REDWOOD COAST EnergyAuthority

STAFF REPORT
Agenda Item # 6.1

AGENDA DATE:	August 22, 2024
TO:	Board of Directors
PREPARED BY:	Jaclyn Harr, TEA Account Director – California Richard Engel, Director of Power Resources
SUBJECT:	Energy Risk Management Quarterly Report

BACKGROUND

The RCEA Board of Directors adopted an Energy Risk Management Policy in December 2016, most recently revised in December 2022 and with an Addendum A adopted in May 2024 (RCEA-ERMP-Approved-Dec-2022.pdf), to establish functions and procedures to manage the risks associated with the Community Choice Energy (CCE) program's power procurement activities. In accordance with this policy, a quarterly update on activities and projected financial performance is presented to the Board during business meetings.

SUMMARY

The Energy Authority (TEA) California Account Director Jaclyn Harr and RCEA staff will provide an energy risk management quarterly update. In addition to the risk update, RCEA's "2024 California Summer Market Conditions Assessment" will be presented.

ALIGNMENT WITH RCEA'S STRATEGIC PLAN

Not applicable.

EQUITY IMPACTS

Not applicable.

RECOMMENDED ACTION

Accept Energy Risk Management Quarterly Report and 2024 California Summer Market Conditions Assessment.

ATTACHMENTS

Redwood Coast Energy Authority: 2024 California Summer Market Conditions Assessment
Energy Risk Management Quarterly Report slides will be presented at the meeting.

Redwood Coast Energy Authority:

2024 California Summer Market Conditions Assessment

Prepared by The Energy Authority (TEA), July 2024

CAISO Grid Conditions Summary

The California Independent System Operator's (CAISO) 2024 Summer Loads and Resources assessment indicates continued improvement in expected available resource capacity for the 2024 summer season. California's anticipated capacity sufficiency is primarily driven by accelerated resource development, average to slightly above average hydro conditions and a reduced demand forecast, all of which has more than offset generation retirements. When combined with the transition of gas-fired once-through cooling generation into the state's strategic reliability reserves pool, projected capacity margins exceed demand and reserve requirements, and meet reliability performance target levels. Target levels are maintained during the early evening hours when solar output wanes; however, the CAISO assessment highlights that there remains consistent risk across the hours ending between 19:00 and 21:00 (i.e. net-peak demand risk), but significantly lower risk is anticipated leading up to the hour ending at 19:00 (i.e. evening ramp risk). This change from previous years is attributed in part to the larger fleet of storage resources available to manage the rapid decline of solar output during these hours each day.

The CAISO's fleet of emergency resource programs, such as the State Power Augmentation Project (SPAP) and the Electricity Supply Strategic Reliability Reserve Program (ESSRRP), have continued to grow in breadth and depth moving into the 2024 summer season, with the ESSRRP combined with available emergency assistance on the interties now totaling approximately 3,450 megawatts (MW). These programs generally trigger based on various CAISO emergency notifications and add emergency capacity and reserve resources to support the grid specifically during extreme events, as outlined in CAISO's Emergency Procedure 4420[1]. Additionally, demand-side programs administered by the California Energy Commission (CEC) and California Public Utilities Commission (CPUC) like the Demand Side Grid Support Program (DSGS) and the Distributed Electricity Backup Assets (DEBA) program focus on load reduction as a means of ensuring grid reliability. These initiatives collectively contribute to improving grid conditions and enhancing overall system preparedness for the summer of 2024.

While TEA's analysts generally support the CAISO's observations included in its Summer 2024 Assessment, four key areas of uncertainty call for tempered confidence in the CAISO's ability to maintain reliable operations during the summer 2024 season:

- Potential for coincident heat event or wildfires to stress inter-regional deliveries;
- Potential over-confidence in expected level of intertie imports, marked at 6,256 MW in September in the multi-hour stack analysis, given west-wide capacity and energy market conditions as well as ongoing challenges with CPUC Import Resource Adequacy (RA) policy;

[1] CAISO Operating Procedure 4420, System Emergency: http://www.caiso.com/Documents/4420.pdf

- Potential for state-of-charge management of storage fleet by individual resources to deliver sub-optimal dispatch availability over evening peak hours; and
- Potential for uncertainty in Western Energy Imbalance Market (WEIM) transfers during tight regional or west-wide system conditions to challenge real-time market stability.

