

Safety and Enforcement Division



Review of San Diego Gas & Electric Company December 2017 De-Energization Events

May 2018

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INTRODUCTION

This report reviews San Diego Gas & Electric Company's (SDG&E) two main de-energization events that occurred on December 4-12 and 14-15, 2017 and assesses whether SDG&E's decision to shut off power was reasonable based on the factors specified in Commission Decision D.12-04-024. Safety and Enforcement Division (SED) finds SDG&E actions appear to have been reasonable and in compliance with the Commission's decision.¹

BACKGROUND

Commission Decision D.12-04-024, issued on April 19, 2012 ruled that SDG&E has the authority under Public Utilities Code, Sections 399.2(a) and 451 to shutoff power in emergency situations when necessary to protect public safety. It also ruled that a decision to shut off power by SDG&E under its statutory authority, including the adequacy of any notice given and any mitigation measures implemented, may be reviewed by the Commission to determine if SDG&E's actions were reasonable.

D.12-04-024 specifies the following factors to consider when assessing the reasonableness of the de-energization:

1. SDG&E will have the burden of demonstrating that its decision to shut off power was necessary to protect public safety.
2. SDG&E should rely on other measures, to the extent available, as an alternative to shutting off power.
3. SDG&E must reasonably believe there is an imminent and significant risk that strong Santa Ana winds will topple its power lines onto tinder dry vegetation during periods of extreme fire hazard.
4. SDG&E should make efforts to mitigate the adverse impacts on the customers and communities in areas where SDG&E shuts off power.
5. Other factors may be considered, as appropriate, to assess whether SDG&E's decision to shut off power was reasonable.

¹ Disclaimer: This report is based on a SED review of SDG&E's filings. It does not represent an independent SED investigation into SDG&E's actions and/or surrounding circumstances and it does not bind SED to any statements made in this report.

The decision also requires SDG&E to notify the SED within 12 hours after SDG&E shuts off the power and provide a report after the shut-off has ended to the director of SED. The report must include an explanation of the decision to shut-off the power; all factors considered in the decision; the time, place and duration of the shutoff event; the customers affected; any wind-related damage to SDG&E facilities; description of customer notifications and any other mitigation provided by SDG&E; and any other relevant matters for the Commission to consider.

DESCRIPTION OF EVENTS

There were two main de-energization events that occurred in SDG&E’s territory in December 2017.

The first main event occurred on December 4-12, 2017. There were 55 individual circuit de-energization events involving 28 circuits (some circuits had multiple de-energization events) in various East San Diego County communities. SDG&E activated its Emergency Operations Center (EOC) at 7:00 a.m. on December 4, 2017. The first de-energization event occurred on December 5, at 8:11 a.m. and the last re-energization occurred on December 11, at 6:36 p.m. A total of approximately 14,000 customers were affected.

The second main event occurred on December 14-15, 2017. There were 6 individual circuit de-energization events involving 3 circuits in various East San Diego County communities. SDG&E activated its EOC at 7:00 a.m. on December 14, 2017. The first de-energization event occurred on December 14 at 5:06 p.m. and the last re-energization occurred on December 15 at 1:00 p.m. A total of approximately 650 customers were affected.

The de-energization events affected the communities in the table below. For each community, the Fire Threat Districts, as defined in General Order 95, are also listed:

Community	Fire Threat District
Alpine	Tier 2,3
Banner	Tier 3,2
Barrett Lake	Tier 3
Borrego	Tier 2 (partial)
Boulevard	Tier 2
Dehesa	Tier 3,2
Descanso	Tier 3
Fallbrook	Tier 2
Harrison Park	Tier 3
Jamul	Tier 3
Japatul	Tier 3
Lake Wohlford	Tier 3

Mesa Grande	Tier 3
Mt. Laguna	Tier 3
Otay Mesa	Tier 2
Pala	Tier 3,2
Palomar Mtn.	Tier 3,2
Potrero	Tier 3
Rainbow	Tier 3
Ramona	Tier 2,3
Valley Center	Tier 2,3
Viejas	Tier 3
Warner Springs	Tier 2
Wynola	Tier 3

SDG&E provided de-energization reports per the requirements of D.12-04-024 for the December 4-12 and the December 14-15 events on January 16, 2018 and January 2, 2018 respectively. The reports include additional details on the circuits, communities and the number of customers affected for each individual circuit de-energization event.

