

## 2020 Public Safety Power Shutoff (PSPS) Post Event Report Review Pacific Gas and Electric Company (PG&E)

### Introduction and Recommendations:

In 2020, PG&E initiated a total of seven PSPS events and submitted seven post event reports to the California Public Utilities Commission (CPUC). The CPUC's Safety and Enforcement Division (SED) reviewed the submitted reports to evaluate PG&E's compliance with the reporting requirements under Resolution ESRB-8, Decision 19-05-042 and Decision 20-05-051. The findings in this Post Event Report Review are based on the information presented in the post event reports and the public comments.

**Table 1 - PG&E 2020 PSPS Summary**

Report #	Dates	Total Customers Notified	Total Customers De-energized	Medical Baseline Customers	Number of Counties De-energized	Number of Tribes De-energized
1	Sep. 7 – Sep. 10	190,606	168,594	10,383	22	8
2	Sep. 27 – Sep. 29	97,606	64,298	4,358	15	0
3	Oct. 14 – Oct. 17	56,953	40,574	2,431	19	1
4	Oct. 21 – Oct. 23	56,636	30,154	2,477	7	2
5	Oct. 25 – Oct. 28	466,378	345,470	22,124	35	14
6	Dec. 2 – Dec. 3	617	617	33	1	0
7	Dec. 7 – Dec. 7	142,773	0	0	0	0

*data source: PG&E 2020 PSPS post event reports and PG&E's response to SED's data requests.*

SED has found some issues and concerns and recommends that PG&E take corrective actions to comply with the guideline requirements.

### Compliance Review:

The results of the review are presented below in the order the existing guidelines were published.

**I. ESRB – 8:**

1. *A notification to the Director of SED provided no later than 12 hours after the power shut-off.*

For all the events, PG&E sent the notifications to SED within 12 hours after the power shut-off.

2. *IOUs shall submit a report to the Director of SED within 10 business days after each de-energization event, as well as after high-threat events where the IOU provided notifications to local government, agencies, and customers of possible de-energization though no de-energization occurred.*

PG&E submitted all the reports timely.

3. *The report should include:*

- a. *an explanation of the decision to shut off power;*

PG&E provided an explanation of the decision to shut off power, as summarized below:

Typically, PG&E started to closely monitor the weather conditions based on the forecast that there would be extreme fire risk weather. Then PG&E made adjustments to the scope of the PSPS event in response to changing weather conditions. When all the weather sources and forecasts corroborated that there was severe fire weather risk, PG&E's management reviewed the latest weather information and fire risk analyses and considered the alternatives to de-energization for the in-scope PSPS areas, including potential mitigations and customer notifications. The Officer in Charge and Incident Commander determined whether de-energization was a necessary measure to protect public safety in these areas.

- b. *all factors considered in the decision to shut off power, including wind speed, temperature, humidity, and moisture in the vicinity of the de-energized circuits;*

PG&E explained factors considered including:

- fire probability models
- humidity levels, FPI ratings, forecast wind gusts
- external validation of PG&E forecasts
- transmission line assessment

- public safety impacts of de-energizing: the total count of impacted customers and the impact of potential de-energization upon medical baseline customers, critical facilities, back-up generation capabilities of critical facilities that pose societal impact risks if de-energized (e.g., critical infrastructure).
- the presence of current wildfire activities.

c. *the time, place, and duration of the shut-off event;*

PG&E reported the time, place, and duration of the shut-off events.

d. *the number of affected customers, broken down by residential, medical baseline, commercial/industrial, and other;*

PG&E reported the number of affected customers broken down by residential, medical baseline, commercial/industrial and other for each PSPS event.

e. *any wind-related damage to IOU's overhead power-line facilities in the areas where power is shut off;*

Except for the December 7 event when there was no power shutoff, PG&E reported wind-related damages. PG&E provided maps and pictures of the damages.

f. *a description of the notice to customers and any other mitigation provided by IOU;*

See Section II. 2. b and II. 2. c. (evaluation of D.19-05-042 – Phase I Guidelines) for further evaluation of PG&E's notification practice.

PG&E described the following mitigations across the seven events:

- improved meteorological guidance
- transmission line scoping
- transmission line segmentation
- distribution switching
- sectionalization
- islanding
- temporary generalization
  - substation temporary generalization
  - temporary microgrids

- backup power support
- Permanently Installed Emergency Generation

- g. *any other matters that IOU believes are relevant to the Commission's assessment of the reasonableness of IOU's decision to shut off power.*

PG&E believes the following environmental factors are relevant to assessing the reasonableness of its decision to shut off power: 2020 is the warmest on record in California's 126-year temperature record; the U.S. Drought Monitor shows a vast portion of Northern California in the category of Severe to Extreme drought (D2-D3); and the meteorological timeline and the maximum recorded wind gust.

