The devastating and unprecedented impact of the extraordinary wildfires currently burning in Northern California is absolutely tragic. PG&E is committed to working with the state and the communities we serve to understand how each of these fires started and how best to prevent and fight fires in the future.

PG&E de-energizes lines as directed by CAL FIRE or of our own volition in direct response to a specific existing safety condition such as a downed wire or existing fire in the immediate area. Any discussion of the potential for proactively de-energizing lines more broadly for any reason, including weather forecasts, is highly complex due to the significant public safety issues such actions can pose.

As the Commission has noted in its decisions, de-energizing lines can have an immediate and very broad impact on public safety. De-energizing lines can affect first responders and the operation of critical facilities such as hospitals, the provision of water and other essential services, street lights and signals, communications systems, operation of building systems such as elevators, and much more.

The impact on public safety is potentially dramatic and becomes more so depending on how widespread de-energizing is utilized. Prior to the current wildfires, for example, 44 of the 49 counties within PG&E's service territory had at least some portion of the county classified as being in extreme fire danger.

Widespread de-energizing would introduce safety risks that would have to be carefully considered, communicated and addressed across many agencies and with the communities and customers we serve. Potential actions to be considered range from the establishment of communications protocols to notify customers of plans to de-energize lines to the broad deployment of generators among critical customer classes.

We appreciate the opportunity to respond to the following questions as an initial part of this discussion. In reviewing these responses, please bear in mind that the wildfires are ongoing so some of our answers will need to be updated over time.

QUESTION 1:

My understanding and expectation is that PG&E proactively de-energizes powerlines when directed to do so by CAL FIRE (as per your emergency preparedness and response plans). Has PG&E received those directions from CAL FIRE during the past 10 days and has PG&E complied with those orders?

RESPONSE 1:

Yes. CAL FIRE directed PG&E to de-energize five distribution lines and three transmission lines as described below. PG&E complied with these orders.

PG&E de-energized the following Distribution lines:

- On 10/12, CAL FIRE directed PG&E to de-energize Calistoga 1101. On 10/12 at 0858 operators opened the circuit breaker at Calistoga 1101, de-energizing the entire circuit.
- On 10/13, CAL FIRE directed PG&E to de-energize a section of Rincon 1101. On 10/13 at 1824, operators de-energized the section of the Rincon 1101 circuit.
- On 10/14, CAL FIRE directed PG&E to de-energize a section of Sonoma 1103. On 10/14 at 0413, operators de-energized the section of the Sonoma 1103 circuit.
- On 10/14, CAL FIRE directed PG&E to de-energize a section of Sonoma 1105. On 10/14 at 0419, operators de-energized the section of the Sonoma 1105 circuit.
- On 10/14, CAL FIRE directed PG&E to de-energize a section of Rincon 1101 for a second time. On 10/14 at 0726, operators de-energized the section of the Rincon 1101 circuit.

PG&E de-energized the following Transmission lines:

- On 10/9, CAL FIRE directed PG&E to de-energize the Trinity-Cottonwood 115kV line. On 10/9 at 1005, PG&E de-energized the Trinity-Cottonwood 115kV line (entire line).
- On 10/11, CAL FIRE directed PG&E to de-energize the Potter Valley-Mendocino 60kV line. On 10/11 at 1657, PG&E de-energized the Potter Valley-Mendocino 60kV line (entire line).
- On 10/14, CAL FIRE directed PG&E to de-energize the Bridgeville-Cottonwood 115kV line. On 10/14 at 1615, PG&E de-energized the Bridgeville-Cottonwood 115kV line (entire line).

QUESTION 2:

Has PG&E proactively de-energized power lines in the last 10 days without being requested to do so by CAL FIRE? If so, please provide information about location, duration and reasons for doing so.

RESPONSE 2:

PG&E de-energized multiple transmission lines as described below without the direction of CAL FIRE:

