RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES **DATE: SEPTEMBER 25, 2023**

GENERAL MANAGER'S REPORT

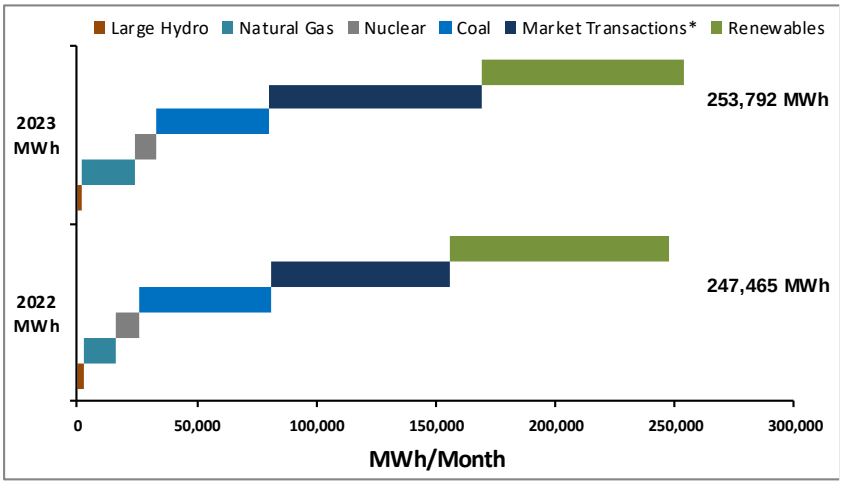
SUBJECT: MONTHLY POWER SUPPLY REPORT – JULY 31, 2023

Monthly Power Usage:

The wholesale load (Vista Substation) for July was 253,792 MWh, which is an increase of 6,327 MWh in comparison to the same month in the previous year. Renewable generation served 33.12% or 84,061 MWh of Riverside's wholesale load. Coal generation served 18.73% or 47,531 MWh of the wholesale load. Nuclear energy covered 3.58% or 9,096 MWh of the wholesale load in July. In July, internal natural gas generation increased production, serving 8.48% or 21,512 MWh due to increased demand. Hydro generation represents 0.89% or 2,252 MWh of Riverside's wholesale load. Finally, the balance of Riverside's wholesale load for July was Market Transactions, which represented 35.20% or 89,340 MWh.

Wholesale Resource Mix - JULY 2022 vs 2023

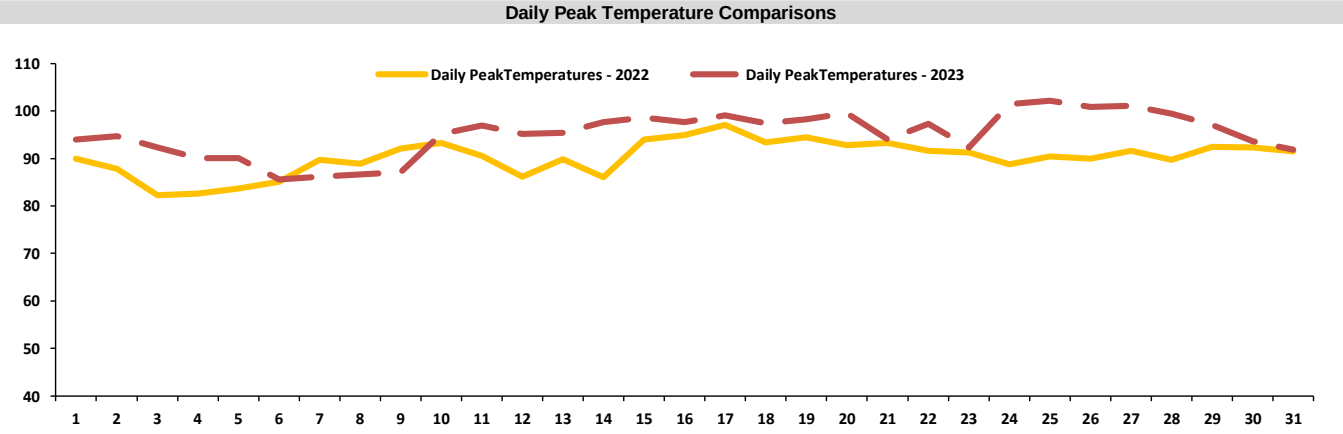
Energy	2022 MWh	2023 MWh
Large Hydro	2,433	2,252
Natural Gas	14,000	21,512
Nuclear	9,266	9,096
Coal	55,611	47,531
Market Transactions*	74,631	89,340
Renewables	91,523	84,061
Wholesale Load (Vista)	**247,465**	**253,792**



