



**San Marcos Electric Utility**  
**City of San Marcos, Texas**

Program of Requirements (POR) for:  
***New 138 kV "Rattler Substation"***  
*Project Number FY146*

## Program of Requirements

### Section I: General Information

Project Name: *Rattler Substation*

Project Number: *FY146*

Date Prepared: *December 07, 2018*

Prepared By: *Tyler Hjorth, P.E.*

*Assistant Director*

*Public Service – Electric Utility*

*City of San Marcos, TX*

Proposed Delivery Method: *Combined use of Competitive Sealed Bid (CSP) and use of Interlocal Agreement with LCRA for design and construction services*

Type of Project: *Design and Construction of an electrical substation*

### Section II: Project Team Members

*Thomas Taggart – Director, Public Services*

*Tyler J. Hjorth, P.E. – Assistant Director, Public Services – Electric Utility*

*Raymond Nutall, P.E. – Electrical Engineering Services Manager, Public Services – Electric Utility*

*Heather Hurlbert, CPA, CGFO – Director, Finance*

*Laurie Moyer, P.E. – Director, Engineering and Capital Improvement Projects*

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### Section III: Project Description

#### 3.1 User Justification:

Installation of a new 138 kV substation and 12.5 kV electrical distribution center off Clovis Barker will increase overall system capacity to meet growing electrical loads across the (local) industrial park and throughout the City of San Marcos (COSM). This upgrade will increase both capacity and reliability of mission-critical City electrical distribution system.

#### 3.2 Project Narrative:

- a. The approximate 2.4 acre substation site, located on a site conveyed to the City by Urban Mining Company, LLC (approved by City Council through a Contribution in Aid of Construction agreement), is immediately adjacent to the existing LCRA Redwood-McCarty Road transmission line. This transmission line will be bisected, converted to underground circuits, and redirected into the new substation. This design will allow for three 138/12.5 kV distribution transformers to be included in the design for resiliency and redundancy. (see Exhibit A)
- b. The joint LCRA-COSM substation will include a LCRA owned and operated ring bus, LCRA control building, COSM transformers, and COSM control and distribution center.
- c. Current electrical load projections indicate system growth will exceed firm capacity of existing Redwood and McCarty Road 138 kV electrical substations in 2021. The proposed substation will add capacity, with redundancy, to meet planned growth and allow for future developments in the industrial park. The new substation is expected to provide needed capacity for the next 5 to 10 years, with expansion capability to meet campus needs for the next 40 to 50 years.
- d. Installation of underground ducts north to Clovis Barker and south to the Amazon right-of-way will provide the necessary accessibility to accommodate current Urban Mining Company campus growth plans and other developments in the area and serve as backup interconnections between the two high voltage substations in the area.
- e. Installation of fully redundant switchgear, included in the substation control house, will provide for multiple feeders for the local development area, other sites within the industrial park, and backup power sources for feeders from other substations in the south-southeast areas of the City.
- f. Upgrade of electrical system control and data acquisition system (SCADA) will incorporate the new substation and connected loads into the existing monitoring and control system.
- g. The substation design for underground entry for the LCRA 138 kV transmission line to allow for footprint for one current and two future transformers is outside the normal LCRA design criteria, and the difference between a standard design with two transformers and the underground design will be funded by the City.
- h. LCRA, the transmission service provider, will be designing and constructing the 138 kV portion of the substation concurrently with City scope managed by San Marcos Electric Utility.
- i. This substation project is being presented as part of three resolutions: an amended Chapter 380, a Contribution in Aid to Construction, and a resolution approving the design and construction of this substation. These three comprise an inclusive economic incentive package for both the City, Urban Mining Company, and Urban Mining, LLC and will be presented to City Council concurrently for approval.

## **Section IV: Project Program of Work**

4.1 The Program of Work for this project includes the following major items:

- a. Substation Site Civil Work - foundations, duct bank, and yard
- b. Construct new substation building, security fence, and screening
- c. Install the following major equipment:
  1. 138 kV and 12.5 kV Switchgear Control Center (in new building)
  2. One (1) 33 MVA Transformers
  3. One (1) Capacitor Banks
  4. One (1) 138 kV SF6 Circuit Breakers
  5. One (1) 138 kV Air Switches
  6. One (1) 12.5 kV switchgear assembly
- d. Install required ductbank and manhole system from the substation to points west, north and south of the Urban Mining, LLC site
- e. Upgrade SCADA system to support new electrical system upgrades

**Section V: Project Budget and Schedule**

5.1 Summary Project Budget:

ID	Budget Category	Budget Amount
1	A/E Services	\$809,000
2	Project Management	\$115,000
3	Construction Contract	\$5,380,000
4	Owner Contingencies	\$679,000
5	Other Services	\$217,000
6	LCRA Underground Conversion	\$1,050,000
	<b>Project Budget</b>	<b>\$8,250,000</b>

5.2 Summary Project Schedule:

ID	General Schedule	Dates
1	City of San Marcos Council Approval	Jan 2019
2	LCRA Board of Directors Approval	Mar 2019
3	A/E Design	Jun 2019 – Jan 2020
4	Construction	Mar 2020 – Mar 2021
5	Commissioning and Energization	Apr 2021 – May 2021

