IN THE MATTER OF the *Public Utilities Act*, R.S.N.L., c.P-47 (the "Act")

And

IN THE MATTER OF capital expenditures and rate base of Newfoundland Power Inc.;

And

IN THE MATTER OF an Application by Newfoundland Power Inc. for an order pursuant to Sections 41 and 78 of the Act:

1. approving its 2012 Capital Budget of $77,293,000;
2. approving certain leases to be entered into in 2012;
3. approving certain capital expenditures related to multi-year projects commencing in 2012; and
4. fixing and determining a 2010 rate base of $875,210,000

To Board of Commissioners of Public Utilities

Suite E210, Prince Charles Building
120 Torbay Road
P.O. Box 12040
St. John's, NL A1A 5B2
Attention: Ms. G. Cheryl Blundon
Direct of Corporate Services & Board Secretary

SUBMISSION OF THE CONSUMER ADVOCATE NEWFOUNDLAND POWER'S 2012 CAPITAL BUDGET APPLICATION

INTRODUCTION

1. Section 41 of the *Public Utilities Act,* RSNL, c. P-47 (the "Act") requires a public utility to submit an annual capital budget of proposed improvements or additions to its property for approval of the Board.

2. Section 78 of the Act vests authority in the Board to fix and determine the rate base for the service provided or supplied to the public by the utility and also gives the Board the power to revise the rate base.

3. On July 8, 2011, Newfoundland Power Inc. filed its Capital Budget Application (the "Application") with the Board. In the Application, Newfoundland Power Inc. requests that the Board make an Order:

   (a) approving its purchase and construction in 2012 of the improvements and additions to its property in the amount of $77,293,000 as set out in Schedules A and B to the Application; and

   (b) fixing and determining its average rate base for 2010 in the amount of $875,210,000 as set out in Schedule E to the Application.

4. The *Electrical Power Control Act, 1994* in section 3(b) requires that utilities manage and operate its facilities in a manner that results in power being delivered to consumers in the province at the "lowest possible cost consistent with reliable service".

5. The amounts spent on capital projects by each of the utilities will need to be financed as either debt or equity and consumers will pay the interest on the debt and the return on equity as well as the costs of depreciation on the acquired assets.

6. The onus rests upon the utility to establish before the Board that the expenditures proposed are necessary in the year in which they are proposed and represent the lowest cost alternative for the provision of electricity service in the province.

7. Newfoundland Power Inc.'s Application is seeking the Board's approval of the purchase and construction in 2012 of improvements and additions to its property in the amount of $77,293,000. Last year's 2011 Capital Budget Application sought approval in the amount of $72,969,000. The Company's 2010 capital budget application sought approval in the amount of $64,679,000. 2009's capital budget approved by the Board in Order No. P.U. 27 (2008) was $61,600,000.

8. Appendix A-1 to the 2012 Capital Plan points to significantly increased capital expenditure projections in the coming years as follows:

2013	2014	2015	2016
$79,6111,000	$88,068,000	$86,397,000	$85,176,000

9. If past forecasting is any indication, these projections themselves may well be lower than what will eventually come to pass. In the Company's 2007 Capital Budget Application for $62,166,000 including $18.8 million in expenditures for the Rattling Brook project, the company forecasted planned capital expenditures to be relatively stable through the 2007 to 2011 period. Whilst noting that circumstances could

change and that as a result of the maximum capital budget could approximate 60-65 million, the Company nevertheless forecasted budgets as follows:

2007	2008	2009	2010	2011
$62,166,000	$52,216,000	$54,240,000	$54,224,000	$53,908,000

Reference: 2007 Capital Plan, Appendix A, p. 1 of 11

10. Meanwhile, Hydro's 2012 Capital Plan forecasts steeply increased capital expenditure projections in the coming years:

2013	2014	2015	2016
$121,369,000	$151,686,000	$155,237,000	$146,973,000

11. Customers ultimately pay for all expenditures made by the utilities in the province, therefore one cannot view the capital expenditures of one utility in isolation of the other's.

12. Newfoundland Power states [see PUB NP 001] that the average forecast expenditure of approximately $83,000,000 ". . . for the next 5 years is consistent on an inflation adjusted basis with that in the period 2007 through 2011" but that observation does not lessen the concern about the utilities' spending levels, particularly given the Company's previous forecasting.

