November 8, 2005

INVITATION TO BID

Sealed bids will be received by the City of Auburn, Alabama, until 2:00 p.m. local time, Tuesday, December 6, 2005, in the Office of the City Manager, 144 Tichenor Avenue, Auburn, Alabama, and then publicly opened and read for Uninterruptible Power System for Traffic Signal Applications as indicated below. Qualified bidders are requested to submit cost and delivery time for the following:

City of Auburn
Uninterruptible Power System
for
Traffic Signal Applications

DESCRIPTION	UNIT	QUANTITY
Clary SP1000SN+	**Each**	**23**
PIM 30G	**Each**	**23**
OPB100	**Each**	**23**
OP72C	**Each**	**23**
336 Type Cabinet	**Each**	**7**

The City reserves the right to select the lowest responsible bidder as the best interest of the City may require, to award the purchase contract from any of the bids, to reject any and all bids, and to waive any informalities in bids received. Bids will be good for sixty **(60)** days after being opened by the City of Auburn, Alabama.

Bid specifications are attached. Bids must be submitted upon the standard forms furnished by the City of Auburn, Alabama. No bids may be withdrawn for a period of sixty **(60)** days after the scheduled closing time for the receipt of bids. A sealed envelope must be delivered to City Hall or mailed, addressed to:

City Manager, City of Auburn
144 Tichenor Avenue
Auburn, Alabama 36830

The envelope must be plainly marked on the outside as follows:

BID: **Uninterruptible Power System for Traffic Signal Applications**
OPENING: **2:00 P.M.**
DATE: **TUESDAY, DECEMBER 6, 2005**

The successful bidder will note that the City pays by invoice on each Friday of the month. Invoices must be received by accounts payable at least seven (7) days before the

scheduled check date. If you have any questions concerning billing, please contact our accounts payable office at 334.501.7237 or 334.501.7238.

Please note that delivery time will be a factor in awarding the contract. Delivery will be made to 365-B North Donahue Drive, Auburn, Alabama.

CITY OF AUBURN, ALABAMA

Karen S. Broome
Purchasing Officer

FOR INFORMATION CONCERNING THIS PROJECT, PLEASE CONTACT BRETT SELLERS, 334.501.3028.

Specification for an Uninterruptible Power System for Traffic Signal Applications

This specification shall be for a true-on-line, power conditioner and uninterruptible power system (UPS) with battery backup capability designed for transportation and traffic applications for twenty-six (26) intersections. Additionally, seventeen (17) intersections will require the cabinet necessary for house the UPS equipment, which should be included within the bid price. The UPS shall be a totally microprocessor controlled and software driven power system. The inverter shall be in operation at all times supplying clean regulated power (both voltage and frequency) to all loads, at all times. The UPS must be fully power factor corrected and fully functional with any type of auxiliary power generator. The UPS shall be furnished in conformance with the following specification.

System Example:
Clary SP1000SN+ – Uninterruptible Power System
PIM30G – Power Interface Module
OPB100 – Battery Cable
OP72C – Battery Set
336 Type Cabinet with circuit breaker, generator connection, suppression, and led indication (as needed).

1.0 Operation

a. The UPS shall be capable of producing – simultaneously – fully regenerated and regulated, conditioned and true sinewave power with continuous and hot standby AC output capability.

b. The UPS's inverter shall be on at all times to produce continuous, clean, regulated power to all loads. The inverter shall have a minimum operating efficiency of 92%. The continuous power output shall be provided for signals, controllers and

modems, etc.; standby output can also be provided for signals if so required. Up to the maximum load rating, the UPS shall be capable of supplying power to any combination of signal heads, whether Incandescent, LED or Neon, by any manufacturer, regardless of power factor, without overdriving the LED heads which may cause early degradation, low luminosity or early signal failure. Also, a programmable digital delay timer is included for short-term battery run under full cycling operation.

