



GE Enterprise Energy Aggregator Guideform Specifications

GE Enterprise Energy Aggregator System Guideform Specifications

PART 1 GENERAL

The requirements of the Contract, Division 1, and Division 16 apply to work in this Section. The goal of this project is to provide energy monitoring through a web enabled software that can create data base for energy related parameters and provide analysis. The database should be accessible over the web to multiple users across the customer's enterprise (Intranet).

1.1 SECTION INCLUDES

- A. Enterprise Energy Aggregator system (EEG)
- B. Communications network

1.2 REFERENCES

The (product description) and protection devices in this specification are designed and manufactured according to latest revision of the following standards (unless otherwise noted).

- A. NEC Article 725 Class II for Power Limited Circuits
- B. EIA-485 for RS-485 Modbus RTU®

1.3 DEFINITIONS & ACRONYMS USED

- A. Modbus RTU: An industry standard, high performance network communications protocol developed by Modicon.
- B. Open Protocol: A protocol which is published and used by other manufacturers and is, therefore, non-proprietary.
- C. RS- 485 / EIA- 485: A physical wiring standard (not a protocol) for high speed, noise tolerant network communication often used with the Modbus RTU protocol.
- D. Ethernet: A high performance local area network standard providing the two lower levels of the ISO/OSI seven layer reference model, the physical layer and the data link layer.
- E. Ethernet Gateway: A physical device that translates information from the RS-485 Modbus RTU communications protocol to Ethernet communications protocol.
- F. Communications Protocol: A formal set of conventions governing the control of Inputs and Outputs within the communicating process.
- H. Optional software for viewing graphic screens through the Internet in Netscape or Internet Explorer browsers.
- I. Meter/Real Meter: A physical energy meter that is providing energy vlues to the system for energy aggregation.
- J. Virtual Meter: Virtual meter is a user-defined meter, which combines real meters definitions corresponding to physical meters. The definition of a virtual meter describes what arithmetic operations on the data from the real meters should be used in order to generate data for a virtual meter. Virtual meter definitions can be based only on real meters. They cannot include other, previously defined virtual meters or cost centers.A logical combination of real meters used for calculating value for a meter which is not physically present in the system.
- K. Cost Center: A combination of physical and virtual meters used for calculating costs for individual department, building, production line etc..
- L. Rate Structure: Energy charges for the energy consumed. This can be user configurable and can be based on TOU, KW, KWh, KWD etc
- M. System Redundancy: Capability of a system to log data to the primary and secondary computers simultaneously and automatically switching over from the primary to the secondary computer in case of a failure, without losing any data.
- N. Acronyms:
 - IED: Intelligent Electronic Devices (meters, relays etc with communication capability)

CAM	Cost Allocation Module
OPC	OLE for Process Control
DDE	Dynamic Data Exchange
NetDDE	Network DDE
Http	HyperText Transfer Protocol
TCP	Transfer Control Protocol
VM	Virtual Meter
CC	Cost Center
MC	Meter Category
BC	Billing Configuration

1.4 VENDOR SUPPLIED SYSTEM HARDWARE AND SOFTWARE

The vendor must guarantee that:

- A. All components, conduit, wire, software and systems integration for a complete operational power management system are provided as specified in xxxxxx.
- B. The following devices shall communicate metered data via the communications network (Note: See equipment sections for specifications of these devices. See drawings for quantities and locations):
 - a. Electronic meters
 - b. Trip units
 - c. Protective relays
 - d. Other Intelligent Electronic Devices as specified
- C. The communications network will be RS-485-based with Modbus RTU protocol. If another protocol is used, gateway devices and/or drivers necessary to convert to Modbus RTU must be provided.
- D. The communications network will consist of a combination of RS-485 Modbus RTU and Ethernet TCP/IP technology as indicated on the contract drawings (xxxxx).
- E. The system will be IRIG-B time synchronization capable.
- F. The system configuration will be capable of viewing (monitoring) data for energy over the web using a standard web browser such as Netscape and or MS Explorer.

1.5 SUBMITTALS

- A. Manufacturer must provide copies of the following documents to the owner for review and evaluation in accordance with the general requirements of Division 1 and Division 16:
 1. Product Data proving compliance with specified Enterprise Energy Aggregator software (EEG) and Application Modules as applicable.
 2. The following drawings or print-outs of displays on computer monitors (Note: For purpose of submittal, documentation, drawings or printouts of computer monitor displays are not required to be job specific. Submitted examples must be similar to the actual drawings or printouts to be provided.):
 - a. Configuration Screen – showing Virtual Meter and Real meter tree
 - b. Rate Configuration Screens
 - c. Trending Screens
 - d. Variance Analysis Screen
 - e. Cost Center Configuration Screens
 - f. Virtual Meter configuration screen

1.6 OPERATION AND MAINTENANCE DATA

- A. The Manufacturer must provide copies of installation, operation and maintenance procedures manuals to the owner for the Enterprise Energy Aggregator (EEGS) and Application Modules.

