DOCKETED	
Docket Number:	21-IEPR-04
Project Title:	Energy Reliability
TN #:	237844
Document Title:	Southern California Gas Company Comments - SoCalGas Comments on Summer 2021 Electric Reliability
Description:	N/A
Filer:	System
Organization:	Southern California Gas Company
Submitter Role:	Public
Submission Date:	5/18/2021 4:23:42 PM
Docketed Date:	5/18/2021

Comment Received From: Southern California Gas Company
Submitted On: 5/18/2021
Docket Number: 21-IEPR-04

SoCalGas Comments on Summer 2021 Electric Reliability

Additional submitted attachment is included below.

N. Jonathan Peress
Senior Director
Business Strategy & Policy
555 West 5th Street
Los Angeles, CA 90013
Tel: 213.335.1081
NPeress@socalgas.com

May 18, 2021

The Honorable J. Andrew McAllister
The Honorable Siva Gunda
California Energy Commission
Docket Unit, MS-4
Docket No. 21-IEPR-04
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Comments on Summer 2021 Electric Reliability

Dear Commissioners McAllister and Gunda:

Southern California Gas Company (SoCalGas) appreciates the opportunity to provide public comments on the Integrated Energy Policy Report (IEPR) Summer 2021 Reliability Workshop. According to the California Energy Commission's (CEC's) electricity planning model showing average conditions in August, the electric grid will have more than enough electricity available to meet demand – about 15,000 MW of surplus in the afternoon and about 4,000 MW in the evening.[1] If this past summer is any indication, longer-term shifts and variability in weather patterns will, however, present ongoing and future risks to the electric grid and infrastructure. In fact, CEC Staff stated that if an extreme heat wave hits California in August, the electric grid could be about 1,200 MW short in the evening,[2] which would compel reliance on "contingency measures" to make up the difference. The situation could become dire should an extreme weather event hit the State in September, causing the electric grid to be ~ 2,340 MW short between 6PM and 7PM.[3]

In addition to the serious safety and public welfare implications that arise from disruption of service, the intensity, frequency, and duration of weather events, could cost utilities and customers

[1] *See* Session 1 – IEPR Joint Agency Workshop on Summer 2021 Reliability – Reliability Outlook, 4 May 2021. Available at *https://energy.zoom.us/rec/share/x6svmlU9gyXIKaljURlgtJa-ukxSKZbqQ3FybMBluovsTJ_tneWXPLsxbQ3s8kCX.EWQ67oUTeYMRWBjg*.
[2] Ibid.
[3] Ibid.

billions, including costly damage to critical infrastructure.[4] We roughly estimate the cost of an 8-hour outage for Los Angeles County to be in the range of $2.5 billion.[5] That said, what California experienced last summer should not be viewed as an anomaly but rather as a critical inflection point in the way the State must plan and operate the power grids to ensure the resiliency and reliability of the interdependent energy systems, as we pursue a decarbonized end state. Resiliency and reliability are increasingly important and valuable energy system attributes. It is vital to the public interest to ensure the reliability of the electric grid for Summer 2021, especially during peak hours when renewable generation is not readily available, and for addressing future reliability under more extreme weather conditions and with higher penetrations of intermittent renewable energy on the electric power grid.

Thus, our comments focus on (1) recent climate events, which should be viewed as a stress test of policies underpinning the current "preferred" electric resource mix; (2) advancing critical clean fuel and carbon management technologies to preserve reliability under projections of increasingly intermittent resource portfolios; (3) key takeaways and lessons learned that should drive innovation towards long-term solutions; (4) new and innovative long-term storage solutions; and (5) cleaner alternatives for backup power.

Recent climate events should be viewed as a stress test of policies underpinning the current "preferred" electric resource mix.

