

GUC CNG VEHICLE REFUELING STATION

Greenville Utilities Commission of the City of Greenville, NC

Purpose of Addendum:

- 1) To respond to RFIs received after the May 9, pre-proposal meeting
- 2) To add supplementary requirements/clarifications to the Phase 1 Technical Specifications
- 3) To add supplementary requirements/clarifications to the Phase 2 Services
- 4) To add standard equipment technical forms to be completed by Proposers and included in the Proposers' Technical Proposals.

Response to RFIs following the Pre-Proposal Meeting

- 1) Reference Specification: 18160-2.01.B – Please specify if WEG is an approved supplier for the SCR.
 - a. Response: WEG is an acceptable manufacturer for the SCR starter, provided that the “Buy America(n)” provisions are met. Note that the Full Voltage starters will be acceptable for motors up to 50 Hp.
- 2) Reference Specification: 18160-2.01.E – Please specify if WEG is approved supplier for the main driver.
 - a. Response: WEG is an acceptable manufacturer for the motor(s), provided that the “Buy America(n)” provisions are met.
- 3) Reference Specification: 18160-2.02.F – Please specify if 50 Hp motors may use FVNR contactors instead of soft starts.
 - a. Response: Full voltage starters may be used for motors up to and including 50 Hp instead of the SCR starters.
- 4) Reference Specification: 18160-2.02.G – Using soft starts for 50 Hp motors, we are using a 72” x 72” x 18” self-standing enclosure. Do you still require 25% extra space, making the 72” x 72” even larger?
 - a. Response: Whether SCR or Full Voltage starters are used, an additional 25% extra space is required. This will be relaxed to 10% extra space if Full Voltage starters mounted in Division 1 rated (NEMA 7) skid mounted enclosures are used.
- 5) Specification Reference: 18160-2.02.L.3 – Do you require shunt trip coils for circuit breakers feeding soft starts, exhaust fans, dryer, and control transformer?
 - a. Response: We will require shunt trips on the main motor drive and dryer, and on the main panel breaker. The programming for these shunts will be determined during the design and permitting.

Amended Section: Section O – Phase 1 Design/Build Base Technical Specifications

The following requirements are not intended to change any previously specified minimum project requirements. Proposers are required to report any perceived discrepancies prior to proposing.

GUC CNG VEHICLE REFUELING STATION

Greenville Utilities Commission of the City of Greenville, NC

The following requirements are presented as minimum requirements. The Contractor may find as a result of their survey and design process that these minimum requirements are not sufficient to meet project requirements—the higher level requirements will dictate and should be included within the proposal.

Civil/Site Work Requirements:

- 1) Contractors are to provide grading and compacted fill at the front portion of the property in the areas of driveways and islands to raise the property to at least 6 inches above the grade of the center of Mumford Road in front of the property unless site permitting requires a higher raised surface in this area. This raised area will include at least an area the width of the property excluding any requirements of unpaved areas for drainage and/or setbacks from adjoining properties. The raised area shall extend from the front property line along Mumford Road to a line parallel to the front property line and 100 feet from the front property line. This entire area shall be constructed with compacted granular fill and asphalt of sufficient thickness and structure to handle traffic including 40-foot transit buses and large garbage compactor trucks.
- 2) The site entrance and exit, and fueling islands must be laid out to allow the safe navigation of 40-foot transit buses and large compactor trucks on to the property, through the fueling lanes, and back on to Mumford Road without the need to perform difficult turns or to back up.
- 3) The Compressor Compound area is indicated on the drawing provided during the site meeting. This compound area is to be raised to a minimum 12 inches above the 500 year flood elevation using compacted material that will remain stable and resistant to erosion. The elevation may be raised by construction of retaining walls and/or local grading. In either case, access to the raised compound must allow vehicles to enter the compound by way of a ramp. A gravel roadway from the paved area at the front of the property to the raised compound must be provided. The 5000 square foot area inside of the proposed layout shall be considered a minimum, since additional area may be required for service access, larger equipment in the future, and electrical separation from unclassified electrical gear which must be located in the raised area. The compound must be sized and laid out to allow the future replacement of the current compressor with a Duplex 200 Hp (400 Hp in total flow) compressor package without the need to enlarge or modify the compound or move equipment other than the compressor.

