

# **Bigger is Different: The Complicated Energy Efficiency Decision-Making of Large C&I Customers**

*Christopher Dyson, Ben Jones, Susan Haselhorst DNV; Leanne Hoadley, CPUC*

## **ABSTRACT**

This paper explores the complex decision-making processes concerning energy efficiency (EE) projects that are characteristic of very large commercial, industrial and institutional customers.<sup>1</sup> It covers topics such as how EE project ideas are generated, who are the key project decision-makers, what are the essential factors and selling points that can make EE projects advance in the capital expenditure project priority list, and what roles that EE program financial incentives or corporate/organizational environmental sustainability policies play in project decision-making. It also explores what factors or barriers can stall or derail approval of EE projects and how EE programs can most usefully intervene to influence project scope and approvals.

The paper draws upon recent in-depth interviews with over two dozen large commercial, industrial, and institutional customers in three different states/provinces. All these customers were participating in downstream custom EE programs.<sup>2</sup> These interviews were conducted over the 2023-2024 period to inform program attribution (e.g., net-to-gross) estimates.

Finally, the paper explores current trends in project decision-making among large customers. For example, in recent years, corporate/organizational environmental sustainability policies have become more significant drivers of EE projects. Better understanding EE project decision-making among large customers should benefit EE programs that are trying to increase program attribution.

## **Introduction**

This paper examines the complex EE project decision-making of large commercial, industrial, and institutional customers<sup>3</sup> based on in-depth interviews with over two dozen such customers. The paper addresses the following questions about this decision-making:

- How are EE project ideas typically generated?
- Who are the key project decision-makers and how do these decision-makers change with project stage or size?
- What factors influence EE project approvals other than program financial incentives?
- How are EE projects prioritized relative to other capital expenditure projects?
- Under what conditions can annual operations & maintenance (O&M) budgets be used to fund EE projects?
- What are the key factors and selling points that can make EE projects advance in the project priority list and obtain ultimate approval?

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<sup>1</sup> One of the EE programs in which our interviewees were participating in had a minimum requirement that participants spend at least \$5 million in annual energy expenditures. A second program was reserved for companies with annual natural gas consumption of 100,000 m<sup>3</sup> of natural gas each day for a minimum of 256 days per year.

<sup>2</sup> Custom EE programs offer financial incentives for customized EE projects that usually have unique characteristics that disqualify them from eligibility for prescriptive EE programs which have pre-defined “deemed” energy savings for certain EE measures.

<sup>3</sup> For the sake of brevity, we will refer to these customers elsewhere in the paper as C&I customers with the understanding that institutional customers are included in this group.

- What roles can financial incentives from EE programs play in project decision-making?
- What roles can corporate/organizational environmental sustainability policies play in project decision-making?
- What factors or barriers can stall or derail approval of EE projects?
- At what point in the project decision-making process can EE most usefully intervene to influence project scope and approvals?

Understanding the answers to these questions is important because it can help the designers and implementers of custom EE programs that target large C&I customers become more effective in influencing EE project generation and approval. This enhanced program effectiveness should reveal itself in higher program attribution scores from program evaluations.

## **Methodology**

To answer these research questions, the paper draws upon recent (2023-2024) interviews with over two dozen large commercial, industrial, and institutional customers in three different states/provinces. The main objectives of these interviews were to collect information about project decision-making needed to estimate net-to-gross ratios (NTGRs) for custom EE programs in California, New Jersey, and Ontario. However, with a couple of exceptions, the information in this paper represents new observations that do not appear in the published evaluation reports for these custom programs. The emphasis of this paper is to find generalizable observations and insights about large C&I customer decision-making that are not unique to a particular large C&I customer base or custom program design.

## **Findings**

This section summarizes the responses of the large C&I interviews for each of the research questions listed in the Introduction.

### **How EE Projects Ideas Originate**

Knowing how EE project ideas originate with large C&I customers can be useful for EE program implementers not only by suggesting program services (e.g., energy audits) that can help with project identification, but also for identifying which customer contacts to cultivate relationships with. For example, if a large C&I customer has a dedicated energy manager that is regularly benchmarking the energy consumption of the company's buildings and equipment, it makes sense for the EE program to develop a relationship with that individual to get more advance notice of potential EE projects.

