# City of Palo Alto (ID # 11873)

## Utilities Advisory Commission Staff Report

**Report Type: New Business** **Meeting Date: 2/3/2021**

## Summary Title: 2nd Transmission Corridor Update

## Title: Informational Update on Progress Toward a Second Transmission Line Corridor Connecting the City of Palo Alto Electric Distribution System to the Pacific Gas & Electric Transmission Grid

## From: City Manager

## Lead Department: Utilities

### Recommendation

This report is provided for the UAC's information and no action is required.

### Executive Summary

The purpose of this report is to update the Utilities Advisory Commission (UAC) on the status of and next steps for a second transmission line corridor connecting the City of Palo Alto (City) electric distribution system to the Pacific Gas & Electric (PG&E) transmission grid. After many years of negotiations with Stanford, SLAC National Accelerator Laboratory (SLAC), and the Department of Energy (DOE) for a 60 kilovolt (kV) electric transmission line interconnection between the 230kV corridor serving SLAC along the western side of Palo Alto and the 115kV corridor serving the City in eastern Palo Alto, the parties have been unable to reach agreement. Moving forward, the City will focus on a new 115kV electric transmission line between the City and PG&E from the southeast corridor (the Project).

### Background

The City of Palo Alto's electric distribution system is connected to Pacific Gas and Electric Company's (PG&E) transmission grid via three 115 kV transmission lines. Although three lines would normally provide redundancy and back-up power delivery, all three lines run in a common corridor on the bay side of the City, a corridor that is near the Palo Alto Airport. The common corridor and proximity to an airport means that the City's power supply is susceptible to single events that can affect all three lines, as happened in February of 2010 when a small aircraft hit the power lines resulting in a city-wide power outage for over 10 hours. To minimize these possibilities and increase resiliency, it is in the City's interest to find a physically diverse connection for power supply to the City. Staff has been investigating options for an alternative connection to the transmission grid for many years.

Following the February 2010 plane crash and subsequent city-wide outage, Council included the goal to evaluate alternative electric transmission line sources in its priorities for 2011 (Staff Report No. 1497, March 21, 2011). Also, in March 2011, Council adopted a guideline and implementation plan item to evaluate interconnection options to the City to increase service reliability and lower delivery costs. Council adopted this guideline and implementation plan as part of the City's updated Long-term Electric Acquisition Plan (LEAP) (Resolution 9152, Staff Report No. 1317).

Now, absent the ability to interconnect the City at SLAC, staff has come to the preliminary conclusion that the optimal interconnection option at this juncture is a connection between the City's Adobe Creek electric substation and the PG&E Ames substation. Although this connection is at the same transmission voltage level as the City's existing interconnection, and therefore does not offer a reduction in electric transmission costs, it does significantly increase reliability and resiliency.

**Discussion**

The City's three existing electric power connection points share a common corridor that begins at PG&E's Cooley Landing and Ravenswood switching stations northeast of the City, and feed into the City's Colorado Power Station near Highway 101 and Colorado Avenue. The additional, new interconnection point being studied would be between the City's Adobe Creek electric station near Highway 101 and San Antonio Road, and PG&E's Ames switching station to the southeast. Although these three PG&E stations share the same 115kV transmission system backbone in the eastern Peninsula, Ames has its own electrically protected incoming line. More importantly, this new corridor from Ames is separated geographically from the existing power feed corridor into the City from the northeast.

Implementing this new option will require professional analysis of the performance of the California Independent System Operator (CAISO) system serving Palo Alto based on the latest regional transmission reliability assessment. This will be followed by independent power flow analysis and further definition of the long-term need to reliably serve the City of Palo Alto's electric load. CPAU has appropriated funds (the "Feasibility Study Funds") from its Electric Infrastructure Fund – EL-06001 and its consulting budgets to conduct these evaluations.

***Summary of Feasibility Studies***

*Analysis of CAISO system* - Each year the CAISO conducts a transmission planning process to identify potential system limitations and opportunities for reliability improvements. The latest performance of the CAISO system serving Palo Alto is captured in the most recent 2020-2021 Transmission Planning Process (TPP) reliability assessment encompassing CAISO and all its transmission providers – available in the Fall of each year. The next TPP for 2021-2022 begins in February 2021. As the transmission system does not change very often, the City's consultant will review the 2020-2021 TPP, to arrive at recommendations for this next TPP on the City's behalf.

*Load Flow Study* **-** Although no new electric customer loads would be added to the regional electric grid as a result of the Project, the City will commission an updated Load Flow Study to determine potential Project impacts on PG&E's system. The Load Flow Study will analyze various normal and fault condition scenarios to show the impacts of the proposed Project on regional power reliability and quality, and to identify if this new interconnect location serves the City's long-term need of a more resilient and reliable power sourcing configuration.

***Next Steps***

Although the initial indicators are that the proposed interconnection is feasible and could provide for the City's current and forecasted electric load, much work remains to move the Project forward. In particular:

(a) Update the Project by reviewing the CAISO's 2021-2022 TPP preliminary reliability assessment and provide comments on the CAISO analysis in September 2021.

(b) The successful completion of the Project will require approval from CAISO due to the 'extreme event' of the potential of losing all the City's power in that existing common corridor. The fact that total loss of power to the City has happened in 2010 will support this request but is not a guarantee of success in this time of wide-reaching Public Safety Power Shutoffs. There are many other competing projects. The scope of work for the remainder of FY 2021 will be preparation leading up to a formal Request Window Application for Project consideration in October 2021 through the CAISO 2021-2022 TPP.

**Resource Impact**

The City is estimated to spend approximately $50,000 for the initial study portion of the Project.

Additional estimated costs with the next steps of project evaluation will include:

- $50,000 for PG&E to perform a study assessing the impacts of the interconnection to its system, which would include laying the groundwork for additional electrical protection requirements required as a result of the proposed Project;
- $50,000 for fine-tuning the City's studies; and
- $500,000 for the detailed evaluation and preliminary design for the Project

In the event CAISO approves and the City proceeds with the Project, the total construction cost to the City is estimated at $7-10 million. The cost to PG&E is estimated at $10-15 million. An early proposed in-service date would be in 2026. Completing the required land use, legal and environmental analysis and regulatory approvals will also impact that estimate.

# NEW PROPOSED FROM ADOBE CREEK TO AMES 115KV TRANSMISSION WITH PG&E INTERCONNECTION

CITY OF PALO ALTO
UTILITIES DEPARTMENT
ELECTRIC ENGINEERING