REVIEW

As the two de-energization events were similar in both circumstances that caused the de-energization and the actions taken by SDG&E, the following lists each of the factors from D.12-04-024 and the relevant details as applicable to both events.

FACTOR 1: SDG&E WILL HAVE THE BURDEN OF DEMONSTRATING THAT ITS DECISION TO SHUT OFF POWER WAS NECESSARY TO PROTECT PUBLIC SAFETY.

SED’s review confirmed that SDG&E considered the following factors before de-energizing specific circuits in its service territory:

- Fire conditions were extreme throughout the SDG&E service territory, including high winds, low humidity (single digit), and critically dry fuels;
- The United States Forest Service Santa Ana Wildfire Threat Index (SAWTI) was at “Extreme” at the peak;
- Recorded wind gusts around the de-energized circuits were in the high 50, 60, and/or 70 mph range for several consecutive reads with some isolated gusts near 90 mph;
- Likely unavailability of fire suppression air resources due to high winds and time of day;
- Other fires in and around the service territory demonstrated the fire risk in Southern California; and

- Ability to target the outages due to the methodical placement of devices and vast SDG&E weather network to minimize impacts to customers.

During the December 2017 Santa Ana wind event, the National Weather Service declared Red Flag Warnings due to strong gusty winds and low humidity. Information directly from the Southern California Geographic Area Coordination Center Bi-Monthly Fuels Discussion indicated that “the explosive fire conditions well past the normal time of year when fires cease to occur is a dramatic example of the dryness of the fuels and the overall health of area vegetation.” The Southern California Geographic Area Coordination Center also reported that dead fuels away from the coast were at or near all-time record dry levels in the mid-teens and as low as 2% in heavily vegetated areas with live fuel moisture not recovering and drifting downward.

Recorded wind gusts around overhead electric circuits in San Diego were in the high 50, 60, and/or 70 mile-per-hour range for several consecutive reads with some isolated gusts near 90 mph, which could exceed design criteria for certain poles (criteria based on the known local conditions). Relative humidity levels of as low as 2% were recorded across the service territory.

During the period of the two events, the Santa Ana Wildfire Threat Index issued by the United States Forest Service reached an Extreme rating. An Extreme rating is defined as “upon ignition, fires will have extreme growth and will be uncontrollable.” This is the first time the index reached the Extreme rating since its inception.

In addition, over five active and devastating fires raged in Los Angeles, Ventura, and Mexico, including the Thomas Fire (which proved to be the largest wildfire in California history). These fires further demonstrated the fire risk in Southern California. As a result of the fires and critical fire weather conditions, both the President of the United States and the Governor of California issued State of Emergency declarations.

SED’s review also established SDG&E’s decision to shut off the power was not primarily based on its concern that its facilities will not be able to withstand the wind speeds in the area and that they would topple. SED analysis confirms that SDG&E decision was fundamentally based on the likelihood and consequences of fire starting in the affected areas and the fact that having any type of open wire, high-voltage, energized lines would be such a high risk that shutting the power would be warranted and reasonable.

SED’s conclusion is during de-energization events SDG&E faced a real and significant risk of wildfires and that the decisions at the circuit level were based on an adequate risk assessment.

FACTOR 2: SDG&E SHOULD RELY ON OTHER MEASURES, TO THE EXTENT AVAILABLE, AS AN ALTERNATIVE TO SHUTTING OFF POWER.