Finally, knowing where project ideas originate from can also help EE programs avoid free ridership. For example, the evaluations of these custom EE programs have revealed that providing program incentives for projects that originate from routine maintenance procedures – such as cleaning heating exchangers or replacing defective steam traps – often results in lower NTGRs.

The interviews revealed that the five most common approaches for identifying EE projects for EE program participation included: 1) benchmarking the energy consumption of buildings or equipment, 2) conducting facility audits to identify and analyze EE opportunities, 3) replacing equipment that was performing sub-optimally or becoming expensive to repair/maintain, 4) enhancing the efficiency of production, and 5) following routine maintenance protocols. .

Often more than one approach was used to identify projects. For example, a company might first use benchmarking to identify a building that was consuming a lot of energy relative to other comparable buildings and then follow-up with an energy audit of that building to identify specific projects. The following are brief descriptions and examples of these approaches:

- *Benchmarking the energy consumption of buildings or equipment:* Companies or organizations which had dedicated energy managers were most likely to do energy benchmarking of their building stock. The energy manager of a large commercial real estate management company developed his own energy accounting and analysis software that allowed him to not only examine metrics like BTUs of energy consumption per square foot, but also to track these performance metrics over time. “When you can not only see where that building is in a given year relative to all the others, but also see the dynamic on what it’s trajectory is,” he said, “that gives you a better picture of where the opportunities are.” This energy manager identified the buildings whose energy consumption had been increasing over the last three years as the top targets for EE projects.

An energy manager for a large healthcare system took a similar approach although with less sophisticated software. “Every year I look at our larger facilities – everything above 10,000 square feet – and I do an Energy Use Intensity (EUI) calculation based on the past year’s of utility use,” said the interviewee. “And everything that looks above what the EUI should be, I say: ‘There’s something going on here, let’s take a look at it.’ That’s how I find opportunities.” Other companies/organizations relied on other sources such as data from steam flow meters or power consumption meters on compressors as proxies for energy consumption.

- *Conducting facility audits:* Some companies hired outside firms to conduct audits of their facilities. These included not only basic audits to identify promising EE projects, but also more sophisticated investment-grade audits that include financial analyses (e.g., estimates of returns on investment (ROI)), risk assessments, detailed analyses of potential energy savings, and even project implementation plans. “Some of these projects are pretty complicated where you have to do [energy consumption] models. You just can’t do a simple spreadsheet,” one project decision-maker noted. “It can be time-consuming and costly to do the analysis needed to make sure you’re really going to produce the savings you expect you’re going to produce.”

Several decision-makers observed that these audits can be crucial for getting management approval on projects. “We rely on [the audits] to make decisions as far as how many [projects] we can do and what the total costs are going to be for the projects,” said one decision-maker. “So without that, it’s just a bad guesstimate as opposed to an actual audit, which will give us a full financial understanding.”

- *Replacing older equipment and enhancing productive efficiency:* A common motivation for EE projects was the replacement of older equipment due to diminishing performance and/or high maintenance and repair costs. For industrial companies, the diminishing performance of the equipment – whether it be motors or cooling towers – was a greater concern than maintenance costs because this diminishing performance could make them less competitive. “[Replacing underperforming motors] is incredibly important particularly when you have a building that has older equipment and you’re competing against companies that have newer equipment,” said one manufacturer. “Their pounds per hour are typically greater than yours, so you’ve got to do everything you can to have more throughput and ... have more finished goods and to drop down the scrap rates.” The replacement of the older equipment also offered opportunities for adding EE improvements – such as adding variable frequency drives (VFDs) or “right-sizing” motors – at a much lower cost than would have been the case in a retrofit scenario.
- *Routine maintenance projects:* Some projects like the cleaning of heat exchangers or the replacement of steam traps were things that companies did every year in accordance with their protocols for ongoing maintenance. Some participants routinely apply for program support for ongoing maintenance projects.

Besides these five most common sources for EE project ideas, many companies and organizations have corporate or organizational policies that include sustainability or carbon reduction goals. Because these carbon reduction goals usually do not prescribe how these carbon reductions should be achieved, the goals do not generate EE project ideas per se. However, by providing funding for carbon-reduction projects, these goals and policies are important drivers for the generation of EE project ideas as well as other types of carbon-reduction projects (e.g., renewables). A later section of this paper discusses these corporate/organizational policies.