13. The fact is that Newfoundland Power does not apply any guidelines as to the overall quantum of its annual capital budget applications [CA NP 002]. It is also a fact that Newfoundland Power does not even rank the priority or criticality of the projects it proposes each year. The Company reports [CA NP 002] that decisions with respect to the inclusion of individual capital projects are made by the

company's professional engineers as part of the annual budgeting process and that projects that are included with annual capital budget applications are those which, in the judgment of the Company's professional engineering staff, are required to be completed in the manner and in accordance with the scheduled proposal.

14. A recent research report from the Economist Intelligence Unit published in The Economist in March, 2011, entitled, "From planning to execution - How executives at top utilities contribute to the success of capital projects", refers to the role of rating in the selection of capital projects at p. 8:

> "Once the executive team defines the goals and requirements of the portfolio, they can more effectively prioritize individual projects. . . At Xcel, the portfolio team assigns a criticality rating to each project as part of the vetting process, to help executives determine which projects to push forward and which ones to delay." (emphasis added)

Reference: From Planning to Execution: How executives at top utilities contribute to the success of capital projects, The Economist, March 2011, Tab 1

15. The Consumer Advocate would submit that such evidence of the ranking of the criticality of capital projects by other utilities such as Xcel adds further justification for Newfoundland Power to provide guidance to the Board and interested parties as regards the ranking of the importance or criticality of the project being proposed in the Application. Ranking of projects would appear to be a sound public utility practice.

16. In Order No. P.U. 28 (2010) the Board stated (p. 5) that the Consumer Advocate's similar submission appeared to be suggesting a change to the Capital Budget

guidelines and that notwithstanding the merits of any proposed changes "the Board is not inclined to consider changes to the guidelines in the context of a specific capital application." The Board stated, "Any such proposals should be raised with all the stakeholders and, following consultation, brought forward to the Board for consideration." Newfoundland Power's submissions to the Board in last year's capital budget application left no doubt where the Company stood on this matter - they oppose it and say that the existing process is sufficient. The Consumer Advocate sees no useful purpose to be served in carrying out further consultations on this issue with Newfoundland Power. In the Consumer Advocate's respectful submission, should the Board not deem it appropriate to consider this submission and to provide direction in the context of this capital budget application, it is recommended that the Board do so as soon as practicable outside of this process.

17. As a regulated utility which is regulated on return on rate base, Newfoundland Power does not have incentives to improve its capital spending efficiencies. It was observed by Singer and Turnipseed in their paper, "Curing capital addictions: Practical ways to reduce a company's excess appetite for capital",

> "Capital hunger also grows where neither explicit nor implicit incentives for improving capital efficiently exists for improving capital efficiency exist, but penalties for poor operational performance are harsh. When held accountable for revenue and profit margins, managers tend to be more concerned with attracting and satisfying customers than with improving the return on the marginal capital dollar. To such managers, the risk-return equation is quite clear: better to be on the safe side, overengineer, and ensure high service levels than strive to be an unsung hero for cutting costs. The result is layers of excess safety stock buried in a company's asset base and capital budget."
>
> . . .

The authors continue,

"Regulated companies, in particular, tend to view capital spending quite differently from operating expense. Even as these companies face deregulation and mounting pressures on performance, such attitudes persist. As one telecommunications company executive put it, "We used to refer to operating expense as 'green dollars' and capital expenditures as 'brown dollars'. Capital just allowed us to increase our rate base." But even in non-regulated companies, managers who have never focused on tight value management often view capital programs as an entitlement rather than as a set of options that must be carefully weighed and traded off against other possible solutions."

Reference: M. Singer and K. Turnipseed, "Curing Capital Addictions" published in McKinsey Quarterly, November 1993, at page 2 of 6,Tab 2

18. Non-regulated and regulated utility companies are exposed to much different risks as regards capital spending. In the March 2011 Economist Report, it stated:

"Higher risk, higher reward
Regulated vs. non-regulated

The North American utility industry is made up of both regulated and non-regulated companies. And while both kinds of organization want to see a strong return for their capital investments, non-regulated companies face greater financial risks, says Northwestern Energy's Brian Bird. 'Non-regulated utilities have to be concerned about whether they will make money on the asset, while a regulated utility just needs to be sure they are getting a reasonable price for the capital expenditure,' he says.

