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SoCalGas comments on Microgrid workshop

Additional submitted attachment is included below.

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California Energy Commission
Docket Office, 20-IEPR-04
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Comments on the IEPR Commissioner Workshop on Assessing the Future Role for Microgrids in California

Southern California Gas Company (SoCalGas) appreciates the opportunity to comment on the California Energy Commission's (CEC's) 2020 Integrated Energy Policy Report (IEPR) Webinars on "Accessing the Future Role for Microgrids in California" held on July 7th & 9th. SoCalGas strongly supports the efforts of the California Energy Commission, in conjunction with the California Public Utilities Commission and California Independent System Operator, to increase the resiliency of communities, essential service facilities, and residents during natural disasters and other risks to energy reliability. SoCalGas appreciates the State's commitment to develop and refine a shared understanding of the opportunities and values a microgrid will provide for localities, especially for our most vulnerable neighborhoods.

SoCalGas offers the following points for consideration:

- Microgrids should include long-duration energy resources,
- Inclusion of dispatchable fuels, such as natural gas and renewable gas, will increase the systems fuel assurance and decrease susceptibility to inclement weather
- Natural Gas and RG should be eligible fuel resources for microgrid generation

The most important function of a microgrid is its resiliency to operate during unforeseen power outages that is caused by issues such as fires, earthquakes, misbalances, powerline outages, among others. To fulfill this primary function, a microgrid must be supported by reliable fuel sources. SoCalGas asks that the State keep natural gas as an eligible fuel source for microgrids as it can be used in stationary fuel cells, fuel cell electric vehicles, as well as clean combined heat and power applications and microturbines.

The nature of the production, delivery, and consumption of electricity is changing as there has been rapid advancements in technology – solar and battery storage, fuel cells, gasification, and electrolysis to name a few. These technologies are tailored specifically for a variety of scenarios ranging from individual premise to community energy systems. When these technologies operate

without the need of the local utility, they are collectively termed a microgrid. A microgrid is understood to be a self-contained, small, electricity system with the ability to manage critical customer resources, disconnect from the electric grid, and provide customers with different levels of critical support. Customers seek reliability and resiliency services from microgrids to better manage challenges, such as power outages due to wildfires, flooding, or other power distributions. Each microgrid can vary in component configuration, size, applications, and level of emissions, but are generally defined as:

> "[A]n interconnected system of loads and energy resources, including, but not limited to, distributed energy resources, energy storage, demand response tools, or other management, forecasting, and analytical tools, appropriately sized to meet customer needs, within a clearly defined electrical boundary that can act as a single, controllable entity, and can connect to, disconnect from, or run in parallel with, larger portions of the electrical grid, or can be managed and isolated to withstand larger disturbances and maintain electrical supply to connected critical infrastructure."[1]

In 2018 and 2019, California suffered extensive damage from wildfires that caused considerable disruptions to communities and the State's electrical infrastructure. The impacts of these wildfires on residents, businesses, and communities have been furthered compounded by the implementation of public safety power shutoff (PSPS) events. To address some or all of the challenges of massive blackouts, many turned to diesel backup generators because of its accessibility and low cost. The main challenge of using diesel generators is that the exhausts contain substances that pose a risk to both environmental and public health.[2] According to the California Office of Environmental Health Hazard Assessment (OEHHA), diesel-fueled engines emit the largest amount of black carbon, which "is the second most important contributor to global warming after carbon dioxide and is considered a short-lived climate pollutant."[3] Black carbon specifically absorbs the sun's energy and traps it as heat, which changes patterns of rain and clouds.[4] In turn, these emissions can increase wildfire risks.[5] While, "inhalation of black carbon is associated with health problems including respiratory and cardiovascular disease, cancer, and even birth defects."[6] Such emissions not only occur when the diesel generator is in operation, but during monthly and weekly maintenance checks.

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[1] California State Legislature. Chapter 566, Statutes of 2018, Senate Bill 1339, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1339.

