10 CAPITAL PLANNING BEST PRACTICES
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Financial Constraints are Tightening
Technical Experts are Retiring
Stakeholder and Performance Expectations are Increasing
Core Infrastructure and Assets are Aging
Introduction

Effective capital planning is crucial for organizations in asset-based industries – including energy, electric utilities, water, transportation, resources, government and healthcare. Aging assets and workforces coupled with the cost and availability of capital are making effective capital planning critical, today more than ever before.

Historically, organizations focused on near-term cost control to ensure short-term earnings were met by minimizing operating and maintenance spend and hitting capital spend targets. Today, the focus is on bringing together the asset life cycle costs with the long-term value of assets, ensuring a holistic approach to planning that drives analysis and communication around the key issues of:

- Risk Management
- Allocation of and trade-offs between operating and maintenance expenditures (opex) and capital expenditures (capex)
- Multi-year multi-attribute spend optimization
- Decision transparency and communication
- Governance over investment decisions and their implementation

The “Squeeze Play” is occurring and organizations must determine how they can do more with less. Stakeholders expect lean investments and more transparency while delivering reliable service to customers. Customers demand increased service levels for low cost, but the technology required to achieve it means significant investments. The existing infrastructure is aging and sustainment investments are expected to grow along with increasing growth from new service demands. Retirements and the limited availability of a skilled workforce is reducing the capacity to execute the work and driving the need for knowledge systems to capture and proliferate the corporate expertise.
By their very nature, asset-centric organizations invest for long term value creation therefore it is essential that they plan for the long term. A risk-based asset investment planning and decision-support process that considers all investments in the asset base simultaneously over the long term can optimize the allocation of resources to achieve your performance objectives within constraints. The more lead time you have in discovering the needs of the asset base the more time you have to mitigate the risk in cost effective ways.

The use of analytics to develop and justify the recommendations, and provide transparency and auditability of the decision process, will support overall corporate performance. An enterprise-wide solution that delivers consistency and enables collaboration among finance, operations and engineering can improve employee engagement.

A direct line of sight from your strategic objectives to the planning of those investments that support your corporate goals, and a closed loop approach to assess the performance of those investments as they are operating, can ensure you are always utilizing your resources in an optimal way and continuously improving your performance.

This integrated and holistic approach is referred to as Asset Investment Planning and Management or AIPM. This white paper outlines 10 best practices to achieve effective asset investment planning and management strategies.
Challenges

The role of the CFO has evolved far beyond financial reporting and data stewardship. According to the IBM report, “IBM 2010 Global CFO Study Reveals Surprising Results”, based on a study of over 1,900 chief financial officers (CFOs) and senior finance executives from 81 countries and 35 industries world-wide, reveals that more than 60 percent of CFOs plan major changes to respond to the new economic climate. (IBM 2010, Global CFO Study).

“Never before has the importance of strong finance capabilities been highlighted more than during the recent global economic downturn” said William Fuessler, global leader, financial management, IBM Global Business Services. “Our study shows that CFOs are expected to provide fact-based leadership and strategic decisions grounded in sophisticated analysis to help navigate the enterprise through these new economic waters.”

Value Integrators: “One group of CFOs, dubbed “value integrators”, were found to consistently out-perform their peers in all key financial metrics by driving two key quality areas across their organization:

- Finance efficiency – the degree of common process and data standards across organization
- Business insight – the maturity level of Finance talent, technology, and analytical capabilities dedicated to providing business optimization, planning and strategic insights

Aging assets, growing customer demand, constrained capital, legislated accountability frameworks and performance requirements, are just a few of the additional challenges facing CFOs in asset-based organizations. For asset-intensive organizations, effective asset investment planning and management has become pivotal in ensuring effective performance, growth, and risk management. The drive for common frameworks in decision support, and for asset analytics and optimization are encapsulated within AIPM.

AIPM drives:
- Adherence to a common strategic framework and process across the financial, operational and engineering communities
- Empowerment of finance, operations and engineering to communicate in a common language to express the risks and rationalize how to deliver on corporate objectives
- Integration of both data and knowledge to motivate informed and sound decision making;
- The use of predictive analytics to provide business insight into the needs of the asset base now and into the future.

This improved risk-informed decision-making, with respect to asset investment, focuses the organization on delivering reliability at the levels required to meet corporate objectives, and reduces risk leading to better overall corporate performance through comprehensive and transparent decision-making.

