PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE

April 14, 2021

Advice Letter 6105-E

Erik Jacobson
Director, Regulatory Relations
Pacific Gas and Electric Company
77 Beale Street, Mail Code B10C
San Francisco, CA 94177

SUBJECT: Disposition partially approving advice letter requesting to reserve temporary generation for use at substations in 2021

Dear Mr. Jacobson,

The Energy Division (ED) has determined that Pacific Gas and Electric Company (PG&E) Advice Letter (AL) 6105-E, filed pursuant to Decision (D.) 21-01-018, is approved in part.

ED recognizes that PG&E may be waiting on the approval of this AL to reserve additional Tier 4 diesel generators for use during the 2021 fire season, although approval is not necessary for PG&E to reserve generation. Tier 4 generators are much cleaner than Tier 2 generators, and D.21-01-018 explicitly aims to minimize the use of Tier 2 diesel. Because the available supply of Tier 4 generators will likely decrease as fire season nears, it is reasonable to consider PG&E's request to reserve temporary generation separately from other issues in the advice letter.[1]

The PG&E AL requests to reserve 168 MW of temporary generation for the 2021 fire season and track the costs of this reservation in PG&E's Microgrid Memorandum Account, and the AL documents compliance with the five conditions for reserving temporary generation listed in the D.21-01-018, Appendix A, Section I.1. The sections of AL 6105-E related to this request and documentation are determined to comply with Ordering Paragraph (OP) 13 of D.21-01-018, and are approved effective April 14, 2021.

In addition to the request to reserve temporary generation, AL 6105-E also aims to document PG&E's "plans to establish clean substation microgrid projects located at, or able to serve, at least one substation" (corresponding to D.21-01-018, Appendix A, Section I.2). This disposition letter does not address, dispose of, or otherwise resolve this section of the Advice Letter. The portions of the Advice Letter related to a clean substation microgrid project are advisory in nature and do not contain a specific requested relief. Therefore, the section of the Advice Letter corresponding to clean substation microgrid projects will be disposed of separately.

[1] PG&E, Sierra Club, and California Environmental Justice Alliance all note the importance of reserving Tier 4 diesel generation.

PG&E filed AL 6105-E on March 5, 2021. Timely protests were filed on March 25, 2021 by the Public Advocates Office, Enchanted Rock, and jointly by Sierra Club and the California Environmental Justice Alliance. Peterson Power Systems filed a response on March 25, 2021. On April 1, 2021, PG&E filed a reply to the protests and response.

Attachment 1 contains a detailed discussion of the protests, response, reply and ED's determination that AL 6105-E is partially compliant with D.21-01-018, OP 13. PG&E AL 6105-E, filed pursuant to D. 21-01-018, is approved in part, as detailed above and in the attachment.

Please contact Daniel Tutt of the Energy Division staff at 415-703-2096 (daniel.tutt@cpuc.ca.gov) if you have any questions.

Sincerely,

Edward Randolph
Deputy Executive Director for Energy and Climate Policy/
Director, Energy Division

cc: Forest Kaser, Energy Division
Fangxing Liu, Public Advocates Office
Chloe Lukins, Public Advocates Office
Heather Lewis, California Environmental Justice Alliance
Tyler Earl, California Environmental Justice Alliance
Katherine Ramsey, Sierra Club
Alan Schurr, Enchanted Rock
Greg Lamberg, Peterson Power
Cheryl Gori, on behalf of Peterson Power

Attachment 1

Review and Analysis

I. Background

On March 5, 2021, PG&E submitted Advice Letter (AL) 6105-E to request relief to reserve temporary generations for use at substations during 2021, in compliance with the directives in D.21-01-018 to 'keep the lights on' during Public Safety Power Shutoff (PSPS) events. The CPUC decision was titled the "Interim Approach for Reserving Temporary Generation for Safe-to-Energize Substation in 2021" and contained detailed instructions for utilities. As anticipated with the decision, PG&E filed AL 6105-E to request approval to reserve 168 MW of temporary generation based on the five criteria laid out in D.21-01-018, Appendix A, Section I.1.

In the CPUC's D.21-01-018 at OP 13, the Commission states that the PG&E may record costs for 2021 temporary generation programs to its Microgrid Memorandum Account provided that:

> "(1) the utility has filed a Tier 2 advice letter that demonstrates need and consideration of cleaner alternatives pursuant to Appendix A, Section I of this decision; and (2) the Commission authorized the investor owned utility's request."[2]

The CPUC Decision related to this topic contains a key appendix (Appendix A, Section I) with two parts. The first part (Section I.1) aims to "keep the lights on," listing five conditions for reserving temporary generation. The second part (Section I.2) aims to "start the transition towards clean generation," and requires that the utility "document its plans to establish clean substation microgrid projects located at, or able to serve, at least one substation," or alternatively "document the specific conditions [for clean substation pilots] that have not been met in its Advice Letter."[3]

In response, PG&E AL 6105-E covers these two distinct parts of Appendix A, Section I of D.21-01-018 that is specifically referenced in the decision's ordering paragraph 13 (quoted above). First, the Advice Letter requests to reserve 168 MW of temporary generation for the 2021 fire season, and documents compliance with the five conditions listed in Appendix A, Section I.1. Second, the Advice Letter documents PG&E's plans to establish clean substation microgrid projects located at, or able to serve, at least one substation, as required by Appendix A, Section I.2. As explained in detail below, the Energy Division's current disposition letter deals solely with the first part of the request. The information related to the second part will be disposed of separately.

In D.21-01-018, the CPUC authorized PG&E to reserve up to 120 percent of the peak coincident deployment of temporary generation used in the immediately previous year, or to justify a larger scope and scale for reserving temporary generation "by providing the basis and justification for why it is reasonable to prepare for specific substations to be de-energized."[4] PG&E calculated that 120 percent of the peak coincident use of temporary generation in 2020 is 55 MW. According to the decision language, PG&E must justify the scope and scale of its request to reserve 168 MW of generation. PG&E refers to a 10-year historical lookback analysis to justify its request to reserve

[2] Decision 21-01-018, OP 13. https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M361/K442/361442167.PDF
[3] Decision 21-01-018, Page A-4.
[4] Decision 21-01-018, Page A-2.

168 MW of temporary generation. This analysis takes data from PG&E's weather model over the past 10 years and runs this data through the current PSPS scoping methodology, producing an estimate of the number and extent of PSPS events over the past 10 years that would have been called, based upon the current models and methodology.

II. Party Protests and PG&E Reply

Enchanted Rock, Public Advocates Office (PAO), and Sierra Club and the California Environmental Justice Alliance (Sierra Club/CEJA) timely filed protests on March 25, 2021. Peterson Power Systems timely filed a response on March 25, 2021. On April 1, 2021, PG&E timely filed a reply to the protests and response.

In its protest, Enchanted Rock argues that PG&E misunderstands the requirements of D.21-01-018, noting that the Decision allows PG&E to reserve temporary generation, regardless of fuel type, for up to three years through a Tier 2 advice letter. Enchanted Rock asks that the Energy Division write a Resolution that clarifies this requirement.

In its protest, PAO argues that PG&E's AL 6105-E contains material omissions in its justification of the scope and scale of the need for providing temporary generation, and as such fails to satisfy the requirements of D.21-01-018. They ask that the Commission require PG&E to supplement AL 6105-E with (1) "a schematic diagram detailing the 10-year historical look-back analysis, including the major components or models of that analysis, the models' inputs and outputs and the correspondence between the models," and (2) "additional information demonstrating how historical outages in 2019 and 2020 influence the selection of substations for the 2021 temporary generation reservation" (PAO protest at p. 3). PAO also asks that PG&E present the 10-year historical lookback analysis at a workshop before requesting to reserve temporary generation for the 2022 fire season.

In their protest, Sierra Club/CEJA argue that PG&E failed to adequately document its plans to develop clean substation microgrid projects, that PG&E attempts to defer a decision on and description of these projects to a future cost recovery advice letter in violation of D.21-01-018, and that PG&E's Temporary Generation Request for Offers was an insufficient effort to procure zero-emission clean substation technologies. All of these protests relate to D.21-01-018, Appendix A, Section I.2 on clean substation pilot projects. This disposition letter deals solely with D.21-01-018, Appendix A, Section I.1 on reserving temporary generation, and as such the Sierra Club/CEJA protest is irrelevant to this disposition letter. As mentioned above, Section I.2 on clean substation pilot projects will be disposed of separately.

In their protest, Sierra Club/CEJA ask the Commission to separate these two parts of PG&E's AL 6105-E—the reservation of temporary generation and the documentation of clean substation pilot projects—in order both to allow PG&E to move forward with the rapid reservation of cleaner Tier 4 diesel generators, and to require PG&E to further document its plans to establish at least one clean substation microgrid (Sierra Club/CEJA protest at p. 4-5).

In its reply, PG&E asked that the Energy Division approve AL 6105-E. PG&E points to the urgency of reserving cleaner Tier 4 diesel generators, given their relative scarcity on the market, and argues

that D.21-01-018 intended Energy Division disposition of this issue by specifying a Tier 2 advice letter for the process. PG&E responds to each protest in turn.

In response to Enchanted Rock, PG&E notes that it agrees with Enchanted Rock's interpretation of the Decision which allows PG&E to reserve non-diesel temporary generation through a Tier 2 advice letter for up to 3 years. PG&E also notes that Enchanted Rock's protest lacks grounds under General Order (GO) 96-B, the CPUC's main regulation related to Advice Letter dispositions.

In response to PAO, PG&E argues that AL 6105-E has no material omissions and fully meets the requirements of D.21-01-018. The decision required PG&E to justify "the scope and scale of the need for providing temporary generation by providing the basis and justification why it is reasonable to prepare for specific substations to be de-energized, including but not limited to:

a. Historical meteorological data showing probability of public safety power shutoff.
b. Historical outage data.
c. Fire spread modelling and incorporation of consequences to customers.
d. Transmission asset condition information; and
e. Transmission operability assessment information."

In its AL 6105-E, PG&E described how each of these requirements is fulfilled by its 10-year historical look-back study, citing more complete descriptions of the study and its component models within the docket for the Wildfire Mitigation Plan Proceeding, R.18-10-007. PG&E also describes how actual outages in 2019 and 2020 were incorporated into its analysis, and guided its plan for temporary generation deployment in 2021. PG&E argues that this documentation fully meets the requirements of the decision and contains no material omissions. However, PG&E additionally provides all the specific information requested by PAO, including a schematic diagram of the 10-year historical look-back study and further description of how actual outage data from 2019 and 2020 was used, in its reply. PG&E also noted its intent to present its 10-year historical lookback to stakeholders in advance of its 2022 temporary generation request, and its intent to continue working with PAO to provide any additional detail requested.

Finally, PG&E also responded to the Sierra Club/CEJA protest. As mentioned above, Sierra Club/CEJA's protest and PG&E's reply relate solely to clean substation pilot projects, and as such are not relevant to this disposition letter. These issues will be disposed of separately.

III. Discussion

PG&E's request to reserve 168 MW of temporary generation for the 2021 fire season is reasonable and fully complies with D.21-01-018. Two parties, Enchanted Rock and PAO, submitted protest relevant to this section of AL 6105-E. As described below, neither protest prevents Energy Division disposition under GO 96-B, which states:

> Notwithstanding a timely protest, the reviewing Industry Division may approve an advice letter that is subject to disposition under this rule and is otherwise proper, if the protest either (1) is not made on proper grounds as set forth in General Rule 7.4.2, (2) may be rejected on a technical basis as discussed in this rule, or (3) is clearly erroneous. (GO 96-B, Section 7.6.1)

Enchanted Rock's protest lacks proper grounds, and the clarification it requests is unnecessary.

Enchanted Rock failed to provide proper grounds for their protest under GO 96-B. Enchanted Rock argues that PG&E "misconstrues the requirement set forth in Decision 21-01-018, which otherwise makes clear that a Tier 3 Advice Letter is not required for proven, commercially available technologies to qualify for the Temp Gen program" (Enchanted Rock protest at p. 2). This does not satisfy any of the six grounds for protesting an advice letter laid out in GO 96-B, Section 7.4.2, nor does Enchanted Rock reference any of these grounds. In addition, Enchanted Rock provides no evidence that PG&E misconstrues any requirements of the decision, and PG&E in its reply denies misconstruing any requirements and claims it already agrees with Enchanted Rock's interpretation of the decision (PG&E reply at p. 10). As such, the further clarification requested by Enchanted Rock is unnecessary. Energy Division confirms that D.21-01-018 allows PG&E to contract temporary generation of any fuel type, including natural gas, and specifically allows PG&E to contract generation that is substantially cleaner than Tier 2 diesel for up to three years. The decision also notes that the Commission expects PG&E to "minimize its use of Tier 2 diesel engines."[5]

PG&E justified the scope and scale of the need for temporary generation in 2021, clearly meeting the technical requirements of the decision, and in addition provided all other information requested by PAO in its reply.

D.21-01-018 requires PG&E to justify the scope and scale of its request to reserve temporary generation in 2021 by identifying the specific substations where it is reasonable to prepare for de-energization, and further providing a basis and justification for identifying these substations by referring to five specific models or data sources.

PG&E's AL 6105-E fully meets this requirement, by (1) specifically describing PG&E's 10-year historical lookback study, (2) detailing how that study relies on all five of the specific models or data sources listed in the decision, in part through reference to the docket of the Wildfire Mitigation Plan Proceeding, R.18-10-007, and (3) describing at length how the results of the 10-year historical lookback study lead to the selection of 13 specific substations where it is reasonable to prepare for de-energization (AL 6105-E at p. 6-17).

In addition, PG&E notes its intent to work with the PAO to provide any additional detail they request on PG&E's methodology (PG&E reply at p. 7). In its reply, PG&E already supplied all the information specifically requested in PAOs protest, including a schematic diagram of the 10-year historical lookback study and additional description of how actual outages in 2019 and 2020 were incorporated into PG&Es modeling. PG&E also notes its intent to present the 10-year historical lookback study to stakeholders before requesting temporary generation for 2022. As such, PAOs requests have already been effectively fulfilled.

[5] Decision 21-01-018, Page A-3. In addition, PG&E's general rate case decision, D.20-12-005, reinforces that the Microgrids Rulemaking Track 1 Decision, D.20-06-017, addresses the generation PG&E is to use in its distribution microgrids (also known as resilience zones), including through the adoption of PG&E's Temporary Generation Program. (see D.20-12-005 at p.336).

Energy Division confirms that AL 6105-E meets the technical requirements of the D.21-01-018, and rejects PAOs protest on a technical basis.

It is reasonable to dispose only of PG&E's request to reserve 168 MW of temporary generation for 2021, and to resolve PG&E's documentation of clean substation pilots separately.

Energy Division recognizes that PG&E may be waiting on the approval of AL 6105-E, at least in part, before reserving additional Tier 4 diesel generators for use during the 2021 fire season. Tier 4 generators are much cleaner than Tier 2 generators, and D.21-01-018 explicitly aims to minimize the use of Tier 2 diesel. There is limited supply of Tier 4 generators on the market, and PG&E notes in its reply that it "has received several communications from other vendors [in addition to Peterson Power] stating that supplies of generators in California are already dwindling" (PG&E reply at p. 3). Thus PG&E requests an urgent disposition of this advice letter. Approval of AL 6105-E is not necessary for PG&E to reserve this generation, though it provides financial assurance by allowing PG&E to record these costs to its Microgrids Memorandum Account.

For the same reasons, Sierra Club/CEJA—the only parties that protested PG&E's documentation of its plans to establish a clean substation pilot—recommend separating the documentation of PG&E's plans to establish clean substation pilots from PG&E's request to reserve temporary generation, and disposing of these two parts of AL 6105-E separately.

Energy Division finds this partial disposition of PG&E's request to reserve 168 MW of temporary generation to be reasonable, because (1) it aligns with the intent of the decision, (2) there is a general social benefit to the rapid reservation of additional Tier 4 diesel generators for use as temporary generation, and (3) all relevant parties agree on this path forward.

The parts of AL 6105-E relating to D.21-01-018, Appendix A, Section I.2 are not addressed, disposed of, or otherwise resolved in this letter. They will be disposed of separately. Energy Division expects that PG&E would provide additional information prior to consideration of an additional disposition.

Other Issues

Energy Division notes that this Advice Letter approval should not be considered an endorsement of the specific process related to PG&E's bid evaluation of PG&E's Temporary Generation Request for Offers that is referenced in the PG&E Advice Letter. Energy Division Staff makes no judgment on the adequacy of PG&E's process.

Pacific Gas and Electric Company

Erik Jacobson
Director
Regulatory Relations

Pacific Gas and Electric Company
77 Beale St., Mail Code B13U
P.O. Box 770000
San Francisco, CA 94177

Fax: 415-973-3582

March 5, 2021

Advice 6105-E
(Pacific Gas and Electric Company ID U 39 E)

Public Utilities Commission of the State of California

Subject: **Request to Reserve Temporary Generation for Use At Substations in 2021**

I. Purpose

Pursuant to Decision ("D.") 21-01-018 ("Decision"), PG&E submits this Advice Letter seeking to reserve temporary generation for energizing safe-to-energize ("STE") substation load subject to Public Safety Power Shutoff (PSPS) outages in 2021.[1]

II. Background and Summary of Request

The Commission initiated Rulemaking ("R.") 19-09-009 to develop a policy framework to facilitate the commercialization of microgrids and related resiliency strategies, and to implement Senate Bill ("SB") 1339 (Stern, 2018).

In Track 1 of the proceeding, the Commission adopted D.20-06-017, ordering short-term actions to accelerate microgrid deployment and related resiliency solutions, including solutions to accelerate interconnection of resiliency projects in advance of the 2020 wildfire season; modernizing existing tariffs to maximize resiliency benefits; solutions to promote collaborative engagement between the utilities and local and tribal governments; and approving an array of resiliency proposals set forth by PG&E and SDG&E.

On January 14, 2021, the Commission adopted the Decision in Track 2 of the proceeding, which among other items, established a pathway for utilities to reserve temporary generation for 2021 fire season and begin the transition from diesel mobile generation to alternative, cleaner backup power generation. In the Decision, the Commission authorized a utility to track the costs associated with reserving temporary generation in a memorandum account, including diesel as well as other temporary generation

[1] D.21-01-018, App. A, p. A-1

technologies, equipment, and services, for the purpose of providing power to the load of safe-to-energize substations during a PSPS outage, under the following conditions:[2]

1. Either:
    a. The utility reserves temporary generation capacity equivalent to 120% or less of the coincident peak deployment of temporary generation in the immediately previous year; *or*
    b. The utility justifies the scope and scale of the need for providing temporary generation by providing the basis and justification why it is reasonable to prepare for specific substations to be de-energized, including but not limited to:
        i. Historical meteorological data showing probability of public safety power shutoff.
        ii. Historical outage data.
        iii. Fire spread modelling and incorporation of consequences to customers.
        iv. Transmission asset condition information; and
        v. Transmission operability assessment information.[3]

2. The utility's previous temporary generation program, if any, has proven effective at serving loads of safe-to-energize substations that would have otherwise been without power during PSPS or other outage events, if and when it was activated to do so.[4]

3. The utility provides evidence that there is resource scarcity that makes it prudent to pay a nonrefundable reservation fee which guarantees generator availability for the duration of fire season in advance of need, or that advance reservation is necessary for logistical reasons to safely mobilize and stage equipment.[5]

4. The utility demonstrates that it has undertaken an analysis of the all-inclusive costs associated with reserving and deploying the temporary generation and that the costs are reasonably close to that associated with deploying similar equipment under normal conditions, such as for a planned maintenance outage.[6]

5. The utility demonstrates ongoing consultation with local air quality agencies, aimed at ensuring the deployment of temporary generation at substations complies with applicable regulations.[7]

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[2] *Id.*, App. A, p. A-1.
[3] *Id.*, App. A, pp. A-1 to A-2.
[4] *Id.*, App. A, p. A-2.
[5] *Id.*, App. A, p. A-2.
[6] *Id.*, App. A, p. A-2.
[7] *Id.*, App. A, p. A-2.

In addition, a utility may reserve or contract to make available temporary generation resources for up to 3 years. Any generation contracted for more than a year must reduce particular matter (PM) and oxides of nitrogen (NOx) emissions compared to a Tier 2 diesel engine by at least 90 percent.[8] More generally, D.21-01-018 made clear the Commission's expectation that a utility seek to minimize its use of Tier 2 diesel—and use alternative fuels like RD-99 (a form of renewable diesel)—where alternatives are safe, cost effective, and feasible.[9]

Finally, D.21-01-018 also requires that this Advice Letter "document [PG&E's] plans to establish clean substation microgrid projects [("Clean Substation Projects")] located at, or able to serve, at least one substation."[10] Further details on PG&E's diesel-alternative pilot program will be included in an upcoming Tier 3 Advice Letter, per the requirements of the Track 2 Decision in the *Order Instituting Rulemaking Regarding Microgrids Pursuant to Senate Bill 1339 and Resiliency Strategies* ("Microgrid OIR") proceeding. Although such Clean Substation Projects may be temporary or permanent (intended for use at a substation for longer than 3 years),[11] in order to facilitate the development of permanent Clean Substation Projects over time, the Decision requires PG&E in this Advice Letter to "identify three top candidate substations" that best fit the requirements set forth in the Decision for permanent projects.[12]

PG&E addresses each of these requirements in the following sections and appendices to this document. Based on the demonstration set forth below, PG&E requests that it be authorized to reserve and track the costs of temporary generation for use at substations during the 2021 fire season.[13]

III. Scope and Scale of 2021 Substation Temporary Generation Program for PSPS Mitigation

Building on PG&E's 2020 Temporary Generation Program, PG&E submits this advice letter seeking approval to track and record costs in its Microgrids Memorandum Account for the reservation and operation of up to 168 MW of temporary generation (nameplate capacity) to support substation microgrids during 2021 Public Safety Power Shutoff ("PSPS") events. This includes 142 MW intended for substations at which PG&E

[8] *Id.*, App. A, p. A-3.
[9] *Id.*, App. A, p. A-3.
[10] *Id.*, App. A, p. A-4.
[11] *Id.*, App. A, p. A-4.
[12] *Id.*, App. A, p. A-4.
[13] As described more fully below, this total capacity includes substations at which PG&E intends to propose at least one Clean Substation Project. Pursuant to D.21-01-018, PG&E will submit a subsequent Tier 3 Advice Letter seeking approval of any specific Clean Substation Project, and its total need for conventional temporary generation will accordingly be reduced to reflect the Clean Substation Project needs to the extent that those projects meet the criteria set forth in the Decision.

currently proposes to stage, interconnect, and make operationally ready temporary generation to serve the substations during outages for the duration of the 2021 fire season (the "Dedicated Substations"). The remaining 26 MW of the proposed reservation cap are units that PG&E currently intends to store at or near substations that are expected to be the next-most-frequently impacted, with greater flexibility to re-deploy these units to other unanticipated substations as a particular outage event requires (the "Hub-and-Spoke Substations"). Subsection A below describes the methodology to determine the capacity calculation associated with the Dedicated Substations, while Subsection B describes the capacity calculation associated with the Hub-and-Spoke Substations.

