RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES **DATE: November 27, 2023**

GENERAL MANAGER'S REPORT

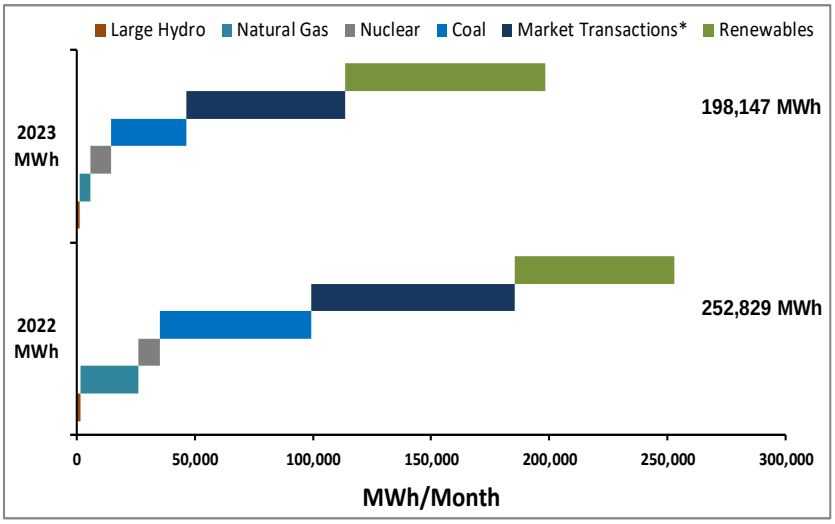
SUBJECT: MONTHLY POWER SUPPLY REPORT – SEPTEMBER 30, 2023

Monthly Power Usage:

The wholesale load (Vista Substation) for September was 198,147 MWh, which is a decrease of 54,682 MWh in comparison to the same month in the previous year. Renewable generation served 42.70% or 84,604 MWh of Riverside's wholesale load. Coal generation served 15.94% or 31,578 MWh of the wholesale load. Nuclear energy covered 4.53% or 8,976 MWh, and internal natural gas generation served 2.21% or 4,381MWh of wholesale load in September. Hydro generation represents 0.70% or 1,382 MWh of Riverside's wholesale load. Finally, the balance for September was covered by Market Transactions, which represented 33.93% or 67,226 MWh.

Wholesale Resource Mix - September 2022 vs 2023

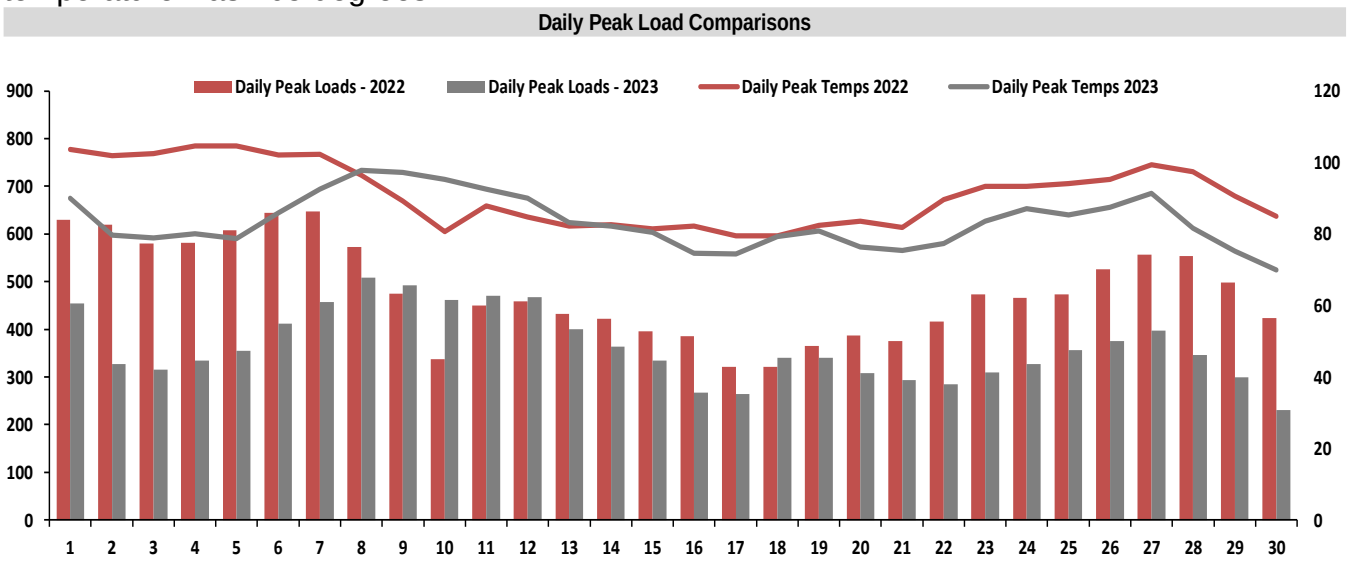
Energy	2022 MWh	2023 MWh
Large Hydro	1,584	1,382
Natural Gas	24,410	4,381
Nuclear	9,312	8,976
Coal	64,002	31,578
Market Transactions*	85,991	67,226
Renewables	67,530	84,604
Wholesale Load (Vista)	252,829	198,147