VALUE INTEGRATORS: IBM 2010 GLOBAL CFO STUDY

Value integrators have found a way to excel and navigate an uncertain economic climate. The study indicates that enforcing process and data standards, integrating information, and applying business analytics are key capabilities that enable improved business insight and risk management. In fact, when compared to peers, their enterprises outperform on every financial measure assessed including return on invested capital (ROIC).

Since value integrators enjoy proportional representation across various dimensions of the data sample, their performance signals better practices, and are not just a consequence of industry, geography or company size. Their finance operations reflect a pervasive corporate philosophy that encourages integration across functions to make smarter decisions that lead to better overall performance.
ROI: Risk-inform, Optimize, Integrate

Adopting asset investment planning and management best practices can create an integrated planning process focused on the needs of the asset-base relative to financial and organizational goals. It can drive opportunities to maximize asset value and empower CFOs to:

- Make better fact-based decisions based on integrated information
- Make better risk-informed decisions based on objective information
- Enhance growth and insights by partnership within the enterprise
- Optimize capital investments with improved asset performance insight
- Improve risk management, transparency, and governance

Effective asset investment planning requires the integration of financial strategies with asset investment strategies and strategic corporate objectives. With appropriate processes and purpose built technology, finance and business units can partner to build asset investment plans that balance performance, profitability, and risk tolerances to maximize the value of the asset base. It requires that finance partners work with business unit leaders to:

- Leverage data to identify multi-year investment needs
- Analyze trade-offs between opex and capex
- Optimize multi-year spend portfolios given many competing objectives, constraints and 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 enterprise-wide
- Improve decision transparency and communication

PAS 55 and the upcoming ISO 55000 asset management standard require an organization to embrace concepts inherent in AIPM. The harmony with PAS 55 encapsulates the best asset management practices including AIPM’s:

- Holistic approach to planning for the asset’s lifecycle
- Risk-based decision support focused on developing an optimal approach to funding and risk trade-offs
- Rigorous and systematic method for standardizing data, metrics and business case development
- Focus on closing the loop to provide for continuous improvement within an integrated environment.

Combining the best practices in asset management as defined in PAS 55, and the lessons learned in the IBM 2010 Global CFO Study, top performers in asset intensive industries are adopting AIPM solutions to:

- Risk-inform their decisions,
- Optimize the value of their asset base, and
- Integrate planning and management across their enterprise

**ROI: RETURN ON INVESTMENT**

A performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. To calculate ROI, the benefit (return) of an investment is divided by the cost of the investment; the result is expressed as a percentage or a ratio.
10 Capital Planning Best Practices

Best Practice #1 – Align to Corporate Strategic Goals

Asset investment planning and management aligns the use, care, investment, and disposal of physical assets with financial strategies, corporate objectives, and the business environment. It requires that an organization articulate the intent and value of productive assets within the context of the overall strategic direction of the organization.

Most organizations are well skilled at stating their goals. Equally true, many organizations are good at stating constraints, such as “We have only $100 million in capital spending available this year”. However, few are good at explaining the rationale behind the constraint. More importantly, fewer are good at articulating the effects on performance targets of changing the constraints. For instance, how many have analyzed the effect on long-term performance of increasing the O&M budget by 12% in one year to reduce backlog maintenance, where performance may include measures for shareholder return, risk exposure, availability, reliability, safety, and others? Understanding the factors that influence an organization’s ability to achieve its goals given its constraints provides insight into the risks of achieving these goals.

Best Practice #2 – Asset Lifecycle Integrated Planning

Long-term planning in most asset-intensive organizations usually consists of a strategic plan that speaks to the expected business objectives around financial return, customer satisfaction, safety, and the environment. Near-term planning in most asset-based organizations consists of a multi-year list of capital projects, a separate multi-year list of operating and maintenance activities, another separate view into administrative costs and finally a forecast of head count requirements. Frequently, these lists do not explicitly focus on the most important part of the business: the assets and how investment choices support the business’ objectives.

To ensure good capital investment decisions are made, organizations need to shift from discrete and separate planning activities to a holistic activity that seeks to model the asset base relative to the operating environment and long-term organizational objectives.

A critical step towards maximizing the value of the asset base is profiling the productive capabilities and health of existing assets relative to business objectives, asset intent, and market conditions. Finance needs to understand the value proposition of the asset base to minimize the risk of stranding investments, maximize the allocation of all resources, and increase the likelihood of achieving corporate goals.