### **Who the EE Project Decision-Makers Are**

The previous section described the most common ways that the ideas for EE projects come about. The interviews with large C&I customers revealed that the individuals who came up with project ideas were the first project decision-makers because they had selected a given project over alternative options. If a company or organization had a dedicated energy manager, then this individual was usually the first project decision-maker.

For industrial companies that did not have a dedicated energy manager, the first decision-maker was usually an experienced facility manager or operations manager who was familiar with what equipment needed replacement or which equipment was consuming more energy than others. In some cases, this facility/operations manager had profit and loss (P&L) responsibility – e.g., they were accountable for the financial performance of a business unit. Usually, such individuals were familiar with the availability of financial incentives from EE programs. For EE projects that impacted industrial production, often a representative from the production department was involved in the decision-making.

Occasionally, the project team would consult with individuals from other parts of the company. For example, if the project had technical complexity, the project team would often consult with in-house engineering staff or occasionally with an outside engineering firm. For equipment purchases, sometimes the project team would consult with a representative from the procurement department. For routine maintenance projects -- such as the cleaning of heat exchangers or the replacement of steam traps – the team would consult with the contact engineers who were most familiar with the equipment (e.g., to identify which heat exchangers had the most urgent need for cleaning).

The size of the EE project was a key determinant in how many other project decision-makers were involved besides the first decision-maker. As a general rule, the larger the project, the greater number of individuals who had approval authority.

Several interviewees observed that the layers of management who must approve these projects usually lacked the technical knowledge to understand these projects in any depth. Therefore one interviewee stressed the importance of having someone who could help explain the technical aspects to upper management. “I depend on [an outside consultant] to make the engineering digestible to regular people,” the interviewee noted. “You can take data and throw it into a graph and people will start getting cross-eyed. It is very important ... to have my consultant translate it into English so that ... the leadership of my department will recognize the value.” However, other interviewees reported having managers who were not interested in learning the technical details of the project as long as the project financials demonstrated cost-effectiveness.

Most industrial customers had a capital expenditure (CapEx) process where a committee reviewed a list of proposed projects including projects with other objectives besides energy savings. “We have one senior executive team that approves all CapEx and you have to present projects to it. There’s an ROI analysis and you’ve got to go through a series of discussions,” one manufacturer observed. “They don’t give you carte blanche, you have to make a proposal and sometimes negotiate, and sometimes you’ve got to ask more than once. ... There’s also been a lot of projects over the years that I’ve been turned down for a year or two and three, and then, eventually, I get it across the finish line.” Many companies

reserved the last quarter of the year as the submission period for CapEx projects that would be scheduled to be installed during the following year.

However, many EE projects have just one or two decision-makers and do not need to go through the CapEx process. The most common of these are routine maintenance projects such as the cleaning of heat exchangers or the replacement of steam traps. Many companies had been doing these routine maintenance projects for several years. Because these companies have compiled extensive cost, performance, and energy savings data to demonstrate the cost effectiveness of these projects, there is no need to submit these projects through CapEx process. Usually, the companies had dedicated funding for these routine maintenance projects.

Another category of projects that have a smaller number of project decision-makers and no need to go through the CapEx process are smaller, ad hoc maintenance projects. Most companies have annual maintenance budgets that cover the costs of these smaller projects. The exact cost threshold below which a project could be paid for out of the annual maintenance budget varied from company to company, but it was usually around \$10,000.

