

Cost Cutting in Utilities Can Be Supported Through Asset Investment Planning Tools

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Energy and utility companies are under significant financial pressure to do more with less because aging infrastructures are exceeding design life and driving up operating and maintenance costs, yet customer expectations continue to increase while available funding gets further constrained. Asset investment planning (AIP) tools provide consistent processes and methodologies for energy and utility companies to prioritize capital and maintenance spending to align with corporate strategies, giving business units and corporate officers common understanding of business risk impacts of cost-cutting initiatives.

Key Findings

- Cost-cutting initiatives complicate the capital and maintenance budgeting processes of utilities trying to improve the reliability and performance of aging assets.
- Most utilities leverage complicated and time-consuming spreadsheet analysis to provide a consistent methodology to evaluate and prioritize spending plans to obtain stakeholder and regulatory approvals.
- With spreadsheets being an inherently desktop tool, the content of these spreadsheet-based investment planning tools is usually the exclusive responsibility of one or two managers to the risk of the organization.
- Vendor-claimed utility case studies from implementing these tools show up to one-year payback from improved business performance and risk mitigation.

Recommendations

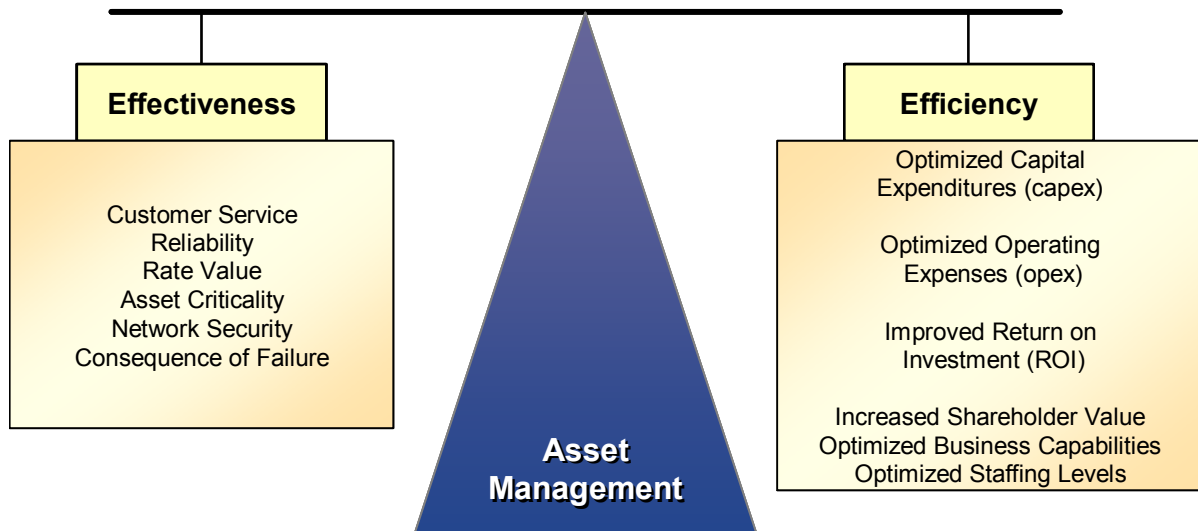
- Energy and utility asset managers, financial officers and regulators who want to leverage more-advanced asset management capabilities into their planning and budgeting processes should leverage AIP process and tools.
- Energy and utility companies should look to streamline and extend their analytical capabilities beyond spreadsheets to get more value out of limited capital and maintenance budgets by prioritizing spending plans by customer and business value, and clearly communicating associated risk arising from unfunded projects.
- CFOs and business leaders must ensure limited budgets create the best value. AIP tools can help streamline complexity; however, managing consistent methodology and business processes should be the priorities, even over buying AIP tools.

ANALYSIS

Overview

Energy and utility asset managers must effectively allocate scarce resources to provide higher levels of customer service and reliability while balancing financial objectives (see Figure 1). The most successful asset managers are able to communicate return on asset investment in terms of customer value and risk avoidance. Cost cutting, aging assets, aging workforces and changing performance drivers require utilities to get smarter in their investment decisions. Utilities need better asset analysis and investment planning tools to manage these conflicting objectives.

Figure 1. Asset Management Balancing Act



Source: Gartner (April 2008)

While a key part of asset management involves specific asset maintenance planning (see "Cost Cutting in Utilities Can Come From Better Asset Management"), this research focuses on how AIP tools can help ensure that utilities invest in the right things to meet their goals.

