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## PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE  
SAN FRANCISCO, CA 94102-3298



April 30, 2018

Ms. Jennifer Kaminsky  
Environmental Manager  
San Diego Gas and Electric Company  
8326 Century Park Court  
San Diego, CA 92123

**RE: Sycamore-Peñasquitos 230 Kilovolt Transmission Line Project – Induced Current on AT&T Communication Cable – Noncompliance issues with Mitigation Measure Hazards - 7**

Dear Ms. Kaminsky:

The California Public Utilities Commission (CPUC) staff requests San Diego Gas & Electric Company's (SDG&E) compliance with Mitigation Measure Hazards – 7 on the Sycamore-Peñasquitos project. As described in detail below, the staff has reviewed the utility's compliance efforts to date and finds the actions insufficient. SDG&E must implement the required mitigation prior to the energization of the transmission line to protect the public from hazardous shock. The CPUC has determined that SDG&E must take additional actions to demonstrate compliance with Mitigation Measure Hazards-7 and SDG&E must install appropriate measures to protect the public and AT&T workers from potential hazardous shock.

### **Background**

San Diego Gas & Electric (SDG&E) filed an Application for a Certification of Public Convenience and Necessity (CPCN) for the Project in 2014. The California Public Utilities Commission (CPUC) prepared and certified an Environmental Impact Report (EIR) to evaluate the environmental impacts of the Project and alternatives to the project in compliance with the California Environmental Quality Act (CEQA). The CPUC adopted the Final EIR and approved Alternative 5 as the Environmentally Superior Alternative on October 13, 2016. SDG&E commenced construction of Alternative 5 in early 2017 pursuant to Decision 16-10-005.

In preparation of the EIR, the CPUC submitted data requests to SDG&E to obtain information on utilities located in proximity to the proposed project for all alternative routes evaluated in the EIR. In response to the requests, SDG&E did not identify any metallic AT&T telecommunication lines in proximity to the proposed project or underground alternatives during the EIR preparation.

### **Mitigation Measure Hazards - 7 for Induced Voltage**

As part of the EIR development process, the CPUC evaluated the impact of shock hazards on workers and the public and presented the results in the EIR. The final EIR found that the Sycamore-Peñasquitos 230-kV Transmission Line had the potential to result in a significant impact on workers or the public and thus the EIR applied Mitigation Measure Hazards-7 to address shock hazards on adjacent utilities.

The full text of Mitigation Measure Hazards-7 is provided below:

**Mitigation Measure Hazards-7 Induced Current/Voltage Touch Study.** SDG&E shall identify both aboveground and underground objects (e.g., metal fences or buried metal utility lines) in the vicinity of the proposed 230-kV transmission line that may potentially present a shock hazard to the public, due to induced currents or voltages. SDG&E shall prepare an Induced Current Touch study that evaluates the conductive and inductive interference effects of the proposed 230-kV transmission line on the identified objects. The Induced Current Touch study shall model the conductive objects using the maximum anticipated voltage for the proposed 230-kV line and shall consider the construction details for the transmission line. The study shall also construct a model using fault conditions. The maximum acceptable touch voltage under steady-state conditions is 15 volts and the threshold for fault conditions is specified in ANSI/IEEE Standard 80. In the event that the modeled induced current voltage of a conductive objective exceeds maximum touch voltage thresholds, SDG&E shall install grounding or other appropriate measures to protect the public from hazardous shocks. The Induced Current Touch study shall include the model voltage results of conductive objects prior to implementation of grounding measures and after implementation of grounding measures.

Sixty days prior to commencing construction, SDG&E shall provide the Induced Current Touch study to the CPUC, for review. The Induced Current Touch study shall include the criteria and approach that was used to determine what facilities could present a shock, the results of the model prior to implementation of grounding measures, details of the grounding or other measures to be installed, and the results of the model after implementation of the grounding measures.

Mitigation Measure Hazards-7 was included in the Draft and Final EIR. SDG&E did not submit comments on the mitigation measure or the shock hazard impact analysis in their comments to the CPUC on the Draft EIR.