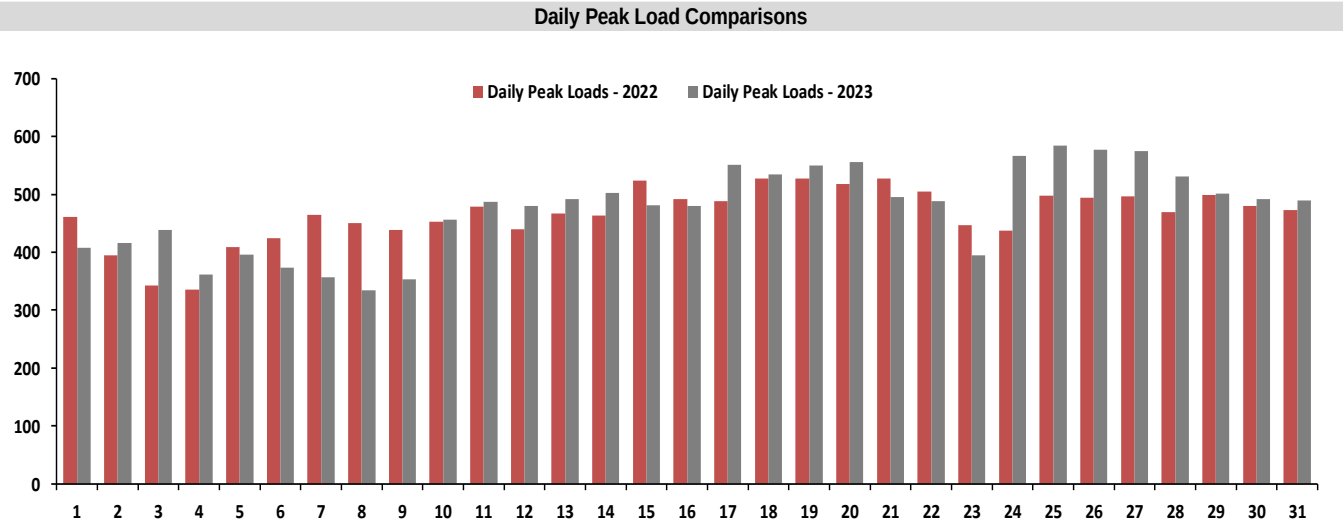
* The Market Transaction category comprises bilateral power contracts and purchases(sales) from(to) the CAISO.

Daily & Monthly Load Trends

Weather has a significant impact on electricity demand, especially the variable temperature. On average, as temperatures increase, electricity demand will also increase. The charts below graphically extrapolate the correlation between weather and electricity demand. July 2023 weather came in slightly warmer in comparison to the same month in the previous year. In July 2023, peak temperatures experienced a consistent upward trend that leveled out in the middle of the month before experiencing upwards movement again. The average temperature in July 2023 was 95 degrees, and the peak was 102 degrees. For comparison, the average temperature in July 2022 was 90 degrees, and the peak temperature was 97 degrees.

