SED DATA REQUEST: SED-SDG&E-01
R.18-10-007 – SB901 WILDFIRE MITIGATION PLAN OIR
SDG&E RESPONSE

Date Received: March 5, 2019
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Regarding SDG&E Wildfire Mitigation Plan (WMP or Plan) Section 4.2 – Inspection Plan

QUESTION 4.2.1:

Describe how the Quality Assurance/Quality Control (QA/QC) inspections described in section 4.2.1.2 are performed.

RESPONSE 4.2.1:

The QA/QC inspection is essentially the same as the General Order (GO) 165 mandated overhead (OH) inspection, with a focus on a smaller subset of condition codes. In addition, the QA/QC inspection is only performed by a qualified electrical worker (QEW) employee who is trained to perform GO 165 mandated OH inspections.

The QA/QC inspection is performed on a 3-year cycle within SDG&E's high fire threat district (HFTD) Tier 3, which is separate from the 5-year cycle for the GO 165 mandated OH inspection. However, if the QA/QC and the GO 165 mandated OH inspection coincides for the same year, SDG&E will perform the GO 165 mandated OH inspection, which will also fulfill the QA/QC inspection.

QUESTION 4.2.2:

Provide all documentation describing procedures or guidelines for performing QA/QC inspections.

RESPONSE 4.2.2:

The procedures/guidelines for performing QA/QC inspections are the same as GO 165 mandated OH inspections. Please see attached documents: "SED-SDG&E-01 Q4.2.2 ESP 601.pdf," "SED-SDG&E-01 Q4.2.2 OHVIQC Condition Code Ref.pdf," and "SED-SDG&E-01 Q4.2.2 OH_CMP_ILT CONFIDENTIAL.pdf," for the procedures/guidelines for GO 165 mandated OH inspections. The document "SED-SDG&E-01 Q4.2.2 OH_CMP_ILT CONFIDENTIAL.pdf" contains confidential and protected materials pursuant to P.U. CODE SECTION 583, GO 66-D, AND D.17-09-023.

QUESTION 4.2.3:

Do inspectors who perform QA/QC inspections require training that is different from the training received by inspectors who perform GO 165-mandated inspections? Describe differences in the training.

RESPONSE 4.2.3:

No, the QA/QC inspection training is the same training as for the GO 165 mandated OH inspection.

QUESTION 4.2.4:

Provide all documentation used for the purpose of training inspectors to perform QA/QC inspections.

RESPONSE 4.2.4:

Please see the response to Question 4.2.2 above.

Regarding SDG&E WMP Section 4.3 – System Hardening Plan

QUESTION 4.3.1:

How was the new section of the SDG&E Facilities Design Manual referenced in section 4.3.1 developed? Who was responsible for the content of the new section of the manual?

RESPONSE 5:

SDG&E's Facilities Design Manual (Design Manual) referenced in Section 4.3.1 of SDG&E's WMP was developed by SDG&E's Electric Distribution Engineering department with collaboration from several internal departments and review of CalFire's Power Line Fire Prevention Field Guide to address the deployment of construction within the HFTD.

QUESTION 4.3.2:

How does SDG&E decide where to implement the proactive measures guided by the Facilities Design Manual?

RESPONSE 4.3.2:

The Design Manual is designed to reduce the risk of a wildfire and the greatest threat for this to occur is within the HFTD.

QUESTION 4.3.3:

Provide in PDF format SDG&E's Facilities Design Manual.

RESPONSE 4.3.3:

Please see the attached "SED-SDG&E-01 Q4.3.3 Attachment – Facilities Design Manual."

QUESTION 4.3.4:

When a facility analysis determines that a certain type of hardware has higher incidences of failure/ignition, what is the process for replacement? Does the analysis apply to all hardware on the system of the same model, or is the analysis restricted to individual pieces of hardware?

RESPONSE 4.3.4:

When an equipment is determined to have a higher incidence of failure/ignition, SDG&E contacts the manufacturer to allow the manufacturer an opportunity address the issue. SDG&E also reviews similar hardware from other manufactures to verify whether the issue is a system wide concern or aligned with a specific model/version. In addition, SDG&E will perform internal or joint tests to fully comprehend the problem. After a detailed understanding of the cause for the increase in failure/ignition has been determined, SDG&E has the capability of freezing all equipment in stock and replace the specific stock item with an alternative. Should this occur, SDG&E communicates this change throughout the various departments that could potentially interact with the equipment. Based on the scope and urgency of the problem, SDG&E has the ability to develop a new program to replace the equipment and prioritizes the risk to address the highest priority locations.

