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GHG Project Case Study

The Bottom Line on GHGs: How Citigroup Saved Money While Reducing Emissions

Citigroup has over 270 retail branches in the greater New York City metropolitan area, including Connecticut and New Jersey. Many of these branches have different control systems for lighting and heating, ventilation, and air conditioning (HVAC). The use of these systems varied from location to location, often without consideration of energy efficiency by branch personnel. In addition, the systems were not automated. If the lighting or HVAC equipment went outside of its control limits, the only option for Citigroup was to deploy a maintenance crew to identify and fix the problem, which often required nothing more than restarting the system. Overall, the lack of standardized energy controls and automation resulted in lost energy savings opportunities and higher operation costs.

Several years ago, retrofitting the system control units would have required expensive rewiring and disruption to operations. The costs could have reached $25,000 per branch, and if a retail branch were to close or move, the capital investment would be lost. In 2002 Citigroup's Northeast region reexamined its options and found that a new wireless satellite technology could provide a cost-effective solution. The new lower-cost technology could be installed over the existing systems and provide remote control to personnel in a central office. There was no need to extensively rewire the branches, so the total installation time was significantly reduced and business operations were not interrupted. If a retail branch were to close or move, the "clip on" system could be removed and reused at another location.

System monitoring, maintenance, and help-desk activities for all branches became centrally managed, and the lighting and HVAC systems were programmed to hourly operation schedules for specific branches. The cost of the retrofit project totaled $2.5 million, but Citigroup was able to apply for $469,000 in energy efficiency rebates from the New York State Energy Research and Development Authority. An additional $38,000 in energy rebates was received from the Long Island Power Authority. These rebates offset part of the cost of the project, which has an estimated payback of one year.

Quantifying the actual financial savings on a large number of locations is difficult and requires significant time and resources after a system goes into service. Variable factors include the timing of the installation, changes in energy rates, changes in operating hours as directed by the business, expanded branch operations, and weather. Any business considering installing a central control and monitoring system should recognize these difficulties and structure an automated reporting system that can capture relevant data. Additionally, other benefits should be factored when considering a centralized monitoring and control system. These include reduced maintenance, reduced service calls, alarm detection, and service quality improvements.

Despite the quantification challenges, Citigroup estimates that the improved performance of its HVAC system has reduced electricity and natural gas use by 15 percent. Furthermore, the ability of central office managers to remotely

monitor and restart the HVAC systems has reduced the number of service calls by 30 percent. Citigroup believes that the system can be further optimized based on familiarity and experience.

In addition to saving energy and operating cost reduction, Citigroup's investment is also helping to reduce GHG emissions by reducing the amount of fossil fuels used to generate its electricity needs. In addition, the project is reducing GHG emissions from vehicles used by maintenance crews on service calls.

The investment also assists Citigroup in enhancing its corporate environmental management practices. The control systems have the ability to track electricity use and heating and cooling temperatures, which is then sent via satellite to a central location. While this type of energy use data is often valuable to management, it can be difficult to obtain, especially when a building is leased as is frequently the case with Citigroup. With this project, Citigroup can capture the data and use it to populate a company-wide energy management system called the "Environmental Database."

This database tracks the energy and materials consumption at all of Citigroup's 13,000 sites worldwide. Although Citigroup is still working to standardize reporting procedures and improve data quality, the database is able to provide a baseline for energy consumption. This helps Citigroup field managers to better control consumption and track progress towards environmental goals. Ultimately, Citigroup expects that the data they collect in the Environmental Database will allow them to easily produce environmental activity reports as well as to compare environmental performance between facilities. This will help in identifying inefficient energy use and ultimately target the best projects for environmental and financial gains.