GUC CNG VEHICLE REFUELING STATION

Greenville Utilities Commission of the City of Greenville, NC

- 4) The compressor compound must be equipped with an 8-foot high chain link fence with a minimum 4 man gates and one or more 12 foot double swing gate to allow vehicle access to the compound for service.
- 5) All equipment must be protected using a combination of 8" (or larger) concrete filled and sleeved removable bollards, galvanized highway guardrail or new precast concrete K rail.
- 6) Reinforced concrete pads are to be provided for each piece of equipment. The storage pad shall be sized to allow the future doubling to 60,000 scf of storage. Pads shall be a minimum of 16" thick with a top and bottom mat of 5/8" rebar at 12" c/c in each direction. Heavier pads and perimeter "haunches" are to be provided if required by geotechnical considerations. All concrete shall be 4000 psi.
- 7) One fuel island 60" wide x approximately 30 feet long is required in the base bid to accommodate the two hose ½" dispenser and the card lock terminal. Note that island must be equipped with bollards as required to protect equipment and must be formed with a stainless steel prefabricated island form. The island must be a minimum 9" above the asphalt and the island pit which is included with the dispenser must be at the inside depth indicated in the equipment specifications.
- 8) A second fuel island shall be priced as an option to accommodate the two optional dispensers if the Owner elects to purchase these.
- 9) Trenches for gas and electrical shall be provided between the compressor compound and the fueling islands, and within the compressor compound to minimize the use of above ground conduit and piping/tubing. Underground gas and electrical lines are to have a minimum 36" of cover—not including the asphalt. Underground gas and electrical lines shall be separated from each other by at least 24" and when one is above the other, the lower service shall be the gas. All underground gas lines and conduit must have a 6" screened sand (or stone sand) envelope and trenches shall have a locator wire buried at approximately 12" above the pipe and/or conduit and a warning tape buried 12" below grade that states the type of service.
- 10) A pre-engineered dispenser island canopy with NC PE stamped design for hurricane location shall be priced as the following options:
 - a. A single island dispenser area canopy of approximate dimensions of 30 feet wide x 50 feet long x 16 feet clear height. This canopy shall include a flat or well ventilated underside designed to eliminate pocketing. The roof shall be designed for drainage with a downspout

GUC CNG VEHICLE REFUELING STATION

Greenville Utilities Commission of the City of Greenville, NC

down the columns. The column bases must be protected against corrosion by galvanizing and or a surface protection such as a tape wrap designed for underground application and corrosion resistance. A minimum of 9 Division 2 rated lights on the canopy underside, controlled by a photocell. A fascia/banner of four sides with Owner designed but contractor supplied artwork with lighting on the front and two ends. The canopy shall include lightning protection.

- b. An optional larger canopy of approximate dimensions of 60 feet wide x 50 feet long x 16 feet clear height with all other requirements as above.

Mechanical Work Requirements:

- 1) Station inlet piping shall be sized for a future upgrade to a duplex 200 Hp (400 Hp in total flow) compressor package.
- 2) Piping and Tubing downstream of the compressors is to be sized for the future installation of a Duplex 200 Hp (400 Hp in total flow) compressor package, and to provide high flow fills for heavy vehicles.
- 3) Underground carbon steel pipe shall be Pritec (or equal) coating and all underground carbon steel lines shall be equipped with a minimum of one 60 pound high potential magnesium anode at each end. The Owner will supply test boxes for installation by the contractor. Each end of each underground steel line shall be equipped with an insulating flange set located above ground.
- 4) All underground stainless steel lines shall be protected in a PVC sleeve.
- 5) Minimum size pipe between the storage and the island is to be 1" XXS SA 106B carbon steel pipe or 1" x 0.120" minimum wall TP 316 SA 213 stainless steel tubing for ½" dispensers and 1.5" XXS SA 106B carbon steel pipe for larger dispensers.
- 6) Minimum tubing size between the priority and ESD panel which is mounted at the storage and the storage as well as connections to the underground lines, shall be the same size as the flow lines within the panel.
- 7) All welded fittings shall be Butt weld with 100% visual inspection and 10% RT.
- 8) All materials, fabrication and QC requirements outlined in the specifications relating to the equipment also apply to the installation.

