The Case for Outsourcing Energy Systems: Velocity, Vector and Virtualization

INTRODUCTION

Years ago, economist and futurist Peter Drucker stated in his book "Managing for the Future" that companies often fail because they spend too much of their effort attempting to "perfect the unnecessary." His contention was that any effort spent on non-revenue-generating activities was not merely unnecessary, but detrimental. He observed that employees assigned to non-core functions rarely climbed the corporate ladder, but instead slipped downward as they added resources and elevated the importance of the non-core activities they were assigned to.

Although Mr. Drucker's words were rejected when first published, today's business leaders may find those words to be visionary. The combination of commoditized markets, task portability, integrated technology and globalization has created an environment where outsourcing is less an option than a mandate. The traditional rank and file, do-it-yourself organization flattened and became lean as the demand for management of employees became less important and management of vendors more important. Ultimately, outsourcing reduced the financial volatility of the organization by trading variable costs for fixed costs, introduced transaction-based pricing and freed the organization strategically to adapt to changing markets.

Outsourcing as initially defined had common attributes that eased the transition from self-performed to vendor-performed. These included rote activities, high employee concentration and attrition, low value and disproportionate management involvement. Today, as outsourcing matures, monitoring technology and robust governance models are moving outsourcing into highly complex and valuable activities such as finance, research and procurement.

Just as outsourcing has created a more virtual organization, so too have variant forms of vendor management and ownership. These first emerged from the federal government's Government-Owned/Contractor-Operated (GOCO) initiatives and transformed into today's managed services and Contractor-Owned, Contractor-Operated (COCO) engagements. These offerings bring similar benefits as outsourcing, but they address non-core functions, such as energy systems, requiring physical proximity, capital equipment and specialized skills. As stated in "Governance: a beacon for successful outsourcing" from May 2016, "The evolution of outsourcing and the advent of emerging trends are offering companies more transformative opportunities and competitive advantages than ever before."[1]

TRENDS IMPACTING ENERGY SERVICES

Commercial innovations can be adopted, or discarded, for the singular purpose of impacting the markets served for the advantage of the organization. As this occurs, those adopting innovation can move quickly and reap the associated benefits such as better customer service, advantageous pricing and superior products. Competitors can be forced to react to lost business or risk losing valuable market share. Additionally, threats can come from industry disrupters and non-traditional competitors, which often do not require innovation but complete organizational reform to survive. Over the next five years, disruption may not be limited to markets but may occur within large organizations. These disruptions could have many of the attributes of an outsourcing engagement yet be far more fluid and responsive.

Three trends could drive disruption in energy systems: velocity, vector and virtualization. These trends have helped transform how organizations function and may immeasurably impact durable systems such as energy conversion and central plants.

Trend One – Velocity

Technologies and innovations are being produced and adopted at an exponential rate compared to just a few years ago. Smartphones are a mere 10 years old yet are possessed by 77 percent[2] of the U.S. population. Material science has made more breakthroughs in a four-month period than it had made in the prior 30 years, much of which will render traditional materials obsolete. As rapid technological changes occur, energy system capital assets with 30-year life spans will no longer be measured by age but by obsolescence.

Trend Two – Vector

Recently, an energy services summit was held in which the keynote speaker was an executive from Google. As he spoke, he shared how predictive analytics, microgrid and battery initiatives would reshape the future of energy generation and resilience.

Bloomberg New Energy Finance (BNEF) reports $11.5 trillion is being invested globally in new power generation capacity from 2018 to 2050, with the majority going toward renewables. About $8.4 trillion will be spent on wind and solar and another $1.5 trillion on other zero-carbon technologies such as hydro and nuclear.

"The arrival of cheap battery storage will mean that it becomes increasingly possible to finesse the delivery of electricity from wind and solar, so that these technologies can help meet demand even when the wind isn't blowing and the sun isn't shining," reported BNEF's Seb Henbest. "The result will be renewables eating up more and more of the existing market for coal, gas and nuclear."[3]

These and other factors will combine to disrupt and redefine energy generation and conversion on national, regional and local levels.

Trend Three – Virtualization

Virtualization, only in its infancy, has already had a significant impact in many areas of our daily life and the operation of organizations. Through the deployment of smart sensors, IoT devices and predictive analytics, multiple systems are monitored to assess risks associated with preventive maintenance, premature failure and natural events. As multiple sites are overseen and analyzed, resources can be deployed that are made up of individuals possessing specific expertise, appropriate spares and prepared plans to minimize disruption. Operations and maintenance activities are conducted efficiently and responsively rather than inefficiently and reactively.

The key benefit and objective of virtualization is to eliminate the underutilization of people, assets and resources. This is achieved by providing shared resources combined with data and insights in a real-time manner.

As you consider these trends, consider their impact within the context of your operating environment.

FUTURE STATE OPTIONS

Option One – Self-Service

Most companies prefer to manage their energy systems on their own simply because when the company was built, there were no other options. This was not a strategic decision but a tactical reality. Companies are forced to spend more to maintain, repair and replace aging energy systems.