#### **SDG&E 2016 Preconstruction Compliance AC Interference Study for Underground Transmission Line**

SDG&E prepared an AC interference study dated October 27, 2016, which evaluated potential shock hazards on conductive objects along the approved Project alignment (Alternative 5) for Mitigation Measure Hazards – 7 preconstruction compliance.

The CPUC provided comments on the study and SDG&E provided a revised study (R-16088-AC Rev.6) dated December 8, 2016. The 2016 AC interference study identified eight pipeline regulator stations in proximity to the underground transmission line where induced voltage could present a touch hazard. SDG&E did not identify any other underground utilities with potential for shock hazard. The induced voltage was modeled on the regulator stations; the voltage threshold of 15 volts specified in Mitigation Measure Hazards-7 was not met or exceeded at any of the stations so no mitigation was required by the CPUC.

At the time of the 2016 induced current study the CPUC was unaware that AT&T had copper (metallic) wire parallel to the Alternative alignment.

#### **AT&T Reports Induced Voltage Concerns to CPUC**

In November 2017, AT&T requested CPUC involvement in addressing the Project induced voltage and potential shock hazard impacts on AT&T's telecommunication cable. SDG&E and AT&T had meetings and SDG&E conducted five versions of a new AC Interference Study for AT&T facilities in late 2016 through early 2018. In January 2018, AT&T met with SDG&E to discuss the results of the study and

possible mitigation strategies. In February 2018, SDG&E offered a mitigation strategy that would include installing a nickel mesh barrier between SDG&E lines and AT&T lines, but only proposed to do so after energization and when AT&T monitoring showed voltages exceeding 50 volts on AT&T facilities. In a March 16, 2018 letter to SDG&E, AT&T reiterated their concerns regarding induced voltage on their facilities, which had not been addressed by SDG&E. The delay in the implementation of the mitigation proposed by SDG&E after energization and monitoring is not acceptable to AT&T.

It is the CPUC's understanding that AT&T began discussing their metallic telecommunication cable adjacent to the Project with SDG&E in late 2016 prior to SDG&E's issuance of the December 8, 2016 report R-16088-AC Rev.6, titled AC Interference and Induced Current and Touch Study for the underground portion of the Project. The December 8, 2016 report did not identify nor include the AT&T metallic (copper) wire parallel to the Project. SDG&E continued to coordinate with AT&T in 2017 to model the induced voltage on AT&T's facilities, but SDG&E did not inform the CPUC staff prior to AT&T separately contacting the CPUC in November 2017.

The CPUC staff has discussed this issue numerous times with AT&T and SDG&E between November 2017 and April 2018. CPUC Staff met with AT&T on April 16, 2018, to discuss AT&T's ongoing concerns about induced voltage. AT&T reported their concerns about safety hazards and service impacts from induced voltages during the meeting with CPUC. AT&T also clarified that as presently installed, AT&T customers could experience induced voltage shocks from the cable at any terminal point, which includes facilities at the customer's home or business (e.g., a phone jack). Also, at the meeting AT&T provided the CPUC with a mitigation proposal that they indicate is based in part and in principle on what SDG&E proposed to them.

#### **SDG&E AC Interference Analysis Results Prepared by ARK Engineering**

SDG&E provided CPUC staff with a fifth version of the AC interference analysis, prepared by ARK Engineering on February 22, 2018 (R-17053-AC Rev. 5). The fifth iteration of the AC interference analysis and modeling of SDG&E's induced voltage attempts to identify potential impacts on AT&T's facilities. The results of the February 22, 2018 AC interference analyses showed a modeled maximum voltage of 41 volts on AT&T's line. The AC interference analysis also identified a potential mitigation of installing a shielding conductor along the 230-kV circuit that would reduce the modeled maximum voltage to 28 volts. After five iterations of this study, AT&T still has concerns about the model construction and results that were not addressed in the February 22, 2018 study. Furthermore, the 28 volts (modeled with new mitigation) and 41 volts (modeled without mitigation) still exceed the Mitigation Measure Hazard -7 maximum level of 15 volts.