GUC CNG VEHICLE REFUELING STATION

Greenville Utilities Commission of the City of Greenville, NC

Electrical Work Requirements:

- 1) Transformer pad, service entrance conduits and pads shall be sized for a future upgrade to an 800 Amp 480/277 Volt service.
- 2) The Contractor shall provide a minimum of 4 phone lines (activation of only the required number) as well as broadband connection to the Master PLC panel or to a communication pull box in the compressor compound.
- 3) The Contractor shall provide conduits for a future emergency phone on the fuel islands.
- 4) The Contractor shall supply two 1" conduits for the future installation of power and network for security cameras as follows: base of each light pole, base of each canopy column.
- 5) The contractor shall supply and install ESD buttons as specified with the equipment and one on the outside of each compressor compound mangate and at two light poles in the general vicinity of the fuel islands. 20 pound fire extinguishers in boxes shall be provided in these locations and on each canopy column.
- 6) The Contractor shall provide a minimum 25% spare conductors in all conduit runs except 480 VAC conduits.
- 7) On all conduit groups between the Master PLC panel and the: Dispensers, card lock terminal(s), compressor skid, MCC, Priority Fill and ESD panel, the Contractor shall provide 2 spare 1" conduits.
- 8) All underground conduits are to be Rigid PVC in the horizontal section with all risers and riser bends as Rigid Galvanized.
- 9) Contractors are to perform a lighting study to design lighting for the vehicle fueling, drive lane, entrance and exit and the compressor compound areas. The contractor shall supply and install all required lighting with control as determined by the Owner. All poles are to be designed to support the future installation of security cameras.
- 10) A bare copper 3/0 ground ring (loop) is to be supplied and installed with two ground points on each piece of equipment, and a minimum of two ground rods.
- 11) Contractors are required to provide a pull/terminal box for all conduits coming from off of the main compressor skid (except 480 V conduits) (These will primarily be conduits to the islands, the dryer control and the outside communications conduits) and connecting to the main compressor skid. This box is intended to facilitate the removal of the current compressor skid and

ADDENDUM NO. 4
GUC CNG VEHICLE REFUELING STATION

ISSUED: May 17, 2011

Greenville Utilities Commission of the City of Greenville, NC

its replacement with a larger skid in the future. Connections to the larger skid will be in a different location.

- 12) All materials, fabrication and QC requirements outlined in the specifications relating to the equipment also apply to the installation.
- 13) The priority fill/ESD panel for the storage is to be mounted off-skid at the storage so that it would remain should the compressor be removed. The priority fill/ESD panel shall be installed above the 500 year flood level.

Amended Section: Section B – Background information

The following requirements are intended to provide clarification to the Phase 2 Services, and should be added to page B-4 of **BRIEF DESCRIPTION OF PHASE 2 – OPERATIONS AND MAINTENANCE, MONITORING AND FUEL ACCOUNTING SERVICES (O&MMA)**.

The following requirements are not intended to change any previously specified minimum project requirements. Proposers are required to report any perceived discrepancies prior to proposing. The following requirements are presented as minimum requirements.

Routine Maintenance:

- 1) Routine Maintenance shall include any and all maintenance required by the equipment manufacturers, by codes and regulations, and by current industry best practice. A proposed maintenance schedule indicating frequency and duration of scheduled site visits and tasks performed shall be provided with the technical proposal. Contractor is responsible to arrange for and pay the costs of proper disposal of any and all hazardous materials resulting from the CNG station operation during the period of the maintenance contract.
- 2) The cost of the maintenance service (if proposed) shall include all labor and expenses including routine maintenance parts and freight. Parts and labor not part of scheduled routine maintenance required repairing or replacing any equipment that wears out or fails during the life of the maintenance contract shall be invoiced separately to the Owner.

Amended Section: Section C – Instructions to Proposers

The following forms are to be completed and included within the Proposers' Technical Proposals for Phase 1 Design Build services. These forms have been added to assist the Owner in evaluating the Proposals and to ensure that all major equipment items are addressed in the Proposals. The forms are included below as a reference. Proposers

GUC CNG VEHICLE REFUELING STATION

Greenville Utilities Commission of the City of Greenville, NC

shall complete the Excel Spreadsheets being sent with this Addendum and include the completed spreadsheets in their Technical Proposals.