California has made incredible progress towards ambitious climate goals, specifically in the adoption and deployment of renewable energy technologies. With this progress, comes new challenges. To ensure grid reliability under changing conditions**,** the California Independent System Operator (CAISO) has expressed the need for ramping flexibility with the ability to start and stop multiple times a day. The CAISO has noted that to reliably manage a green grid, it needs flexible resources with the right operational characteristics at the right location.[6] In effect, for each increment of solar and wind capacity added to the grid, reliability requires a commensurate increment of flexibility and responsiveness capability. In this respect, CAISO cautioned for a measured approach to ensure these capabilities remain available, and that new technologies to provide them, such as battery storage, be appropriately demonstrated at scale before transitioning away from current technology. In a recent regulatory filing, CAISO stated:

> *The CAISO successfully integrated over 12,000 MW of large-scale solar and manages the system with over 8,000 MW of behind-the-meter solar that impacts the grid. During*

---

[4] The U.S. Government Accountability Office's (GAO's) 2021 Report found that more frequent droughts and changing rainfall patterns may adversely affect hydroelectricity while increasing wildfire activity due to warmer temperatures and drier conditions may reduce transmission capacity or damage distribution lines. *See* Statement of Frank Rusco, Director of U.S. Natural Resources and Environment, Before the Committee on Environment and Public Works, U.S. Senate on the U.S. Government Accountability Office's Report Electricity Grid Resilience: Climate Change Is Expected to Have Far-reaching Effects and DOE and FERC Should Take Actions, 10 March 2021. Available at *https://www.gao.gov/assets/gao-21-423t.pdf*.

[5] Based on the Los Angeles economy of approximately $730 billion in 2020.

[6] *See* California Independent System Operator, Fast Facts: What the duck curve tells us about managing a green grid, 2016, at 2. Available at *https://www.caiso.com/documents/flexibleresourceshelprenewables_fastfacts.pdf*.

this evolution, the CAISO has learned many operational lessons, made major market changes, and worked closely with market participants to change and influence resource behavior and participation. Even with these changes, the CAISO still relies heavily on current hydro, gas-fired, and import resources to manage daily ramping and flexibility needs. Hydro, gas, and import resources also provide the bulk of the essential grid services necessary to maintain grid reliability. This is even more pronounced under stressed conditions. As the grid transitions to new resources, such as short-duration battery storage or "hybridized" storage and intermittent renewable resources, the CAISO will need a period of testing to ensure they (1) can provide the necessary capabilities to maintain reliability and (2) have the appropriate incentives to make those capabilities available at scale.[7]

In the meantime, strategically maintain the natural gas-fired fleet and delivery infrastructure – During the transition to a cleaner grid, the state may need to retain portions of the current gas-fired fleet to provide both energy and reliability services. Specifically, reliability services include, but are not limited to regulation; frequency response; spinning and non-spinning reserves; inertia; fault current; and grid forming capability. Although other resources, including renewable resources, can provide a sub-set of these services, they cannot yet provide these services on a large scale. In addition, renewable resources often have policy and commercial incentives that run counter to providing grid services. The Joint Agencies should also consider how to appropriately maintain necessary gas delivery infrastructure, which may be used less overall but will be more heavily relied upon during shorter periods, such as during steep ramping events.[8]

The reliability services and capabilities provided by the gas grid are increasingly being called upon to complement renewable resource deployment. In 2020, most peak hour gas deliveries from SoCalGas' system were to serve dispatchable electric generators (DEGs) and electric system ramping needs; far greater than peak hours to serve Core customer thermal load. Of the 77 hours in 2020 when deliveries to either Core customers or DEGs exceeded 100,000 Dths/hr (equivalent to ~ 2.4 bcf/d of capacity), 62 hours were to serve DEGs and 15 hours for Core customers. In effect, prolific deployment of renewables on the electric grid is dramatically changing the way that the gas grid is used. This trendline is and will be amplified as more renewables are added; even more so as Core customer load is increasingly electrified in the future.[9]

---

[7] *See* California Independent System Operator Reply Comments on Senate Bill 100 Modeling Inputs and Assumptions Workshop held on February 24, 2020 by the CEC, CPUC, and CARB, 16 August 2019, at 6-7. Available at *http://www.caiso.com/Documents/Mar9-2020-Comments-ModelingInputs-AssumptionsWorkshop-SB-100-Path-CleanEnergyFuture-19-SB-100.pdf*.

[8] Ibid., at 8.

[9] While beyond the scope of this proceeding, it should be noted that much of the valuable complementary reliability (decarbonization-enabling) service provided by the gas grid to the electric grid is unpriced and largely uncompensated. An effect that must change for a reliable and resilient decarbonizing integrated energy system.

