



# The Computerworld Honors Program

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## Final Copy of Case Study

**Status:**

Laureate

**Year:**

2013

**Organization Name:**

Energy Future Holdings

**Organization URL:**

[www.eneryfutureholdings.com](http://www.eneryfutureholdings.com)

**Project Name:**

Extreme Makeover: Green Edition

**Please select the category in which you are submitting your entry:**

Sustainability

**Please provide an overview of the nominated project. Describe the problem it was intended to solve, the technology or approach used, how it was innovative and any technical or other challenges that had to be overcome for successful implementation and adoption. (In 300 words or less.)**

In recent years, Energy Future Holdings has focused on incorporating sustainability and energy efficiency into every aspect of the business with IT taking a leadership role. Before 2009, the IT infrastructure had become increasingly obsolete, unstable and lagging in efficiency. Recently, a multiyear transformation project was initiated focused on turning IT into a strategic enabler for the business and achieving 26 percent incremental savings in operating expenses. As part of this initiative an important decision was required regarding the primary data center: abandon and move to a new site or invest with new innovations and upgrade the 30-year-old site. Located in Mesquite, Texas, and built in 1979, the 34,000-square-foot data center (MDC) had not been effectively

maintained and was in a state of functional obsolescence. There were major building infrastructure issues with the electrical switch gear, hvac, building make-up, air, fire protection, plumbing, lighting, roof, irrigation and central plant operations. Space utilization was inadequate, limiting future growth, so the company undertook an extensive space utilization study. In 2010, work began on renovating the archaic data center. Old inefficient servers and clunky cables were eliminated as newer and virtualized equipment was put in place. Mechanical systems were replaced with Energy Star-certified systems. The lighting and cooling was completely automated. Economizers were installed to use outside air for cooling when the temperature falls below 50 degrees. Blanking panels were put in all cabinets for controlled airflow. Existing holes were filled with foam to control airflow to cold aisle rows. Amazingly, two years later, the MDC was recognized in the top quartile with Energy Star recognition in 2011 and 2012 and plans to achieve LEED Certification for Existing Buildings by Q4 of 2013. Obtaining these certifications signifies the company's commitment to its communities and customers.

**When was this project implemented or last updated? (Please specify month and year.) Has it incorporated new technologies and/or other innovations since its initial deployment? (In 300 words or less.)**

The initial project was completed in early 2012. Since that time, Phase 2 began further improvements in nearly every part of the facility. Sixteen new cameras have been installed to the facility's floor space. A building management system has been added to provide automated alerts to smartphones and other mobile devices for early warning on mechanical/systems failures. There has been a further reduction of under-floor cabling and a move toward overhead cabling standards. Since 2011, more than 500,000 feet of cables and more than 450 physical servers, 150 storage devices and 71 network devices have been removed from the MDC and sent to salvage. Additionally, over 40 tape drives were eliminated in the transition to nearline disk. This represents a net reduction of over 700 devices at the MDC through virtualization on HP Blades and VMWare on new EMC VMax and HDS VSP auto-tiering storage. Just as impressive as the efficiency gains and cost elimination, system reliability and performance improved by 65% on tier 1 systems. Other recent upgrades include lighting retrofits and building automation systems. These systems optimize the startup and performance of heating and cooling equipment and increase the interaction between the mechanical subsystems, which results in improved occupant comfort and lower energy usage. New technologies include the installation of low-flush restroom facilities, an irrigation meter and an irrigation controller to further maximize energy efficiency. In Texas, a large amount of energy is spent on cooling systems. Two aging rooftop units have recently been replaced and rooftop HVAC units have been added to the building management system. Meters have been installed on all mechanical gear to track power usage.

Additionally, the revamped center's layout more effectively supports the efficient use of electricity.

**Is implementation of the project complete? If no, please describe the project's phases and which phase the project is now in. (In 300 words or less.)**

EFH will complete Phase 2 improvements in Q4-2013 with plans for continuous improvement at the facility in the years to come as it strives to find new ways to adopt green technology and make the center a healthy and safe place to work for employees. Currently, the main objective is to further reduce operational costs, improve reliability and further improve energy efficiency with a goal of achieving LEED Existing Building Certification by Q4-2013. LEED buildings are retrofitted with the standards established by the U.S. Green Building Council. The goal is to alleviate the environmental impact of the construction and retrofitting as well as create an environmentally sustainable building. Additionally, EFH is planning to further reduce square footage to conserve energy and install more LED lighting to reduce power consumption. A "virtual first" policy has been implemented in line with the green strategy, which includes plans to move any new and all remaining business critical systems operating on standalone physical servers to the virtual server farm. The goal is to reduce the server footprint by an additional 25 percent over the next year. Another positive impact of this strategy is to enable the IT organization to become a profit center by turning the MDC into a co-location center in partnership with a key outsourcer, HCL. Equipment space and bandwidth will be available for other firms to use in an efficient environment, allowing IT to offset the cost of its own operations.

**Please provide at least one example of how the technology project has benefited a specific individual or organization. Feel free to include personal quotes from individuals who have directly benefited from the work. (In 300 words or less.)**

As an Energy Star-rated building, the data center performs in the top 25 percent of similar facilities nationwide for energy efficiency and meets strict energy efficiency performance levels set by the EPA. Using less energy is important in the state of Texas, where energy usage in key peak summer months must be controlled to ensure energy is available to all. This project has reduced energy usage at the data center by 17.2 Megawatts per week. The facility also uses 35 percent less energy than typical buildings and releases 35 percent less carbon dioxide into the atmosphere. Most importantly, it creates a healthier environment for employees to work in through better air quality and lighting. Glen Douglas has worked for EFH for 26 years and has supported the data center in various roles during his time with the company. Today, Glen oversees all aspects of the facility as the data center manager. "When I joined the company in 1986, the facility was



strictly a mainframe data center," Glen said. "In 2010, EFH made the decision to make the facility the company's primary data center with state of the art technologies that have an ROI of less than 2 years. This project contributed to our overall reduction of operating expense in IT by 26% the past 3 years. Those are significant savings that benefit our electric customers at TXU Energy." EFH's effort to ensure its facilities are environmentally friendly, sustainable and cost efficient is a point of pride for the company and its employees. "EFH is committed to being a leader in environmental stewardship. I'm proud that our building management practices support this initiative and rank us as one of the best in the nation," said Bob Keith, facilities and building sr. director for EFH.

**Would this project be considered an innovation, a best practice or other notable advancement that could be adopted by or tailored for other organizations and uses? If yes, please describe that here. (In 300 words or less.)**

Retrofitting and upgrading a 30-year-old dedicated data center, which houses computing platforms like servers and storage devices, to be in the top quartile in energy efficiency can seem like an impossible challenge. However, any organization that strives to reduce its carbon footprint and impact on the environment can take the steps that EFH has to become greener. Through consolidation, upgrades to equipment, LED lighting installation, virtual environment implementation with state of the art technical platforms, organizations can vastly improve the environmental impact of their facilities. The LEED Certification and Energy Star rating processes are practices that can be adopted by any organization. LEED is flexible enough to apply to all project types including healthcare facilities, schools, homes and even entire neighborhoods.