



Strategic Energy Plan

As organizations strive to control rising costs, the focus on the energy cost component is ever increasing. The remedial attention is normally placed on obvious energy conservation initiatives that generate short paybacks. Frequently ignored is the overall energy impact of a holistic approach to reducing energy costs.

With a global approach, the organization can address future growth, maintenance, renewal of old and obsolete equipment and systems, energy conservation measures, and utilization management. To this end, a forward looking energy plan should be developed that encompasses energy related facility strategies.

A **Strategic Energy Plan** is a 1, 3, 5, and 10 year forecast of an organization's energy needs with a strategy on how to meet those needs efficiently and economically. These tactical strategies provides a mechanism for mitigating increasing projected energy cost expenditures that will be fueled by constantly increasing organizational growth and change.

The final product is a structured plan to maximize profitability through enhanced energy solutions.

Developing a Strategic Energy Plan requires:

A - Comprehensive Review

The first step is to establish a base line perspective of the facility in the absence of a Strategic Energy Plan. This is also the basis of comparison for assessment of the effectiveness of the strategies developed in the plan.

1. Energy utilization of current operations. This involves the detailed survey and analysis of utility bills. All related meters/account are compiled, tabulated and reviewed.
 - Detailed monthly electricity and fuel expenditures
 - Load profile by energy type
 - Average energy unit costs
 - Waste heat utilization
2. Future energy expectations are developed. This is based on growth expectation variables that have a direct and indirect affect on the consumption and cost of energy. Projections are made for the short, mid and long terms up to 10 years.
 - Ten year capital plan
 - Inflationary factors
 - Growth factors
 - New construction/additions
 - Facility renewal
 - Deferred Maintenance backlog
 - Load creep
 - Overall impact
3. Breakdown of energy consumption by fuel source. Disaggregation identifies the key system groups that make up the energy profile of an organization, thus allowing priorities to be set based on the largest and most influential energy consuming components.
 - Reinforces HVAC and lighting as key strategy targets
 - Identifies other system strategy targets
4. Issues of consideration - Demands being placed on the organization in the form of:
 - New Construction
 - Maintenance Constraints
 - Population
 - Operating Schedules
 - Asset Management/Ownership/Balance Sheet

- Energy Market Changes
- New Technologies
- Retooling/Remodeling
- Growth

B - Strategies

Action items that will direct the organization to meet future growth, effectively and efficiently. Each strategy introduces its fundamental approach and identifies the influencing factors that affect it. Additionally, an assessment of the physical facility is examined as it relates to the specific strategy. Lastly, a discussion is developed for the expected financial and qualitative benefits that would be realized by implementing the recommended strategy.

There are five elements of the facilities energy infrastructure that compliment the visions, goal and objectives of the organization that must be addressed.

1. New Construction – Addresses the growth needs of an organization with comprehensive and highly efficient design standards.
 - Adoption of high efficiency design standards
 - Requirement of continuous commissioning process
 - Adoption of energy efficient equipment purchasing policies
 - Allocation of proper operations and maintenance budgets
 - Incorporate new technologies
 - Outsourcing opportunities
 - a) Chilled/Hot water plants
 - b) Co-Generation
 - c) Chauffage
2. Deferred Maintenance – Maintenance backlogs and decaying infrastructures as related to the energy component of a facility, require the adoption of a comprehensive preventative maintenance program.
 - Addresses current backlog
 - Prevents additional backlog from accumulating
3. Facility Renewal – This focuses on the energy infrastructure as it is related to the age of the facility, which addresses whole building renovations and system or component end of life replacement.
 - Incorporates capital planning
 - Incorporates New Construction Strategy standards
 - Expand renewal scope to include energy related systems and/or components
 - Outsourcing opportunities
 - a) Waste Heat Generation (ORC)
 - b) Chilled/Hot water plants
 - c) Co-Generation
 - d) Chauffage
4. Energy Projects – This strategy targets specific energy reducing measures by performing equipment or infrastructure improvements. Each measure evaluated must meet simple payback, IRR and net present value requirements. Additionally, all measures must adhere to the goal of the SEP and its relative impact of:
 - Energy
 - Operations and Maintenance
 - Avoided costs
 - Non-tangible improvements (higher light levels, more comfortable environment)
 - Outsourcing opportunities
 - a) Waste Heat Generation (ORC)
 - b) Chilled/Hot water plants
 - c) Co-Generation
 - d) Chauffage

5. Energy Management Plan – A strategy that manages facility loads and utilization, minimizing energy unit costs from today and into the future. Energy management revolves around the following key areas:
 - Energy management control systems (EMCS)
 - Sub-metering of site buildings and major plants
 - Energy information systems (energy accounting)
 - Operational optimization and load control
 - Daily operation and maintenance
 - Integration of EMCS and supply side market conditions
 - Monitoring, measurement and verification
 - Outsourcing opportunities
 - a) Waste Heat Generation (ORC)
 - b) Chilled/Hot water plants
 - c) Co-Generation
 - d) Chauffage

C - Beyond the Plan - Adoption of the plan requires proper implementation, monitoring and continuous updating.

1. Implementation - Action that incorporates the global intent of the overall strategic energy plan within each individual strategy.
 - Design engineering
 - Construction
 - Commissioning
2. Monitoring, measurement and verification - Measures the effectiveness of the strategy against the preexisting condition or baseline.
 - Validates equipment level baseline performance
 - Validates equipment level upgrade performance
 - Confirms continued performance levels
 - Quantifies achieved savings
3. Strategic Energy Plan updates - The SEP is a forecast for energy utilization and must be updated to incorporate changes within and outside of the organization as related to the energy component of the physical facility.

D - Implementing a SEP

Executing the SEP Master Agreement allows for fee based performance of the SEP study, a Letter of Intent (LOI) for Performance Execution and a MOU for fee based SEP updates, monitoring, measurement and verification. With the SEP Master Agreement executed, the following steps take place:

- 1) Deliver SEP
- 2) Develop performance values and contract amounts
- 3) Convert LOI to an implementation contract and establish funding
- 4) Engineer, construct and commission
- 5) Measurement and verification
- 6) Continuous commissioning
- 7) Monitoring
- 8) Continuous SEP update

E - Stick to the Plan

Success is achieved by religiously incorporating the SEP into Facilities Management planning, operations strategies, tactics and daily operations. Secure commitments from all management levels and ultimately the entire organization.