

Docket No.: R.20-11-003
Exhibit No.: SC-02
Witness: Sahm White

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Establish
Policies, Processes, and Rules to Ensure
Reliable Electric Service in California in the
Event of an Extreme Weather Event in 2021.

Rulemaking 20-11-003
Filed November 19, 2020

**PREPARED OPENING TESTIMONY OF
SAHM WHITE**

ON BEHALF OF SIERRA CLUB

SEPTEMBER 1, 2021

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LIST OF EXHIBITS

Exhibit A: Resume of Sahm White

1 Sierra Club submits the following testimony on the Order Instituting Rulemaking to
2 Establish Policies, Processes, and Rules to Ensure Reliable Electric Service in California in the
3 Event of an Extreme Weather Event in 2021, proceeding R.20-11-003. This testimony responds
4 to the August 10, 2021 Assigned Commissioner’s Scoping Memo and Ruling for Phase 2 and
5 Administrative Law Judge Stevens’ August 11, 2021 e-mail guidance on proposals, and is timely
6 served.

7 **I. SUMMARY OF TESTIMONY AND FINDINGS**

8 **Q. Please summarize your testimony**

9 **A.** Through this testimony, I provide background on and regulatory context for the
10 regulation and use of prohibited resources (including diesel backup generators (“BUGS”)
11 in California. I provide a series of recommendations for clear, practical improvements to
12 the Emergency Load Reduction Program (“ELRP”) that will realize the intent of the
13 California Public Utilities Commission (“CPUC” or “Commission”) to use prohibited
14 resources solely as a last resort.

15 **Q. What are your main recommendations in this testimony?**

16 **A.** Through this testimony, I recommend that the Commission:

- 17 1. Require that the ELRP only call on incremental use of fossil-fueled generation—
18 especially diesel BUGs, other prohibited resources, and emitting resources located
19 in or near disadvantaged communities (“DACs”) —as a last resort, after all other
20 resources have been called.
- 21 2. Take the steps necessary to minimize and phase out reliance on prohibited
22 resources, including monitoring, public reporting, and verification of actual use.
- 23 3. Consider authorizing compensation for behind-the-meter (“BTM”)
24 renewable/zero-emission hybrid and storage resources for performance in
25 preventing and/or addressing grid emergencies

26 **II. INTRODUCTION**

27 **Q. Please state your name, occupation, and business address.**

1 A. My name is Kenneth Sahn White. I am a consultant for the Sierra Club. My business
2 address is 507 California Ave, Santa Cruz, CA 95060.

3 **Q. On whose behalf are you testifying?**

4 A. I am testifying on behalf of Sierra Club.

5 **Q. Please summarize your professional and educational background.**

6 A. I am an expert consultant for environmental ratepayer advocates on energy issues.

7 I have worked on emissions, air quality and energy issues for over 25 years spanning four
8 decades, beginning with the reauthorization of the 1978 Clean Air Act and 1990
9 amendments, and on the development of quantifiable sustainability metrics, emissions
10 calculations, and regional Climate Action Plans before specifically focusing on electric
11 utility and grid operation issues. For the past twelve years, I have been primarily engaged
12 on policy matters related to transmission, distribution, and electric generation resources,
13 and the intersection of the electric sector with climate, environmental, and equity issues.
14 For the decade prior to working for Sierra Club, I worked at the Clean Coalition as
15 Director of Policy and Economic Analysis. I developed regulatory and legislative
16 analysis and proposals across a dozen states and an equal number of municipal utility
17 jurisdictions, with a primary focus on California regulatory issues. Additionally I have
18 been the lead analyst for several U.S. Department of Energy, New York State Energy
19 Research and Development Authority and the California Energy Commission (“CEC”)
20 Electric Program Investment Charge studies.

21 I have a Bachelor of Science from the University of Michigan, two years of graduate
22 level social studies of science and technology at the Massachusetts Institute of
23 Technology, and an additional two years in Environmental Science at San Jose State
24 University. A full resume is attached in Exhibit A.

25 **Q. Are you generally familiar with electric utilities and related policy and regulatory**
26 **issues in California?**

1 A. Yes. I have been deeply engaged in working groups and proceedings at the CPUC as well
2 as stakeholder processes at the California ISO and California Energy Commission. I have
3 authored of over 150 filings, primarily in CPUC proceedings and have additionally
4 contributed to an equal number, with a particular focus on the impact of local distributed
5 energy resources. Through my work coordinate closely with multiple environmental and
6 environmental justice organizations to pursue electric sector policies that reduce air
7 pollution and transition to clean, renewable energy.

8 **Q. What is the purpose of your testimony?**

9 A. In this testimony, I identify the failure of Decision (“D.”) 21-03-056 to properly restrict
10 the use of prohibited resources; I outline the climate, public health, and air quality
11 impacts by fossil fueled generating facilities generally as well as in the particular context
12 of employing emergency back-up generators for grid reliability in California; and I
13 highlight the unique risks that increased emissions pose to disadvantaged communities.
14 Finally, I address preferred alternatives to the use of prohibited resources for demand
15 response, including Critical Peak Pricing (“CPP”), Flex Alert integration in the ELRP,
16 options to incent the use of BTM batteries during net peak periods, expanded application
17 and dispatch of smart devices for load reduction, and load shifting. In addition, I briefly
18 explain the opportunity to incorporate behind-the-meter battery resources to prevent grid
19 emergencies.

20 **Q. Have you ever testified before this Commission?**

21 A. Yes. I have previously testified in 2014 on the Green Tariff Shared Renewables program,
22 and in 2013 in Track 4 of the Long Term Planning and Procurement proceeding, and I
23 have aided in the drafting of testimony on other occasions.

24 **III. BACKGROUND ON PROHIBITED RESOURCES**

25 **Q. Please provide a definition of prohibited resources.**

26 A. In D.16-09-056, the Commission identified distributed generation technologies using
27 diesel, natural gas, gasoline, propane, or liquefied petroleum gas “prohibited resources”

1 with respect to their use in demand response programs, including banning their
2 application in both topping cycle Combined Heat and Power (“CHP”) or non-CHP
3 configuration.¹ This builds upon the earlier D.09-08-027 which states that “subsidizing
4 backup generation with demand response funds is not appropriate; we prefer to reserve
5 these funds for activities that reduce total energy use.”²

6 Diesel BUGs are the most common technology deployed by both number and total
7 capacity. California has more than 24,403 backup and emergency generators with a total
8 of 8 GW capacity in just three of the most populated of the state's 35 air districts, and
9 95% of that capacity is powered by diesel.³

10 **Q. Please explain health impacts of prohibited resources.**

11 **A.** Fossil fueled combustion technology based electric generation results in hazardous
12 emissions into the surrounding environment. Emissions include greenhouse gases like
13 carbon dioxide as well as criteria pollutants like sulfur dioxide (“SO₂”), nitrogen oxides
14 (“NO_x”), coarse and fine particulate matter (“PM₁₀”, “PM_{2.5}”), and other hazardous
15 pollutants like mercury. Furthermore, significant methane and other emissions occur in
16 the extraction, refinement, storage and delivery of fuels to electric generation facilities,
17 resulting in localized air quality impacts and additional greenhouse gas emissions roughly
18 equal to those realized from combustion.⁴ These emissions all impact public health, either
19 by directly harming human health when inhaled, providing precursors causing regional
20 atmospheric chemical reactions creating smog, unhealthy ozone, acid and nitrogen
21 deposits that negatively impact soil and water quality, and/or by contributing to the
22 climate crisis.

¹ D.16-09-056 at 94-95.

² D.09-08-027 at 165-166.

³ Moss, Steven and Andrew Bilich, *Hidden Grid: More Than Eight Gigawatts of Fossil Fueled Back-Up Generators Located in Just Five California Districts*, M.CUBED (May 2020), <http://www.lgsec.org/wp-content/uploads/2020/05/BUGs-in-5-CA-Air-Districts.pdf>.

⁴ Based on the 20 year global warming potential of methane of 86 from IPCC 5AR WG, sec.8.7.1.2, pp.714 and a leakage rate of 3 percent from wellhead to end use. For leakage rate citations see Sierra Club, *Fracked Gas: Nothing “Natural” About It*.