As a result, unregulated utilities must be more rigorous in their assessments of individual project risks and ROI analyses, because they rely on these projects to deliver profits. 'For non-regulated companies, risk needs to be fully accounted within the project itself,' notes Duke's Paul King. 'Regulated utilities face uncertain prudency judgment from regulators, but are typically in a better risk management position.' "

Reference: Ibid p. 13, Tab 1

19. In their paper, "The hidden value of capital efficiency", Copeland and Ostrowski observed:

> "The advantages of improved capital efficiency for unregulated companies are obvious. Those than can do more with less are rewarded by the capital markets. If the same operating cash flows can be achieved by using less working capital or less physical capital, a company's free cash flow increases, which is reflected in a higher market price for its shares. A company that generates a dollar of earnings by spending twenty cents of capital will enjoy a higher share price than a competitor that generates a dollar of earnings by spending fifty cents of capital."

20. The authors state however that "The rationale for capital efficiency at regulated companies such as utilities and telecoms is different, especially if the rate of return on their capital base is regulated." Notably, the two benefits cited by the authors as reasons for rate base regulated utilities to pursue capital efficiency, namely the potential to benefit from regulator benchmark reward systems and the potential for the utility's loss of power contracts is not a consideration in the Newfoundland Power monopoly context.

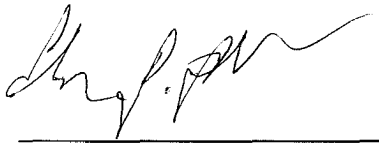
Reference: T. Copeland and K. Ostrowski, "The hidden value of capital efficiency" published in McKinsey Quarterly, May 1993, at p. 2 of 10, Tab 3

21. In the light of the escalating capital expenditure requests of each utility, whereby the utilities are forecasting to spend a total of $1,079,690,000 between 2012 and 2016 and in the light of the known absence of financial incentives for rate base regulated utilities to strive for capital efficiency, the Consumer Advocate would respectfully renew the call for the Board to provide direction to the utilities as regards the

importance/criticality ranking of proposed capital projects. The timing and necessity of the investments to meet the obligations to serve on a least cost basis unquestionably involves engineering judgment, but that judgment does not obviate the utility of criticality ranking in the capital budgeting process.

Reference: *NP - $416,536,000 (see NP 2012 Capital Plan, p. A-1) and Hydro - $663,127,000 (see NLH 2012 Capital, p. A-3)*

RESPECTFULLY SUBMITTED AND DATED at St. John's, in the Province of Newfoundland and Labrador, this day of September, 2011.



THE CONSUMER ADVOCATE
Thomas Johnson
O'Dea, Earle Law Offices
323 Duckworth Street
P.O. Box 5955
St. John's, NL A1C 5X4

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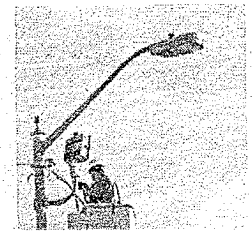
TAB 1

From planning to execution

How executives at top utilities contribute to the success of capital projects

A report from the Economist Intelligence Unit
Sponsored by Oracle



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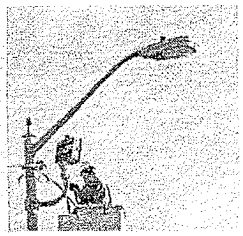
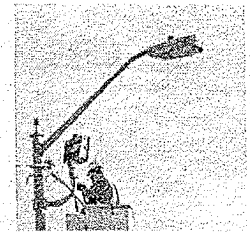


Preface

From planning to execution: How top utilities executives contribute to the success of capital projects is an Economist Intelligence Unit research report, sponsored by Oracle. The findings and views expressed in the report do not necessarily reflect the views of the sponsor. The author was Sarah Fister Gale.

March 2011



Executive summary

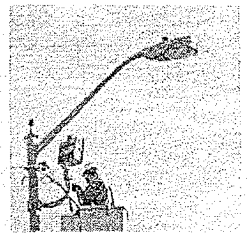
Every fiscal year, utility executives face difficult decisions about which capital projects to support and how to assess the benefits and risks of these investments for customers and stakeholders. Limited budgets, growing customer demand, renewable energy goals, risk of infrastructure failure and an ever-shifting regulatory environment are just a few of the factors they must consider as they balance their portfolios.

Making the wrong choice can lead to massive cost overruns, infrastructure failure and missed regulatory deadlines, all of which impact corporate viability and the bottom line. Additionally, it is the utility executives themselves who are held accountable for failed projects, even though their role becomes one of oversight once the initial decision-making process is completed.