CAISO Grid Conditions – Deeper Dive

New Power Plants

The CPUC adopted its 2023 Preferred System Plan (PSP) portfolio in February 2024, which includes planned capacity additions of over 7 gigawatts (GW), primarily 4-hour Lithium-ion batteries (4.3 GW) and solar resources (3 GW), while phasing out 2.2 GW of gas capacity from the portfolio. The CAISO's 2024 Summer Assessment stochastic model analysis of the CPUC's preferred portfolio was adjusted to the anticipated online portfolio as of June 30, 2024, which only impacts the Natural Gas, Solar, and 4-Hour Battery figures as shown in the following table.

Installed Capacity (MW) Fuel Type	CPUC's Preferred System Portfolio (2024)	CAISO's Stochastic Model (2024)
Coal	480	480
Natural Gas	23,744	**25,991**
CHP	1,925	1,925
Nuclear	2,935	2,935
Geothermal	1,303	1,303
Biomass	487	487
Biogas	217	217
Hydro	8,523	8,523
In-State Wind	8,027	8,027
Out-of-State Wind	11	11
Solar	22,037	**19,037**
Li-ion Battery (4-hr)	12,894	**8,554**
Li-ion Battery (8-hr)	67	67
Pumped Hydro Storage	1,483	1,483
Shed DR	2,446	2,446
Total	**86,579**	**81,486**

("Total installed capacity by fuel type in CAISO's 2024 stochastic model" Source: CAISO 2024 Summer Assessment Report, Table 1.1, p. 8)

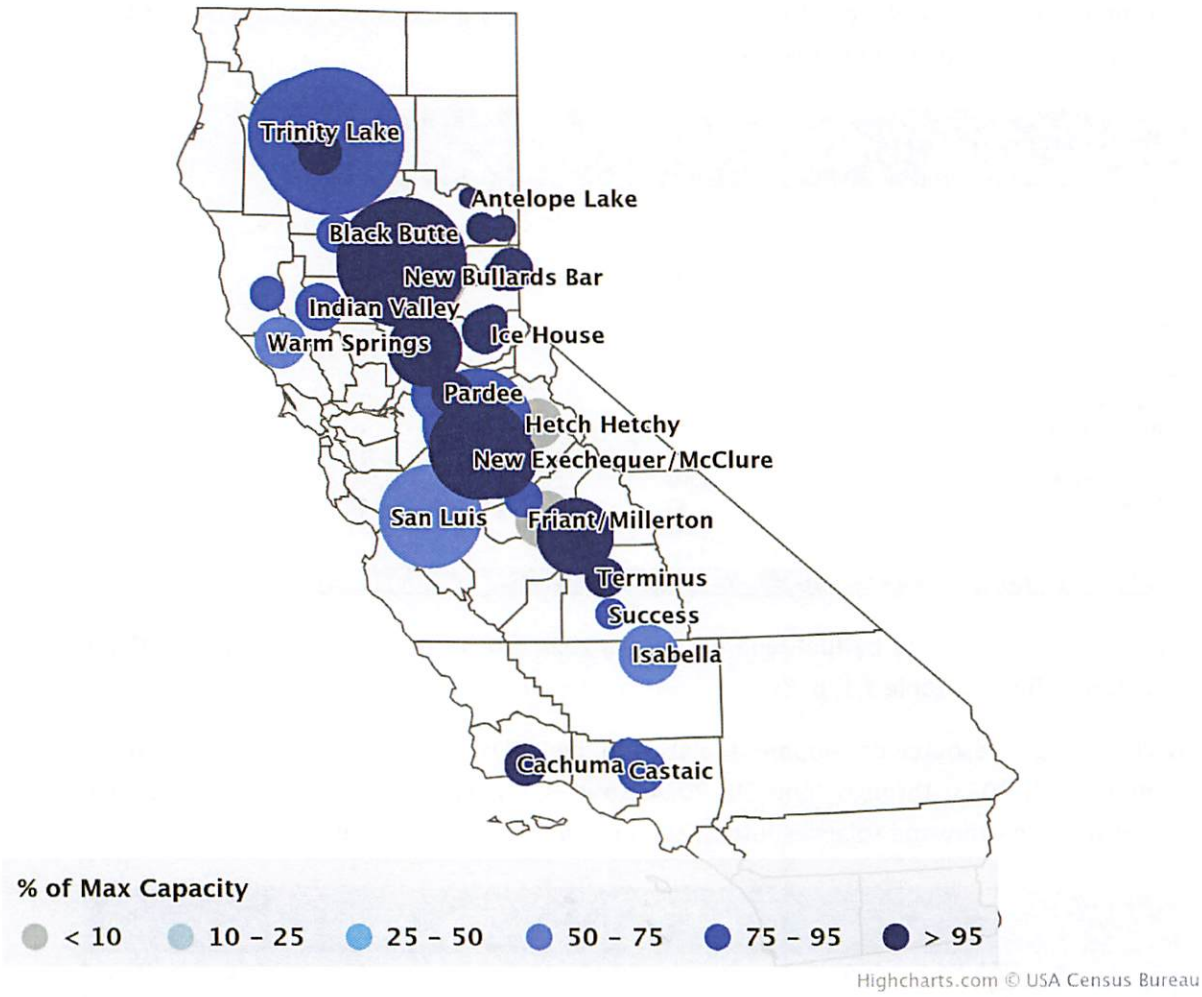
While the lag in resource development relative to the PSP is notable, actual and expected additions from September 1, 2023, through June 30, 2024, total 9,071 MW of total nameplate capacity, primarily comprised of battery and solar resources, as shown in the following table:

Category	Battery	Wind	Solar	Biofuel	Geothermal	Hybrid	Total Nameplate Capacity
Additions from September 1, 2023 through December 31, 2023	1,321	95	1,842			318	**3,576**
Additions from January 1, 2024 through April 1, 2024	425		498			3	**926**
Expected additions from April 1, 2024 through June 30, 2024	3,199	18	818	3	41	490	**4,569**
Total	**4,945**	**113**	**3,158**	**3**	**41**	**811**	**9,071**

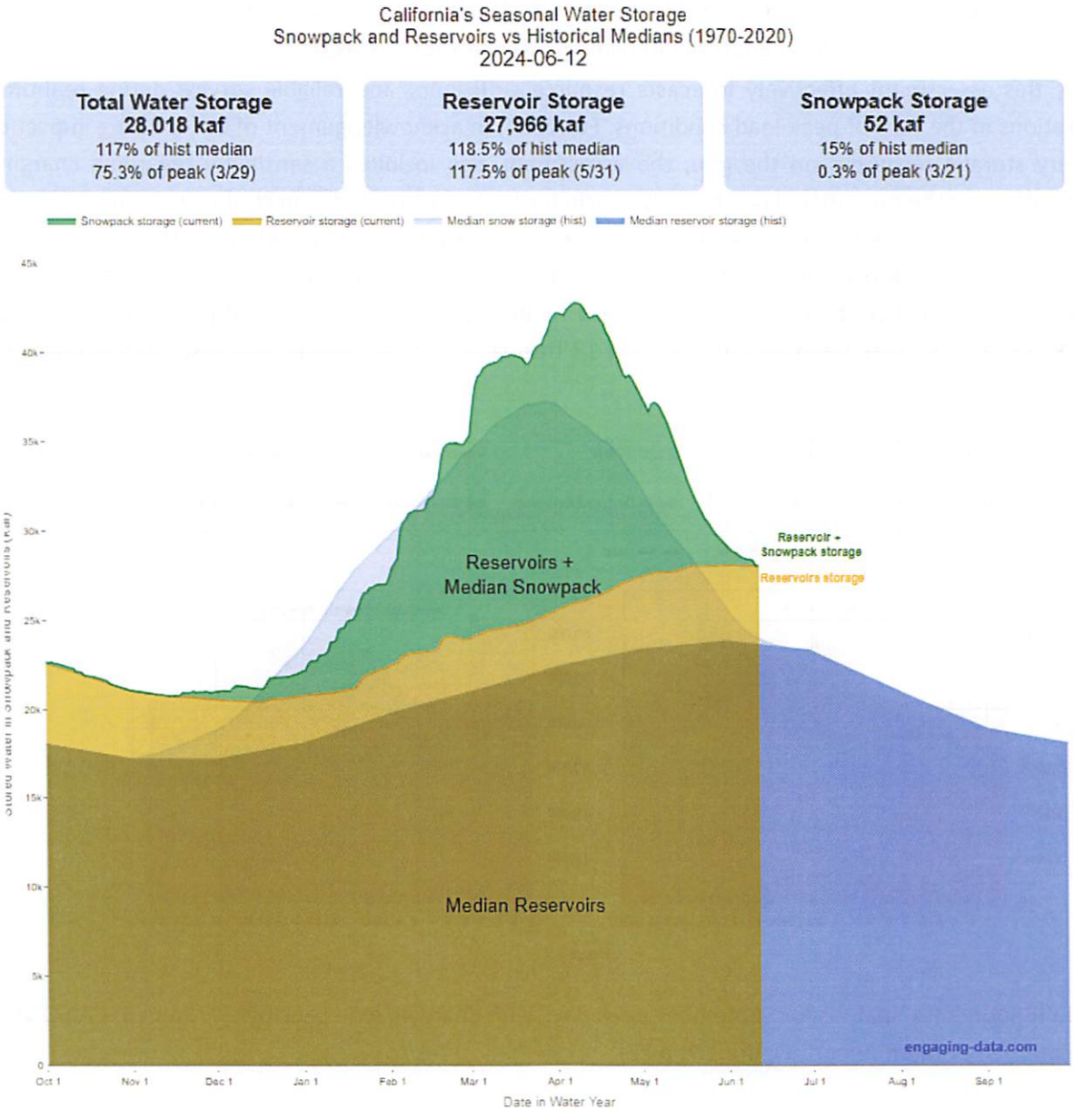
("Actual and expected additions from September 1, 2023 through June 30, 2024 (MW)" Source: CAISO 2024 Summer Assessment Report, Table E.1, p. 6)