1 **Q. How does this impact California’s air quality?**

2 **A.** Many parts of California suffer from persistently poor air quality. Thirty-nine of the
3 state’s 58 counties have been in nonattainment for at least one criteria pollutant in the
4 past five years.⁵ Many of California’s air basins are in serious, extreme, and/or severe
5 nonattainment for one or more criteria pollutants, including El Dorado, Fresno, Inyo,
6 Kern, Kings, Los Angeles, Madera, Merced, Nevada, Orange, Placer, Riverside, San
7 Bernardino, San Diego, San Joaquin, Solano, Stanislaus, Sutter, Tulare, Ventura, and
8 Yolo counties.⁶ These harms are especially pronounced in California’s most polluted air
9 basins and in DACs. These harmful, polluting resources—especially diesel BUGs—
10 produce intensely localized pollution that harms public health and exacerbates the climate
11 crisis.

12 Poor air quality is already a major health hazard. Combined with health risks from
13 COVID-19, air quality has become even more dangerous. A study by Harvard
14 University’s School of Public Health found that a small increase in long-term exposure to
15 particulate matter was associated with a 8 percent increase in the COVID-19 death rate.⁷
16 Another analysis found that nearly 80% of the deaths in Italy, Spain, France, and
17 Germany occurred in the five most polluted regions based on nitrogen dioxide
18 concentrations.⁸ According to the California Air Resources Board (“CARB”), operating
19 an uncontrolled one-megawatt diesel engine for only 250 hours per year results in a 50

⁵ Exhibit B: United States Environmental Protection Agency, *Green Book: Current Nonattainment Counties for All Criteria Pollutants* (data current as of Dec. 31, 2020), <https://www3.epa.gov/airquality/greenbook/ancl.html>.

⁶ The order of classification from least serious to most serious is: nonattainment, marginal, moderate, serious, severe, and extreme.

⁷ See X. Wu et al, Air pollution and COVID-19 mortality in the United States: Strengths and limitations of an ecological regression analysis, *Science Advances* (2020), <https://projects.iq.harvard.edu/covid-pm>; see also <https://www.hsph.harvard.edu/news/hsph-in-the-news/air-pollution-linked-with-higher-covid-19-death-rates/>.

⁸ Ogen, Yaron, Assessing nitrogen dioxide (NO₂) levels as a contributing factor to coronavirus (COVID-19) fatality, *Science Direct* (2020), <https://www.sciencedirect.com/science/article/pii/S0048969720321215>.

1 percent increase in cancer risk to residents within one city block.⁹ Air pollution must be
2 reduced to protect lives in California's most vulnerable communities.

3 **Q. Can you describe the health impacts of these emissions, outside of the climate and**
4 **other ecological impacts?**

5 **A.** Sulfur dioxide, nitrogen oxides, and particulate matter each irritate and damage the lungs,
6 with particular risks to children, the elderly, and people with asthma. Sulfur dioxide
7 damages the lungs, causing wheezing, shortness of breath, chest tightness, and other
8 problems, as well as increasing the risk of hospital admissions or emergency room
9 visits.¹⁰ Nitrogen oxides cause inflammation of airways, reduce lung function, increased
10 asthma attacks, cardiovascular harm, low birth weight in newborns, and increased risk of
11 premature death.¹¹ The U.S. Environmental Protection Agency suspects that long
12 exposures to elevated nitrogen oxide concentrations may cause asthma and increased
13 susceptibility to respiratory infections.¹²

14 Particulate matter can be coarse (meaning between 2.5 and 10 microns in diameter) or
15 fine (meaning smaller than 2.5 microns in diameter), and the size determines how far they
16 can infiltrate the human body.¹³ Our bodies might cough or sneeze out coarse particulate
17 matter, but fine particulate matter can get trapped in the lungs and pass into the
18 bloodstream.¹⁴ Coarse particulate matter contributes to asthma and chronic bronchitis,

⁹ Santa Barbara County Air Pollution Control District: <https://www.ourair.org/do-you-really-need-adiesel-generator/>.

¹⁰ American Lung Association, *Sulfur Dioxide*, <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/sulfur-dioxide>.

¹¹ American Lung Association, *Nitrogen Dioxide*, <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/nitrogen-dioxide>.

¹² U.S. EPA, *Basic Information about NO2*, <https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects>.

¹³ American Lung Association, *Particle Pollution*, <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/particle-pollution>.

¹⁴ *Id.*

1 especially in the children and the elderly.¹⁵ Because fine particulate matter can penetrate
2 further into the body, its health impacts are even more severe.

3 **Q. Please explain further how fine particulate matter affects the body.**

4 **A.** Fine particulate matter exposure is very closely connected to decreased lung function,
5 more frequent asthma symptoms, increased numbers of asthma and heart attacks, more
6 frequent emergency department visits, additional hospital admissions, and increased
7 numbers of death.¹⁶ Researchers at Harvard found a clear association between increased
8 risk of a heart attack following exposure to increased concentrations of fine particulate
9 matter.¹⁷ Other research supports these connections, including a study that connected the
10 relationship between daily PM2.5 concentrations and emergency hospital admissions for
11 cardiovascular diseases, heart attacks, and congestive heart failure in multiple
12 communities.¹⁸ Fine particulate matter can also cause emphysema and lung cancer.¹⁹

13 **Q. Are there any particular concerns about emissions from diesel resources?**

14 With respect to diesel in particular, more than 40 gaseous and particulate constituents of
15 diesel exhaust are listed as hazardous air pollutants by U.S. Environmental Protection
16 Agency or as toxic air contaminants by CARB, and over 40 of these substances are
17 identified by the State of California as known carcinogens, as described by the CARB²⁰.
18 Even small increases in diesel particulate matter (“PM”) can be deadly, as described by

¹⁵ U.S. Energy Information Administration (“EIA”), *Electricity explained: Electricity and the environment*, <https://www.eia.gov/energyexplained/electricity/electricity-and-the-environment.php> [hereinafter “EIA: Electricity and the Environment”].

¹⁶ American Lung Association, *Particle Pollution*, <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/particle-pollution>.

¹⁷ Annette Peters et al., *Increased Particulate Air Pollution and the Triggering of Myocardial Infarction*, Vol. 103:23 *Circulation* 2810-15 (2001), <https://doi.org/10.1161/01.CIR.103.23.2810>.

¹⁸ Antonella Zanobetti et al., *Fine particulate air pollution and its components in association with cause-specific emergency admissions*, Vol. 8:58 *Environmental Health* (2009).

¹⁹ Sun Young Kyong and Sung Hwan Jeong, *Particulate-Matter Related Respiratory Diseases* (April. 2020), *Tuberculosis and Respiratory Diseases*, <https://www.e-trd.org/journal/view.php?doi=10.4046/trd.2019.0025>.

²⁰ *Overview of Diesel Exhaust & Health, Background*, <https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health>.

1 the American Lung Association’s publication on *Particle Pollution - What Makes Air*
2 *Unhealthy*, which summarized a series of studies that show harmful effects of both
3 short-term and long-term exposure to low-level concentrations of diesel PM_{2.5}.²¹
4 There is no healthy threshold for diesel PM, meaning that any additional diesel
5 emissions poses health risks.

6 **Q. Are there any trends in where backup generators resources tend to be located?**

7 **A.** Importantly, BUGs tend to be located at locations with significant electrical loads,
8 meaning that they are located adjacent to facilities where people live and work,
9 concentrated in population centers. CARB estimated that diesel BUGs during public
10 service power shutoffs in October 2019 alone produced diesel PM equivalent to almost
11 29,000 heavy duty diesel trucks driving on California roadways for one month, as
12 determined by CARB.²² However, in contrast to diesel trucks, these BUGs are stationary,
13 concentrating all emissions in close proximity to where people live and breathe. In the
14 South Coast Air Quality Management District alone, over 100 schools are located within
15 300 meters (less than a quarter of a mile) of a diesel generator.²³ Because of the health
16 impacts of these fossil fueled backup generators, D.16-09-056 unambiguously banned
17 diesel BUGs and fossil-based distributed resources from participation in demand
18 response programs.²⁴

19 **Q. Please explain context that the Commission specifically prohibits the use of these**
20 **resources for participation in demand response programs.**

21 **A.** As I mentioned above, in D.16-09-056, the Commission specifically identified diesel
22 BUGs and other fossil-based distributed technologies as “prohibited resources” banned

²¹ American Lung Association, *Particle Pollution*, <https://www.lung.org/clean-air/outdoors/what-makes-air-unhealthy/particle-pollution>.