QUESTION 4.3.5:

How often does SDG&E perform LiDAR surveys on its service area? How often does the acquired data need to be updated?

RESPONSE 4.3.5:

Traditionally, SDG&E performs LiDAR surveys in advance of PLS-CADD transmission and distribution designs. More recently, SDG&E has begun acquiring LiDAR post construction to ensure the overhead infrastructure installed in the field met the required design criteria and to have an engineering PLS-CADD model as built. In addition, the entire HFTD was recently surveyed in 2018 to support designs for fire hardening programs such as the Fire Risk Mitigation (FiRM) program and the Pole Risk Mitigation and Engineering (PRiME) program, as well providing data for vegetation management. SDG&E is still evaluating how often to update this data.

QUESTION 4.3.6:

Will all pole replacements be with steel poles, or just those replaced in the HFTD?

RESPONSE 4.3.6:

SDG&E standards allow for the use of wood poles, steel poles, or composite poles outside the HFTD. Specific design and project requirements influence which materials are used for projects outside the HFTD.

QUESTION 4.3.7:

Provide any documentation or studies related to fire testing of pole materials used by SDG&E in selecting non-wood pole replacement materials.

RESPONSE 4.3.7:

Please see the attached document "SED-SDG&E-01 Q4.3.7 Attachment" regarding steel pole performance after being exposed to fire.

During the 2007 fires in SDG&E's service territory, over 2,000 thousand wood poles burned beyond repair and had to be replaced. These fires also burned near steel poles and tower transmission structures that remained structurally intact after the fires. Based on this experience, SDG&E believes that steel poles are more resilient to fires than wood poles. Further, the ignition temperature for wood is significantly less than the ignition temperature of steel.

QUESTION 4.3.8:

What are the specific risks that SDG&E intends to mitigate with the installation of steel poles?

RESPONSE 4.3.8:

As stated in Section 4.3.6 of SDG&E's WMP, the fire hardening of SDG&E's transmission and distribution system within the HFTD is a multi-faceted approach that begins with enhanced design criteria. As further stated in Section 4.3.6, lines were previously designed to withstand wind loads of 56 miles per hour (mph) as prescribed by GO 95. After lessons learned from the 2007 fires, the installation and subsequent data collection from a dense network of anemometers, and wind studies, SDG&E learned that the maximum wind speeds its electric system endures is much higher than 56 mph; it is much closer to 85 mph and even 111 mph in certain areas. It is important to note that wind force is not linear. For example, a 56 mph wind exerts 8 pounds per square foot of force while an 85 mph wind exerts 18 pounds per square foot, an increase of 125%. Designing the system to withstand wind loads that occur during red flag conditions in Tier 3 and Tier 2 of the HFTD reduces the risk of equipment failure and potential ignitions.

Additionally, SDG&E is replacing single aluminum and copper core conductors with high tensile strength steel core conductors to reduce the risk of wire down failures that could lead to ignitions. Where dense vegetation exists, covered conductor is being evaluated as a conductor solution to reduce the risk of vegetation contacts. SDG&E is also increasing the phase spacing beyond the requirements of GO 95, which results in a decrease in the likelihood of energized lines coming into contact with one another or arcing after being struck by flying debris.

SDG&E is also utilizing steel poles instead of wood poles. There are two significant benefits that steel poles provide. The first is they are a more reliable material being manufactured versus natural, meaning a steel pole of a specified strength is more likely to have that strength that a wood pole of the same value. This is evident in the GO 95 safety factor requirements. A grade A wood pole is required to have a safety factor of 4 while a grade A steel pole is required to have a safety factor of 1.5. This means a steel structure is required to be only 1.5 times the strength of the calculated loads versus 4 times the strength with a wood pole, as there is less variability in the nominal strength of the material. In addition, as stated in Section 4.3.7, from previous experience steel poles have proven to be more resilient to wildfires than wood poles.

QUESTION 4.3.9:

How do "poles that fail inspection" contribute to the risk of wildfires? What constitutes a failed inspection? Are these failures also seen with steel poles?

