

Energy Efficiency as a Service:

Own the Solution, Not the Equipment

Casey Talon
Research Director

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The EEaaS Opportunity

Energy efficiency as a service (EEaaS) offers Fortune 500 firms, colleges, hospitals, and institutional customers a comprehensive technical and financial solution to implement energy retrofits—and it is gaining traction. EEaaS is a pay-for-performance structure that enables customers to get energy efficiency projects done with no upfront cost. A third-party EEaaS provider designs, finances, owns and operates the upgraded equipment and building systems, which can align the interests of varied stakeholders and speed the implementation of energy efficiency projects.

Today, facility managers must balance the pressures of deferred maintenance, sustainability goals, and occupant demands for comfort and customized experience. At the same time, the C-suite is facing mounting pressure to contain costs, preserve capital, and meet sustainability goals demanded by shareholders, employees, customers, and students. A myriad of regulations, targets, and initiatives are forcing executives to reassess how they account for their building portfolio as a part of their overall business performance. Energy use and its impact on sustainability are becoming inextricably linked to brand and long-term financials. Due to the coronavirus outbreak, economic uncertainty and financial hardship are making these concerns even more acute. Despite the current uncertainties, EEaaS is an effective solution that unifies the need and desire to make efficiency upgrades and facility improvements without draining capital budgets or taking on debt. Guidehouse Insights estimates that the North American market for EEaaS is anticipated to grow from \$13.2 billion in 2020 to \$33.8 billion by 2029.¹

Customers realize ongoing energy and cost savings through customized, bundled energy efficiency measures that meet specific facility needs and business goals. For one customer, this may include lighting, heating, and water efficiency; for another, it could be a new building management system and high efficiency boilers across multiple sites. EEaaS is similar to the widely used power purchase agreement (PPA) for solar PV projects. EEaaS contracts are similar to PPAs in that there is 100% financing from a third-party owner.

Companies and organizations are realizing that long-term sustainability cannot be fully achieved solely with carbon offsets or renewable energy credits. Onsite energy and operational efficiency improvements provide significant economic and environmental benefits and are a necessary cornerstone of

¹ For this white paper EEaaS aligns with the Energy Portfolio Advisory Solutions, Energy Efficiency and Building Optimization, and Load Management and Optimization, and Load Management and Optimization segments from the Navigant Research report, *Energy as a Service Market Overview* published in 2019.

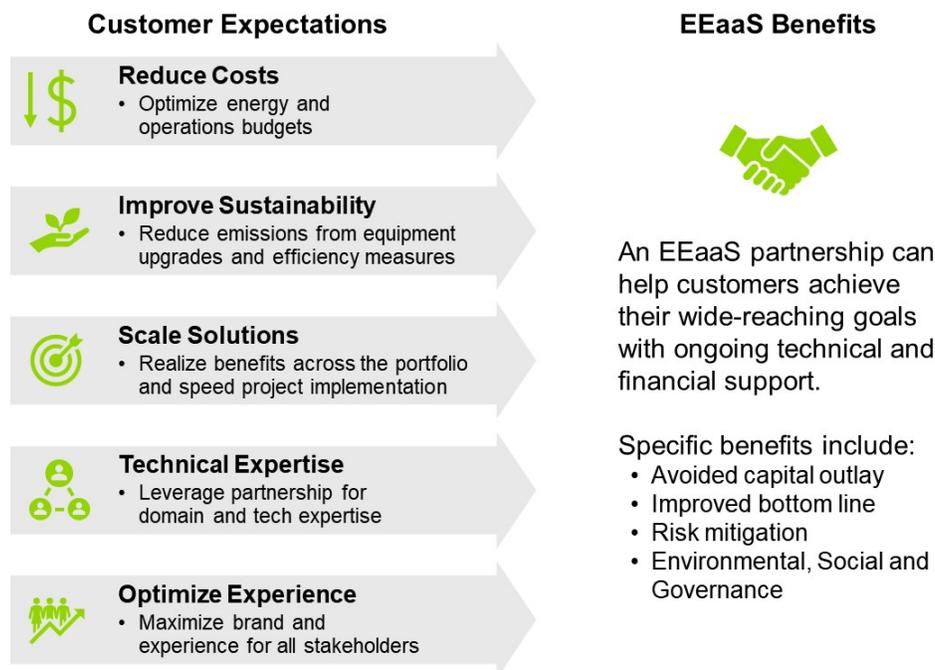
sustainability initiatives in the built environment. Increasingly, facility managers and executives are honing in on the importance of upgrading building systems, investing in automation and analytics, and deploying onsite energy resources as a means to achieving a wide range of business, operational, and environmental goals. EEaaS is a strategic financial solution that aligns business, operational, and environmental efforts. This white paper from Guidehouse Insights outlines the steps to develop successful EEaaS projects and programs.

