Introduction

When issuing a Request for Proposal (RFP) for bids to procure a Real Time Energy Management (RTEM) system and associated RTEM services, key elements should be included to ensure bidders have consistent and clear guidelines when developing their responses. RFPs should include but are not limited to the content provided in this guide. This is a comprehensive document and certain sections may not apply to your business; these can be altered or deleted as appropriate.

What is a Standard RTEM System?

A standard RTEM system consists of data acquisition devices located in buildings that acquire, assemble, organize, and securely transmit building data in real-time to the RTEM system's cloud infrastructure. Data acquisition devices may either transmit data directly to a cloud-based repository through an individual Internet connection, or the data acquisition devices may transmit data locally to an on-premise apparatus, that in turn assembles and organizes building data into a single, secured communication connection to the cloud destination. This apparatus, whether it is discrete hardware, or a piece of software installed on a computer, gathers the data from the sensors, detectors, meters, control panels, or a building automation system, and securely delivers the data to the cloud. Apparatus names can include but are not limited to "gateway," "agent," or "appliance."

Cloud-Based Functionalities

RTEM is especially different from web-enabled or internet-connected building automation systems where computing resources are still located within the building, which is not sufficient to satisfy NYSERDA's definition of an RTEM system.

Examples of cloud-based functionalities include:

- Persistent data repository
- Access provided using common web browsers (such as for visualization and monitoring)
- Energy usage aggregation/disaggregation
- Analytics for optimization
- Fault and anomaly detection
- Diagnosing the cause of the fault and anomaly
- Digital twin modeling
- Demand and consumption tracking and cost estimation based on blended rate or utility tariffs
- Trending
- Alert/alarm notification
- Reporting
- Access management

Principal data sources to support the cloud-based functionalities must be the building data repository that also is hosted in the cloud, derived from other cloud data sources, or based on interactions with a user through a common web browser.

NYSERDA suggests the system limits to a maximum latency of 15-minutes for changes at the on-premise data sources to become available for processing by the cloud-hosted functionalities.

Integration with Other Systems

Additionally, while a standard RTEM system is capable of monitoring whole-building consumption, the system should be principally designed to acquire data at equipment, sub-system, or circuit levels.

NYSERDA prefers a standard RTEM system that is tightly integrated with the site's building automation and work-order tracking systems. This combination delivers seamless monitoring, real-time control, analytics, diagnostics, notification, work dispatch, and work tracking to building operators, facility engineers, managers, and in some cases, tenants that occupy the space within the RTEM system.

The common use cases for a standard RTEM system are:

- Detect and notify network communication interruptions and data quality issues
- Supplement data from existing data sources with additional meters and sensors
- Benchmark portfolio of buildings using normalized performance metrics to detect high- and low-performance properties
- Compare the current and predicted demand and consumption patterns to historical patterns while supporting a wide range of normalization variables for determination of abnormal conditions
- Forecast demand and energy usage incorporating financial metrics depending on weather, occupancy, and equipment/plant setpoint variables for business planning
- Disaggregate whole-building intervals by end-use equipment and plants to diagnose abnormal equipment/plant-level consumption conditions
- Implement intelligent detection and alarming of abnormal conditions with notifications of corrective actions
- Deliver readily accessible reports tailored by business function

Access to the standard RTEM system interface must be protected by industry best practice access management policies. Minimal access control mechanisms allow the system to:

- Permit user access by permissions granted on a site-by-site basis

- Permit access to functional capabilities on role-based authorities associated with a user

- Employ multiple credential factors when authenticating user access

What to include in your RTEM system and services RFP

A large portion of an RFP is boilerplate language specific to a company or an organization for all solicitations. This guide, however, is designed to help you develop an RFP that will solicit clear and concise responses,whichwill allow you to procure RTEM systems and RTEM services that are elegible for a NYSERDA cost-share and that can deliver actual benefits.

RFP topics included in this guide are:

- Eligibility for NYSERDA Cost-share

- Site Details

- Planned Usage

- User Groups

- Data Governance

- Data Integrity

- Data Ownership

- Cyber Security

- Commissioning

- System Capabilities

- Service Capabilities

Eligibility for NYSERDA Incentive

The NYSERDA RTEM Program (PON 3689) offers cost-sharing for the installation of an RTEM system and purchasing RTEM services for up to five years. To be eligible for NYSERDA cost-share funding, a RTEM Qualified Vendor must submit an application. An RTEM Qualified Vendor is any RTEM system and/or RTEM service vendor who has qualified as a NYSERDA RTEM Vendor through the NYSERDA process.