RESPONSE 4.3.9:

To clarify, the term "fail inspection" as used in Section 4.3 of SDG&E's WMP is meant to describe an inspection that results in a major repair/replacement. That being said, some of the inspection results that SDG&E finds in the field would be significant signs of decay inside a wood pole at or below ground line. Based on the inspection results, a percent capacity is calculated and a corrective action is then identified. Wood poles that fall below a certain percent capacity would no longer meet the strength requirements they were designed for and can contribute to wildfire risk as there is an increased chance of a structure failure. Steel poles do not deteriorate in the same manner as wood poles. Steel poles are inspected for surface corrosion and must maintain proper steel thickness to provide their designed strength.

QUESTION 4.3.10:

Does SDG&E have a projected goal for a number of deteriorated poles replaced with steel poles in its service area?

RESPONSE 4.3.10:

SDG&E tends to replace approximately 1,000 poles per year under the corrective maintenance program. This is dependent on annual inspection results but based on five-year averages.

QUESTION 4.3.11:

Is SDG&E aware of any studies to assess the effectiveness of the ten feet of defensible space required in PRC 4292 in protecting wooden poles from outside fire damage?

RESPONSE 4.3.11:

SDG&E is not aware of studies that assess the effectiveness of the 10' radius for vegetation clearing around wood poles.

Regarding SDG&E's WMP Section 6.2 – Metrics to Evaluate Plan Performance

QUESTION 6.2.1:

Regarding the metric proposed in section 6.2.1.2, does SDG&E monitor or measure the effectiveness of the inspections performed as a mitigation measure? How does SDG&E quantify success of its inspection program?

RESPONSE 6.2.1:

SDG&E monitors the effectiveness of its inspections through various activities. SDG&E performs quarterly field audits of inspections at a rate of 1.5% per inspector as well as internal audits of the districts on a periodic basis. In addition, SDG&E performs an extensive review of inspection and maintenance records. Another key success indicator is the progress and completion of the mandated GO 165 inspections on a regular basis.

QUESTION 6.2.2:

The metric proposed in Section 6.2.1.3 "System Hardening Plan" is described as an "execution metric, that will measure adherence to the approved Plan." Identify which other metrics that SDG&E proposed that would also be categorized as an "execution metric".

RESPONSE 6.2.2:

Each metric provides an insight as to the action taken by SDG&E to move its Plan forward on a positive and measurable basis. Each metric is executable in design and provides insight as to how SDG&E is performing on key tasks that drive the plan completeness. For this metric in particular, SDG&E is proposing to measure it by comparing its assumed levels of work, as put forth in the Plan, to actual work performed. The other metric SDG&E is proposing to measure similarly is the number of internal and external emergency response preparedness trainings conducted in the Disaster and Emergency Preparedness section (Section 6.2.3.2).

QUESTION 6.2.3:

Describe how this type of "execution metric" would inform the performance of the respective preventative strategies and programs.

RESPONSE 6.2.3:

It is SDG&E's desire to operate, maintain, and improve its resiliency towards wildfire mitigation. This metric focuses on progress related to three of SDG&E's largest System Hardening programs (Fire Risk Mitigation program or FiRM, Cleveland National Forest, and Pole Risk Mitigation and Engineering or PRiME) and provides accountability by tracking and communicating through the metric if SDG&E accomplished the work it anticipated. That said, the System Hardening Plan metric as well as the other metrics SDG&E included in its Plan measure the performance of these programs and strategies, which taken collectively is intended to result in a safer, more resilient system upon completion.

QUESTION 6.2.4:

For each of the preventative strategies and programs proposed that can be correlated to an "execution metric", how does SDG&E currently determine the effectiveness of each of those strategies and programs?

RESPONSE 6.2.4:

Effectiveness calculations for programs in SDG&E's Plan will be considered in its Risk Mitigation Assessment Phase (RAMP) proceeding and subsequent phases of the General Rate Case (GRC), which are outside of this proceeding.

QUESTION 6.2.5:

Regarding the metric proposed in section 6.2.2.2, for what reason would the FPI not be published on a particular day? Is there a history of the lack of a published FPI proving to be an obstacle to SDG&E operations?

RESPONSE 6.2.5:

The process for publishing the Fire Potential Index (FPI) requires SDG&E's meteorology team to leverage situational awareness data from multiple tools, such as the SDG&E Weather Network and high-performance computing program. This data is analyzed by a degreed meteorologist and the FPI is updated and distributed by the subject matter expert. The FPI would not be published on a given day if the meteorology team was not able to provide the company with this situational awareness (e.g., technology challenges, personnel challenges).