



NUCLEAR PLANT COST REDUCTION SERVICES



**Helping Nuclear Plants Stay Competitive
and Create Value by Reducing O&M and
Capital Costs**

MCR NUCLEAR PLANT COST REDUCTION SERVICES

MCR provides cost reduction support to nuclear generation plants operating in both regulated and competitive markets. Our clients all share a common goal: reduce and control costs to compete with other generation sources. We are the industry experts in reducing nuclear costs and offer many services including the following:

Risk-Informed Budgeting

- ✓ An analytical approach to optimize spending that challenges the status quo.
- ✓ Budget owners are required to justify all budget requests based on incurred risk of non-funding.
- ✓ A “challenge process” using a peer review method to assess each budget line item and determine the ability to adjust the amount and timing of each expenditure.
- ✓ Typically produces reductions of 10%–15% from routine budgets.

Capital Project Evaluation

- ✓ A unique capital project evaluation, business case development and approval process to optimize capital expenditures through risk valuation.
- ✓ Communication of spending objectives to link project business cases to overall plant spending targets and ensure selection of the most cost-effective solutions.
- ✓ A scoring method for the Executive Review Team to apply business case results to prioritize each project in the portfolio.
- ✓ Typically produces reductions of 20%–30% from originally proposed spending.

Process Improvement

- ✓ An exhaustive examination of equipment reliability, work management, maintenance, long range business planning and budgeting process integrations.
- ✓ Plans are developed to implement recommendations, enabling the realization of savings from proven opportunities.
- ✓ Opportunities for total savings of 10%–25% of O&M and capital.

Staffing Optimization

- ✓ An analytical approach to develop a comprehensive understanding of work performed at a station.
- ✓ Identification of key tasks performed by plant personnel and quantification of resource usage associated with each task.
- ✓ A senior management “challenge review” provides station leadership with a detailed view of work being performed at a station.

MCR'S APPROACH

MCR uses a collaborative approach for all our cost reduction engagements. Our focus is simple: find and generate value for our clients. Before starting an assignment, we invest the time to understand our client's unique situation and issues.

Cost reduction is a difficult task and can lead to uneasiness throughout the organization if not managed properly. MCR collaborates with our client teams to find cost reduction opportunities together and achieve the common goal of continuing to operate the plant safely and reliably. We provide expert facilitation and support; we believe knowledge transfer from MCR to our clients is critical for success.



ACHIEVING SIGNIFICANT O&M REDUCTION WITH RISK-INFORMED BUDGETING

As MCR has previously noted, utilities are facing increasing cost pressure. Despite growing demand and high reliability expectations, utilities are expected to limit rate increases. Utilities are left with no simple options to manage these conflicting objectives and still maintain strong profitability and returns.

To address financial pressures, utilities frequently look to traditional cost-cutting methods: flat percentage or across-the-board budget cuts, staff reductions, or deferred project spending. While these traditional methods may achieve some results, a more analytical approach to optimize spending will help ensure the right funding is applied to the right efforts at the right time.

Risk-informed budgeting (RIB) is an analytical approach in which the timing, amount, and consequence of every budget line item is challenged. In our experience, an effectively implemented RIB program can produce 10% to 15% savings in routine budgets, even after implementing other cost reduction initiatives.


The Deficiencies of Traditional Budgeting

Traditional budgeting typically relies on an incremental approach—the prior year's budget is accepted as a baseline, and percentage increases or cuts are used to meet financial goals. This approach is easy to implement and repeat annually, often through executive-mandated reductions applied uniformly across the organization. The results are typically superficial, and executives often feel they left something on the table. Compounding the issue, the lack of detailed review institutionalizes an assumed base level of spending. As a result, recurring spending becomes part of the operational budget paradigm, and overspending is perpetuated from year to year.

Risk-Informed Budgeting

At its core, RIB, based on MCR's approach to zero-based budgeting, requires budget owners to provide risk justification for all budget requests. In contrast to traditional incremental budgeting, which continues

» [View our Risk-Informed Budgeting white paper](#)



RECONCILE SAFETY AND RELIABILITY WITH COST: A PROVEN APPROACH TO OPTIMIZE PROJECT SPENDING AT NUCLEAR POWER PLANTS

Most nuclear plants require a business case before a significant project is approved. However, these business cases often just go through the motions to justify the desired project, resulting in higher-than-necessary budgets and displacement of other important projects.

A successful project review process requires an active executive team and robust business cases to quantify alternatives and evaluate cost-risk trade-offs. This process helps ensure power plants meet their reliability goals in cost-effective ways. Moreover, when led by senior plant management, this approach can produce cost savings of over 50%, reducing the strain on power plant capital and operating budgets.

MCR assists nuclear plants by teaching techniques to prepare robust business cases with creative alternatives that quantify reliability and financial risk. These previously unavailable insights empower the executive team to confidently make the best decisions.

The Case for Business Cases

Nuclear plants often have more projects than budget. As one Site Vice President said, "I have no shortage of high net present value projects I can do... I do, however, have a shortage of money to accommodate those projects and still make my business plan goals."

Ninety-six percent of U.S. nuclear plants are at least 30 years old (see Exhibit 1). As these plants continue to age, capital and O&M budgets will face additional pressure to maintain reliability. To address this increasing pressure, management needs to plan projects to increase reliability in the most cost-effective manner possible. Robust business cases with quantitative comparisons of alternatives, considered in a well-thought-out process, provide the following benefits to utilities:

- Wise project budget spending.