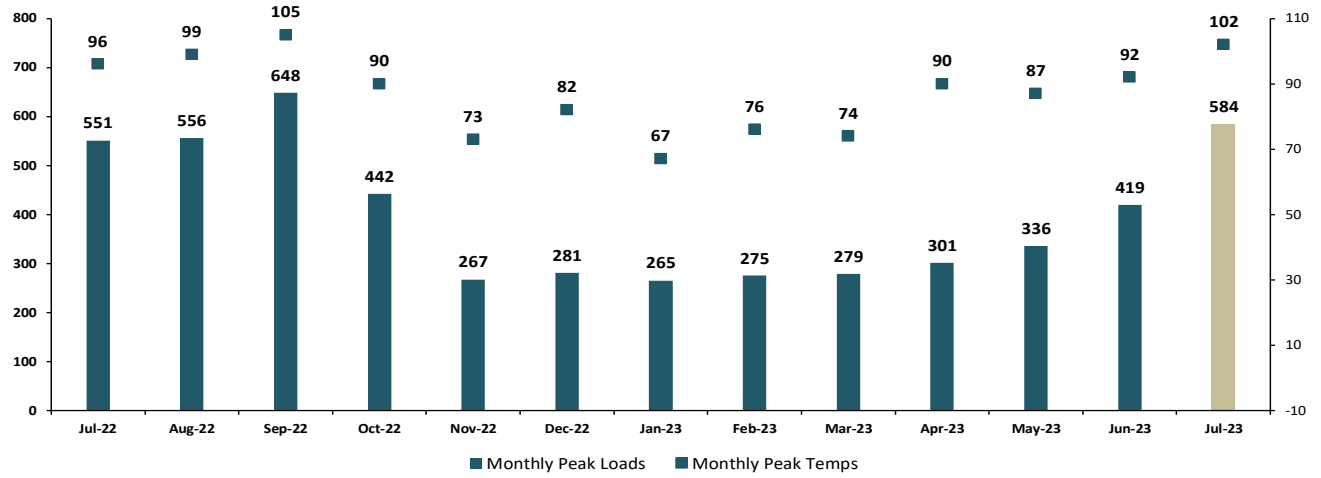


Daily load patterns in 2023 were very similar to those observed in 2022, with the exception of the last seven days of the month. July 2022 had an average temperature of 90 degrees, pushing the average daily peak to 465 MW, with daily peak loads of 500 MW or greater on 6 out of the 31 days. July 2023 had more pronounced temperatures that pushed average daily peak loads to 474 MW, with daily peak loads of 500 MW or greater on 11 out of the 31 days. The average load in July 2023 increased by 9 MW in comparison to the same month in the previous year.



With warmer weather, we see higher peak loads than the previous year. Hourly demand peaked at 584 MW on 7/25/23 HE 17, an increase of 33 MW compared to the same month in the previous year. Riverside resources covered 100% of the hourly peak demand on 7/25/23 HE 17. The chart below shows how the July 2023 peak load and temperature compare to the previous 12 months.

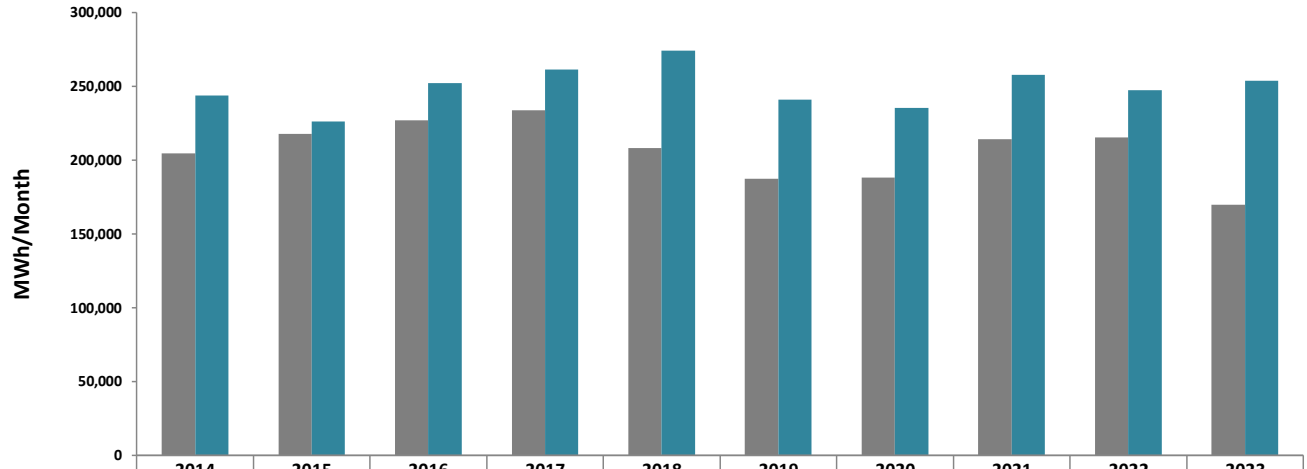
Monthly Peak Load and Temperature



10-Year Retail Load Trends

Retail load for July has hit a ten-year low, with readings at 169,766 MWh. This drop is a decrease of 17,607 MWh from the previous low in 2019 at 187,373. System load reading for 2023 are 253,792 MWh, which has remained steady since 2021. The year-over-year retail load decreased by 45,589 MWh from 2022 to 2023, and the year-over-year system load increased by 6,327 MWh from 2022 to 2023. The upward pattern in System load can be attributed to a large number of variables, most significantly due to higher temperatures in July 2023 compared to July 2022. Retail load values can be impacted by the significant adoption of residential PV solar, efficiency programs, adoption of energy-efficient appliances, available meter data, etc.