Analysis

The electric utility market is entering a phase where expansion and replacement requirements are being driven largely by asset age, condition and load growth. Complicating this phase are changes in regulations, the labor pool and financial market turmoil from the subprime mortgage meltdown. Utilities have the daunting task of maintaining investor confidence during a time of increasing capital, increasing load, increasing reliability requirements, an ageing workforce and increasing regulatory oversight.

Energy and utility companies need better tools and methods to streamline a very complex process. AIP is a process and software tool that:

- Provides analytics and reporting to support asset planning and budgeting over multiple years given financial constraints, performance obligations, and risk tolerances

- Prioritizes spending requirements to best meet business objectives within given budget constraints
- Supports evaluation of energy efficiency, demand response and alternative energy programs alongside traditional utility infrastructure capacity additions

The fundamental purpose of AIP is to optimize the investment performance over time — that is, the company-specific function of cost, profit, key performance indicators, risk and so on. A balanced scorecard is used by many companies as their performance objectives; others might focus on economic value added.

In cost-cutting environments, the tendency is to cut costs where it is easiest, by eliminating large capital and "greenfield" projects. However, these cost-cutting measures are often undertaken with little understanding of their effects on the long-term performance function. An AIP process provides insight into the effects that near-term decisions have on performance over time, and thus enables more-informed cost-cutting.

The current economic climate has many organizations more narrowly focused on cost cutting with a short-term view. There are many approaches to prioritization that span mathematical to process-based models. However, AIP ensures cost-cutting approaches balance cost, risk and performance over the life cycle of the asset to maximize "performance function" (and shareholder value).

Gartner provides several tools to support IT project prioritization and portfolio management that can be leveraged in this broader AIP discussion (see "Toolkit Presentation: Project Prioritization and Portfolio Management Starter Kit"). However, this research focuses on how IT can optimize business *and* IT investments. At the highest level, project prioritization and portfolio management (part of AIP) involves seven steps:

1. **Investment Class Definition:** The asset manager works with the CFO to define investment classes with characteristics that the business will regard as reflecting its priorities and interests. For example, new connections and line extensions, new supply resources, break-fix, delivery capacity increases, reliability improvement, other regulatory requirements, efficiency, modernization and obsolescence.
2. **Assessment Criteria:** Develop investment assessment criteria that are directly relevant to each investment class, and weight each criterion to reflect its balance against the other criteria. For example, safety would be highest, as would regulatory requirements, followed by financial returns on investment, efficiency, sales/revenue, market share, overall value, branding presence and market performance.
3. **Investment Spending Allocation:** Allocate the amount of available discretionary spending across the investment portfolios in a manner that best fits the strategic goals of the company. The actual allocation can be revisited in Step 6 to rebalance the investments (as necessary).
4. **Rank Current and Potential Investments:** At the business-unit level, investments in each class are force-ranked by value and importance. This step also incorporates a consistent risk assessment for each investment that would impede business performance improvement or regulatory requirement. Each investment in a portfolio is being compared on an "apples to apples" basis, using criteria tailored to that portfolio as defined in Step 2.
5. **Consolidate and Rank Investment Classes at the Corporate Level:** Requests for funding from different business units, which were force-ranked in Step 4, are now merged into

consolidated portfolios for each investment class category and ranked against other business units' projects.

6. Investment Class Cutoff Optimization: The result of Step 5 will be an identification of projects for which funding was available (that is, above the cutoff line) and those for which no funding was available. If this doesn't produce an optimal result, then relative rankings can be adjusted to move up a project to replace another, or the discretionary spending allocation by portfolio can be adjusted to remove funds from one portfolio and apply them to another.
7. Ongoing Investment Rebalancing: A change in business conditions could result in less spending being available at some point, or the business could change its strategic priorities and decide to increase its investment levels. This would result in a rebalancing exercise to reflect the new priorities.

Until now, many asset managers have had to manage complex in-house spreadsheets and custom databases controlled by only a few people who knew how to modify them to provide asset analysis. Spreadsheet analysis for such a complex and important process carries an inherent risk of change-control errors and security management. When it got right down to it, whoever yelled the loudest at the investment planning meetings seemed to get their pet projects approved. In a cost-cutting environment, this is no longer acceptable.