#### **SDG&E AC Interference Analysis and MM Hazards-7 Requirements**

The CPUC has reviewed SDG&E's AC Interference Analysis relative to the requirements in Mitigation Measure Hazards-7 language and finds the following noncompliance issues:

- 1. SDG&E shall prepare an Induced Current Touch study that evaluates the conductive and inductive interference effects of the proposed 230-kV transmission line on the identified objects. The Induced Current Touch study shall model the conductive objects using the maximum anticipated voltage for the proposed 230-kV line and shall consider the construction details for the transmission line.*

SDG&E prepared an induced current touch study that evaluates the potential voltage effects on AT&T's telecommunication wires. SDG&E's study used the maximum anticipated voltage for the

proposed 230-kV transmission line and considered the construction details, including grounding, of the transmission line. SDG&E complied with this portion of Mitigation Measure Hazards-7 by completing the recent AC interference study, which reflected both the maximum voltage of SDG&E's transmission line and the construction details for the transmission line. However, a version of the study was not provided to the CPUC until roughly a year (November 28, 2017 Revision 3) after SDG&E was aware of AT&T's concerns and was not provided for review sixty days prior to commencing construction, as required by Mitigation Measure Hazards-7.

- 2. The study shall also construct a model using fault conditions. The maximum acceptable touch voltage under steady-state conditions is 15 volts and the threshold for fault conditions is specified in ANSI/IEEE Standard 80.*

SDG&E's AC interference study for the AT&T telecommunication line does not use the maximum touch voltage threshold of 15 volts under steady-state conditions as specified in Mitigation Measure Hazards-7. Instead, SDG&E's AC Interference study used an OSHA voltage threshold of 50 volts to evaluate whether the shock hazard would require mitigation. The OSHA voltage threshold is a requirement SDG&E must meet for its workers' protection. The 15-volt threshold used in the EIR was required to be protective of the public. The 15-volt threshold reasonably applies to AT&T facilities for protection of the public/customers and AT&T workers who could be shocked by induced voltage from SDG&E's transmission line.

- 3. In the event that the modeled induced current voltage of a conductive objective exceeds maximum touch voltage thresholds, SDG&E shall install grounding or other appropriate measures to protect the public from hazardous shocks.*

The modeled induced voltage levels on AT&T's line exceeded the maximum touch voltage threshold of 15 volts; however, SDG&E did not propose to implement measures to protect the public from hazardous shocks. SDG&E's study recommended monitoring the actual voltage level and only installing mitigation if the observed voltage levels exceeded the OSHA threshold of 50 volts. Neither the 50-volt threshold, nor the approach to only monitor observed voltages are in compliance with the measure, which requires SDG&E to implement mitigation if the modeled voltage exceeds the threshold of 15 volts.

- 4. The Induced Current Touch study shall include the model voltage results of conductive objects prior to implementation of grounding measures and after implementation of grounding measures.*

SDG&E's AC interference study identified modeled voltage levels prior to and after implementation of voltage reduction measures. The modeled voltage levels after implementation of the measures still exceeded the 15-volt threshold included in Mitigation Measure Hazards-7. Additional voltage reduction measures must be defined to meet the standard included in Mitigation Measure Hazards-7.

## **Conclusion**

SDG&E has modeled the induced current/voltage effects of the Project transmission line on AT&T facilities. SDG&E's model finds that the maximum touch voltage will exceed the 15-volt threshold included in Mitigation Measure Hazards-7.

AT&T has provided recommendations to SDG&E and CPUC regarding potential mitigation solutions. SDG&E will define, or work with AT&T to define additional feasible mitigation to reduce the maximum induced voltage on AT&T's facilities to levels below the required threshold per Mitigation Measure Hazards-7.

Additional mitigation efforts must be implemented prior to energization of the transmission line to protect the public from hazardous shocks and ensure that the maximum induced voltage on all nearby utility facilities is below the required threshold.

Please direct any questions or comments to me at (415) 703-2068 or [Billie.Blanchard@cpuc.ca.gov](mailto:Billie.Blanchard@cpuc.ca.gov).

Sincerely,

*Billie Blanchard*

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Energy Division, CEQA Unit

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Lonn Maier, Supervisor  
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