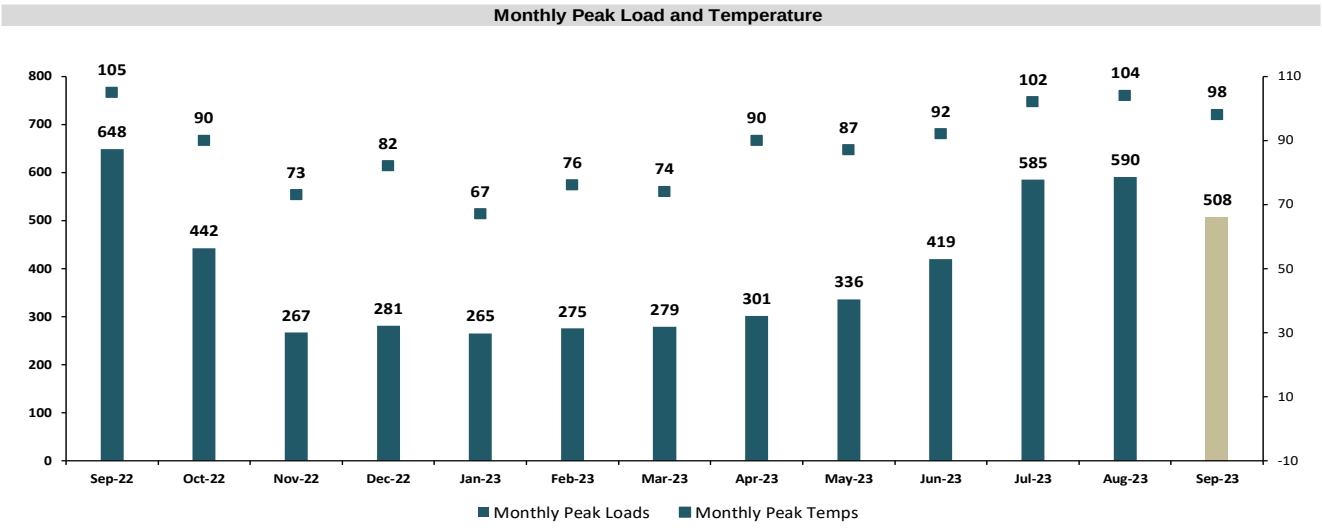
* The Market Transaction category comprises bilateral power contracts and purchases(sales) from(to) the CAISO.

Daily & Monthly Load & Temperature Trends

Weather has a significant impact on electricity demand, especially the variable temperature. Typically, as temperatures increase, electricity demand will also increase. The charts below graphically extrapolate the correlation between weather and electricity demand. September 2023 daily peak temperatures consistently remained in the 85-to-95-degree range. While September 2022 peak temperatures were consistently higher and remained in the 90-to-100-degree range. In further analyzing weather data, daily low temperatures in September 2023 were, on average, 8 degrees lower than in September 2022. The average peak temperature in September 2023 was 83 degrees, and the monthly peak was 98 degrees. For comparison, the average peak temperature in September 2022 was 91 degrees, and the monthly peak temperature was 105 degrees.