²² CARB, *Emission Impact: Additional Generator Usage Associated with Power Outage January 30, 2020*, http://ww2.arb.ca.gov/sites/default/files/2020-01/Emissions_Inventory_Generator_Demand%20Usage_During_Power_Outage_01_30_20.pdf.

²³ See Environmental Defense Fund, *Smaller, Closer Dirtier, DIESEL BACKUP GENERATORS IN CALIFORNIA*, https://www.edf.org/sites/default/files/2272_BUGsreport_0.pdf, pp. 50-51.

²⁴ D.16-09-056, pp. 94-95.

1 from use in demand response programs, prohibiting the use of distributed generation
2 technologies using diesel, natural gas, gasoline, propane, or liquefied petroleum gas, in
3 topping cycle CHP or non-CHP configuration.²⁵ This decision built upon the earlier
4 D.09-08-027 in which the Commission stated that “subsidizing backup generation with
5 demand response funds is not appropriate; we prefer to reserve these funds for activities
6 that reduce total energy use.”²⁶ The Commission in D.16-09-056 specifically prohibited
7 demand response (“DR”) participants from using these resources to “ensure that demand
8 response is actual load reduction and not substituted with fossil-fueled generation.”²⁷

9 **Q. Does the reasoning in these two prior decisions (i.e. D.16-09-056 and D.09-08-027)**
10 **regarding the use of prohibited resources apply to grid emergencies?**

11 **A.** In my opinion, that logic remains applicable to any grid emergency as well. This
12 prohibition against the use of fossil-fired BUGs must be reflected in any demand
13 response program authorized in this proceeding. In my view, the public health impacts of
14 these resources—particularly diesel BUGs—are too significant, localized, and disparately
15 impacting disadvantaged communities, for ratepayers to support.

16 **Q. Do you have any equity concerns regarding the use of prohibited resources?**

17 **A.** Yes. Disadvantaged communities are already overburdened by environmental and health
18 impacts. California law requires that these communities be prioritized in pollution
19 reduction efforts. SB 350 established a requirement to minimize localized air pollutants
20 and other greenhouse gas emissions, with early priority for disadvantaged communities.²⁸
21 Authorizing additional use of prohibited resources would exacerbate these harms, and
22 failing to ensure that any additional emissions are actually only allowed and monitored to
23 occur as a last resort after all other reasonable alternatives have been exhausted would
24 unlawfully fail to meet the requirements of SB 350. The Commission is required to offer

²⁵ D. 16-09-056, pp. 26, 92 (Conclusion of Law #6).

²⁶ D.09-08-027, pp. 165-166.

²⁷ D.16-09-056, p. 30.

²⁸ Cal. Pub. Util. Code 454.52(a)(1)(I) (requiring that load-serving entities must “minimize localized air pollutants and other greenhouse gas emissions, with early priority for disadvantaged communities”).

1 special protection for disadvantaged communities and to ensure that resource planning
2 prioritizes air pollution improvements in these communities.²⁹

3 **Q. Would a requirement that prohibited resources use be located in a non-**
4 **disadvantaged community resolve this problem?**

5 **A.** No, not entirely. Many prohibited resources are sited in a census tract that is near, but not
6 specifically inside, a disadvantaged community, and are commonly upwind of these
7 communities. Additional capacity to pollute at these facilities could still impact
8 disadvantaged communities by exacerbating the environmental and health burdens of
9 those adjacent and downwind census tracts.

10 **Q. Are there regulatory limits on the use of prohibited resources?**

11 **A.** Yes, each prohibited resource has an air permit with strict limits on emissions and
12 operations, provided by the local air district. In addition, CARB sets requirements in the
13 Airborne Toxic Control Measure for Stationary Compression Ignition Engines
14 (“Stationary Engine ATCM”), which prohibits the use of prohibited resources from
15 supplying power to the electric grid in non-emergency situations.³⁰ The Stationary
16 Engine ATCM also prohibits the use of backup generators “.... to supply power to an
17 electric grid” or “as part of a financial arrangement with any entity,” except under very
18 specific circumstances that require a separate permit for such use as well as multiple
19 simultaneous requirements.³¹ Under the Stationary Engine ATCM, a customer’s concern

²⁹ Cal. Pub. Util. Code 454.52(a)(1)(I) (requiring California’s load-serving entities to “minimize localized air pollutants and other greenhouse gas emissions, with early priority for disadvantaged communities”).

³⁰ CARB, Stationary Engine ATCM, <https://ww2.arb.ca.gov/sites/default/files/classic//diesel/documents/finalreg2011.pdf>, pp. 8-9 (defining “emergency standby engine” to include only engines that are “not operated to supply power to an electric grid or does not supply power as part of a financial arrangement with any entity...” (except for situation that do not apply in this instance) and defines “emergency use” to include “the failure or loss of all or part of normal electrical power service or normal natural gas supply to the facility: 1. which is caused by any reason other than the enforcement of a contractual obligation the owner or operator has with a third party or any other party; and 2. which is demonstrated by the owner or operator to the district [Air Pollution Control Officer’s] satisfaction to have been beyond the reasonable control of the owner or operator.”).

³¹ CARB, Stationary Engine ATCM, <https://ww2.arb.ca.gov/sites/default/files/classic//diesel/documents/finalreg2011.pdf>, p. 9. Entities that

1 that the grid might lose power at a future point in time is not an emergency.³² Instead, an
2 emergency is a loss of power that actually occurs at the facility, and which is caused, not
3 by an arrangement between the facility and a third party, but by a circumstance beyond
4 the facility's control.

5 **IV. THE ROLE OF PROHIBITED RESOURCES IN THE ELRP DECISION**

6 **Q. Please recap how the latest Extreme Weather decision authorized the use of**
7 **prohibited resources in the ELRP program.**

8 **A.** Decision 21-03-056 states that “[p]rohibited resources may be used during an ELRP
9 event to achieve [incremental load reduction], including during the overlapping period
10 with an independently triggered event in a dual-enrolled DR program, but only for
11 achieving load reduction incremental to any other existing commitment (e.g., under a
12 dual-enrolled DR program).”³³ This appears to erroneously allow prohibited resources,
13 including diesel BUGs, to be relied upon in 2021 and 2022 and is silent regarding use
14 only as a last option within ELRP or any limits on use within ELRP, with no limits or
15 analysis required until 2023.³⁴

16 **Q. Have the Commissioners provide direction regarding the potential use of prohibited**
17 **resources?**

commit to use of diesel BUGs under a financial agreement would apply through a different permitting arrangement.

³² CARB, Stationary Engine ATCM,

<https://ww2.arb.ca.gov/sites/default/files/classic//diesel/documents/finalreg2011.pdf>, Section 93115.6 (c) p. 25 (prohibiting backup engines for use in a demand response program from operating in response to an impending rotating outage unless operating pursuant to the program or all of the following are met: the engine's permit allows operation in anticipation of a rotating outage; the utility has ordered rotating outages where the resource is located or has indicated it expects such outages; the engine is located where the rotating outages are occurring; the engine operates no more than 30 minutes prior to the forecasted time of rotating outages; and the engine stops operating immediately after the rotating outage is no longer in effect).

³³ D.21-03-056, p. 24.

³⁴ D.21-03-056, p. 24. *See also id.*, p.19 (requiring only IOU collection of data on backup generator participation in ELRP in 202 and 2022).

1 A. Yes. The Commission has authorized the use of BUGs to achieve incremental load
2 reduction in the ELRP program, but CPUC President Batjer and Commissioner
3 Rechtshaffen provided additional direction to the Commission and stakeholders during a
4 recent CPUC voting meeting, specifying that prohibited resources should be used only as
5 an emergency last resort.³⁵ However, in order to avoid ambiguity, this direction must be
6 incorporated into any new decision in this proceeding with clear criteria restricting the
7 conditions under which the actual use of BUGs will be authorized, and necessary steps to
8 validate that BUGs are prevented from unauthorized use.