The good news is that utility industry leaders have come to recognise the shortcomings in their portfolio management process, and many of them are making changes to improve results. This report investigates the methods they are using.

Our findings show that utility executives are increasingly:

- demanding more rigorous up-front planning before a project will even be considered. If divisions want support for their initiatives, they must produce detailed project plans outlining benefits, risks, budgets, schedule and scope. This streamlines decision-making and eliminates bad ideas from the start;
- managing budgets and risks across the portfolio, rather than considering projects individually. This approach gives them the flexibility to accommodate unexpected risks and take advantage of opportunities by moving funds between projects;
- adding early milestone reviews to trigger the full release of funds. As project plans are often written months in advance of execution, this step ensures scope and budgets are still relevant before they make a final investment;
- triggering immediate executive reviews when projects run significantly over budget or behind schedule. Having formal triggers enables executives to solve problems before projects veer off course;
- viewing regulators as partners, not adversaries. Regulations are not going away, and the most timely and cost-effective way to address them is to work in conjunction with the regulators and elected officials.



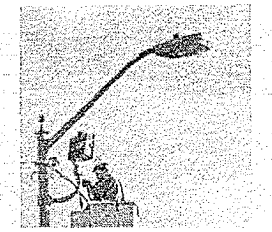
Introduction

Utility companies may excel at building reliable energy systems, but they struggle to manage the finances that support these capital investments. An Economist Intelligence Unit survey released in January 2011[1] shows that the three greatest challenges utility industry executives face in delivering capital projects are predicting long-term costs (48%); assessing return on investment (33%); and effectively managing cash flow over the lifecycle of these projects (30%). The survey also shows that 17% of executives rate their organisations as "not very effective" or "not at all effective" at planning, prioritising and selecting capital investment opportunities.

This lack of expertise often results in projects that deliver quality results, but with massive budget overruns. Take, for example, Xcel's Smart Grid City in Boulder, Colorado. This groundbreaking project is seen as a model for future smart grid projects, delivering innovative solutions that give consumers real-time information about their power consumption. But the final cost of the project came in at almost three times the original projected price tag. Such scenarios are not uncommon, and reflect a need for better financial planning and project decision-making methods to keep these investments on track.

A growing awareness of this gap, coupled with the limited access to capital for new projects, is triggering change in the sector. Utility executives are implementing more rigorous project assessment processes and greater oversight to improve the ROI of their capital investments. Companies that use these methods are already reaping benefits in the form of improved project delivery rates, fewer risks and better investment decisions that deliver greater system reliability and improved financial results.

1. *Prepare for the unexpected: Investment planning in asset intensive-industries*, Economist Intelligence Unit, January 2011.



Portfolio planning

Utility executives face constant pressures when making capital planning decisions. The senior leaders in the organisation, including the CEO, CFO, COO and often the heads of transmission, distribution, and generation, come together to assess potential projects and determine which investments to support within their limited budgets. These decisions must accommodate infrastructure maintenance, regulatory requirements, energy efficiency and sustainability goals and demands to extend their power systems to new communities, among other things. While all the projects they consider may be relevant, they must determine which investments deliver the greatest value and reliability to consumers, while reinforcing the financial standing of their companies.

Adding to the challenge is the fact that industry revenue has steadily declined in recent years, with no foreseeable uptick. Less than one-quarter of utility executives in the US expect electricity usage in their area to rise by an annual average of more than 1.5% between 2011 and 2020, according to the 2010 Black & Veatch *Strategic Directions in the Electric Utility Industry* survey.[2] And they believe regulatory commissions are unlikely to approve rate increases, which means utilities have got to make their existing budgets go further.

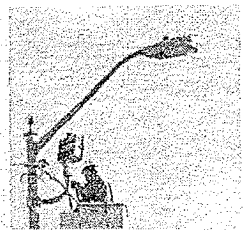
Brian Bird, CFO of NorthWestern Energy in Sioux Falls, South Dakota, understands these pressures. He joined NorthWestern in 2003, shortly after the company declared bankruptcy, and has been rebuilding its capital structure and financial profile ever since. The company emerged from bankruptcy in 2005 and, owing to prudent financial management, is now rated a stable investment by Wall Street, drawing renewed interest from investors.

This kind of financial stability is vital in an industry where projects can only move forward if executives can attract the capital to support them. However, getting access to funding is just the first step. When investors are eager to put money into projects, executives must be more careful about the capital they accept and about defining the return they can secure for those investments. If they accept too much money, their debt to capital ratio is too high, which throws off their standing with rating agencies and increases their financial risks.

