

BENTLEY MILLS: EFFICIENCY AS A SERVICE FINANCING (EAAS) FOR LED LIGHTING UPGRADE AND WATER EFFICIENCY

SOLUTION OVERVIEW



BETTER PRACTICE WINNER 2019

Bentley Mills has a history of conducting high impact energy efficiency projects through internal funding and was committed to improving the LEED certification and efficiency of their plant in City of Industry, California. Two projects were identified for an initial master plan: an LED retrofit for the entire facility and the installation of high efficiency fixtures for all domestic water use at the facility. The partner sought an alternative to traditional financing routes for the proposed retrofit projects and ultimately enlisted a Better Buildings Financial Ally, Redaptive, to fund two major projects using “Efficiency as a Service” (EaaS) model, a plant-wide LED retrofit and high efficiency fixtures for all domestic water uses.

Bentley Mills first considered the traditional route of simply paying for capital expenditures or going with a performance contracting approach – essentially paying for facility upgrades with future energy savings. However, the partner found the EaaS model to be an easier and more attractive option for financing major retrofit projects. The EaaS model enables commercial organizations to undertake energy and water efficiency projects with no upfront capital outlay. The EaaS provider covers the entirety of the upfront capital, with the equipment being owned by them until the end of the contract, during which time the cost is paid for through cost savings realized on utility bills. The EaaS model further transfers the responsibility of maintaining and operating the equipment at the required efficiency level to the service provider. The model thus transfers the responsibility of maintaining and optimally operating the equipment to the service provider.

ORGANIZATION TYPE

Carpet Tile, Broadloom, and Area Rug Manufacturer

BARRIER

Limited financing options for large capital projects and a need to minimize risk associated with the energy performance of equipment

SOLUTION

Use the “Efficiency as a Service” (EaaS) model to fund projects with no upfront capital outlay which transfers liability of the system performance to the service provider

OUTCOME

Successful implementation of a easy to replicate EaaS contract with the financing of a facility-wide LED lighting upgrade and high efficiency water fixtures

POLICIES

Given the scope of the initiative, Bentley Mills collaborated with its parent organization, The Balta Group, which provided broader support to streamline the project. The Balta Group signed a Certificate of Incumbency, to identify the signing officers of a corporation and confirm the authorization of the signees to enact legally binding transactions on behalf of the company.

Bentley Mills operates from a leased facility and therefore was required to involve building ownership throughout the course of the project. Securing buy-in was not a challenge given the increased efficiency of the proposed new equipment, in this case, Light Emitting Diodes (LED) to replace metal halide and fluorescent lighting that had been in the plant since the last 1970s.

PROCESS

Bentley Mills contracted with Redaptive and The Balta Group’s accounting firm, Price Waterhouse Coopers (PWC) to prepare the master agreement and audit the project. One aspect of the agreement was the warranty period. If any lamps of the new lighting system underperformed, Redaptive agreed to repair the underperforming units within 90 days as opposed to six months. Also, the EaaS contract runs its course once savings are achieved, reverting ownership of equipment to Bentley Mills. This approach transferred a large amount of project risk to Redaptive. The only risk to Bentley Mills was the possibility of lower-than-expected energy cost savings if utility rates decreased. Based on the fact that their utility electric rates for Bentley Mills increased on average by approximately 2% per year for the past 10 years, the partner felt confident that their risk exposure was low. Southern California Edison offered rebates that went to Redaptive, which were passed on in the contract rate. Upon agreement of the master plan, the Bentley Mills financial team finalized the details of the cash flow, and after a thorough internal review, details were forwarded to the Balta Group for final approval.

A meticulous plan to measure the energy savings of the implemented projects was laid out and a measurement and verification protocol was established. This was of paramount importance as the Resource Savings Payment (monthly payment to Redaptive by Bentley Mills) for the delivery of the “Services” was directly dependent on the savings achieved in by the system. The formula for calculating the resource savings is given by:

$$\text{Resources savings payments} = \text{actual saved resources (in units)} * \text{contract rate (\$/unit)}$$

The Actual Saved Resources is the difference between the pre-system consumption and the actual consumption during period of operation defined on a total system level.

The timeline of planning and execution of the lighting project is shown below.