### **Factors Influencing EE Project Approvals Other Than Program Financial Incentives**

Decisions whether to approve the implementation of EE projects can depend on many factors other than program financial incentives (which we will discuss in a later section). These include:

- *Opportunities to improve production efficiency:* As discussed, many manufacturers view the ability of new equipment to increase manufacturing throughput as the most important justification for equipment replacement decisions -- more important than other considerations such as energy savings or the availability of financial incentives.
- *The prospect of energy savings:* As noted, many EE projects originate from benchmarking exercises that are designed to target buildings or equipment that consume more energy than their comparables. "If particular buildings are really energy hungry in comparison [to their comparables], then we want to get those down as quickly as we can," said an energy manager for a telecommunications company.
- *Concerns about equipment failure:* Some companies did regular assessments of their equipment which not only looked at the age of the equipment but also how critical the equipment was for facility operations. So equipment that was both very old and critical had a higher probability of being approved for replacement.
- *Concerns about the disruption of building operations:* Some EE projects can cause interruptions in production or general building operations and these can be important considerations in determining project scale and schedule. For example, one manufacturer chose to implement motor upgrades in stages to minimize the interruptions to factory operations.
- *O&M savings:* If older equipment had incurred significant O&M costs, then the prospect of new equipment reducing these O&M costs was a selling point for some projects. For example, one company used evidence of multiple leaking incidents to help justify the replacement of a heat recovery steam generator (HRSG).
- *"Use it or lose it" funding structures:* An energy manager for a large healthcare system reported that they had a \$2 million per year budget for major maintenance projects that could not be carried over to the next fiscal year. This funding structure motivated the organization to come up with a list of projects long enough to ensure that most or all of this annual budget was spent in a given year. The funding structure also made management more likely to approve proposed projects.
- *Labor and financial constraints:* The implementation of EE projects can absorb the time and attention of in-house personnel and therefore the scale and schedule of these projects can depend on staff availability. For example, one project decision-maker observed that his company

normally does about four lighting retrofits per year but “sometimes it’s even more than that ... it depends how busy we are.” He observed that recent increases in company staffing levels had allowed them to increase the number of annual lighting projects.

- *The prospect of combining multiple energy projects in a single installation:* One project decision-maker said that his company prioritized buildings for lighting retrofits which could also benefit from other energy saving or carbon reduction projects such as swapping out old HVAC equipment, installing solar panels, or installing EV charging stations. This bundling of projects at a single facility can also reduce “soft costs” such as permitting costs.

## How Program Financial Incentives Impact EE Projects

It is worth noting that the earlier section on how EE project ideas originate did not mention EE programs as a source of these ideas. While EE programs can introduce C&I customers to project ideas, this is more common among small- to medium-sized C&I customers who lack in-house expertise to identify such opportunities. The large C&I customers we interviewed almost exclusively claimed to have come up with their own project ideas.

However, EE programs – primarily by offering financial incentives – can increase the chances that such large C&I EE projects get management approval. These incentives can also help these projects get management approval before other projects that are competing with them for capital expenditures. Finally, they can sometimes make these projects larger in scope than they otherwise would have been.

Several large C&I project decision-makers stressed the importance of these financial incentives in getting project approval. “[This project] was contingent on the incentives,” said one decision-maker. You’re fighting for capital investments, so the best shot at getting them is to get some of [the project costs] covered.” “My instinct is that we would have done nothing at all [without the EE program], because the incentives made the investment compelling,” said another decision-maker. However, it is important to note that there were other cases where the project decision-makers said that their projects had such great potential energy savings, or benefits for manufacturing efficiency, that they would have received management approval whether financial incentives were available or not.

Even when companies decided to implement EE projects for reasons unrelated to the EE programs, the financial incentives could still influence the timing of these projects. For example, one company had committed, due to corporate sustainability policies, to implementing LED lighting retrofits in a certain number of its buildings every year. In deciding which buildings to retrofit first, however, the availability of financial incentives was a key consideration. Although they eventually did lighting retrofits of their buildings in areas where no financial incentives were available, these were done much later.

Several project decision-makers also said that the financial incentives had allowed them to scope larger projects than they otherwise would have. “[Without the incentives] I may have said: ‘Let’s do two AC motor and drive upgrades,’” said one decision-maker. “I probably would have scaled [the motor project] down for sure. I would have never asked for that much [capital expenditure] money.”

Besides program financial incentives increasing the chances of EE project approvals, or accelerating or expanding proposed projects, the project decision-makers mentioned other benefits of the incentives including:

- *Aiding future project planning:* One project decision-maker observed that the knowledge that program financial incentives would be available helped his company with their planning of future EE projects. “It’s definitely important for us, because [the incentives] do provide us the financial flexibility to project out, not only current year, but also future year projects,” he said. “...It helps us generate a roadmap for our future workload as well. So knowing that there are incentives helps us budget how much we’re going to do this year and next year at the same time, potentially even the year after that.”

