

Advanced RTU Campaign

Walgreens has developed a successful program to strategically retire RTUs prior to failure and replace them with high-efficiency units. In just 150 stores, Walgreens realized more than \$1 million in savings from material and labor budgets. Walgreens planned RTU replacement model includes right-sizing equipment and optimizing replacements compared to an emergency replace upon failure mode. In one store, Walgreens reduced RTU energy consumption by more than 50% and energy costs by more than \$14,000 annually.

Overview

Walgreens, the nation's largest drugstore chain, operates more than 8,200 drugstores across the United States. The company has a long-standing commitment to reduce energy consumption and expand its renewable energy initiatives. Through its partnership with the U.S. Department of Energy (DOE) Better Buildings Challenge, Walgreens is committed to reducing energy consumption by 20% by 2020 across its portfolio of 125 million square feet. To reach this commitment, Walgreens has initiated several energy efficiency programs and installed solar power at more than 150 locations.

Planned RTU replacement has been one of Walgreens' most successful initiatives. Before 2010, Walgreens only performed emergency replacements of failed RTUs. These replacements were expensive because of extra costs from overtime, expedited permitting and ordering, small purchase size, lack of rebates, and failure to address the potential for down-sizing. This run-to-fail model missed many opportunities that correspond to drastic opportunity cost savings at each building site.

Decision Process

In 2010, Walgreens developed a portfolio-wide planned RTU replacement model that resulted in significant energy and cost savings. The company evaluated their old reactive process of replace after failure against a proactive asset retirement approach to develop the business case for the new model. The risk and costs of not implementing the proactive program played a large role in securing capital to begin the program.

Data on the emergency replacement process were available through maintenance numbers, and data for the proactive retirement model were captured by Walgreens' engineering group, energy and sustainability team, and partnering vendors. A major component of the project was finding the right balance between initial investment, energy savings, and maintenance savings.



Organizational Profile

Established	1901
Number of Facilities	8,200
Employees	240,000
Project Scope	Portfolio wide analysis and replacement plan



Emergency Replacement	Planned Replacement
63+ process steps	35+ process steps
Labor and material scheduling issues drive up costs	Labor and material scheduling to control costs
No energy/comfort/rebate optimization	Opportunity to re-engineer the design resulting in reduced tonnage, lower operating expenses and optimized comfort Utility rebate optimization

Missed Opportunities with Emergency Replacements	Opportunity Costs per Site with Planned Replacement
Re-design / capacity reduction / downsizing	\$4,800 (material)
EPACT calculations / site review / signatures	\$2,300 (net)
Mobilization savings (6 installs/6 RTUs versus 1 install/6 RTUs)	\$3,700 per RTU 15%-25% premium for expedited curb adapters
Volume discounts through high volume purchases with economies of scale	Confirmed, but not specified

Building the Business Case

To develop the business case, Walgreens evaluated the age of stores and RTUs across their portfolio, and they found the average operational lifetime of RTUs in their portfolio to be 13 years. Walgreens developed financial metrics and documented all cost saving opportunities. The evaluation was done on a per market basis, since equipment operation hours and utility rates differ by market and climate zone.

Walgreens included performance degradation of the old units in the analysis. For example, a 12-year-old RTU may have started with an 8.5 energy efficiency ratio (EER) but after degradation, the current EER of that same RTU is estimated at 6.5. Walgreens was able to confirm this degradation curve through retroactive analysis. This is a significant decrease in efficiency and affects the bottom line of RTU business case calculations. The performance of Walgreens' new units exceeds CEE Tier 2 with rated 12.6 EER and 15+ integrated energy efficiency ratio (IEER).

Walgreens conducted a sizing review through a whole building load analysis and determined that many stores could down-size their RTUs. Significant reductions in capacity were possible by incorporating the benefits of load reductions from lighting and other retrofits and reducing safety factors in calculations. With an average reduction of five tons per project, Walgreens realized more than a million dollars in material (\$800,000) and labor (\$325,000) savings in the 150 locations receiving planned replacements in 2010.

“There are a lot of missed opportunities in a run-to-fail approach. When things get replaced on an emergency basis, there are a lot of key points that never get hit. One opportunity is the ability to reevaluate loads and redesign the store for its current load requirements, which are often less than the original design.”

Success

Since Walgreens began piloting their planned RTU replacement model in 2010, the program has evolved to become a more streamlined process that covers a larger number of sites. Walgreens was able to reduce the number of contractors involved while increasing the number of points included in the analysis for each project and address more locations with the same budget. The window for implementing these projects is limited to approximately seven months annually due to fiscal year budgeting and blackout periods around holidays. In spite of these constraints, the success of the program has led to its continued expansion, and the company has implemented more than 5,000 RTU early retirements since 2010.

“One of the focuses was making sure that we establish better practices across the program year over year. The idea was, if we can streamline, not only from an equipment processing perspective but also on the installation side, we can reduce costs and labor, which could allow us to increase the number of planned retirements per year.”

Program Evolution	2010	2013	2014	2015 (planned)
Contractors	10-12	1	1	1
Initiatives	7-8 analysis points per project	30 analysis points per project	30 analysis points per project	30 analysis points per project
Budget	150 sites	194 sites	300 sites	300 sites

Lessons Learned

- ▶ Plan for variation, even if your facilities appear identical
- ▶ Rebates take a long time to process (60 days on average)
- ▶ Energy savings (and energy cost savings) will take time to materialize, especially if equipment is installed after primary cooling season
- ▶ Execution is never flawless, incorporate errors into business plan
- ▶ Adapter curbs add cost and reduce efficiency; avoid if at all possible
- ▶ New R-410a equipment weighs more than old R-22 equipment, so targeting tonnage reductions on units helps avoid structural changes and increases cost savings when compared to emergency replacements.

What's Next?

- ▶ Walgreens' goal is to implement RTU replacements at 500 stores per year.
- ▶ Walgreens is refining its re-commissioning process to ensure maximum energy saving potential is realized within seven days of installation.
- ▶ Walgreens is reviewing equipment change-out opportunities by ASHRAE climate zone to maximize comfort and energy savings potential.