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August 23, 2018  
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Mr. Kevin Powell  
Assistant Director of Public Works  
Hudson Public Power  
1769 Georgetown Road  
Hudson, Ohio 44236

**RE: Hudson Prospect Substation Improvement Project SCADA Programming  
Proposal for Engineering Services**

Dear Mr. Powell:

We are pleased to offer this fee proposal for the Hudson Prospect Substation Improvement Project SCADA System Programming. GPD proposes to perform the following tasks to complete this work:

**Task Item 100: Preliminary Engineering**

1. Create proposed IED and RTU configuration/points list
2. Develop proposed HMI screens (draft sketches)
3. Develop proposed alarm handling rules:
  - a. Define which critical alarms will be annunciated via smartphones
  - b. Define alarm priority levels for all alarms
4. Submit to HPP for approval and revise per HPP comments
5. Test/verify and debug existing VPN connection to master station with assistance from Hudson IT group and ACS technical support. This will enable GPD to access the SCADA master via the network from our GPD Akron office location. This will potentially reduce the number of field trips required for completion of Task Items 200 and 300.

**Task Item 200: RTU and IED Programming**

1. For each of the IEDs, define custom DNP maps and define SER records within the IED, assign Master Station (Prism) database names and update NTX-220 RTU configuration/points list.
2. Using each IED device database point definition, develop the following IED configuration definitions (estimated 25 points per device = approximately 875 IED points total):
  - a. SEL-2533 Annunciators (x4)
  - b. SEL 2431 Regulator controllers (x6)
  - c. Bitronic Panel Meters (x10)
  - d. Hindle-Power AT10 Battery Charger (x1)
  - e. SEL 387 Transformer Protection Relays (x2)

- f. SEL 351 Feeder & Backup Relays (x8)
  - g. SEL 311L Transmission Line Relays (x4)
- 3. Using the I/O point definitions, configure the local digital inputs and momentary control output relays in the NTX-220 RTU.
- 4. Configure the NTX-220 RTU system Controller 10/100baseT Ethernet Port with the desired virtual RTU addresses and database.
- 5. Verify the NTX-220 IED and Virtual RTU master database using simulated I/O.
- 6. Confirm proper configuration of all other functions of the NTX-220 RTU including the IRI-G-B Time Code Reader interface and all active serial and Ethernet ports.
- 7. Develop the RS485 Communications Port Definitions for the 35 IED devices.

**Task Item 300: Master Station Screen and Database Development**

- 1. Within the Prism Master Station database, define and program points and point scaling for the following Prospect RTU IEDs (estimated 25 points per device = approximately 875 IED points total):
  - a. SEL-387 Points (x2)
  - b. SEL-351 Points (x8)
  - c. SEL-311L Points (x4)
  - d. SEL-2533 Annunciators Points (x4)
  - e. SEL-2431 Regulators Points (x6)
  - f. Bitronics Panel Meters Points (x10)
  - g. Hindle-Power Battery Charger (X1)
  - h. RTU Hardware points
    - i. Approximately 64 digital input points
    - ii. Approximately 24 On/Off & Trip/Close control pairs
- 2. Program all alarm & notification handling rules for print, email, text, etc.
- 3. Develop the following HMI display screens:
  - a. One 69 kV single-line display
  - b. One 12 kV single-line display
  - c. One display showing salient data for all feeders (e.g. Amps, Watts, Vars, PF, etc.)
  - d. One display showing relevant 69kV load data and breaker position/condition.
  - e. One display showing relevant 67/12.47kV transformer parameters
  - f. One display showing relevant parameter for 6 voltage regulators
  - g. One display for other miscellaneous IEDs including battery charger
  - h. One display for each of the 35 IEDs
  - i. One display for SCADA communication status and statistics

**Task Item 400: Field Commissioning & Startup**

- 1. Develop a field commissioning and startup activity checklist
- 2. Using the RS485 Communications Port Definitions, verify the communications interfaces for the 35 IED devices into the assigned NTX-220 RTU Gateway Serial Ports.

3. NTX-220 RTU & IED Programming:
  - a. Upload configuration files into IEDs
  - b. Verify Correct IED Addresses
  - c. Upload configuration files into RTU
4. Assist the City and the testing contractor with:
  - a. Verification of correct RS-485 communications to each IED
  - b. Verification of correct digital Inputs to RTU (Non-IED)
  - c. Verification of correct control operations from RTU
  - d. Verification of correct GPS IRIG clock functions
  - e. Verification of correct control operations from Master
  - f. Verification of correct digital inputs to Master
  - g. Verification of correct IEDs points and point scaling to Master (testing contractor injects current & voltage to verify correct readings at master)
  - h. Debugging Point Database as required
  - i. Debugging HMI Screens as required

**Task Item 500: Record Documents**

Update and issue the following items to close out the project:

1. SCADA Configuration Spreadsheet
2. IED specific data sheets and instructions
3. Final As-Built drawings
4. Documentation for all relevant IP addresses and DNP addresses

GPD proposes to do this work on an hourly not to exceed basis for the following hours and fee, including expenses:

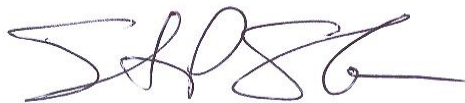
Task Item	Estimated Hours	Estimated Fee
Task Item 100: Preliminary Engineering	100	\$12,540
Task Item 200: RTU and IED Programming	140	\$17,200
Task Item 300: Master Station Screen and Database Development	180	\$23,550
Task Item 400: Field Commissioning & Startup	85	\$ 11,100
Task Item 500: Record Documents	75	\$ 8,250
Total	580	\$72,640

No services other than those identified above shall be part of this proposal. Additional work to the above scope will be billed on an hourly basis at standard GPD hourly rates after approval by the City of Hudson. We plan to invoice monthly based on hours worked. The City has the option to perform portions of the task items above, thus potentially reducing the number of GPD hours and fee to complete the SCADA work. GPD will be available to begin work immediately and coordinate the SCADA development work with the current Prospect Substation Improvement construction activities.

Please call if you have any questions or need additional information. Thank you for this opportunity to quote engineering services to the City of Hudson.

Sincerely,

GPD ASSOCIATES



Steven P. Schaub, PE

DAN/lkw

cc: Dave Griffith – Hudson Public Power  
Dwight Niederkofler – GPD Group  
Vic Oeftering – GPD Group  
Jim O'Connor – GPD Group