

PROJECT PURPOSE AND DESCRIPTION¹

The City of Seaford owns and operates a retail distribution electric utility that services approximately 3,840 residential, commercial, industrial, and institutional customers. Peak load for the entire system has recently reached 25 MW and is anticipated to increase in the future. The City of Seaford Electric Department operates and maintains three substations as part of its distribution and transmission network located throughout the City. Due to anticipated system load increases and the planned decommissioning of the Central Substation, the City desires to modernize and expand the capacity of the Pine Street facility to accommodate additional load growth and a two substation system configuration.

The proposed substation to be relocated and expanded is located at 58 N. Pine Street in the City of Seaford, Delaware. The City owns several parcels of land in the existing substation and five parcels adjacent to the existing facilities. The total land mass available for the project is approximately ± 2 acres. The existing substation is the single system transmission "tie-point" and metering location for the City Utility with the wholesale delivery utility, Delmarva Power. The original Pine Street facility was constructed in 1974 and is approaching the end of its useful life cycle. The existing substation transformer capacity is 15 MVA base load with an additional capacity up to 25 MW through the use of cooling fans.

It is desired to replace the existing substation with a new substation that incorporates a two (2) transmission to distribution voltage transformer configuration leaving the existing facilities intact during construction. Each of the two new substation transformer capacities are anticipated to be 20 MVA base load capacity and an additional capacity up to 33 MW (or greater if available) through the use of cooling fans. The design shall include all necessary associated 69 kV and 12 kV bus work, supporting structures and foundations, conductor, grounding provisions, breakers, and control building to the north of the existing substation to provide a complete, integrated and expanded substation.

Upon completion of the new substation the existing Pine Street Substation, bus work, foundations, grounding features, (may include) control building and other associated items would be completely removed as part of the efforts. This demolition and removal would be as required in two separate substation locations (Central Substation and Pine Street Substation).

The proposed distribution bus work would include the necessary breakers and space availability for an additional four distribution circuit connections. Two of the new distribution breakers would accommodate two existing City circuits (140 & 150) that are currently served by Central Substation that is scheduled to be decommissioned as part of this project. The remaining two new distribution positions are to be utilized for one future circuit and the relocation of an existing circuit from the northern portion of the Pine Street Substation. Additionally it is desired to add the necessary bus work and switching capabilities in the substation during the expansion to have the operational ability to append specific circuitry in the substation by the use of switching points.

The work effort by the consultant shall also include the design of an aerial pole line extension and interconnection of circuit 310 that currently has a point of presence just north of the US Route 13 and Herring Run Road intersection (south bound side). The consultant shall prepare the necessary plans, materials specification, coordinate with DOT, DP&L Chesapeake Utilities, Comcast, Eastern Shore Natural Gas, Delaware Electric Coop and any other affected utility required for the

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proposed alignment. The proposed pole line shall be an aerial three phase 336 ACSR conductor distribution circuit extension that will extend approximately 1.2 miles along and adjacent to US Route 13 from the current location to the intersection of Sussex Highway and Old Furnace Road (north bound side) then turn East on Old Furnace Road for approximately 0.2 miles. All necessary structural analysis, sag and tension calculations, utility requirements, roadway crossing, wetland and stream crossing requirements, and other design parameters shall be included in the consultant's efforts. This pole line interconnection and extension is anticipated to be an overbuild of an existing Delmarva Power and Light circuit on US Route 13 where the City would occupy the top tier of a new joint use pole line installation (to maintain proper safety clearances) and Delmarva would occupy the lower tier.

The pole line extension shall include plans and details for the extension of the City dark fiber network "east loop" of 96 ct. fiber optic cable. The consultant shall include all necessary attachment, termination, and splicing details for the installation and extension of a radial tap (48 ct.) to the fiber loop to the terminus reaches of the proposed circuit 310 extension.

Also included shall be the design of an aerial pole line reconstruction of portions of the existing circuit 290/140 & 150 to the approximate limits shown in exhibit F. The City shall also consider the re-conductoring of circuit 280 over the portions of Norfolk Southern Railroad. The proposed pole line shall be an aerial three phase 336 ACSR conductor distribution circuit. The consultant shall prepare the necessary plans, materials specification, coordinate with DOT, DP&L Chesapeake Utilities, Norfolk Southern, Comcast, and any other affected utility required for the proposed reconstruction. As this facility is currently (and shall remain) in service during the project the consultant shall provide the necessary coordination and scheduling plans to minimize outages and disruptions in service.

The reconstruction of the substation will require several existing distribution circuits to be relocated (as generally described above) to accommodate the new configuration. The consultant shall prepare the necessary realignment plans and implementation schedule for this work. Some of the relocated circuitry may/will need to be installed underground to accommodate substation relocation and access to critical substation facilities. This shall include all necessary plans details structural analysis, sag and tension information, and related design features necessary to accomplish the expansion.

The project will require the removal of an adjacent commercial building and other incidental facilities (fencing and paving) to accommodate the substation reconfiguration. All circuit realignments and reconstruction must be planned, scheduled, and executed in conjunction with the overall project schedule and the anticipated distribution circuit relocations entering and exiting the proposed new substation layout. The plans for the substation reconfiguration and associated realignments must be comprehensive and include provisions for the commercial/utility truck traffic, storm water management and all other required provisions to construct a completed facility. The consultants should note that any new or modified entrances onto Pine Street Extended will require State of Delaware DOT approval and Letter of No Objection (LONO) as Pine Street Extended is a State maintained roadway. Guard rails, barricades or other protective features may be required to protect the expanded facilities and shall be included in the proposed design plans.

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Security of this facility is critical and the substation facility should be built for limited access, with the use of fencing, gates, and other measures. The City desires to expand its existing security camera system to the location and to provide 24/7/365 monitoring of activities on-site. Site lighting shall also be incorporated into the new substation design to augment facility security and workmen safety. The site lighting shall be LED type fixtures and shall fully illuminate all portions of the new facility.

The existing substation configuration includes a control facility. A new modernized, expanded control facility for the reconfigured substation arrangement will need to be planned and incorporated into the new substation layout. The City desires the control facility and site lighting features to be provided with the necessary emergency power circuitry to operate in the event of a local power interruption. The form of emergency power shall be via emergency generator (owned and operated by the City) connected to the facility.

A portion of the design effort involves the evaluation of a potential new tie point between the City's 69kV transmission system and the Delmarva Power delivery network. Attachment D details three possible routes for an additional tie point. The consultant shall include in the required scope of work evaluation of the options for feasibility, cost, and long term maintenance. The consultant shall assist the City in coordinating with Delmarva Power to ensure all safety, and constructability requirements are met. Depending on budgetary and other factors the City may decide to proceed with the design and construction of a new tie point alternative.

¹ **Project Purpose and Description** verbiage was taken directly from City of Seaford, Delaware RFP issued September 11, 2015 (for the Pine Street Electrical Substation Expansion and Reconstruction) and updated by the City during the design development process.