- *Encouraging follow-on EE projects:* Several project decision-makers said that receiving program financial incentives for one EE project encouraged them to develop and implement subsequent projects. This was especially true if they could show management the energy savings that the initial project produced.
- *Impacting routine maintenance practices:* One project decision-maker indicated that positive experiences with the energy savings resulting from program-incentivized LED lighting retrofits in some of their buildings encouraged them to move to more energy-efficient practices for lamp replacement in their buildings that still had legacy lighting. “Right now our policy is wherever possible we replace the existing lamps with something that is incentivized and meeting the energy efficiency requirements,” he said. “So if you have two bulbs that are comparable to one another, and one has an ENERGY STAR or TRC rating, and the other one does not, ... we’re going to go with the incentivized bulb.”

### **The Impact of Corporate Sustainability Policies**

One trend that DNV observed in these 2023-2024 in-depth interviews with large C&I customers was the growing importance of corporate/organizational sustainability or carbon reduction policies in driving EE projects. These policies appear more prevalent than was the case when DNV conducted similar interviews over the 2022-2023 period.<sup>4</sup> “We have a commitment to our shareholders to reduce our carbon footprint across the company, so that’s where our biggest corporate responsibility comes into play is the locations that are the biggest energy hogs,” said one project decision-maker. “Our corporation worldwide has made a commitment to reduce greenhouse gases by ... 59% by the year 2030,” said another decision-maker.

These policies took various forms. In one case a carbon reduction policy led a company to form a new energy management team. “[Our company] has a corporate responsibility to the shareholders to reduce our carbon emissions footprint,” said one project decision-maker. “So, for the team that I’m on -- energy management -- our sole responsibility is to do things to make our buildings and our workspaces more efficient and less impactful to the environment and, of course, more cost efficient within the company.” This energy management team then implemented a long-term plan to complete LED lighting retrofits in a certain number of the company’s buildings every year.

In another case, the company’s EE objectives were part of a broader Environmental, Social, and Governance (ESG) framework. “I wrote the energy sustainability side [of the report], human resources did the social side, and somebody else did the governance side,” one energy manager observed. This ESG report served as a useful justification for future EE projects.

In a third case an international company created a pool of money for greenhouse gas reduction projects that its affiliates across the world could compete for. A European-based committee reviewed the proposed projects and approved a few of them.

In this last case the committee approved full funding of the project and therefore the financial incentives it subsequently received from an American EE program had no influence over the project. However, in other cases where the corporate/organizational sustainability policy encouraged the creation of a proposed EE project, other project drivers such as energy savings or program financial incentives could still influence project approval or timing.

For example, when asked if the company’s ESG policy would have been enough to approve an EE project, a project decision-maker said: “It’s always about cost savings. If [a project] doesn’t pass the cost savings test, it’s not going to benefit the shareholders, and it’s not going to happen.” However, this decision-maker acknowledged that the sustainability benefits of the project could still help with

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<sup>4</sup> It will be interesting see whether this trend continues or takes a different direction due to changes in the U.S. political environment in 2025.

management approval. “The combination of a [positive] ROI and checking off the box for sustainability reporting, putting our best foot forward, the combination of those two things helps,” he said.

In the example described above where a company’s carbon reduction policy caused them to implement a long-term plan of lighting projects, the project decision-makers said that the lighting retrofits would have eventually gone ahead whether or not the projects had received program financial incentives. However, they did credit these incentives with allowing them to do larger lighting retrofits sooner than they otherwise would have.