9 In the March 25, 2021 CPUC Voting Meeting, President Batjer made clear that she shares
10 the concerns over the use of diesel backup generators, often located in low-income and
11 disadvantaged communities that are already facing the brunt of air pollution and fossil
12 fuels generating plant, refineries and other industrial facilities.”³⁶

13 In light of these impacts, President Batjer stated that backup generation should only be
14 used “as a last resort” and the adjustments made to the proposed decision “will clarify
15 that the ELRP program is an emergency last resort program” that “will only be deployed
16 when the grid is absolutely at the edge.”³⁷ President Batjer clearly and directly stated
17 “[I]et me underscore, there will be backup generation only if needed as a last resort only
18 and likely for minutes, hours not multiple days as we have experienced in [Public Safety
19 Power Shutoff] events.”³⁸

20 In addition to restricting use of harmful, polluting BUGs only as a last resort, President
21 Batjer stated that she “would like to make a personal request to the Commission’s Energy
22 Division for this summer: that they coordinate with the [Investor-Owned Utilities], the
23 local air district and [CARB] to see if there are additional steps we can take this summer

³⁵ CPUC Voting Meeting (March 25, 2021), <http://www.adminmonitor.com/ca/cpuc/voting/meeting/20210325/> (“CPUC Voting Meeting”), Minutes 28, 36, 47-48.

³⁶ *Id.* at Minute 36.

³⁷ *Id.* Minute 36.

³⁸ *Id.* at Minute 28.

1 to reduce the likelihood of triggering the use of back-up generators (BUGS) especially in
2 disadvantaged communities.”³⁹

3 Commissioner Rechtshaffen also expressed concern and sought additional confirmation
4 from President Batjer stating that he “would like [the BUG] aspect of the program
5 reviewed after this summer in order to determine whether to continue it after this calendar
6 year” and noting that “the proceeding is being held open and, as President Batjer notes, it
7 directs the utilities to collect data on back-up generator participation in the program this
8 summer.”⁴⁰ He continued to observe that “[s]everal parties have argued that backup
9 generators should be dispatched last in the ELRP program and should be dispatched after
10 the base-interruptible program.”⁴¹ In light of these observations, Commissioner
11 Rechtshaffen sought to confirm President Batjer’s understanding and agreement about
12 what the Commission is doing. He asked directly: “[I]s it that we will be looking at data
13 collected from this summer to inform what should be done about BUGs in future years of
14 the program including 2022 and including whether to require that they be dispatched after
15 all other resources.”⁴²

16 In response to Commissioner Rechtshaffen’s request for clarification on these points,
17 President Batjer responded, “I have asked the Energy Division to coordinate with the
18 IOUs and the local air districts and the air resources board to see if there is additional
19 steps that we can take to reduce the likelihood of triggering the use of BUGs especially in
20 the disadvantaged communities. Absolutely we will be looking at that. It is one of the
21 reasons I want to keep this proceeding open. And we will be looking at that once we
22 conclude the high weather danger periods of August, September and I dare say
23 October... We will be looking at this in this proceeding... So we will, and you have my
24 pledge.”⁴³

³⁹ *Id.* at Minute 27.

⁴⁰ *Id.* at Minute 47-48.

⁴¹ *Id.* at Minute 48.

⁴² *Id.*

⁴³ *Id.* at Minutes 49-50.

1 The text of Decision 21-03-056 does not incorporate these directions from the
2 Commissioners, so I recommend that any subsequent ruling or decision include this
3 direction.

4 **Q. What specific directions from the Commissioners statements would you recommend**
5 **incorporating in the next Extreme Weather decision?**

6 **A.** The Commission should specifically require Energy Division to work with the IOUs, the
7 local air districts, the California Air Pollution Control Officers Association
8 (“CAPCOA”), and CARB to identify additional steps to:

- 9 1. Ensure that prohibited resources are used only as a last resort in the ELRP
10 with prohibited resources in DACs called on last. I elaborate in more detail on
11 this below.
- 12 2. Reduce the likelihood of triggering the use of BUGs especially in DACs.
- 13 3. Review the use of prohibited resources in the ELRP program to determine
14 whether it should be continued after this calendar year.
- 15 4. Collect data on prohibited resource use during ELRP events to monitor air
16 quality impacts.

17 **Q. Has the Commission authorized use of BUGs that appears to be in conflict with**
18 **California law and precedent, or addressed any such conflicts?**

19 **A.** Decision 21-03-056 appears to erroneously allow prohibited resources, including diesel
20 BUGs, to be relied upon in 2021 and 2022 with no limits or analysis required until 2023,
21 despite no party having demonstrated, as required under California law, that fossil fuel
22 BUG resources are necessary to meet potential reliability needs. Thus, any later decision
23 adopted in this proceeding should address and correct these errors.

24 Decision 21-03-056 only requires IOU collection of data on backup generator
25 participation in ELRP in 2021 and 2022. Page 24 states “Prohibited resources may be
26 used during an ELRP event to achieve [incremental load reduction], including during the

1 overlapping period with an independently triggered event in a dual-enrolled DR program,
2 but only for achieving load reduction incremental to any other existing commitment (e.g.,
3 under a dual-enrolled DR program” Simple incrementality is far short of limiting use to a
4 “last resort” to be employed only after all other measures have been exhausted. This
5 direction contradicts the statements made by President Batjer (and Commissioner
6 Rechtshaffen in support) at the March 25, 2021 Voting Meeting. As described above,
7 President Batjer put important additional limits on the ELRP and required monitoring and
8 analysis.⁴⁴ The Commission should implement these requirements in the text of the next
9 Extreme Weather decision to ensure that other key agencies and impacted stakeholders
10 understand and apply these critical limitations.

11 **Q. Has the Commission elsewhere prohibited the use of BUGs in demand response**
12 **programs?**

13 **A.** The Commission has long prohibited reliance on dirty back-up generation resources
14 because these resources conflict with the Commission’s Energy Action Plan, Loading
15 Order, Public Utilities Code Section 380.5, and other clean energy policy goals. As the
16 Commission summarized in D.16-09-056, “D.14-12-024 confirmed that fossil-fueled
17 back-up generation is antithetical to the efforts of the Commission’s Energy Action Plan
18 and Loading Order.”⁴⁵ The Commission further explained in D.16-09-056 that it
19 considers these “policies of the highest importance” and that Section 380.5 of the Public
20 Utilities Code requires the Commission to “establish rules consistent with state and
21 federal law for how and when back-up generation may be used within the demand
22 response program.”⁴⁶ This enacting legislation explicitly stated an intent to ensure that
23 California and the Public Utilities Commission increase use of demand response to both
24 help meet the state’s greenhouse gas emissions reduction goals and achieve electrical grid
25 reliability.

⁴⁴ *Id.* at Minutes 28, 36, 47-48.

⁴⁵ D.16-09-05, pp. 19-20.

⁴⁶ D.16-09-056, p. 20.

1 As such, it is clear that the Commission should never cause additional emissions to result
2 from a demand response program unless there is no other alternative available to achieve
3 grid reliability. Based on this mandate, the Commission adopted a clear list of prohibited
4 resources in D.16-09-056, which included diesel, gasoline, and propane.⁴⁷ That Decision
5 also rightfully cited California Public Utility Code section 380.5 to conclude that “not
6 having a clear identified prohibition on the use of certain resources to reduce load during
7 demand response events conflicts with our policy statement and may prevent the
8 Commission from meeting its aggressive clean energy policy goals.”⁴⁸

9 **Q. Does the authorization to use BUGs in the ELRP have any equity impacts?**

10 **A.** Yes. DACs are already disproportionately impacted by pollutant emissions. Accordingly,
11 the use of prohibited resources, to the extent that any such use is necessary, should occur
12 within DACs only after all available resources have been employed in other locations.

13 Accordingly, the Commission should instruct the Energy Division to reduce the
14 likelihood that prohibited resource use will occur in DACs, and specify concrete steps
15 and timelines to coordinate with the air districts and CARB, stating what information
16 must be collected and analyzed, and what steps will be taken to address prohibited
17 resource use in DACs. This direction will help ensure that other agencies understand the
18 issue and its importance and can deploy resources to participate in discussions.

19 **Q. Please describe the scale of potential use of BUGs and the need to account for ELRP**
20 **use of prohibited resources.**

21 **A.** The need for public accounting and prohibited resource use verification was highlighted
22 in public comments by a Bay Area Air Quality Management District (“BAAQMD”)
23 representative the Commission’s March 25, 2021 Voting Meeting.⁴⁹ The BAAQMD
24 representative stated that “approximately 10,000 internal combustion engines [are]
25 permitted in the Bay Area alone and [BAAQMD staff] have recently been receiving

⁴⁷ *Id.*, pp. 94-95.

