aggregate Storage (Mead, Mohave & Havasu): 13.011 MAF (12.774 MAF December 2014), 20.838 MAF (65-Year Historical Average).

The Lake Mead end of January 2015 elevation was 1,088.51 feet (0.72 feet higher than end of December 2014 elevation ), or about 131.13 feet below full storage elevation of 1,219.64 feet and 38.51 feet above the minimum generation elevation for Hoover of 1,050 feet.

Lake Mead's elevation is projected to peak at 1,089.25 feet in February of water year (WY) 2015 (19.5 feet below the WY 2014 peak elevation of 1,108.75 feet), and drop to a minimum elevation of 1,073.37 feet in June of WY 2015. This projected minimum elevation is below the 1,075 feet Shortage Condition elevation. However, this does not mean that Lake Mead would be operating under Shortage Conditions for WY 2015. Lake Mead is currently operating under Normal Conditions for WY 2015. Lake Mead's elevation at the beginning of WY 2015 (October 1, 2014) was 25.4 feet lower than at the beginning of WY 2014 (October 1, 2013).

The Lake Powell operational tier for WY 2015 is currently the Upper Elevation Balancing Tier. Total releases from Lake Powell are projected to average about 9.0 MAF for WY 2015 (actual of 7.48 MAF for WY 2014). These releases above the normal 8.23 MAF are characterized as "balancing releases" due to the current projection that the Lake Powell elevation will be at or above 3,575 feet and the Lake Mead elevation will be below 1,075 feet on September 30, 2015.

The projected 2015 April-July unregulated inflow into Lake Powell is 5.20 MAF or 73 percent of average (actual of 6.92 MAF or 97 percent of average for 2014).

Basin Snow Pack and Precipitation: DSW hydrology, or the Lower Colorado River Basin, is mostly dependent on the Colorado River Basin snow pack and precipitation above Lake Powell. The WY 2015 precipitation is currently 76 percent of average and the snowpack is 80 percent of average.

Lower Basin Runoff: The lower basin tributary inflow into Lake Mead for January 2015 was 72 kAF. The projected side inflow into Lake Mead for WY 2015 is 824 kAF which represents a 21.7 percent increase over last year's actual of 677 kAF and 63 percent of the normal annual side inflow of 1.3 MAF.

Forecasted WY 2015 Generation: 5,157 GWh compared to 5,633 GWh (Historical Average). The projected Hoover and Parker-Davis generation for WY 2015 is 92 percent of the average historical generation.

Wholesale Power Market Conditions: The December market prices in the Desert Southwest averaged about \$26/MWh firm on-peak, \$24/MWh firm off-peak compared to \$31/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 4.605 MAF, compared to 4.148 MAF last year. Accumulated inflow for the water year-to-date is 167 percent of the 15-year average for Trinity, 111 percent for Shasta, 72 percent for Folsom, and 71 percent for New Melones. None of the reservoirs is in flood control operations at this time.

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 2.74 inches, which is 90 percent of the monthly average. November recorded precipitation totaled 4.35 inches, which is 70 percent of average. December recorded precipitation totaled 15.85 inches or 179 percent of average. January recorded precipitation totaled 0.28 inches or 3 percent of average. It was one of the fifth driest on record. As of February 12, the month was at 7.18 inches or 89 percent of its average. The cumulative total at this time is 30.40 inches or 60 percent of the annual average.

Water year type forecasting begins in December, but snow surveying doesn't begin until January. The snowpack is assumed to reach its peak on April 1. Therefore, snow water equivalents are reported as a percentage of this average. As of February 10, the North was at 18 percent, the Central was at 21 percent, and the South was at 18 percent of this average. The recent precipitation was mainly rain rather than snow, which is unfortunate since snowpack is storage. The Sacramento River Index forecast of water supply based upon

February 1 conditions is “critical” for the 90 percent exceedance, but “below normal” for the 50 percent 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 year ended at approximately 60 percent of that average. Reclamation forecasts are based upon January 1 conditions, which were based upon water supply forecast of “critical” for the 90 percent exceedance and “above normal” for the 50 percent exceedance Sacramento River Index. These forecasts would be 57 percent and 68 percent of this “Green Book” average.