To ensure vendors adhere to the NYSERDA cost-share requirements when developing a response to your RFP, the following language should be included under Eligibility to Bid:

- Bids will only be accepted from NYSERDA Qualified Vendors, which are an RTEM system, RTEM service, or RTEM system and service vendor who have been prequalified by NYSERDA.

- The primary bidder is responsible as an RTEM project applicant for the timely and accurate submittal of an application to NYSERDA for cost-share funding, and also is responsible for satisfying all of the participation requirements according to NYSERDA.

- If the primary bidder is not a NYSERDA qualified vendor, the bidder must identify a qualified RTEM system and/or service vendor, whichever is appropriate, in the proposal.

Site Details

Preparing a comprehensive bid for an RTEM system and associated services requires a bidder to specify and budget for the hardware and software deployment tailored to each organization's situation. Consequently, the RFP should describe in detail the characteristics of the site(s) to inform bidders of any key aspects to be included in the RFP scope, estimate the complexity of data acquisition and integration effort, and estimate project costs for the RTEM system and the annual costs of the RTEM service.

To ensure this, the RFP should contain a section with the following items, tailored as applicable, for inclusion in the proposals:

1. Description of the site (or campus) included in the scope of work, and for each building included in the RFP scope, describe:

    - Age of building

    - Square footage

    - How the building is used (and occupancy schedule)

    - Last major renovation including a summary of work performed

    - Type of heating plant (e.g., hot water, steam, direct heat) with nameplate information of the major plant equipment identifying capacity, fuel type, rated efficiency (if available), and age

    - Type of cooling plant (e.g., chilled water, DX) with nameplate information of the major plant equipment identifying capacity, fuel type, rated efficiency (if available), and age

    - Type of heating/cooling terminals (e.g., FCU, VVT, VAV, etc.) deployed with quantities

    - Number of heating and cooling zones, including occupant accessible controls

    - Types of lighting fixtures (e.g., fluorescent, LED, HID) with quantities and wattage

    - Floor plans

    - Critical loads connected to the backup power supply

2. Provide a minimum of one year, three years preferred, of utility bills showing monthly consumption.

3. For any sensors part of an existing BAS, provide a list of their make, model, and type (with transducer and transmitter descriptions), and any available meters to be integrated into the monitoring, diagnostics, and analysis. For each sensor and meter, identify the measurement quantity, unit, data frequency, and scope (zone, building, etc.). Additionally, describe how it is connected (e.g., PLC Input channel) and the communication protocol that the data can be extracted (e.g., Modbus, FieldBus, Analog, KYX Relay).

4. Identification of the brand of the building automation or control system, the age of the system with the control schedule, and override operating procedure.

5. Listing of the control system and historian points with point ID, description, quantity represented, type (digital, binary, integer, floating point, etc.), unit, measured or calculated, and whether it is active or inactive.

6. If integration with the existing building automation or control system is required, the RFP should describe whether there is an existing data gateway or protocol converter in place and what communication protocol it supports (e.g., BACnet, Modbus), including make, model, and age of the device. The RFP also should identify whether the as-built engineering documentation for the gateway/protocol converter is available. Alternatively, if none exists, the RFP should identify that there is no existing data gateway or protocol converter already in place and the bidder should include the same as part of the proposed work scope.

7. Identification of any existing monitoring or submetering system in place that is not part of the Building Automation and Control System, and explain whether integration is required or is optional for the RTEM System. If the system exists, the RFP should describe how it is used, whether the system supports data extraction, and identify the supported protocol for data extraction.

Diagrams, such as one-line, electrical riser, process and instrumentation (P&ID) or schematics, including circuit identifier for breaker panels. We recognize gathering the information listed above could be a significant task. Consequently, hiring qualified consultants to perform a thorough RTEM Feasibility Study to update and organize the requisite information may be a prudent precursor to RFP creation. NYSERDA offers funding assistance and expertise for an RTEM Feasibility Study through additional programs (list relevant programs here)

Planned Usage

RFPs often include a description of the project's intended usage to guide bidders. For RTEM projects, including the planned usage of the RTEM system and service is suggested:

- Monitor energy performance using reporting metrics tailored to different departments or business functions

- Reduce annual-equivalent weather normalized utility costs by a minimum of 15% for the first consecutive 12 months after RTEM system commission

- Automate continuous building and major system energy-performance benchmarking

- Recommend and prioritize operational efficiency opportunities

- Track routine and identify unscheduled maintenance tasks and improvement opportunities

- Identify pending peak demand episodes and provide a warning before incurring peak demand charges

- Eliminate occupant comfort complaints attributed to zone temperature not maintaining a set point

- Exceed indoor air quality regulations

- Deliver analysis and metrics for capital project planning

The RFP should include language requiring the bidder to describe how they will track and satisfy each objective.

