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**SoCalGas Comments on Clean Energy Alternatives to Diesel Backup Generator Systems**

*Additional submitted attachment is included below.*



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California Energy Commission  
Docket Unit, MS-4  
Docket No. 19-ERDD-01  
1516 Ninth Street  
Sacramento, CA 95814-5512

**Subject: Comments on the Workshop to Discuss Research into Clean Energy Alternatives to Diesel Backup Generator Systems**

Southern California Gas Company (SoCalGas) appreciates the opportunity to comment on the California Energy Commission's (CEC's) workshop led by Mike Gravely on Research into Clean Energy Alternatives to Diesel Backup Generator Systems on January 21, 2021.

SoCalGas is committed to becoming the cleanest, safest, and most innovative energy company in North America. We believe that in order to improve the health and well-being of all communities in California, the State and federal clean air goals must be pursued alongside the State energy and climate goals. To help meet the State climate, energy, and clean air goals, we are focused on developing and deploying emerging technologies that enable the use of clean, low, and no-emission energy that is affordable, reliable, and resilient for homes and businesses in California.

Our comments focus on the current public health impacts from increasing reliance on diesel backup generators during Public Safety Power Shutoff (PSPS) events in California. Gas fuel cells and generators like microturbines can help mitigate adverse public health impacts today while also supporting long-term decarbonization goals by using low or zero carbon fuels at scale in the future. We would like to share what SoCalGas is doing to advance fuel cell technologies and gas generators as replacements for diesel backup generators at critical facilities like data centers.

**Air Pollution and Public Health Impacts from Diesel Backup Generator Usage During PSPS Events**

Diesel backup generators emit the toxic air contaminant (TAC) known as diesel particulate matter (DPM) or diesel "soot." Diesel soot is especially harmful to humans because it is small enough to

be inhaled and, once absorbed in lung tissue, can damage DNA and cause cancer.<sup>1</sup> In California, diesel soot emissions account for about 70 percent of known cancer risk from TAC emissions.<sup>2</sup> Currently, mobile sources such as heavy-duty trucks, ships, and trains account for most of the public health impacts from diesel soot in urban areas and along transportation corridors.<sup>3</sup>

However, wildfires and the need for PSPS events are exacerbating public health impacts in urban areas and expanding exposure risk to rural areas where wildfires occur. For example, nearly one million people were affected by a PSPS event in October 2019 and utilized 125,000 diesel backup generators for electrical power.<sup>4</sup> 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.

Diesel soot is not the only air pollutant of public health concern from diesel backup generator usage during PSPS events. Nitrogen Oxide (NOx) emissions, when mixed with sunshine and other air pollutants form ozone. Ozone leads to respiratory illnesses like asthma, damages lungs, and increases the risk of premature death.<sup>5</sup> According to the South Coast Air Quality Management District (SCAQMD), diesel backup generators create NOx emissions “200 to 600 times greater, per unit of electricity, than new or controlled existing central power plants fired on natural gas.”<sup>6</sup> For example, SCAQMD estimated that during a 2019 PSPS event in Los Angeles and San Bernardino Counties, less than 2,000 diesel back-up generators emitted 6 tons of NOx per day. This is higher than average daily emissions from the largest refinery in its jurisdiction.<sup>7</sup>

In order to achieve clean air standards and protect public health, SCAQMD recognizes that “technologies such as natural gas/renewable natural gas/hydrogen fuel 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.”<sup>8</sup> While traditional gas fuel cells and generators can help mitigate current air pollution and public health impacts, these technologies can also support the State’s long-term decarbonization goals by using low or zero carbon fuels at scale in the future.

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<sup>1</sup> California Air Resources Board. Summary: Diesel Particulate Matter Health Impacts. Retrieved from: <https://ww2.arb.ca.gov/resources/summary-diesel-particulate-matter-health-impacts#:~:text=Diesel%20engine%20emissions%20are%20believed,is%20a%20known%20health%20hazard>

<sup>2</sup> Op Cit.