Utilities must shift from a discrete capital planning process to a more inclusive process that considers all asset investment plans simultaneously and over time. Automated tools are needed to effectively manage this complex process. AIP tools combine corporate financial considerations (debt, long-term value, strategic objectives and return obligations) with engineering asset management information on asset condition, real-time capacity limitations, and maintenance requirements. The AIP approach also incorporates operational information regarding reliability, outages and workforce planning. For greater agility, AIP solutions should interface with enterprise asset management (EAM)/ERP vendors to package solutions with existing utility implementations (see Note 1).

The idea of a systematic, metrics-driven approach to picking the right investments is very attractive, especially in large, complex energy and utility organizations. However, the results are never certain. Those considering AIP must realize that part of the process can involve a lot of judgment, assessment of risks and their probabilities, and other factors that consider environmental uncertainties. It all applies, even if AIP is implemented in a vacuum. Knowing that there are people in the process adds to the implementation difficulties. If certain pending investment plans are given a "yes" vote and are included in the portfolio, then others are receiving the dreaded "no." People don't like getting a "no" answer to something they want to do.

AIP results in more-objective budget decisions that involve the integration of financial, asset and labor strategies. But how can the value of good planning be quantified in terms of benefits? This is difficult, because it is unlikely anyone would look back and admit they would have made a different decision had they not implemented AIP tools. However, consider a typical utility in which the replacement cost of its assets is in the tens of billions of dollars. This typical utility will likely spend \$250 million annually on maintenance and another \$250 million on capital expenditures. Now imagine doing the majority of the planning work in a spreadsheet involving multiyear budgets and life cycle analysis for assets having a book life of 30 years or more. It gets very complex very fast, driving the need for better tools.

With appropriate processes and purpose-built technology, finance and business units can partner to build asset investment plans that balance performance, cost, and risk tolerances to maximize the value of the asset base, given organizational constraints. It requires a finance manager to partner with business unit leaders to:

- Leverage asset condition and performance data to identify multiyear investment needs
- Analyze trade-offs between opex and capex
- Optimize multiyear spending portfolios, given many attributes across many scenarios
- Develop and analyze asset-centric pro forma financial forecasts to ensure financial sustainability
- Qualify and quantify risk to enable risk management
- Standardize information and processes enterprisewide
- Improve decision transparency and communication

Cost to Implement

Costs to implement these approaches vary widely, but one large utility spent roughly \$500,000 (total of internal and external cost) to implement the process and AIP tool with excellent results. Cost variance depends on the level of integration with ERP and EAM applications, as well as the number and size of business units involved. However, the cost of the AIP tool is not usually the limiting factor of an AIP implementation. The limiting factor to a successful AIP implementation typically involves a large resource commitment of subject matter experts from the business to work through the tough process requirements and establish consensus on scoring methodology; and having an executive sponsor committed to the project and leveraging tools, data, and processes to drive results across the business. Business resources involved in these "special projects" typically have a "day job" responsibility that they must do concurrently; that often delays AIP initiatives and must be taken into account.

Potential Savings

The value of the AIP solution is primarily around managing and communicating risk. When cost cutting happens, the budgets will get cut one way or another. Past practices have ranged from arbitrary, across-the-board cuts, letting business units manage their proportional budget cuts, or worse, letting those that yell the loudest keep their project funding, which could mean the demise of a key project when the project manager missed the invitation to the budget meeting. This has led to less-than-optimal investment choices.

The true value of AIP is:

- Implementing a consistent process to ensure organizations make more rigorously and accurately informed investment decisions, encompassing multiple financial and nonfinancial attributes
- Better explaining and defending investment plans to key stakeholders in terms of risk mitigation and benefits, thus increasing the likelihood of acceptance
- Improving the efficiency of planning, budgeting and reporting processes
- Understanding that changes to budget funding levels can be quickly analyzed in terms of corporate risk and opportunity cost due to unfunded projects below the cutoff line
- Realizing higher ROI and overall performance from asset investments

AIP tools require a change in business process. It has become increasingly clear that the real value is the confidence in stakeholder planning, which, as an emerging market, can be challenging to quantify.

There are four utility examples of AIP benefits (most of which were provided by AIP vendors).

Prior to implementing AIP process and tools, a utility built its capital budget derived from a list of equipment replacement/overhaul activities prioritized using a linear programming approach to solve for multiple constraints across a single fiscal period. This meant equipment replacement was justified based on a series of constraints, but not based on the overall asset life cycle. The result was like-for-like equipment replacement costs were stranded because the field operations group had not been advised by the engineering group that a station was planned for significant upgrade.

