



Greening MassMutual's Data Center

■ Photos courtesy of MassMutual.

JUST THREE YEARS SINCE THE GREEN DATA CENTER PROJECT WAS CONCEIVED, MASSMUTUAL HAS ALREADY MET ALL OF ITS INITIAL ENERGY GOALS AND CURTAILED FUTURE ENERGY GROWTH TRENDS.

>> BY SEAN ANDERSON, CEM, CPE

While most global financial companies are ultimately focused on the bottom line when it comes to improving their operations and facilities, Massachusetts Mutual Life Insurance Company (MassMutual) prides itself on being both economical and eco-friendly.

Founded in 1851, MassMutual is a mutually owned financial protection, accumulation and income management company headquartered in Springfield, Mass. For more than a quarter of a century, MassMutual has followed a comprehensive, environmentally friendly facilities program to lessen and control the company's impact on the environment while also creating a safe place for its employees to work.

Recently, the company embarked on an effort to obtain LEED for Existing Buildings (LEED-EB) certification for its 1.4-million-square-foot headquarters. The LEED-EB goal included greening MassMutual's Data Center; an ongoing project that is already achieving results just months after implementing improved efficiencies.

THE BUILDING

MassMutual's Data Center consists of a Tier III, multi-level stand-alone building constructed in 1988 to be a hardened facility from the ground up. It houses nearly 2,500 infrastructure devices ranging from Network, UNIX and Windows servers to storage and mainframe computing environments.

As one can imagine, 2,500 devices processing around the clock can potentially generate a lot of heat while consuming considerable energy. While it's not uncommon for data centers to draw such amounts of energy, rising global energy prices and a stronger demand for energy made data center power consumption top of mind for MassMutual.

"Growing energy consumption was a concern for MassMutual not only from a cost perspective but also because of its impact on the environment," says Bob Casale, MassMutual's chief information officer. "We wanted and needed to find a way to reduce our energy consumption and align our data center to fit better with our overall green initiatives."

THE GREEN TEAM

In 2006, MassMutual's IT and Facilities departments teamed up to develop a 3i "Go-Green" strategy, which consisted of implementing best practices and innovative technologies, improving power usage effectiveness (PUE) (a key measure of data center efficiency) by 10 percent over three years, and increasing server virtualization and consolidation by 30 percent.

To carry out the 3i strategy, a group of IT and Facilities managers, who became known as the "DC Green Team," worked closely together to ensure the improvements each department was making meshed well together.

The most significant facilities improvements to the data center included:

- Deploying fire-retardant compressible mini cubes in floor tile cutouts to prohibit fugitive air migration and increase sub-floor airflow by 22 percent.
- Implementing an on-demand ventilation program.
- Organizing equipment by using hot/cold aisle configurations for maximum temperature efficiency.
- Converting to a cleaner-burning diesel fuel for emergency generation thereby reducing environmental emissions (including sulfur) by 97 percent.

"By reorganizing our equipment, upgrading our ventilation and increasing airflow we are better able to control the temperature of our data center with less energy," says David Brown, assistant vice president, MassMutual Corporate Real Estate and Facilities Management.

The [power growth] reduction has provided monetary savings and a better awareness of how collaborated efforts between departments on green initiatives can benefit the company as a whole.

Significant IT improvements included adopting high-density blade server technology to help reduce physical footprint, establishing a "virtualize-first" standard for server deployments by increasing Windows CPU virtualization to 38 percent and UNIX virtualization to 55 percent, removing idle and underutilized servers, reducing the enterprise IT carbon footprint by consolidating its global subsidiary infrastructure and performing hardware environment upgrades to reduce space and power consumption.

"By taking a virtualize-first approach, we were able to eliminate the need for approximately 1,200 physical servers while ensuring our other equipment is working at its fullest potential," said Casale.



REAPING THE BENEFITS

Just three years since the green data center project was conceived, MassMutual has already met all of its initial energy goals. The company has managed to reduce the data center's power growth by 55 percent, curtailing future energy growth trends. In addition, the reduction has provided monetary savings and a better awareness of how collaborated efforts between departments on green initiatives can benefit the company as a whole.

"For the past 25 years MassMutual has followed a comprehensive program to reduce its impact on the environment," notes Brown. "Greening the data center seemed like a natural progression to becoming a truly green company while also saving on the bottom line."

Greening the data center not only helped MassMutual lessen its carbon footprint by 40 percent through diminishing emissions, increasing server virtualization and converting to high-efficiency lighting for example, but it also cut MassMutual's potential energy costs by 44 percent and created a strong working relationship between the company's IT and Facilities departments.

Earlier this year, MassMutual's IT and Facilities departments won the Uptime Institute's 2009 Green Enterprise IT Award (GEIT) for Data Center Energy Efficiency Improvement. This award recognizes the company's dedication to energy efficiency and the collaborated effort between its IT and Facilities departments.

"Our green data center is a success because of the dedication of our team and the emphasis MassMutual places on its green initiatives," says Brown. "While the GEIT award is a great honor, our biggest accomplishment is reducing our carbon footprint and creating a better, sustainable facility."

Going forward MassMutual is continuing to make improvements to the data center with hopes of reducing power consumption even further in the next few years as well as reducing its environmental impact to ensure a sustainable future for its operations. **SF**



Sean Anderson is assistant vice president, facilities operations and director of green initiatives at MassMutual. He oversees the facilities operations for MassMutual's home office locations in Springfield, Mass., and Enfield, Conn., as well as evaluates and implements environmentally sustainable projects that reduce expense, minimize consumption and improve efficiency of the facilities. Sean is a certified energy manager (CEM) and a certified plant engineer (CPE).