Hydro Generation

The 2024 hydro conditions, while not as robust as 2023, in most areas of the state ranged from near to slightly-above historical averages as of Spring 2024. For planning purposes, the CAISO default study assumes average historical hydro generation as represented by the 2010-2011 hydro year in its probabilistic study (approximately 8,500 MW) and approximately 7,000 MW of Net-Qualifying Capacity (NQC) from hydro resources in its multi-hour stack analysis.



Note: sizes of circles are proportional to total storage capacity of each reservoir. Source: Commodity Weather Group, 6/13/2024

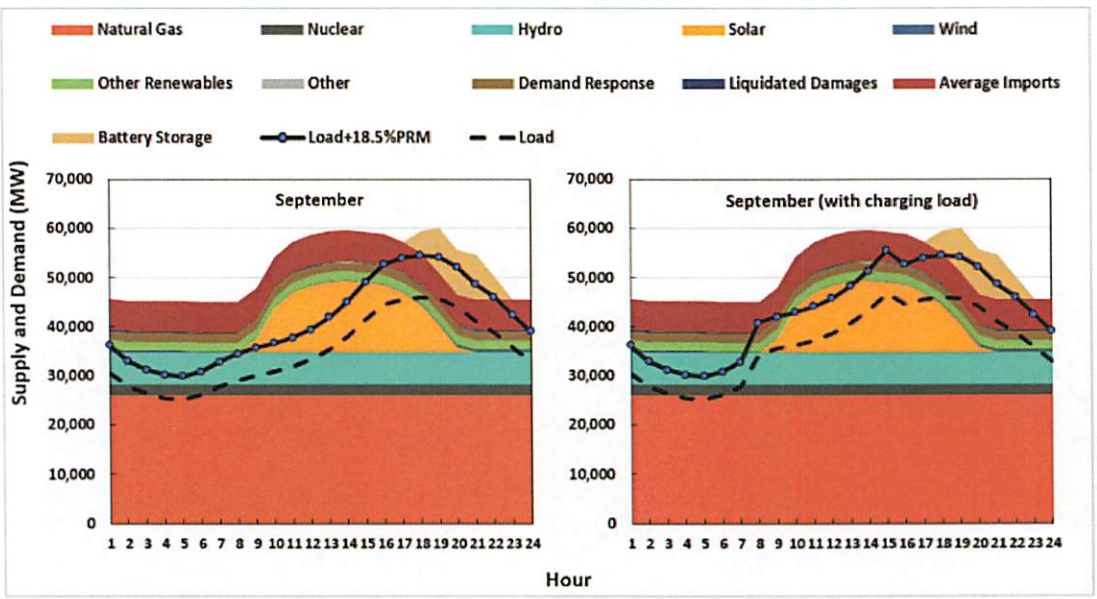


(note: "kaf" in above graph means thousands of acre-feet. Source: engaging-data.com, 6/12/2024)