PG&E views its Temporary Generation Program for PSPS Mitigation as similar to typical insurance policies: While it is prudent and reasonable to have insurance to reduce the impact of reasonably foreseeable major events, the preferred outcome is that the insurance is unneeded because those low-frequency high-impact major events or risks do not materialize. In the same way, PG&E views the reservation of temporary generation and the preparation of substations and other locations for the use of that temporary generation during PSPS events as reasonable and necessary given the continuing need for PSPS as a fire mitigation tool and the frequency with which these locations experienced impacts in the 10-year historical look-back (described in further detail in the following section), but the preferred outcome is that the temporary generation is unneeded because the substations do not need to be de-energized.

2019 was PG&E's first full year of the PSPS program and its highest number of customer shutoffs to date. PG&E continues to harden its electric system and improve its weather modeling and also transmission operability modeling capabilities to decrease the customer accounts impacted by PSPS scope and scale in each program year. Due to meteorology fluctuations year-over-year, PG&E cannot perfectly predict when, where, or how frequently PSPS events will occur and requires the flexibility to identify and address with the potential shutoffs to its customers and mitigate them to the best of its ability.

As further described in Section IV, below, substation-level temporary generation was a critical part of lessening customer impacts in 2020. During 2020 PSPS events, PG&E energized four substations that came into scope and had safe-to-energize load, keeping the lights on for approximately 12,600 customer accounts. As part of preparing its 2021 temporary generation program, PG&E reviewed its 2020 program for lessons learned and new tools available. To select substations for its 2020 temporary generation program, PG&E identified substations that had been de-energized two or more times with safe-to-energize load during actual 2019 PSPS events, its first full year of PSPS program data. Since designing its 2020 temporary generation program in early 2020, PG&E has since improved its weather and transmission operability modeling, grid operations (e.g., switching and transmission islanding), and system resiliency. With these improvements, PG&E can reduce the number of forecasted substations in need of temporary generation for PSPS mitigation in 2021. PG&E is therefore seeking to reserve up to 168 MW of temporary generation (nameplate capacity) to support substations during 2021 PSPS events, compared to 350 MW reserved for substations in 2020.

In D.21-01-018, the Commission determined that PG&E may demonstrate the reasonableness of its request to reserve temporary generation either by: (1) showing that the capacity is at or less 120% of the coincident peak deployment of temporary generation in 2020; or (2) otherwise justifying the scope and scale of the need for providing temporary generation by providing the basis and justification why it is reasonable to prepare for specific substations to be de-energized.[14] As shown in Table 1, below, the coincident peak use of temporary generation at substations during 2020 PSPS events was 46 MWs of nameplate capacity, resulting in up to 55.2 MW (120% of the peak deployment) deemed reasonable for 2021 capacity reservation under D.21-01-018. Since PG&E's request to reserve temporary generation is in excess of that amount, the following sections justify the scope and scale of the need through an examination of the specific substations that it proposes to prepare for islanding during 2021 PSPS events.

While PG&E is identifying specific substations that it believes represent the greatest opportunities to mitigate likely PSPS outages in 2021 using temporary generation at substations, it is critical to note that the modeling and resulting data underlying PSPS modeling and mitigation continue to evolve rapidly in order to incorporate improvements in the science behind the modeling that allow for greater precision in scoping future PSPS events. The methodology described in this Advice Letter is based upon information currently available to PG&E, and it represents the best information available for purposes of determining a reasonable and prudent amount of temporary generation to reserve in 2021 to mitigate PSPS outages at substations. However, given the dynamic nature of PSPS modeling, the specific facts underlying each specific PSPS event, and the necessity of meeting any future legal and regulatory requirements associated with the execution of particular PSPS events, PG&E may deploy the temporary generation capacity it reserves at different locations than those identified for planning purposes here. Additionally, changes in modeling or other PSPS mitigation plans may result in the need to reserve a smaller amount of temporary generation capacity than the maximum authorization requested in this Advice Letter.

[14] D.21-01-018, App. A., pp. A-1 to A-2.

Table 1. Coincident Peak Deployment of Substation Temporary Generation in 2020

Substation	MW Energized (nameplate)	2020 PSPS Event	Safe-to-Energize Customer Accounts Served
Brunswick	20 MW	7-Sept; 25-Oct	~4500; ~4,250
Hoopa	6 MW	25-Oct	~1,800
Placerville*	8 MW	25-Oct	~480
Willow Creek	12 MW	25-Oct	~2,300
Total on 10/25 (Peak Coincident Use)	**46 MW**		
120% of Peak Coincident Use	**55.2 MW**		

*Note that for 2021, Placerville will become part of PG&E's distribution microgrid program and have a pre-installed interconnection hub (PIH) constructed. The PIH will allow for the connection of temporary generation at the feeder level outside of the substation.

A. Selection of Top Dedicated Substation Candidates for 2021 Temporary Generation

To determine the appropriate locations for substation temporary generation for 2021 PSPS mitigation, PG&E assessed the relative frequency of historical PSPS impacts through a four-step analysis consisting of: (1) historical meteorological data modeling using current PSPS criteria; (2) safe-to-energize customer count filter; (3) frequency and impact magnitude filtering; and (4) assessment of ongoing work to harden and assess the condition of grid assets in order to reduce future PSPS impacts.

Step 1: 10-Year Historical Look-Back Analysis

The foundational data for selecting temporary substation microgrid sites for 2021 is an analysis of 10 years of historical weather events (2010-2019). This "historical look-back" begins with the use of hourly meteorological data associated with historical weather events. It then uses the PSPS models and other risk assessment criteria adopted by PG&E for use in August-October 2020 to determine the transmission and distribution assets that would have been required to be de-energized in each of those historical weather events. In this sense, the historical look-back analysis is a hypothetical exercise, but it is based on actual PSPS assessment criteria and meteorological data.

PG&E leverages numerical weather models, fuel moisture models, fire danger models, outage models, and vegetation models in each PSPS assessment. The historical look-

back study uses PG&E's 30-year climatology with 1-hour temporal resolution data. The climatology uses the same weather model configuration as PG&E's short term weather forecast model to produce a 30-year, hour-by-hour, historical weather and fuels climatology. PG&E's Operational Mesoscale Modeling System (POMMS), is a version of the National Center for Atmospheric Research-Weather Research and Forecasting (WRF) Model. This modeling framework provides forecast data for more than 45,000 2x2km model "grid-cells" across PG&E's service territory.[15] These "grid-cells" can be thought of like virtual weather stations where data can be extracted. PG&E also coupled Live Fuel Moisture and Dead Fuel Moisture Models into POMMS, to provide dead and live fuel moisture forecasts across the same model domain for PSPS assessments. The weather and fuel data from the climatology is then used to model the fire danger through PG&E's Utility Fire Potential Index (FPI), and distribution and transmission outage models. Enhancements to models and guidance from 2019 to 2020 captured in the climatology and lookback study include: updated distribution Outage Producing Wind model (OPW 2.0); enhancements to the transmission Operability Assessment (OA) model; incorporation of 2020 Large Fire Probability (LFP_D, LFP_T) and Black Swan criteria for distribution and transmission; and incorporation of a new transmission Vegetation Risk Index based on lidar.[16] The study reflects mitigation work on transmission facilities and vegetation work as of mid-2020, and therefore contains updated information on transmission asset health.

For each PSPS event evaluated in the look-back study, a PSPS scoping process was followed similar to the process used during actual PSPS events. PSPS risk polygons[17] were created for electric distribution and the PSPS Viewer application tool creates the playbooks[18] of distribution facility and customer impacts. Transmission power flow

[15] While 2x2km model "grid cells" were eventually used for PSPS events in 2020, this update to the model was not available when the 10-year historical look-back was constructed. The 10-year historical look-back uses 3x3 "grid cells."

[16] *See* PG&E 2021 Wildfire Mitigation Plan, submitted on Feb. 6, 2021, Section 4.2.A (available at https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/wildfire-mitigation-plan.page?WT.mc_id=Vanity_wildfiremitigationplan) (providing further details of PSPS models and guidance).

[17] A "risk polygon" refers to a map-based geographic designation of the area deemed to unacceptable level of ignition risk, wildfire consequence, or combination thereof and thus scoped for de-energization in a particular PSPS event.

[18] "Playbook" refers to the list of transmission lines and distribution circuits planned to be de-energized as part of the PSPS event. A typical PSPS event will have several iterations of Playbooks during an event. These iterations typically start with a broad scope at 96/72 hours prior to de-energization and may change as the modeling progresses throughout the event and the scope becomes more clearly defined.

analysis was performed by an outside consultant, Quanta, to obtain both transmission direct[19] and indirect[20] facility and customer impacts.

The look-back study required large, cloud-based computing resources in order to process approximately 50 billion data points of weather, fuels, asset and vegetation information. Nonetheless, some of the model's limitations, coupled with the possibility that future events may not perfectly resemble historical events, mean that it cannot perfectly predict the future. The development of the historical lookback began prior to 2020 PSPS events and thus, any changes made to the system since then, or the PSPS program subsequently in response to those events, is not yet reflected. For example, the current methodology does yet not include revisions to OA scores for structures on which targeted repairs were completed after the look-back study was completed. The current methodology also does not currently include consideration of transmission segmentation work, in which select transmission lines have been modelled by PG&E and sectionalized based on installed devices. PG&E intends to update the historical look-back study on an annual basis to reflect the latest asset and vegetation conditions, as well as updated PSPS models and tools that are also updated on an annual cadence.
The look-back analysis identified 26 significant weather events in the 2010-2019 period[21] that would have resulted in 18 PSPS events involving transmission-level impacts. For each of those 18 hypothetical PSPS events, PG&E then identified which substations would have experienced a de-energization due to the transmission-level outages. Next, PG&E modeled the extent to which each such impacted substation would have had "safe-to-energize" customer load, meaning that the fire risk identified by the models did not preclude the operation of all of the distribution circuits served by the substation. This allowed PG&E to focus on those substations best-suited for the potential use of local temporary generation at substations to mitigate the PSPS outage, since the temporary generation could have allowed customer load to continue to be served even when the transmission lines to the substation were de-energized. With the understanding that longer-term historical weather patterns and events are the best available indicator of the likelihood of where future PSPS impacts may occur, PG&E used the results from this historical look-back to identify the initial list of substations most likely to be impacted in 2021. This included over 150 substations that were modeled to have at least one transmission-level de-energization event in the look-back period.

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[19] Direct impacts are those in which the transmission line(s) serving a substation is considered to have an unacceptable level of ignition risk, wildfire consequence, or combination thereof and thus scoped for de-energization in a particular PSPS event.

[20] Indirect impacts are those in which that the line is de-energized due to operational configuration identified through power flow studies to ensure safety, security, or stability of the system given the set of direct impacts.

[21] Although 2020 PSPS impact data was not part of the historical look-back data set, PG&E subsequently evaluated the results of the look-back study in light of actual 2020 PSPS impacts on substations and determined that none of the results of its substation selection methodology described in this Advice Letter would change as a result of considering the incremental actual impacts in 2020.

Step 2: Safe-To-Energize Customer Count Filter

In order to remove de minimis impacts to substations due to low numbers of customers who would have been safe-to-energize during the look-back study events, PG&E removed from the list substations in which there were less than 100 safe-to-energize customer accounts in all events that occurred during the look-back period. This reduced the list to 130 impacted substations.

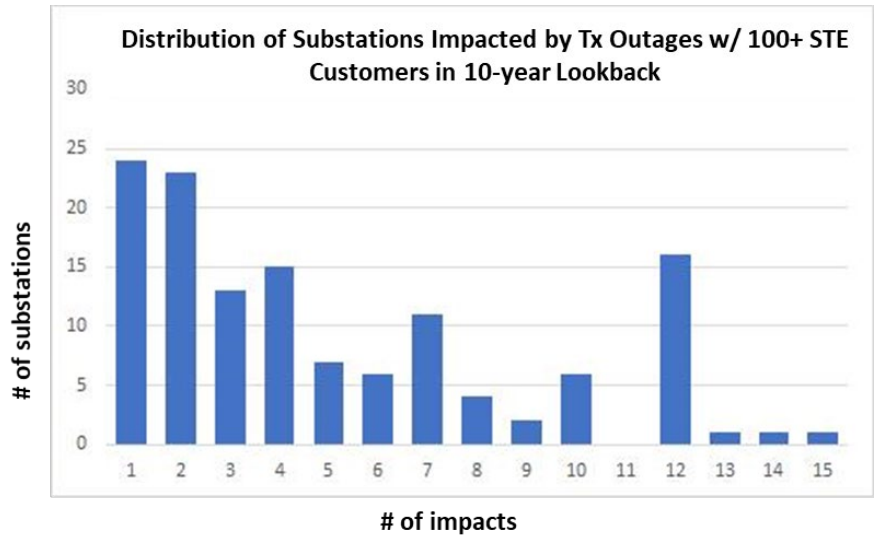
Step 3: Frequency and Impact Magnitude Filtering

PG&E filtered the resulting 130 substations to identify those with the most frequent de-energization events where at least 100 customer accounts served by the substation would have been safe-to-energize in each respective event. Applying a lesson learned from the 2020 Temporary Generation Program (described in more detail below), PG&E currently plans to interconnect and test temporary generation at the Dedicated Substations that are expected to experience the most frequent impacts under this methodology. The distribution of impacts in the look-back study is shown in Figure 1, below. Using a cut-off of 10 or more events over the look-back period results in a list of 25 substations that had on average about one de-energization event per year. While the past cannot prove a perfect prediction of the future, this filter is intended to select substations with a higher likelihood of impact in 2021.

Of these 25 substations, PG&E filtered out 14 substations that are within the service area for the Humboldt Bay Generation Station (HBGS) Island which began operation in 2020.[22] While these 14 substations had high impact counts in the historical look-back analysis, PG&E anticipates that the HBGS Island will provide service to them in the event that the transmission lines normally serving those substations are de-energized in future PSPS events. Removing those 14 substations resulted in a high-frequency candidate list of 11. The modeling also showed that each of these 11 high-frequency substations would have experienced at least one year with 3 or more impacts.

[22] HBGS was re-configured by PG&E after the 2019 fire season to allow the plant to island portions of Humboldt County and be separated from the larger grid and energized exclusively from the plant when the transmission source is impacted. HGBS began operations in 2010.

Figure 1. Distribution of Substations Impacted by Transmission Outages in Look-Back Study



Step 4: Assessment of Grid Hardening and Other PSPS Mitigation Work

The 11 substations and their circuits were then reviewed to determine whether other planned 2021 PSPS mitigation work might remove them from the scope of future PSPS de-energization events. This work might include installation of a transmission switching solution, allowing the use of an alternative transmission path to the substation that is less likely to be impacted in a future PSPS event. PG&E also reviewed planned work to improve the transmission asset health of the lines serving the candidate substations, including planned grid hardening work (e.g., undergrounding or the installation of covered conductor) and vegetation management work.

Based on this assessment, PG&E determined that one substation with 10 impacts in the study, French Gulch, could be removed from the candidate list because a vegetation management project planned for the transmission line serving it is expected to be completed in 2021.

This resulted in a final list of 10 substations that are the top current candidates to be Dedicated Substations in the 2021 Temporary Generation Program. If the reservation strategy proposed in this Advice Letter is approved and modeling does not change in the interim, PG&E is planning to pre-interconnect and test generation at each of these 10 substations for use during 2021 PSPS events.

Complete lists of substations that had safe-to-energize load referenced above are presented in Appendix A.

Figure 2, below, presents a visual summary of the methodology used to select the top 10 Dedicated Substation candidates.

Figure 2. Graphical Representation of PG&E's Candidate Substation Selection Methodology

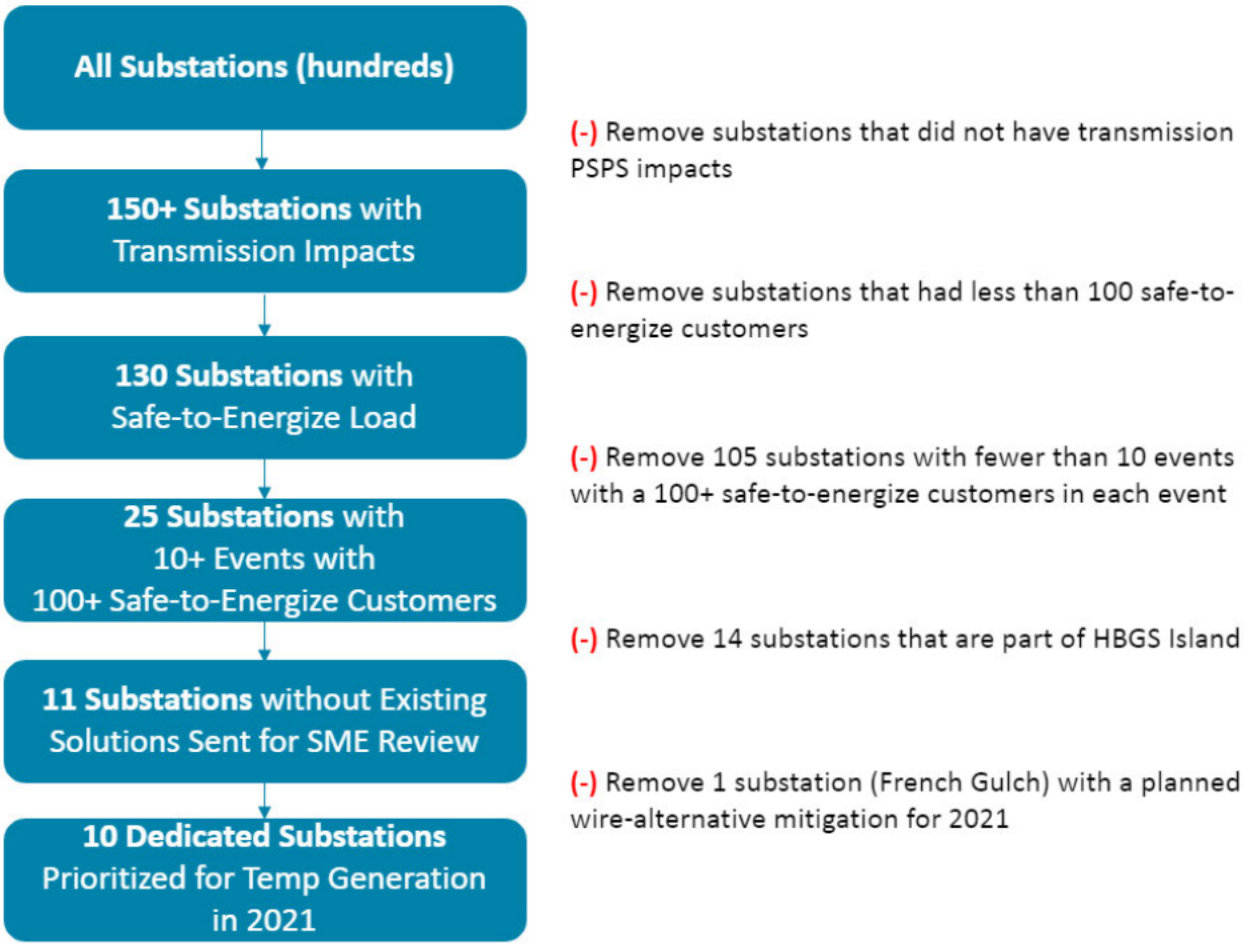


Table 2, below, summarizes the list of top 10 Dedicated Substation candidates that result from the methodology described above.

Table 2. List of Top 10 Dedicated Substation Candidates

Substation	# of Impacts in 10-year lookback w/ 100+ STE Customers	City	County	Energized in 2020?	Prepared for Temp Gen in 2020?
BRUNSWICK	14	Grass Valley	Nevada	Yes	Yes

Substation	# of Impacts in 10-year lookback w/ 100+ STE Customers	City	County	Energized in 2020?	Prepared for Temp Gen in 2020?
CLEAR LAKE	13	Kelseyville	Lake	No	Yes
CLOVERDALE	10	Cloverdale	Sonoma	No	Yes
HARTLEY	12	Lakeport	Lake	No	Yes
HOOPA*	12	Hoopa	Humboldt	Yes	Yes
KONOCTI	10	Kelseyville	Lake	No	Yes
LOW GAP	12	Mad River	Trinity	No	No
PLAINFIELD	15	Woodland	Yolo	No	No
POINT MORETTI	10	Davenport	Santa Cruz	No	No
WILLOW CREEK*	12	Willow Creek	Humboldt	Yes	Yes

* Note that these two substations lose their transmission source when the newly created HBGS Island operates.

1. Proposed Temporary Generation Capacity Reservation Associated with Top Dedicated Substation Candidates

PG&E plans to reserve up to 142 MW of temporary generation (nameplate capacity) based upon the capacity it would require to support each of these top Dedicated Substation candidates during PSPS events in 2021. This procurement need is calculated by taking the peak load of each substation, making an adjustment to account for the maximum operating capacity of the units in relation to their nameplate capacities (a 20% adder), and then including an "N-1" adjustment to ensure each substation has one additional generation unit onsite to minimize customer outages in the event of equipment failure or maintenance needs during a PSPS event.

The nameplate capacity adjustment is necessary because the temporary generators are only rated to continuously operate at approximately 80% of their nameplate generation capacity. Thus, to meet the established peak load of the substation, PG&E needs to procure an incremental 20% in total nameplate capacity.

The N-1 adjustment refers to a common industry practice of building critical systems, like the temporary generation powering an islanded substation during a PSPS or other emergency, with redundant components. This redundancy helps to address contingencies and risks that may materialize and to allow the critical system to continue to operate, or to be restored quickly, in the event of primary equipment failure, avoiding a full system failure. The term N-1 refers to the ability of the system, through redundancy, to be able to operate with the loss of one primary component.[23] To calculate the N-1 additive adjustment in Table 3 below, PG&E reviewed the predominant type of temporary generator unit it expects to deploy at each Dedicated Substation (e.g., a 2 MW unit or a 1 MW unit) and added one additional, redundant unit of that predominant type.

N-1 redundancy specifications are common in critical infrastructure applications, including in emergency, medical, server storage facilities, medical facilities, security, and communications systems. These critical systems are designed to supply power even in the event of a failure of a key component. To be reliable, the systems most commonly address the failure risk with redundancy. N-1 redundancy also allows for equipment maintenance to occur during long duration events and/or back-to-back PSPS scenarios that require continuous generator use.

PG&E experienced temporary generator failures during the 2019 and 2020 PSPS seasons.[24] Without redundancy built into the system, such failures or necessary maintenance could lead to outages based on inadequate generation lasting from several hours to a day or more while the vendor secures, transports, and installs replacement parts.

[23] The temporary generation industry denotes redundancy consideration as “N+1” while PG&E refers to redundancy as “N-1” to align with NERC industry standards. “N” is the base or primary unit or units that support the critical load.

[24] PG&E recorded 30 failures of leased temporary generation equipment in 2019 and 77 in 2020. The large increase in 2020 failures, which was equivalent to a failure of 13.5% of all leased units that year, is proportionate to the increase in capacity procurement in 2020. Similarly, data provided by one of PG&E’s temporary generation vendors showed that the 1.5 MW units provided by that vendor for PG&E’s use had failed to operate 67 times during the 2019-2020 period.