» [View our Project Valuation white paper](#)



PROCESS IMPROVEMENT: IDENTIFYING THE MOST ELUSIVE SOURCES OF COST

Every nuclear plant is a multifunctional organization where a variety of disciplines all work together using complex processes. As most industry professionals know, these processes can break down, yielding churn and wasted funds. Everyone in the organization has their own thoughts on why processes degrade. These varying opinions make it difficult to identify causes, how can executives get the whole picture to remedy the issue? The reality is that each perspective is just one drop in a wider sea of data. When the data are collected and analyzed, the causes of process inefficiency become abundantly clear. A process assessment using data-driven analysis can provide targeted justification for a performance improvement strategy. At a minimum, it may validate preconceived notions of improvement needs, confirm strategy, and identify costs stranded in inefficient processes. At best, it can lead to a paradigm shift in performance strategy and initiatives, based on aggregated ground-level data combined with industry best practices, with a corresponding reduction in costs.

Scoping the Assessment

Process improvement initiatives in nuclear settings typically focus on core business processes that are significantly integrated and interdependent. Typical characteristics of these core processes are as follows:

- They each have their own requirements, but their output and ultimate success depend on how well they interface with each other.
- They are prone to unnecessary steps, missed handoffs, duplication of efforts, excess resource consumption, and less-than-optimal results.
- They require analysis of all aspects of process requirements, design, and performance.
- Cost and staffing benchmarks provide excellent guidance to help identify problem areas.
- Financial and non-financial performance indicators provide additional insight.

» [View our Process Improvement white paper](#)

Through our consulting assignments, we have helped our clients realize savings totaling billions of dollars.

RISK-INFORMED BUDGETING

WHAT WE DO:

We use Risk-Informed Budgeting to reduce operations and maintenance expenses. During the engagement, we guide the station's cost center owners through our Risk-Informed Budgeting process. Using our cost analysis templates and database, we work with the cost center owners to analyze, challenge and risk rank every line item in the budget. Based on the risk ranking, we identify costs that could be reduced or eliminated from operations. Reflecting the cost reductions, the revised budget is consolidated and reviewed with the station's management team.

Our Risk-Informed Budgeting engagements typically identify opportunities to reduce non-labor O&M costs by 10%–15%, savings that repeat annually. In addition to the savings, the new budget plan includes a justification of every expenditure and a better understanding of the potential risks of not funding any specific budget line item.

WHAT OUR CLIENTS ARE SAYING:

"In just this year alone, the MCR project results have yielded \$8.7 million (10%) in non-outage related savings that will be repeated year after year. Our goal is to achieve cost performance on par with the number one performer for our plant size. If we keep working on these initiatives, if we're not number one, we'll be pretty darn close."

—Chief Nuclear Officer



CAPITAL PROJECT EVALUATION

WHAT WE DO:

We use Capital Project Evaluation to optimize capital spending. MCR works with our client's engineering and business personnel to develop business cases for selected projects. Each business case includes identified alternatives and quantified risk through sensitivity, breakeven and probabilistic risk analysis. A key measure of success is the development of robust project alternatives with dollar and percentage savings from the baseline budget for the selected projects.

Coordinating with client's staff, we develop business cases for capital projects and provide "hands-on" training on the approach.

The training is supplemented with a desktop evaluation guide to document the

business case process and to institutionalize the approach. Our capital project evaluation engagements typically result in savings of greater than 20% of the original budgeted amounts, exceeding the client's investment in the engagement by a factor of 40x.

WHAT OUR CLIENTS ARE SAYING:

"Over the past seven years, we have formalized a process around using the MCR project evaluation methodology and tools, and have applied it to our entire fleet."

*—Nuclear Fleet
Project Evaluation Manager*



PROCESS IMPROVEMENT

WHAT WE DO:

MCR reduces resource requirements to implement the most complex nuclear processes through application of advanced process improvement methodologies. Using best practices documented over two decades and supported by industry standard processes, we thoroughly examine the organization's process implementations to identify and validate improvement opportunities.



Our exhaustive examination of equipment reliability, work management, maintenance, long range business planning and budgeting process integrations create an unprecedented level of substantiating detail leveraged to clearly identify improvement opportunities otherwise shrouded in complexity. Thousands of analysis comments become hundreds of observations and dozens of recommendations. We develop plans to implement recommendations enabling the realization of savings from proven opportunities.

Typical savings areas are:

- ✓ Reduction in outage and online spending
- ✓ Staffing optimization
- ✓ Capital spending
- ✓ Forced loss rate

Our expectations for total savings opportunities are in the range of 10%-25% of O&M and capital.

WHAT OUR CLIENTS ARE SAYING:

“The MCR team has a great balance of plant and industry experience. Not many consultants truly understand the culture of nuclear like MCR. They worked great as a team and gave us a ton of information supporting process improvement that is still being referred to a year after project completion.”

—Nuclear Fleet Director of Finance

STAFFING OPTIMIZATION

WHAT WE DO:

We use Staffing Optimization to reduce and realign operations and maintenance expenses. Our approach is designed to address the challenges of maintaining plant safety and reliability, identifying work at a level of detail that allows for well-considered staffing reductions and determining the proper ratio of in-house vs. contract resources.



Our Staffing Optimization engagements provide a deep, introspective examination of the work done at the plant and why it is important. It looks at how employees are actually spending their time as opposed to what their job descriptions say should be the case. This approach leads to actionable results with specific magnitude, timeline, assigned responsibility and commitment. Potential actions include redeployment of resources, reclassification of job descriptions, termination of contracts, and support for plant strategies and initiatives.

WHAT OUR CLIENTS ARE SAYING:

“When you’re sick...you go to the doctor. When your company is ailing, you bring in the experts.”

—Chief Nuclear Officer

FOR FURTHER INFORMATION ON THESE SERVICES, PLEASE CONTACT:

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