c. Upon loss of utility power the UPS shall utilize battery power in support of the system via a supplied Power Interface Module (PIM). In the normal operation, the UPS shall be operated in the real-time true on-line mode with the inverter supplying power to all cabinet loads, at all times. In addition, the UPS can be operated in hot standby mode with power transfer being accomplished in 100 msec. or less, if required. In the event of UPS failure and/or battery depletion, the PIM will ensure that the UPS will drop out and, upon return of utility power, the traffic control system will default to normal operating mode.
d. The Power Interface Module shall enable removal and replacement of the UPS without shutting down the traffic control system (i.e. “hot swap” capability). Connectors shall be equipped with a “safety interlock” feature.
e. For 170 type cabinets, upon loss of power the UPS shall actuate the existing Flash Transfer Relays (FTRs) and Mercury Contractor (MC) to force the traffic control system into Flash Mode operation.
f. Existing Flasher Modules and Flash Transfer Relays shall be utilized.
g. To facilitate emergency crews and police activities, the UPS shall be fully compatible with police panel functions (i.e. “Signals OFF” switch must kill power to the field wiring even when on UPS/Battery power).
h. The UPS shall not duplicate or take over flash operation or flash transfer relay functions.
i. The Traffic UPS shall be capable of providing continuous, fully conditioned, regulated, pure sinusoidal (AC) power to all connected devices such as signal controllers, modems, communications hubs, NTCIP adapters and video equipment at all times.
j. The UPS shall be NTCIP capable with optional standard adapter.
k. The UPS shall contain two external serial ports located on the front panel (rear panel for 170 applications) of the UPS. The Signal serial port shall provide the user the option to select alarm output functions. These functions shall be open collector type contact closures that the user can assign as signal utility interrupt, low battery and inverter active conditions or utility fail indicate. These signals shall be capable of being interfaced to any manufacturers controller auxiliary alarm inputs or the Power Interface Module (PIM). The RS232 Signal port provides an intelligent interface for connection to optional software systems for monitoring and control, including internet connections.
l. The UPS shall be fully power factor corrected under all operating conditions.
m. Each UPS shall be provided with a CD ROM containing Windows based configuration software.

2.0 Description - The UPS shall consist of three major components, the Electronics Module with a detachable Power Interface Module, and the Battery System.

2.1 The Electronics Module shall consist of the following:

a. True on line, double conversion, pure sinewave, high frequency inverter utilizing IGBT technology
b. 3-stage, temperature compensated, battery charger
c. Digital microprocessor based timer for programmable flash command requirements
d. For connection from the Electronics Module to the Power Interface Module and Battery System, dedicated harnesses shall be provided with quick-release, keyed, circular connectors and braided nylon sleeving over all conductors,
e. Local individual LED indicators for AC input, inverter, summary alarm, UPS output, battery status, load levels, with LCD panels for battery run time, and event counters.
f. Local and remote communications capabilities,
g. A detachable Power Interface Module for inserting power safety and reliably,
h. And be capable of accepting an NTCIP-ready adapter or a Spread Spectrum Radio modem.
i. Two separate DB9F connectors for remote signal alarms and true RS232 monitoring and remote communications.

2.1.1 Mounting/Configuration -Shall be of Universal Design.

a. NEMA Style: mounting method shall be shelf-mount or wall-mount.
b. 170 Style: mounting method shall be 19" rack-mount.

2.2 Power Interface Module (PIM)

a. A **PIM** shall be required to safely insert utility power into the UPS system
b. The **PIM** shall contain a terminal strip for input and output power connections in addition to neutral and ground connections. In addition, the terminal strip shall also include open collector (relay type) connections for: on battery, low battery and digital flash timer. .

i. The PIM shall include two serial ports with connection to the digital timer. When the serial port on the UPS is connected to the signal serial port on the PIM, loss of utility power shall activate the digital timer. The digital timer shall switch the signal operation from full colors to flash based on flash trigger values

ii. The signal serial port on the PIM can be used to send open collector type contact closures that the user can assign as signal utility interrupt, low battery and inverter active conditions to the signal controller auxiliary alarm inputs.

iii. Optional PIM models shall be available for connection to auxiliary power generators and to provide a GFI outlet.