Table 3. Dedicated Substation Candidate List – Adjusted Temporary Generation Capacity Requirements

Substation	Peak Load (MW)	Adjustment for Nameplate [Peak Load X 20%] (MW)	Adjustment for N-1 [Adjustment for Nameplate + One Additional Unit] (MW)
BRUNSWICK*	18*	20	22
CLEAR LAKE	10	14	16
CLOVERDALE	14	16	17
HARTLEY	12	16	18
HOOPA	4	5	6
KONOCTI	14	16	18
LOW GAP	1	1.5	2
PLAINFIELD	23	27.5	29
POINT MORETTI	3	3.5	4
WILLOW CREEK	6	8	10
TOTAL	**105**	**128 (+23)**	**142 (+14)**

**The peak load of Brunswick substation is ~60 MW, but due to space constraints, a maximum of ~22 MW of temporary generation can currently fit within the substation footprint.*

B. Selection of Top Substation Candidates for Hub-and-Spoke Temporary Generation in 2021

In addition to the capacity needed for the top Dedicated Substation candidates described above, PG&E intends to develop energization plans for three additional top Hub-and-Spoke Substation candidates and to reserve up to 26 MW temporary generation in the event these or other substations not on the list of Dedicated Substations should come into scope during 2021 PSPS events.

These three top Hub-and-Spoke Substation candidates were identified using the same historical look-back study methodology described for purposes of the Dedicated Substations above. Specifically, in addition to the Dedicated Substation candidates that met the 10+ event threshold with 100 or more safe-to-energize customers in each event, PG&E also determined which substations met an 8+ event threshold with 100 or more safe-to-energize customers in each event.

This produced a list of five additional substations which were then reviewed for existing and planned alternative mitigation solutions. The safe-to-energize customers served by one of these substations, Shady Glen, are expected to be energized through a distribution microgrid in 2021, which is a separate PSPS mitigation workstream approved as part of PG&E's 2020 General Rate Case. Another of the substations, Whitmore, is expected to have reduced risk of PSPS de-energization in 2021 due to a planned vegetation management project on the transmission line serving it. The transmission line serving Whitmore is only in-scope for PSPS events due to vegetation.

Thus, the list of top Hub-and-Spoke Substation candidates was reduced from five to three substations, shown in Table 4, below. PG&E will develop energization plans for these three locations, which are engineering plans to interconnect temporary generation on an as-needed basis. Generation that could support these locations would be staged at or nearby these locations for interconnection in the lead-up to a PSPS event, if they are identified to be in-scope. However, since the temporary generators are not pre-interconnected at the substations, the units could also be readily deployed to other substations not identified for 2021 temporary generation preparation efforts that may come into scope for de-energization and have safe-to-energize load.

In this way, the up to 26 MW reserved for the Hub-and-Spoke Substations also act as a contingency for the overall Temporary Generation program, in recognition that each PSPS event is unique and that PG&E cannot perfectly predict when, where, or how frequently PSPS events will occur. Setting aside the capacity associated with the Hub-and-Spoke Substations is appropriate given PG&E's obligation to identify potential shutoffs to its customers and to mitigate them to the best of its ability. Additionally, the design of the PSPS program could continue to evolve following the filing of this Advice Letter based on changes in the modeling, including changes that may be required pursuant to future legal or regulatory decisions.

Table 4. Identification of Top Hub-and-Spoke Substation Candidates

Substation	# of Historical Impacts w/ 100+ STE Customers	City	County
Big Basin	8	Santa Cruz	Santa Cruz
Dobbins	8	Dobbins	Yuba
Weimar	8	Weimer	Placer

Table 5. Hub-and-Spoke Substation Candidate List – Adjusted Temporary Generation Capacity Requirements

Substation	Peak Load (MW)	Adjustment for Nameplate [Peak Load X 20%] (MW)	Adjustment for N-1 [Adjustment for Nameplate + One Additional Unit] (MW)
Big Basin	7	8.5	10
Dobbins	2	2.5	3.5
Weimar	8	10	12
TOTAL	**17**	**21 (+4)**	**25.5 (+4.5)[25]**

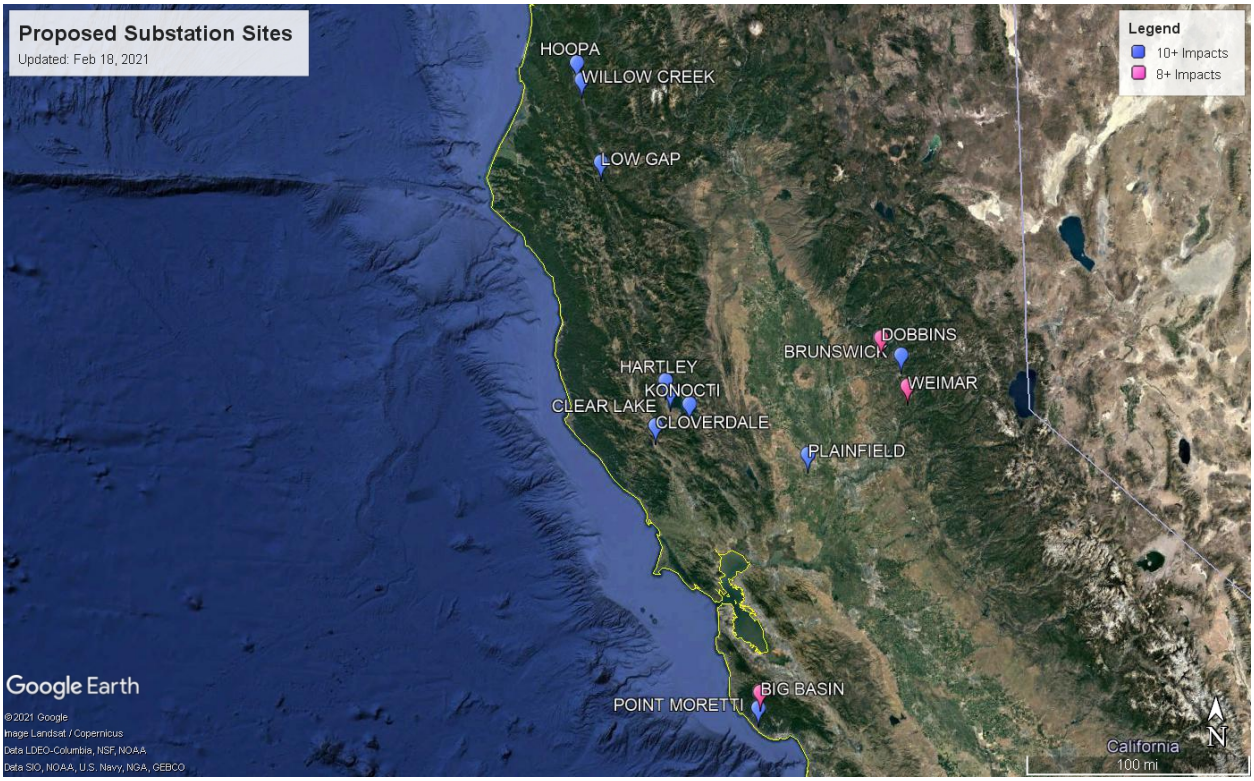
Based upon the foregoing analysis, PG&E requests authority to reserve up to 168 MW based upon the capacity needs of the identified Dedicated Substations and Hub-and-Spoke Substations.[26] Figure 3, below, provides a map showing the geographic location

[25] For purposes of the up to 168 MW total that PG&E is requesting authorization to reserve, PG&E has rounded this 25.5 MW to 26 MW.

[26] Based on the peak load and space availability of the 13 substations listed above, a variety of different sized temporary generators will be needed. At present, PG&E intends to procure a significant number of 1,000 kW units, in addition to units of other sizes. At the time of this filing, the availability of the lowest-emitting Tier 4 1000 kW units has recently declined from what was initially submitted in response to the 2021 temporary generation solicitation. If supply of 1,000 kW units becomes constrained, PG&E will explore using a combination of 1,250 kW and 500 kW units. However, a greater reliance on 1,250 kW units may be necessary to address fault duty and other operational needs. To the extent PG&E needs to reserve 1,250 kW units to

of each of the 13 substations that have been identified as top candidates for the 2021 Substation Temporary Generation Program.

Figure 3. Map of Top Candidate Substation Locations for 2021 Substation Temporary Generation



IV. Effectiveness of PG&E's 2020 Temporary Generation Program

This section of the Advice Letter addresses the requirement in the Decision that PG&E show that its previous temporary generation program "has proven effective at serving loads of safe-to-energize substations that would have otherwise been without power during PSPS or other outage events, if and when it was activated to do so."[27]

PG&E confirms that its 2020 temporary generation program was effective in preparing 60 substations to receive temporary generation within a 48-hour window and in energizing over 13,000 customer accounts during two PSPS events.

make up for some the loss of some or all of the 1,000 kW units, this would result in a maximum of an additional 18 MWs of nameplate capacity incremental to the 168 MWs outlined above.

[27] D.21-01-018, App. A, p. A-2.

A. Background on 2020 Temporary Generation Program

Based upon 2019 PSPS events, PG&E ultimately prepared 60 substations to be energized using temporary generation during 2020 PSPS events, as necessary and to the extent PG&E had at least 48 hours to do so. Due to constraints on the availability of temporary generators of sufficient size, these 60 substations were separated into three "preparation type" categories: ready-to-energize; staged at substation; and energization plan only. Of the 60 substations, there were 18 prioritized substations deemed "ready-to-energize" with temporary generation pre-interconnected and tested (225 MW of nameplate capacity), four substations with temporary generation staged at the substation and ready to interconnect at that location or another nearby substation (50 MW of nameplate capacity), and another 40 substations in a "hub and spoke" model with pre-developed, engineered, energization plans with temporary generation strategically staged at several "hubs" across PG&E's service territory (75 MW of nameplate capacity). Two of these substations, Placerville and Calistoga, eventually became part of the distribution microgrid program.

Following the development and procurement of the 2020 Temporary Generation Program, significant improvements in PG&E's PSPS risk modeling capabilities led to a significant decrease in transmission line de-energization during actual PSPS events, relative to what would have occurred under prior modeling and operational protocols. The smaller size of the PSPS events reduced the need for temporary generation at substations. PG&E Meteorology improved the granularity of both its Utility FPI and OPW PSPS weather modeling tools. These enhancements allowed the models to predict severe fire weather risks in more focused (smaller) areas and to identify those areas that exceeded distribution risk guidance with increased geographic precision. Because the weather predictions were more precise and applied to smaller areas, the scope of a potential PSPS event was reduced compared to what would have occurred during a similar weather event in 2019.

In addition, transmission line scoping for 2020 PSPS events used transmission-specific thresholds for asset health and outage likelihood based upon the transmission OA model. The transmission asset analysis used was more granular than 2019, with assets analyzed against guidance at the structure level.

The combined result of these more granular and improved modeling tools was a significant reduction in the scope of 2020 PSPS events compared to the 2019-vintage models PG&E had used to plan for 2020 temporary generation. For those substations that were still de-energized during 2020 PSPS events, PG&E observed that many had little or no safe-to-energize load during the events.

The scale and scope of PG&E's 2021 Temporary Generation Program has been significantly reduced based upon the experience from 2020 and the use in the historical look-back methodology of the 2020 PSPS scoping criteria and modeling techniques.

Table 1, above, shows the four substations that were energized during 2020 with temporary generation during PSPS events, the date of the events, and the number of safe-to-energize customers who were served during each such event. Each of these substations was included in PG&E's 2020 Make-Ready Program to prepare substations to receive temporary generation in advance of 2020 PSPS events. These substations were all in the "ready to energize" preparation category for 2020. This means that generation was pre-interconnected and tested at these locations.

In addition to the four substations identified in Table 1, four substations that were prepared to receive temporary generation within 48 hours in 2020 came into scope for 2020 PSPS events and had safe-to-energize load, but were not energized. These substations were all in the "energization plan only" preparation category for 2020. This means that energization plans were developed for these substations and that generation was staged at nearby locations for in-event deployment.

For three of these substations, the determination that these substations would come into scope for the associated PSPS event and have safe-to-energize load was made less than 48 hours before de-energization and in some cases, less than 24 hours. Due to this brief time window, PG&E was unable to deploy and interconnect generation at these locations. Following the de-energization of two of these substations, temporary generation was deployed and pre-staged at those substations in case future events again required de-energization of the substations.

For the fourth substation, a switching solution that had been pre-identified to keep the substation energized could not operate safely given the location of the PSPS risk polygon.

The experience in 2020, the first operational year for PG&E's Temporary Generation Program, provided PG&E with important learning experiences, and those lessons learned have informed the design of the proposed 2021 Temporary Generation Program. Specifically, experience with brief time windows prior to de-energization in 2020 is one of the reasons PG&E is currently planning to pre-interconnect and test temporary generation at all 10 Dedicated Substations that have experienced the highest frequency of impacts (10+ events over the historical look-back period), as further described in Section III, above.

V. Demonstration of Need for Reserving Temporary Generation in Advance of 2021 Fire Season

This section responds to the requirement in the Track 2 Decision that PG&E provide "evidence that there is resource scarcity that makes it prudent to pay a nonrefundable reservation fee which guarantees generator availability for the duration of fire season in advance of need, or that advance reservation is necessary for logistical reasons to safely mobilize and stage equipment."[28]

[28] *Id.*, App. A, p. A-2.

Based upon the market data available to PG&E, it is clear that relying upon the real-time procurement, rather than advance reservation, of temporary generators for use at substations during 2021 would create an untenably high risk of program failure. Reliance on just-in-time procurement and delivery of generators would create very significant execution risk and could constrain PG&E's ability to utilize the most technologically-advanced and significantly lower-emitting Tier 4 diesel generators, rather than the more common Tier 2 diesel generators.

Furthermore, nationwide catastrophic events also have significant impacts on the availability of temporary generator supplies in California. Based upon the market data available to PG&E, a high demand of temporary generators occurs when significant hurricane conditions occur in the southeast states. Even recently, there is evidence that temporary generator supplies are being deployed and are in demand today in response to the polar vortex event that struck central United States in February 2021.

Both PG&E's 2020 Temporary Generation Request for Information (RFI) and 2021 Temporary Generation solicitation ("Temp Gen RFP") indicate that scarcity exists in Tier 4 temporary generators with a capacity to serve substations. This was also confirmed through an inquiry to the California Air Resources Board (CARB) based on data from the Portable Equipment Registration Program (PERP).

Further, as described more fully above, a key learning from the 2020 Temporary Generation Program was that PG&E needs to focus on pre-staging and pre-interconnecting the generators at substations most likely to be impacted. That strategy is only possible if the generators are reserved and deployed in advance of the fire season. PG&E does not believe that it is operationally feasible, nor would it be a prudent strategy, for it to wait to procure, deliver, inspect, interconnect, fuel, and test temporary generation at up to 13 identified candidate substations in the short window of time leading up to a PSPS event.

Based upon PG&E's 2019 and 2020 PSPS experiences, it is necessary to pre-interconnect and test temporary generation at all but a handful of sites where temporary generation is expected to be used. Interconnection is a complex process that requires engineering study pre-work by our Distribution Operator Engineers, studies and planning by PG&E's distribution operations control center, and several hours, if not days, of field resource construction followed by testing. For example, in addition to the time it would take to procure and transport generation in real-time, it takes approximately 6 "person hours" to interconnect each temporary generation unit and then 2 hours to test the generation. Adding the timeline for mobilization of the equipment and labor resources to these often-remote locations further delays the on-line time. These timelines must be compared against the very limited time available during a PSPS event. The scope of a particular PSPS event is often not finalized more than 48 hours prior to de-energization, greatly reducing the ability to utilize temporary generation that is not already pre-staged and pre-interconnected.

A. Summary of Scarcity Data Based on Market Solicitation and CARB PERP Data

PG&E issued a Temporary Generation RFI on November 3, 2020, and the RFI closed on November 12, 2020. Along with other objectives, the RFI set out to determine the supply of Tier 4 diesel temporary generators. The RFI was broadly distributed to 63 potential vendors. [redacted]

[redacted]

Most recently, PG&E issued the 2021 Temp Gen RFP on January 20, 2021. The solicitation closed on February 3, 2021. 59 potential vendors were invited to participate. [redacted] As shown in Appendix B, the solicitation included individual pricing worksheets for each of the four temporary generation for PSPS mitigation workstreams, including substations. Vendors were asked to indicate how many units of what sizes they could provide and at what cost. [redacted] Since the bid submission deadline, vendors informed PG&E they have been losing available supply of Tier 4 and some Tier 2 generators to other states like Texas and Florida who are planning for emergency events.[29] It is likely that this trend will continue as we draw nearer to the traditional fire season.

It is also important to note that the mobile, trailer-mounted Tier 4 diesel units are fairly new, which partially contributes to the lack of supply. Figure 4, below, illustrates the very significant evolution of Tier 4 engines in reducing emissions levels as compared to Tier 2 diesel engines. The larger (>750 kw) Tier 4 diesel engines did not enter the California market until 2015 and can be limited in quantity for the larger size engines required to support substation-level microgrids. While CARB will continue to allow Tier 2 diesel engines through at least 2027, the strong environmental policy objectives of the State

[29] The Federal Emergency Management Agency (FEMA) can require vendors to supply any temporary units not under contract.

encourage the transition of all diesel-fueled temporary generation use to Tier 4 in the coming years. This will create additional demand for these units. It is currently unclear if and how supply will grow in response. Figure 5, below, illustrates the Tier phase-out schedule by Tier, size and date.

Figure 4. Tiering of Diesel Temporary Generators – Size and Emission Requirements Over Time

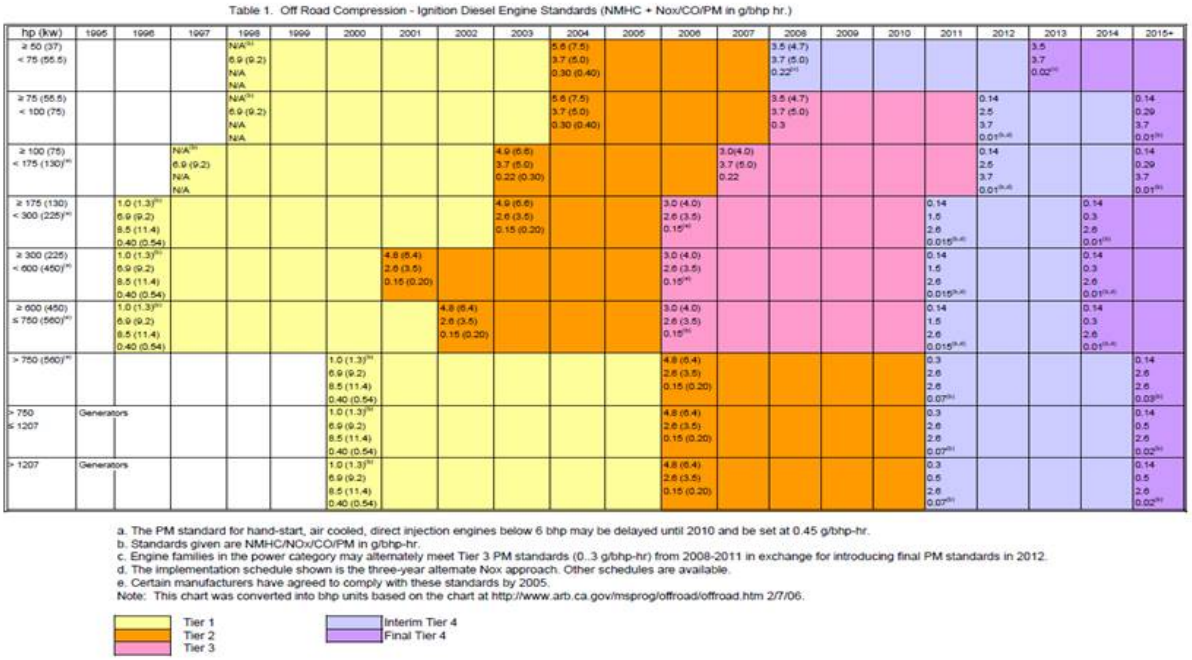


Table 1. Off Road Compression - Ignition Diesel Engine Standards (NMHC + Nox/CO/PM in g/bhp hr.)

hp (kw)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015+
≥ 50 (37) < 75 (55.5)				N/A[a] 6.9 (9.2) N/A N/A						5.6 (7.5) 3.7 (5.0) 0.30 (0.40)				3.5 (4.7) 3.7 (5.0) 0.22[c]					3.5 3.7 0.02[c]		
≥ 75 (55.5) < 100 (75)				N/A[a] 6.9 (9.2) N/A N/A						5.6 (7.5) 3.7 (5.0) 0.30 (0.40)				3.5 (4.7) 3.7 (5.0) 0.3				0.14 2.5 3.7 0.01[b,d]			0.14 0.29 3.7 0.01[b]
≥ 100 (75) < 175 (130)[e]			N/A[a] 6.9 (9.2) N/A N/A						4.9 (6.6) 3.7 (5.0) 0.22 (0.30)				3.0(4.0) 3.7 (5.0) 0.22					0.14 2.5 3.7 0.01[b,d]			0.14 0.29 3.7 0.01[b]
≥ 175 (130) < 300 (225)[e]		1.0 (1.3)[a] 6.9 (9.2) 8.5 (11.4) 0.40 (0.54)							4.9 (6.6) 2.6 (3.5) 0.15 (0.20)			3.0 (4.0) 2.6 (3.5) 0.15[d]					0.14 1.5 2.6 0.015[b,d]			0.14 0.3 2.6 0.01[b]	
≥ 300 (225) < 600 (450)[e]		1.0 (1.3)[a] 6.9 (9.2) 8.5 (11.4) 0.40 (0.54)					4.8 (6.4) 2.6 (3.5) 0.15 (0.20)					3.0 (4.0) 2.6 (3.5) 0.15[d]					0.14 1.5 2.6 0.015[b,d]			0.14 0.3 2.6 0.01[b,d]	
≥ 600 (450) ≤ 750 (560)[e]		1.0 (1.3)[a] 6.9 (9.2) 8.5 (11.4) 0.40 (0.54)						4.8 (6.4) 2.6 (3.5) 0.15 (0.20)				3.0 (4.0) 2.6 (3.5) 0.15[d]					0.14 1.5 2.6 0.015[b,d]			0.14 0.3 2.6 0.01[b,d]	
> 750 (560)[e]						1.0 (1.3)[a] 6.9 (9.2) 8.5 (11.4) 0.40 (0.54)						4.8 (6.4) 2.6 (3.5) 0.15 (0.20)					0.3 2.6 2.6 0.07[b]				0.14 2.6 2.6 0.03[b]
> 750 ≤ 1207	Generators					1.0 (1.3)[a] 6.9 (9.2) 8.5 (11.4) 0.40 (0.54)						4.8 (6.4) 2.6 (3.5) 0.15 (0.20)					0.3 2.6 2.6 0.07[b]				0.14 0.5 2.6 0.02[b]
> 1207	Generators					1.0 (1.3)[a] 6.9 (9.2) 8.5 (11.4) 0.40 (0.54)						4.8 (6.4) 2.6 (3.5) 0.15 (0.20)					0.3 0.5 2.6 0.07[b]				0.14 0.5 2.6 0.02[b]

a. The PM standard for hand-start, air cooled, direct injection engines below 6 bhp may be delayed until 2010 and be set at 0.45 g/bhp-hr.
b. Standards given are NMHC/NOx/CO/PM in g/bhp-hr.
c. Engine families in the power category may alternately meet Tier 3 PM standards (0..3 g/bhp-hr) from 2008-2011 in exchange for introducing final PM standards in 2012.
d. The implementation schedule shown is the three-year alternate Nox approach. Other schedules are available.
e. Certain manufacturers have agreed to comply with these standards by 2005.
Note: This chart was converted into bhp units based on the chart at http://www.arb.ca.gov/msprog/offroad/offroad.htm 2/7/06.