1. On 10/9 at 0027, PG&E de-energized the Centerville-Table Mountain-Oroville 60kV line (Lime Saddle to Oroville section) due to fire in the area. The section of line was returned to service on 10/11 at 2227.
2. On 10/9 at 0033, PG&E de-energized the Potter Valley-Willits 60kV line due to fire in the area. The line was returned to service on 10/15 at 1624.
3. On 10/9 at 0644, PG&E de-energized the Fulton-Santa Rosa #1-115kV line due to fire in the area. The line was returned to service on 10/9 at 1455.
4. On 10/9 at 0644, PG&E de-energized the Fulton-Santa Rosa #2-115kV line due to fire in the area. The line was returned to service on 10/14 at 1044.
5. On 10/9 at 0354, PG&E de-energized the Colgate-Smartville #1-60kV line due to a pole fire at pole 0/5. The line was returned to service on 10/10 at 1123.
6. On 10/9 at 1622, PG&E de-energized the Lakeville #1-60kV line due to a pole fire at pole 10/7 at the Dunbar Substation. The line was returned to service on 10/13 at 0834.
7. On 10/9 at 1642, PG&E de-energized the Mendocino-Willits-Fort Bragg 60kV line to repair sagging conductor at pole 6/9. The line was returned to service on 10/15 at 1642.

Regarding distribution lines, PG&E had a significant number of outages where lines were de-energized for various reasons. As with all outages on PG&E's system, we will need to perform our outage review process to make final outage cause determinations. Given that the wildfires and our restoration efforts are ongoing, we do not have all of the information available to perform that outage review process and will update this response.

QUESTION 3:

My understanding and expectation is that PG&E proactively monitors weather conditions in its service territory and takes proactive steps to mitigate risks of weather conditions, such as performing additional inspections and staging crews in areas that may be impacted (as per your emergency preparedness plans and operating procedures).

3.a. Was PG&E monitoring weather conditions in its territory prior to October 8th?

RESPONSE 3.a.:

Yes. PG&E has an active weather monitoring program to maintain awareness of upcoming weather events. In advance of the Sunday 10/08 wind event, PG&E's damage prediction model indicated high winds and the potential for outage activity.

3.b. What was PG&E's assessment of risks to fires for the counties that are now experiencing fires?

RESPONSE 3.b.:

PG&E operates a fire danger rating system that produces daily ratings of fire danger for each of the CAL FIRE Zones within the PG&E territory. PG&E's Adjective Fire Index[1] rating indicated "extreme", the highest rating, for October 8 and October 9 in the counties that are now experiencing fires. In addition, Red Flag Warnings were issued by the National Weather Service and were in effect across these fire areas. The maps indicate that extensive areas of the PG&E territory were rated extreme, and the maps also include Red Flag Warnings, which covered a large portion of Northern California. 44 of the 49 counties within PG&E's service territory had at least some portion of the county in extreme fire danger.

3.c. What steps, if any, did PG&E take to mitigate risks associated with forecasted weather conditions prior to October 8th?

RESPONSE 3.c.:

Below is a timeline of events describing actions PG&E took in advance of activating its Emergency Operations Center on October 9, 2017:

[1] "Adjective" in this context refers to the use of adjectives to rate fires, rather than numbers, i.e., low, moderate, high, very high, extreme.

Date	Time (if applicable)	Summary of Activity
Thursday, October 05, 2017	n/a	Meteorology department begins to report out on wind risks on daily operational calls for the upcoming weekend.
Thursday, October 05, 2017 - Sunday, October 08, 2017	8:00	0800 daily electric operations calls begin to discuss wind event awareness and readiness utilizing meteorology models. Models identify pre-stage and event staffing level forecasts for discussions. Discussions on proactive Operations Emergency Center (OEC) activation are also held.
Thursday, October 05, 2017	8:00	Restoration Compliance Operations begins modeling staffing readiness levels for forecasted impacted divisions based upon weather model forecasts.
Friday, October 06, 2017	7:39	Emergency Operation Center (EOC) epage distributed to electric distribution leadership reminding teams to review local readiness, on shift resource plans, and OEC activation commitments. EOC on-call staffing levels identified and committed.
Friday, October 06, 2017	8:00	0800 daily electric operations call discusses wind readiness with meteorology reporting, pre-stage resource requirements, emergency center activations, and general readiness.
Friday, October 6, 2017 - Sunday, October 8, 2017	Various throughout	3 times per day weather forecast modelling / operations teams monitoring grid conditions and staffing operators for incoming weather / prestaging of troublemen resources for emergency response, assessment, and restoration.
Saturday, October 7, 2017 - Sunday, October 8, 2017	16:00 12:00	Electric distribution emergency management director updates Electric Operations organization on both wind readiness and day-of updates on current system conditions.
Saturday, October 7, 2017 - Sunday, October 8, 2017	Various	Northern Region, Bay Region, and forecasted impacted division OECs have various calls to discuss region and division readiness plans.
Sunday, October 08, 2017	8:24	North Valley OEC activates, includes leadership team and pre-staged resources.
Sunday, October 08, 2017	11:14	Sacramento OEC activates, includes leadership team and pre-staged resources.
Sunday, October 08, 2017	14:56	Sonoma OEC activates, includes leadership team and pre-staged resources.