Users' Groups

RTEM can benefit a wider array of users when compared to a building automation system, which is often limited to the engineering department. As a result, the RFP should identify additional business functions or departmental users, and if known, identify Key Process Indicators for each user group.

Alternatively, if you are uncertain which business functions to include in the RFP, the RFP should require bidders to propose capabilities targeted to different business functions or departmental users, by customizing visualization infographics, dashboards, and reports.

Following is a list of example business functions or departmental users that could be included in the RFP:

- Facility Engineering
- Operations Manager
- Property Manager
- Finance Manager
- Sustainability Manager
- Property Owner
- Tenants
- Consulting Engineer (external)
- Energy Service Provider (external)
- Maintenance Contractor (external)

Data Governance

It is recommended that the RFP should require the bidder to explain the methodology of the proposed system and team to ensure data integrity, data ownership, and cybersecurity. Many of the requirements for data integrity, data ownership, and cybersecurity that should be included in your RFP can likely be found within your organization's existing data governance or IT security policies. Detailed descriptions of data integrity, data ownership, and cybersecurity follow.

Data Integrity

Ensuring the integrity of the data gathered and processed by the RTEM system is critical for confidence in the derived data analysis. It is recommended the RFP require bidders explain their approach to establish and maintain data integrity, as well as specify roles and responsibilities for monitoring data integrity, and for taking corrective actions to repair missing or corrupted data.

Additionally, the RFP should contain language requiring the bidder to specify their capabilities to acquire and present actual, accurate, complete, and current data. The definitions of these terms are clarified as follows:

- **Actual.** Data gathered from physical data sources versus interpolated data derived from the actual data. The RFP should contain language asking the bidder to identify actual versus interpolated data when the data is stored and used by the proposed system.
- **Accurate**. The degree to which the data values are correct. The RFP should contain language requiring the bidder to identify the responsible party for ensuring the accuracy of the data collected from the data sources. Additionally, the bidder also should explain the proposed system variation that would still be represented as accurate data.

- **Complete.** The bidder should identify all of the data elements necessary for the proposed system to deliver various capabilities.

- **Current.** The up-to-date or "real-timeliness" of the available data on the proposed system's features. The bidder should identify the average and maximum latency, as measured from when a physical change in the building environment, system or equipment, to when the change is available in the proposed system. The maximum latency should be no longer than 15-minutes.

To ensure data integrity the RFP should require bidders to describe how will they will avoid/address the following scenarios after detecting any data integrity issues.

- **Commissioned Data.** Data integrity begins with RTEM system installation. The bidder should explain their process for verifying data accuracy and completeness, beginning with system commissioning. This should include specifying what will be used as an independent reference for determining the data reflected in the RTEM system's accuracy.

- **Missing Data.** Gaps in the data stream caused by an interruption of communication with the source of data or data discarded because of the data stream containing abnormal values. The bidder should explain how the proposed system and service will detect missing data or gaps in the data as a momentary condition and how correct data collection would resume after a gap.

- **Flatlined Data.** A data stream with unchanging values inconsistent with the normal behavior of the building's environment, system, or equipment. The bidder should explain how the proposed system and service will detect the flatlining scenario, where except for data value remaining unchanging, there is no other indication of abnormality.

- **Data with incorrect values.** The data stream is corrupted with improper values, such as persistent zeroes, caused by an issue within the data acquisition system. Issues such as loss of communication with the sensors, data values being out of range (e.g., greater or less than the configured range), corruption due to interference, or misinterpretation of the values from the data source. The bidder should describe how will they identify scenarios where data has incorrect values.

- **Data spiking.** The data stream containing sudden and dramatic value changes resulting in a positive or negative spiking of a trendline but remains within the valid value ranges from the equipment and system. There is no other indication of issues aside from the sudden value change. The bidder should describe how they will differentiate conditions where spiking of data represents improper data from conditions where the rapid rise or decline of values in the data stream reflects the correct condition of the building environment, system, and equipment.