Tier 1
Tier 2
Tier 3
Interim Tier 4
Final Tier 4

Source: California Air Resources Board, Non-road Diesel Engine Certification Tier Chart: https://ww2.arb.ca.gov/resources/documents/non-road-diesel-engine-certification-tier-chart

Figure 5. Phase-Out Schedule for Tiers of Diesel Engines in California

Tier Phase-out Schedule (required for small fleets, default option for large fleets)			
Engine Certification	Engines rated 50 to 750 bhp		Engines rated >750 bhp
	Large Fleet	Small Fleet	
Tier 1	1/1/2020	1/1/2020	1/1/2022
Tier 2 built prior to 1/1/2009	1/1/2022	1/1/2023	1/1/2025
Tier 2 built on or after 1/1/2009	NA	NA	1/1/2027
Tier 3 built prior to 1/1/2009	1/1/2025	1/1/2027	NA
Tier 3 built on or after 1/1/2009	1/1/2027	1/1/2029	NA
Tier 1, 2, and 3 flexibility engines	December 31 of the year 17 years after the date of manufacture. This provision shall not apply to any engine operation before the effective date of this regulation.		

Source: California Air Resources Board, PERP Regulation and Portable Engine Airborne Toxic Control Measure (ATCM), Tier Phase Out Option: https://ww2.arb.ca.gov/resources/documents/perp-regulation-and-portable-engine-atcm

The public data available from CARB combined with the market data obtained through the RFI and the pending 2021 Temp Gen RFP indicate a significant scarcity of the lowest-emitting Tier 4 diesel generators available for substation use in 2021. This, combined with the operationally infeasibility of employing a real-time procurement and deployment strategy, justify the advance reservation of the capacity for the top candidate substations identified in Section III.

VI. Cost Analysis of Reserving Temporary Generation

This section responds to the Track 2 Decision's requirement that, in order to reserve temporary generation for use at substations in 2021, PG&E demonstrate "that it has undertaken an analysis of the all-inclusive costs associated with reserving and deploying the [substation] temporary generation and that the costs are reasonably close to that associated with deploying similar equipment under normal conditions, such as for a planned maintenance outage." [30]

In order to determine the relative cost of reserving temporary generation for substations against the cost of procuring temporary generation on an as-needed basis (as it has typically done for planned outages), PG&E sought current estimates for both types of products and services from two of the vendors that have supplied temporary generation

[30] *Id.*, App. A, p. A-2.

to PG&E in the past. In order to compare the procurement approaches under similar scenarios, PG&E requested quotes in each case for the operation of the temporary generation four times over the 2021 fire season, with 72 hours of operation in each event. In the first scenario, PG&E would reserve the generation for seven months, paying a fixed reservation charge and variable operating costs in each event. In the second scenario, PG&E would procure the temporary generation in each event in real time, assuming it was available, and it would be mobilized and demobilized before and after each event, with costs limited to variable operating costs and deployment. The second scenario also assumes that the initial deployment would require transportation of the temporary generation from outside of California, given the expected limited supply within California during 2021 for the reasons previously described. Confidential Appendices C and D present the estimates provided in vendor quotes and demonstrates that the total cost estimated under both scenarios are reasonably close, in compliance with D.21-01-018. Additionally, it must be noted that this comparison does not quantify the option value provided by reservation of the generation in advance, ensuring its timely availability when needed during emergency events like a PSPS or system reliability events. PG&E estimates that in the case of real-time procurement presented by scenario 2, it would take 7-10 days to procure, transport the generation, and interconnect it at the substation. As further described in Section V, above, waiting to procure generation in real-time, as the need arises, would be operationally infeasible given the short timeframes in which the scope of a particular PSPS is identified.

VII. Status of Consultations with Local Air Districts

This Section responds to the requirement in the Track 2 Decision that, in order to reserve temporary generation for use in 2021, PG&E demonstrate "ongoing consultation with local air quality agencies, aimed at ensuring the deployment of temporary generation at substations complies with applicable regulations."[31]

Similar to PG&E's outreach efforts to local air districts in 2020, PG&E has continued its ongoing engagement with local air quality districts to coordinate on meeting applicable regulatory requirements for the deployment of temporary generators at substations and distribution microgrids. In addition to informal exchanges, PG&E has held meetings with local air quality agencies to consult with them regarding the 2021 Temporary Generation Program on the following dates:

- December 17, 2020 – PG&E met with staff from the Bay Area Air Quality Management District (BAAQMD), Placer County Air Pollution Control District (APCD) and the Northern Sonoma County APCD. These districts stated that they would require local air permits for use of generators at substations in 2021.

[31] *Id.*, App. A, p. A-2.

- January 26, 2021 – PG&E met with BAAQMD staff to confirm what type of air permit would be required for their district and the necessary information.
- January 28, 2021 – Placer County APCD issued a determination to PG&E requiring a local permit.
- February 23, 2021 – PG&E met with Lake County Air Quality Management staff to discuss the deployment of temporary generation for PSPS within the county.

Given the smaller number of substation locations PG&E has identified as in scope for its 2021 temporary generation program, PG&E is currently pursuing individual conversations with each impacted air districts to discuss location by location permitting needs.

Over the coming months, PG&E plans to meet individually with the remaining air districts with jurisdiction over the top candidate substations identified in this Advice Letter for potential use of generators at a substation microgrid to discuss their individual requirements.

VIII. Clean Substation Microgrid Demonstration Project

This Section addresses the requirement in the Track 2 Microgrid OIR Decision that PG&E document its plans to establish Clean Substation Projects located at, or able to serve, at least one substation.[32] The Interim Approach for Reserving Temporary Generation for Safe-to-Energize Substations in 2021 set forth in Appendix A to D.21-01-018 describes two primary goals: Keeping the lights on; and starting the transition to clean temporary generation. With regard to the second goal, the Decision states that the objective is "to increase utility and market experience and understanding of alternatives to diesel generation to facilitate a transition away from diesel in future years."[33] The Decision is technology-agnostic when describing temporary "clean substation microgrid pilots projects" in Section 2 of Appendix A; instead, it sets forth certain cost-effectiveness, operational, and environmental requirements that must be met by the Clean Substation Pilot Projects. Some of these requirements depend on whether the project is temporary or permanent and on when the project will be operating. For example, the subsection labeled 1.1 on page A-5 of Appendix A sets forth air pollutant emission reduction requirements that must be met by such projects beginning in the 2022 fire season, and it notes that completed permanent projects "must demonstrate a fully renewable microgrid."[34] As further described in that Decision, PG&E intends to submit one or more Clean Substation Project(s) for review and approval via a future Tier 3 Advice Letter.

[32] *Id.*, App. A, p. A-4.
[33] D.21-01-018, App. A, p. A-1.
[34] *Id.*, p. A-5.

As noted previously, PG&E issued a Temporary Generation RFI on November 3, 2020, and the RFI closed on November 12, 2020. The RFI was broadly distributed to 63 potential vendors. [redacted]

PG&E subsequently issued an all-source Temporary Generation RFP on January 20, 2021, seeking to reserve temporary generation for use at substations and other temporary generation workstreams for reducing PSPS impacts. Bids in response to the RFP were due on February 3, 2021.

The RFP overview stated: "PG&E is also looking to pilot diesel-alternative generation technologies and welcomes bids for solutions or combinations of solutions including, but not limited to natural gas generators, batteries, and fuel cells, as long as the single technology or combination of technologies meet all of PG&E's operational requirements."[35] Potential vendors were provided with anonymous, site-specific details for three substation sites and three distribution microgrid sites.[36] For each such site, PG&E provided a site description (including load, customer count, and other neighborhood considerations); a load profile; a description of the space constraints and availability; and the availability of pipeline natural gas. PG&E specified that each diesel alternative project is required to be able to serve the substation load for a minimum of 48 hours with a preference for 72 hours.[37] Shortlisted vendors have since received additional site-specific information. While the solicitation focused on temporary generation, PG&E did indicate it was open to "staged" generation that would remain in one location for the duration of the rental period. This was intended to enable diesel-alternative technologies, which often face mobility hurdles.

As mentioned previously, 59 potential vendors were invited to participate in the all-source 2021 Temporary Generation RFP. [redacted]
These are currently under review. For the substation workstream, the only diesel-alternative technology bids received were for natural gas-fueled technologies and battery storage. PG&E is currently evaluating bids based on a variety of factors, including commercial, pricing, technical, safety, and supply chain responsibility. PG&E has compiled a consolidated scorecard for down-selecting to a short-list of suppliers for further negotiations based on the highest scoring suppliers and the capacity information provided to ensure that sufficient supply can be contracted on the most favorable terms. Follow-up conversations with short-listed bidders and negotiations are ongoing.

[35] *See* Appendix E, Para. 1.1.
[36] *See* Appendix F (2021 Substation and Distribution Microgrid Diesel Alternative Pilot Projects)
[37] Appendix E, Para. 1.4.

While natural gas and natural gas plus storage technologies are still reciprocating engine technologies, these technologies emit less particulate matter than even the most advanced, Tier 4 reciprocating engines that run on diesel-based fuels. While natural gas-fueled generators are not a new technology in the energy industry more broadly, the temporary utilization of natural gas reciprocating engines fueled via a mobile refueling strategy, potentially paired with energy storage, to meet the full de-energization and re-energization requirements to provide backup power at a substation during longer-duration outages warrants piloting and further investigation to determine its operational feasibility. Such a pilot would advance the State's understanding regarding whether and how the technology can be operationally scaled in these substation use cases and potentially other use cases to reduce or eliminate the reliance on diesel-based generation.

An example of the novel questions presented by the use of natural gas-fueled technologies for this use case is the complexity involved with mobile compressed natural gas (CNG) fueling/refueling availability and logistics. The lessons learned from a pilot would inform whether a broader scale natural gas and/or renewable natural gas would prove feasible at-scale in future years for substations or other locations during PSPS events. Furthermore, the relative scarcity of CNG fueling stations and energy density differences when compared to diesel would require that any such pilot address fuel availability, on-site storage, and potentially complex, more frequent refueling operations when running high MW mobile power stations continuously over a multiple day period. These findings could be directly applied to understanding how other relatively scarce fuel types, such as hydrogen, may fare in these use cases as the State transitions to even cleaner back-up generation solutions.

Another potentially valuable aspect of a pilot could be the pairing of natural gas technology with energy storage assets. Because CNG is less energy dense than diesel fuels, natural gas reciprocating engines are generally less effective in picking up larger instantaneous load blocks than diesel-based reciprocating engines. Pairing such natural gas generation with storage could advance understanding regarding whether and how batteries can complement a CNG-fueled generator in improving load acceptance during the in-rush of restoring thousands of customers at a time.[38] Finally, depending on the size of energy storage required, a natural gas plus battery hybrid configuration could also allow PG&E to determine whether and how batteries can be

[38] Because of the different combustion and fuel delivery processes of natural gas, many natural gas reciprocating engines have a lower transient response when compared to a similarly sized diesel engine. Pairing natural gas reciprocating engines with batteries enables higher amounts of transient inrush capability and minimizes service interruption duration when transitioning to microgrid operation. This in turn allows for simpler energization plans and less operational steps that would otherwise be required to sectionalize.

used for peak load shaving to reduce the run-time and emissions from the natural gas generation.

The complexity of developing diesel-alternative solutions in the long-term, let alone in less than a year, is daunting. These complexities likely led to the dominance of natural gas and battery storage bids in the 2021 Temporary Generation RFO compared to other types of diesel-alternative technologies (*e.g.,* fuel cells, hydrogen-based reciprocating engines, linear generators, etc.). Many of the Dedicated Substations have limited PG&E-owned available land. As cleaner technologies are less energy dense per equivalent footprint of diesel or natural gas reciprocating engines, the cleaner and more renewable solutions face land constraint challenges. While natural gas is less energy dense than diesel, requiring more land to support additional generators and fuel storage than diesel, it is still more compact than solutions using fuel cells, solar installations, or energy storage only. While PG&E and/or an external vendor could explore acquiring additional land, the acquisition process and land use permitting process would subject the project to considerable viability risk and, even if successful, could take years.

While PG&E agrees with vendors who have asserted that behind-the-meter customer generation could play a role in reducing the amount of generation needed at substations in future years, the incorporation of such customer generation has not yet been shown to be capable of scaling sufficiently to fully alleviate space constraint issues faced at many of the substations in the immediate future. In addition, many of these substations are miles from the nearest gas distribution or transmission line, complicating natural gas reciprocating engine, turbine, and fuel cell solutions. Therefore, better understanding whether a mobile fueling strategy could prove feasible at-scale could be a key first step in transitioning away from diesel temporary generation.

Data intended to demonstrate some of the complexities faced by diesel-alternative technologies at substations are included in Table 6 below. In Table 7 below, PG&E also provides sample calculations of the number of batteries needed to support 48-hour islanding of smaller and larger substations included in the list of Dedicated Substations for 2021 to illustrate the complexity of diesel-alternative solutions.

Table 6. Key Considerations at Dedicated Substations for Diesel Alternative Solutions

Substation	Peak Load	Net Available PG&E-Owned Land w/in substation fence (ft^2) - Subject to Substation Review for Usability	Available PG&E Owned Land Adjacent to Substation	Notes	Distance to Distribution Pipeline (feet)	Percentage of Peak Distribution System Can Currently Support	Distance to Transmission Pipeline (feet)	Distance to Closest CNG Fueling Station
BRUNSWICK	60	19,200	40,300	Vegetation on land outside fence and land is sloped	100	~3%	10,000	38
CLEAR LAKE	10	5,500	Minimal		12 miles	--	13 miles	74
CLOVERDALE	14	31,500	100,000		2300	~3-5%	4800	33
HARTLEY	12	9,200	25,000	Vegetation on land outside fence	16 miles	--	17 miles	65
HOOPA	4	8,200	22,500	Driveway encroaching on land outside of fence	45 miles	0%	45 miles	
KONOCTI	14	6,000	Minimal	Minimal	22 miles	--	23 miles	
LOW GAP	1	Site Visit Needed	Site Visit Needed	PG&E owns 0.91-acre total. Heavy vegetation and slope make net usable unknown	15,000	--	6,000	
PLAINFIELD	23	6,700	Minimal	ft^2 within fence comprised of several smaller chunks	16,000	--	26,000	15
POINT MORETTI	3	1,000	1,480		6,200	--	7,800	47
WILLOW CREEK	6	6,700	46,000	Land outside of fence is shared with service center - unknown how much is available	35 miles	0%	35 miles	172

*Note to Table 6: A single 1 MWh battery is approximately 160ft^2 in size and a single 1300kW natural gas unit is approximately 180ft^2 in size. Natural gas generators cannot

be placed directly next to one another and need room for auxiliary equipment (e.g., gas regulator, distribution manifolds, etc.). Note that a 1300kW natural gas generator could serve around 1MW of load due to necessary adjustments to nameplate capacity to reflect continuous capacity.

Table 7. Batteries Needed to Support 48-hour Islanding[39] of Selected Substations

Substation	Peak Demand (MW)	Avg Demand (MW)[40]	Count of 1 MWH Batteries for 48 Hours
Clear Lake	10.0	7	336
Cloverdale	14.0	9.8	470[41]
Hoopa	4.0	2.8	134
Willow Creek	6.0	4.2	202

Due to the cleaner emissions profile of hybrid natural gas-fueled/battery storage solutions or standalone natural gas-fueled temporary generation when compared to conventional diesel generators, PG&E is evaluating these bids to determine whether to propose a Clean Substation Project. As directed by D.21-01-018, any such proposed Clean Substation Project would be subsequently submitted for Commission and stakeholder review via a separate Tier 3 Advice Letter. PG&E reserves the ability, also set forth in D.21-01-018, to ultimately determine based on its evaluation of the bids that Clean Substation Projects are infeasible for deployment in 2021 given the requirements set forth in the decision.

The following RFP documents, attached to this Advice Letter as appendices, provide additional information regarding PG&E's plans and process to procure diesel-alternative generation for use at substations in 2021:

[39] Based on the 10-year historical lookback and assuming 8 hours for temporary generation energization (bringing the system online) and an additional 8 hours to patrol and restore, the mean, median, max, and min outage duration (in hours) for Hoopa is as follows: 46, 51, 68, 25.

[40] For the purposes of this exercise, a daily load factor of 70% was assumed across these four substations.

[41] 470MWHh represents approximately 60% of the Moss landing battery storage project.

Public RFP Documents

The following RFP documents were provided to potential vendors of diesel alternatives for use in submitting their bids.

- Appendix B: Request for Proposals Temporary Generation Pricing Worksheets
- Appendix E: RFP Overview
- Appendix F: 2021 Substation and Distribution Microgrid Diesel Alternative Pilot Projects
- Appendix G: RFP General Questionnaires
- Appendix H: RFP Technical Questionnaire

Confidential RFP Documents

The following documents are PG&E's confidential evaluation scorecards relevant to the diesel alternative bid evaluations.

- Confidential Appendix I: Clean Temporary Generation RFP Scorecard
- Confidential Appendix J:Temporary Generation Services RFP Scorecard

A. Identification of Three Top Candidate Substations for Long-Term Solutions

D.21-01-018 requires that this Advice Letter identify three top candidate substations that would best meet the requirements set forth in that Decision for siting generation for longer than 3 years.[42] The purpose of identifying these substations is "to facilitate the development of projects that primarily involve stationary installation of generation at substations for longer than 3 years."[43]

The purpose of this Section of the Advice Letter is to identify the three top candidate substations for long-term solutions. However, PG&E is not currently pursuing solutions in 2021 that will meet the requirements for long-term generation under Condition 2.2 of Appendix A in D.21-01-018. Given the highly dynamic and quickly evolving nature of PSPS risk modeling and grid hardening plans, PG&E does not believe it is prudent at this time to implement permanent solutions. Consistent with D.21-01-018, PG&E expects to file an Application by June 30, 2021, in which it will propose a comprehensive framework for evaluating long-term solutions at substations.[44] PG&E would caution external parties from spending extensive time developing permanent solutions for the substations listed below until that Application is filed.

[42] D.21-01-018, App. A., p. A-4.
[43] *Id.*
[44] *See id.*, pp. A-6 to A-8.

The Track 2 Decision requires that the top three substations be focused on locations where PG&E expects the following conditions to exist:

a. Transmission lines serving the substation may be de-energized because of the fire risk, despite safe-to-energize load at the substation. The probability of transmission-level power loss affecting otherwise safe-to-energize load is relatively high and expected to persist; and
b. Either, the utility does not have ongoing, planned, or proposed grid hardening investments that would significantly reduce the risk of de-energization at this substation over the next 10 years
Or
alternatively, the cost of proposed grid hardening investments exceed $10 million multiplied by the peak substation load in MW, and a permanent microgrid would replace the need for grid hardening.[45]

Although PG&E's analysis of these factors is ongoing and subject to refinement as part of the review and approval of the forthcoming long-term framework for PSPS mitigation, PG&E has identified the substations shown in Table 8, below, as the best candidates for permanent (> 3 years) solutions for PSPS mitigation. Each of these substations is also a top candidate as a Dedicated Substation for 2021, as described more fully in Section III, above, and further details, including the location of each substation, is provided in that Section of the Advice Letter. Given PG&E's continued work to improve its PSPS models and tools, PG&E does not believe it is prudent at this time to invest in permanent generation for PSPS mitigation at substations.

In addition, due to the requirements set forth in D.21-01-018 that permanent generation at substations meet a 90% reduction target for particulates and NOx along with achieving a grid-average emissions rate by the 2022 fire season, and be fully renewable in their final stage,[46] these permanent projects would face the many complexities outlined above regarding diesel-alternative technologies.

PG&E requested resource adequacy (RA) deliverability data from the California Independent System Operator (CAISO) for the Dedicated Substations and others that were initially under consideration for the 2021 Substation Temporary Generation Program earlier in 2021. Only one of the Dedicated Substations, Point Moretti, has deliverable capacity.[47] Because this lack of deliverable capacity constrains the ability to receive RA revenues from projects during normal ("blue-sky") operating conditions, this further complicates project finance for developers of potential permanent projects.

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[45] *Id.*, p. A.-4.
[46] D.21-01-018, App. A, p. A-5 (Section labeled 1.1).
[47] http://www.caiso.com/Documents/2021PotentialDeliverabilityforDistributedGenerationWorksheet-PGE.pdf

While PG&E is not intending to pursue permanent substation projects for deployment in 2021, for informational purposes, PG&E is identifying the following subset of the identified Dedicated Substations that appear to be the best current candidates for permanent generation.

Table 8. Top Three Candidates for Permanent PSPS Mitigation Solutions.

Substation	Peak Load (MW)
HOOPA	4
WILLOW CREEK	6
POINT MORETTI	3

PG&E identified and evaluated the following factors in selecting these three substations:

Substation	De-Energized when HBGS Islands	Proximity to Sensitive Receptors	Direct Impacts	No Planned Mitigating Work on Transmission System	High space/peak load ratio
HOOPA	X	X	X	X	X
WILLOW CREEK	X	X	X	X	X
POINT MORETTI			X	X	X

IX. Requested Findings

Based on the demonstration set forth above, PG&E requests that any disposition of this Advice Letter making it effective without modification be deemed to include the following findings:

1. PG&E's request to reserve up to 168 MW of temporary generation for use at substations to mitigate PSPS outages in 2021 is reasonable.

2. PG&E has documented its plans to establish Clean Substation Projects located at, or able to serve, at least one substation.

3. PG&E has met all requirements set forth in Appendix A of D.21-01-018 and is therefore authorized to track the costs associated with reserving up to 168 MW of temporary generation in its Microgrids Memorandum Account, including diesel as well as other temporary generation, for the purpose of providing power to the load of safe-to-energize substations during a PSPS outage.

4. The temporary generation authorized to be reserved in this Advice Letter is intended for the 2021 fire season, which may extend into 2022. If PG&E wishes to extend contracts under which it reserves the 2021 temporary generation beyond 365 days, it may seek further authorization to do so in a manner consistent with D.21-01-018.

X. Confidentiality Treatment

In support of this Advice Letter, PG&E has provided confidential information within and in the confidential appendices listed below. Pursuant to General Order 66-D and Public Utilities Code 583, PG&E requests confidential treatment for portions of this Advice Letter and the confidential appendices . A separate Declaration Seeking Confidential Treatment is being submitted concurrently with this Advice Letter.