⁴⁸ *Id.*, p. 21.

⁴⁹ CPUC Voting Meeting at Minutes 14-15.

1 about 400 engine permit applications per year.”⁵⁰ For the data center subsector alone,
2 “the fleet of diesel backup generators in the Bay Area is growing from the existing
3 capacity of 1.2 GW to more than 2.7 GW” and “many of these diesel generators are
4 located in AB 617 disadvantaged communities that are already overburdened with poor
5 air quality.”⁵¹ BAAQMD analysis for a portion of Santa Clara county focusing on data
6 centers for the period including last summer’s heat storm events shows that nearly half of
7 the identified facilities operated their backup diesel generators for emergency purposes.
8 “Many facilities operated their diesel generators for multiple emergency events,” and
9 “one facility ran diesel generators for approximately 400 hours for emergency purposes
10 over the course of the period.”⁵² Such use is substantial, potentially excessive, and results
11 in significant localized emissions that warrant both public monitoring and all feasible
12 reduction in use and impact.

13 **Q. Is the authorized use of BUGs in the ELRP consistent with the requirements in the**
14 **Stationary Source ATCM?**

15 **A.** No. Unfortunately, the authorization to use prohibited resources, like diesel BUGs,
16 during an ELRP event conflicts with existing regulations and air permit limits that
17 prohibit their use in non-emergency situations. Neither the announcement of an ELRP
18 event or a stated possibility that the grid might lose power at a future time is not an
19 emergency.⁵³ Additionally, the ATCM’s definition of an emergency does not include an
20 arrangement between the facility and a third party. Under the ATCM, owners and

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² *Id.*

⁵³ CARB, Stationary Engine ATCM, <https://ww2.arb.ca.gov/sites/default/files/classic//diesel/documents/finalreg2011.pdf>, Section 93115.6 (c) p. 25 (prohibiting backup engines for use in a demand response program from operating in response to an impending rotating outage unless operating pursuant to the program or all of the following are met: the engine’s permit allows operation in anticipation of a rotating outage; the utility has ordered rotating outages where the resource is located or has indicated it expects such outages; the engine is located where the rotating outages are occurring; the engine operates no more than 30 minutes prior to the forecasted time of rotating outages; and the engine stops operating immediately after the rotating outage is no longer in effect).

1 operators of a backup generator cannot use it to participate in a demand response program
2 except in very narrow conditions that include specific authorization in their air permit,
3 among other requirements. In order for a backup generator owner or operator to legally
4 run their resource under the ELRP, the owner needs to have an air permit that authorizes
5 the engine to operate in the anticipation of a rotating outage, plus multiple additional
6 criteria need to be met.⁵⁴

7 **Q. Why does this matter?**

8 **A.** There is considerable risk that owners or operators of these resource might interpret the
9 ELRP as specific authorization to run their resources during an ELRP event, even if such
10 use would violate the owner or operator's air permit. Without specific approval from the
11 relevant air district to participate in a demand response program, operation of the backup
12 generator during an ELRP event would be illegal because ELRP events do not constitute
13 an emergency under the ATCM.

14 I am concerned that without very clear and coordinated messaging from the Commission,
15 CARB, and the local air districts, participants in the ELRP who own a backup generator
16 might inadvertently violate the terms of their air permit. Accordingly, I recommend that
17 the Commission require ELRP participants to disclose whether they own a backup
18 generate and communicate with participants to ensure that they understand that they are
19 not authorized to operate their backup generators to produce incremental load reductions
20 without specific approval from their local air district.

21 **V. RECOMMENDATIONS TO ENSURE THAT PROHIBITED RESOURCES ARE**
22 **USED IN ELRP ONLY AS RESOURCES OF LAST RESORT**

23 **Q. Given the additional direction from Commissioners and the reasons you stated**
24 **above, what recommendations do you have to the Commission in this proceeding**
25 **regarding the use of prohibited resources?**

⁵⁴ CARB, Stationary Engine ATCM,
<https://ww2.arb.ca.gov/sites/default/files/classic//diesel/documents/finalreg2011.pdf>, Section 93115.6 (c)
p. 25.

1 A. I have five recommendations to make sure that prohibited resources are used only as
2 resources of last resort:

- 3 1. Develop a dispatch order for ELRP participants;
- 4 2. Require the ELRP to call the full capacity of all other resources before permitting
5 the use of prohibited resources, and only allow the ELRP to call on prohibited
6 resources in DACs if no other resources are available to meet emergency needs;
- 7 3. If prohibited resources are called, require a showing, available to the public, that
8 all other resources have been deployed before prohibited resources, that there are
9 no other resources available, and that the prohibited resources in DACs are called
10 on last;
- 11 4. Develop a verification methodology to make sure that BUGs are operating within
12 the Commission requirements; and
- 13 5. Require the ELRP administrator to collect data for air quality monitoring that will
14 enable analysis of the air quality impacts of the use of prohibited resources and
15 compliance with air permits.

16 For each of these recommendations, the Commission needs to provide clear direction to
17 the IOUs and any other ELRP administrator to gather that the requisite information from
18 participants, take measures to dispatch resources in order, and then implement the
19 required data collection and monitoring to ensure compliance and track air quality
20 impacts. Transparency and accountability at each of these steps are critical, and important
21 for impacted communities. Together, these requirements would increase the likelihood
22 that the ELRP delivers on the Commission's stated commitment to ensuring that
23 prohibited resources, including those located in disadvantaged communities, are used
24 only as a resource of last resort.

25 a. **Develop a dispatch order for ELRP participants.**

26 Q. **Please describe your proposal of a dispatch order for the ELRP.**

27 A. Decision 21-03-056 already indicates that “[u]se of prohibited resources during a[n
28 ELRP] test event is not permitted and will not be compensated” and that the program is

1 “minimizing use of diesel backup generators where there are safe, cost-effective, and
2 feasible alternatives.”⁵⁵ However, in the refinement of the ERLP, I recommend that the
3 Commission further ensure that prohibited resources are only used as the last resort by
4 requiring the following:

- 5 • The ELRP should require participants to disclose ownership of prohibited
6 resources and their location so that the dispatching entity can prioritize calling on
7 all other customers and avoid calling on customers with prohibited resources
8 unless absolutely necessary; and
- 9 • The Energy Division, in coordination with the IOUs and any other ELRP
10 administrator, should implement a dispatch order that requires the ELRP to only
11 call on prohibited resources, if at all, as a last resort, if and only if no other
12 resources are available to meet the emergency needs. Further, as I stated above, if
13 prohibited resources are called, then the prohibited resources in DACs should be
14 called on last.

15 **Q. How would this help ensure that prohibited resources are used only as resources of**
16 **last resort?**

17 **A.** Requiring a dispatch order for the ELRP will ensure that the program administrator has
18 the customer information that it needs to make a distinct call to customers without
19 prohibited resources first. Requiring Energy Division to identify the dispatch order would
20 also build in transparency and consistency between IOUs and ELRP administrators.

- 21 **b. Require a showing that all other resources have been called and there are no**
22 **other resources available**

23 **Q. Please describe your proposal that ELRP administrators be required to show that**
24 **all other resources have been called and that there are no other resources available.**

25 **A.** Requiring the IOUs or any other ELRP administrator to show that all other resources
26 have been called would push the ELRP administrator to identify all potential alternative
27 resources before implementing the program. This requirement would also push ELRP

⁵⁵ D. 21-03-056, p. 26.

1 administrator to develop clear, transparent record keeping to ensure regulatory and public
2 accountability. The public health impacts of backup generators are so severe that the
3 Commission and stakeholders need access to these showings in order to ensure the ELRP
4 sufficiently protects public health.