Advancement of critical clean fuel and carbon management technologies is needed to preserve reliability under projections of increasingly intermittent resource portfolios.
In examining resource portfolios, the 2021 Senate Bill (SB) 100 Joint Agency Report retains much of the existing gas-fired generation (GFG) fleet through 2045 to meet the system's resource adequacy requirements and provide long-term energy and responsiveness needed to reliably operate the system.[10] The SB 100 modeling scenarios project almost a tripling of the electric capacity.[11] As we look to solve the immediate problems of this summer, we must not lose sight of the immense challenges around the corner. To decarbonize California, electrification will be one of the primary means in reaching the State's climate goals. Further, to reliably support the magnitude of electrification, electric demand, and an increasingly intermittent energy supply envisioned in 2030 and beyond, the resiliency and reliability of the gas system, particularly the fuels network will be increasingly relied upon. The CAISO, California Public Utilities Commission (CPUC), and CEC (Joint Agencies) need to give serious consideration to viable long-term, clean molecule solutions that can deliver the operational characteristics provided today by the gas grid but with a cleaner profile.

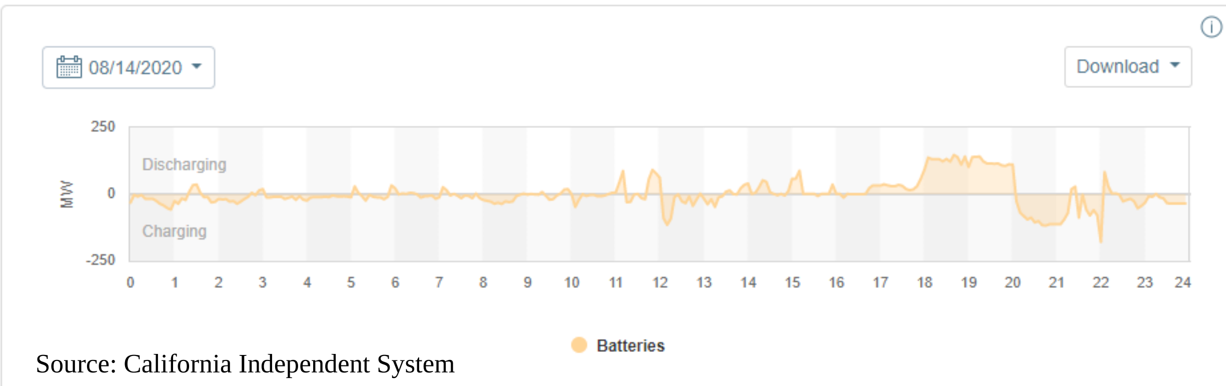
In fact, the National Renewable Energy Laboratory (NREL) and Los Angeles Department of Water and Power (LADWP) highlight the use of clean fuels like hydrogen and biofuels which provide a unique reliability and resiliency feature in the Los Angeles 100 percent Renewable Energy Study (LA100).[12] These clean fuels specifically maintain the critical operational characteristics that gas generation provides today (*i.e.*, ramping, long duration storage, and other grid reliability services); and preserve access to those services in-basin and locally, mitigating the risk of relying on transmission lines which could be affected by fire and de-energization protocols that would hinder the ability to transmit wind and solar power into the Los Angeles, for instance.[13] Within the broad rubric of system reliability, local reliability and related constraints drive greater emphasis on the need to have firm dispatchable generation in-basin that is not reliant or dependent upon transmission which could be constrained, thus compromising reliability. The need for local reliability and resiliency remains a critical open question, particularly in scenarios where no combustion or clean fuels alternatives are envisioned. Siting of renewables and storage, without commensurate amounts of firm dispatchable in-basin generation, presents serious challenges to maintaining reliability and resiliency in an increasingly decarbonized end state.

---

[10] *See* The 2021 SB 100 Joint Agency Report, Achieving 100 percent Clean Electricity in California: An Initial Assessment, March 2021. Available at *https://efiling.energy.ca.gov/EFiling/GetFile.aspx?tn=237167&DocumentContentId=70349*.
[11] *See* The 2021 SB 100 Joint Agency Report, Achieving 100 percent Clean Electricity in California: An Initial Assessment, March 2021. Available at *https://efiling.energy.ca.gov/EFiling/GetFile.aspx?tn=237167&DocumentContentId=70349*.
[12] *See* National Renewable Energy Laboratory and Los Angeles Department of Water & Power, *Final Report for the Los Angeles 100% Renewable Energy Study*, March 2021. Available at *https://maps.nrel.gov/la100/report*.
[13] *See* National Renewable Energy Laboratory and Los Angeles Department of Water & Power, *Key Findings from LA100,* March 2021. Available at *https://www.nrel.gov/docs/fy21osti/79445.pdf*.