Another major utility faced rapidly increasing operating and maintenance expenses in its generation business, as well as substandard plant performance. Working through an AIP process enabled the company to compare all capital and operations and management (O&M) investments based on their impact on shareholder value, cash flow, earnings, and enhancements to plant performance. The AIP project transformed the annual budget process, eliminated about 30% of the prior capital and O&M budgets, and increased plant performance during the past few years.

One utility prioritized capital and maintenance funding as separate investment streams. The lack of integration of labor resource requirements and the requirements for taking assets out of service consistently resulted in budgeted work programs not getting done within the fiscal year, and thus underspending the budget allocation (effectively losing several hundred thousand dollars) that could have been spent on other urgent needs. Consequently, the CFO lacked confidence in the business's ability to plan and execute its requirements, and thus permanently cut the budget in the following years. AIP enabled the business to submit a plan that balances life cycle investment needs with labor resources relative to operational and financial constraints, and provide sufficient details in its ability to execute to get the needed funding.

A final example: A utility required its engineering and asset management organization to provide scenario planning to prove its recommended optimal investment portfolio to its board, following a period of weak plan execution. The utility's board required the business to compare the recommended plan with 10 scenarios driven by alternative price forecasts, 10 additional scenarios driven by alternative spending portfolios, plus a stream of cases varying key financial indicators (such as debt/equity). The result was a requirement to present 120 cases, simply and logically, to nontechnical board members. With the previous spreadsheet method, a business analyst or engineer needed to link worksheets from 150 different Microsoft Excel files, an effort that would have taken 1,900 hours. Using AIP tools, the setup, reporting, analysis and comparison of all 120 cases took a total of 13 hours — less than 1% of the prior process. For simplicity, if we assume fully loaded utility labor rates of \$100 per hour, this exercise alone saved the utility \$178,000 in labor costs and months of delay in getting the budget approved.

RECOMMENDED READING

"Cost Cutting in Utilities Can Come From Better Asset Management"

"Cool Vendors in Energy and Utilities, 2007"

"Toolkit Presentation: Project Prioritization and Portfolio Management Starter Kit"

"Re-energize Energy and Utility IT Investments With Enterprise Information Management"

Note 1

Energy and Utility AIP Sample Vendors

Axia Software (www.searchsolvescore.com) — Reveal: Axia Software formally launched Reveal in January 2008 on a modern IT platform that goes beyond some other AIP tools by incorporating

asset health assessment engineering attributes into the AIP prioritization analysis. Reveal uses Axia's Search, Solve, and Score process to complement utility EAM and mobile workforce management tools. Reveal's integration with specific asset condition, maintenance and historical performance data helps identify and communicate the core financial and asset management issues into a common tool.

CopperLeaf Technologies (www.copperleafgroup.com) — ESP: Featured as a Gartner "Cool Vendor" in 2007, ESP provides the analytics and reporting to support planning and budgeting of expenditures over multiple years given financial constraints, performance obligations and risk tolerances. ESP is Web-based, using n-tier architecture ASP.NET, with Oracle or Microsoft SQL Server databases. CopperLeaf provides application programming interfaces (APIs) to popular EAM/ERP suites and also supports Web services and nonproprietary XML interfaces to collect asset data and push work programs.

Davies Consulting (www.daviescon.com) — Asset Investment Strategy (AIS): AIS is a Web-based asset management portfolio optimization decision-support tool, integrated to other applications to optimize investment portfolios within or across utility business units, including: Electric Distribution, Transmission, Power Supply, Customer Care, Gas, Water, and Business Services (such as IT, HR, fleet and facilities).

Navigant Consulting (www.navigantconsulting.com): Navigant supports utility clients to develop processes and Excel-based tools for economic evaluation of capital investments and prioritization of capital decisions across a portfolio of utility assets. Navigant provides strategy, implementation planning, and implementation assistance for optimizing the balance of utility asset physical condition, operating performance, and financial (such as capital and O&M) decisions related to utility company assets (primarily generation and energy delivery business units or enterprisewide).

Strategic Decisions Group (www.sdg.com): SDG works closely with utilities to redesign their budget allocation processes and build specific tools to compare all capital and O&M investments based on their impact on shareholder value, cash flow, earnings and enhancements to performance.

UMS Group (www.umsgroup.com) — Portfolio Optimization Process (POP): POP is a process and a custom Excel tool deliverable. UMS Group consultants facilitate utility executive leadership and planning groups in aligning overall strategic objectives of the enterprise and development of a set of project and program scoring matrices that underpin the optimization process. These outcomes are the foundation for the customization and delivery of a constrained optimization tool to allocate scarce financial resources.

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