Sunday, October 08, 2017	15:00	Restoration Compliance Operations executes intra-regional resource movement of both troublemen and Public Safety & Reliability inspectors to pre-stage locations forecasted to be impacted by weather model forecasts.
Sunday, October 08, 2017	15:00	Initial electric notification performed by PG&E Public Safety Specialist of initial fire reports near Napa Airport to PG&E Emergency Management organization.
Sunday, October 08, 2017	16:01	North Bay (which includes Napa) OEC activates, includes leadership team and pre-staged resources.
Sunday, October 08, 2017	22:11	Sierra OEC activates, includes leadership team and pre-staged resources.
Sunday, October 08, 2017	23:13	Electric Operations Incident Report sent out by PG&E Emergency Management organization (Public Safety Specialist) on the spread of the Atlas Fire due to strong north east winds and potential impacts to Electric Distribution circuits in Napa.
Sunday, October 08, 2017	23:30	Electric distribution emergency management director updates Electric Operations organization on current wind impacts system conditions.
Monday, October 09, 2017	0:09	Humboldt OEC activates, includes leadership team and pre-staged resources.
Monday, October 09, 2017	1:16	E-mail notification to Electric and Gas Leadership and all EOC on-call that the EOC will be activating starting at 06:00.
Monday, October 09, 2017	2:34	Northern Region Regional Emergency Center activates.
Monday, October 09, 2017	2:35	Electric Transmission Emergency Center (ETEC) activated.
Monday, October 09, 2017	6:00	PG&E Emergency Operations Center activated.

In addition to these operational activities, PG&E activated its Fire Danger Precautions in Hazardous Fire Areas standard, PG&E Utility Standard TD-1464S, which requires employees to adhere to the following directives, among others:

- Fuses are not replaced until line has been patrolled and all trouble cleared
- Thoroughly water down all flammable material within a 15-foot radius of the test location before replacing any blown open-link fuses
- Do not reclose line reclosers, sectionalizers, or circuit breakers that have tested automatically to lockout or open position until the overhead line in the involved protected zone has been patrolled and all found trouble cleared

In addition to these activities, PG&E has also been executing the following:

- Routine vegetation management work to maintain clearance requirements per applicable state and CPUC regulations. PG&E manages about 123 million trees in our 70,000 square mile service area.
- Public Safety and Reliability tree and limb removal work beyond compliance requirements which targets areas with higher history of vegetation outages
    i. 4,600 trees worked in the Napa district (2012 – 2017)
    ii. 15,700 trees worked in the Sonoma district (2012 – 2017)
- Transmission vegetation management work to enhance system reliability, reduce fire risk and maintain clearance requirements per applicable Federal, State and CPUC regulations
- Since 2014, in response to the drought, PG&E has added extraordinary measures to our tree maintenance program that prunes or removes more than 1.2 million trees each year. These measures include:
    i. Foot and aerial patrols, in addition to the use of remote sensing technology, specifically LiDAR Light-detecting and Ranging, to identify trees to be worked.
    ii. Inspecting along power lines in high fire-danger areas twice a year, and some areas as often as four times a year. In 2016, we conducted these additional patrols on 68,000 miles of power line, and in 2017 we expect to patrol 73,000 miles of line a second time.
    iii. In 2016, we removed about 236,000 dead or dying trees, in addition to pruning or removing about 1.2 million trees under the annual program to prevent contact with power lines. This is about seven times more trees removed than our pre-drought three-year average.
    iv. In 2017, we expect to remove about 150,000 dead trees to prevent them from contacting power lines, starting wildfires and posing other public safety risks.
    v. Wood debris management.
    vi. Fuel reduction and emergency response access.
    vii. Early detection of wildfires and forest disease and infestation.
    viii. Participation in Governor's Tree Mortality Task Force.

Below is a summary of Electric Distribution spending on vegetation management and fire hazard prevention:

$M	**2014**	**2015**	**2016**	**2017 September YTD**
Electric Distribution				
Fire Hazard Prevention	$25.3	$33.0	$183.6	$163.7
Vegetation Management	$189.8	$195.1	$198.7	$150.3
Total	$215.1	$228.1	$382.3	$314.0

This table does not include spending on PG&E's electric transmission, gas, and power generation vegetation management activities.