- **Data timestamp synchronization.** Timestamps of the data stream from different data sources often do not match and require synchronization to align all the data to a common time interval within the RTEM system. When data is being time stamped by multiple loggers, control panels, and "smart" meters, this may result in data with different time intervals. The bidder should describe how their system will synchronize data to a common time interval and identify the source of the master time clock.

Data Ownership

The RFP should explicitly state the ownership of the data generated by the RTEM system and service and require bidders to identify exclusions to the ownership statement.

The following list contains example language for identifying data ownership in the RFP. The language can be modified to your solicitation.

- <u>Name of the organization</u> retains ownership of all data gathered from the <u>name of the facility</u> by the proposed RTEM system, including data calculated using data gathered from the <u>name of the facility</u> as its only constituents, such as virtual points, alarms, and alerts.

- The ownership of data applies to the calculated data as long as data gathered from the <u>name of the facility</u> is included in the calculations.

- Excluded is the constituent data used in the calculation from an outside source not gathered from the <u>name of the facility</u>, which is owned or has the right-to-use by the bidder or a Third Party.

- Excluded are the proprietary formula, algorithm, data schema, or other intellectual properties incorporated in the collection, storage and calculation of the claimed data. Only the output of the calculation is claimed by the <u>name of the organization</u>.

- The bidder is requested to identify exclusions from the ownership by the <u>name of the organization</u>.

NYSERDA's cost-share does not change data ownership. However, NYSERDA's role in verifying program compliance requires data consumed by the RTEM vendors to be delivered in the accompanying reports required by NYSERDA. Allowing NYSERDA access to the data is a requirement for receiving NYSERDA incentive.

Cybersecurity

An organization's security policy often treats third-party cloud connectivity as a risk. Security is a huge concern among facilities, particularly in light of data breaches by large corporations over the past few years. Consequently, we recommend that the RFP include a section containing your organization's security requirements to allow the bidders to proactively address concerns from security stakeholders representing IT, facility, and compliance departments.

The bidder should describe how the proposed system and service will detect unauthorized intrusions and implement protective actions, including identifying all responsible parties in preventing and detecting intrusion or unauthorized access. Additionally, the bidder should explain how they will keep the proposed system's security provisions updated to protect against future vulnerabilities.

For organizations that do not have a formal security policy, the following bulleted items are recommended as the minimum cybersecurity requirements for the RFP:

- **Cloud Connectivity Protection.** Provide a secure communication path between the site and the proposed system's cloud-based system, including authentication of the sources of the on-premise data stream and the sources of the returning messages between the cloud and the site.

- **Data Gateway Protection.** Employ security provisions within the internet-connected gateway by including an agent, appliance, computer, or panel that marshals the data between the building/property and the internet. The security provisions should include protecting the physical access to the gateway, local port connections, and elimination of default credentials.

- **Local Network Protection.** Provide for the allowance of sensors, meters, storage devices, and computers to connect to the proposed system's on-premise communication network.

- **Web Portal Access Protection.** Provide user authentication for the proposed system's web portal, dashboard, applications, and reports access. This should include details of the proposed system's permission hierarchy.

- **User Credential Protection.** Prevent dissemination of an authorized credential to an unauthorized person through mechanisms such as email phishing attacks or sharing of credentials by periodically changing credentials such as passwords and eliminating default credentials.

Commissioning of RTEM System

The installation and commissioning of the RTEM system is critical for the successful deployment of an RTEM project. The commissioning process should be a methodical and rigorous quality assurance process with documented step-by-step tasks including clear roles and responsibilities to verify the implementation of the RTEM system.

The RFP include language should require the bidder to describe their commissioning process. The following is sample language you should tailor to your business RFP by requiring the bidder to formally certify the major elements of the RTEM system.