- h. *The local communities' representatives the IOU contacted prior to de-energization, the date on which they were contacted, and whether the areas affected by the de-energization are classified as Zone 1, Tier 2, or Tier 3 as per the definition in General Order 95, Rule 21.2-D.*

PG&E reported the local governments, tribal representatives and community choice aggregators contacted prior to de-energization, and the initial date on which these stakeholders were contacted. Except for the December 7 event, when PG&E did not de-energize any circuits, there were de-energized circuits that were partially outside HFTD.

- i. *If an IOU is not able to provide customers with notice at least 2 hours prior to the de-energization event, the IOU shall provide an explanation in its report.*

Refer to SED's assessment under Section II. 2. c. (evaluation of D.19-05-042 – Phase I Guidelines)

- j. *The IOU shall summarize the number and nature of complaints received as the result of the de-energization event and include claims that are filed against the IOU because of de-energization.*

While PG&E reported a total of 2 complaints received via the CPUC and 106 claims, SED found:

- 1) PG&E did not report if there were any complaints filed directly with PG&E. In the future, PG&E must summarize the number and nature of all complaints received.
- 2) In the post event report for the October 21 –23 event, PG&E stated it would combine the complaints for that event with the October 25 event. However, in the post event report for the October 25 event, PG&E did not mention any complaints for the October 21 - 23 event. It is unclear whether there were no complaints for the October 21 event or PG&E missed reporting the complaints.

k. *The IOU shall provide detailed description of the steps it took to restore power.*

PG&E reported it took the following steps it took to restore power:

- Prior to restoration activities, PG&E pre-positioned field resources and prepared helicopters in anticipation of the “weather all clear” to begin patrols. The PG&E Incident Commander and meteorology team monitored real-time and forecasted weather conditions based on weather models, weather station data, and field observations. Using this incoming information, all clears were issued by fire index area (FIA) in a phased approach to restore customers.
- PG&E issued the weather all clear by FIA based on weather stations that have been developed to allow meteorologists to quickly assess the latest fire weather observations across each FIA.
- As weather all clears were issued, PG&E patrolled electrical facilities to identify and repair or clear any damage or hazards before re-energizing. Using the Incident Command System (ICS) as a base response framework, each circuit was assigned a taskforce consisting of supervisors, crews, trouble men, and inspectors.
- Over the course of restoration, PG&E issued all clears and utilized personnel and helicopters to identify any safety concerns and make necessary repairs prior to restoration.
- Power was restored to customers as patrols were completed.

PG&E provided a table listing the clearance notification times for each FIA.

l. *The IOU shall identify the address of each community assistance location during a de-energization event, describe the location (in a building, a trailer, etc.), describe the assistance available at each location, and give the days and hours that it was open.*

PG&E reported the required information. Nevertheless, PG&E must consider stakeholders' feedback and continue to improve the CRC's services including, but not limited to, better coordination with telecommunications providers to ensure all CRCs have uninterrupted Wi-Fi and cellular network service.

4. *The IOU shall notify the Director of SED, as soon as practicable, once it decides to de-energize its facilities. If the notification was not prior to the de-energization event, the IOU shall explain why a pre-event notification was not possible. The notification shall include the area affected, an estimate of the number of customers affected, and an estimated restoration time. The IOU shall also notify the Director of SED of full restoration within 12 hours from the time the last service is restored.*

For the October 25 –28 event, PG&E notified Director of SED informing power was successfully restored in all areas on October 28, 3:40 pm. According to Appendix A - TIME, PLACE, DURATION AND AFFECTED CUSTOMERS, most of the circuits were re-energized by the early afternoon of October 28; however, some circuits were re-energized in the evening of October 28. For example, circuit EL DORADO PH 2101 was restored at 6:28 pm (page App-7). Therefore, PG&E incorrectly reported to SED in the afternoon of October 28 that power was successfully restored in all areas. PG&E must improve the accuracy of the notifications to the state governments.

## **II. D.19-05-042 (R18-12-005 - Phase 1 Guidelines)**

1. *In addition to submitting a report to the Director of the Commission's Safety and Enforcement Division within 10 business days of power restoration, electric investor-owned utilities must serve their de-energization report on the service lists of this proceeding and Rulemaking 18-10-007 or their successor proceedings. Service should include a link to the report on the utility's website and contact information to submit comments to the Director of the Safety and Enforcement Division.*

PG&E properly and timely served all of the post event reports.