SED analysis confirms that SDG&E considered and implemented other measures prior to making the decision to proactively de-energize specific circuits. These measures included adjustments of recloser settings, vegetation management, inspection and monitoring during extreme fire conditions:

a. Reclosers

Reclosers are circuit breakers equipped with mechanisms that can automatically close the breaker after it has been opened due to a fault. In SDG&E's system, there are substation reclosers and field reclosers. When the Fire Potential Index (defined by SDG&E) is expected to be "Elevated" for an extended period of time, both substation and field reclosers in the Fire Threat Zone (defined by the Commission) are disabled. Reclosers located in the High Fire Threat District Tier 2 and Tier 3 were disabled on June 14, 2017, and they have not been re-enabled yet due to on-going critical fire conditions and lack of precipitation

b. Vegetation Management

SDG&E currently operates a vegetation management program with records of approximately 460,000 trees located near its power lines. Prior to fire season, Vegetation Management performs an additional incremental hazard tree assessment in the high-risk fire areas, and vegetation clearing for these off-cycle patrols was completed prior to September 1 to mitigate risks associated with Santa Ana winds.

c. Pre-inspection

In addition to the mandated inspection and patrol programs required under Commission General Orders, in the December Santa Ana event SDG&E electric crews inspected full circuits in advance of the critical fire conditions to find and correct any deficiencies.

d. Monitoring

Stationary and mobile observers and contract firefighting resources were deployed in the field to provide real-time information on field conditions. Observers are qualified electric workers who are familiar with electric infrastructure. SDG&E uses observers in an effort to identify safety hazards as they arise. These resources are deployed by SDG&E's Electric Regional Operations group in coordination with Electric Distribution Operations and Meteorology, who identify locations with the most adverse weather conditions. In addition, SDG&E made use of contract firefighting resources for pre-treatment, fire-ignition prevention, and rapid-fire extinguishment, who were trained in emergency medical response. During high wildfire risk conditions in December 2017, contract firefighting

resources were deployed with field personnel to circuits that require emergency work or during re-energization.

SED finds that SDG&E considered de-energizing for public safety only after employing other mitigation strategies.

FACTOR 3: SDG&E MUST REASONABLY BELIEVE THERE IS AN IMMINENT AND SIGNIFICANT RISK THAT STRONG SANTA ANA WINDS WILL TOPPLE ITS POWER LINES ONTO TINDER DRY VEGETATION DURING PERIODS OF EXTREME FIRE HAZARD.

It is clear that, during the two de-energization events, there was imminent and significant wildfire risk in the affected areas. Looking at wind speeds in particular, SDG&E considered the following factors:

1. The wind speed at the locations where circuits were de-energized and the wind direction to the extent this affected the wind load on the facilities.
2. The type of facilities at the locations where power was shut off (for example, grade of construction and material); the wind load design basis for the facilities; the age and condition of the facilities; and the safety factor.
3. The calculated risk of wind-caused structural failures.
4. The vegetation conditions where power was shut off (for example vegetation fuel load and fuel-level moisture).
5. Whether the National Weather Service had declared a Red Flag Warning due to extremely low humidity or low humidity plus strong winds.

SED review confirms that there were many indications that the fire hazard was significant.

During the December Santa Ana event, the National Weather Service declared Red Flag Warnings due to strong gusty winds and low humidity. Information directly from the Southern California Geographic Area Coordination Center Bi-Monthly Fuels Discussion indicated that “the explosive fire conditions well past the normal time of year when fires cease to occur is a dramatic example of the dryness of the fuels and the overall health of area vegetation.”

In December, the Southern California Geographic Area Coordination Center reported that dead fuels away from the coast were at or near all-time record dry levels in the mid-teens and as low as 2% in heavily vegetated areas with live fuel moisture not recovering and drifting downward. Recorded wind gusts around the de-energized circuits were in the high 50, 60, and/or 70 mile-per-hour range for several consecutive reads with some isolated gusts near 90 mph, which could exceed design criteria for certain poles (criteria based on the known local conditions).

SED finds that when making each decision to de-energize SDG&E considered the particular facts that affected that portion of the system, including winds and other local conditions. It was reasonable for SDG&E to consider the risk from Santa Ana winds to be imminent and significant.