Stack Analysis of Available CAISO Resources

The CAISO's deterministic stack analysis is used to evaluate resource procurement targets and minimum resource needs under the CPUC Resource Adequacy program. It provides an additional perspective on the expected capacity available for summer 2024 and the level of reliability under different load levels and import conditions. In this analysis, reserve margins are interpreted differently from the Loss of Load Expectation (LOLE) approach and focus specifically on resources available during peak load times. The CAISO considered various parameters including North American Electric Reliability Corporation (NERC) requirements, unloaded capacity, forced outage rates, and load forecast levels. For 2024, the CAISO

applied a planning reserve margin (PRM) of 18.5% to its 1-in-2 load forecast level, derived from the CEC's 2023 Integrated Energy Policy Report (IEPR) planning forecast for a peak day in each summer month. As such, this assessment effectively forecasts resource sufficiency and reliable service during real-time operations in the face of peak load conditions. For 2024, in acknowledgement of the growing impact of battery storage resources on the grid, the assessment also includes a sensitivity regarding charging demand across the operating day. The CAISO includes both existing and expected new resources in this analysis, as represented in the table above, but excludes resources contracted under the SRR program. Notably, the analysis includes expected imports as derived from an average of historical intertie monthly RA showings from 2016 through 2023. In total, the multi-hour stack analysis indicates a surplus of at least 3,428 MW during peak net load hours ending 18 through 22 in September, as shown in the following figure:



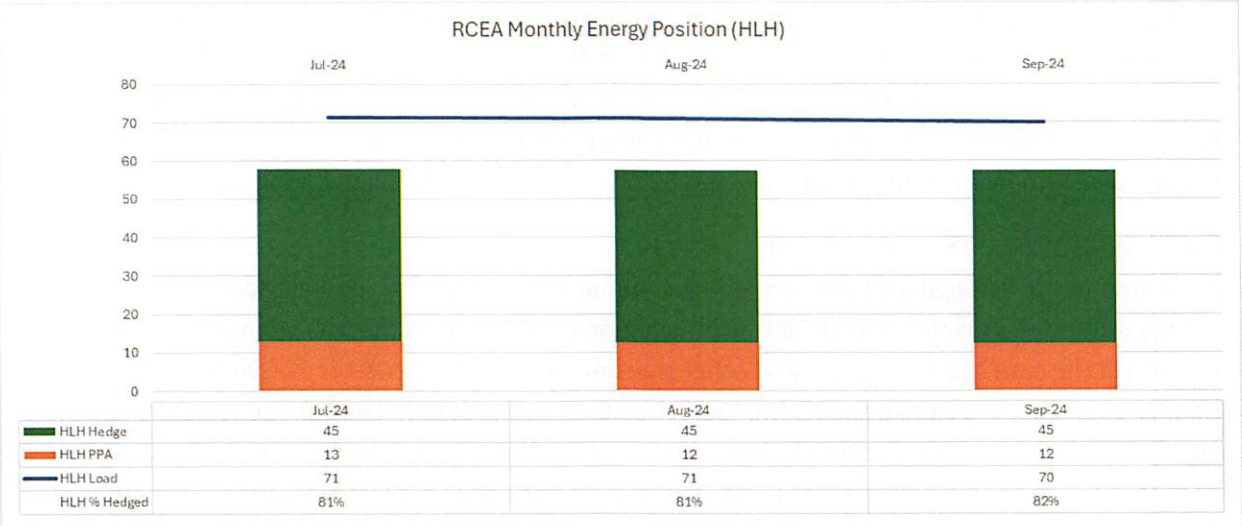
("Multi-hour stack analysis for September peak days with charging load sensitivity". Source: CAISO 2024 Summer Assessment Report, Figure 1.7, p 22)

Redwood Coast Energy Authority Summer 2024 Readiness

A short summary of RCEA's work in ensuring local and statewide grid reliability is described below.