### **Factors that Can Stall or Derail EE Projects**

The large C&I project decision-makers mentioned several factors that can stall or derail EE projects including:

- *A prior negative experience with an EE program:* One project decisionmaker noted that his corporate management was wary about participating in new EE programs because they had previously approved a large EE project with the expectation of receiving substantial financial incentives, but the contractor had been unable to obtain the incentives. “I think there was some skepticism in the corporate office because ... any time you go through this rebate process there’s a little skepticism that they don’t give you the rebate because you had brown shoes that day. You know ... some arbitrary technicality that says that you don’t qualify.”
- *Concerns about interruption of operations:* As noted, some EE projects can cause interruptions in production or general building operations and these can be important considerations in determining project scale and schedule.
- *The general nature of the commercial real estate market:* An energy manager for a large commercial real estate management company said that the commercial real estate market had several barriers to EE project implementation that were more significant than was the case in other market sectors. These included:
  - *Lack of knowledge or interest in EE retrofits:* “[The commercial real estate market] is different, psychologically, it’s a different animal,” said the energy manager. “As much as these guys came out of Wharton and NYU and ... they’re smart when it comes to financing, but when it comes to utilities, it’s like you’re talking to wall. ... The commercial real estate world is not used to these kinds of decisions. They’re building buildings. They’re renting space. They’re doing tenant fit up. It’s all about generating rent dollars, not about generating [energy] savings.” The fact that many commercial real estate management companies have less economic motivation to save energy because they can pass utility costs off to their tenants -- often referred to as the “split incentive barrier” -- was another contributing factor to this lack of interest.
  - *The auditing Catch-22:* The commercial real estate energy manager said that management would only approve EE projects that had been identified through audits – including both initial “walk-through” audits and more detailed follow-up investment-grade audits. However, they were often unwilling to pay for the upfront audit costs because they were uncertain whether the audits would pay off with viable projects.

“First I’ve got to convince the operations VP to spend the money to do the [walk-through] audit, and then you do the audit and get the results, hopefully, are interesting enough to where the investment is compelling,” the energy manager explained. “Then you’ve got to fight for the money to do the analytics to be able to do the [investment grade audit]. And then when you do the [investment grade audit], you’ve got to fight to get the project approved with the builder.”

- *The complicated economics of commercial leases:* The commercial real estate manager said that many commercial real estate buildings used modified triple net leases where the tenants pay a share of the building operating costs including utilities for common areas. A typical arrangement is for the tenant's share of the building's operating costs to be set at the beginning of the lease period (usually five years) and remain at that baseline level over the lease period. So, for example, if the customer is paying \$2 per square foot for operating costs at the beginning of the lease and the building operation costs increase to \$3 per square foot by year four or five of the lease, the landlord has to absorb those additional costs.
 

In this scenario, the landlord might have an incentive to make EE improvements to reduce these costs, but that all depends on the level of those increased costs, or on whether the landlord is able to increase the tenant's baseline share of the operating costs when the lease is next renewed. An additional complicating factor is that the building will have many other tenants and some of these tenants may have newer leases which may already contain the higher building operating costs in their cost-sharing formula. In summary, figuring out the economic benefits of EE projects is much more complicated with commercial real estate than it would be for an owner-occupied C&I building.
- *Commercial real estate sales:* An energy manager for a large commercial real estate management company reported that he had lost several planned EE projects when his company sold the properties where the projects were going to be implemented. "The company was in a state of flux where they were thinking about selling off their office buildings," he explained. "So very good [EE] projects ... would go to the back burner because [their buildings] were on the chopping block."

### **Program Features that Enhance Large C&I EE Customer Engagement and Program Influence**

This exploration of the complicated EE decision-making of large C&I customers raises an important question: How can EE program design improve customer engagement and gain more influence over the approval, scope, and timing of the EE projects that large C&I customers are considering? The interviews offered some suggestions:

- *Cultivate relationships with corporate energy champions:* Most of the large C&I projects that DNV evaluated had been developed by an individual who either was a dedicated energy manager or who had spent many years being responsible for facility operations and therefore was very knowledgeable about the age, performance, and energy consumption of the facility's equipment.
 

While the energy managers were mostly already aware of EE programs and their incentives, some of the long-time operations staff only learned about the EE programs by happenstance. More consistent program outreach to these corporate energy "champions" could increase the chance that the EE programs could be involved earlier in the project development and proposal stages. As discussed below, increased use of familiar utility account reps is one promising avenue for increasing EE program awareness.