The Value of EEaaS for Diverse Stakeholders

Many companies are grappling with the question, “How do I take significant action to reduce carbon emissions and how will I fund those projects?” EEaaS offers a compelling pathway to accelerate the speed of implementing energy efficiency projects and deepen the economic, environmental, and operational impact of efficiency measures and equipment upgrades.

There are a host of evolving customer expectations driving the top-down pressures to upgrade buildings, as illustrated in Figure 1. The priority ranking of these expectations vary by industry and stakeholder, but EEaaS offers a flexible approach to meet them all.

Figure 1 Partnering to Achieve Key Benefits



(Source: Guidehouse Insights)

There is no longer a single decision maker when it comes to energy efficiency and real estate management. The most successful building optimization projects unify a host of stakeholders and address their challenges and goals.

- **Facilities/Operations:** Facility directors and managers have traditionally owned the decision to replace building systems on burnout or upgrade equipment when budgets allowed. They are

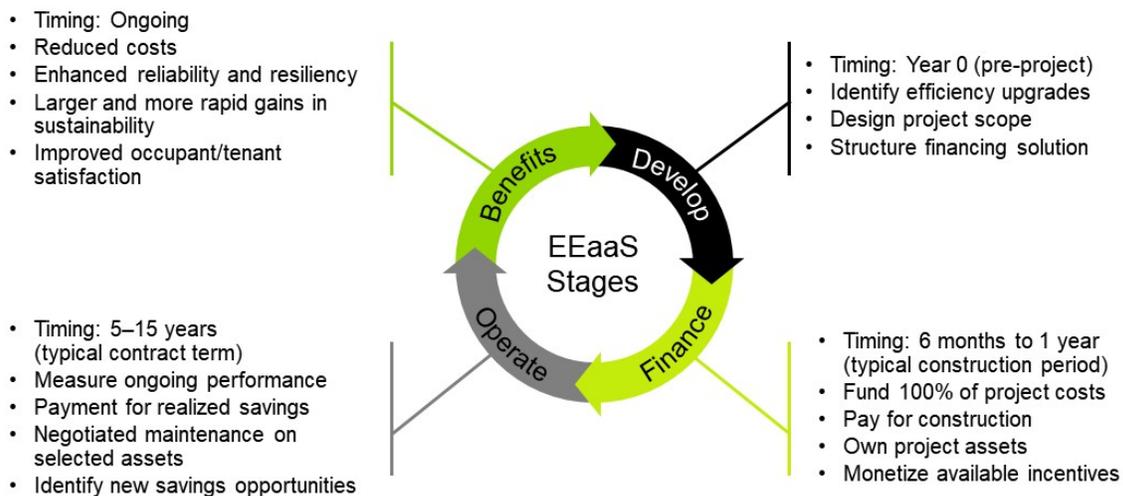
challenged by the pressures of optimizing existing resources and developing more digitized and automated energy systems. In addition, facilities management work is challenged by aging equipment and deferred maintenance. EEaaS offers these stakeholders an option to speed up the deployment of new energy efficient equipment and systems.

- **Real Estate:** The real estate dynamics of owning, leasing, or selling facilities are often an important overlay in the development of EEaaS projects. EEaaS can bundle intelligent building solutions with energy efficiency upgrades to generate insights that create added value. Insights into space utilization, for example, can help guide decisions on HVAC and lighting investments, or the total square footage needed to enhance the overall real estate value of commercial buildings. Unlike onsite solar projects, EEaaS projects work well for leased properties.
- **Finance:** CFOs see value in energy efficiency projects that can both improve the bottom line of their organization and free-up scarce capital for investment in other key areas. EEaaS is an off-balance sheet solution that does not adversely impact existing debt covenants or impair a customer's ability to raise debt.
- **Sustainability:** In many organizations, sustainability teams reside within business groups that communicate goals but lack budget authority. EEaaS is an effective pathway for sustainability directors to achieve their mandate without the need for upfront capital.

EEaaS Project Life Cycle

Customers appear to have an endless menu of options when considering possibilities for improving energy efficiency and technologies to retrofit their buildings. The path to success requires planning, investment, monitoring, and ongoing management of increasingly connected and efficient systems. EEaaS offers customers the roadmap as well as the required resources needed throughout the entire project life cycle. Figure 2 depicts the life cycle and key steps associated with the development and operation of an EEaaS project.