2.3 Battery System

a. The battery shall be comprised of extreme temperature, deep cycle, AGM/VRLA (Absorbed Glass Mat/Valve Regulated Lead Acid) batteries that have been field proven and tested by the U.S. military.

b. The battery system shall consist of a single string of 6 (1250VA) or 8 (2000VA) batteries of extreme temperature, deep cycle, AGM/VRLA type (Absorbed Glass Mat/Valve Regulated Lead Acid) batteries.

c. Batteries shall be certified to operate at extreme temperatures (from -40°C to +74°C) and shall not require aid of any external devices to cool or heat the batteries.

d. The batteries shall be provided with keyed interconnect wiring harness. This harness shall connect the battery pack to the UPS module. The harness shall be a minimum of 5 feet in length.

e. The interconnect cable shall be protected with abrasion-resistant nylon sheathing.

f. The interconnect cable shall connect to the base module via a quick-release circular connector.

g. For purposes of safety and proper operation, the circular battery connector shall have interlocking pins to prevent turn-on if batteries are not connected, and to shut off the UPS should the batteries be disconnected.

h. Battery construction shall include heavy-duty, inter-cell connections for low-impedance between cells, and heavy-duty plates to withstand shock and vibration.

i. The top cover shall use tongue and groove construction and shall be expoxied to the battery case for maximum strength and durability.

j. An optional external, stand-alone pad, or pole mounted, outdoor enclosure shall be available should there be inadequate room in the signal cabinet or should the consulting/traffic engineer prefer independent, external mounting. The external cabinet shall be a 336 170 style cabinet with EIA rack, light, fan, and vents with front and back door.

3.0 Electrical Specifications

a. Input Voltage

Nominal Input Voltage	120 VAC, Single Phase
DC Battery Buss	72VDC-1250VA or 96VDC-2000VA
Input Voltage Range	85 VAC to 140 VAC
Input Frequency	50 or 60 Hz (+/-5%)
Input Configuration	3 Wire (Hot, Neutral & Ground)
Input Current (Max. draw)	7.2 amps, PFC-1250VA or 14.6 amps,PFC-2000VA
Input Protection	Input Fuse (20 amps)

b. Output Specification

Nominal Output Voltage	120 VAC, Single Phase
Power Rating	1250VA/825W with (10 sec) 2000VA/1400W.
Output Voltage Regulation	+/-2% for 100% step load change and from High battery to Low battery condition
Output Frequency	50 or 60 Hz (+/-5%)
Output Configuration	Keyed, circular connectors and duplex receptacle
Output Wave Form	True Sinewave
Overload capability	110% for 10 minutes 200% for ½ second

Fault clearing	Current limit and automatic shutdown
Short circuit protection	Current limit and automatic shutdown
Efficiency	92% at full load
Load Power Factor	.7 lagging through unity to .7 leading

4.0 Physical Specifications, UPS Electronics Module shall be no greater than:
Rack-mount: Width = 19", Depth = 13", Height = 3.5" (2U)
Shelf-mount: Width = 19", Depth = 13", Height = 3.5"
Wall-mount: Width = 19", Depth – 13", Height = 3.5"
Detachable Power-Interface Module = Width = 6", Depth = 2.8", Height = 9"
Weight: UPS: 20 lbs. or less, Shipping weight: 25 lbs. or less

5.0 Environmental Specification

a. The UPS system, including batteries, shall meet or exceed NEMA temperature standards from -40° C to +74° C.
b. The UPS system, including batteries, shall be certified and field proven to meet or exceed NEMA temperature standards. A certificate of compliance, from a independent testing facility, shall be made available upon request.

6.0 Battery Specifications

a. The battery system shall be certified and field proven to meet or exceed NEMA temperature standards from –40° C to +74° C.
b. Batteries shall be the 41 Ampere-Hour rating type.
c. Batteries shall meet MIL SPEC B-8565J for hydrogen gas emissions.
d. Communication, Controls and Diagnostics
e. Alarm function monitoring through the UPS shall be through a standard DB-9F connector with open collectors (40V@20mA) indicating:
    i. Loss of utility power
    ii. Inverter failure
    iii. Low battery
f. An RS232 interface shall be provided via a DB-9F connector to allow full interactive remote computer monitoring and control of the UPS functions.
g. Front panel controls shall consist of no less than: Power On, Cold (DC) Start, Alarm Silence, Battery Test, Bypass Breaker, and DC/Battery Breaker.