Key takeaways and lessons learned should drive innovation towards long-term solutions. The power outages in August and September 2020 illuminate operational vulnerabilities presented by the transition towards an increasingly solar and wind-based energy system. A 2021 report by the Joint Agencies found that "[i]n transitioning to a reliable, clean, and affordable resource mix, resource planning targets have not kept pace to ensure sufficient resources that can be relied upon to meet demand in the early evening hours. This made balancing demand and supply more challenging during the extreme heat wave."[14] While batteries are undoubtedly a critical tool in the suite of decarbonized technologies, operational characteristics, especially considering resource owner commercial interests, must be recognized. For example, on August 14, 2020, five-minute data on utility-scale battery storage technologies shows that during critical evening hours energy storage was consuming electricity rather than providing it. As seen in Figure 1,[15] from 8PM to 9PM (*e.g.*, hours 20 and 21), the aggregated battery storage resources consumed electricity (*i.e.*, charging) rather than providing it (*i.e.*, discharging).

Figure 1: Utility Scale Battery Storage, August 14, 2020



Source: California Independent System

Wholesale market participants, including battery storage operators, generate profit by arbitraging temporal price differences. Energy price data from August 14, 2020 suggest that battery resource owners acted rationally, by garnering peak energy rents available within their respective discharge durations. In fact, this rational commercial interest may have been a contributing factor to reliability challenges. Prices dropped by more than 60 percent between hours 20 and 21.[16,17] As discussed above, CAISO has expressed the need for "appropriate incentives" for short duration battery storage, and noted during the workshop the need to "hold resource adequacy storage resources to their day-ahead market schedules only on tightest supply days, to meet reliability

[14] CAISO, CPUC, and CEC, *Final Report the Root Cause Analysis: Mid-August 2020 Extreme Heat Wave*, 13 January 2021, at 4. Available at *http://www.caiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf*.

[15] *See* CAISO Today's Outlook: Batteries trend for August 14, 2020. Available at *http://www.caiso.com/TodaysOutlook/Pages/supply.html*.

[16] Omer Karaduman, *Economics of Grid-Scale Energy Storage*, working paper, 1 January 2020. Available at *https://economics.mit.edu/files/18357*.

[17] Calculations are based on Locational Marginal Prices for August 14, 2020 from CAISO OASIS Database.

needs across critical evening peak hours."[18] Staff indicated the expectation of ~10 times more battery storage in the Summer of 2021 than the previous year. Market structures and targeted policies to optimize the system are essential to ensure resources, including wholesale battery storage providers, respond to appropriate market signals that align with system needs.

Beyond market reform, batteries are limited in providing multi-day and/or long-term storage, particularly during long periods of diminished renewable production. We respectfully suggest that as SB 100 goals are pursued, the Joint Agencies should address grid reliability challenges not in isolation per proceeding (*i.e.,* the Integrated Resource Plan, the Joint Agency SB 100, and the Root Cause Analysis Reports), but in a holistic fashion considering Summer 2021, and beyond towards 2045. For example, through the Integrated Resource Planning (IRP) proceeding, the CPUC's proposed Reference System Plan identifies a need of ~12 GW of solar and ~ 9 GW of battery storage by 2030.[19] This translates to roughly an 11 percent compound annual growth rate (CAGR) for solar deployment and 20 percent CAGR for battery storage deployment. Procurement, siting and operationalizing a resource mix of this level of market entry is unprecedented and highlights the foregoing reliability and resiliency needs, particularly as longstanding capacity resources such as Diablo Canyon are slated for retirement. Likewise, extensions of once-through cooling (OTC) units provide temporary relief but not the unavoidable long-term system needs around dispatchable energy.