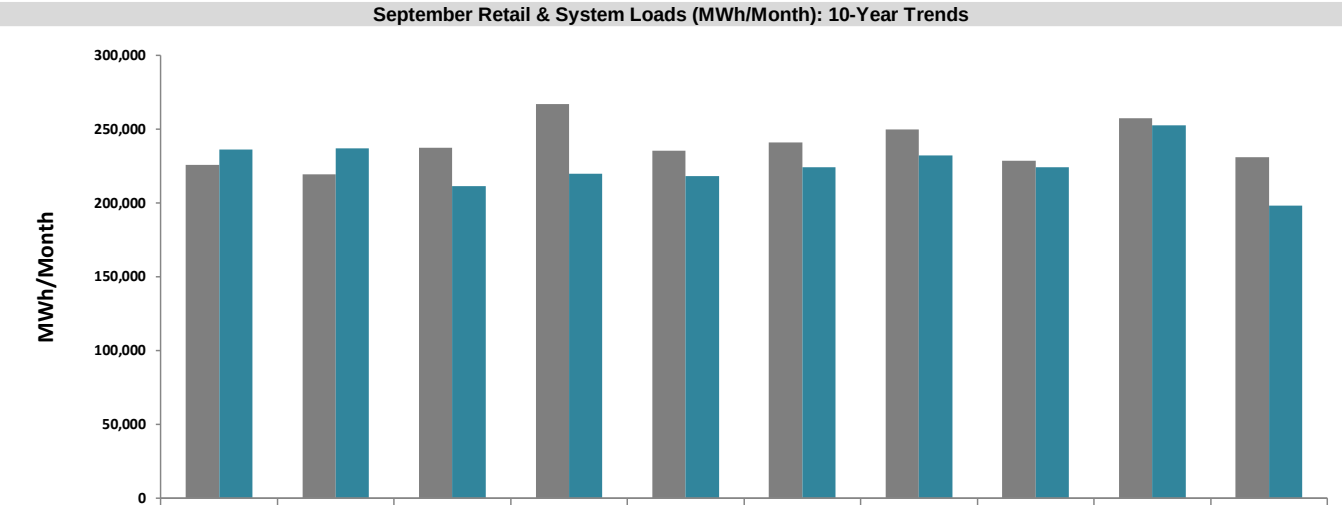
September 2022 experienced relatively consistent high temperatures, with an average peak temperature of 91 degrees, the average daily peak load was 480 MW, with daily peak loads of 500 MW or greater on 15 out of the 30 days. With a lower average peak temperature of 83 degrees in September 2023, the average daily peak load was 363 MW, with daily peak loads of 500 MW or greater on only 1 out of the 30 days. The average daily peak load in September 2023 decreased by 117 MW in comparison to the same month in the previous year.



Riverside experienced fewer days of continuous high temperatures in September 2023, which led to lower peak loads, thus putting downward pressure on the monthly peak. Hourly demand peaked at 508 MW on 9/8/23 HE 17, a decrease of 140 MW compared to a peak of 648 MW the same month last year. It is worth noting that the September 2022 648 MW peak is Riverside's record high hourly peak set during a historic west-wide heat wave experienced in the summer of 2022. Riverside resources covered 70% of the hourly peak demand on 9/8/23. The chart below shows the September 2023 peak load and temperature compared to the previous 12 months.

10-Year Retail Load Trends

Retail load for September 2023 was 230,900 MWh, a decrease of 26,574 MWh from the previous year's reading of 257,474 MWh. The System load for September 2023 was 198,147 MWh, a decrease of 54,682 MWh from the prior year's reading of 252,829 MWh. 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.