- The bidder shall be responsible for all aspects of commissioning and will provide a commissioning report to certify the following that:
  - The RTEM system has been tested, verified, and all elements operate as proposed
  - All meters and sensors installed with the RTEM system have been configured/programmed, calibrated, and are communicating accurate data
  - All points within the RTEM system have been configured/programmed, calibrated, and are communicating accurate data
  - All the communication pathways within the RTEM system has been verified as fully functional

- All key performance indicators and metrics have been verified as correctly calculated
- Any known bugs and deficiencies of the RTEM system have been documented
- All external data has been accurately sourced and integrated
- All historical data has been imported and integrated
- All dashboards, screens, trend charts, tables, and other visualization functionalities have been configured as designed
- All alerts and alarms have been configured with notifications as designed
- All reports have been configured and are available as designed
- All user credentials have been configured and made available

- The bidder shall provide training after commissioning of the RTEM system. The training shall include the following:

  - Login and navigation to access dashboards, screens, trend charts, tables, and other visualization infographics
  - Access key performance indicators and metrics
  - Access alerts and alarms
  - Access reports
  - Detect data integrity issues
  - Detect communication and networking interruptions and outages
  - Access online or in-personal supports
  - Cybersecurity protection

RTEM System Capabilities

The costs of the RTEM system including all hardware, software, and labor to install, commission and provide training are eligible to receive NYSERDA cost-share funding under the RTEM project.

This section presents a sample set of RTEM system capabilities for consideration to be included in your RFP.

The system shall monitor energy consumption at a whole-building level at 15-minute intervals for the following fuel types:

- Electricity
- Natural Gas
- Steam
- Water

- Additional fuel types

The system shall extract data at a sub-building level at 15-minute intervals from the following data sources:

- Building Automation System: specify make, model, version, and communication protocol
- Electrical, gas, steam, or water meters with pulse outputs
- Electrical Circuits: identify loads, 1-phase, 3-phase, nominal voltage, maximum amperage, loads for the circuits
- Equipment Control Panels: specify make, model, version, and communication protocol
  Lighting Control Panels: specify make, model, version, and communication protocol
- Field Devices
- Additional data sources

The system shall be capable of generating virtual data from physical meter or sensor readings to create new time-stamped data that will be stored in the cloud-based servers.

The system shall store all meta and time-series data in the cloud for a minimum of five years. The stored data shall be available for analytics and visualization.

The system shall detect data quality issues such as gaps, spikes, and flat-lines, and will provide the required service to correct data errors.

The system will calculate and provide visualizations of energy costs using:

- Site tariffs
- Demand rate ($/kW) and consumption rate ($kW/h)
- Blended rate ($/kWh)
- Additional energy costs

The system shall be capable of normalizing energy consumption data using the following independent variables:

- Local weather (dry bulb, wet bulb, HDD, CDD, etc.)
- Operating calendar (weekday, weekend, holiday, etc.)
- Actual occupancy (CO_2, headcount, etc.)
- Additional variables

The system shall provide a suite of tables, plots, and charts to visualize data at the following user selected intervals:

- 15-minute
- Hourly
- Daily
- Days of the week
- Monthly
- Annually

The system shall update in real-time the tables, plots, and charts to visualize data at a maximum latency of 15 minutes.

The system shall provide the ability to allow comparisons of data values at the following user selected intervals:

- Daily
- Weekly
- Monthly
- Annually

The system shall be capable of configuring alerts/alarms that will be automatically triggered by the following data patterns:

- High or low static thresholds
- High or low dynamic thresholds based on running average
- Thresholds based on the rate-of-change in the data values
- Thresholds for a different time of day

The system shall time stamp each alert/alarm condition and store the alert/alarm as virtual data available for analytics and reporting.

The system shall include the alarming conditions in the message sent by automatic email function or text.

The system shall allow the following notifications to be configured for each alert/alarm or a collection of alerts/alarms:

- Email subject and bodies

- Text

The system shall detect data integrity conditions and generate alerts/alarms.

The system shall allow the alert/alarm notifications to be configured according to the following:

- One notification per alert/alarm condition (e.g., alert/alarm notifications are not repeated while the alert/alarm conditions persist)
- Repeated periodic notification as long as alert/alarm conditions persist

The system shall be capable of generating reports, allowing users to select from available charts, graphs, tables, and alarms, presenting actual data or analytic results, into a standalone document that can be downloaded on-demand or can be distributed automatically by email.

The system shall support reports containing data spanning multiple sites and buildings.

The system shall be capable of extracting the building's utility data that is not available for local automated collection using the following methods:

- Website scrapping from electric/natural gas/steam/water/etc utility
- Digitally uploading column-row formatted electronics files containing structured data (e.g., CSV, spreadsheet, XML)
- Scanned image of monthly utility invoice/bill document
- GreenButton API

The system shall interface with the existing automation and control systems identified in the Site Details section to automatically acquire and time stamp real-time data, for all the points identified, without adversely affecting the native performance of the automation and control systems.