CASE STUDY: BC HYDRO GENERATION

“We manage 34 generation facilities and needed to develop long-term plans for each one. That meant implementing asset management practices for all facilities as a whole, rather than making individual investment decisions at individual generating Stations.”

Drew Dunlop
Manager of Strategic Asset Management
BC Hydro Generation
Best Practice #3 – Make Risk-Informed Decisions

Decision-making needs to be grounded in fact and tied to the strategic goals of the organization. Understanding what risks are inherent in the asset base and which have the largest impact on the corporate goals over the long term is critical to make a determination on how scarce resources should be allocated to optimize outcomes across the enterprise.

Since this must be undertaken with rigor and discipline, the organization must work together to develop a consistent risk analysis approach enterprise-wide to assess and characterize the risk of asset failure. Analytics should be used to predict the risk of failure over the asset life cycle for each asset, and initially for critical assets. The corporate appetite for risk in terms of, for example, service interruption, safety and environment, needs to be determined and used to optimize funding approaches that meet these tolerances.

Creating a rigorous risk-informed decision culture, aided by standards, process and supporting tools, delivers the highest level of business insight and organizational performance to drive your business execution.

Best Practice #4 – Standardize Data & Metrics Enterprise-Wide

For corporations to effectively and efficiently manage the asset base, they must have access to standardized reports and centralized information. They must establish a governance structure to help drive enterprise-wide adoption of common information standards, data sources, processes, frameworks and aligned values. Process controls are needed to ensure the accuracy and integrity of financial data required for fact-based decision making. You must to break-down information silos between business units and/or geographic boundaries to make effective operating and strategic trade-offs for funding across the organization.

Finance and business unit leaders need to partner to gather, integrate, interpret, and convey data on corporate assets using common units, assumptions, and constraints.

Best Practice #5 – Add Rigor & Discipline to Decision-Making

Understanding organizational goals around sustaining, divesting, or growing the business is important. If the goal is to sustain the business, organizations must determine what investments are required in the asset base to ensure financial return and performance objectives are achievable within constraints and risk tolerances. However, if the objective is to grow the business, not only does investment in the existing asset base need to be considered, it is also important to consider growth investments. As with sustaining goals, trade-offs must be analyzed to ensure financial return, performance objectives, and risk tolerances are evaluated. Even more challenging, the organization must make trade-off decisions across multi-lines of business with sustainment and growth objectives.

Then, given the goals of the organization, there is a need to prioritize investments over multiple years within constraints and tolerances. Prioritization is achieved through multiple processes: including (1) ratings and rankings, (2) mathematical optimization, and (3) the evaluation of multi-year financial impacts. Analytics facilitates trade-offs between O&M and capital plans over time. The analysis should also include implementation risk and tracking of progress towards project milestones and accomplishments. Non-financial impacts that may be important to the organization - such as staffing levels, safety effects or environmental impacts - should also be considered. Finally,
sensitivity and scenario analysis allows the robustness of portfolio recommendations to be evaluated relative to changing input variables and assumptions.

These analytical approaches must be backed up by a documented and prescriptive stage gate process for reviewing and refining potential investments and the business cases justifying them indicating how they contribute to the corporate objectives. Peer review of this process helps to ensure compliance and enhance rigor, as well as foster employee engagement.

Developing a rigorous and disciplined process to document and evaluate investment priorities improves communication as to why decisions are being made, increases understanding and acceptance, and improves the likelihood of success in execution.

**CASE STUDY: NORTH AMERICAN HYDRO GENERATOR**

Managing 31 hydro generation facilities is a challenging task. Our integrated decision support platform for corporate long-range planning to on-the-ground management of assets and projects has enabled us to improve our execution ability 20-30%.

This has been driven, in part, by employee engagement enabled by this integrated platform and transparent approach. Looking at the long-range planning horizon has provided more time to evaluate efficient alternatives in deploying capital to mitigate risk in the asset base.

**Best Practice #6 – Improve Governance**

Fundamentally, governance drives process control and accountability to ensure actions are taken in the interests of the company and shareholders. In asset-intensive organizations, governance should also focus on ensuring the performance of the asset base. This requires leadership, organizational structure, and processes to ensure assets are managed in a manner that sustains and supports near and long-term organizational strategies and objectives, and furthermore, that these processes can be audited to ensure compliance.

