Better Buildings CHALLENGE
U.S. DEPARTMENT OF ENERGY

INDUSTRIAL PARTNER

GENERAL MOTORS

Implementation Model: Energy Performance Contracting

ORGANIZATION TYPE
Industrial

BARRIER
Despite significant investment in energy and water reduction initiatives over the last several years, GM was concerned it would fall short of its aggressive sustainability goals without additional capital for conservation projects.

SOLUTION
- GM has begun using an "Energy Performance Contracting" (EPC) model, which allows third-party Energy Service Companies (ESCOs) to fund, own and share in the energy savings attributes of implemented projects.

OUTCOME
Over the past several years GM has doubled the amount of money directed towards energy conservation, from $40 million to $80 million, using EPC methods. Energy performance contracting has resulted in a reduction of an additional 120,000 megawatt hours (MWH) of annual energy consumption

Overview

GM's approach is significant because it represents a relatively rare example of a U.S. manufacturer successfully using the EPC model. The vast majority of energy performance contracting performed in

the United States today is for public entities. According to data collected and maintained by Lawrence Berkeley National Laboratory, the commercial and industrial sectors accounted for only about 8% of ESCO industry revenues in 2011. The ESCO model is attractive because it allows for the implementation of energy saving projects, usually at no upfront cost to the end user, with the ESCO being repaid out of the cost savings generated from the energy projects over time.

Though manufacturers sometimes use energy performance contracting, it is usually fraught with pitfalls. The traditional ESCO business model based on long-term performance contracts can be a tough sell for industrial customers with the economic downturn further crimping its attractiveness. In the industrial sector, many customers are reluctant to enter into long-term contracts because they are not sure how long their plants will remain open or at what operational level. Also, measurement and verification of savings tends to be more challenging for industrial retrofits, which may involve complex technologies and processes that are proprietary or commercially sensitive. For that same reason, outside parties are not typically welcome on site. Additionally, many companies find the internal legal, financial, and administrative burdens too difficult and abandon the strategy altogether without implementing a single project.

GM worked for several years to address the challenges associated with traditional EPC methods and build internal consensus for implementing a new system. Beginning in 2012, GM has executed projects totaling more than $40 million in ESCO investment, resulting in immediate energy and operational savings to the company. Even after making payments to the ESCO, GM is cash ahead from day one with no financial investment whatsoever.

General Motors' Playbook

Policies

GM has used corporate set aside funding to achieve energy reductions for the past 14 years. With these funds, GM has been able to reduce global energy intensity by 10% from its 2010 baseline in 2013. Vertical manufacturing integration, more complex manufacturing processes and shorter product cycles, however, have created significant challenges for GM's energy reduction efforts. In an effort to meet these challenges GM increased its direct energy and water conservation investment by 60% over the last two years. Even with these increases it became evident that additional energy savings opportunities were available and Energy Performance Contracting provided a resource to expand its savings.

To coincide with the increased need for funding in 2013 and 2014, GM began investigating the use of an EPC method for project delivery. Conversations began internally with finance, legal, business and separate GM building owners to simultaneously identify acceptable projects and potential roadblocks. By September of 2012, GM had worked through the internal requirements and controls necessary to implement the EPC method.

The new policy was driven by GM's goals for energy conservation and environmental stewardship as part of its corporate culture. This has resulted in aggressive energy and water reduction targets for all of its manufacturing facilities. Through analysis, GM discovered that meeting these targets, while adding value for its customers required non-traditional methods.

As noted in GM's 2013 Sustainability Report, "From designing more fuel-efficient vehicles and deploying advanced safety technologies to being the workplace of choice for employees and the neighbor of choice for communities, we make strategic decisions based on how the outcome ultimately translates into value for our customers. In doing so, sustainability becomes an integrated business imperative that creates positive benefits for our stakeholders and drives long-term success for GM. This approach, which we call Customer-Driven Sustainability, enables each employee at every level of our Company to help build value with the customer as our compass."

Process

Although EPC was new to GM, the company wanted to stay consistent with its current processes (legal, purchasing, contractor selection, and management), as much as possible. By doing so GM was able to mitigate risk and increase the speed with which eventual projects could be executed. As such, when implementing the new EPC method, special attention was given to:

1) Internal goals for EPC
2) Accounting treatment of contracts
3) Process for selecting ESCO's
4) Contracting Mechanism
5) Execution Process

Goal Setting

EPCs can be structured in any number of ways. In a manufacturing organization, the structure of an EPC must align with company goals and processes. The key is to find a structure that is easily communicated, sells internally and is executable.