July Retail & System Loads (MWh/Month): 10-Year Trends

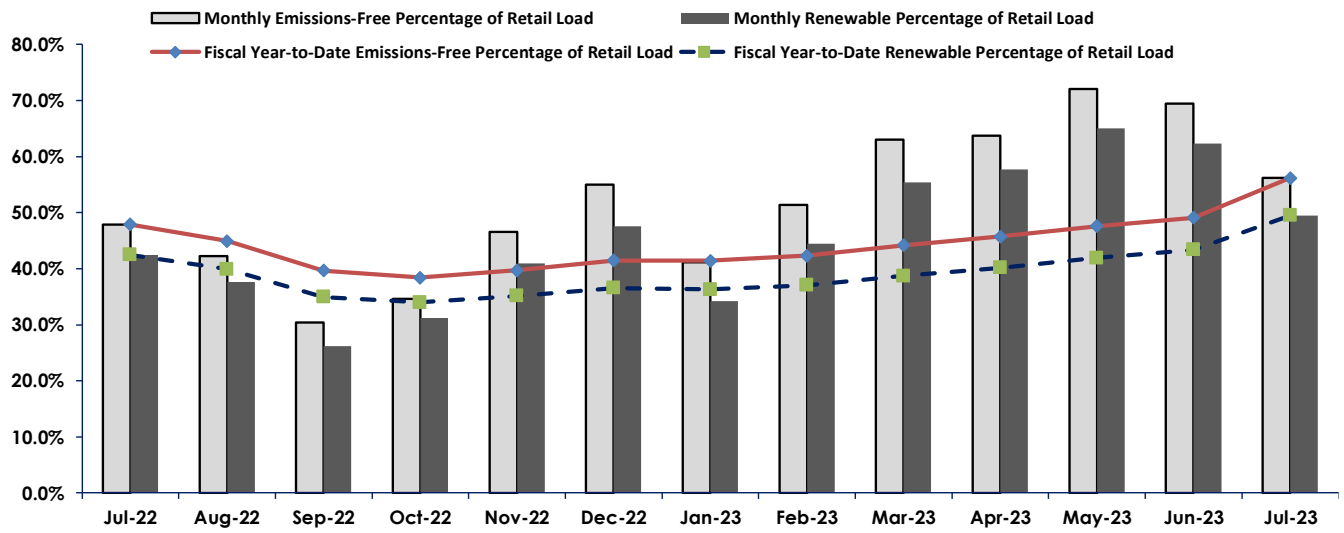


	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Retail Load	204,822	217,709	226,928	233,953	208,267	187,373	188,439	214,065	215,355	169,766
System Load	243,795	226,186	252,041	261,607	274,087	241,046	235,385	258,011	247,465	253,792

Fiscal Year Renewable Generation Trends

Solar PV is most efficient when ambient temperatures oscillate around the high 70 degrees. Optimal PV conditions in July 2023 have decreased, with higher average temperatures. Renewable generation, as a percentage of retail load, decreased about 13 percentage points from June 2023. Geothermal production has remained at maximum output with minor derates throughout the month. Hydro and Nuclear have maintained steady production throughout July 2023. Overall, emissions-free resource production served 56.2% of the retail load in July, and renewable resources served 49.5% of the retail load in July.

Emission Free and Renewable Resources' Summary



*Riverside's emmisions free resources are composed of renewables plus hydro and nuclear
*Riverside's renewable resources are composed of solar, wind and geothermal.

July 2023 Resource Availability - Internal Generation

RERC's availability for the month was 99.95% in July due to a minor issue affecting unit 1.

Springs generation had a total availability of 99.51% in July due to a minor issue with units 1&2.

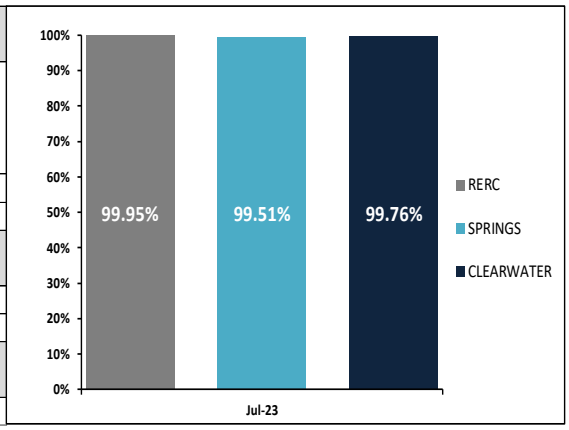
Cleawater's availability for the month was 99.76% due to a loss of power on 7/14/23.