It requires consistent, deliberate, and disciplined planning processes that extend far beyond typical annual budgeting. It necessitates a multi-year approach that ties asset capabilities to revenue requirements, to investment requirements, to shareholder obligations, to risk tolerances and to strategic direction over the expected life of the asset base. From this perspective, capital planning is an integral discipline within the larger process called asset investment planning and management.

Effective governance around the planning process cannot be achieved if the traditional information silos remain and if accountability remains focused on the “annual budget”. Effective asset investment planning and management requires the finance organization to partner with business unit leaders to drive the adoption of common controls and standards, so that processes are repeatable and transparent, demonstrably aligned with strategy, with accountability clearly articulated, and are auditable.
Best Practice #7 – Ensure Transparency

The influence of legislation, such as Sarbanes-Oxley, has increased the level of rigor that must be followed for financial processes, including planning. Furthermore, the information age has given today’s stakeholders knowledge and power. CFOs are more agile with the ability to easily acquire information, but stakeholders benefit from the same access to information. Given the opportunity, stakeholders are not only asking, but in certain situations are entitled to understand why certain decisions are made in favor of other decisions. A clear line of sight from strategic objectives to investment decision-making and delivery on expected benefits is critical to support the communication requirements of stakeholders such as shareholders, directors, customers, and regulators.

Effective asset investment planning and management processes create a common decision framework and business case management process ensuring that investment and risk analyses are completed in a consistent and repeatable manner. It also ensures decisions are aligned to the organizational strategic goals.

Finance organizations that enable consistency, repeatability, and alignment in the decision making process are able to communicate to all stakeholder groups the rationale for decisions in a manner that is understandable (transparent). The result is an increased likelihood and speed of acceptance of plans and improved stakeholder confidence and trust. Buy-in will also deliver faster and higher quality execution of the plans which is vital to corporate performance.

CASE STUDY: NORTH AMERICAN HYDRO GENERATOR

Our industry must move towards more transparency and accountability. AIPM has helped us determine how much risk we are taking, how much risk we should take and when to intervene. Optimizing our approach, with the ability to justify our decisions, has improved our ability to perform our job.

Technology today has created a data rich environment while we face reduced margins and funding levels. Trillions of dollars of re-investment decisions are being made around the globe which can be optimized and produce enhanced outcomes by the use of AIPM solutions.

Best Practice #8 – Close the Loop

Developing optimized plans based on a sound foundation of facts and associated analytics tied to corporate objectives provides the best approach to meeting the needs of the organization. But that is just the beginning. The review and analysis of performance all along the way, and the determination as to whether the expected outcomes have been met – is the only way to provide feedback for continuous improvement.

Typical organizations may create a risk-informed fact-based plan based on a rigorous approach, but then “lose continuity” once the implementation has begun. Performance of the projects isn’t or cannot be tied back to the originating business cases and the corporate contributions they were supposed to achieve. The feedback loop gets disconnected in the transactional systems which usually focus on the current budget year. Tying the results back to the funding decisions and business case justification is critical for understanding the execution ability and resilience of the organization. It’s the only way to significantly refine and improve investment decision-making and to
holistically measure your asset investment acumen across the whole organization. This provides the ability for you to make corrections to the plan using a risk-informed optimized approach during the operating period helping you to track more closely to the objectives and benefits you were trying to achieve. Closing the loop is the only way to continuously refine the application of your business insight and risk management methodologies which are the building blocks for exceptional performance.

**Best Practice #9 – Improve Communication Enterprise-Wide**

Asset investment planning and management success requires effective communication between corporate finance and operating groups. Many asset managers recognize that understanding asset conditions and capabilities are prerequisites to good planning, but often cannot translate the impacts of asset health into terms meaningful to financial management or other external stakeholders.

Using analytic approaches can bridge this gap and improve confidence in asset management decisions. Asset investment plans should therefore explain why a proposed portfolio of investments is the most appropriate course of action for an asset portfolio and explain operational issues in non-technical terms. Financial statements for an asset group can be used to explain both short and long-term impacts to financial performance, and a risk matrix can provide a straightforward view of risk exposure.

Effective asset investment planning thereby improves communication within the organization. The “Asset Plan”, a typical outcome of an asset planning cycle, provides a succinct explanation of the drivers and constraints affecting the operation, maintenance, and investment in a group of assets. As such, the plan helps develop a shared understanding of targets, strategies, and constraints, which in turn promotes alignment of priorities and is directly linked to execution and employee engagement.

