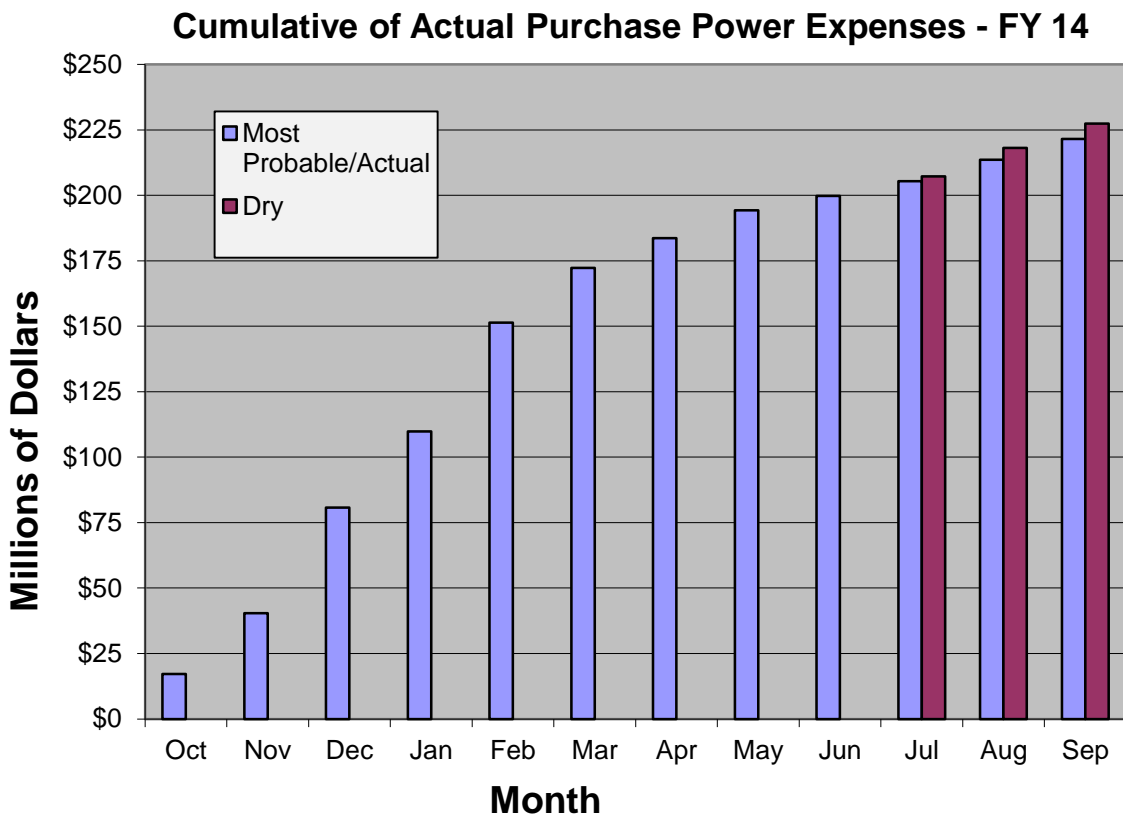


## Hydro Conditions and Purchase Power Monthly Outlook July 2014

### Western Summary

- The most probable forecast of net generation for fiscal year (FY) 2014 is 22,736 gigawatt-hours (GWh) or 84 percent of average. October through June generation was 82 percent of average.
- The lower level forecast of generation for FY 2014 is 22,141 GWh or 82 percent of average.
- The purchased power for FY 2014 is expected to be approximately 4,631 GWh.
- The average price for purchase power across all hydro projects and off-peak and on-peak periods is expected to be \$48/megawatt-hour (MWh). This price compares to \$43/MWh last year.
- Purchase power expenses for FY 2014 are forecast to be approximately \$221 million.
- October through June purchases totaled over \$199 million – compared to \$146 million for the same period last year.



## Upper Great Plains Region

Canyon Ferry: The anticipated inflow for the June through July period for Canyon Ferry Dam and Reservoir is forecast to be 253.5 thousand acre-feet (kAF) or 90 percent of the 30-year average.

As of July 16, 2014, reservoir storage at [Canyon Ferry](#) was 1,893,223 acre-feet and the active conservation pool is 100.0 percent full.

Yellowtail: Streamflows into Bighorn Lake during June continued to remain above average at 128 percent of average. Based on the July 1 water supply forecast and the planned releases out of Boysen and Buffalo Bill Reservoirs, the July runoff into Bighorn Lake is expected to equal 301,700 acre-feet (120 percent of average).

As of July 16, 2014, reservoir storage at [Yellowtail](#) is 1,026,532 acre-feet and the active conservation pool is 100.0 percent full.