Confidential Appendices

Confidential Appendix C: Vendor #1 Quote for Reserving Temporary Generation against Procuring on As-Needed Basis

Confidential Appendix D: Vendor #2 Quote for Reserving Temporary Generation against procuring on As-Needed Basis

Confidential Appendix I: Clean Temporary Generation RFP Scorecard

Confidential Appendix J:Temporary Generation Services RFP Scorecard

Public Appendices

Appendix A: List of Substations with Impacts in 10-Year Historical Look-Back Analysis (2010-2019)

Appendix B: Request for Proposals Temporary Generation Pricing Worksheets

Appendix E: RFP Overview

Appendix F: 2021 Substation and Distribution Microgrid Diesel Alternative Pilot Projects

Appendix G: RFP General Questionnaire

Appendix H: RFP Technical Questionnaire

XI. Protests

*****Due to the COVID-19 pandemic and the shelter at home orders, PG&E is currently unable to receive protests or comments to this advice letter via U.S. mail or fax. Please submit protests or comments to this advice letter to EDTariffUnit@cpuc.ca.gov andPGETariffs@pge.com*****

Anyone wishing to protest this submittal may do so by letter sent via U.S. mail, facsimile, or E-mail, no later than **March 25, 2021**, which is 20 days after the date of this submittal. Protests must be submitted to:

CPUC Energy Division
ED Tariff Unit
505 Van Ness Avenue, 4th Floor
San Francisco, California 94102

Facsimile: (415) 703-2200
E-mail: EDTariffUnit@cpuc.ca.gov

Copies of protests also should be mailed to the attention of the Director, Energy Division, Room 4004, at the address shown above.

The protest shall also be sent to PG&E either via E-mail or U.S. mail (and by facsimile, if possible) at the address shown below on the same date it is mailed or delivered to the Commission:

Erik Jacobson
Director, Regulatory Relations
c/o Megan Lawson
Pacific Gas and Electric Company
77 Beale Street, Mail Code B13U
P.O. Box 770000

San Francisco, California 94177

Facsimile: (415) 973-3582
E-mail: PGETariffs@pge.com

Any person (including individuals, groups, or organizations) may protest or respond to an advice letter (General Order 96-B, Section 7.4). The protest shall contain the following information: specification of the advice letter protested; grounds for the protest; supporting factual information or legal argument; name, telephone number, postal address, and (where appropriate) e-mail address of the protestant; and statement that the protest was sent to the utility no later than the day on which the protest was submitted to the reviewing Industry Division (General Order 96-B, Section 3.11).

XII. Effective Date

Given the urgent and fleeting opportunity to reserve adequate low-emission temporary generation in advance of the 2021 fire season, PG&E requests that this Tier 2 advice submittal become effective on **April 4, 2021**, which is 30 days after the date of submission.

XIII. Notice

In accordance with General Order 96-B, Section IV, a copy of this Advice Letter is being sent electronically and via U.S. mail to parties shown on the attached list and the parties on the service lists **R.19-09-009**. Address changes to the General Order 96-B service list should be directed to PG&E at email address PGETariffs@pge.com. For changes to any other service list, please contact the Commission's Process Office at (415) 703-2021 or at Process_Office@cpuc.ca.gov. Send all electronic approvals to PGETariffs@pge.com. Advice letter submittals can also be accessed electronically at: http://www.pge.com/tariffs/.

/S/
Erik Jacobson
Director, Regulatory Relations

cc: Service Lists R.19-09-009

Attachments

California Public Utilities Commission

ADVICE LETTER SUMMARY

ENERGY UTILITY

MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No.: Pacific Gas and Electric Company (ID U 39 E)

Utility type:
☑ ELC ☐ GAS ☐ WATER
☐ PLC ☐ HEAT

Contact Person: Stuart Rubio
Phone #: (415) 973-4587
E-mail: PGETariffs@pge.com
E-mail Disposition Notice to: SHR8@pge.com

EXPLANATION OF UTILITY TYPE
ELC = Electric GAS = Gas WATER = Water
PLC = Pipeline HEAT = Heat

(Date Submitted / Received Stamp by CPUC)

Advice Letter (AL) #: 6105-E

Tier Designation: 2

Subject of AL: Request to Reserve Temporary Generation for Use At Substations in 2021

Keywords (choose from CPUC listing): Compliance

AL Type: ☐ Monthly ☐ Quarterly ☐ Annual ☑ One-Time ☐ Other:

If AL submitted in compliance with a Commission order, indicate relevant Decision/Resolution #: D.21-01-018

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: No

Summarize differences between the AL and the prior withdrawn or rejected AL: N/A

Confidential treatment requested? ☑ Yes ☐ No

If yes, specification of confidential information: See Confidential Declaration
Confidential information will be made available to appropriate parties who execute a nondisclosure agreement. Name and contact information to request nondisclosure agreement/ access to confidential information: Quinn Nakayama, QJN1@pge.com, 415-973-3732,

Resolution required? ☐ Yes ☑ No

Requested effective date: 4/4/21

No. of tariff sheets: N/A

Estimated system annual revenue effect (%): N/A

Estimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: N/A

Service affected and changes proposed[1]: N/A

Pending advice letters that revise the same tariff sheets: N/A

[1]Discuss in AL if more space is needed.

Clear Form

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this submittal, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102
Email: EDTariffUnit@cpuc.ca.gov

Name: Erik Jacobson, c/o Megan Lawson
Title: Director, Regulatory Relations
Utility Name: Pacific Gas and Electric Company
Address: 77 Beale Street, Mail Code B13U
City: San Francisco, CA 94177
State: California Zip: 94177
Telephone (xxx) xxx-xxxx: (415)973-2093
Facsimile (xxx) xxx-xxxx: (415)973-3582
Email: PGETariffs@pge.com

Name:
Title:
Utility Name:
Address:
City:
State: District of Columbia Zip:
Telephone (xxx) xxx-xxxx:
Facsimile (xxx) xxx-xxxx:
Email:

Clear Form

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

DECLARATION SUPPORTING CONFIDENTIAL DESIGNATION
ON BEHALF OF
PACIFIC GAS AND ELECTRIC COMPANY (U 39 E)

1. I, Quinn Nakayama, am the Director of Integrated Grid Planning and Innovation within the Energy Policy and Procurement organization at Pacific Gas and Electric Company ("PG&E"), a California corporation. Fong Wan, the Senior Vice President of Energy Policy and Procurement at PG&E, delegated authority to me to sign this declaration. My business office is located at:

   Pacific Gas and Electric Company
   77 Beale Street
   San Francisco, CA 94105

2. PG&E will produce the information identified in paragraph 3 of this Declaration to the California Public Utilities Commission ("CPUC") or departments within or contractors retained by the CPUC in response to a CPUC audit, data request, proceeding, or other CPUC request.

   Name or Docket No. of CPUC Proceeding (if applicable): R.19-09-009

3. Title and description of document(s): The following appendices submitted in PG&E Advice Letter 6105-E contain confidential information:

   1) Confidential Appendix C: Vendor #1 Quote for Reserving Temporary Generation against Procuring on As-Needed Basis
   2) Confidential Appendix D: Vendor #2 Quote for Reserving Temporary Generation against Procuring on As-Needed Basis
   3) Confidential Appendix I - Clean Temporary Generation RFP Scorecard
   4) Confidential Appendix J - Temporary Generation Services RFP Scorecard

4. These documents contain confidential information that, based on my information and belief, has not been publicly disclosed. These documents are marked as confidential, and the basis for confidential treatment and where the confidential information is located on the documents are identified on the following chart.

Check	Basis for Confidential Treatment	Where Confidential Information is located on the documents
☐	Customer-specific data, which may include demand, loads, names, addresses, and billing data (Protected under PUC § 8380; Civ. Code §§ 1798 *et seq.*; Govt. Code § 6254; Public Util. Code § 8380; Decisions (D.) 14-05-016, 04-08-055, 06-12-029)	
☐	Personal information that identifies or describes an individual (including employees), which may include home address or phone number; SSN, driver's license, or passport numbers; education; financial matters; medical or employment history (not including PG&E job titles); and statements attributed to the individual (Protected under Civ. Code §§ 1798 *et seq.;* Govt. Code § 6254; 42 U.S.C. § 1320d-6; and General Order (G.O.) 77-M)	
☐	Physical facility, cyber-security sensitive, or critical energy infrastructure data, including without limitation critical energy infrastructure information (CEII) as defined by the regulations of the Federal Energy Regulatory Commission at 18 C.F.R. § 388.113 (Protected under Govt. Code § 6254(k), (ab); 6 U.S.C. § 131; 6 CFR § 29.2)	
☒	Proprietary and trade secret information or other intellectual property and protected market sensitive/competitive data (Protected under Civ. Code §§3426 *et seq.*; Govt. Code §§ 6254, *et seq*., e.g., 6254(e), 6254(k), 6254.15; Govt. Code § 6276.44; Evid. Code §1060; D.11-01-036)	(1) Confidential Appendix I - Clean Temporary Generation RFP Scorecard (2) Confidential Appendix J - Temporary Generation Services RFP Scorecard

		(3) Confidential Appendix C – Vendor #1 Quote for Reserving Temporary Generation against Procuring on As-Needed Basis (4) Confidential Appendix D – Vendor #2 Quote for Reserving Temporary Generation against Procuring on As-Needed Basis
☐	Corporate financial records (Protected under Govt. Code §§ 6254(k), 6254.15)	
☐	Third-Party information subject to non-disclosure or confidentiality agreements or obligations (Protected under Govt. Code § 6254(k); see, e.g., CPUC D.11-01-036)	
☐	Other categories where disclosure would be against the public interest (Govt. Code § 6255(a))	

5. The importance of maintaining the confidentiality of this information outweighs any public interest in disclosure of this information. This information should be exempt from the public disclosure requirements under the Public Records Act and should be withheld from disclosure.
6. I declare under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge.
7. Executed on this 5th day of March, 2021 at Orinda, California.

/s/

Quinn Nakayama
Director – Integrated Grid Planning and Innovation
Energy Policy and Procurement Organization
Pacific Gas and Electric Company

Advice 6105-E
March 5, 2021

Appendix A

List of Substations with Impacts in 10-Year Historical Look-Back Analysis (2010-2019)

(Public)

Appendix A: List of Substations with Impacts in 10-Year Historical Look-Back Analysis (2010-2019)

Item Number	Substation Name	Event Count	Direct Impact	Indirect Impact	Impacts w/ 100+ STE Customers	Temporary Generation Alternative Identified
1	**PLAINFIELD**	**15**	**-**	**15**	**15**	
2	**BRUNSWICK**	**14**	**14**	**-**	**14**	
3	**CLEAR LAKE**	**13**	**-**	**13**	**13**	
4	**FRUITLAND**	**13**	**13**	**-**	**12**	**Served by HBGS Island**[1]
5	**HARTLEY**	**12**	**-**	**12**	**12**	
6	**ARCATA**	**12**	**12**	**-**	**12**	**Served by HBGS Island**
7	**HARRIS**	**12**	**12**	**-**	**12**	**Served by HBGS Island**
8	**JANES CREEK**	**12**	**12**	**-**	**12**	**Served by HBGS Island**
9	**NEWBURG**	**12**	**12**	**-**	**12**	**Served by HBGS Island**
10	**EEL RIVER**	**12**	**12**	**-**	**12**	**Served by HBGS Island**
11	**WILLOW CREEK**	**12**	**12**	**-**	**12**	
12	**RIO DELL**	**12**	**12**	**-**	**12**	**Served by HBGS Island**
13	**HOOPA**	**12**	**12**	**-**	**12**	
14	**BLUE LAKE**	**12**	**12**	**-**	**12**	**Served by HBGS Island**
15	**TRINIDAD**	**12**	**12**	**-**	**12**	**Served by HBGS Island**
16	**CARLOTTA**	**12**	**12**	**-**	**12**	**Served by HBGS Island**
17	**FAIRHAVEN**	**12**	**12**	**-**	**12**	**Served by HBGS Island**
18	**ORICK**	**12**	**12**	**-**	**12**	**Served by HBGS Island**
19	**BIG LAGOON**	**12**	**12**	**-**	**12**	**Served by HBGS Island**
20	**LOW GAP**	**12**	**12**	**-**	**10**	
21	**KONOCTI**	**10**	**-**	**10**	**10**	
22	**HUMBOLDT BAY**	**10**	**7**	**3**	**10**	**Served by HBGS Island**
23	**CLOVERDALE**	**10**	**7**	**3**	**10**	
24	**POINT MORETTI**	**10**	**10**	**-**	**10**	
25	**FRENCH GULCH**	**10**	**10**	**-**	**10**	**2021 Vegetation Management Solution**
26	**WHITMORE**	**12**	**12**	**-**	**9**	
27	**GARBERVILLE**	**9**	**7**	**2**	**9**	**Served by HBGS Island**
28	**SHADY GLEN**	**15**	**15**	**-**	**8**	**Served by Colfax Distribution Microgrid**
29	**WEIMAR**	**15**	**15**	**-**	**8**	
30	**DOBBINS**	**15**	**15**	**-**	**8**	
31	**BIG BASIN**	**9**	**9**	**-**	**8**	
32	**COLUMBIA HILL**	**16**	**16**	**-**	**7**	
33	**CEDAR CREEK**	**13**	**13**	**-**	**7**	
34	**CLARK ROAD**	**11**	**11**	**-**	**7**	
35	**MONTICELLO**	**9**	**9**	**-**	**7**	

[1] The Humboldt Generating Station Island is a solution put in place in 2020 allowing the Humboldt Generating Station to be used as generation to energize an island of substations if the primary transmission connections into the Humboldt area must be de-energized due to a PSPS event.

Item Number	Substation Name	Event Count	Direct Impact	Indirect Impact	Impacts w/ 100+ STE Customers	Temporary Generation Alternative Identified
36	**REDBUD**	**7**	**-**	**7**	**7**	
37	**SAN RAFAEL**	**7**	**-**	**7**	**7**	
38	**NAPA**	**7**	**-**	**7**	**7**	
39	**BASALT**	**7**	**-**	**7**	**7**	
40	**OREGON TRAIL**	**7**	**-**	**7**	**7**	
41	**CORDELIA**	**7**	**4**	**3**	**7**	
42	**TULUCAY**	**7**	**-**	**7**	**7**	
43	**BONNIE NOOK**	**15**	**15**	**-**	**6**	
44	**FORT SEWARD**	**13**	**13**	**-**	**6**	
45	**ELECTRA**	**12**	**12**	**-**	**6**	
46	**BRIDGEVILLE**	**12**	**12**	**-**	**6**	
47	**SALT SPRINGS**	**9**	**9**	**-**	**6**	
48	**UKIAH**	**6**	**-**	**6**	**6**	
49	**ALLEGHANY**	**16**	**16**	**-**	**5**	
50	**FORESTHILL**	**15**	**15**	**-**	**5**	
51	**MAPLE CREEK**	**12**	**12**	**-**	**5**	
52	**BANGOR**	**6**	**6**	**-**	**5**	
53	**SILVERADO**	**5**	**5**	**-**	**5**	
54	**HOPLAND**	**5**	**-**	**5**	**5**	
55	**TAMARACK**	**5**	**5**	**-**	**5**	
56	**PIKE CITY**	**16**	**16**	**-**	**4**	
57	**GRASS VALLEY**	**13**	**13**	**-**	**4**	
58	**CALPELLA**	**4**	**-**	**4**	**4**	
59	**ALTO**	**4**	**-**	**4**	**4**	
60	**GREENBRAE**	**4**	**-**	**4**	**4**	
61	**MI-WUK**	**4**	**4**	**-**	**4**	
62	**FORT BRAGG A**	**4**	**3**	**1**	**4**	
63	**SAUSALITO**	**4**	**-**	**4**	**4**	
64	**WILLITS**	**4**	**2**	**2**	**4**	
65	**MIDDLETOWN**	**4**	**-**	**4**	**4**	
66	**NOVATO**	**4**	**-**	**4**	**4**	
67	**FITCH MOUNTAIN**	**4**	**4**	**-**	**4**	
68	**GEYSERVILLE**	**4**	**4**	**-**	**4**	
69	**OLEMA**	**4**	**-**	**4**	**4**	
70	**SUMMIT**	**4**	**4**	**-**	**4**	
71	**PINE GROVE**	**12**	**12**	**-**	**3**	
72	**NARROWS**	**4**	**4**	**-**	**3**	
73	**STAFFORD**	**4**	**-**	**4**	**3**	
74	**WOODACRE**	**4**	**1**	**3**	**3**	
75	**BOLINAS**	**4**	**-**	**4**	**3**	
76	**IGNACIO**	**3**	**-**	**3**	**3**	
77	**LAKEVILLE**	**3**	**-**	**3**	**3**	
78	**CORONA**	**3**	**-**	**3**	**3**	

Item Number	Substation Name	Event Count	Direct Impact	Indirect Impact	Impacts w/ 100+ STE Customers	Temporary Generation Alternative Identified
79	**GUALALA**	**3**	**3**	**-**	**3**	
80	**STILLWATER**	**3**	**-**	**3**	**3**	
81	**PHILO**	**3**	**-**	**3**	**3**	
82	**PENNGROVE**	**3**	**-**	**3**	**3**	
83	**COVELO**	**3**	**3**	**-**	**3**	
84	**CHALLENGE**	**15**	**15**	**-**	**2**	
85	**DRUM #1 PH**	**12**	**12**	**-**	**2**	
86	**PLACERVILLE**	**11**	**11**	**-**	**2**	
87	**SPAULDNG 3 PH**	**10**	**10**	**-**	**2**	
88	**RINCON**	**5**	**5**	**-**	**2**	
89	**ANNAPOLIS**	**3**	**3**	**-**	**2**	
90	**SANTA ROSA A**	**2**	**-**	**2**	**2**	
91	**BELLEVUE**	**2**	**-**	**2**	**2**	
92	**MONROE**	**2**	**-**	**2**	**2**	
93	**PUEBLO**	**2**	**1**	**1**	**2**	
94	**SONOMA A**	**2**	**-**	**2**	**2**	
95	**PACIFICA**	**2**	**2**	**-**	**2**	
96	**PEORIA**	**2**	**-**	**2**	**2**	
97	**LUCERNE**	**2**	**-**	**2**	**2**	
98	**LOS MOLINOS**	**2**	**2**	**-**	**2**	
99	**LAYTONVILLE**	**2**	**2**	**-**	**2**	
100	**ELK**	**2**	**-**	**2**	**2**	
101	**ANTLER**	**2**	**-**	**2**	**2**	
102	**KESWICK**	**2**	**-**	**2**	**2**	
103	**POINT ARENA**	**2**	**2**	**-**	**2**	
104	**DAIRYVILLE**	**2**	**2**	**-**	**2**	
105	**VINA**	**2**	**2**	**-**	**2**	
106	**ICASTAIC (ARCO PIPELINE TEJON SUB)**	**2**	**2**	**-**	**2**	
107	**KANAKA**	**16**	**16**	**-**	**1**	
108	**WEST POINT**	**12**	**12**	**-**	**1**	
109	**APPLE HILL**	**11**	**11**	**-**	**1**	
110	**EL DORADO PH**	**11**	**11**	**-**	**1**	
111	**MOLINO**	**1**	**-**	**1**	**1**	
112	**HIGHWAY**	**1**	**-**	**1**	**1**	
113	**LAS GALLINAS A**	**1**	**-**	**1**	**1**	
114	**COTATI**	**1**	**-**	**1**	**1**	
115	**FULTON**	**1**	**-**	**1**	**1**	
116	**CARQUINEZ**	**1**	**-**	**1**	**1**	
117	**WINDSOR**	**1**	**-**	**1**	**1**	
118	**MARTELL**	**1**	**1**	**-**	**1**	
119	**MIRABEL**	**1**	**-**	**1**	**1**	
120	**RESERVATION RD**	**1**	**1**	**-**	**1**	

Item Number	Substation Name	Event Count	Direct Impact	Indirect Impact	Impacts w/ 100+ STE Customers	Temporary Generation Alternative Identified
121	**LAURELES**	**1**	**1**	**-**	**1**	
122	**YOSEMITE**	**1**	**1**	**-**	**1**	
123	**BIG RIVER**	**1**	**-**	**1**	**1**	
124	**MENDOCINO**	**1**	**-**	**1**	**1**	
125	**SALMON CREEK**	**1**	**1**	**-**	**1**	
126	**GANSNER**	**1**	**1**	**-**	**1**	
127	**UPPER LAKE**	**1**	**-**	**1**	**1**	
128	**OTTER**	**1**	**1**	**-**	**1**	
129	**IONE PRISON**	**1**	**1**	**-**	**1**	
130	**GRAYS FLAT**	**1**	**1**	**-**	**1**	

Advice 6105-E
March 5, 2021

Appendix B

Request for Proposals Temporary Generation Pricing Worksheets

(Public)

Substation Microgrids Generator Rental Rates
Current expected total procurement is approximately 200-255 MW. * PG&E has a target delivery date of April 1st, 2021 for 50% of the expected total MWs, and a mandatory delivery deadline of June 1st, 2021 for the remaining 50%.