FACTOR 4: SDG&E SHOULD MAKE EFFORTS TO MITIGATE THE ADVERSE IMPACTS ON THE CUSTOMERS AND COMMUNITIES IN AREAS WHERE SDG&E SHUTS OFF POWER.

SED finds that SDG&E made reasonable efforts to mitigate the adverse impacts on the customers and communities in areas where SDG&E de-energized circuits. However, the impact from de-energization is significant, especially in remote areas. SDG&E should continue working with communities on preparedness for de-energization and take steps to improve communication.

During the December Santa Ana wind event, SDG&E issued over 60 custom and standard communications to customers who might be or were impacted by the de-energization for public safety outages. These began with outbound communications at the beginning of the Red Flag Warning on December 4 and were tailored over the days as specific conditions developed. Per SDG&E procedure that was followed, Medical Base Line customers who were de-energized and could not be reached by the broad-based notification were subsequently contacted with an individual call, and if not reached by the personal call, a field tech was dispatched to contact the customer.

SDG&E Media Relations conducted TV and radio interviews to discuss SDG&E's preparations for the RFW, and a full Media Conference was held in the SDG&E EOC on December 6 to provide information to customers. Media Relations established a running blog on the SDG&E News Center to post real-time updates for media and customers and monitored and responded to social media including Twitter. Throughout the event, Regional Public Affairs contacted local agencies, California Department of Forestry and Fire Protection (CAL FIRE), and elected officials prior to, or immediately following de-energization, and provided customer counts and specific communities impacted and provided medical base line information to the County Office of Emergency Services.

Urgent and essential customers were contacted by their assigned account executive to confirm back-up generation was operational, including the Federal Aviation Administration (FAA), water districts, state universities, telecommunication, and state agencies. Multiple SDG&E mobile command trailers were dispatched to impacted communities to provide water, wi-fi connectivity, and battery charging capabilities along with a company representative. In the downtown Julian community, SDG&E mobilized a large generator to maintain power for the stores and restaurants to enable customers to access supplies throughout the duration.

While SDG&E made an effort to contact customers and push out notifications, SED is aware of multiple complaints of SDG&E customers and local communities about the short-term nature of notifications and even their absence in some cases. Also, the adverse effects of de-energization events are significant and difficult to mitigate. SDG&E has made an effort to provide back-up generation in some locations, such as Julian, CA, but SDG&E practices in this regard do not appear to be consistent across its operating territory.

In sum, SED finds that there are opportunities for improvement for how SDG&E communicates prior to de-energization events and mitigates the impact of de-energization, especially in situations where power shut off is prolonged.

FACTOR 5: OTHER CIRCUMSTANCES MAY BE CONSIDERED, AS APPROPRIATE, TO ASSESS WHETHER SDG&E'S DECISION TO SHUT OFF POWER WAS REASONABLE.

The decision to de-energize for public safety is complex and dependent on many factors including and not limited to fuel moisture, aerial and ground firefighting capabilities, active fires that indicate fire conditions, situational awareness provided by fire agencies, the National Weather Service, and the United States Forest Services, and local meteorological conditions of humidity and winds.

The 2017 California wildfire season was the most destructive wildfire season on record, which saw multiple wildfires burning across California, including five of the 20 most destructive wildland-urban interface fires in the state's history. The wildfire threat conditions that SDG&E faced were at least as significant as those faced by Southern California Edison and Pacific Gas and Electric. SDG&E's situational awareness has greatly improved over the years and in 2017 SDG&E was using a variety of tools to selectively de-energize circuits that were most at risk.

CONCLUSION

SDG&E exercised its statutory authority under Public Utilities Code Sections 451 and 399.2(a), to de-energize specific circuits, on specific days, in December of 2017. SED finds that SDG&E followed a decision making process to de-energize these circuits that was driven by the need to protect public safety from wildfires. SED concurs with SDG&E's evaluation that at that time there was a real and significant risk of wildfires.

In conclusion, SED review of SDG&E's de-energization events finds that SDG&E's actions appear to have been reasonable under the factors specified in D.12-04-024. The review also finds that SDG&E complied with the reporting requirements in D.12-04-024.