2. In addition to the reporting requirements in Resolution ESRB-8, the electric investor-owned utilities must provide the following information:
  - a. *Decision criteria leading to de-energization, including an evaluation of alternatives to de-energization that were considered and*

*mitigation measures used to decrease the risk of utility-caused wildfire in the de-energized area.*

- 1) While PG&E explained its fire probability models, national weather forecast comparison and the FPI, PG&E did not provide sufficient detailed information regarding decision criteria and thresholds. PG&E must provide more detailed information about the de-energization decision, including the comparison between the forecasted and the actual weather for each contributing factor on each circuit. The following are two examples that a PSPS was initiated with maximum wind gusts in the teens for some circuits.
    - September 27 –29 event
    - October 25 –28 event
  - 2) PG&E reported it made efforts, including identifying opportunities for islanding, temporary generation, alternate grid solutions, and sectionalizing solutions, to reduce and mitigate the number of customers de-energized. PG&E must provide sufficient granularity and more robust evaluation of each alternative it considered before calling for a PSPS.
- b. *A copy of all notifications, the timing of notifications, the methods of notifications and who made the notifications (the utility or local public safety partners).*

Upon the review of PG&E's notification description, notification scripts and the timing of notifications, SED found the following deficiencies:

- 1) PG&E's imminent or warning notifications were sent out approximately 4-12 hours in advance of the power being shutoff. This did not meet the guideline requirement of 1-4 hours in advance of anticipated de-energization.
- 2) When de-energization was initiated, PG&E did not send out the required notifications to customers. Instead, PG&E stated that its 4-12 hour imminent notifications served as de-energization initiation notifications. This did not comply with the guideline which requires the notification must be sent out when de-energization is initiated.
- 3) PG&E did not send out any advance notifications to some customers due to various non-weather-related reasons:

Oct. 14-17: about 1,100 customers;

Oct. 21: about 160 customers;

Oct. 25-28: about 1,940;

Sep. 7-10: about 2,300;

Sep. 27 – 29: about 200

Total: 5,700

- 4) For the December 2 –3 event, the first notification to public safety partners was sent out on December 1, at 1:00 pm. PG&E did not meet the 48-72 hours advance notification timeline.
- 5) PG&E did not directly respond to the question of “who made the notifications”. It is not clear whether some public safety partners or CBOs also made notifications to certain groups of customers.

- c. *If the utility fails to provide advanced notification or notification according to the minimum timelines set forth in these Guidelines, an explanation of the circumstances that resulted in such failure;*

For the events that PG&E was not able to provide advanced notification prior to the de-energization event, PG&E provided the following explanations.

- A different sectionalizing device or circuit breaker was used that was different than planned.
- No valid contact information was on file during the event
- Locations with the customer’s service point identification (SPID) number was not mapped to the local transformer.
- There were abnormal circuit configurations that were not anticipated when modeling PSPS event.
- PG&E’s advanced switching and load transfer procedures unintentionally caused customers who would have been in the PSPS scope, but were not due to planned switching procedures, to experience a short duration outage (generally less than 20 minutes).
- Customers with only a mobile phone number on file sometimes did not receive an event update notification of the second de-energization due to a PG&E error in creating the notification file.
- There was a different device operated in the field than planned to be used for de-energization



- Customers on recently built lines who were awaiting to be assigned an associated transformer in PG&E's PSPS customer notification system
- d. *A description and evaluation of engagement with local and state public safety partners in providing advanced education and outreach and notification during the de-energization event;*

For all the events, PG&E described its engagement with local, state agency and first responders, Community Choice Aggregators (CCA), communications and water providers, Publicly Owned Utilities (POUs) and transmission-level customers. SED noted for all PSPS events, except the October 25 –28 event, PG&E did not report the evaluation of the engagement. PG&E only stated it would provide the PSPS post event report to the public safety partners for their feedback. PG&E reported the results of its survey for the October 25 – 28 event. Most respondents noted that their experience with PG&E during PSPS events improved from 2019 to 2020 and rated the coordinating calls with Agency Representatives and the Tribal Cooperators favorably. Some respondents recommended additional enhancements to the PSPS Portal and external Situation Reports (page 64).

- e. *For those customers where positive or affirmative notification was attempted, an accounting of the customers (which tariff and/or access and functional needs population designation), the number of notification attempts made, the timing of attempts, who made the notification attempt (utility or public safety partner) and the number of customers for whom positive notification was achieved;*

Upon review of PG&E's responses and the Appendices, SED noted the following:

- 1) For the December 7 event, PG&E did not report the number of notification attempts made, and the number of customers for whom positive notification was achieved. Although PG&E did not de-energize any customers during this event, PG&E must report the complete data regarding Medical Baseline (MBL) customer notifications.
- f. *A description of how sectionalization, i.e. separating loads within a circuit, was considered and implemented and the extent to which it*

*impacted the size and scope of the de-energization event.*

PG&E described its use of sectionalization to reduce the impact of PSPS events. During the December 2 – 3 event, PG&E reported that newly installed “greenfield” devices could not save any customers from de-energization” (page 50).