COE: The large winter snowpack caused runoff in June to be 153 percent of normal above Garrison. Although the reaches above Fort Peck had better snowpack, runoff was less than expected due to dry conditions leaving Fort Peck lower than forecasted. Heavy rains in June between Garrison and Oahe added to these pool elevations. Flooding rains on the Big Sioux River in eastern South Dakota caused some large downstream flows below Gavins Point. System generation was cut back in recent weeks to allow this water to evacuate. Some of this energy has been pushed into the late fall and winter months to evacuate the system.

Bird peaking continues at Garrison and Fort Randall for the balance of the summer.

Snow pack: July forecasted runoff for 2014 is now 130 percent of normal at 33 million acre-feet (MAF). Normal runoff is 25.2 MAF.

FY Generation: The six main stem power plants generated 752 million kilowatt-hours (kWh) of electricity in June. Total energy production for 2014 is forecasted to be 9,332 GWh, down from 9,462 GWh forecasted in June. The long-term average is approximately 10 billion kWh.

Purchased Power: We are in the summer months of the generating season, and with loads increasing prices have stayed in the upper twenties for off-peak power and on-peak power ranges up to upper thirties.

## 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.

The LAP area continues to be drought free. The year-to-date reservoir inflow has been well above average. The overall LAP reservoir storage at the end of June was above average with gains in all three Basins since the end of last June. The latest National Weather Service forecast indicates August through October temperatures will more likely be below average while the precipitation is more likely to be above average. The total spring snowmelt runoff (April-July) will end up well

above average in all three basins due to the snowpack and favorable soil moisture and bank storage carrying over from the heavy fall storms.

LAP Water Conditions At-A-Glance									
	Reservoir Storage 1,000 acre-feet			Actual Reservoir Inflow To-Date 1,000 acre-feet			Most Probable Reservoir Inflow 1,000 acre-feet (April - July)		
	beginning of July	average	% of average	October - June	average	% of average	July forecast	average	% of average
<b>CBT</b>	928.5	797.5	116%	850.4	573.8	148%	770.3	588.0	131%
<b>North Platte</b>	1,951.3	1,837.5	106%	1,264.3	911.3	139%	1,045.0	770.0	136%
<b>Bighorn</b>	2,314.0	2,127.2	109%	1,750.3	1,282.8	136%	1,978.0	1,315.0	150%
<b>TOTAL</b>	5,193.8	4,762.2	109%	3,865.0	2,767.9	140%	3,793.3	2,673.0	142%
Net At Plant Generation Projections (GWh)									
	Most Probable Case median inflow			Reasonable Minimum Case lower decile inflow			Reasonable Maximum Case upper decile inflow		
	July projection	average	% of average	July projection	average	% of average	July projection	average	% of average
<b>Winter 13-14</b>	555.3	718.0	77%	555.3	718.0	77%	555.3	718.0	77%
<b>Summer 14</b>	1,372.3	1,217.8	113%	1,338.2	1,217.8	110%	1,413.7	1,217.8	116%
<b>TOTAL 2014</b>	1,927.6	1,935.8	100%	1,893.5	1,935.8	98%	1,969.0	1,935.8	102%

The summer season generation is expected to fall between 110 and 116 percent of average with a significant drop-off in August. There were plant bypasses in the Bighorn and North Platte basins due to the heavy spring runoff. Some of the Yellowtail bypass was at the request of Western to allow for upward regulation. In the CBT a bypass was required at the Green Mountain plant, and Lake Granby did start to spill when East Slope CBT storage filled. There will be a curtailment of Adams Tunnel imports and associated CBT generation from August 4 through the Labor Day weekend as a means to improve water clarity in Grand Lake. The amount of upcoming winter generation will depend on how much water remains in storage after the irrigation season winds down.

### Colorado River Storage Project Management Center

The total storage volume for the CRSP main stem reservoirs is 18,102,000 acre-feet, which is about 59 percent of the total main stem reservoir storage capacity. Main stem reservoir inflows for the most recent historical month (June 2014) were about 115 percent of average. Lake Powell elevation currently is about 3,610 feet, 90 feet from maximum reservoir level, and about 120 feet from the minimum generation level. Lake Powell elevation has increased about 32 feet since March as spring runoff entered the reservoir. Based on the current forecast, the July 24-Month Study projects Lake Powell elevation will peak at approximately 3,610 feet and end the water year near 3,605 feet with approximately 12.25 MAF in storage (50 percent capacity).

Based on the most probable inflow forecast, estimated SLCA/IP net generation for FY 2014 is 4,091 GWh as compared to 5,584 GWh based on the long-term historical average generation.