7.0 Reliability

a. Calculated MTBF is 100,00 hours based on component ratings.
b. When Bypass and Power Interface Module are included, system MTBF increases to 150,000 hours.

8.0 Options

a. UPS-Link, Internally mounted STMP/NTCIP adapter
b. Extended run times via additional batteries
c. Battery tray for 170 type cabinets, to hold a maximum of 4 batteries and mounts on RETMA rails.

d. Swing-out battery box, capable of being mounted on right inside rail behind back door of 170 type cabinets. Box to hold a maximum of 6 batteries.
e. Service pedestal or cabinet mount.
f. High rate battery charger for accelerated charging capacity for multiple battery strings.

9.0 Serviceability & Maintainability

a. MTTR (Mean-Time-To-Replace or Repair)
   a. Electronics: 15 minutes or less
   b. Battery System: 15 minutes or less

10.0 Warranty: Standard warranty terms cover entire UPS including battery. Terms are two-year parts and labor F.O.B. factory.

It is the intent of these specifications to describe an Uninterruptible Power System for Traffic Signal Applications. Refer to the included Invitation to Bid for details on requirements for each specification.

CITY OF AUBURN
AUBURN, ALABAMA
MINIMUM BID SPECIFICATIONS
Uninterruptible Power System for Traffic Signal Applications

The following are intended as guidelines. All equivalent or comparable units will be considered.

All bidders must fill in all blanks: **YES** if meeting or exceeding specifications and **NO** if exceptions are taken. **Any exceptions taken must be explained in written detail on bidder's letterhead and attached to the bid submitted.** Bidder must attach a copy of factory warranty for Uninterruptible Power System for Traffic Signal Applications.

		YES	NO	OFFERED
1.0	**Operation**	____	____	_____
2.0	**Description**	____	____	_____
2.1	**Electronics Module**	____	____	_____
2.1.1	**Mounting/Configuration**	____	____	_____
2.2	**Power Interface Module (PIM)**	____	____	_____
2.3	**Battery System**	____	____	_____
3.0	**Electrical Specifications**	____	____	_____

4.0	**Physical Specifications**	____	____	_____
5.0	**Environmental Specification**	____	____	_____
6.0	**Battery Specifications**	____	____	_____
7.0	**Reliability**	____	____	_____
8.0	**Options**	____	____	_____
9.0	**Serviceability & Maintainability**	____	____	_____
10.0	**Warranty**	____	____	_____

A. DELIVERY

1. Unit must be delivered to the following address:
   356 North Donahue Drive
   Auburn, Alabama 36832

2. Bid price will be F.O.B. Auburn and include title application.

3. **The vendor will provide City of Auburn confirmation that order is received within 24 hours after receipt of order.**

TO: City of Auburn

We, the undersigned, propose to furnish the items listed below and guarantee that if we are awarded the bid, we will furnish these goods in accordance with the attached specifications. **THIS FORM MAY BE COPIED IF YOU WISH TO BID ALTERNATE MODEL EQUIPMENT.**

YOU MUST SPECIFY THE EXACT UNINTERRUPTABLE POWER SYSTEM.
(Enclose brochures/description documents if needed)

MAKE BID: _____

MODEL BID: _____

TOTAL BID: _____

ESTIMATED DELIVERY DATE:_____
DELIVERY DATE IS IMPORTANT CONSIDERATION

Exceptions:_____

_____

_____

BID PRICE IS GUARANTEED FOR NINETY (90) DAYS AFTER BEING OPENED BY THE CITY OF AUBURN

_____ _____
Authorized Signature Name of Firm

_____ _____
Printed Name of Signee Address

_____ _____
Date City, State, zip

_____

Phone/Fax No.