Figure 2 EEaaS Life Cycle



(Source: Guidehouse Insights)

The main stages in the life cycle of an EEaaS project are detailed in the following sections.

Develop

In the development stage, the EEaaS provider will conduct or facilitate a preliminary assessment to help identify and prioritize potential efficiency opportunities and measures that will deliver cost and energy savings and other associated business benefits. The EEaaS provider will select—often in consultation with the customer—an energy services company (ESCO or contractor) to conduct the preliminary assessment. Under contract to the EEaaS provider, that contractor will then go on to complete any added engineering or construction work.

The preliminary assessment delivers an initial project scope that will help the customer understand the impact and benefits of potential upgrades. If this initial project scope is appealing, the EEaaS provider and customer sign a letter of intent to move into the next phase of development, which includes conducting a detailed energy assessment.

The detailed assessment can often take as much as 3 months to complete depending on the size of a facility and project scope. It provides details on specific types of upgrades and equipment and includes more refined, construction-ready costs and savings estimates.

Where possible, EEaaS projects bundle different energy efficiency and building technologies to deliver a more palatable payback period with amplified savings and environmental impact. For example, a boiler replacement is a traditionally expensive CAPEX burden with a payback exceeding 20 years, and customers typically address this when the equipment fails at end of life. EEaaS can bundle a boiler replacement with quicker payback period items like LED lighting or controls that provide a more acceptable weighted average payback. Figure 3 illustrates the diversity of energy efficiency measures and technology options that executives and energy and sustainability managers can evaluate to combine for the best payback and environmental impact for their specific business goals.

Figure 3 *Menu of Energy Efficiency Measures*



(Source: Metrus Energy)

At the end of this stage, the EEaaS provider works with the contractor to distill the results of the detailed assessment into project-specific exhibits that include the final scope of work. Key to this assessment is detailing the calculations and methodology for how energy savings from each of the upgrades will be measured during the project term. Savings calculations are based on a combination of baseline inputs agreed to with the customer and ongoing measurements of the efficiency of specific pieces of equipment. In all cases, customers should expect their EEaaS provider to put forward a transparent measurement and verification (M&V) plan prior to project execution.

Finance

Funding and construction commence upon the signing of project-level contracts. The EEaaS provider funds 100% of the total project cost and pays the contractor to construct the project, typically over a 6- to 12-month period depending on the project scope. Project funding is typically a combination of equity from the EEaaS provider and debt. The EEaaS provider will work to secure any available utility incentives, which are incorporated into the overall project economics and contract terms. Once project construction achieves substantial completion, the EEaaS provider will own the specific assets (e.g., new boiler, chiller, and LED lights), and the operational stage will commence. At this point, customers begin to realize operational savings.

Operate

EEaaS project terms typically run from 5 to 15 years, although some contracts can be for 20 years. During each year of the project, the EEaaS provider will pay for ongoing maintenance and monitoring services. The amount of maintenance and monitoring services vary depending on the type of project and a customer's specific needs. Once the project is operational, customers begin repayment of the project through realized energy cost savings as measured through the agreed upon M&V plan. After Year 1, customers benefit from selected ongoing maintenance services that support the mix of installed technology and equipment. EEaaS providers are well-positioned to support customers throughout their energy efficiency and sustainability journeys as they look for new investments as their buildings become optimized. For example, EEaaS projects can be expanded to include onsite solar PV, energy storage, and EV charging infrastructure that can be integrated for even greater business impact. These investments can further customers' sustainability goals.

Benefits

As customers accrue the economic, operational, and environmental benefits of EEaaS projects, they must also showcase the results for key stakeholders including employees, consumers, and shareholders/investors. Key benefits include:

- **Avoided Capital Outlay:** Securing 100% financing for the upfront cost of projects frees up internal capital for investments that are core to a customer's business.
- **Cost Savings and Reduced Energy Consumption:** Cost savings from reducing energy consumption are a main driver for project implementation, and energy efficiency is increasingly becoming part of companies' cost savings programs.

- **Competitive Advantage:** The benefits that an efficient building program can provide to its tenants, customers, patients, occupants, citizens, students, and others can create a competitive advantage in certain customer segments.
- **Sustainability Initiatives:** Energy efficiency is the cheapest and quickest route to reducing greenhouse gas emissions. Customers are using energy efficiency investments as a tool to speed the implementation of sustainability initiatives that carry the added benefits of reducing operating costs and improving public image.
- **Technical Expertise:** Many customers are increasingly resource constrained and could benefit from added technical services. This includes the delivery of specialized maintenance support and services as well as analytics of building operations and energy management systems data.