5 **c. Require a showing that if prohibited resources are called, then prohibited**
6 **resources in disadvantaged communities are called on last**

7 **Q. Please describe your proposal that ELRP administrators be required to show that if**
8 **prohibited resources are called, then prohibited resources in DACs are called on**
9 **last.**

10 **A.** Similar to the recommendation above, this requirement would provide public health
11 protections for communities that are already overburdened by pollution. This is a policy
12 in line with President Batjer’s statements that she “would like to make a personal request
13 to the Commission’s Energy Division for this summer: that they coordinate with the
14 IOUs, the local air districts and [CARB] to see if there are additional steps we can take
15 this summer to reduce the likelihood of triggering the use of back-up generators (BUGS)
16 especially in disadvantaged communities.”⁵⁶

17 **d. Develop a verification methodology to make sure that BUGs are operating**
18 **within the Commission and air permit requirements**

19 **Q. Please describe your proposal that the Commission develop a verification**
20 **methodology to make sure that BUGs are operating within the Commission**
21 **requirements.**

22 **A.** Decision 21-03-056 requires data collection and monitoring on a number of important
23 criteria, but it fails to require the IOUs to report of the hours of operation, which is a key
24 variable to determine air quality impact and permit compliance. ELRP participation
25 should require each prohibited resource to track the specific start and stop times for each
26 ELRP event to ensure that the prohibited resources are complying with both the
27 Commission requirements and any applicable air permit terms.

⁵⁶ CPUC Voting Meeting Minute 37.

1 The Commission’s partner agencies have extensive expertise on verification
2 methodology, and I recommend that the Commission coordinate with CARB, the
3 CAPCOA, and local air districts to develop a verification methodology appropriate for
4 the ELRP.

5 **e. Require the ELRP administrator to collect data for air quality monitoring**

6 **Q. Please describe your proposal that the ELRP collect data for air quality monitoring.**

7 **A.** As mentioned above, the ELRP administrator should report the hours of operation for
8 each prohibited resource to determine air quality impact and permit compliance.
9 However, additional data collection and tracking is needed to understand the cumulative
10 air quality impacts of the ELRP in order to inform any later evaluation of whether to
11 continue this program. Without information on how often and for how long prohibited
12 resources operate in the ELRP, and whether or not those resources are located in DACs,
13 the Commission cannot conduct the analysis needed to understand the overall impacts of
14 the ELRP.

15 **VI. ALTERNATIVES TO BACKUP GENERATION FOR PEAK SUMMER DAYS**

16 **Q. Please describe the distinction between ELRP events versus Public Safety Power
17 Shut Off (“PSPS”) outages that may require backup generation.**

18 **A.** Both ELRP and PSPS events are driven by weather condition risks that are forecast in
19 advance. This allows notification and preparation to occur at all levels, including among
20 customers. However, ELRP events last only during those hours of the day in which
21 demand threatens to exceed supply. Additionally, and importantly, ELRP is employed to
22 maintain electric service from the grid and avoid power shut offs, unlike PSPS events in
23 which no power is available from the grid in localized areas. This means that: 1) ELRP
24 mitigations only need to last a few hours, and 2) ELRP mitigations generally are system-
25 wide and not tied to specific locations.

26
27 These two factors offer much greater flexibility and a greater variety of options to meet
28 ELRP needs. Because the grid remains energized, and grid operators will already be

1 endeavoring to maximize access to energy supplies, load factors are the other side of the
2 equation that can be addressed by reducing net load on the grid for a few hours, typically
3 in the early evening net peak. This can be achieved either by reducing total electric
4 demand, or by shifting that demand to hours before or after the event when adequate grid
5 supply is available, and/or by shifting the demand of some customers from the grid to
6 utilize their own energy resources for those hours. In coordination with related programs
7 and tariffs, ELRP should encourage, incentivize, and employ all three approaches to
8 temporarily mitigate critical demand on the grid. The short duration of ELRP events
9 means that both changes in customer behavior and the use of short duration resources
10 such as battery storage, are each viable, highly effective, and preferred alternatives to the
11 use of fossil-fueled generation. There is a choice between these alternatives, and the
12 preferred option should be clear: The Commission has a well-established understanding
13 of preferred resources and a Loading Order to meet demand, and this can and should be
14 utilized before any consideration of otherwise prohibited resources.

15 **Q. What alternatives to the use of prohibited resources do you recommend to address**
16 **emergency load reduction needs?**

17 **A.** There are a number of preferable alternatives that should be considered, including those
18 proposed by Energy Division staff. Beyond the staff proposals, there are clear
19 opportunities to implement Critical Peak Pricing tariff options, incentives for customers
20 to use BTM batteries to reduce their load on the grid during net peak periods, expanded
21 application and dispatch of smart devices for load reduction, and additional customer
22 outreach and education on load shifting, such as pre-cooling to reduce net peak load.

23 **Q. Do you support expanding ELRP eligibility to Include Residential Customers, and**
24 **Energy Division staff implementation concept proposals?**

25 **A.** Yes. As noted in the Energy Division's August 16, 2021 Staff Concepts Paper, currently,
26 most residential customers do not participate in demand response programs that
27 compensate them for load reductions, but the CAISO often depends on load reduction

1 from residential customers through the Flex Alert program, which is a voluntary program
2 that calls on social action to reduce demand but does not compensate individual
3 customers. This raises questions of both equity and effectiveness given that the CPUC
4 has developed numerous programs, including ELRP, that compensates nonresidential
5 customers for load reduction, but comparatively few programs for residential customers.
6 Additionally, the voluntary Flex Alert program may have diminishing impacts over time
7 as customer fatigue sets in. To address these possible concerns, Energy Division staff
8 offers a proposal concept for consideration that all residential customers be considered
9 eligible to participate in ELRP by default (except customers participating in existing
10 supply-side DR programs).

11 **Q. Do you support the following proposal concept details:**

12 **i. All residential customers would be automatically enrolled in ELRP (except**
13 **customers currently enrolled in supply-side DR programs). There would be no**
14 **required sign-up or acknowledgment process.**

15 **A.** I agree, default enrollment is optimal - providing ease of opportunity while creating no
16 burden or commitment on customers.

17 **ii. The triggering requirements for these residential customers would be the CAISO**
18 **calling a Flex Alert or Grid Alert in the day-ahead.**

19 **A.** Yes, this is an appropriate triggering event basis. However, experience with the program
20 should invite opportunity to consider evolving additional cost effective opportunities in
21 response to more localized transient capacity constraints and appropriately adjusted
22 compensation rates, which may be integrated with or transferred to automated load
23 modification and price signaling programs.

24 **iii. The Flex Alert marketing would be modified to promote ELRP event and to**
25 **utilize all available channels to reach and notify customers about the imminent**
26 **event and the opportunity to reduce consumption and receive payment or bill credit.**

1 A. Yes. Flex Alerts have proven effective, and low-cost communication channels have
2 advanced greatly over time, including especially text alerts and cell phone notifications.
3 As noted above, these can also be supplemented or eventually replaced with automated
4 signaling to customer devices over time, as the most reliable and effective response is one
5 that does not require customer action.

6 **iv. The payments for load reduction would be based on meter verified incremental**
7 **load reduction (“ILR”) relative to a “simple” baseline to be established by the IOUs.**

8 A. Yes. Meters provide ample data to establish an appropriate baseline for each customer,
9 and offer the potential for customers to see their baseline and reduction performance in
10 near real time.

11 **v. Program would be administered through the IOUs.**

12 A. The IOUs are an obvious choice for program administration for the customers they serve,
13 but consideration should be given to the role of all load serving entities (“LSEs”) which
14 have responsibility for their customers’ load. Both Community Choice Aggregators and
15 municipal utilities within IOU service territories are public entities representing the
16 interests of their communities, and the role of customers served by all LSEs within
17 CAISO will be instrumental in program effectiveness. I commend the simplicity of
18 default ELRP Flex Alert enrollment, compensation, and centralized administration, but
19 caution against establishing centralized IOU administration in a way that inhibits more
20 open participation, especially by public LSEs.

21 **vi. IOUs and third-party DR Providers would still be permitted to target Residential**
22 **ELRP customers to enroll them into their respective supply-side DR program, in**
23 **which case the customer is removed from ELRP.**

24 A. Maybe. It is important to allow more sophisticated DR programs to develop and **retain**
25 customers. These may be an alternative to ELRP enrollment, however they might also be
26 layered on top of ELRP and not necessarily require removing the customer from ELRP,
27 since a customer’s ELRP compensation would be based on meter verified ILR during an

1 event, and compensation to an intermediate aggregate DR provider may be adjusted by
2 this same ILR verification during the event period.

3 Additionally, this proposal should be compared with and complemented by effective CPP
4 programs such as Sacramento Municipal Utility District's ("SMUD") successfully piloted
5 with unusually high levels of customer satisfaction.