The system shall interface with the existing automation and control systems identified in the Site Details section to change the schedule and setpoints also identified in the Site Details section, without adversely affecting the native performance of the automation and control systems.

The system shall interface with the existing metering acquisition system and the related data store identified in the Site Details section to automatically acquire data for the identified meters, without adversely affecting the native performance of the metering acquisition system.

The system shall permit limiting of user access to data according to permissions granted on a site-by-site basis.

The system shall permit limiting of user access to analytic / reporting capabilities according to permissions granted to role-based authorities.

The system shall employ multi-factor authentication when granting users access.

The users shall be capable of accessing permitted system capabilities using the following desktop/laptop/Thin-Client hosted browsers:

- Chrome
- Edge
- Firefox
- Additional browsers

The users shall be capable of accessing all system capabilities using dedicated applications on the following mobile platforms:

- IOS
- Android

The users shall be capable of accessing permitted system capabilities without locational constraints, if desired.

The system shall support concurrent access by multiple users without materially affecting the responsiveness of any user.

RTEM Service Capabilities

The RFP should specify RTEM service that encompasses all consultant-based activities eligible to receive NYSERDA incentive funding. The consultation service should be targeted to providing principal or supplemental expertise as well as resources to translate building data into insights, identify improvement opportunities, and provide actionable recommendations to your organization to realize the opportunities.

This section presents a sample set of RTEM service capabilities for consideration to be included in your RFP.

The consultant shall develop a basic understanding of the building equipment and systems before the installation of the RTEM system by:

- Performing a walk-through of the facility
- Reviewing facility information provided to the consultant
- Documenting building's non-energy attributes including building usages, square footage, occupancy level, operating schedule, and O&M procedures
- Cataloging main energy consumption equipment and systems

The consultant shall recommend and execute a feasibility study before the installation of the RTEM system. The study should:

- Document existing control schedule for all major equipment and systems
- Document how different systems interact with each other
- Establish an energy usage baseline of all major equipment and systems
- Identify and recommend energy performance metrics/statistics for all major equipment and systems
- Identify and recommend energy performance metrics/statistics for the building
- Identify baseline O&M opportunities
- Identify baseline conservation measures
- Identify baseline capital upgrade opportunities

After developing a basic understanding of the building equipment and systems, the consultant shall confirm that the RTEM system will satisfy the goals and objectives as described in this RFP.

- The consultant is expected to recommend changes to the scope of the proposed RTEM system and justify these recommendations.

After installation and commissioning of the RTEM system, the consultant shall monitor the RTEM data and building operations on a regular basis, identify failures, diagnose possible causes, estimate costs if failures are left unaddressed, and recommend corrective actions. Failures include, but are not limted to:

- Failed communications in the RTEM system

- Failed control action

- Failed equipment and system

- Immenent failures of control actions, equipment, or systems

The consultant shall communicate the failures in the following manner depending on severity:

- Immediate alerts delivered by email and phone call

- Quarterly reports delivered by email

- Quarterly meetings or conference calls

After installation and commissioning of the RTEM system, the consultant shall monitor the RTEM data and building operations on a regular basis, identify the following upgrade opportunities, quantify expected savings, estimate avoided cost, and recommend next steps, including but not limited to:

- New scheduled O&M activities

- New one-time O&M activities

- Energy conservation measures including changing operating schedules, modifying setpoints, etc.

- Capital upgrades

- Different utility tariffs

The consultant shall communicate the opportunities and recommendations in the following manner:

- Quarterly reports delivered by email
- Quarterly meetings or conference calls

The consultant shall perform predictive analytics to determine future energy consumption patterns, and provide recommendations on O&M activities, control actions, equipment, or systems operating schedule.

The consultant shall develop and evaluate comparative analysis for benchmarking and tracking energy use over time between buildings.

The consultant shall monitor the data integrity of the RTEM system and recommend corrective steps to handle data integrity issues.

The consultant shall develop implementation plans for the repair or replacement of failed equipment and systems.

The consultant shall develop implementation plans for realizing identified upgrade opportunities.

The consultant shall recommend the best-fit equipment/system for realizing upgrade opportunities.

The consultant shall prepare bid documents for the purchase and installation of upgrade opportunities.