Estimated purchase power expenses for firming during the FY 2014 are about \$60.7 million as compared to about \$21.7 million based on long-term average historical releases. Purchase power availability in the region is good and prices are somewhat higher than usual for this time of year. Firming purchases for the last month have been averaging in the mid \$40s on-peak and mid \$30s off-peak.

### **Desert Southwest Region**

Current Aggregate Storage (Mead, Mohave & Havasu): 12.505 MAF (12.954 MAF May 2014), 20.965 MAF (64-Year Historical Average).

The Lake Mead end of June 2014 elevation was 1,082.66 feet (4.8 feet lower than end of May 2014 elevation), or about 136.98 feet below full storage elevation of 1,219.64 feet and 32.66 feet above the minimum generation elevation for Hoover of 1,050 feet.

Lake Mead's elevation peaked at 1,108.75 feet in January of water year (WY) 2014 (13.57 feet below the WY 2013 peak elevation of 1,122.32 feet), and is projected to drop to a minimum elevation of 1,080.17 feet in September of WY 2014, a maximum fluctuation in lake elevation of 28.58 feet.

The Lake Powell operational tier for WY 2014 is currently the Mid-Elevation Release Tier. Total releases from Lake Powell to Lake Mead are projected to average about 7.48 MAF for WY 2014 (actual of 8.232 MAF for WY 2013). The projected 2014 April-July unregulated inflow into Lake Powell (as of July 16, 2014) is 7.02 MAF or 98 percent of average (actual of 2.56 MAF or 36 percent of average).

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 2014 precipitation is currently 95 percent of average and the snowpack is gone.

Lower Basin Runoff: The lower basin tributary inflow into Lake Mead for June 2014 was 11 kAF. The projected side inflow into Lake Mead for WY 2014 is 649 kAF which represents a 27 percent decrease over last year's actual of 824 kAF, and represents 50 percent of the normal annual side inflow of 1.3 MAF.

Forecasted WY 2014 Generation: 5,336 GWh compared to 5,640 GWh (Historical Average). The projected Hoover and Parker-Davis generation for WY 2014 is 95 percent of the average historical generation.

Wholesale Power Market Conditions: The June market prices in the Desert Southwest averaged about \$45/MWh firm on-peak, \$33/MWh firm off-peak compared to \$41/MWh firm on-peak, \$30/MWh firm off-peak for the previous month.

### **Sierra Nevada Region**

The total storage of the four major CVP reservoirs is 3,623 MAF, compared to 5,938 MAF last year. Accumulated inflow for the water year-to-date is 30 percent of the 15-year average for Trinity, 49 percent for Shasta, 38 percent for Folsom, and 35 percent for New Melones. None of the reservoirs is in flood control operations at this time. Trinity storage is at 37 percent capacity;

Shasta at 36 percent, Folsom nearly 43 percent, and New Melones is at nearly 27 percent of its capacity. End of September carryover could be at an all-time low.

The Northern Sierra Eight Station index averages slightly more than 50 inches of precipitation per water year. October recorded precipitation totaled 0.72 inches, or 23 percent of the monthly average. November recorded precipitation totaled 1.66 inches, or 26 percent of average. December came in at 0.92 inches, or 10 percent of average. January came in at 1.20 inches or 13 percent of its average. February ended at 14.20 inches or 130 percent of its average. March came in at 10.21 inches, or 153 percent of average. April ended at 3.95 inches or 67 percent of average. May which averages 2.20 inches ended at 0.75 inches, only 34 percent of average. June which averages 0.97 inches ended at 0.05 inches. The cumulative total at this time is 28.97 inches or 57 percent of the annual average. July which averages 0.17 inches is at 0.12 inches now.

Water year type forecasting begins in December, but snow surveying doesn't begin until January. The snowpack is assumed to reach its peak April 1. Snow water equivalents are reported as a percentage of this average. As of May 23, the North is at 2 percent, the Central is at 3 percent and the South is at 1 percent of this average. The Sacramento River Index forecast of water supply, based upon May 1 conditions forecast, remains "critical" for the 90 percent exceedence as well as the 50 percent case. The 40-30-30 year type declaration based upon May 1 conditions at the 50 percent exceedence level is "critical."

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 91 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 exceedence and "critical" for the 50 percent exceedence. These forecasts are 67 percent and 67 percent of this "Green Book" average net generation. Reclamation had been at 800 cubic feet per second (cfs) of pumping at Tracy for some time due to Delta outflow standard. Rather than release more water from storage, on July 10 they shut down Tracy and then began a two day on and one day off cycle. Meanwhile, State Water Project pumping has remained at 1,200 cfs during this time, with a Feather River release of approximately 3,000 cfs from Oroville.