6 **Q. You noted additional options. Starting with Critical Peak Pricing, could you
7 describe that opportunity?**

8 **A.** Yes. CPP has significant untapped potential for load reduction in California. SMUD
9 conducted a successful CPP pilot through its Smart Pricing Options pilot nearly ten years
10 ago. This was a multi-year pricing pilot that tested three time-variant pricing plans (e.g.,
11 time-of-use, critical peak pricing and the combination of the two) and two different
12 recruitment strategies (opt-in and default). The primary objective of was to investigate
13 the effectiveness of advanced metering infrastructure ("AMI")-enabled, time-variant
14 pricing and enhanced information to induce behavior change in electricity consumers,
15 with particular interest in reductions in peak-period electricity use. Results⁵⁷ found a high
16 degree of customer satisfaction with the CPP program, with less than 6% of customers
17 electing to drop out of default enrollment and 14% peak load reduction (12% when paired
18 with default time-of-use ("TOU") rates). A key conclusion of SMUD's large-scale, two-
19 year pilot study was that, under CPP event-day weather conditions, average load
20 reductions for CPP pricing plans are roughly twice as large as for TOU pricing plans.⁵⁸

21 **Q. How can BTM batteries to reduce load on the grid during net peak periods?**

22 **A.** Both residential and commercial customers have started installing batteries behind their
23 meters. Commercial customers have largely been interested in mitigation of demand
24 charges, as well as providing an uninterruptable power supply of limited duration. With

⁵⁷ Jennifer Potter, et al., Smart Pricing Options Final Evaluation, September 5, 2014. Prepared For: U.S. Department of Energy under Award Number OE0000214.
https://www.smartgrid.gov/files/documents/SMUD_SmartPricingOptionPilotEvaluationFinalCombo11_5_2014.pdf.

⁵⁸ *Id.* at 4.

1 TOU rates, residential customers under NEM tariffs can realize greater value from their
2 PV production if they can save it for use during higher evening rate periods, offsetting the
3 cost of batteries which also provide power during outages. SGIP has supported
4 significant BTM battery deployment, especially in areas at risk of PSPS outages.

5 These customer sited batteries can readily take over all or part of a customer's load
6 during an outage as well as during periods of grid stress, or even daily to mitigate net
7 peak demand and ramp rates (a form of load shifting). This use only occurs, however, if
8 customers are engaged to do so. The Commission should take notice of a program
9 introduced by the Hawaiian Electric Company on July 19th this year that offers a subsidy
10 for customer installed batteries on O'ahu in exchange for customer agreement to use
11 and/or export electricity stored in the battery at the contracted amount on a firm two-hour
12 schedule specified by Hawaiian Electric between 6 p.m. to 8:30 p.m. daily (including
13 weekends and holidays) through December 31, 2023. For example, a customer might be
14 directed to a set two-hour period of 6:05 p.m. to 8:05 p.m. After December 31, 2023,
15 customers will have the option to transition to the program's next phase to be defined by
16 the Hawaiian Public Utilities Commission for the rest of the 10-year term.⁵⁹ California's
17 ELRP needs differ from those of Hawaiian Electric, but the same approach of incentives
18 in exchange for specific customer actions is readily adaptable. ELRP ratepayer mitigation
19 value can also be paired with or stacked on top of other cost effective tariffs and
20 programs that leverage and support optimal levels of customer participation and battery
21 operation.

- 22 **A.** Other utilities have implemented similar programs in which the utility can dispatch use of
23 customer sited batteries in exchange for a rebate or incentive. For example Green
24 Mountain Power a Bring Your Own Device program which adds your stored energy to
25 that of other enrolled battery owners, and this network of stored energy helps offset

⁵⁹ See also, Hawaii Electric, *Customer Renewable Programs, Battery Bonus*, hawaiianelectric.com/batterybonus (last visited September 1, 2021).

1 power demand during peak periods 5 to 8 times per month, in exchange for a monthly or
2 onetime incentive payment.⁶⁰

3 Significant BTM battery capacity is already installed and readily available in California if
4 customers are incented to enroll in a similar program. Substantial additional capacity can
5 be installed each year, and future integration of electric vehicle batteries for the same
6 purpose holds extremely large potential.

7 There is additional potential in some cases for these batteries to export power to the grid
8 where their capacity exceeds customer load. This should be considered as an incremental
9 additional grid support beyond the value of reducing the customer's own use of grid
10 resources during critical and peak periods.

11 **Q. You suggested dispatch capabilities of smart appliances. Please elaborate.**

12 **A.** Yes. We have seen consistently, and unsurprisingly, that automated demand response is
13 more responsive, more reliable, and produces distinctly larger results than approaches
14 that rely on human action. This is especially true where the value of individual action is
15 small but the aggregated impact of widespread action is large. For example, smart
16 thermostats are capable of remote adjustment, either through individual customer control
17 or a grid signal. Asking customers to take action in response to a grid alert or price signal
18 is far less effective than an automated direct response from the device triggered by the
19 same alert or signal.

20 For example, PG&E has had a SmartAC program for a number of years that utilizes
21 direct load control switches on central air conditioning and programmable
22 communicating thermostats at residential premises to reduce electricity demand during
23 times of peak system usage. Findings from the impact evaluation report of residential
24 customers during the 2017 season, which ran from May through October, show 118,000

⁶⁰ Green Mountain Power, *Bring Your Own Device*, <https://greenmountainpower.com/rebates-programs/home-energy-storage/bring-your-own-device/> (last visited September 1, 2021).

1 customers enrolled, achieving an aggregate of 64 MW July peak load shed during 1-in-2
2 year events, and 79 MW load shed for 1-in-10 year peak events.⁶¹

3 While these results are not huge, they are clearly substantial and significant, especially
4 when applied statewide (other utilities have some similar programs). Moreover, there
5 appears to be room to expand the program to many more customers just within those
6 regions with high air conditioning usage. Note also that air conditioning is not the only
7 residential electric demand that could be enrolled in automated DR programs. Electric
8 water heaters and pumps offer additional opportunity, and will offer increased capacity as
9 gas water heating transitions to heat pump systems.

10 **Q. And lastly, you mentioned customer education and load shift potential?**

11 **A.** Yes, customer education has demonstrated success over time in changing usage patterns.
12 It is an ongoing process that deserves continued attention and support to help customers
13 become aware of opportunities to adjust usage to save money, access incentives, or
14 respond to alerts. AMI data is extremely useful in identifying and targeting customers
15 who can most benefit and offer the greatest opportunity. Customers are adjusting to TOU
16 rates, and concepts such as pre-cooling help them leverage these rates, with or without
17 communication smart thermostats, critical peak pricing or other supporting approaches.
18 Education and outreach is hardly new, but its value should not be underappreciated as we
19 consider how to meet extreme weather conditions.

20 **Q. Does this conclude your testimony?**

21 Yes.

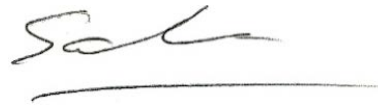
⁶¹ Sam Borgeson et al., 2017 Load Impact Evaluation for Pacific Gas & Electric Company's SmartAC™ Program (April 2, 2018), http://www.calmac.org/publications/4_PGE_2017_SmartAC_Report.pdf.

1
2
3 **VERIFICATION**

4 I, Kenneth Sahm White, am a consultant for the Sierra Club in this proceeding. I am
5 authorized to make this verification on the organization's behalf. The statements in the foregoing
6 document are true to my own knowledge, except for those matters that are stated on information
7 and belief, and as to those matters, I believe them to be true.

8 I declare under penalty of perjury that the foregoing is true and correct.

9 Executed on September 1, 2021, at Santa Cruz, California.
10
11

12 

13 Kenneth Sahm White
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16

EXHIBIT A

Exhibit to the Prepared Opening Testimony of Sahm White

On Behalf of Sierra Club

Kenneth Sahn White

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EDUCATION

- Bachelor of Science, University of Michigan (Honors)
- Doctoral Program in the Social Studies of Science and Technology (ND), Massachusetts Institute of Technology
- Master of Science Program, Environmental Studies, San Jose State University (thesis pending: GHG mitigation - indirect impact factors in cost effectiveness)

PROFESSIONAL EXPERIENCE

Expert Regulatory Consultant - Energy Policy, 2019 - Present

Sierra Club - Oakland, CA, (Microgrids, Emissions & Environmental Justice) 2019 - Present
Green Power Institute, Berkeley, CA (Grid Interconnection) - 2020
350 Bay Area - 2020 (Energy Services Tariff Development, Transmission Cost Allocation Legislative Initiative, Grid Modernization) 2020 - Present

Clean Coalition – Palo Alto, CA

Director of Policy & Economic Analysis, 2011-2020

Renewables Integration, Grid Planning, Economic Analysis, Cost Allocation, Procurement Mechanisms and Tariff design.