2018 Lighting Project Details

Project Timeline	Days Taken	Start Date
1 - Data Gathering	5 d	06/01/18
2 - Audit	10 d	06/15/18
3 - Proposal Creation	15 d	06/29/18
4 - Customer Sign-Off	20 d	07/20/18
5 - Pre - Installation	25 d	08/17/18
6 - Meeting	7 d	09/21/18
7 - Lighting Install	30 d	09/21/18
8 - Letter of Acceptance	7 d	12/14/18
9 - First Bill	5 d	12/14/18

Project Summary

Number of Fixture	3110
Electricity used Pre-Retrofit	1,922,177 kWh
Demand Savings	210 kW
Electricity Savings	1,185,769 kWh
Cumulative Cost Savings (2018 – 2026)	\$1,566,839

A summary of the financial terms is shown in the table below.

Cash flow numbers are calculated as a cumulative over the contract period (2018 – 2026)

Electricity Spend Pre-Retrofit	\$9,175,684	Water Spend Pre-Retrofit	\$3,031,685
Electricity Spend Post-Retrofit	\$7,342,143	Water Spend Post-Retrofit	\$2,880,135
Lighting Retrofit Savings	\$1,566,839	Water Measures Retrofit Savings	\$73,413
Air Compressor Retrofit Savings		Waste Water Savings	\$78,137

OUTREACH

To obtain concurrence within the company the project team emphasized the fact that none of the processes or business units in the plant would incur any additional costs to their respective budgets. Plant managers, and other employees were alerted about retrofit plans when their section of the facility was impacted. Monthly safety meetings were held to confirm optimal timing to conduct work on specific areas. Stakeholders remained involved through open and honest communication. The financial benefits of the EaaS model were heavily in Bentley Mills favor, helping to move the project along on its own merit. PWC's consultation and support also helped instill greater confidence about the financial figures throughout the process.

MEASURING SUCCESS

Redaptive took the lead on managing data throughout the course of the retrofit project by installing meters that fed a dashboard. These meters helped show the difference in energy consumption compared with the baseline year by section and by bulb and validate energy and monetary savings. Redaptive used depreciation rates factored into the contract to analyze the proposal. As there were no capital expenditures in the project, there was no need for corporate Return on Investment (ROI) calculations. Project success was defined by energy and financial savings, with Bentley Mills focused on limiting capital spending to less than the commitment in the contract.

OUTCOMES

Annual energy savings from the lighting retrofit is estimated to be 1.3 million kWh, with the system out-performing this estimate by 10% in the first three months. If this performance continues, Bentley Mills will be able to pay off the cost in seven years and two months, ahead of the expected end of the contract.

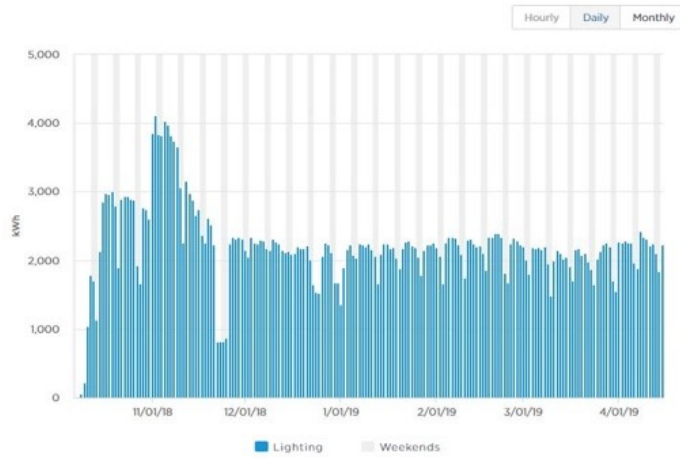
The successful project has also given Bentley Mills the confidence to tackle more complex projects in other areas of their manufacturing process with the EaaS financing model. The installation of a solar array is being discussed as a potential third project to be executed using a similar financial model. The success of this EaaS model has also allowed for fruitful conversations with the partner's clients. Being able to share and explore how this model can be implemented in other industries has been insightful on both ends. Specifically, sharing the experience of the process, the financial validity, and achieving the project goals has been both a valuable teaching and learning tool for those that are interested in pursuing their own energy efficiency improvements.

Separate from the financing model, the implementation of the lighting retrofit has helped with quality inspection and manufacturing processes. The higher functioning inspection process reduces the amount of work required and should yield fewer warranty claims. There is also better employee satisfaction with better quality light. The impact of the water retrofit project is yet to be fully evaluated.

Electricity Consumption

Building Systems

- All
- Lighting
- HVAC
- Industrial Equipment
- Plug Load
- Other Submetered



Picture shows the reduction in daily lighting energy with the implementation of the LED retrofit, one of the first projects implemented using the energy of the service model in December 2018.