Proper goal setting that aligned well with GM's public goals and internal controls helped gain early approval and acceptance of the EPC method. GM arrived at the following goals for EPCs, which are excerpted from the company's original request for proposal: The subject contract will utilize a shared savings model of performance contracting.

Services and plant improvements will be implemented through an energy performance contract which:

1. Achieves significant long-term cost savings
2. Maintains consistent and reasonable levels of occupant comfort meeting GM company standards.
3. Maintains consistent levels of building functionality
4. Captures additional benefits that may directly result from energy-related services and capital improvements, such as environmental protection, hazardous materials disposal or recycling, improved occupant comfort, reduced maintenance needs, improved indoor air quality, additional building improvements, etc.
5. Has a term of 5 years or less.
6. Maintains positive cash flow to General Motors

These goals were communicated to the key stakeholders and then finally to the ESCOs, inside the bid package. Clear communication of goals helped GM stakeholders and the ESCOs to align properly from the beginning. This minimized confusion and set the tone for the contract going forward.

Accounting Treatment of Contracts

Energy performance contracting in a financial world falls into one of two broad accounting categories:

1) Operating Lease

2) Capital Lease

In order to determine which type of lease accounting treatment to use, a significant amount of study was needed by GM's internal analysts and accountants. GM has so far determined all of its EPCs to be operating leases. In the end, companies are governed by the standards set by the Financial Accounting Standards Board (FASB) (of particular note is FASB-13) on their own internal accounting rules. For this analysis the GM EPC project manager had to work with the accountants to determine fair market value of the improvement in an attempt to answer some highly technical and detailed accounting questions.

The features of operating and capital leases, as described by the U.S. Environmental Protection Agency's ENERGY STAR® Program, are provided below:

1. Operating Lease:
    - There will be little or no initial/down payment required.
    - There are fixed later payments (can usually be structured to be less than the projected energy savings).
    - The depreciation and interest are tax deductible.
    - End user assumes all the energy performance/savings risks.
    - End user eventually owns the equipment.
    - All the residual cost savings from the upgrade are immediately available.
    - At the end of the lease, the end user can purchase it for fair market value or require the Lessor to replace it with original equipment or abandon in place.
2. Capital Lease:
    - There will be little or no initial/down payment required.
    - There are fixed later payments (can usually be structured to be less than the projected energy savings).
    - The Lessor claims the depreciation tax benefits, assumes the energy performance/savings risks, and owns the equipment until the end of the lease (when the end user can purchase it or lease it again).

Whether the outcome is "operating" or "capital" lease treatment, the organization will need to be able to manage it internally and continue with the project.

Process for Selecting an ESCO

Selecting an ESCO should be done in a similar manner to how other contractors are selected within an organization. The key difference is that companies need to pay additional attention to the lender, who will likely not be the same as the ESCO. Having to

pay attention to the lender is different than what most industrial customers are accustomed to. Even if a relationship between the industrial customer and the lender is handled through the ESCO, the industrial customer will have to work in some way with the lender to finance the ESCO. To that end, the industrial customer must ensure that both the lender and the ESCO are:

1) Agreeable with the customer's terms, conditions, and contracting method, which may differ for the performance contracting, from more traditional work.

2) Have a rock solid financial plan. This plan needs to contemplate how to fully fund the project beginning at construction and finishing at the end of the monitoring period. Industrial EPC users might have construction periods far in excess of municipalities and government users of energy performance contracting. This is something that needs to be contemplated in the financing plan.

Although companies may not want to get too involved with the lender, they must properly vet them along with the ESCO. The lender must be compatible with the existing legal agreement and have a rock solid financial plan. Without these two pre-requisites in place, it may be difficult to move to the execution phase.

Contracting Mechanism

GM utilizes a shared savings model of performance contracting. There are two types of performance contracting models, as described in an International Finance Corporation market analysis: 1) shared savings, and 2) guaranteed savings (also called paid from savings) contracting. Under a shared savings contract, the energy cost savings are split by a pre-arranged percentage for a pre-determined length of time. There is no 'standard' split as this depends on the cost of the project, the length of the contract and the risks taken by the ESCO and the customer. The company assumes no direct contractual obligation to repay the lender, only the ESCO has this obligation. In guaranteed savings contracting, the company essentially applies for a loan, finances the project and makes periodic debt service payments to a financial institution. The ESCO bears no direct contractual obligation to repay the lender, only the company assumes this obligation. Under a guaranteed savings contract the ESCO guarantees a certain level of energy savings and in this way shields the client from any performance risk.