[2] California Office of Environmental Health Hazard Assessment. *Health Effects of Diesel Exhaust,* May 21, 2001, https://oehha.ca.gov/air/health-effects-diesel-exhaust#:~:text=Diesel%20engines%20are%20a%20major%20source%20of%20fine%2Dparticle%20pollution.&text=Like%20all%20fuel%2Dburning%20equipment,lung%20diseases%2C%20such%20as%20asthma.

[3] California Office of Environmental Health Hazard Assessment. *Atmospheric black carbon concentrations,* February 11, 2019, https://oehha.ca.gov/epic/climate-change-drivers/atmospheric-black-carbon-concentrations.

[4] United States Environmental Protection Agency. *Black Carbon Research,* March 11, 2020, https://www.epa.gov/air-research/black-carbon-research.

[5] Ibid., 3.

[6] Ibid., 4.

However, there has been an uptick in microgrids powered by intermittent renewable fuels, such as solar and battery storage. These microgrids reduce demand on the electrical grid, increase resiliency in the community, and reduce greenhouse gas emissions. But, these microgrids require a dispatchable fuel source to increase the systems fuel assurance and decrease its susceptibility to inclement weather patterns. Within the City of Fremont, for instance, solar and battery storage microgrids were installed at three critical fire stations. These microgrids protect critical facilities against power outages, while the batteries have capacity to island for 8-12 hours. At any given time, the Fremont fire stations can island for three hours.[7] However, the fire stations also installed diesel generators as a secondary backup to the solar and battery microgrid. According to Rachel DiFranco, Sustainability Manager of the City of Fremont, the secondary diesel generators are fired off.[8] As such, the emissions challenge discussed above remain prevalent. One mitigation tool against the dangers posed by using diesel backup generators is the use of other dispatchable fuels, such as natural gas, which produces fewer polluting emissions than current formulations of diesel fuels.[9]

While there is much uncertainty of the growing intensity of climate-related hazards to the State's energy infrastructure, we know for sure that the gas system is climate adaptive and has been and will continue to be resilient and reliable. In fact, a study commissioned by the California Energy Commission in 2018 found that "natural gas assets and services are likely to experience limited impacts from climate hazards. Widespread disruptions are not expected due to limited projected exposure to climate hazards and existing physical protections that limit potential impacts."[10] This is a result of the characteristics of natural gas's transmission and distribution infrastructure. The greater storage capacity and underground assets make natural gas a more reliable energy source in the face of adversity.

These dependable attributes provide Californians and essential service providers, such as hospitals and water utilities, with energy security at the most critical hour. Seth Baruch, National Director for Energy and Utilities at Kaiser Permanente, stated that when Kaiser hospitals and/or medical offices use natural gas fuel cells during a power outage all surgeries proceeds because of the high level of energy reliability that natural gas fuel cells provide.[11] While those Kaiser facilities using diesel generators will only perform life-threatening surgeries and will reschedule all other surgeries until power is fully restored.[12] Additionally, during the Woolsey and Hill Fires, water utilities in Southern California relied on [natural gas] generators to maintain water pressure when

[7] Rachel DiFranco. "IEPR Commissioner Workshop on Assessing the Future Role for Microgrids in California Session 2," Panel 1: Resilience Impacts on the Microgrid Market, July 9, 2020.
[8] Ibid., 7.
[9] Ibid., 2.
[10] California Energy Commission. *Potential Climate Change Impacts and Adaptation Actions for Gas Assets in the San Diego Gas and Electric Company Service Area,* by Judsen Bruzgul et al., Report Number CCCA4-CEC-2018-009, August 2018, https://www.energy.ca.gov/sites/default/files/2019-11/Energy_CCCA4-CEC-2018-009_ADA.pdf.
[11] Seth Baruch. "IEPR Commissioner Workshop on Assessing the Future Role for Microgrids in California Session 2," Panel 1: Resilience Impacts on the Microgrid Market, July 9, 2020.
[12] Ibid., 11.

the power went out.[13] Having a reliable and resilient fuel such as natural gas not only allows for life-saving surgeries to occur, but means that water can be made available to save lives and property.