Buffer Storage Data		
Item #	Item Description:	Contractor to Complete Data:
1	Manufacturer:	
2	Cylinders or Spheres:	
3	Design Pressure: (psig)	
4	Number of Vessels per Assembly:	
5	Outside Diameter: (inches)	
6	Vessel Length (cylinders only): (Feet-inches)	
7	Water Capacity/Vessel: (Cubic Feet)	
8	Total Capacity in SCF of CNG at 4500 psig:	
9	Year of Manufacture:	
10	Length of Each Assembly:	
11	Width of Each Assembly:	

See Next Sheet for Additional Data Requirements

Single Tower CNG Dryer Data			
Item #	Item Description:	Base Specification Compliant	
1	Manufacturer:		
2	Model:		
3	Design Pressure (psig):		
4	Flow Capacity in SCFM @ 100 psig:		
5	Maximum Inlet Gas Pressure (psig)		
6	Vessel Height:		
7	Vessel Diameter:		
8	Pounds of Desiccant:		
9	Type of Desiccant:		
10	Manufacturer of Desiccant:		
11	Outlet Dewpoint at System Pressure: (F)		
12	MMSCF between Regenerations based on specified pounds of H ₂ O/MMSCF:		
13	Regeneration Heating Time at 0 F Ambient Temperature:		
14	Regeneration Cooling Time at 100F Ambient Temperature:		
15	Electrical Classification: (Class and Division)		
16	Heater Size: (kW)		
17	Amp Draw During Regeneration:		
18	Make and Model of Control PLC:		
19	Communication with MCP PLC by Ethernet or by Analog and Discrete I/O:		
20	System Pressure Drop: (psi)		
21	Air Pressure Required: (psig)		
22	Air Flow Required: (cfm)		
23	Process Inlet and Outlet Pipe Size and Type: (inches/ANSI XXX Flange)		
24	Length x Width x Height of Dryer Assembly: (inches)		
25	Weight of Assembly: (pounds)		

See Next Sheet for Additional Data Requirements

GUC CNG VEHICLE REFUELING STATION

Greenville Utilities Commission of the City of Greenville, NC

CNG Compressor Data		
Item #	Item Description:	Contractor to Complete Data:
	Compressor:	Attach compressor run simulation at maximum ambient temperature and minimum, maximum and typical inlet pressure conditions. This run must indicate predicted operating pressures, heat rejection and temperatures, rod loads and horsepower at these operating conditions.
Base Specification Equipment		
1	Compressor Package:	
2	Compressor Block Manufacturer:	
3	Compressor Block Model:	
	CNG Compressor Specifications:	
4	Rotating Speed: (rpm)	
5	Piston Stroke: (inches)	
6	Piston Speed: (Feet/minute)	
7	Allowable Suction Range: (Minimum and Maximum Pressure in psig)	
8	Flow Capacity in SCFM and Hp required @ minimum station inlet pressure:	
9	Flow Capacity in SCFM and Hp required @ typical station inlet pressure:	
10	Flow Capacity in SCFM and Hp required @ maximum station inlet pressure:	
11	Horsepower and Speed of Main Motor: (HP/rpm)	
12	Main Motor-Belt Drive or Direct Coupler:	
13	Maximum Discharge Pressure: (psig)	
14	Compression Ratio and Maximum Discharge Gas Temperature - 1 st Stage: (Ratio/Degrees F)	
15	Compression Ratio and Maximum Discharge Gas Temperature - 2 nd Stage: (Ratio/Degrees F)	
16	Compression Ratio and Maximum Discharge Gas Temperature - 3 rd Stage: (Ratio/Degrees F)	
17	Compression Ratio and Maximum Discharge Gas Temperature - 4 th Stage: (Ratio/Degrees F)	
18	Manufacturer Rod Load Rating: (pounds Compression/pounds Tension)	
19	Maximum Rod Loads-1 st Stage: (pounds Compression/pounds Tension)	
20	Maximum Rod Loads-2 nd Stage: (pounds Compression/pounds Tension)	
21	Maximum Rod Loads-3 rd Stage: (pounds Compression/pounds Tension)	
22	Maximum Rod Loads-4 th Stage: (pounds Compression/pounds Tension)	
23	Compressor Ring Material(s)-1st Stage:	
24	Compressor Ring Material(s)-2nd Stage:	
25	Compressor Ring Material(s)-3rd Stage:	
26	Compressor Ring Material(s)-4th Stage:	
27	Expected Ring Life in Intermittent CNG Service: (Hours)	
28		
	Cooling System	
40	Air Cooled: (Y/N)	
41	Number of Cooling Fans:	
42	Diameter/Hz of Cooling Fan: (inches/Hz)	
43	Cooling Fan Air Flow and Maximum Static Pressure: (cfm/inches wc)	
	Compressor Lubrication	
50	Recommended Crankcase Oil	
51	Spin OFF Oil filter-?	
52		
53	Points of pressurized lubrication:	
54	Amount of oil in gas stream downstream of the final compressor cooling filter: (pounds per MMSCF)	
55	Amount of oil recaptured as a percentage of oil injected or added to the compressor: (percent)	
	Package Information	
60	Suction and/or Discharge Pulsation Vessels on all stages? (yes/no—which stages if no)	
61	Size of Blowdown Receiver: (gallons)	
62	Design Pressure of Blowdown Receiver: (psig)	
63	Estimated Pressure in Blowdown Receiver after Shutdown from Operation at Maximum Suction and Discharge Pressures: (psig)	
64	Enclosure Heater Size and Type: (kW/Forced Air)	
65	Maximum Noise Level (at loudest point) at 15 feet from the compressor: (dba)	
66	Length x Width x Height of Compressor Assembly: (inches)—Individual Compressor Package	
67	Length x Width x Height of Compressor Assembly: (inches)—Integrated package with two compressors, control panels and CNG dryer	
68	Weight of Assembly: (pounds)—Individual Compressor Package	
69	Weight of Assembly: (pounds)—Integrated package with 2 compressors, control panels and CNG dryer	
70	Make and Model of UCP PLC:—specification compliant	
71		
73		