Regardless of the model selected, every company will be different in how it executes energy performance contracting. Developing a unique contract may prove to be too arduous, and using a "canned" EPC format from the ESCO can be risky. To work through these two issues, GM uses a standard company purchase order to buy energy reduction, much like any other commodity. This purchase order method was used to provide GM with the comfort of much of its own standard terms and conditions. While using many of its standard terms and conditions, those that did not apply or required slight modification were summarized in a supplemental document, negating the need for additional stand-alone documentation and any "contract." This made legal and purchasing reviews easier, helping the company execute the necessary paperwork with fewer concerns and risks.

Execution Process

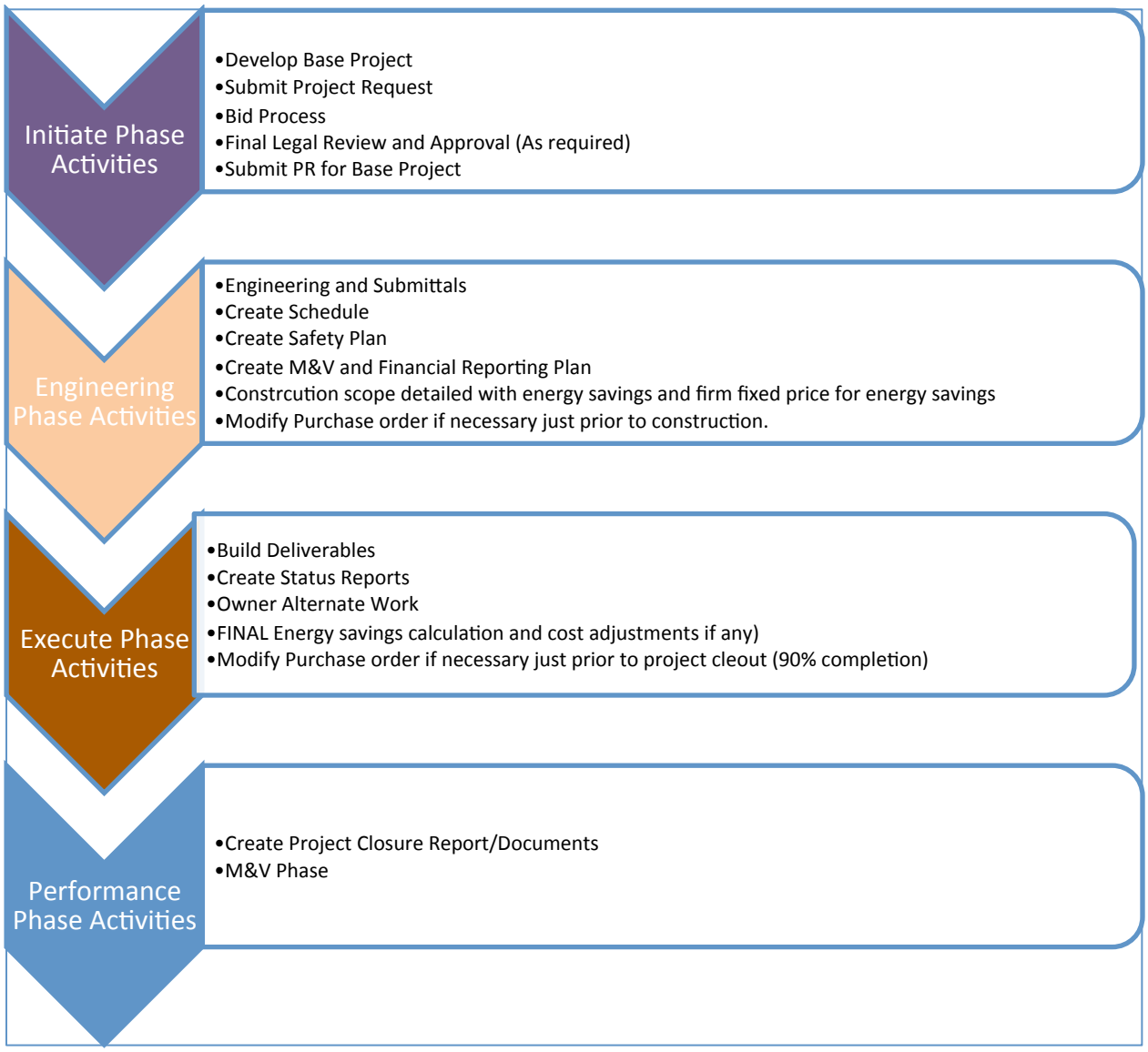
This is an area where industrial customers differ significantly from commercial or government agencies. Industrial customers typically have significant engineering assets and a lot to lose if the ESCO limits or inhibits production. Unlike government agencies or commercial enterprises, construction windows are much tighter and performance