Item #	Is this Equipment Offered for the Diesel-Alternative Generation Technologies Pilot projects? (Yes/No)	Equipment Type	Generator Quantity Requested by PG&E	Generator Quantity Offered by Contractor	Generator Size Requested by PG&E (Nameplate kW)	Generator Size Offered by Contractor (Nameplate kW)	Generator Size Offered by Contractor (Continuous kW)	Is your company supplying this generator from its own inventory?	For generators that will not be supplied from your own inventory, identify the other company or supply network that will be supplying this generator.	PERP Registered or CARB Certified	Tier Rating (CARB) Tier 4 Preferred	Fuel Type? (Diesel/CNG/LNG/Other-specify)	Renewable Diesel / Gas Capable? (Yes/No)	Footprint Size (square feet per unit)	Current Location (City)	Current Location (State)	Earliest Delivery Date	Target Delivery Date*
1			10		500													
2			79		1000													
3			6		1250													
4			15		1500													
5			69		2000													
6																		
7																		
8																		
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25																		

[1]Monthly Reservation Rate is a monthly fixed fee for reservation and exclusive use of the unit by PG&E from April 1/June 1, 2021 through December 31, 2021. Fee is paid in equal monthly increments over the reservation period.
[2]Unit Variable Rate is a fee applied to each unit for each hour of operation not including fuel, labor or other costs covered by another category.
[3]Other Fee is a fee applied to each unit not covered by the previous columns and not covered by another category such as fuel and labor. Enter fee definition in column X.
Note: Proposed equipment should be located within the continental US

Distribution Microgrids Generator Rental Rates

Current expected total procurement is approximately 80-85 MW. ***PG&E has a target delivery date of April 1st, 2021 for 50% of the expected total MWs, and a mandatory delivery deadline of June 1st, 2021 for the remaining 50%.**

Item #	Is this Equipment Offered for the Diesel-Alternative Generation Technologies Pilot projects? (Y/N)	Equipment Type	Generator Quantity Requested by PG&E	Generator Quantity Offered by Contractor	Generator Size Requested by PG&E (Nameplate kW)	Generator Size Offered by Contractor (Nameplate kW)	Generator Size Offered by Contractor (Continuous kW)	Is your company supplying this generator from its own inventory?	For generators that will not be supplied from your own inventory, identify the other company or supply network that will be supplying this generator.	PERP Registered or CARB Certified	Tier Rating (CARB) Tier 4 Preferred	Fuel Type? (Diesel/CNG/LNG/Other-specify)	Renewable Diesel / Gas Capable? (Yes/No)	Footprint Size (square feet per unit)	Current Location (City)	Current Location (State)	Earliest Delivery Date	Target Delivery Date*	Latest Delivery Date	Vendor required t Monthly Reservation Rate ($/unit)[1]
1			14		500															
2			35		1000															
3			9		1500															
4			13		2000															
5																				
6																				
7																				
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[1]Monthly Reservation Rate is a monthly fixed fee for reservation and exclusive use of the unit by PG&E from April 1/June 1, 2021 through December 31, 2021. Fee is paid in equal monthly increments over the reservation period.
[2]Unit Variable Rate is a fee applied to each unit for each hour of operation not including fuel, labor or other costs covered by another category
[3]Other Fee is a fee applied to each unit not covered by the previous columns and not covered by another category such as fuel and labor. Enter fee definition in column X
Note: Proposed equipment should be located within the continental US

Individual Critical Customer Back-Up Power Support: Generator Rental Rates
Current expected total procurement is approximately 40 - 45 MW. *** PG&E has a target delivery date of April 1st, 2021 for 50% of the expected total MWs, and a mandatory delivery deadline of June 1st, 2021 for the remaining 50%.**

Item #	Equipment Type	Generator Quantity Requested by PG&E	Generator Quantity Offered by Contractor	Generator Size Requested by PG&E (Nameplate kW)	Generator Size Offered by Contractor (Nameplate kW)	Generator Size Offered by Contractor (Continuous kW)	Is your company supplying this generator from its own inventory?	For generators that will not be supplied from your own inventory, identify the other company or supply network that will be supplying this generator.	PERP Registered or CARB Certified	Tier Rating (CARB) Tier 4 Preferred	Fuel Type? (Diesel/CNG/LNG/Other-specify)	Renewable Diesel / Gas Capable? (Yes/No)	Footprint Size (square feet per unit)	Current Location (City)	Current Location (State)	Earliest Delivery Date
1		1		125												
2		2		150												
3		26		200												
4		4		300												
5		5		400												
6		5		500												
7		5		800												
8		12		1000												
9		10		1500												
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[1]Monthly Reservation Rate is a monthly fixed fee for reservation and exclusive use of the unit by PG&E from April 1/June 1, 2021 through December 31, 2021. Fee is paid in equal monthly increments over the reservation period.
[2]Unit Variable Rate is a fee applied to each unit for each hour of operation not including fuel, labor or other costs covered by another category.
[3]Other Fee is a fee applied to each unit not covered by the previous columns and not covered by another category such as fuel and labor. Enter fee definition in column X.
Note: Proposed equipment should be located within the continental US

Community Resource Centers: Generator Rental Rates

Current expected total procurement is approximately 11-13 MW. **Vendors will need to be prepared to deliver generators and ancillary equipment to Community Resource Centers by April 1, 2021.**

*** This list is subject to change**

Item #	Equipment Type	County	Location*	Generator Size Requested by PG&E (Nameplate kW)	Generator Size Offered by Contractor (Nameplate kW)	Generator Size Offered by Contractor (Continuous kW)	Is your company supplying this generator from its own inventory?	For generators that will not be supplied from your own inventory, identify the other company or supply network that will be supplying this generator.	PERP Registered or CARB Certified	Tier Rating (CARB) Tier 4 Preferred	Fuel Type? (Diesel/CNG/LNG/Other-specify)	Renewable Diesel / Gas Capable? (Yes/No)	Footprint Size (square feet per unit)	Current Location (City)	Current Location (State)	Earliest Delivery Date	Target Delivery Date	Latest Delivery Date
1		Alameda	San Leandro	200														
2		Alameda	Berkeley	200														
3		Alameda	Emeryville	200														
4		Amador	Pioneer	64														
5		Amador	Plymouth	150														
6		Butte	Forest Ranch	65														
7		Butte	Bangor	75														
8		Butte	Chico	200														
9		Butte	Oroville	200														
10		Calaveras	Murphys	70														
11		Calaveras	Valley Springs	125														
12		Calaveras	Mt. Ranch	70														
13		Calaveras	San Andreas	150														
14		Calaveras	West Point	70														
15		Colusa	Stonyford	25														
16		Colusa	Colusa	50														
17		Contra Costa	Antioch	125														
18		Contra Costa	Lafayette	200														
19		Contra Costa	Walnut Creek	200														
20		El Dorado	Cameron Park	200														
21		El Dorado	El Dorado Hills	100														
22		Fresno	Tollhouse	150														
23		Fresno	Auberry	100														
24		Fresno	Dunlap Area	150														
25		Humboldt	Blue Lake	50														
26		Humboldt	Fortuna	70														
27		Kern	Taft	64														
28		Kern	Arvin	64														
29		Kern	Lamont	70														
30		Kern	Lebec	70														
31		Lake	Lakeport	100														
32		Madera	Ahwahnee	64														
33		Madera	Coarsegold	64														
34		Madera	Oakhurst	200														
35		Madera	North Fork	100														
36		Marin	Fairfax	56														
37		Marin	San Rafael	200														
38		Marin	Novato	100														
39		Marin	Point Reyes	200														
40		Marin	Marin City	70														
41		Mariposa	Mariposa	150														
42		Mariposa	Mariposa	70														
43		Mendocino	Point Arena	65														
44		Mendocino	Laytonville	50														
45		Mendocino	Willits	100														
46		Monterey	Salinas	70														
47		Monterey	King City	150														
48		Napa	Calistoga	70														
49		Napa	Napa	50														
50		Napa	Napa	50														
51		Napa	American Canyon	150														
52		Nevada	Grass Valley	70														
53		Nevada	North San Juan	30														
54		Nevada	Nevada City	100														
55		Nevada	Grass Valley	200														
56		Nevada	Penn Valley	100														
57		Placer	Foresthill	50														
58		Placer	Alta	30														

Additional Equipment Available for Potential Use by PG&E (if required)

Equipment Type	Equipment Description	Size (Nameplate kW)	Size (Continuous kW)	PERP Registered or CARB Certified	Tier Rating (CARB) Tier 4 Preferred	Fuel Type? (Diesel/CNG/LNG/ Other-specify)

*Generator Rental Rate (Single Shift)

**Unit Variable Rate is a fee applied to each unit for each hour of operation not including fuel, labor or other costs covered by another category.

***Other Fee is a fee applied to each unit not covered by the previous columns and not covered by another category such as fuel and labor. Enter fee definition in column O.

Labor + Fuel Rates

Description	Unit
Setup and Take down labor - per hour	$ per hour
Electrical Work performed by IBEW 1245 employees (e.g., interconnection, ground grid, etc.)	
Operator	$ per hour
Journeyman Electrician	$ per hour
Foreman	$ per hour
Apprentice Electrician	$ per hour
Groundman	$ per hour
[1] Stand by time onsite (Operator/Generator Technician time) - per hour	$ per hour
Additional Labor Classifications (if needed):	
	$ per hour
	$ per hour
	$ per hour
	$ per hour
	$ per hour
	$ per hour
	$ per hour
	$ per hour
(Internal) Equipment delivery and pick up rate - Portal to Portal (Up to 80,000 lbs gross)	$ per hour
(Internal) Equipment delivery and pick up rate - Portal to Portal (Over 80,000 lbs gross)	$ per hour
Fuel delivery charge per delivery, including emergency	$ Each
Fuel charge per gallon	Cost + Markup
Subcontracted Labor	Cost + Markup

Instructions: complete the cells highlighted in yellow

Cable Rates

Size	Type	Voltage Rating	Free Air Capacity	Quantity	Quantity Available	All Regions/Divisions Monthly Reservation Rate ($/Quantity)*
4/0 Male Pig Tail				$ Each		
4/0 Female Pig Tail				$ Each		
#2 Male Pig Tail				$ Each		
#2 Female Pig Tail				$ Each		
#1/4				$ Each 50 Feet		
#2/0				$ Each 50 Feet		
#2/4				$ Each 50 Feet		
#2/5				$ Each 50 Feet		
#4/0 (25 ft)				$ Each 25 Feet		
#4/0 (50 ft)				$ Each 50 Feet		
444 MCM				$ Each 50 Feet		
#6/4				$ Each 50 Feet		
#10/3				$ Each 50 Feet		
#12/3				$ Each 50 Feet		
500MCM 15KV 50' CABLES	NEMA TO NEMA			$ Each 50 Feet		
500MCM 25KV 100' CABLES	NEMA TO DB			$ Each 100 Feet		
500MCM 25KV 50' CABLES	NEMA TO NEMA			$ Each 50 Feet		
500MCM 36KV 100' CABLES	NEMA TO DB			$ Each 100 Feet		
500MCM 36KV 150' CABLES	NEMA TO NEMA			$ Each 150 Feet		
4/0 25KV 50' CABLES	NEMA TO NEMA			$ Each 50 Feet		
4/0 25KV 100' CABLES	NEMA TO LB			$ Each 100 Feet		
4/0 25MV 50' CABLES	NEMA TO LB			$ Each 50 Feet		
4/0 25MV 50' CABLES	NEMA TO 600AMP DB			$ Each 50 Feet		
4/0 15KV 300' CABLES	NEMA TO NEMA			$ Each for 300 Feet		
4/0 15KV 250' CABLES	NEMA TO NEMA			$ Each for 250 Feet		
4/0 15KV 200' CABLES	NEMA TO NEMA			$ Each for 200 Feet		
4/0 15KV 150' CABLES	NEMA TO NEMA			$ Each for 150 Feet		
4/0 15KV 100' CABLES	NEMA TO NEMA			$ Each 100 Feet		
4/0 15KV 50' CABLES	NEMA TO NEMA			$ Each 50 Feet		
4/0 15KV 25' CABLES	NEMA TO NEMA			$ Each for 25 Feet		
2/0 15KV 100' CABLES	NEMA TO NEMA			$ Each for 100 Feet		
2/0 15KV 75' CABLES	NEMA TO NEMA			$ Each for 75 Feet		
2/0 15KV 50' CABLES	NEMA TO NEMA			$ Each for 50 Feet		
1/0 15KV 50' CABLES	LB TO 600AMP DB			$ Each for 50 Feet		
777 MCM				$ Each 50 Feet		
CABLE TEE'S (HARD)				$ Each		

*Monthly Reservation Rate is a monthly fixed fee for reservation and exclusive use of the unit by PG&E from June 1, 2021 through December 31,2021. Fee is paid in equal monthly increments over the reservation period.

Ancillary Equipment List

Equipment Type	Description	Voltage Type	Transformer Configuration (Delta or Wye Configuration)	Quantity Available	Hourly Rate	Daily Rate	Weekly Rate	Monthly Rate
RESISTIVE LOAD BANKS								
100kW								
250kW								
400kW								
600kW								
1000kW								
1500kW								
2000kW								
2500kW								
3000kW								
REACTIVE LOAD BANKS								
3.3 LOADBANK 480VOLT RES/REA								
6.0 LOADBANK 480VOLT RES/REA								
REACTOR								
500kVA								
650 KVA								
1000kVA								
CAPACITOR BANK								
1200KVA								
1500KVA								
2000kVA								
2500kVA								
3000kVA								
RESISTIVE / REACTIVE LOAD BANKS								
500kVA								
1500kVA								
1875kVA								
3300kVA								
6000kVA								
TRANSFORMERS								
500kVA								
1000kVA								
1500kVA								
2500kVA								
3500KVA								
3750kVA								
4000kVA								
5000kVA								
7000kVA								
FUEL TANKS								
500 US Gal								
1000 US Gal								
1240 US Gal								
2300 US Gal								
SPILL BERMS								
12 Foot								
20 Foot								
40 Foot								
50 Foot								
MISCELLANEOUS								
Trailer < 40ft								
Trailer >= 40ft								
Chassis Trailer								
Cable Ramp								
Service Truck								
DRIVE-OVER - CABLE GUARD 4/0 X5								
DRIVE-OVER - CABLE GUARD 500 X3								
Spider Box								
Light Tower								
Forklift								
Strip Chart Recorder								
"K-Rail" 10 Foot								
"K-Rail" 20 Foot								
10,000 AMP Tap Panel								
Mobile Restroom Facilities								
Other:								
Other:								
SWITCHGEAR								
Single Gang								
3 Gang								
4 Gang								
5 Gang								
6 Gang								
7 Gang								
8 Gang								
9 Gang								
10 Gang								
SPECIALTY SWITCHGEAR								

Instructions: complete the cells highlighted in yellow

Discounts

Volume Discount Thresholds: Discount once annual dollar discount level is reached.	**Provide a % discount in the yellow cell.**
$1 to $5,000,000	
$5,000,000 to $14,999,999	
$15,000,000 to $29,999,999	
$30,000,000 +	

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Appendix E

RFP Overview

(Public)

Temporary Generation RFP Overview

1. **OVERVIEW AND PURPOSE**:

1.1. PG&E seeks to contract for mobile and staged temporary generation for use during the 2021 wildfire season to mitigate the customer impact of Public Safety Power Shutoff (PSPS) events.[1] PG&E also looks to contract for the associated ancillary equipment and services needed to transport, interconnect, fuel, operate, and maintain these generators. PG&E is committed to moving toward an increasingly cleaner portfolio of temporary generation solutions in 2021. PG&E will accept bids for conventional temporary generation (i.e., diesel), with a strong preference that any diesel units be Tier 4 certified by CARB and fueled with hydrogenated vegetable oil (HVO). PG&E is also looking to pilot diesel-alternative generation technologies and welcomes bids for solutions or combinations of solutions including, but not limited to natural gas generators, batteries, and fuel cells, as long as the single technology or combination of technologies meet all of PG&E's operational requirements. These diesel-alternative technologies will be piloted at a limited number of substations and possibly distribution microgrids.

1.1.1. These generators are intended to support four temporary generation workstreams intended to mitigate the customer impacts of PSPS events in 2021:

- Substation microgrids
- Distribution microgrids
- Individual critical customer back-up power support
- Community Resource Centers

1.1.2. If the need arises and logistics allow, PG&E may elect to also use some portion of this temporary generation to support wildfire response, reliability events, and other emergency needs.

1.2. PG&E does not own either a fleet of temporary generators or the ancillary equipment to interconnect generation at a given location. PG&E also does not currently have a workforce in place to interconnect generation. Thus, PG&E seeks to contract for the following equipment and services from contractors (although contractors are not required to provide all of the services listed below):

1.2.1. Provide generators for use in one or more of the temporary generation workstreams. Delivery of any generators would need to occur no later than June 1, 2021 (for the CRC units by April 1, 2021).[2] A single year rental would end on December 31, 2021.[3] PG&E is open to contractor proposals for generator rentals beyond the June 1, 2021 - December 31,

[1] Mobile means that the generation could be deployed from a storage location and interconnected at a given location within 48 hours. Staged means that the generation would remain at a single location for the duration of the 2021 wildfire season.
[2] For the Substation Microgrid, Distribution Microgrid and Back Up Power Support workstreams, PG&E prefers to take delivery of half of the capacity by April 1, 2021 (the target delivery deadline) and the second half by June 1, 2021. The mandatory delivery deadline for all units is June 1, 2021.
[3] The end date of the term may be extended beyond December 31, depending on weather conditions and fire risk.

2021 time period to the extent doing so is necessary, prudent, and more cost-effective for our customers.

1.2.2. Provide ancillary equipment needed to interconnect generation at a given location (e.g., cabling, step-up transformers, temporary ground grids, etc.). Delivery of any ancillary equipment would need to occur by June 1, 2021 (for the CRC units by April 1, 2021).[2] A single year rental would end December 31, 2021.[4] PG&E is open to contractor proposals for equipment rentals beyond the June 1, 2021 - December 31, 2021 period to the extent doing so is necessary, prudent and more cost-effective for our customers.

1.2.3. Provide ancillary services and personnel needed to transport, interconnect, fuel, monitor, maintain, and track the location of generators. Contractors will safely operate the units as directed by PG&E. Contractors will be appropriately staffed to communicate effectively on a 24/7 basis to meet PG&E's generation and ancillary equipment and services needs that arise during any PSPS or other emergency event.

1.2.4. Store any generation offsite if not needed at a given location at a particular time.

1.2.5. Acquire the necessary state registrations and/or permits by June 1, 2021 for any available generators supplied to PG&E (by April 1, 2021 for Community Resource Centers units).

1.3. 2021 Temporary Generation Workstreams

PG&E plans to deploy temporary generation for four workstreams for PSPS mitigation in 2021.

1.3.1. **Substation Microgrids** – Substation Microgrids are temporary generation placed at a substation to energize distribution lines served from the substation when safe to do so during a PSPS or other emergency event. Generation will likely largely be pre-staged at an identified substation. Some amount of in-event deployment may be needed as weather and ground conditions evolve. This workstream will likely use larger units in the 800kW - 2MW range (nameplate capacity). Current expected total procurement is approximately 200 – 255 MW.

1.3.2. **Distribution Microgrids** – Distribution Microgrids are temporary generation placed on the distribution system either temporarily or through a permanent pre-installed interconnection hub (PIH) to energize a hardened/undergrounded commercial corridor with shared community services during a PSPS or other emergency event. Generation will likely largely be pre-staged at an identified substation. Some amount of in-event deployment may be needed as weather and ground conditions evolve. This workstream will likely use larger units in the 500kW and above range (nameplate capacity). Current expected total procurement is approximately 80 - 85 MW.

1.3.3. **Individual Critical Customer Back-up Power Support** – Individual Critical Customer Back-up Power Support is temporary generation placed just in front of or behind the meter of an individual critical customer in need of back-up generation during a PSPS or other emergency event. Some generation could be pre-interconnected in advance of wildfire season, but the majority will be deployed during a PSPS or other emergency event as need arises. This workstream will likely use moderately sized units in the 300 - 800kW

[4] The end date of the term may be extended beyond December 31, depending on weather conditions and fire risk.

range (nameplate capacity). Current expected total procurement is approximately 40 - 45 MW.

1.3.4. **Community Resource Centers** – Community Resource Centers ("CRCs") are locations where temporary generation is placed at a pre-determined hardened indoor facility (e.g., a library). CRCs are intended to provide customers access to basic resources and up-to-date information. Generation will be pre-staged at CRCs in advance of wildfire season. This workstream will likely use smaller sized units in the 30 - 300kW range (nameplate capacity). Current expected total procurement is approximately 11 - 13 MW.

PG&E may elect to redeploy generators from one temporary generation workstream to another to provide the most effective resource utilization on an event-by-event basis.

1.4 **Piloting Diesel Alternative Technologies in 2021**

PG&E is looking to pilot diesel-alternative generation technologies in 2021 at a limited number of substations and possibly distribution microgrids. All diesel-alternative technologies are welcome as long as the single technology or combination of technologies meet all of PG&E's operational requirements (e.g., a battery and a synchronous condenser to address fault duty protections). While PG&E strongly prefers vendors to supply continuous power generation for at least 72 hours duration during a PSPS event, PG&E requires a minimum of 48 hours duration (see DGEMS Contractor Engineering and Operational Testing Requirements).

These diesel-alternative technologies will be piloted at a small number of substations and possibly distribution microgrids to be identified by PG&E. Additional information on example diesel-alternative pilot locations is provided to vendors in the 2021 Substation and Distribution Microgrid Diesel Alternative Pilot Projects zip file. This information is anonymized for site-specific details and is intended to provide examples of potential diesel-alternative pilot locations. PG&E is expressly not asking vendors to provide site-specific bid information at this time. PG&E will provide additional site-specific information in discussions with short-listed bidders.

2. **SCOPE OF WORK**:

2.1 Contractor shall provide temporary generators (mobile and/or staged), ancillary equipment, and ancillary services. Contractors can contract out for portions of their offering, but should clearly indicate to PG&E all portions of the scope of work that will be subcontracted.

2.2 Contractors are invited to offer generators that are certified by California Air Resources Board (CARB) and registered with the Portable Equipment Registration Program (PERP). These units can range from 30kW - 2MW in nameplate capacity. Contractors are welcome to offer generators that are currently out-of-state, not certified with CARB, or not registered under PERP. For those generators that are not currently certified with CARB and/or not registered under PERP, CARB certification and PERP registration must be completed by June 1, 2021 (by April 1, 2021 for CRC units).

2.3 The Scope of Work includes the following services:

2.3.1 Stage and Deploy Generators: For specified staged generation sites, contractor will stage the generators at mutually agreed locations and make them ready for energization at any time. Upon request from PG&E, contractor will inspect the site, propose a design for the installation, and seek approval from PG&E. Once the design is approved, contractor will transport the generators to the site, safely install the generator and any necessary

equipment, and make the location safe and ready for operation. For staged generation, the contractor will deliver a portion of the generators to specified locations for the duration of the contract. For mobile generation, the contractor will store generation at a mutually agreed upon location until a need arises during a PSPS or other emergency response event. When the need arises, PG&E will instruct the contractor to transport, interconnect, and fuel the generator at the specified location. Re-location of the unit to a storage location following the event may also be needed.

2.3.2 Operate the Units: Contractor will safely operate the generating units during the PSPS event. Vendor must perform hourly checks on equipment to make sure all equipment is producing proper voltage, frequency and mechanically functioning as designed. Vendor shall also monitor and coordinate fueling, with proper fuel, for equipment to continue to run efficiently.

2.3.3 Removal: Within 72 hours of request from PG&E, contractor will safely remove the unit from any given site, ensure the site is left in a clean and safe condition and return the generator to a central staging area.

2.3.4 Labor Availability: Given the potential for large-scale PSPS events involving all the units reserved for all four temporary generation workstreams, contractor will maintain access to a trained workforce capable of communicating with PG&E regarding staffing needs as they arise as well as safely deploying and operating all reserved units simultaneously for the duration of the contract. Appropriate staffing is needed 24/7 to support a PSPS or other emergency event.

2.3.5 Renewable Diesel Availability: A diesel generation contractor will make arrangements with its fuel supplier(s) to ensure that sufficient renewable diesel fuel (HVO preferred) is available to fuel the reserved generating units for the duration of the contract. In addition, contractor will make arrangements with fuel suppliers to ensure that during the term of the contract, they have sufficient capacity to deliver fuel to the reserved generating units if all units are deployed and operating simultaneously. Contractors and their suppliers must ensure that fuel storage, fueling, and refueling are all performed safely.

2.3.6 Natural Gas or Hydrogen Availability: Natural gas and hydrogen generation contractors will make arrangements with its fuel supplier(s) to ensure that sufficient natural gas or hydrogen is available to fuel the reserved generating units for the duration of the contract. In addition, contractor will make arrangements with fuel suppliers to ensure that during the term of the contract they have sufficient capacity to deliver fuel to the reserved generating units if all are deployed and operating simultaneously. Contractors and their suppliers must ensure that fuel storage, fueling, and refueling are all performed safely.