QUESTION 4:

My understanding and expectation is that PG&E has been monitoring weather forecasts, specifically wind conditions, since fires started on October 8th.

4.a. What actions has PG&E taken in response to any of the forecasts?

RESPONSE 4.a.:

Subsequent to the initial north winds and fire activity Sunday night into Monday morning (10/08 to 10/09), there have been two periods of extreme fire weather concern. The first was Wednesday night into Thursday (10/11 to 10/12), when forecasted north winds prompted more extreme fire danger ratings and additional Red Flag Warnings. The second was Friday night into Saturday (10/13 to 10/14) when another round of dry north winds drove another period of critical fire danger. In response to each of these additional events, PG&E Meteorology communicated the additional risk periods to the organization from EOC leadership on down to OEC and the field. Starting on Wednesday, 10/11, Distribution Operations Centers began to implement the strategy to deactivate reclose functions on additional protective devices within the potential fire expansion zones on SCADA capable Line Reclosers and Circuit Breakers. PG&E also coordinated with CAL FIRE to de-energize lines as indicated in response to question #1 and followed its procedures to de-energize lines when circumstances warranted it, as indicated in response to question #2. Given that the wildfires and our restoration efforts are ongoing, we do not have all of the information available to respond at this time and will update this response.

4.b. Is PG&E continuing to monitor weather conditions?

RESPONSE 4.b.:

Yes. PG&E continues to monitor current and forecasted weather conditions. When periods of expected adverse weather approach, PG&E increases the number of forecasts provided to ensure timely response.

4.c. In your operational assessment, is there a need to proactively de-energize any additional lines to prevent any more fires from igniting?

RESPONSE 4.c.:

PG&E will continue to work with CAL FIRE to de-energize lines as directed, and will also apply our procedures to de-energize if we encounter a safety condition warranting the de-energizing of the lines. As stated below, the question of whether to proactively de-energize lines for any reason, including weather forecasts, is a highly complex one given the significant public safety issues such actions can pose.

QUESTION 5:

Some utilities, for example SDG&E, have procedures in place to proactively de-energize power lines when weather conditions indicate extremely high risks of fires (based on temperature, humidity, wind-speed and other factors). Does PG&E have similar procedures in place?

RESPONSE 5:

PG&E does not have a procedure to de-energize power lines and thereby disable power service to its customers in advance of weather conditions that indicate extreme fire risk. Any discussion of proactively de-energizing lines is highly complex due to significant public safety issues such actions can pose. De-energizing lines can have an immediate and very broad impact on public safety, affecting first responders and the operation of critical facilities such as hospitals, the provision of water and other essential services, street lights and signals, communications systems, operation of building systems such as elevators, and much more. The impact on public safety is potentially dramatic and becomes more so depending on how widespread de-energizing is utilized. Prior to the current wildfires, for example, 44 of the 49 counties within PG&E's services territory had at least some portion of the county classified as being in extreme fire danger.

QUESTION 6:

6.a. Does PG&E have auto reclosers deployed through the counties impacted by the fires?

RESPONSE 6.a.:

Yes. PG&E utilizes auto reclosing on transmission and distribution circuit breakers in addition to automatic line reclosers (which can also be described as pole mounted breakers) in all counties throughout the entire service territory.

6.b. If you have auto reclosers deployed, what are the current protection settings?

RESPONSE 6.b.:

Each Recloser has its own protection settings. There are "Phase" minimum trip settings to detect Line-to-Line type faults, as well as "Ground" minimum trip settings to detect Line-to-Ground type faults. Depending upon the circumstance the Recloser may be set anywhere from one to three tests before it completely locks-out (opens). In purely underground areas the Recloser may be set for zero tests to mitigate risks to public safety or reliability. PG&E can follow up regarding individual settings as requested.

6.c. Do PG&E reclosers allow for remote configuration changes to protection settings (e.g. reduce the duration of a fault and the duration of discharged energy, restrict the number and duration of automated reclose attempts etc.)?

RESPONSE 6.c.:

Some Reclosers have remote SCADA communication capabilities that can have the Reclosing Relay disabled remotely, and in some cases can also be changed from its normal setting configuration (Alt-1) to an Alternate setting configuration (Alt-2) remotely. In all cases where remote SCADA communication capabilities are available, the Recloser can be opened or closed remotely by the Distribution Operator at the Control Center.