

## RTEM and Related Systems

NYSERDA uses Real Time Energy Management (RTEM) as a name to describe a family of hardware, software, cloud connectivity, and services used to gain visibility into the live operation of energy-consuming and energy-producing building equipment. Data are gathered in real time, perpetually stored in the cloud indefinitely, and consumed algorithmically by cloud-hosted software and human experts responsible for determining the actions necessary to optimize building conditions.

Here are several other industry terms often used to describe the capabilities that are the same as or similar to RTEM:

- Building Management System (BMS)
- Building Energy Management System (BEMS)
- Energy Information System (EIS)
- Energy Management System (EMS)
- Energy Management Information System (EMIS)
- Remote Monitoring System (RMS)
- Continuous Commissioning® (CC®) System<sup>1</sup>



Software applications such as fault detection, fault diagnostics, and energy analytics are often used to describe elements of RTEM systems. These confusing terminologies erect barriers to exploration, which the NYSERDA RTEM program seeks to alleviate through a consolidated approach.

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<sup>1</sup> Continuous Commissioning® is a registered trademark by Energy Systems & Laboratory, Texas A&M.

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Additionally, a Building Automation System (BAS) is often referenced in conjunction with RTEM. Traditionally, BAS is designed to execute control loops to maintain setpoints of a building's mechanical systems (Cooling, Heating, Ventilation, etc.) Many BAS lack the modern cloud-based functionalities of an RTEM system. RTEM is often deployed to leverage BAS for data and to supplement BAS functionalities.

### The Role of the Cloud

The emphasis on cloud-based functionality is a critical aspect of NYSERDA's definition for RTEM. Compared to systems that only reside within the four walls of a building, such as BAS, RTEM depends on the cloud for the delivery of servers, storage, data, and software applications in an "as-needed, pay-per-use" business model. An RTEM system provider is responsible for the maintenance of the cloud infrastructure, freeing the building staff to focus on using the RTEM capabilities and not on enabling the IT foundation.

RTEM is especially differentiated from a BAS that is web-enabled or internet-connected because the system computing resources still reside within the building. Simply providing access to the computing resource confined within a building using an internet connection is not sufficient to satisfy NYSERDA's definition of an RTEM system.

The growth of cloud-based computing is undeniable. Billions of dollars have been invested to provide a secure and responsive experience, where Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS) business models are broadly available at competitive pricing. By rooting RTEM in cloud-based computing, NYSERDA is focusing on transforming the RTEM marketplace beyond the impacts associated with the incentives.