**CASE STUDY: BC TRANSMISSION**

BC Transmission was faced with annual regulatory applications for the approval of its capital investment plans. The Corporation routinely received some disallowance by the regulator of its proposed replacement (sustainment) capital program.

Asset managers first responded by reducing their programs when the aging infrastructure actually required increased investment. The Utility then responded by developing a strategic sustainment investment model that projected asset investment needs for the next 10 decades.

The results were presented to the regulator and demonstrated that the investment level actually needed to increase for the first 5 decades. The regulator accepted this strategic view and subsequently approved requests for increased capital funding.
Best Practice #10 – Use AIPM Technology

Effective asset investment planning and management requires a high degree of data management and analytics. A number of technology packages support this approach, including:

- **Enterprise Resource Planning (ERP) software** to track current year budgets and actual costs, and to provide historical financial information
- **Enterprise Asset Management (EAM) software** to manage work such as maintenance programs, and asset-specific data
- **Asset Investment Planning & Management (AIPM) software** to provide a system of record for planned investments, the associated risk and facilitate modeling, sensitivity analysis and optimization, and produce financial and risk management reports

Financial (ERP) and asset management (EAM) systems are immediate term and historically-focused transactional systems that are better designed to control costs than to provide insight into the long-term value of assets. Asset Investment Planning and Management software is a critical component of the enterprise landscape in achieving best in class practices and complying with PAS 55 and other developing standards for Asset Management. It:

- Provides a single and multi-year repository of planned, and proposed asset investments without the need to create projects and work orders in the transactional systems
- Provides a single modeling framework using common assumptions that can be used for discounted cash flow analysis
- Provides a view to the organization’s current and future risk exposure and provides the framework for cost-risk trade-offs
- Facilitates the analysis of alternative investment scenarios ranging from individual projects and programs to entire investment portfolios and across multi-lines of business
- Provides visibility into the impacts of investment scenarios on financial, and non-financial outcomes
- Enables long term cost-risk trade-offs to arrive at an optimized, evidence-based investment plan
- Strengthens the line of sight between business strategy, budgets, and the work plans used to execute them
- Manages sustainability of the asset-based business
- Integrates decision-making data from multiple systems or organizations making it possible and efficient to create plans that drive the corporate objectives

**Historically, AIPM solutions have been modelled around point solutions, not integrated enterprise solutions, and likely have been supported by a myriad of spreadsheets. These solutions limit the effectiveness and efficiency of the approach and therefore the outcome. AIPM solutions, such as C55, are available today that can deliver exceptional results and focus your organization’s energy on the most important contributor to success: knowing where to spend each dollar to achieve your corporate objectives!**
About C55

C55 is the industry leading Asset Investment Planning and Management solution that improves your organization’s ability to:

- Improve the visibility of your long-term spending requirements
- Identify impact on profitability, operating performance, and risk
- Increase the effectiveness of your resource allocation and asset investment decisions
- Increase the efficiency of your planning process
- Strengthen the execution of your plan and performance tracking
- Enhance your ability to communicate and defend decisions, both internally and to external stakeholders

C55 is a purpose-built, enterprise-wide, asset investment planning and management solution that supports an asset-based risk-informed approach to budgeting and asset planning. It connects disjointed processes with a single tool for investment portfolio identification, asset analytics, financial and performance modeling, budgeting, and variance analysis.

C55 is a multi-year, multi-user web-based enterprise solution that captures future spending requirements and opportunities. It allows comprehensive plans to be created while avoiding the problems inherent with managing organization-wide spreadsheets models or creating work orders and project IDs for planning. It enables the trade-off of cost and risk dynamically to aid in evidence-based decision-making, transparency and arriving at an optimal plan.

Financial leaders can quickly assess portfolios of investments and maximize the value of assets for their organization. Investment candidates are identified based on asset health. Investments can also be valued based on risk, financial and non-financial aspects of performance.

C55 builds on the technical foundation of asset management, asset analytics and financial modeling to facilitate types of analysis not otherwise possible. C55 captures and reflects both executive and stakeholder perspectives, it improves the quality of decisions, and enhances enterprise-wide communication. Ultimately, this maximizes the value of asset management programs and instills stakeholder confidence.

Contact Copperleaf Technologies

CopperLeaf Technologies provides thought leadership and the enabling technologies to improve the performance of energy companies and utilities, transportation, government, and other asset intensive organizations. Contact us today to learn how CopperLeaf’s C55 can help support your long-term asset investment planning success.