- g. *An explanation of how the utility determined that the benefit of de-energization outweighed potential public safety risks.*

PG&E provided an explanation for each event that the benefit of de-energization outweighed potential public safety risks.

- h. *The timeline for power restoration (re-energization,) in addition to the steps taken to restore power as required in Resolution ESRB-8.*

PG&E reported the “Weather All Clear” date and time as well as circuit restoration date and time.

- i. *Lessons learned from the de-energization event.*

PG&E reported lessons learned from each event.

- j. *Any recommended updates to the guidelines adopted in Resolution ESRB-8 and this decision.*

PG&E reported it continues to work through the implementation of the de-energization guidelines and appreciates that there may be continued opportunity to refine certain aspects of the guidelines. PG&E stated that it will continue to engage with stakeholders and the open proceedings at the Commission and has no new suggestions at this time.

### **III. D.20-05-051 (R18-12-005 Phase 2 Guidelines)**

- 1. *CRCs shall be operable at least 8 AM-10 PM during an active de-energization event, with actual hours of operation to be determined by the local government in cases in which early closure of a facility is required due to inability to access a facility until 10 PM*

PG&E reported its CRCs followed the required operation hours, from the initiation of de-energization time to restoration time.

2. *Each electric investor-owned utility shall ensure that electric service to impacted service points is restored as soon as possible and within 24 hours from the termination of the de-energization event, unless it is unsafe to do so.*

Among the seven events, there were four events that PG&E could not restore powers within 24 hours from the termination of de-energization event. PG&E provided an explanation for each of them.

- September 7 – 10 event: Wildfires that either started or grew during the weather event caused access issues and heavy smoke and fog caused visibility issues. As a result, the amount of aerial patrols PG&E had planned to perform was reduced.
- October 14 – 17 event: Portions of the circuit were inaccessible to helicopters due to a forest canopy, which presented a threat to PG&E personnel.
- October 21 – 23: PG&E utilized a new technique, clearing a portion of a circuit, to restore power to customers for this event. In utilizing this new technique, the field patrol and restoration process was not implemented as planned and the operations team waited for the entire circuit to be cleared prior to beginning restoration efforts which began on October 23. Restoration of the entire circuit was completed around 12:43 pm causing a portion of the customers on this circuit to experience greater than 24 hours of restoration time.
- October 25 – October 28: PG&E did not have sufficient helicopter and patrol resources.

3. *Each electric investor-owned utility shall enumerate and explain the cause of any false communications in its post event reports by citing the sources of changing data.*

Many of the customers notified who were not de-energized received cancellation notifications. Those who did not receive cancellation notices are counted as false positives. Except for the December 2 – 3 event and the December 7 event in which there were zero false communications, PG&E enumerated and explained the cause of false communications.

**Table 2**

Dates	False Negative	False Positive	Report Page #
Sep. 7 – Sep. 10	2,300	1,500	Page 22 - 23
Sep. 27 – Sep. 29	200	1,500	Page 32
Oct. 14 – Oct. 17	1,100 (700 +400)	1,700	Page 32

Oct. 21 – Oct. 23	160	340	Page 32 - 33
Oct. 25 – Oct. 28	1,940	6,900	Page 34
Total	5,700	11,940	

Refer to Section II.2.c for the primary causes of false negative communications. When customers were not de-energized but were notified, that de-energization would occur, this false communication could be due to one or more reasons below:

- Advanced switching solutions which were able to remove customers from the planned de-energization scope.
- Customer mapping issues leading to customers being incorrectly identified as impacted.
- Customers had already been de-energized due to active fires before the start of switching for PSPS.
- Load transfer solutions were able to remove customers from the planned de-energization scope with insufficient time to send cancellation notifications prior to de-energization.

4. *Each electric investor-owned utility shall report on all potential or active de-energization events in its post event reports. These reports shall include a thorough and detailed description of the quantitative and qualitative factors it considered in calling, sustaining, or curtailing each de-energization event (including information regarding why the de-energization event was a last resort option) and a specification of the factors that led to the conclusion of the de-energization event.*

PG&E reported some qualitative factors in calling a PSPS. PG&E did not provide sufficient quantitative analysis in calling a PSPS, including the detailed information comparing the predetermined threshold with forecast value and with the actual value for the quantitative attributes in the PSPS decision-making process and why the de-energization was the last resort.