BETTER
BUILDING EFFICIENCY TARGETING TOOL FOR ENERGY RETROFITS
U.S. DEPARTMENT OF ENERGY

PORTFOLIO CASE STUDY

BETTER Enables PowerOptions To Find $2.5 Million in Potential Annual Energy Cost Savings for Its Nonprofit Members

Summary

PowerOptions, a nonprofit energy consortium in Massachusetts, has been using the U.S. Department of Energy (DOE) Building Technologies Office's (BTO) Building Efficiency Targeting Tool for Energy Retrofits (BETTER) since January 2023 to conduct virtual energy efficiency audits for over 50 buildings from eight nonprofit organizations. The results from BETTER are integrated into Building Roadmaps that help guide PowerOptions' nonprofit members towards improving the energy performance of their portfolios. BETTER enabled PowerOptions to avoid on-site energy audit costs, save time, and provide roadmaps that will help its members cut energy costs by $2.48 million each year.

Motivation

Massachusetts has established statewide goals to transition all buildings toward high-efficiency, low-energy operation by 2050. PowerOptions is working to help nonprofits meet this goal in the most cost-effective way possible. This energy consortium offers nonprofits low-cost Building Roadmaps to outline key action items and costs for improving the energy efficiency of their portfolios over time. Energy conservation measures (ECM) are a cornerstone strategy for reducing energy use and operating costs across building portfolios.

Challenge

PowerOptions' core challenge was to create a low-cost, fast, relatively accurate approach to understand: (1) what ECMs are recommended at each building in a portfolio, and (2) how much energy savings each building can expect to see once the measures are completed. On-site audits are expensive and require a great deal of work-hours, and most virtual energy efficiency audit software tools are costly as well.

PARTNER

PowerOptions
Powering Nonprofits

PORTFOLIO PROFILE

TYPE	Office, K-12 school, public assembly, college, university
SIZE	8 portfolios 50 buildings 2,454,126 ft^2
OCCUPANCY	100%
FUEL TYPES	Electricity and Fuel

PARTNER TESTIMONIAL

"PowerOptions is a non-profit energy consortium that has been using the BETTER tool since January of 2023 as a virtual energy efficiency audit for our members' Building Roadmaps. We've analyzed over fifty buildings across a dozen portfolios and found that BETTER is an intuitive, easy-to-use tool with a very responsive and helpful support staff. For the building use types available in the tool, we have found the results to be about 90% accurate. We are grateful to have this free tool available to us, to streamline energy planning for our non-profit members!"

ERIN CAMP, PHD, ENERGY ANALYTICS AND STRATEGY PROGRAM MANAGER, POWEROPTIONS, INC.

RESULTS

ESTIMATED ROADMAP SAVINGS IN 50 BUILDINGS	
Estimated Electricity Reduction	8,143,448 kWh/year
Estimated Fuel Reduction	90,604 MMBTU/year
Estimated Cost Savings	$2,485,000/year
Estimated Payback Period	4 years

Solution

With a minimal amount of input data, and at no cost, BETTER helped PowerOptions quickly and accurately identify which ECMs are needed at each building, and how much energy savings each building can expect to see once they are completed.

Actions Taken

PowerOptions used BETTER for a pilot group of eight portfolios representing about 50 buildings. PowerOptions applied local cost data to each recommended ECM from BETTER to estimate the economics of implementing the ECMs.

These results were included in PowerOptions' Building Roadmaps, which guide nonprofits towards getting on-site energy audits and implementing cost-saving energy efficiency measures. PowerOptions discussed the recommended ECMs from BETTER with each building owner to verify the accuracy of the list and to remove any suggested measures that were recently implemented and should not be included in the Building Roadmap.

Results

The pilot group of portfolios with which PowerOptions' tested the use of BETTER worked to help establish a high-level estimate of recommended ECMs. The results from the pilot group represented a potential energy savings of over 160,000 million British thermal units (MMBTU) (66% of the existing energy load).

For building use types that aligned with the selection options currently available in the BETTER tool (i.e., office, K-12 school), PowerOptions verified with facility managers that, for every 10 energy ECMs recommended by BETTER for the Building Roadmaps, at least nine of them had not been implemented in the past decade in the facility and were a needed improvement.

To learn more, visit **better.lbl.gov** or contact:

Billierae Engelman, U.S. DOE
Billirae.engelman@ee.doe.gov

Carolyn Szum, Lawrence Berkeley National Laboratory
ccszum@lbl.gov

BETTER is developed under Cooperative Research and Development Agreement (CRADA) No. FP00007338 between the Regents of the University of California Ernest Orlando Lawrence Berkeley National Laboratory, under its U.S. DOE Contract No. DE-AC02-05CH11231, and Johnson Controls, with assistance from ICF.

Next Steps

PowerOptions will continue to use BETTER for its Building Roadmaps, given its free accessibility, relative accuracy, and ease of use. PowerOptions plans to conduct a secondary pilot with multifamily buildings that will be receiving American Society of Heating and Refrigerating and Air-Conditioning Engineers (ASHRAE) Level 2 audits, to compare the estimates of energy savings from BETTER to those of an on-site audit.