Resource Availibility

Jul-23	Total Outage Hours	Total Monthly Hrs.	Actual Available Hrs.	Availability %
RERC1	1.50	744.00	742.50	99.80%
RERC2	0.00	744.00	744.00	100.00%
RERC3	0.00	744.00	744.00	100.00%
RERC4	0.00	744.00	744.00	100.00%
RERC	1.50	2976.00	2974.50	99.95%

Jul-23	Total Outage Hours	Total Monthly Hrs.	Actual Available Hrs.	Availability %
SPRINGS	14.5	2976	2961.5	99.51%

Jul-23	Total Outage Hours	Total Monthly Hrs.	Actual Available Hrs.	Availability %
CLEARWATER	1.75	744	742.25	99.76%



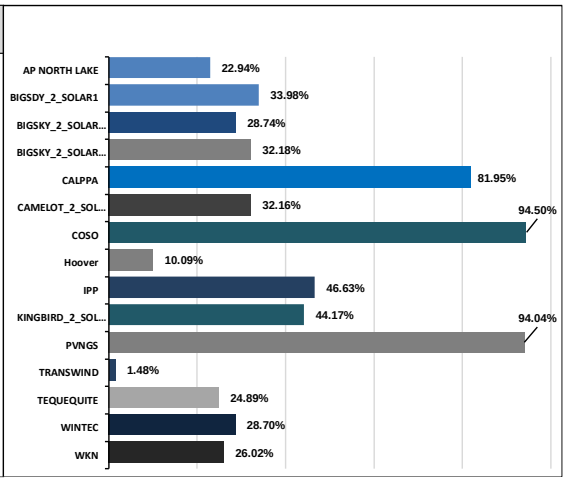
July 2023 Resource Availability – External Resources

Solar resources had capacity factors ranging from 22.94% to 44.17%. Wind resources had capacity factors ranging from 1.48% to 28.70%. Riverside's nuclear resource had a steady production with a capacity factor of 94.04%. Hoover continues to be affected by lake-level restrictions impacting the resource's capacity factor and maintaining a 10.09% capacity factor for the month. An undersupply of coal is currently impacting IPP, restricting generation output; thus, its capacity factor was 46.63%. Riverside's CalEnergy Portfolio capacity was 81.95%, slightly affected by under generation. Lastly, Coso had a capacity factor of 94.50%, affected by under generation.

It is worth noting that intermittent renewable resources, including wind and solar, have capacity factors that are affected by natural factors such as cloud cover and blowing wind.

Resource Capacity Factor

Jul-23	Resource	Max. Monthly MWH	Actual Energy MWH	Capacity Factors %
AP NORTH LAKE	Solar	14,880	3,413	22.94%
BIGSDY_2_SOLAR1	Solar	7,440	2,528	33.98%
BIGSKY_2_SOLAR3 (SCP3)	Solar	7,440	2,138	28.74%
BIGSKY_2_SOLAR7 (SCP4)	Solar	18,600	5,986	32.18%
CALPPA	Geothermal	63,984	52,438	81.95%
CAMELOT_2_SOLAR2 (SCP2)	Solar	8,288	2,665	32.16%
COSO	Geothermal	7,440	7,031	94.50%
Hoover	Hydro	22,320	2,252	10.09%
IPP	Coal	101,928	47,531	46.63%
KINGBIRD_2_SOLAR2 (SCP1)	Solar	10,416	4,601	44.17%
PVNGS	Nuclear	9,672	9,096	94.04%
TRANSWIND	Wind	29,016	428	1.48%
TEQUEQUITE	Solar	5,580	1,389	24.89%
WINTEC	Wind	982	282	28.70%
WKN	Wind	4,464	1,161	26.02%



Resource Outages and Transmission Constraints

- RERC
  - Unit 1 was on a forced outage due to NOX water issues.
- SPRINGS
  - Unit 1 & 2 forced outage due to fuel controller issues.
- CLEARWATER
  - Facility forced outage due to loss of power.