See Next Sheet for Additional Data Requirements

ADDENDUM NO. 4

ISSUED: May 17, 2011

GUC CNG VEHICLE REFUELING STATION

Greenville Utilities Commission of the City of Greenville, NC

Station Filter Data							
Item #	Item Description:	Contractor to Complete Data:					
		Filter:	Brand:	Model and Type: (Model #/Cooling or Particulate or Mech Pad)	Pressure Rating: (psig)	Flow Rating: (cfm @ XX psig)	Filter Diameter and Height: (Inches)
1	Gas Dryer Inlet:						
2	Gas Dryer Outlet:						
3	Compressor Suction:						
4	Compressor 1 st Stage:						
5	Compressor 2nd Stage:						
6	Compressor 3 rd Stage:						
7	Compressor 4 th Stage:						
8	Compressor Final Cooling System-1 st Filter:						
9	Compressor Final Cooling System-2 nd Filter:						
10	Compressor Recovery System:						
11	Dispenser Inlet Cooling System-1/2" dispenser						
12	Dispenser Inlet Cooling System-3/4" dispenser						
13	Air System Cooler:						
14	Other:						
15							
16							
17							
18							

See Next Sheet for Additional Data Requirements

Station Valve Data					
Item #	Item Description:	Contractor to Complete Data:			
		Size/Application:	Valve Brand:	Valve Model	Pressure Rating (psig)
1	1/2" and lower ball valve for high pressure:				
2	Light Duty Dispenser Flow Control Valves:				
3	1/2" ball valve for high pressure				
4	1" ball valve for high pressure				
5	>1" Ball Valve for Inlet and Interstage pressures				
6	Compressor recovery system recycle pressure controller:				
7	Filter and Vessel Multi-Turn Drain Valves-high pressure				
8	Storage SRVs				
9	Compressor 1 st stage Discharge SRV				
10	Compressor 2nd stage Discharge SRV				
11	Compressor 3 rd stage Discharge SRV				
12	Compressor 4 th stage Discharge SRV				
13	Compressor Recovery Tank SRV				
14	Dispenser SRV				
15	Other:				
16					
17					
18					
19					

See Next Sheet for Additional Data Requirements

Please acknowledge receipt of this Addendum in the appropriate location in Section E – Price Proposal.

Attachment: Email Carl Smith at smithch@guc.com for a copy of the Excel Workbook with the above spreadsheets.