- Lead Consultant, co-author
 - Renewable Procurement Program Design – City of San Diego (2019 CCA planning), CleanPowerSF CCA (2016), Utah Associated Municipal Power (2015), and Fort Collins Utilities, CO (2010-11)
 - California Energy Commission GFO 16-309 – Valencia Energy Storage Pilot
 - California Energy Commission GFO 13-312 – Peninsula Advanced Energy Community Pilot
 - Preferred Resources Pilot - Economic Potential; Southern California Edison
 - Solar Project Development RFP and Public Site Lease Design - Palo Alto Municipal Utilities
- Lead Economic Consultant, co-author
 - East Bay Community Energy CCA: Business Development Plan, Local Resource Development and Procurement Tariff Design
 - Long Island Community Microgrid Project: NY Prize grant award
 - Renewable Capacity Analysis & Procurement Program Design – U.S. Virgin Islands Water & Power Authority
- Lead Intervener (200+ filings) – Proceedings:
 - Rule 21 Interconnection Reform and Advanced Inverter Standards (CPUC)
 - Transmission Access Charge (CAISO)
 - Distribution Resource Plans (CPUC)
 - Distributed Energy Resources (CPUC)
 - Procurement Programs (CPUC): Renewable Auction Mechanism (RAM), Renewable Market Adjusting Tariff (ReMAT), and Green Tariff Shared Renewables Program (GTSR)
 - Co-chair, Load Modifying Demand Response Valuation Working Group (CPUC)

Senior Energy Policy Analyst, 2010-11

Procurement Mechanisms and Tariff design.

ICLEI – Local Governments for Sustainability

Climate Action Planning, City of Portola Valley & Santa Clara County 2008 – 09

Progressive Secretary – Sacramento, CA

Director of Operations, 2002 – 06

Redefining Progress/Global Footprint Network – Oakland, CA

Associate Analyst & Researcher, 2001 – 03

SYNERGISTIC ACTIVITIES

Panels & Presentations

- East Bay Community Energy’s Local Business Development Plan Community Engagement Symposium, panelist, 2018
- California Public Utilities Commission, “Grid Modernization Investment”, panelist, 2017
- National Association of Regulatory Utility Commissioners, “Locational Net Benefits Assessment”, presenter, 2017
- Western Interstate Energy Board, Technical Advisory Committee, “Locational Net Benefits Assessment”, presenter, 2017
- CPUC Public Workshop on Green Tariff Shared Renewables, presenter, 2016
- National Regulatory Research Institute, “Non-Transmission Alternatives,” presenter, 2015
- Mid-Atlantic Distributed Resources Initiative, “Distributed Resources Planning”, panelist, 2015
- Numerous Clean Coalition public webinar presentations

Working Groups

Co-chair, Load Modifying Demand Response Valuation Working Group, CPUC, 2014 – 2015

Member of the following Working Groups at the CPUC, and contributing author of associated reports:

- Locational Net Benefits Assessment, Distribution Resources Plan proceeding, R.14-08-013, 2015 – present
- Integrated Capacity Analysis, Distribution Resources Plan proceeding, R.14-08-13, 2015 – present
- Cost Effectiveness, Integrated Distributed Energy Resources proceeding, R.14-10-003, 2015 – present
- Distribution Planning Advisory Group – Integrated Distributed Energy Resources proceeding, R.14-10-003, 2017 – present
- Load Modifying Demand Response Valuation Working Group, Co-chair, R.13-09-011
- Distribution Interconnection Working Groups – Rule 21 proceeding, R.11-09-011, 2011-2016 & R.17-07-007, 2017 – present

Member, Interconnection Policy Working Group, NY REV proceeding, New York Public Service Commission, 2016 – present

Lead Intervenor, California Public Utilities Commission (CPUC)

- Rule 21 Interconnection proceedings & settlement, R.11-09-011 & R.17-07-007, 2011 – present
- Integrated Distributed Energy Resources proceedings, R.14-10-003, 2017 – present
- Distribution Resource Planning proceedings, R.14-08-013, 2015 – present
- Renewable Portfolio Standard, R.11-05-005, R.15-02-020, 2011-present
- Demand Response, R.13-09-011, 2013-2016
- Long Term Planning & Procurement, R.10-05-006, R.12-03-014, R.13-12-001, 2010 – 2014

Associate Intervenor

- Integrated Resource Planning proceedings, R.16-02-007, 2016 – present

- Resource Adequacy, R.11-10-023, R.14-10-010, 2011-2016
- Net Energy Metering, R.14-07-002, 2014-2015
- Energy Storage proceedings, R.10.12.007, R.12-11-005, R.15-03-11, 2011 – present
- Electric Vehicles, R.13-11-007, 2013-2014
- SB 32 Implementation, R.08-08-009, 2011-2012

PUBLICATIONS

- *Interconnecting Generation Facilities to the Electric Distribution System: Model Practices & Procedures for Publicly Owned Utilities*, 2013. DOE SunShot Initiative grant DE-EE0005685, [Clean Coalition](#), Palo Alto, CA, 2013
- *'Local CLEAN Program Guide' National best practices for regulatory and utility assessment, design, implementation, pricing, and fiscal impacts related to procurement of renewable wholesale distributed generation*, [Clean Coalition](#), Palo Alto, CA, 2011
- *'Matching Greenhouse Gas Mediation Options and Communities in the San Francisco Bay Area: Inclusion of Indirect Impact Benefit/Cost Analysis in a Multi-criteria Decision Approach to Sorting Actions for GHG Reduction.'* Master's Thesis (in progress)
- *'Advancing the Ecological Footprint's Policy Relevance'* 'Ecological Economics' (ISEE), (co-author) Mathis Wackernagel et al 2007
- *'Ecological Footprint Accounts for Advancing Sustainability: Measuring Human Demand on Nature'* (co-author) Chapter 12 in 'Sustainable Development Indicators and Public Policy: Assessing the Policy-Guiding Value of Sustainable Development Indicators', Phil Lawn (editor). Edward Elgar publishing, 2006.
- *'Using Ecological Footprint Accounts: From Analysis to Applications'* Summary of sustainable resource accounting methodology and policy adoption. International Journal of Environment and Sustainable Development (IJESD), (Co-author) Mathis Wackernagel et al 2004

MODELING TOOL EXPERIENCE

Rate Design Public Tool (E3/California Public Utilities Commission)

COG – Cost of Generation Calculator (California Energy Commission)

DERAC – Distributed Energy Resources Avoided Cost Calculator (E3/California Public Utilities Commission)

SAM – System Advisor Model (National Renewable Energy Laboratory)

JEDI – Jobs and Economic Development Impact (National Renewable Energy Laboratory)

LNBA – Locational Net Benefits Assessment energy resource grid impact model (CPUC/IOU)

StorageVET – Storage Value Estimation Tool (EPRI)

DER-CAM – Distributed Energy Resources - Customer Adoption Model (Berkeley Lab)

CREST – Cost of Renewable Energy Spreadsheet Tool (National Renewable Energy Laboratory)

MARKAL – a dynamic general equilibrium energy and economics model, (International Energy Agency)

RETScreen – Renewable Energy-efficient Technologies management software (CanmetENERGY)

ADAPT - Adaptation Database and Planning Tool - energy and climate resilience assessment (ICLIE)

BEAR: Berkeley Energy And Resources - a Dynamic General Equilibrium model of the California counties and state economy (UCB)

CACP - Clean Air & Climate Protection - energy and emissions assessment and modeling (ICLIE)

E-DRAM - Environmental Dynamic Revenue Assessment Model - a Computable General Equilibrium model of California (UCB)

EFA - Ecological Footprint Accounts - regional I-O natural resource impact assessment model (GFN)

IMPLAN - Impact analysis for Planning - regional I-O economic impact assessment model (MIG)