



City of Palo Alto

City Council Staff Report

(ID # 11498)

Report Type: Consent Calendar

Meeting Date: 10/19/2020

Summary Title: Electric Substation Grounding Design

Title: Approve and Authorize the City Manager or Designee to Execute Professional Services Agreement, Contract Number C21179544, With Kinectrics AES Inc. in an Amount Not-to-Exceed \$310,000 for the Electric Substation Grounding Design Capital Improvement Project EL-89044; and Authorization to Negotiate and Execute Related Change Orders in the Amount of \$31,000 for a Total Not-to-Exceed Amount of \$341,000

From: City Manager

Lead Department: Utilities

Staff recommends that Council:

1. Approve and authorize the City Manager or designee to execute a professional services agreement, [No. C21179544](#) with Kinectrics AES Inc., in an amount not-to-exceed \$310,000, for design of electric utility substation grounding plans and standards, as part of the Substation Facility Improvements (WBS EL-89044) Capital Improvement Project.
2. Authorize the City Manager or designee to negotiate and execute one or more change orders to the agreement with Kinectrics AES Inc. for related additional, but unforeseen, work which may develop during the project; the total of which will not exceed \$31,000 or 10% of the total price; the total not-to-exceed (NTE) amount for the agreement is \$341,000.

Background

City of Palo Alto Utilities (CPAU) owns and operates the City's electric distribution system, serving approximately 30,000 customers. The City receives power over PG&E transmission lines at 115,000 volts (115 kV) at the Colorado Power Station (COP) and transforms this to 60,000 volts (60 kV) to feed the city's sub-transmission system linking nine distribution substations, in a looped configuration.

The substation grounding grid system has two functions. The first provides a means of dissipating electric current into the earth without exceeding the operating limits of the equipment. The second provides a safe environment to protect personnel in the vicinity of the

grounded facilities from the dangers of electric shock under abnormal conditions such as ground faults.

Discussion

The existing grounding grids at the nine substations need to be brought to current standards to safely protect personnel and equipment. During the last 50-70 years since the substations were constructed, design standards have improved considerably, improving ground grid system capabilities to safely sustain ground fault conditions. Due to the corrosive nature of soil on copper, industry case studies and practices suggest that the useful life of ground grids is approximately 50 years. Recent faults have damaged grounding grid components at some locations, which stresses the need for this design update.

The equipment that is protected via proper grounding includes substation large power transformers, power capacitors, current transformers, potential transformers, utility switches, large circuit breakers, control buildings, cabinets, panels, switchgear, steel structures, cables, and any conductive material on the ground, in the ground, or above the ground, including the substation metal fences that can be contacted by personnel.

The design will study, test, and account for soil resistivity and existing grounding conditions at each of nine substation locations. The design will consider proper sizing, quantity, connections to, and placement of grounding grid wiring, ground rods, ground connections to the equipment, lightning arrestors, fencing, gates, and related equipment. Deliverables will include specific ground grid construction drawings for each substation with associated, engineered reports, standard engineering grounding drawings, and updated engineering grounding standards that will be used by CPAU Engineering and Operations.

The results of this study will be used to determine and budget the succeeding construction phases over multiple years, some of which will be performed concurrently alongside other major improvements in the substation system.

Solicitation Process

On July 21, 2020, a notice soliciting proposals for a Request for Proposals (RFP) for the Design of Electric Substation Grounding was posted at City Hall and on the Planet Bids portal, with a utility engineering proposal estimate of \$400,000.

The solicitation was open for 5 weeks and bids were received from eight Proposers on August 26, 2020.

Summary of Solicitation Process

Proposal Title	Electric Substation Grounding Design	
Proposal Number	179544	
Proposed Length of Project	6 months	
Number of Proposal packages downloaded	1,850	
Total Days to Respond to Proposal	36	
Number of Proposals Received	8	
Proposal Costs Range	\$178,596 to \$413,383	
Company Name	Location (City, State)	Amount
Kinectrics AES Inc.	Fremont, CA	\$310,000

Evaluation of Services

Staff used the following criteria during the evaluation process to identify the successful proposer. Staff selected Kinectrics AES Inc. over the lowest cost proposal for scoring significantly higher on quality of the proposal and the quality, performance and effectiveness of the solution.

Evaluation criteria included:

- Quality of the proposal
- Quality, performance and effectiveness of the solution
- Proposer's experience
- Cost to the City
- Proposer's financial stability
- Proposer's compliance to technical specifications and commercial terms
- Proposer's ability to perform the contract within the time specified
- Proposer's prior record of performance with CPAU or others
- Any other factor the city deems relevant as specified in the request for proposals

Specifically, Kinectrics is one of the few assessment, testing, and engineering firms able to complete the entire project from beginning to end, in-house, with the latest equipment and methods. Kinectrics proposed a grounding modelling software that is the industry standard and which staff expects to be easily scalable in future years as CPAU performs necessary updates.

Based on Kinectrics' references, they are indeed a full-service firm, offering both technical and project management expertise that other large engineering firms provide. Kinectrics is also the only proposer who included a full assessment of the existing ground grid and full soil resistivity testing, both short survey and long survey, which staff found to be a critical factor in the design for Palo Alto.

The lowest cost proposal did offer some pre-assessment testing at additional cost while using methods that could require CPAU to deenergize the City's electric transmission line, which is not the preferred option. The lowest cost proposal, as most of the others, offered short-cuts to this critical pre-design testing. Kinectrics does their testing and assessment using equipment and methods that do not affect the energization of the City's system. Kinectrics' also provided a sample test plan and report which gives the exact level of detail and information CPAU is seeking before moving forward to the construction phase. The lowest bidder, as most of the other proposers, did not provide this type of detailed plan.

Resource Impact

Funding is available in the FY 2021 Electric budget for this project under capital improvement project EL-89044 (Substation Facility Improvements).

Policy Implications

The approval of this electric enterprise Fund professional services contract is consistent with existing City policies. This recommendation is consistent with the Council-approved Utilities 2018 Strategic Plan ([Staff Report 9022](#)), especially the strategic objective to: "Establish a proactive infrastructure replacement program, based on planned replacement before failure to support reliability and resiliency."

This contract is on the City's professional services contract template, which permits the City to terminate without cause for convenience by providing written notice to the contractor. In the event the City finds itself facing a challenging budget situation, and it is determined that City resources need to be refocused elsewhere, the City can terminate for convenience. Other options include termination due to non-appropriation of funds or amending the contract to reduce the cost, for example, by reducing the scope of work. The contract may also be suspended by written notice of the City Manager.

Stakeholder Engagement

There was no community involvement required.

Environmental Review

Approval of the attached contract is not subject to California Environmental Quality Act (CEQA) review because the design work contemplated does not meet the definition of a "project" that will result in any physical change to the environment, under Public Resource Code section 21065.