requirements are very well defined and must be met. Traditional energy performance contracting has the ESCO determining all the energy saving measures with their engineers and proposing them to the customer after award. In GM's form of contracting the ESCO is still allowed to find and propose new projects, but the initial project is proposed by GM in the bid processes. All ESCO's bid an "EPC markup" and provide EPC methods as part of their bid. GM selects pre-qualified ESCO's based on best value.

Additional care must be exercised during this phase to identify all key stakeholders and ensure everyone understands their role. Particularly when executing the project over a diverse portfolio, identifying key team members and their roles is crucial. The RACI (Responsible, Accountable, Consulted, and Informed) and process flow charts GM uses to manage EPCs are provided here as a reference.

RACI Matrix For Execution of EPCs at GM

Project Deliverable (or Activity) / Role	GM Project Leadership						Project Team Members							Energy Performance Contractor			
							Global Facilities				SiteTeam						
	Program Manager	Finance Manager	Legal	Technical Accouting	Treasury Office	Treasury Office and Tax Staff	Project Engineer (s)	Overall Project Manager	Project Energy Engineer (S)	Site Energy Engineer	Site Facility Manager	Site Facility manager or Representative	Site Project Lead	Program Manager	Project Engineer	Safety Manager	Project Manager
Initiate Phase Activities																	
Develop Base Project	R	A/C					A/C	I	A/C	A/C	A/C	C	I				
Submit Project Request	R	A/C	A/C	A/C	A/C	A/C	I	I	I	I	A/C	I	I				
Bid Process	R	I					C	I	C	C	C	C	C				
Final Legal Review And Approval	R		A/C					I			I		I	R			
Submit PR for Base Project	A/C	A						I			A	I	R				
Engineering Phase																	
Engineering/Submittals	I						A	C	C	C	C	A	C	A	R	C	
- Create Schedule	A							A		C	C	C	C	A	I	I	R
Create Safety Plan	I							C			C	C	C	A	C	R	C
Create M&V and Financial Reporting Plan	A							I						A	R		I
SCHED A Firm Fixed Price	A	I					A	I	C	C	I	I	I	A	R		I
Construction PR (POA)	A/C	A						I			A	I	R				
Execute Phase Activities																	
Build Deliverables	I						C	C	C	C	C/A	C/A	r / C	I	C	R	R
Create Status Reports	I	I	I	I			I	I	I	I	I	I	I	I	I	R	R
Owner Alternate Work	A/C	A/C					C	A/C	C	C	A/C	C	R	A/C	C	I	C
FINAL Sched A	A	A					I	I	C	C	I	I	I	A/C	R		
Submit Follow on POA (TRUE UP)	A/C	A						I			A	I	R				
Perfromance Phase Activities																	
Create Project Closure Report/Documents	C/A	C/A	C	C			C/A	C/A	C	C	C/A	C	C/A	C	R/A	C	R
M&V Phase										C	C	C	R/A				R



Outcomes

By developing a team approach towards streamlining and implementing energy performance contracting, GM has been able to significantly improve the amount of energy conservation efforts within its company. Although GM has found it difficult to implement energy performance contracting, the company has successfully worked through all the challenges. GM found that having champions in each organization working together towards a set of common goals was critical to the success of its EPC work.

Projects implemented in the initial two years included lighting retrofits and controls – T8, LED, outdoor lighting, and wireless controls for facilities that were left with only projects greater than 2 year paybacks (see before and after photos of successful projects at GM's Wentzville, Missouri plant here). In 2014, GM added a steam elimination project to the mix at a stamping plant where building heating is not closely affected by production. To date, GM has avoided spending about $40 million and is achieving cost, electricity, and carbon savings that would not otherwise have been possible.

Through this effort GM has been able to double the amount of money directed towards energy conservation, reducing an additional 120,000 megawatt hours of energy consumption annually for an additional 1% energy consumption savings.

Utilizing the energy performance contracting method described is a valuable addition to GM's energy and carbon savings process. When company funding is not available for energy savings projects, a shared savings EPC is the next best alternative and much better than doing nothing.