Although the focus of this paper has been on influencing the decision-making of large C&I customers in the context of conventional custom EE programs, it is worth noting that Strategic Energy Management (SEM) programs can create a more formalized structure for creating and cultivating energy champions.
- *Subsidize energy audits:* As noted, facility energy audits are one of the most common sources of ideas for EE projects among large C&I customers. In the commercial real estate market, these audits are also especially important for convincing building managers of the financial benefits of EE projects. However, some large C&I customers, especially those in commercial real estate, have difficulty obtaining funding for energy audits.

For these reasons, energy efficiency programs should consider subsidizing the costs of these energy audits. One EE program – NYSERDA’s Commercial Tenant Program – has had success in encouraging EE projects in the commercial real estate market. The program supports commercial office tenants, commercial landlords, and architecture/engineering firms in improving interior office and leased spaces through innovative design, proactive maintenance and operations, and actionable plans to reduce energy consumption in existing buildings. A 2020 evaluation found that program participants self-reported that they had implemented EE projects that installed 44.9% of the savings (kWh) recommended from inception of the program in 2016 through April 30, 2019.<sup>5</sup> NYSERDA has another program – the FlexTech program – which provides EE feasibility studies for a broader range of C&I customers. The program pays half the costs of these feasibility studies up to \$1 million.<sup>6</sup>

- *Make utility key account reps accountable for EE program recruitment:* The interviews revealed that many large C&I project decision-makers were more familiar with their utility key account representatives than they were with program EE staff. Therefore, key account reps often proved useful in connecting the large C&I facility staff with information about the EE programs and key contacts at these programs. Ensuring that the key account reps are knowledgeable about the latest EE program offerings and accountable for making connections will make the most effective use of this important communications channel. Also some utilities have made successful recruitment of C&I customers for EE projects one of the KPIs for utility key account representatives.
- *Create bundled carbon reduction projects:* While large C&I customers are reluctant to disrupt their operations to accommodate EE projects, they are more willing to do so if they can implement multiple carbon reduction projects during this interruption period. For example, as noted, one company which was implementing lighting retrofits in their buildings welcomed the opportunity to implement other EE or electrification projects in these same buildings -- whether this involved HVAC upgrades, the installation of solar panels, or the installation of EV charging stations.
- *Design EE programs that have long windows for EE incentive availability and long program continuity:* Because large C&I customers usually have large and complicated EE projects, these projects can take multiple years to be developed, analyzed, and approved. To accommodate these long project schedules, some EE programs that target large C&I customers give these customers as much as three years to spend financial incentives that have been reserved for their projects.<sup>7</sup> This can mitigate the concerns of some C&I customers that their incentives might disappear if their project takes longer than expected to implement. EE programs with long duration can also attract large C&I customers since the confidence that the program will be around for the foreseeable future can encourage them to make long-term plans for EE project implementation.
- *Avoid incentivizing routine maintenance projects:* The interviews revealed that many large C&I customers complete routine maintenance projects such as the cleaning of heat exchangers or the replacement of steam traps. Because these companies have completed these projects over many years, they have compiled extensive cost, performance, and energy savings data to demonstrate the cost effectiveness of these projects. This evidence has allowed them to obtain dedicated funding for these projects. Due to the routine nature of these projects and their access to

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<sup>5</sup> NYSERDA CRE Tenant Measure Adoption Rate Survey, Interim Report, Prepared for: New York State Research and Development Authority, January 2020, Prepared by DNV GL.

<sup>6</sup> [Flexible Technical Assistance Program - NYSERDA](#)

<sup>7</sup> Some custom EE programs – such as those in California – allow program participants to file for an extension with the utility and the CPUC if the EE project is likely to be implemented later than the originally-specified deadline. These extension requests are usually granted if the participant follows the proper filing procedure.

dedicated funding, EE programs should avoid incentivizing them because they pose a high risk of free ridership.

- *Help management understand the technical aspects of EE projects:* While some interviewees reported having managers who were not interested in learning the technical details of the project as long as the project financials demonstrated cost-effectiveness, others strongly believed that helping managers understand the technical aspects of EE projects could increase their chances of approval.

While the above strategies can certainly increase the chances that EE projects will be implemented, it is important to note that many barriers to EE project adoption, discussed in more detail above, remain. These include the fact that some managers are only willing to approve EE projects that had been identified through energy audits, but they are often unwilling to pay for the upfront audit costs due to uncertainty as to whether the audits would pay off with viable projects. Other persistent barriers to EE project implementation include the complexity of commercial real estate leases and the split incentive barriers for leased buildings.