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Appendix F

2021 Substation and Distribution Microgrid Diesel Alternative Pilot Projects

(Public)

2021 Substation and Distribution Microgrid Diesel Alternative Pilot Projects

Contents

Potential 2021 Diesel Alternative Substation Pilot Sites

Site A

A.1 Site description

- Peak load: 14 MW
- Peak customer count: 4,000

A.2 Load profile

See attachment [2021 Clean Substation Microgrid Pilot Load Profiles.xlsx]

- Peak: 14 MW

A.3 Space available

- Estimated land available for development at substation: 5,500 sq. ft.
- Distance to distribution pipeline: No gas within 10+ miles.
- Distance to transmission pipeline: No gas within 10+ miles.
- Percentage of peak load gas system can currently support: N/A

A.4 Gas availability

- Distance to distribution pipeline: 100 ft
- Distance to transmission pipeline: 10,000 ft
- Percentage of peak load gas system can currently support: 2%

Site B

B.1 Site description

- Peak load: 4 MW
- Peak customer count: 2,000
- There is a school within 1,000 ft. of the substation.

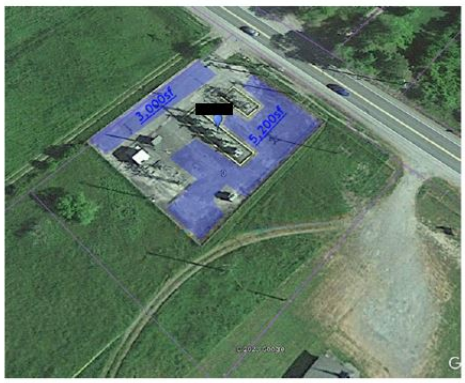
B.2 Load profile

See attachment [2021 Clean Substation Microgrid Pilot Load Profiles.xlsx]

- Peak: 4 MW

B.3 Space available

- Estimated land available for development at substation: 8,200 sq. ft.
- PG&E owned land within 0.5 miles: 22,500 sq. ft.
- PG&E owned land within 1 mile: No incremental land.
- PG&E land owned within 2 miles: No incremental land.



B.4 Gas available

- Distance to distribution pipeline: No gas within 10+ miles.
- Distance to transmission pipeline: No gas within 10+ miles.
- Percentage of peak load gas system can currently support: N/A

Site C

C.1 Site description

- Peak load: 6 MW
- Peak customer count: 2,500
- There is a school within 1,000 ft. of the substation.

C.2 Load profile

See attachment [2021 Clean Substation Microgrid Pilot Load Profiles.xlsx]

- Peak: 6 MW

C.3 Space available

- Estimated land available for development at substation: 6,700 sq. ft.
- PG&E owned land within 0.5 miles: Limited space outside the substation fence in the left quarter of the land parcel outlined in red below.
- PG&E owned land within 1 mile: No incremental land.
- PG&E land owned within 2 miles: No incremental land.

C.4 Gas available

- Distance to distribution pipeline: No gas within 10+ miles.
- Distance to transmission pipeline: No gas within 10+ miles.
- Percentage of peak load gas system can currently support: N/A

Potential 2021 Diesel Alternative Distribution Microgrid Pilot Sites

Site D

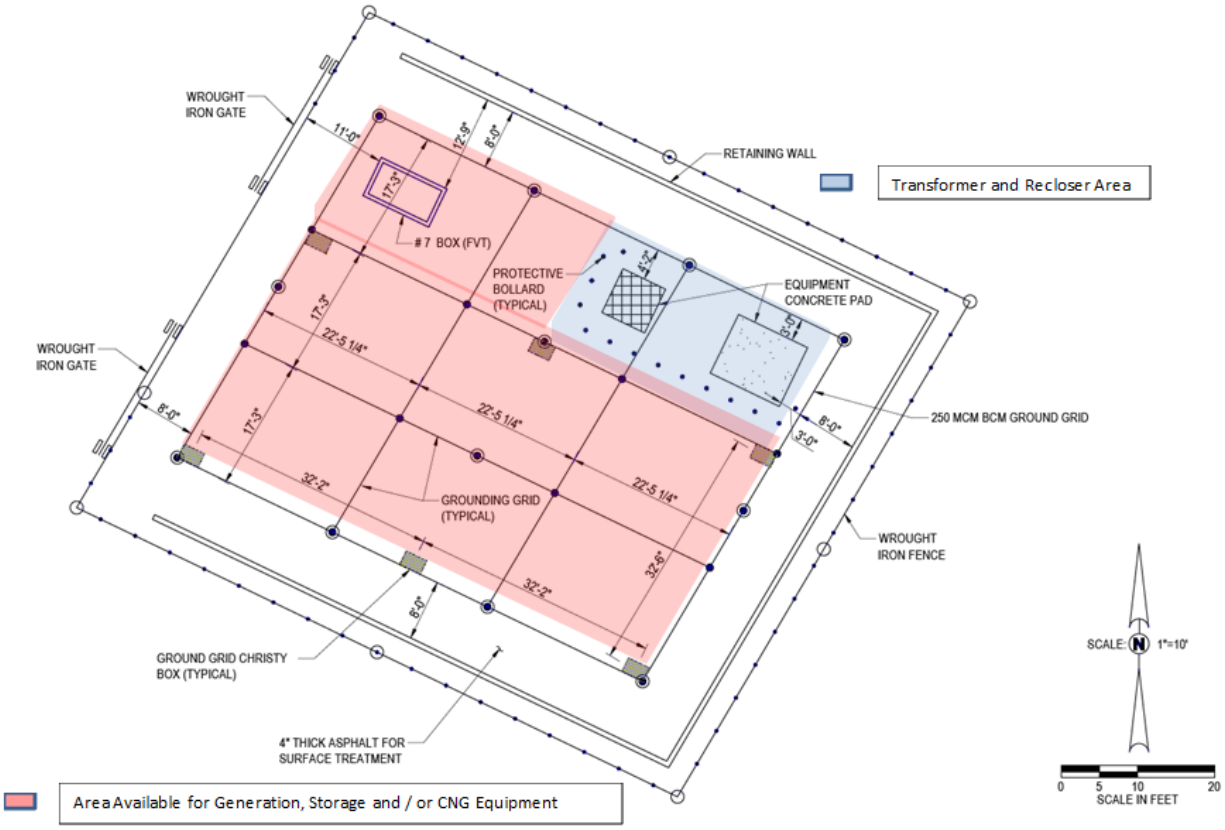
D.1 Site description

- Pre-installed interconnection hub (PIH) available
- Space available for stationary or mobile equipment

D.2 Load profile

- See attachment [2021 Clean Temp Microgrid Pilot Load Profiles.xlsx]
- Peak: 204 kW

D.3 Space available



D.4 Desired technology

- Stationary storage to be paired with mobile diesel (or alternative generation source such as mobile CNG equipment that meets operational requirements within this solicitation)

Site E

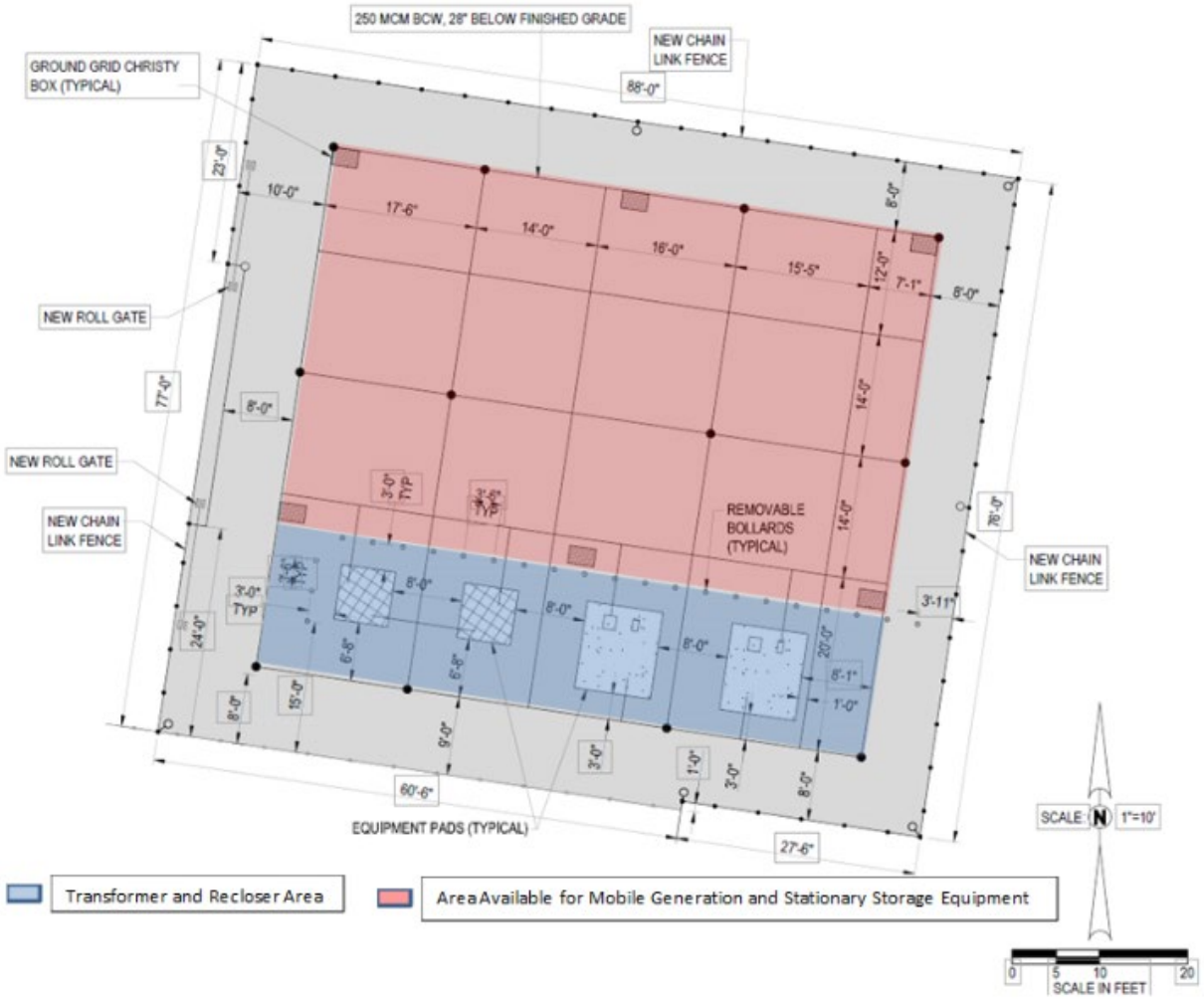
E.1 Site description

- Pre-installed interconnection hub (PIH) available
- Space available for stationary or mobile equipment
- Significant customer-owned solar in the area

E.2 Load profile

- See attachment [2021 Clean Temp Microgrid Pilot Load Profiles.xlsx]
- Peak: 253 kW

E.3 Space available



Note: All equipment must be located at least 3' inside the ground grid

E.4 Desired technology

- Stationary storage to be paired with mobile diesel (or alternative generation source such as mobile CNG equipment that meets operational requirements within this solicitation), and
- Microgrid controller for communication with customer owned DERs

Site F

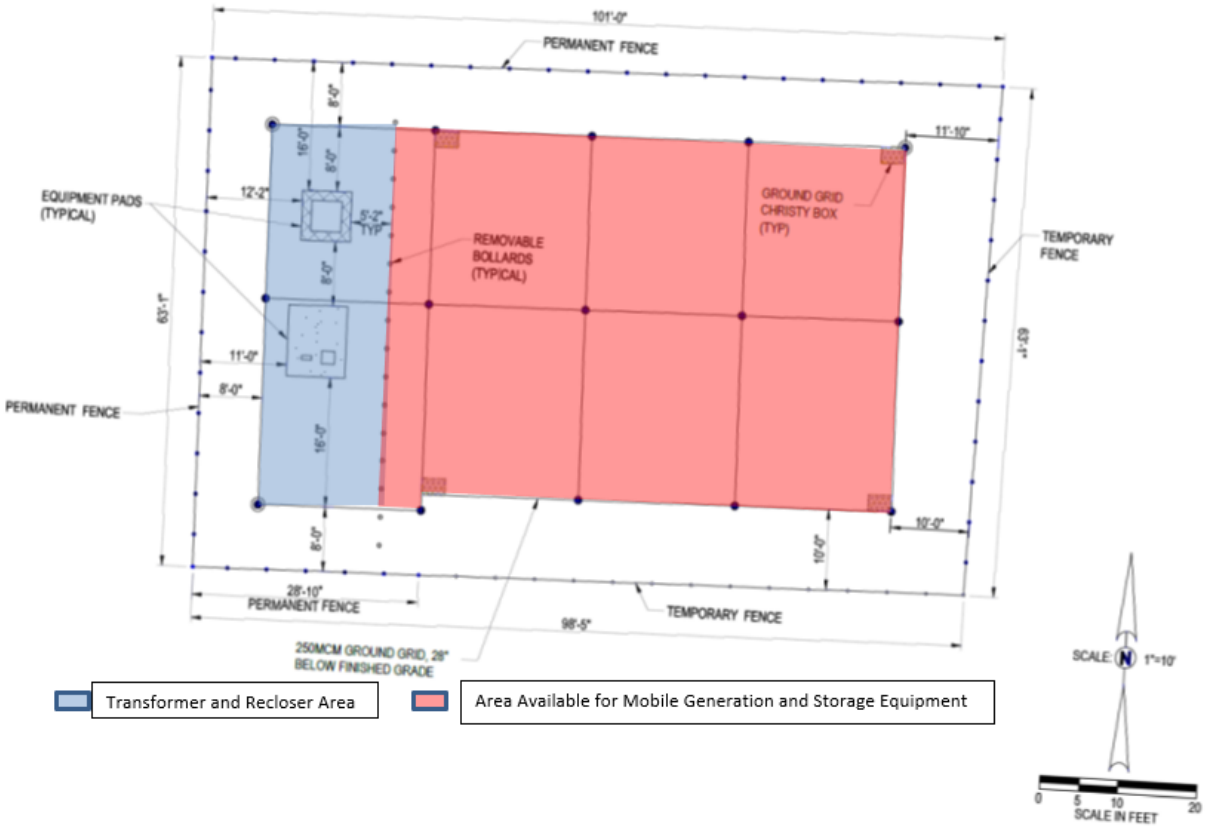
F.1 Site description

- Pre-installed interconnection hub (PIH) available
- Space available for stationary or mobile equipment

F.2 Load profile

- See attachment [2021 Clean Temp Microgrid Pilot Load Profiles.xlsx]
- Peak: 452 kW

F.3 Space available



Note: All equipment must be located at least 3' inside the ground grid

F.4 Desired technology

- Mobile or stationary storage to be paired with mobile diesel (or alternative generation source such as mobile CNG equipment that meets operational requirements within this solicitation)

Appendix

Pre-installed interconnection hub (PIH)

- Pre-installed interconnection hubs (PIHs) are designed to reduce installation complexity and increase safety and reliability of temporary generation used to energize islanded temporary microgrids during PSPS events.
- PIHs feature:
    - Grounding grid
    - Pad-mounted step-up transformer, which enables generators to be stepped up from 480V to the appropriate primary voltage (12kV – 21 kV)
    - Pad-mounted recloser, a system protection device
    - Access road
    - Permanent or temporary fencing

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Appendix G

RFP General Questionnaire

(Public)

Appendix F - RFP General Questionnaire

QUESTIONS
INFORMATION
Bidder shall answer all questions. All datasheet fields are limited to 1000 characters. Any response requiring additional space, may be uploaded to Tab 2 of Power Advocate with your proposal. If you chose to do so, please remember to note the name of the document and section supplementing your response in each corresponding cell.
GENERAL COMPANY INFORMATION
BUSINESS ENTITY VALIDATION
Instructions: Please go to the California Secretary of State website (https://businesssearch.sos.ca.gov/) and provide the following information. Please ensure that your company name matches exactly in the fields below.
CA Secretary of State Entity Number (e.g. C1234567)
CA Secretary of State Entity Name (Company Name)
State of Incorporation
Type of Business (C Corp, S Corp, LLC, etc.)
Address Line 1
Address Line 2
City
State
Postal Code/Zip
Web Site (If Applicable)
CONTACT INFORMATION: BID EVENT COORDINATOR
Instructions: Please provide the contact information of the personal who will the primary point of contact during the bid process.
Contact Name
Title
eMail Address
Telephone (Office)
Telephone (Mobile)
CONTACT INFORMATION: CONTRACT SIGNER
Instructions: Please provide the contact information of the personal who has authority to sign contracts on behalf of your company, should you become the successful bidder.
Contact Name
Title
eMail Address
Telephone (Office)
Telephone (Mobile)
CONTACT INFORMATION: CONTRACT ADMIN
Instructions: Please provide the contact information of the personal who will be responsible for managing or administrating the contract, should you become the successful bidder.
Contact Name
Title
eMail Address
Telephone (Office)
Telephone (Mobile)
FINANCIAL
Please provide the following company information so that we may understand your company's ownership structure, experience and financial position.
Is your company listed on a stock exchange? (Yes or No)
Specify market & ticker symbol (e.g. USA, PCG):
DUNS Number
Dun & Bradstreet Rating
Tax ID Number (if no DUNS number)
Please describe your company ownership structure (e.g. publically held, privately held, joint venture, etc.). Please list any parent, subsidiaries, or affiliate companies.
Revenues Current Year ($)
Net Earnings Current Year ($)
Revenues Previous Year ($)
Net Earnings Previous Year ($)
Revenues 2 Years Ago ($)
Net Earnings 2 Years Ago ($)
Revenues 3 Years Ago ($)
Net Earnings 3 Years Ago ($)
REFERENCES
Client Company Name
Contact Name
Title
Telephone
eMail
Client Company Name
Contact Name
Title
Telephone
eMail
Client Company Name
Contact Name
Title
Telephone
eMail
GENERAL INFORMATION
EMPLOYEES
How many employees work directly for your company (excluding sub-contractors)?
Part-Time Employees
UNION INFORMATION
Is your company a signatory or willing to be a signatory to a union agreement?
If yes, please list your agreements.
ETHICS AND COMPLIANCE
PG&E stresses the importance of integrity, honesty, professionalism, and ethical business conduct to all of its employees and it contractors/suppliers. PG&E expects that companies interested in providing services to PG&E will conduct business with the same emphasis. Please provide a copy of your ethics policy as an attachment to your RFP response, and highlight key provisions of the program in the space provided.
Has your firm ever been convicted of a Local, State and or Federal criminal act?
If your answer to the above question is "yes", please explain.
Is your company registered with the Federal System for Award Management (SAM)? If so, please provide the name of the registered entity. If not, say "Not Registered".
Is your company debarred from performing work at the State (e.g. California list of debarred contractors) or Federal (e.g. OFAC sanctions list) Level?
LITIGATION AND DISPUTES
Has a contract been terminated during the past five (5) years for reasons of default by your company?
If "Yes", provide information pertaining to any contract that has been terminated during the past five (5) years for reasons of default by your company.
Has your company been involved in a contractual dispute, or disagreement requiring negotiation, with PG&E in the last 24 months?
If "Yes", please provide details and the PG&E contact for this matter.
Has your company been subject to any fines, probationary or disciplinary action by regulatory agencies in the last 24 months?
If "Yes", please provide details for each occurrence.
INSURANCE
If awarded, will you maintain the proper insurance coverage and be responsible for all Subcontractors maintaining sufficient limits?
Please list out your insurance companies:
LICENSES
Please list any applicable licenses:
SAFETY
Are you registered with ISNetWorld (http://www.isn.com)
If Yes, please provide your ISN Number:
If you perform excavation work, please indicate if you are gold shove certified (http://www.goldshovelstandard.com)
If you perform construction work, please provide your CA Constructors License Number

QUESTIONS
Supply Chain Responsibility Questions
Instructions
Complete this questionnaire. Click the boxes to make a selection. Include copies of all certification(s). Please also include documentation to demonstrate the quality of your company's Supply Chain Responsibility efforts if available (current reports, brochures, articles, etc.). If you choose to supplement your responses by uploading additional documentation, please remember to cross-reference your answers with the appropriate file name and section.
1) Is your company certified as a minority, woman, service disabled veteran-owned (DVBE) business, lesbian, gay, transgender (LGBT) business?
Please list all certifying agencies and corresponding certification numbers:
2) Is your company a certified small business?*
Please list all certifying agencies and corresponding certification numbers:
For information about Small Business standards, please refer to one of the following sites: (1) California Department of General Services http://www.dgs.ca.gov/pd/Programs/OSDS.aspx (2) Small Business Administration https://www.sba.gov/contracting/getting-started-contractor/qualifying-small-business
3) What was your company's prior year spending with certified minority, women, service disabled veteran and LGBT businesses as a percentage of your company's total procurement base?
Comments:
4) What was your company's prior year spending with certified small businesses as a percentage of your company's total procurement base (including all federal, state or local small business programs)?
Comments:
5) Does your company track diversity spending of its largest suppliers? If so, describe your process and how you ensure the accuracy of the subcontracting data reported.
Please describe your process:
6) Does your company have an employee (s) responsible for your supplier diversity program? If so, what is the cumulative number of FTE(s) dedicated to supplier diversity (e.g. 1, 2.5, 4.5 etc.)?
Comments:
7) Does your company have specific programs designed to recruit and develop small, diverse suppliers/subcontractors (e.g. outreach, training, mentorship, etc.). Please describe each of these programs and list any suppliers that you have developed over the last twelve months.
Program Description:
8) Does your company have a supplier diversity web page? If so, please provide the website link and describe the contents of the site.
Web Link:
Website Description:
9) Does your company have a Code of Conduct policy for its employees and suppliers? If so, please provide copies.
Code of Conduct For Employees:
Code of Conduct For Suppliers:
Comments:
10) Did your company provide a signed Exhibit 1A with this RFP?
Comments:
IMPORTANT: A signed Exhibit 1A is required prior to award.
Please provide any other information about your company's Supply Chain Responsibility efforts below.

QUESTIONS
PGE SUPPLIER SUSTAINABILITY QUESTIONS
PG&E's corporate level commitment to being an environmental leader and champion of social responsibility is demonstrated by our track record in environmental conservation and enhancement, and in our sustainable business practices. Presently, about 25% of the company's environmental footprint is represented by contractors and suppliers undertaking work for or on behalf of the company. PG&E therefore expects that any company providing services to PG&E is able to help uphold and maintain our leadership in these areas, and can demonstrate that all aspects of service conducted for or on behalf of PG&E are carried out in an environmentally and socially responsible manner.

