Introduction

Commercial buildings account for 40% of energy consumption, yet 30%-50% of that energy is routinely wasted. Traditional approaches to driving commercial efficiency across a large portfolio are slow and expensive, however, creating a significant bottleneck in the marketplace.

Advanced energy analytics can enable deeper energy savings at a fraction of the time and cost throughout the building efficiency lifecycle – from targeting the right buildings, engaging customers with unique recommendations, converting more projects via an on-site audit and tracking projects and new opportunities.

Retroficiency, through its Building Efficiency Intelligence (BEI) Platform, has established a market-leading position by providing advanced analytics to utilities, energy service providers, and commercial building owners. Retroficiency's software leverages sophisticated technology that has been built on decades of commercial building experience and deep energy efficiency domain expertise.

Retroficiency's software solutions include:

- **Virtual Energy Assessment (VEA)** rapidly and remotely identifies operational and retrofit opportunities in commercial buildings in minutes, without ever going on-site. Requiring just a building address and 12 months of historical energy interval data, VEA employs sophisticated data analytics to identify Energy Conservation Indicators™ (ECIs) - actionable recommendations related to lighting, heating, cooling, building controls, and retro-commissioning opportunities. Each ECI is detailed for its energy saving potential.
- **Automated Energy Audit (AEA)** dramatically reduces the time and expense required to complete the commercial building auditing process, whether a user has limited building asset data or is performing a more detailed audit. AEA streamlines data input, makes sophisticated Energy Conservation Measure (ECM) calculations, and evaluates thousands of retrofit recommendations in minutes for more than 25 different building use types.
- **Efficiency Track** scans for new opportunities as efficiency technologies continuously evolve, building conditions change, or incentive programs are modified. This long term solution provides the ability to re-target and re-engage customers with relevant opportunities. Leveraging industry accepted approaches and proprietary algorithms, Efficiency Track verifies savings from implemented energy efficiency measures. It provides confidence that measures are performing as expected, increases the likelihood of future participation

Proposal

For this pilot, we propose beginning with VEA to prioritize all relevant buildings by their energy savings potential. Retroficiency's analysis across multiple utility portfolios suggests that about 30% of the buildings account for 70% of the opportunity. By proactively targeting high potential buildings, VEA can help deliver more savings later on. This is particularly impactful for the small-to-medium sized customer segment, which has a significant number of buildings, making targeting even more important.

Next, VEA will enable SCE and its partners to engage customers with unique opportunities about their building. Rather than relying on mass market approaches to efficiency, each customer will be engaged with the right program or program(s) for their building. This will drive increased conversion rates to the next step – an on-site audit.

Next, Retroficiency proposes comprehensive on-site audits using the AEA and a program to connect actual projects with products and services to ensure findings are implemented /savings achieved. AEA can be used to audit more than 25 different building use-types, including offices, schools, retail, restaurants, healthcare, multi-family, warehouses, and hotels,. AEA allows users to combine collected building asset data inputs with detailed statistically-derived inferences to quickly develop a 8,760 hourly thermodynamic energy model of the building, calibrate that model to actual building energy use, and then utilize the calibrated model to identify highly detailed, cost-effective Energy Conservation Measures (ECMs) using localized weather data.

Retroficiency's online Marketplace will recommend new and innovative energy savings technologies to building owners. Marketplace will be embedded into AEA to offer a suite of products tailored to various types of commercial buildings. Each product is modeled and vetted to ensure opportunities are relevant and actionable. Annual savings, installation cost, payback period, useful life, energy and carbon reduction and other related information can be presented to a customer with the click of a button.

Once successful projects take place, buildings can be compared to how they should be performing via Efficiency Track. Efficiency Track also makes the whole process dynamic. Because a 'living' model is being created for each building as part of the pilot process, SCE has a unique opportunity to leverage this asset of every building in its territory for a variety of reasons including:

- Assess the impact of new technologies as they become available
- Assess the impact of new policies that are under consideration
- Run scenario based analyses for new incentive programs

In short, the living asset capabilities of the BEI platform offers increased visibility for efficiency opportunities over time and will continually allow SCE to achieve greater energy savings at lower costs.

Conclusion

Retroficiency's proposed pilot will employ compelling interval and asset-based analytics throughout the entire energy efficiency delivery process to offer higher levels of savings to participating commercial customers in a manner that is cost-effective to ratepayers. Interval data analysis will first help customers understand how the buildings in the portfolio consume energy and where they should focus their efforts to improve performance. Retroficiency will refer the buildings with high savings potential to Qualified SCE Contractors that will build on the interval analysis and recommend comprehensive set of ECMs through an on-site audit that fully leverage SCE's existing incentive programs. Retroficiency will connect products and services directly to building owners, increasing implementation rates. Following implementation, the proposal team will re-engage the customer with interval analysis to demonstrate realized savings, ensure persistence, and possibly identify new measures for the customer to pursue.