Energy Hedging

RCEA utilizes a programmatic approach to hedging that incrementally fills energy deficits through bilateral procurement from market counterparties. The program is designed to ensure the utility is fully hedged to levels set in RCEA's energy risk management policy for summer periods prior to the onset. This approach means that RCEA's exposure to volatile energy prices that may occur during summer heat events is significantly mitigated. Care is taken to ensure load variation is accounted for when determining the appropriate hedge volumes. As of early June 2024, RCEA had met all of its targeted procurement of energy hedges for Q3 2024:



	Jul-24	Aug-24	Sep-24
HLH Hedge	45	45	45
HLH PPA	13	12	12
HLH Load	71	71	70
HLH % Hedged	81%	81%	82%

(Note: HLH in the figure refers to heavy load hours, defined as Monday through Saturday, hour ending 0700 through hour ending 2200. Source: The Energy Authority)

Resource Adequacy

RCEA actively monitors its resource adequacy position (RA) and pursues forward procurement of RA-only products or generation resources through Power Purchase Agreements (PPAs) to meet its assigned RA obligations. Like many similarly situated entities, RCEA has been impacted by delays in the online date of resources that has made RA position management challenging. Further complicating this matter has been the extreme illiquidity in RA markets, which are opaque and require a combination of both formal and informal solicitation approaches to secure this product. Nonetheless, RCEA expects to fully meet its RA procurement requirements for Summer 2024. While it has not yet fully procured all RA for all summer months, RCEA is in commercial agreement to contract for all of its needed RA.

New Resources

RCEA continues to pursue new clean capacity resources and has over 100 MW of new capacity resources in development that it has contracted for. While different types of new resources provide different degrees of carrying capacity on the grid, RCEA's goals for resource procurement will provide it with a substantial amount of clean peaking energy in the years to come. RCEA has not yet brought any new resources online this year due to development delays outside of its control. Nevertheless, RCEA plans on expanding its renewable energy portfolio in the coming years with further procurement of renewable resources that can be paired with storage assets to provide clean dispatchable peaking energy when needed. This will not only provide support to the power grid, but will also reduce costs to RCEA.

Existing Resources

The majority of RCEA's existing fleet of resources are expected to provide summer capacity. Largest among them is Humboldt Sawmill Company's (HSC) biomass plant, which has provided reliable capacity during peak hours and has a steady generation shape that allows it to have a relatively high load carrying capacity when compared to other types of renewables. RCEA's Airport Microgrid not only reduces RCEA's draw on the power grid during the summer but also serves as a source of local

emergency power during a potential blackout condition. Cove Mountain Hydro, however, has gone offline for the summer as expected, as reduced waterflow over the summer months eliminates the ability of the facility to generate meaningful amounts of electricity, which is typical for most run-of-rive hydro facilities like Cove Mountain Hydro. RCEA also contracts for resource adequacy from energy storage and demand response resources that help to ensure grid reliability during critical periods.

Public Safety Power Shutoffs (PSPS)

RCEA staff has developed protocols regarding communication with its scheduling coordinator, The Energy Authority, as well as with PG&E in anticipation of PSPS events that may impact Humboldt County. In the case of a PSPS event and other transmission outages, PG&E may island the Humboldt County Local Capacity Area using its Humboldt Bay Generating Station (HBGS), reducing the risk of significant blackout events for Humboldt residents compared to previous years. An unfortunate consequence of this islanding is that PG&E deems it operationally necessary to disconnect other generators such as HSC and the Airport Microgrid for local grid stability. However, the HBGS plant has sufficient capacity to meet local peak loads during islanded operation.

Volatile Incoming Pricing Event Response (VIPER)

New to this year, RCEA and The Energy Authority have collaborated to codify staff protocols should an event occur that is expected to impact grid operations and/or pricing. Events of this nature include unexpected outages by large generators or transmission lines, widespread wildfires or PSPS events, or high temperatures within California or west-wide, as occurred in the first half of July. VIPER protocols include review of potential portfolio and/or financial risks during an event, mitigation measures where appropriate, and increased collaboration and communication between RCEA and TEA staff before, during, and after an event.