The purpose of the questions below is to help PG&E to gauge how your organization manages sustainability against a few key management system elements. Response options for each question are intended to be additive or progressive. For example, an Option E response implies that your organization has progressed through or built upon or incorporated Options B through D.
*NOTE: Please note that, should your organization be awarded a contract to work with PG&E, the information provided in this worksheet would form a Statement of Record against which PG&E may request to assess or audit your organization during contract execution.
A.
SUSTAINABILITY SCOPE
Please select which topics are managed as part of your sustainability management system or initiatives.
B.
CORPORATE INFORMATION
Please select one option for each question below that best applies to your organization. Options are additive or progressive, so, for example, selecting Option E implies that your organization has progressed through or integrated Options B through D.
1.0
Company Governance & Operations
a
Management engagement & commitment:
A = Management is not engaged in sustainability management
B = Management is engaged on an ad hoc project basis
C = Management visibly demonstrates commitment to sustainability
D = Top management reviews sustainability performance and participates in goal setting
E = Top management sponsors transformative change in sustainabilty performance
b
Roles, responsibilities and accountabilities
A = There are no sustainability roles or responsibilities at the company
B = Sustainability roles/responsibilities/accountabilities are not formally defined, but may be informally recognized
C = A sustainability point person is formally assigned with overall responsibility for ensuring applicable requirements and commitments are implemented at the company, or for a project
D = Accountabilities and job-specific responsibilities are actively in place from management through to applicable individual contributors. Cross functional team(s) manage continuous sustainability performance improvement goals and objectives
E = Accountability for sustainability management at the company is formally assigned to an executive officer of the company; there is Board of Director level review and responsibility for sustainability performance.
c
Policy
A = There is no sustainability policy
B = There is a general policy with a commitment to meet applicable sustainability-oriented legal requirements
C = A written sustainability policy is in place that commits to sustainability beyond compliance
D = The policy addresses sustainability issues specific to the nature and scale of company activities, products or services
E = There is a policy level commitment to transform environmental performance in the industry.
2.0
Assessment
a
Topic scope
A = There is no assessment of sustainability issues
B = The topic scope is dictated by regulatory requirements (project-based regulatory requirements for field services e.g. construction)
C = The topic scope extends beyond regulatory requirements to risk assessment
D = The scope extends beyond compliance and risk to include review of sustainability impacts, issues and opportunities based on, for example, a life-cycle assessment (LCA) approach, "duty of care" and/or stakeholder considerations
E = The process and process outputs are reviewed and vetted by a credible third party
b
Operational scope
A = There is no assessment of sustainability issues
B = The assessment is limited to ad hoc activities, products or services
C = The assessment includes all company activities, products or services
D = The assessment extends to select Tier 1 suppliers/sub-contractors
E = The assessment extends to all Tier 1 suppliers/sub-contractors and select Tier 2 suppliers/sub-contractors
3.0
Management System
a
Controls, improvement plans and measurement
A = There are no sustainability controls, improvement plans or measurements in place
B = Focus is on ensuring and demonstrating regulatory compliance
C = Focus is on mitigating significant sustainability-oriented risks/addressing key opportunities
D = Written performance improvement objectives, targets, KPIs and implementation plans are in place and are achieving improvements year on year

E = Improvement planning includes benchmarking and research to identify best practices for focus areas, and/or embedding pollution prevention and eco-efficiency principles into product/service/ project design and operations
b
Management system rigor
A = There is no sustainability management system
B = There is a partial system in place; the system is primarily informal/undocumented
C = There is a comprehensive system in place with some formal documented elements
D = The system conforms with a recognized international standard, and includes continuous improvement
E = The system is periodically audited by an independent third party
4.0
Reporting
Depth and Scope
A = There is no sustainability reporting
B = Sustainability reporting is limited to internal, compliance-focused reporting
C = Reporting includes reporting performance against objectives, targets, KPIs and plans to responsible management
D = Performance is reported to top management and made publically available (e.g. via the company annual report or website)
E = Reported information is validated by an independent third party
C.
SUPPLIER MANAGEMENT INFORMATION
Please select one option for each question below that best applies to your organization. Options are additive or progressive, so, for example, selecting Option E implies that your organization has progressed through or integrated Options B through D.
Supplier / Sub-contractor Management
1.0
Scope of suppliers included in sustainability management
A = There is no focus on supplier/sub-contractor management
B = A few suppliers/sub-contractors are in scope on an ad hoc project basis
C = Select top tier or strategic suppliers/sub-contractors are in scope
D = The majority of tier 1 suppliers/sub-contractors (e.g. those represented by 80% or more of the spend) are in scope
E = All tier 1 and most high impact/spend tier 2 suppliers/sub-contractors are in scope
2.0
Supplier / Sub-Contractor Assessment (Formality and scope)
A = There is no assessment of supplier/sub-contractor sustainability risks/issues
B = Assessment is focused on ad hoc issues and suppliers/sub-contractors
C = There is a systematic process to identify and prioritize risks, issues and impacts associated with supplier/sub-contractor operations/activities

D = The process is documented and results are reviewed periodically, or upon process changes that may change the sustainability profile

E = The process and outputs undergo independent third party validation
3.0
Supplier / Sub-Contractor Assessment (Sustainability considerations in supplier sourcing, qualification and selection)
A = There are no sustainability considerations in product/service/sub-contractor screening and selection process
B = Sustainability is included in product/ service/sub-contractor screening and selection process on an ad hoc basis
C = Sustainability is standard in specifications and/or the RFP process, with responses weighted and included in overall evaluation
D = Weighting is assigned that gives sustainability a meaningful influence in the evaluation process
E = Where applicable, sustainability is given equal consideration alongside other supplier selection criteria e.g. cost, quality, health and safety

4.0
Performance Management
A = There is no focused supplier/sub-contractor sustainability performance management
B = Supplier/sub-contractor requirements and performance is managed on ad hoc basis
C = Expectations are clearly articulated and communicated to suppliers/sub-contractors
D = Performance against requirements is evaluated and included in supplier scorecards, and/or is directly audited. A corrective action process is in place to close out gaps
E = Gaps and opportunities for improvement or innovation in supplier/sub-contractor management and capacity building are collaboratively determined, and addressed by suppliers/sub-contractors and the Company
D.
GENERAL INFORMATION
1. List the company's/project's 3 to 5 most significant environmental risks, issues or impacts and provide a brief (2 to 4 bullet points) description on how the company manages or proposes to manage them, and/or improvement goals for same.
Note: Respond from the project or scope-of-work perspective if this bid relates to service delivery; respond from the company or manufacturing facility perspective if this bid relates to product procurement.
Risk/Issue/Impact
How Risk/Issue/Impact is Managed

2. Describe the best practices and innovative approaches your organization would employ to help reduce the environmental footprint (greenhouse gas, waste, water, green chemistry, packaging, etc) for the scope of work or product referred to in this bid opportunity.

QUESTIONS
INTENT TO BID
Do you intend to bid on this RFP?
If you decline to bid, please provide a reason:

Advice 6105-E
March 5, 2021

Appendix H

RFP Technical Questionnaire

(Public)

RFP 112203 - Temporary Generation for PSPS Mitigation Technical Questionnaire
Technical Questions for all vendors

Instructions:
Please provide detailed responses to all questions in the "yellow" highlighted cells below. Do not add rows or columns to the spreadsheet.

	Technical Questions	Bidder Response
	Relevant Experience	
1	Describe your experience in California with supplying temporary generators.	
2	Describe your experience connecting primary temporary generators (e.g., > 600 volts) to electric utility customers.	
3	Describe your experience connecting secondary temporary generators (< 600 volts) to electric utility customers.	
	Qualified Resources	
4	What scope of work can your company provide - provision of generators/equipment only vs. provision of equipment and full interconnection services?	
5	If performing interconnection services, describe the detailed scope of services. Would you be performing this work in-house or subcontracting? If sub-contracting, please provide information on the proposed contractor(s) and their experience with this type of work.	
6	If providing interconnection services, please confirm your company is signatory to IBEW 1245.	
7	List all Generator Operator Qualifications (OQs) and provide recent examples of projects worked.	
	Schedule / Resources	
8	What level of local, available resources do you have in PG&E's service territory (northern & central California) to perform the work (deployment for PSPS events in the field on 48-72 hours notice)?	
9	Describe your company's ability to scale staffing to meet the requirements of a PSPS event for the equipment you are proposing to provide PG&E. Do you have 24x7 staffing (both field and office) to respond to PG&E requests?	
	Project Management and Execution	
10	Can you provide the following types of reporting to PG&E: - Inventory tracking sheet (see Inventory Tracking Sample Report Tab for example data) PG&E will need to receive weekly and on request, prior to any expected event and post event - Event Specific Reporting: pre-event personnel available, equipment run time, personnel type used	
11	Describe how your company will meet PG&E's deployment schedule prior to the start of PSPS season (September 1, 2021) by delivering all equipment for testing and installation no later than June 1, 2021 (April 1, 2021 for all CRC units).	
12	If PG&E requires your company to operate additional equipment, how would you scale up your resources?	
13	Describe your quality assurance process and tools to support this Work. Please provide examples from recent projects on how your QA/QC process has worked effectively.	
14	Based upon the Scope of Work, please provide suggestions that would achieve innovative project execution solutions to achieve lower cost, an accelerated delivery timeframe and reduced impact to the community.	
	Equipment (Deployment and Use)	
15	If your company is not supplying all of the equipment that you have offered in the Pricing Workbook from its own inventory (especially Tier 4 diesel generators), summarize the equipment that will be supplied by another company or supply network here. And in the Pricing Workbook, identify all of the equipment that will be supplied by another company or supply network, and in each case, identify that company or supply network.	
16	Describe the process for getting equipment ready to deploy to a job site.	
17	Describe the process for switching out equipment on a job site that is not working properly, including typical timing.	
18	What is your plan for testing equipment after the job site has been set up and is ready to tie into the PG&E system.	
19	Do you have spare or replacement equipment if one of you pieces of equipment fails to perform as required?	
20	Will your team visit the job sites prior to deployment of equipment? What will they be looking for if you plan to visit the sites before deployment of equipment?	
21	Describe the process of conducting a rotation check to validate that the units are tied in correctly to the intertie point.	
	Equipment Handling and Site Logistics	
22	Where is your proposed staging area?	
23	What controls are in place to ensure licensed transporters safely operate in a timely manner to deliver and retrieve equipment?	
24	How will you manage equipment handling, tracking, and organization?	
	Challenging Site Conditions	
25	Describe your approach to working in an environment with wildlife and environmental sensitivities.	
26	Describe your work experience in California's Tier 2 & 3 wildfire areas. Please highlight any experience working with R4 & R5 conditions (weather conditions within wildfire areas that place constraints on work).	
	DGEMS Vendor Engineering and Operational Testing Requirements	
27	Has Contractor read the entire DGEMS Vendor Engineering and Operational Testing Requirements document?	
28	Does Contractor fully understand the entire DGEMS Vendor Engineering and Operational Testing Requirements document?	
29	Does Contractor certify that the proposed solution in its bid will fully comply with all requirements of the DGEMS Vendor Engineering and Operational Testing Requirements document?	
30	Does Contractor agree to complete the Vendor Compliance Requirements table in Attachment 1 of the DGEMS Requirements as a condition precedent to the required load bank and field testing to demonstrate how Contractor will meet each of the testing requirements with their equipment?	
31	For all Contractors that have not previously provided temporary generators to PG&E, do you agree to perform all of the testing requirements specified in the DGEMS Vendor Engineering and Operational Testing Requirements document in a field test within the State of California with PG&E personnel present, all at Contractor's sole risk and expense?	

RFP 112203 - Temporary Generation for PSPS Mitigation Technical Questionnaire
Safety Questions for all vendors

Instructions:
Please provide detailed responses to all questions in the "yellow" highlighted cells below. Do not add rows or columns to the spreadsheet.

	Safety Questions	Bidder Response
	Safety Approach	
1	Describe your firm's approach to risk identification and mitigation. What parameters will you put in place to ensure this work will be performed with the highest degree of safety? Please provide a sample safety plan for this work.	
2	How do you mitigate for safety concerns where separation from the public cannot be achieved?	
3	How does your company monitor and provide/ensure safety and field leadership oversight to your employees? Subcontractors?	
	Safety Organization	
4	Does your company have full time safety advisors that go out into the field and visit your crews?	
5	a. If yes, how many crews does the person identified above have responsibility for (employee, subcontractor and third parties)?	
6	b. Describe in detail the role and schedule/frequency in managing each crew.	
7	Describe any innovative process or approach that demonstrates your workforce's ownership of your health and safety process and management's guidance and support; i.e., accountability programs, incentive programs, hazard recognition programs:	
	Safety Results	
8	Describe your company's post-incident management process. What is your companies policy and time frame on incident investigations and follow ups?	
9	What is your plan to validate that all equipment is bonded and grounded, and what measures do you have in place to validate this?	
10	What controls are in place to monitor and validate safe fueling of the units while in use.	
11	What is your emergency plan if a piece of equipment fails during use.	
12	Within the last 3 years, how many potential Serious Injury or Fatality incidents (SIFs) was your company involved in as it relates specifically to Temporary Generation work? Be specific as to the type of incident and if it was self-performed or sub-contracted work.	
13	Within the last 3 years, how many Notice of Violations (NOVs) has your company received both on and off PG&E property? Be specific as to the reasons for the violations.	
	Safety Tools/Templates/Examples	
14	Please provide the file name in the space provided and upload the following via the Upload Documents tab:	
15	Provide a copy of your corporate safety program.	
16	Provide an example of a safety tailboard.	
17	Provide a copy of your company's COVID-19 mitigation plan	
18	Provide a copy of your company's safety/field observation checklist/template	
	ISN Rating	
19	Does Contractor agree to obtain and maintain a safety rating of "B" or better from ISN no later than the initial delivery date of its equipment?	

RFP 112203 - Temporary Generation for PSPS Mitigation Technical Questionnaire
Diesel and Gas Generator Emission Questions

Instructions:
Please provide detailed responses to all questions in the "yellow" highlighted cells below. Do not add rows or columns to the spreadsheet.

	Direct Emissions						
1	For each generator or BESS that you are proposing to supply how long would this technology operate (in hours) to support a 48-hour outage (e.g., including any start-up and shutdown time)?	**Generator # 1**	**Generator # 2**	**Generator # 3**	**Generator # 4**	**Generator # 5**	**Generator # 6**
2	For each generator or BESS that you are proposing to supply what is the name/plate capacity (in MWs)?						
3	Does this technology combust fuel?						
4	What fuel(s) does this technology use?						

		Generator # 1					**Generator # 2**					**Generator # 3**					**Generator # 4**					**Generator # 5**					**Generator # 6**				
5	Please list in tons per MW, the emissions of CO2, CO, NOx, Particulate Matter (PM), VOC, and SO2 that are produced hourly **when operating at a 100% capacity factor**	**CO2**	**CO**	**NOx**	**PM**	**VOC**	**CO2**	**CO**	**NOx**	**PM**	**VOC**	**CO2**	**CO**	**NOx**	**PM**	**VOC**	**CO2**	**CO**	**NOx**	**PM**	**VOC**	**CO2**	**CO**	**NOx**	**PM**	**VOC**	**CO2**	**CO**	**NOx**	**PM**	**VOC**
6	Please list in tons, the emissions of CO2, CO, NOx, Particulate Matter (PM), VOC, and SO2 that are produced hourly **when operating at 60% of continuous power rating**	**CO2**	**CO**	**NOx**	**PM**	**VOC**	**CO2**	**CO**	**NOx**	**PM**	**VOC**	**CO2**	**CO**	**NOx**	**PM**	**VOC**	**CO2**	**CO**	**NOx**	**PM**	**VOC**	**CO2**	**CO**	**NOx**	**PM**	**VOC**	**CO2**	**CO**	**NOx**	**PM**	**VOC**
7	Does this technology require air emissions permitting in the state of California? If so, please describe.																													

	Indirect Emissions, including Fueling/Refueling	
8	Do you have the capability and willingness to track and report the indirect emissions of your operations (e.g., emissions from operating trucks, vehicles, forklifts, reach lifts) on a monthly basis?	
	Please only answer questions 9 and 10 if the generation technology involves Hydrogen	
9	If the generation technology involves the use of hydrogen, is the hydrogen produced using natural gas or electricity?	
10(a)	If the hydrogen is produced using electricity, is it California grid based electricity, out-of-state grid based (what state), or renewable? Specify the source.	
10(b)	If it is natural gas, is the natural gas renewable natural gas or conventional natural gas? Specify the source.	

RFP 112203 - Temporary Generation for PSPS Mitigation Technical Questionnaire
Clean Generation Pilot Project Questions (for projects with no local air emissions, i.e., not diesel or gas)

Instructions:
Please provide detailed responses to all questions in the "yellow" highlighted cells below. Do not add rows or columns to the spreadsheet.

	Direct Emissions	Bidder Response					
1	What is the generation technology that you are proposing to supply?						
2	What fuel(s) does this technology use?						
3	For each generator or BESS that you are proposing to supply, how long would this technology operate (in hours) to support a 48-hour outage (e.g., including all start-up and shutdown times)?	Generator # 1	Generator # 2	Generator # 3	Generator # 4	Generator # 5	Generator # 6
4	What utilities (e.g., water, chemicals) does your clean generation technology require when operating?						
5	How much of these utilities does your clean generation technology require when operating at 100% capacity factor?	Generator # 1	Generator # 2	Generator # 3	Generator # 4	Generator # 5	Generator # 6
6	What is the net output (in MW) when operating at 100% capacity factor?						
7	How much of these utilities does your clean generation technology require when operating at 65% of continuous power rating?	Generator # 1	Generator # 2	Generator # 3	Generator # 4	Generator # 5	Generator # 6
8	What is the net output (in MW) when operating at 65% of continuous power rating?						
9	What is the start up time from notification to full power?						

RFP 112203 - Temporary Generation for PSPS Mitigation Technical Questionnaire
Technical Questions for all vendors bidding Battery Energy Storage Systems (BESS)

Instructions:
Please provide detailed responses to all questions in the "yellow" highlighted cells below. Do not add rows or columns to the spreadsheet.

	Technical Questions	Bidder Response
	Discharging and Charging	
1	Maximum continuous discharge power (Dmax) (MW)	
2	Minimum continuous discharge power (Dmin) (MW)	
3	Maximum discharge duration at constant Dmax (hours)	
4	Maximum continuous charge power (Cmax) (MW)	
5	Minimum continuous charge power (Cmin) (MW)	
6	Maximum charge duration at constant Cmax (hours)	
7	Amount of Energy released to fully discharge (MWh)	
8	Amount of Energy required to fully charge (MWh)	
9	Round-trip efficiency (%)	
	Ramp Rates	
10	Dmin to Dmax (MW/second)	
11	Cmin to Cmax (MW/second)	
12	Dmax to Dmin (MW/second)	
13	Cmax to Cmin (MW/second)	
	System Response Time	
14	Idle to Dmax (seconds)	
15	Idle to Cmax (seconds)	
16	Dmax to Cmax (seconds)	
17	Cmax to Dmax (seconds)	
18	Dmin to Cmin (seconds)	
19	Cmin to Dmin (seconds)	
20	Discharge Start-up time (from notification to Dmin) (seconds)	
21	Charge Start-up time (from notification to Cmin) (seconds)	
	Starts and other Run Time Limitations	
22	Start limitations	
23	Run hour limitations	
24	The minimum run time after a Discharge Start-up (seconds)	
25	The minimum run time after a Charge Start-up is (seconds)	
26	The minimum down time after a shutdown (seconds)	
	Voltage Services	
27	Generator voltage regulation range (+/- volts per unit)	
28	Maximum reactive power leading (mega volt amps reactive (MVar))	
29	Maximum reactive power lagging (mega volt amps reactive (MVar))	

RFP 112203 - Temporary Generation for PSPS Mitigation Technical Questionnaire
Sample Inventory and Staffing Weekly Tracking Report [also to be sent upon request pre- and post PSPS events]

I. Inventory

Date	Vendor	Equipment Type	Generator Engine Tier	Perp ID Number	EPA Engine Family Name	Generator Run Time (HRS)	Generator Fuel Capacity (GAL)	Size (Nameplate)	Size Units	Description	Serial #	Quantity	Inspection Date	Status (ON SITE/ AVL/NOT AVL)	RFP#	Current Location City	Workstream Type	Workstream Sub-Type (For Substation and BUPS)	Current Location Address	Location Owner	Notes	Deployment Use Case	Deployment Site	In Event Run Times	On-Line	Off-Line

EXAMPLE

II. Staffing

Labor Type	Date	# Available
Generator Technician		
Operator*		
Journeyman Electrician*		
Foreman*		
Apprentice Electrician*		
Groundman*		

* Interconnection/Ground Grid/etc. work performed by IBEW 1245 employees.

Advice 6105-E
March 5, 2021

Appendix C

Vendor #1 Quote for Reserving Temporary Generation against Procuring on As-Needed Basis

(Confidential)

Advice 6105-E
March 5, 2021

Appendix D

Vendor #2 Quote for Reserving Temporary Generation against procuring on As-Needed Basis

(Confidential)

Advice 6105-E
March 5, 2021

Appendix I

Clean Temporary Generation RFP Scorecard

(Confidential)

Advice 6105-E
March 5, 2021

Appendix J

Temporary Generation Services RFP Scorecard

(Confidential)

PG&E Gas and Electric
Advice Submittal List
General Order 96-B, Section IV

AT&T
Albion Power Company

Alta Power Group, LLC
Anderson & Poole

Atlas ReFuel
BART

Barkovich & Yap, Inc.
California Cotton Ginners & Growers Assn
California Energy Commission

California Hub for Energy Efficiency Financing

California Alternative Energy and Advanced Transportation Financing Authority
California Public Utilities Commission
Calpine

Cameron-Daniel, P.C.
Casner, Steve
Cenergy Power
Center for Biological Diversity

Chevron Pipeline and Power
City of Palo Alto

City of San Jose
Clean Power Research
Coast Economic Consulting
Commercial Energy
Crossborder Energy
Crown Road Energy, LLC
Davis Wright Tremaine LLP
Day Carter Murphy

Dept of General Services
Don Pickett & Associates, Inc.
Douglass & Liddell

East Bay Community Energy Ellison Schneider & Harris LLP Energy Management Service
Engineers and Scientists of California

GenOn Energy, Inc.
Goodin, MacBride, Squeri, Schlotz & Ritchie
Green Power Institute
Hanna & Morton
ICF
IGS Energy
International Power Technology
Intestate Gas Services, Inc.
Kelly Group
Ken Bohn Consulting
Keyes & Fox LLP
Leviton Manufacturing Co., Inc.

Los Angeles County Integrated Waste Management Task Force
MRW & Associates
Manatt Phelps Phillips
Marin Energy Authority
McKenzie & Associates

Modesto Irrigation District
NLine Energy, Inc.
NRG Solar

Office of Ratepayer Advocates
OnGrid Solar
Pacific Gas and Electric Company
Peninsula Clean Energy

Pioneer Community Energy

Redwood Coast Energy Authority
Regulatory & Cogeneration Service, Inc.
SCD Energy Solutions
San Diego Gas & Electric Company

SPURR
San Francisco Water Power and Sewer
Sempra Utilities

Sierra Telephone Company, Inc.
Southern California Edison Company
Southern California Gas Company
Spark Energy
Sun Light & Power
Sunshine Design
Tecogen, Inc.
TerraVerde Renewable Partners
Tiger Natural Gas, Inc.

TransCanada
Utility Cost Management
Utility Power Solutions
Water and Energy Consulting Wellhead Electric Company
Western Manufactured Housing Communities Association (WMA)
Yep Energy