- 1.7 QUALITY ASSURANCE (QUALIFICATIONS)
- A. Manufacturer must be able to demonstrate experience and expertise in the manufacture and assembly of electrical distribution systems and development of Enterprise Energy Aggregator (EEGS) software. The software and electronic components must be year 2000 capable.
- 1.8 DELIVERY, STORAGE, AND HANDLING
- The vendor must:
- A. Deliver, store, protect, and handle products in accordance with recommended practices listed in the manufacturer's Installation and Maintenance Manuals.
- B. Deliver one copy of the software and [_] copies of the system instruction manuals to the customer simultaneous with the system hardware and software delivery.
- C. Inspect and report concealed damage to carrier within specified time.
- 1.9 WARRANTY
- A. The Manufacturer must warrant software to be free of defects for 1 year from date of installation or 18 months from date of purchase, whichever occurs first.

PART 2 PRODUCTS

- 2.1 MANUFACTURER
- General Electric Company products have been used as the basis for design. Other manufacturers' products of equivalent quality and operating features may be acceptable, at the engineer's discretion, if they comply with all requirements specified or indicated in these Contract documents.
- 2.2 COMPONENTS
- A. The Enterprise Energy Aggregator (EEGS) must provide the following functionality.
- a. Security through pass word shall be provided as to enable/disable users access to multiple/individual site being logged by the EEG system.
 - b. The EEG systems web applications must operate on Microsoft's® Internet Explorer version 4.0 and higher.
 - c. The EEG system will operate as a self contained system as well as a component of a Power Monitoring and Control System (PMCS).
 - d. The EEG shall be a desktop application and the configuration and viewing should be accessible via a specified Browser.
 - e. The EEG shall support a logging function to communicate with a DDE Comm Server to retrieve a given set of Energy and Demand parameters from the suite of logging and non-logging devices in the system, as well as generic non-logging devices whose parameters do not require data manipulation beyond a constant conversion factor, and log that data into a database.
 - f. The EEG shall use Microsoft® MSDE data base.
 - g. The data from the multiple sites shall be accumulated at one centralized enterprise database. Which is called as Enterprise Energy Aggregator data site.
 - h. The EEG shall provide the user with a web based tool for access and remote configuration of the systems parameters.
 - i. The EEG shall be able to display the data logged by the system. The local viewer will display the data specific to the local site, the enterprise viewer will display the data as it pertains to multiple sites.
 - j. The EEG shall support the following tools/features:
 - i. Configuration - The purpose of this portion of the software is to provide the user with a web based configuration tool to configure or integrate the sites and also to display the Data of different sites, which transfers from the different Site.

- ii. Viewer –The local viewer will display the data for the different sites.
 - iii. EEG should be able to define virtual meters and configure a new virtual meter, modify parameters of the existing one and delete a virtual meter. The EEG should be able to combine a minimum sixteen (16) real meters to define a virtual meter
 - iv. EEG shall be able to define a Cost Center based on virtual and real meters. System shall be able to configure a new cost center, modify parameters of the existing one and delete non-desired cost center(s). The EEG shall be able to combine a minimum of 32 real and virtual meters to form a cost center.
- k. The EEG systems shall be able to create simple utility rates for billing purposes. The rates could be based on (but not limited to) the following charges as provided by the Utility:
- 1. Customer Service Charge/Flat-fee
 - 2. Distribution Charges For Time-of-use Energy/Demand and PF Penalty
 - 3. Transmission Charges For Time-of-use Energy/Demand and PF Penalty
 - 4. Generation Charges For Time-of-use Energy/Demand and PF Penalty
 - 5. Miscellaneous Charges For Time-of-use Energy/Demand and PF Penalty
- l. The EEG systems shall be able to create bills in three simple steps (using bill viewer, predefined billing-periods, and predefined billing-configuration) and print the bills in fixed format.
- m. The EEG should be able to export data for Energy Profiler billing application software for complex utility rate structure.
- n. The EEG should be able to graph multiple cost center/meters for energy consumption simultaneously for comparison purposes. The graphs should also be able to pinpoint the peak demands.
- B. The host computer must have the following minimum requirements:
- a. IBM® Compatible PC with local bus SVGA graphics adapter and compatible color monitor with Windows 2000 SP2 Professional; *Should have* Windows 2000 compatible RS-485 or Ethernet interface card.
 - b. MS-IIS (Internet Information Server)
 - c. 1GHz or greater single processor Dell OptiPlex processor;
 - d. 512MB or greater RAM
 - e. 512K cache
 - f. 30GB or greater AT-100 hard drive
 - g. 10/10/32 CDRW (not operating burning CDs while application is running)
 - h. 2 10-BaseT Ethernet Cards (static IP addresses only- no DHCP support)
 - i. 1 parallel port printer
 - j. 1 analog phone modem (no Winmodems)
 - k. Additional hard disk space is recommended for increased storage of log and trend data. Also recommended are an uninterruptable power supply (UPS), 17” or larger monitor, tape drive or other backup mechanism, and (if Remote Access technical support is desired) a 28.8 Kbps or faster modem.
 - l. Symantec PcAnywhere version
 - m. Norton Antivirus

2.3 TESTING

- i. The software and devices shall be tested per user instruction manuals.

PART 3 EXECUTION

3.1 INSTALLATION

The vendor will be responsible for:

- A. The software installation on the host computer in accordance with the PMCS Users Guide.
- B. Providing [___] days of on site startup assistance and user training for the setup and operation of the EEG system.
- C. Coordinate with the manufacturer of the EEG system to provide all conduit and wire as indicated on the contract drawings and as required for a complete, operational system.
- D. Coordinate with the manufacturer to provide all junction boxes, repeaters and other appurtenances necessary for a complete, operational system.