As more and more communities, businesses, residents and essential service providers embrace the idea of microgrids, there has not been wide adoption of these self-contained energy systems. Various panelist over the course of the IEPR Commissioner Workshops on microgrids expressed that the major barriers are due to a combination of financial, regulatory and technical challenges. However, currently there is an emergence of clean, flexible fuel cell microgrids that deliver financial and environmental benefits. This is evident at Stone Edge Farms Estate Vineyards and Wines, which utilizes hydrogen from rainwater and solar panels that comes at a marginal cost of zero.[14] During the summer months, Stone Edge Farms is able to island with solar as its primary fuel, however, during the winter months hydrogen is mostly used.[15] The diversity and integration of fuels at Stone Edge Farms allows for a more consistent, reliable from of energy, while reducing greenhouse gas emissions.

Fuel cells provide an essential power supply when it is most needed and can convert natural gas, biogas, and/or hydrogen into electricity. These fuel sources not only provide flexible and reliable generation but provide storage. Renewable hydrogen, for instance, offers a unique capability as it provides long and seasonal duration as well as vast amounts of storage capacity.[16] Permitting localities to invest in fuel cells does not equate to investing in natural gas or fossil cells, but allows for businesses, residents, and local governments to invest in adequate preparation for the worst case scenario. Additionally, combined heat and power technologies can provide reliable energy in the form of electricity and heat. By diversifying power sources throughout a community, residents will receive dependable energy and feel safer in the event of a natural disaster or other emergency. While essential services, such as fire stations, hospitals, and schools, are ensured of their ability to remain operational in an emergency or PSPS event when the rest of the city has gone dark.

There is no one fuel source that will fit the needs of reliability for every community across California. This is no more evident than at the Marine Corps Air Station (MCAS) Miramar. The Department of Defense requires a microgrid to island from the electrical grid for fourteen consecutive days.[17] This is achievable because the military base leverages all onsite resources that include renewables as well as landfill, thermal energy, natural gas and even diesel. Per Mick Wasco, Utilities & Energy Management at MCAS Miramar, "there is tremendous opportunity and

[13] ICF. *Case Studies of Natural Gas Sector Resilience,* October 2019, https://www.socalgas.com/1443742022576/SoCalGas-Case-Studies.pdf.
[14] Mac McQuown. "IEPR Commissioner Workshop on Assessing the Future Role for Microgrids in California Session 2," Panel 2: Economic Considerations for Microgrid Deployment, July 9, 2020.
[15] Jorge Elizondo. "IEPR Commissioner Workshop on Assessing the Future Role for Microgrids in California Session 2," Panel 2: Economic Considerations for Microgrid Deployment, July 9, 2020.
[16] Jack Brouwer. "IEPR Commissioner Workshop on Assessing the Future Role for Microgrids in California Session 3," Panel 2: Emerging Technologies to Extend Islanding, July 9, 2020.
[17] Mick Wasco. "IEPR Commissioner Workshop on Assessing the Future Role for Microgrids in California Session 1," Panel 1: What is working and Why for Microgrids: Design Considerations and Operational lessons Learned, July 7, 2020.

benefits in using clean natural gas."[18] Though natural gas or renewable natural gas are not valued as clean fuels to displace diesel generators or to add value to residential, essential service, and/or community microgrids.

Diversification of fuels avoids putting energy reliability and resiliency at risk and allows for community centers to shelter and cool residents, grocery stores to provide food, and wastewater treatment centers to keep our drinking water safe. Now more than ever we need to use all local resources available - solar, wind, biogas, hydrogen, renewable natural gas, natural gas, fuel cells, combined heat and power applications - to increase California's climate adaptation while meeting the State's energy policy goals.

SoCalGas is committed to improving the lives of those we serve by delivering affordable, reliable, and increasingly renewable energy with a purpose. Given these reasons, SoCalGas supports the California Energy Commission, California Public Utilities Commission, and California Independent System Operator investing in the diverse and beneficial technologies of microgrids.

Sincerely,

Tim Carmichael

Sincerely,

/s/ Tim Carmichael

Tim Carmichael
Agency Relations Manager
Southern California Gas Company

[18] Ibid., 14.