## SUMMARY OF FINDINGS

Key findings from these interviews with large C&I project decision-makers include:

- *How EE project ideas originate:* The five most common sources of EE project ideas for large C&I customers included: 1) benchmarking the energy consumption of buildings or equipment, 2) conducting facility audits, 3) replacing equipment that was performing sub-optimally or becoming expensive to repair/maintain, 4) enhancing the efficiency of production and 5) following routine maintenance protocols.

While EE programs can introduce C&I customers to project ideas, this is more common among small- to medium-sized C&I customers who lack in-house expertise to identify such opportunities. The large C&I customers we interviewed almost exclusively claimed to have come up with their own project ideas.

- *Who the EE project decision-makers are:* If a company or organization had a dedicated energy manager, then this individual was usually the first project decision-maker (e.g., the person who identified a promising EE project). For industrial companies that did not have a dedicated energy manager, the first decision-maker was usually an experienced facility manager or operations manager.

The size of the EE project was a key determinant in how many other project decision-makers were involved besides the first decision-maker. As a general rule, the larger the project, the greater number of individuals who had approval authority. Most industrial customers had a CapEx process where a committee reviewed a list of proposed projects including projects with other objectives besides energy savings. However, for large routine maintenance projects which already have dedicated funding, or for smaller projects which could be funded by a company's annual maintenance budget, the decision-makers were normally only one or two individuals involved in facility operations.

- *Factors influencing EE project approvals other than program financial incentives:* Decisions as to the scope or timing of EE projects, or whether to implement such projects at all, can depend on several considerations not directly related to the availability of financial incentives. Some of these more common factors include: opportunities to improve production efficiency, the prospect of energy savings, concerns about equipment failure, concerns about the disruption of building

operations, “use it or lose it” funding structures, O&M savings, labor and financial constraints, and corporate/organizational sustainability policies.

- *How program financial Incentives impact EE projects:* EE programs – primarily by offering financial incentives – can increase the chances that large C&I EE projects get management approval. These incentives can also help these projects get management approval before other projects that are competing with them for capital expenditures. Finally, they can sometimes make these projects large in scope than they otherwise would have been.

Besides program financial incentives increasing the chances of EE project approvals, or accelerating or expanding proposed projects, the project decision-makers mentioned other benefits of the incentives including aiding future project planning, encouraging follow-on EE projects, and impacting routine maintenance practices.

- *The impact of corporate sustainability policies:* One trend that DNV observed in these 2023-2024 in-depth interviews with large C&I customers was the growing importance of corporate/organizational sustainability or carbon reduction policies in driving EE projects. These policies appear more prevalent than was the case when DNV conducted similar interviews before 2023. These policies took various forms ranging from the formation of dedicated energy management teams, to the development of ESG frameworks, and the creation of funds for greenhouse gas reduction projects.

In one case a greenhouse gas reduction fund fully financed the EE project and the financial incentives it subsequently received from an American EE program had no influence over the project. However, in other cases where the corporate/organizational sustainability policy encouraged the creation of a proposed EE project, other project drivers such as energy savings or program financial incentives could still influence project approval or timing.

- *Factors that can stall or derail EE projects:* The large C&I project decision-makers mentioned several factors that can stall or derail EE projects including a prior negative experience with an EE program, concerns about the interruption of operations, commercial real estate sales, and the general nature of the commercial real estate market (which includes barriers such as a lack of knowledge or interest in EE retrofits, a reluctance to pay for energy audits, and complicated commercial lease arrangements).

## CONCLUSIONS

The interviews suggested ways that EE programs could gain more influence over the approval, scope, and timing of the EE projects that large C&I customers are considering. These suggestions included:

- Cultivating relationships with corporate energy champions
- Subsidizing energy audits
- Making utility key account reps accountable for EE program recruitment
- Creating bundled carbon reduction projects
- Designing EE programs that have long windows for EE incentive availability and long program continuity
- Avoiding the incentivization of routine maintenance projects
- Helping management understand the technical aspects of EE projects