As one example, Metrus Energy executed a comprehensive \$75 million EEaaS engagement with a Fortune 100 Technology firm in partnership with SmartWatt as the ESCO and Key Bank and Citi as its lenders. The EEaaS program includes LED retrofits and building management system upgrades across 56 sites in 23 different states. This program is reducing lighting use by approximately 71% and avoiding the annual emission of over 138,000 tons of CO₂.

When customers showcase how energy efficiency investments align with the commitments key stakeholders now demand, there are also significant brand enhancements. For example, since the Climate Group and Carbon Disclosure Project (CDP) launched RE100 in 2014, over 200 companies have committed to achieving 100% renewable electric power for their operations by 2050. This initiative also offers a ramp to orchestrate operations in new ways with more sophisticated integrated energy strategies for corporate campuses investing in renewables, advanced automation, and analytics. The Science Based Target Initiative (SBTi) is another great example of an industrywide effort. Over 800 companies have joined SBTi and over 300 have established specific targets. Companies across industries—from consumer-packaged goods, automotive, high tech, to retail—have joined the initiative to showcase their commitment to climate action. SBTi companies recognize that today's customers, employees, investors, and other stakeholders align sustainability and brand value. Customers who undertake EEaaS projects will get the inherent economic, operational, and environmental benefits while also being able to highlight these benefits in annual reports and sustainability reports. Further, the rigorous M&V of energy savings requirements of EEaaS projects can aid customers looking to participate in voluntary programs such as the CDP or SBTi. When an EEaaS project includes the deployment of controls, automation, and analytics, there is also a new layer of insight into ongoing system performance and resulting energy efficiency gains. The remotely accessible data can be used to either improve legacy M&V approaches (as defined by the International Performance M&V Protocol) or provide accurate and even real-time metering of energy savings. This data-driven approach to monitoring validates customers' efforts to meet their corporate goals.

The Risks of Inaction

Delaying the implementation of building upgrades and energy efficiency can carry several risks of inaction, including:

- **Opportunity Cost:** Customers should consider the lost savings associated with delaying the implementation of some or all of the potential energy efficiency improvements within their facility portfolio. When a customer self-funds efficiency upgrades, they often only undertake a portion of what is possible or elect not to fund projects with a simple payback longer than a few years. This means that some efficiency measures are left undone and the savings from those measures are either lost or (at best) pushed out a few years. EEaaS eliminates this risk by allowing customers to fast-track the implementation of deeper energy savings projects by having a third-party finance and own 100% of all possible projects.
- **Business Disruption:** Deferred maintenance and out of commission and aging equipment present a risk of disruption at burnout. Investing in connected, high efficiency equipment upgrades eliminates this risk with analytics that offer insight into performance through fault detection, and through diagnostics and predictive maintenance applications that shift the management approach from reactive to proactive.
- **Degradation of Brand:** Across industries, market leaders are committing to increasingly aggressive climate and sustainability goals. Investing in energy efficiency and building upgrades are cost-effective, high impact options that align with these executive priorities. The commitments are highly visible from a marketing perspective and as the participation rates in initiatives such as RE100 or SBTi become more mainstream, sustainability becomes directly linked to brand. Customers, employees, and even partners demand action, focusing on building investments as part of the strategy is an economic and impactful option.

Conclusion and Recommendations

EEaaS providers partner with customers to eliminate the burden of developing, financing, owning, and managing complex and integrated energy systems. Customers can benefit from this flexible, off-balance sheet solution that can help fast-track energy efficiency building upgrades and sustainability projects.

The benefits of EEaaS are valuable to different stakeholders across customer organizations. Market leaders are addressing their building performance as a part of their strategic planning for sustainability and climate goals, and EEaaS offers a pathway to upgrading building equipment and energy systems without upfront costs and with added benefits of third-party expertise and services.

- EEaaS providers can work with customers to generate an initial overview of potential projects by leveraging existing energy use and facilities data to quickly conduct a preliminary assessment. Often these initial assessments are conducted at no cost and can be started with remote analysis. These initial snapshots, coupled with a review of the contract structure can be enough for customers to see where and how EEaaS might be able to jump-start the implementation of energy efficiency projects across a single site or an entire facility portfolio.

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1800 Tysons Blvd., 7th Floor
McLean, VA 22102 USA
www.guidehouseinsights.com

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