Long-term storage solutions are essential

Various ongoing proceedings among the Joint Agencies express the need for long-duration storage (*e.g.,* seasonal) to provide clean energy during peak and net hours of the day after the sun sets and during multi-day weather events. Numerous credible experts have, in effect, validated the projections of CPUC Staff in the Senate Bill (SB) 380 proceeding (Figure 2 below) that we should expect peak day gas takes by electric generators to increase as the system is decarbonized, while overall throughput is decreased.[20]

---

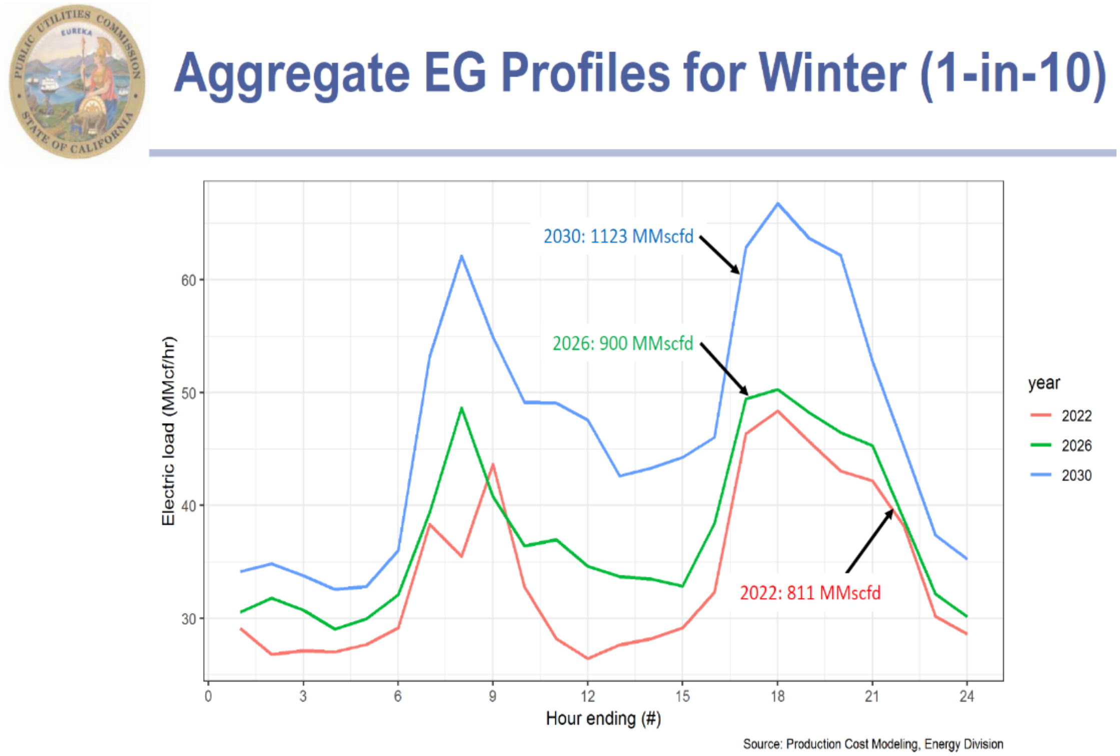
[18] *See* The 2021 SB 100 Joint Agency Report.

[19] *See* the CPUC Integrated Resource Plan Reference System Plan.

[20] See, *e.g.*, the statement of Dr. Arne Olson of E3 at the CPUC July 21, 2020 Workshop (Rulemaking 20-01-007):

> "The real question will be the average daily throughput being reduced, and the average gas generation being reduced by 2030. It doesn't necessarily mean that the peak use of natural gas for electric generation is going to decrease. And I would expect to see that as heating loads in California are electrified, that we might actually see increased gas use during wintertime peak. And since the infrastructure really needs to be sized based on peak use not based on average use, I think it does raise some important questions about how to make sure that infrastructure is funded and is in place when we really need it, even as we expect the average use of it to decline over time due to carbon policies."

Figure 2: Projected Electric Generation Load on SoCalGas System (Considering 2030 IRP Reference Portfolio)



In fact, long-term (*i.e.*, seasonal) storage is not a new phenomenon in California's energy system. The backbone of the energy system has been hydroelectric systems and gas storage because of their ability to store energy for months at a time for use in the distant future. This unique capability of hydroelectricity and gas storage allows for costs hedging to keep costs affordable for end-users.

Hydroelectric generation is the longest running supply side resource in California. In the 1940s it made up about 60 percent of the electricity supply. Pondage hydro is recognized as long-term storage (*e.g.*, hourly or daily). However, climate change could have drastic impacts on the seasonal storage capacity of snowpack, which is invaluable to the hydroelectric system. The late Spring and Summer snowpack melt off generates carbon-free electricity and provides power as temperatures and demand rise. As average temperatures increase, it is projected that there will be considerably less snowpack because more precipitation will fall as rain rather than snow. This is important because if there is excess water that dams cannot hold, they will release the water early in the season. Therefore, the electricity is generated early (*i.e.*, winter months) rather than being continuously stored for summer months when demand is high. Climate change will reduce the amount of natural long-term storage that Californians have historically relied upon.