Often, companies delayed or eliminated investment in this equipment due to financial realities or priorities. Constraints in spending led operations to be run beyond lean and often leading to inefficient operations or equipment failure. Often, these issues led to extended outages after which greater expenses are incurred than would have been spent through regular maintenance and investment. Ultimately, results of the outage include significant revenue loss and dissatisfied customers.

When considering self-service, it is important to take several items into consideration.

- What has the historical record been regarding the willingness of the organization to invest in energy assets?
- What are the costs associated with acquiring critical but scarce competent staff?
- What spares and assets do I have access to in case of failure?
- What is my cost per hour in outage situations?
- What is the impact to machinery and work in process?
- What degree of accountability do I have personally?

As you ask yourself these questions, consider the potential of significant change due to velocity, vector and virtualization, and holistically consider the skills of your team, age of your assets and access to resources.

Option Two – Managed Services

Managed services provide labor, tools and consumables for all operational and management activities for company-owned energy assets. This provides companies with the benefit of removing the management burden of energy services yet leaves the responsibility for equipment ownership, replacement and non-routine activities with it. The challenges of managed services lie in its governance, which typically is in the form of a service level agreement (SLA). The SLA holds the vendor accountable for energy services in exchange for a monthly fee.

A primary concern regarding managed services is that while operational effectiveness is preserved, sometimes there is no incentive to improve it. Additionally, because they operate on a fixed monthly fee, sometimes vendors may provide the minimum resources possible. In situations of equipment failure, replacement or refurbishment responsibility lies solely in SLA compliance or with the company.

If your organization is considering a managed services approach, ask the following questions:

- Do we have a skills shortage, knowledge gap or high attrition in this area?
- What is the age of our assets and how much non-routine maintenance is expected?
- How much change is expected over the life of the contract and how will that be accommodated?
- How willing are we to invest capital in assets we do not operate?
- How do I mitigate risks associated with unplanned outages or equipment failure?

Finally, evaluate what options you would have should technology shift radically and your assets become obsolete.

Option Three – Integrated Energy Solutions

Integrated Energy Solutions (IES) is a term that describes the next level of outsourcing for energy systems. IES is the next level because outsourcing typically does not provide for adapting to change or adopting innovation. In an IES agreement, the vendor:

- Purchases all existing energy systems and assumes responsibilities and risks
- Becomes responsible for equipment failure, replacement or refurbishment
- Incorporates beneficial technologies and procedures

Energy costs, resilience, renewables, planned outage management and other elements become the primary concern of the vendor due to the fee-at-risk nature of the engagement. In addition, unexpected costs associated with equipment failure no longer require corporate funding as a portion of the vendor's fee is used to offset such events. Ultimately, the vendor becomes a virtual shared service agency responsible for volume usage and performance.

EVALUATION OF VENDORS

If you are considering an IES or outsourcing option for your energy services, you may want to perform a hierarchical due diligence comprised of the four 'C's. The first 'c' is competence.

- Does the vendor act as a thought leader or merely a participant in the industry?
- How innovative have they been, and have they deployed new technology in the past?
- How aggressive are they when integrating new technology? Do they align with your risk tolerance?

Once you pass through this stage, the second consideration should be capabilities.

- Does the vendor understand all aspects of my energy conversion assets such as chilled water, refrigeration, boilers, compressed air and the like?
- Has the vendor worked in my industry or one very similar to it?
- Is the vendor financially sound enough to make investments in a timely manner?

When you have evaluated capabilities, you next need to consider capacity.

- Does the vendor have ample bandwidth to provide services in the volume, nature and locations needed?
- How large is the vendor's portfolio, and how similar in scope are their typical engagements to what they are proposing?
- What is the vendor's plan to address unforeseen absences, needs for subject matter expertise or personnel that may be needed for system recovery?

Finally, when that is completed, you must address cost.

- Make certain that you do not make the mistake of comparing price versus cost. Cost is what you pay for equipment, materials and labor. Price is what you pay for equipment, but you still have the expense of materials and labor. Focus on cost.
- Determine if you want your expenses to be funded through capital or operating expenses. This will often determine if you are truly seeking a managed service solution (CapEx) or outsourced solution (OpEx).
- Look for pricing flexibility. Align costs with the revenue cycles of your organization to pay more during the periods when you earn more. By doing this, fees align with utilization and do not become a disproportional expense during slow periods.

CONCLUSION

For years, managing energy systems has not changed much. Today, with the advent of more reliable equipment and software monitoring, the responsibility of self-performing is not the only option. Equipment, expertise and engagement practices will shift dramatically as the impacts of velocity of adoption, vector of technology and deployment of virtualization occur.

What would it look like for you to innovate your approach to owning and managing your energy systems? Would your future planning include an IES approach? We'd be pleased to help you explore this as a possibility for consolidating your resources for your core responsibilities.

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Sources: 1. https://consulting.ey.com/governance-successful-outsourcing/May 2016, 2. Pew Research Center, http://www.pewinternet.org/fact-sheet/mobile, 3. "Utility Dive," June 2018.