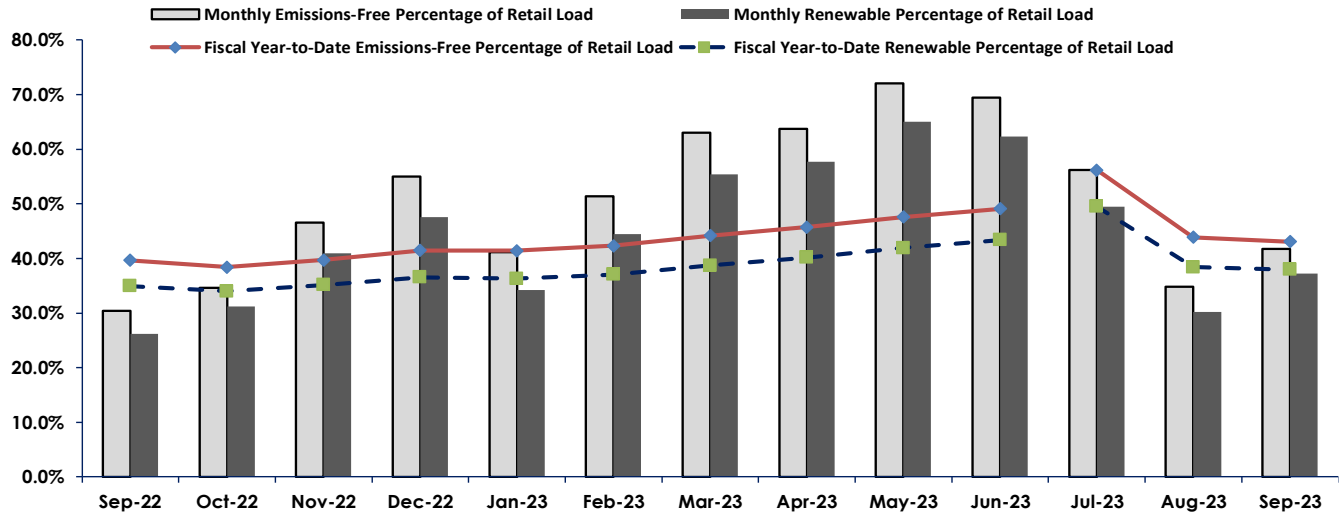
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Retail Load	225,769	219,591	237,524	266,841	235,419	240,926	249,913	228,676	257,474	230,900
System Load	236,410	237,228	211,521	219,904	218,062	224,137	232,392	224,312	252,829	198,147

Fiscal Year Renewable Generation Trends

In September 2023, nuclear generation experienced a reduction of 1% compared to August 2023 and a reduction of 4% compared to September 2022. Hydroelectric generation experienced a reduction of about 16% from August 2023 and a reduction of 13% compared to September 2022. September 2023 wind generation experienced an increase of 18% output compared to August 2023, but under-generated by about 13% compared to September 2022. September 2023 solar generation experienced an 8% reduction compared to August 2023 and a 4% increase in production compared to September 2022. Lastly, in September 2023, geothermal generation experienced a 36% increase in output compared to August 2023 and a 38% increase in output compared to September 2022. In September 2023, renewable generation, as a percentage of retail load, increased about 7 percentage points from August 2023 and increased by 11

percentage points compared to September 2022. Lastly, in September 2023, Emissions-Free generation, as a percentage of retail load, increased by about 7 percentage points from August 2023, and increased by about 11 percentage points compared to September 2022. The driving factor for the increased percentages in September 2023 is the higher geothermal production, in September 2022 and August 2023, the CalEnergy Portfolio experienced unplanned outages reducing overall renewable generation.

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.

Notes: * CAISO Market Purchases are calculated as CAISO metered system load ("MLAP_RVSD_RVSD") minus sum of all energy purchases.

September 2023 Resource Availability - Internal Generation

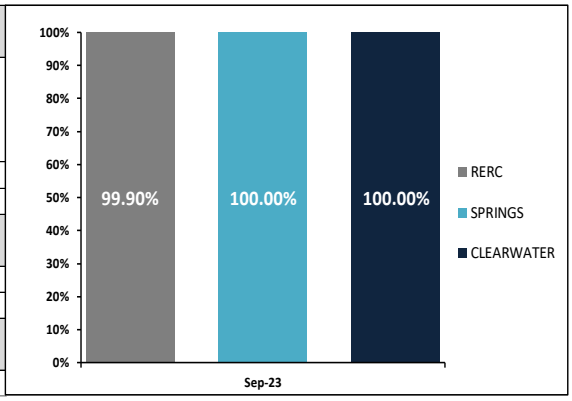
- RERC's availability for the month was 99.90%.
- Spring's availability for the month was 100.00%.
- Clearwater's availability for the month was 100.00%.