The gas grid's long-term storage infrastructure plays an essential role in preserving this energy system reliability and resilience. Without long-term storage, a catastrophic climatic event could potentially have a significant effect on the safety and wellbeing of Southern Californians. For instance, an event similar in gravity to that of the 2014 Polar Vortex in the Northeast United States[21] or the 2021 Texas Storm Uri[22] could foreseeably cause a curtailment in the availability of gas supply statewide. Such curtailments could put both electric and gas customers at risk,[23] which could in turn lead to significant injuries and/or loss of life (as experienced in Texas during the 2021 Storm Uri). Such potentially devastating impacts to Californians are mitigated by the characteristics of the existing gas system, which is comprised of both pipelines and storage facilities.

The recent experience in Texas demonstrates that customers could face a serious safety risk should similar conditions occur in California. Long-term storage facilities currently mitigate these risks while also supporting other mitigation technologies such as microgrids and fuel cells. For example, during Storm Uri, we utilized our Aliso Canyon, Honor Rancho, La Goleta, and Playa Del Rey storage fields to supply sufficient gas to customers, including to the electrical grid, without relying on out-of-state supply. This ability to operate long-term storage facilities "on-demand" enabled us to proactively respond to climatic events. Today, one of the most critical function of the gas grid infrastructure (*i.e.*, pipeline and storage) is its resilience and continued operation during climate induced energy supply disruptions.

The CAISO has expressed the need for between 1,000 MW to 4,000 MW of long-term storage for years 2026 and 2030 to maintain reliability.[24] At the same time, the CAISO estimates that the retirement of Diablo Canyon Power Plant and four gas plants along the California coast will cause a nearly 3,500 MW deficiency[25] in supply. The electricity system has always depended on long-term storage (*i.e.*, pondage hydro and snowpack), but those dependable carbon-free resources are diminishing because of climate change further tightening constraints on the system. Future energy system resiliency and reliability will depend on new and innovative long-duration carbon-free storage technologies, such as power-to-gas-to-power resources and/or carbon management strategies.

While the State works to optimize energy storage to be compatible with resource adequacy needs, an increasingly decarbonized gas grid will continue to support the electric grid during rapid

---

[21] *See* North American Electric Reliability Corporation, *Polar Vortex Review*, September 2014. Available at *https://www.nerc.com/pa/rrm/January%202014%20Polar%20Vortex%20Review/Polar_Vortex_Review_29_Sept_2014_Final.pdf*.

[22] *See* ERCOT Letter to the Members of the Texas Senate and the Texas House of Representatives, March 4, 2021. Available at *http://www.ercot.com/content/wcm/lists/226521/ERCOT_Letter_Re_Feb_2021_Generator_Outages.pdf*.

[23] *See* Wood Mackenzie Public Report, *Western Interconnection Gas-Electric Interface Study*, June 20118, at 15. Available at *https://www.wecc.org/Reliability/Western%20Interconnection%20Gas-Electric%20Interface%20Study%20Public%20Report.pdf*.

[24] *See* California State Legislators Letter to the California State Legislature on the Need for Urgent Action on Long Duration Energy Storage Procurement, 2 February 2021. Available at *https://static1.squarespace.com/static/5e3b69edfd4af10b189254b0/t/602c2b114fcd5f707072b101/1613507345595/Letter+to+CPUC%2C+Long+Duration+Energy+Storage+Letter%2C+2-5-21.pdf*.

[25] *See* California Independent System Operator Comments on the Order Instituting Rulemaking 20-05-003 to Continue Electric Integrated Resource Planning and Related Procurement Processes, 2020 October 23. Available at *http://www.caiso.com/Documents/Oct23-2020_Comments-on-Integrated-Resource-Planning-R20-05-003.pdf*.

fluctuations of an increasingly volatile energy system. For example, all of SoCalGas' storage assets were employed to fill the gap between abnormally high electric demand, driven by increased cooling loads, and low renewable energy generation, due to smoke from the wildfires.[26] The gas grid helped avert a crisis within a crisis this past Summer by providing an essential solution to intermittency, storability and dispatchability challenges. Diversity of fuel source becomes an important hedging strategy during moments of high strain on the electric power grid, delivering critical resiliency to the interdependent energy systems.