<sup>3</sup> California Air Resources Board. Diesel Exhaust and Health. Retrieved from: <https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health>

<sup>4</sup> California Air Resources Board. Emission Impact: Additional Generator Usage Associated with Power Outage. January 30, 2020. Retrieved from: [https://ww2.arb.ca.gov/sites/default/files/2020-01/Emissions\\_Inventory\\_Generator\\_Demand%20Usage\\_During\\_Power\\_Outage\\_01\\_30\\_20.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-01/Emissions_Inventory_Generator_Demand%20Usage_During_Power_Outage_01_30_20.pdf)

<sup>5</sup> SCAQMD. “South Coast AQMD Issues Ozone Advisory Due to Heat Wave”, May 25, 2020. Retrieved from: <http://www.aqmd.gov/docs/default-source/news-archive/2020/ozone-advisory-may-25-2020.pdf?sfvrsn=8>

<sup>6</sup> South Coast Air Quality Management District (SCAQMD) Fact Sheet on Emergency Backup Generators. Retrieved from: <http://www.aqmd.gov/home/permits/emergency-generators#Fact2>

<sup>7</sup> SCAQMD. Legislative Update Presentation by Philip Crabbe to the Environmental Justice Community Partnership Advisory Council on September 2, 2020. Retrieved from: <http://www.aqmd.gov/home/news-events/webcast/live-webcast?ms=0U9KfvvcV3w>

<sup>8</sup> California Public Utilities Commission (CPUC). Public comment for D.15-10-049

## Fuel Cell Microgrids and Gas Generators as Clean Energy Alternatives to Diesel Backup Generators

During the workshop, the Bay Area Air Quality Management District noted that in the last three years, more than 3,000 diesel backup generators have been installed, noting the uptick primarily driven by an increase in data centers and PSPS awareness in the region. As noted above, there are substantial public health and clean air impacts from relying on diesel generators at critical facilities during PSPS events. Fuel-cell powered microgrids are a viable, clean energy alternative for critical facilities like data centers, grocery stores, and hospitals that need power to operate 24/7. As discussed at the workshop by Dr. Jack Brouwer, Director of the Advanced Power & Energy Program at UC Irvine, data centers can become 100 percent renewable and zero-emission with the use of hydrogen fuel cells.

SoCalGas is also committed to partnering with businesses, research universities, and state agencies to advance the integration of fuel cells and gas engines at data centers and other critical facilities. Currently, SoCalGas is powering its two largest Los Angeles facilities with Bloom Energy's AlwaysOn Microgrids to reduce air pollution, GHG emissions, and electricity costs, while increasing reliability for our 22 million customers.<sup>9</sup>

In 2019, SoCalGas partnered with Microsoft and the University of California Irvine to investigate how both solid-oxide and proton exchange membrane fuel cells can lower emissions and increase energy reliability.<sup>10</sup> Additionally, SoCalGas is working with Mainspring (formerly EtaGen) and the CEC to develop and deploy a near-zero emissions generator that can quickly alternate between traditional gas and renewable fuels at a local grocery store.<sup>11</sup> Further research at the CEC should focus on developing and deploying fuel cell microgrids and gas generators like microturbines for their immediate public health benefits and long-term contribution to the state's decarbonization goals.

SoCalGas appreciates the opportunity to provide input on this important topic.

Sincerely,

*/s/ Tim Carmichael*

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<sup>9</sup> SoCalGas Press Release. "SoCalGas Now Powering Two Los Angeles Facilities with Bloom Energy AlwaysON Microgrids".

<sup>10</sup> SoCalGas. "2019 Annual Report: Fostering Breakthrough Innovation" Retrieved from: <https://www.socalgas.com/sites/default/files/2020-04/2019%20SoCalGas%20RDD%20Annual%20Report.pdf>

<sup>11</sup> Op cit.