Resource Availibility

Sep-23	Total Outage Hours	Total Monthly Hrs.	Actual Available Hrs.	Availability %
RERC1	2.00	720.00	718.00	99.72%
RERC2	0.00	720.00	720.00	100.00%
RERC3	0.00	720.00	720.00	100.00%
RERC4	0.75	720.00	719.25	99.90%
RERC	**2.75**	**2880.00**	**2877.25**	**99.90%**

Sep-23	Total Outage Hours	Total Monthly Hrs.	Actual Available Hrs.	Availability %
SPRINGS	**0**	**2880**	**2880**	**100.00%**

Sep-23	Total Outage Hours	Total Monthly Hrs.	Actual Available Hrs.	Availability %
CLEARWATER	**0**	**720**	**720**	**100.00%**

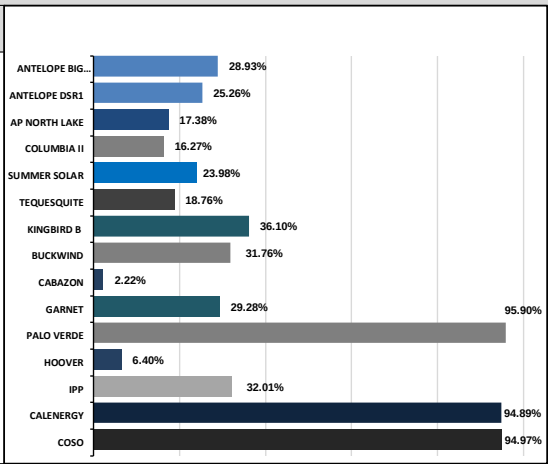


September 2023 Resource Availability – External Resources

Solar resources had capacity factors ranging from 16.27% to 36.10%. Wind resources had capacity factors ranging from 2.22% to 31.76%. Riverside's Palo-Verde nuclear share had steady production with a capacity factor of 95.90%. Hoover is an energy limited resource and continues to be affected by lake-level restrictions, the resource maintained a 6.40% capacity factor for the month. An undersupply of coal is currently impacting IPP restricting generation output; thus, its capacity factor was 32.01%. Riverside's CalEnergy Portfolio capacity was 94.89%, affected slightly by transmission constraints and forced outages due to under-generation. Lastly, Coso had a capacity factor of 94.97%, affected slightly 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

Sep-23	Resource	Max. Monthly MWH	Actual Energy MWH	Capacity Factors %
ANTELOPE BIG SKY RANCH	Solar	7,200	2,083	28.93%
ANTELOPE DSR1	Solar	18,000	4,546	25.26%
AP NORTH LAKE	Solar	14,400	2,503	17.38%
COLUMBIA II	Solar	8,021	1,305	16.27%
SUMMER SOLAR	Solar	7,200	1,727	23.98%
TEQUESQUITE	Solar	5,400	1,013	18.76%
KINGBIRD B	Solar	10,080	3,639	36.10%
BUCKWIND	Wind	950	302	31.76%
CABAZON	Wind	28,080	625	2.22%
GARNET	Wind	4,320	1,265	29.28%
PALO VERDE	Nuclear	9,360	8,976	95.90%
HOOVER	Hydro	21,600	1,382	6.40%
IPP	Coal	98,640	31,578	32.01%
CALENERGY	Geothermal	61,920	58,758	94.89%
COSO	Geothermal	7,200	6,838	94.97%



Resource Outages and Transmission Constraints

- RERC
  - Unit 1 forced outage was to change a VSV controller board.
  - Unit 4 forced outage was to replace failed part on fire system.
- Clearwater
  - No planned or forced outages.
- Springs
  - No planned or forced outages.
- Cabazon
  - Decreased availability due to continued turbine repairs following tower failures.