Cleaner alternatives are needed for Backup Power

Throughout California, Public Safety Power Shutoff (PSPS) events are increasing reliance on diesel backup generators (BUGs) for power. The table below provides a comparison of 2019 and 2020 PSPS events and the average duration a circuit was de-energized for all investor-owned utilities.[27] Though the average duration of PSPS events declined in 2020, the number of times a circuit de-energized has increased.[28] As such, BUG purchases are increasing. In fact, a 2020 survey found that 15 percent of people who experienced outages during a PSPS event purchased a BUG for power.[29] This is problematic as BUGs emit the toxic air contaminant (TAC) diesel particulate matter (DPM) or diesel "soot." In California, diesel soot emissions account for about 70 percent of known cancer risk from TAC emissions.[30]

Nearly one million people were affected by a PSPS event in October 2019 and utilized 125,000 diesel backup generators for electrical power.[31] The California Air Resources Board (CARB) estimated that diesel backup generators used during this time emitted 9 tons of diesel soot, which is the equivalent of about 29,000 heavy-duty diesel trucks driving on California roadways for one month.

	Year 2019	Year 2020
Total # of times a circuit was de-energized from a PSPS event	2,290	3,847
Total # of hours circuits were de-energized from a PSPS events	105, 154	156,350
Average duration a circuit was de-energized from a PSPS event	46	41

To abate the usage of BUGs, gas fuel cells and generators can help mitigate current air pollution and public health impacts. Additionally, the South Coast Air Quality Management District (SCAQMD) found that "technologies such as natural gas/renewable natural gas/hydrogen fuel

[26] U.S. Energy Information Administration, *Today in Energy: Smoke from California wildfires decreases solar generation in CAISO*, 30 September 2020. Available at *https://www.eia.gov/todayinenergy/detail.php?id=45336*.
[27] These utilities are SCE, SDG&E, PG&E, and PacifiCorp.
[28] California Public Utilities Commission, *PSPS Rollup: October 2013 through December 31, 2020*. Available at *https://www.cpuc.ca.gov/psps/*.
[29] Energy Institute at HAAS. *Electricity Outages Lead to Substantial Backup Generator Purchases*, 26 May 2020. Available at *https://energyathaas.wordpress.com/2020/05/26/electricity-outages-lead-to-substantial-backup-generator-purchases/.*
[30] Ibid.
[31] California Air Resources Board, *Emission Impact: Additional Generator Usage Associated with Power Outage*, 30 January 2020. Available at *https://ww2.arb.ca.gov/sites/default/files/2020-01/Emissions_Inventory_Generator_Demand%20Usage_During_Power_Outage_01_30_20.pdf*

cells and natural gas-powered back-up generators can provide substantially cleaner forms of backup power, emitting far less NOx and diesel particulate matter than diesel-fueled options."[32] These technologies support the State's long-term decarbonization goals by using low or zero carbon fuels at scale in the future. As such, SoCalGas is advancing hydrogen innovations to help mitigate diesel generator use and to provide energy reliability and resiliency during PSPS and other emergency events.

In closing, it is incumbent upon policymakers, market participants, and stakeholders to collaborate on and prioritize the reliability and resiliency of the interdependent energy systems, as we collectively pursue California's imperative energy system decarbonization and public welfare goals. SoCalGas looks forward to contributing and advancing those efforts, working with the CEC and its sister agencies as a key partner in leveraging the fuel system to enable a future decarbonized energy system.

Respectfully,

/s/ N. Jonathan Peress

N. Jonathan Peress
Senior Director
Business Strategy & Energy Policy

cc: The Honorable David Hochschild, CEC Chair
The Honorable Karen Douglas, CEC Commissioner
The Honorable Patty Monahan, CEC Commissioner
The Honorable Marybel Batjer, CPUC President
The Honorable Clifford Rechtschaffen, CPUC Commissioner
The Honorable Elliot Mainzer, CAISO President and CEO
The Honorable Matthew Baker, CNRA Deputy Secretary, Energy
The Honorable Ted Craddock, DWR Deputy Director, State Water Project

[32] *See* California Public Utilities Commission. Public comment for D.15-10-049.