"The ideal profile is 50-55% debt to capital," says Mr Bird. To achieve this requires mature evaluation processes that accurately measure the potential ROI of a project, and strict project oversight to ensure that value is delivered.

"The goal is to bring top-tier reliability without putting undue pressure on customer rates," Mr Bird says. "If we spend too much, customers overpay, but if we spend too little, reliability suffers."

2. *Fourth annual strategic directions in the electric utility industry survey*, Black & Veatch, January 2010.



The long view

Most utilities attempt to maximise the value of their portfolio by first reviewing their long-range capital planning goals, based on projected needs over the next 20 years. They then identify near-term capital investments to support those goals. Those investments are assembled in a five-year capital expenditure plan that is adjusted annually to accommodate changes in forecast demand.

The benefits of such long-range capital planning that is supported by an immediate five-year portfolio plan are clear. By forecasting and prioritising projects on a long-term basis, leadership teams can more efficiently accommodate adjustments in the portfolio and shuffle projects to take advantage of shifting market opportunities.

This way, if a high-priority project requires additional funds, the leadership team can transfer money from a low-priority initiative to fill that budget gap. Or, if a major project is under budget, executives can reallocate contingency funds to ramp up new initiatives, according to Mr Bird. "It makes us more

CASE STUDY A change of course for Duke

Sometimes unexpected risks arise during project implementation that require executive teams to carefully balance the needs of the organisation against the needs of the community. Such was the case in April 2010, when Duke Energy was building a US$60m substation and transmission line in North Carolina to address load growth issues in the area.

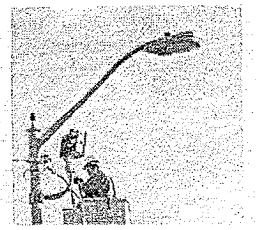
The project was on schedule and under-budget. Land had been purchased and construction had begun, says Paul Kling, Duke's director of project management and controls. But then a local group of Cherokee Indians raised a concern. They claimed that the hillside Duke had purchased for the station was "in view of sacred ground", which made it off limits for construction.

The tribe brought a lawsuit against Duke, which shut the project down, and Duke senior executives immediately met with project team to devise a solution. Though Duke could have fought the lawsuit, the executives and project team approached the problem from a more holistic standpoint, seeking out a solution that would balance the objectives of the projects with the needs of the Cherokees.

After negotiating with the Cherokee tribe, and government leaders Duke opted to move the project to a new location. By making that decision, the company was able to build a new transmission station in time to address impending voltage issues, while accommodating the concerns of the Cherokee community.

"The project team invested a significant amount of time and effort into making sure we met everyone's needs and got this project accomplished," says Mr Kling.

Since Duke enables its business unit leaders to manage their budgets from a portfolio standpoint, rather than by individual project, the project team was able to manage changes to the remaining US$52m from the existing project plan. They were also able to shift additional resources within the project portfolio to account for any cash flow deviations that occurred as a result of the scope change. "Because our contingencies are built into the portfolio, we were able to reintegrate dollars from elsewhere in the budget and spend them more effectively," says Mr Kling.

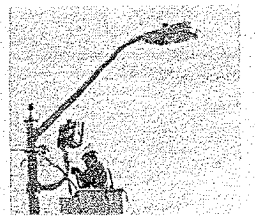


nimble, and it allows people closest to the work to make decisions without worrying about where the money will come from."

Such an approach also allows utilities to secure long-term contracts with vendors and contractors, which enables volume discounts and reduces the time spent renegotiating contracts. "It lowers our costs and it lowers our risks, because we can plan further into the future," says Paul Kling, director of project management and controls at Duke Energy.

The challenge in establishing a five-year portfolio plan is that many of these projects take more than a decade to complete. Execution risks, such as fluctuating commodity prices and new regulations, are difficult to predict so far in advance, says Teresa Mogensen, vice-president of transmission at Xcel Energy in Minneapolis.

She points to a US$2bn programme in her current portfolio to build four multi-state transmission lines and substations. Xcel is partnering with 10 other utilities to deliver the project, which began in 2004 and is scheduled for completion in 2015. "It's difficult to definitively line up resources for a project of such scope and complexity when it might not begin or end within your current five-year plan," she says.



Selecting projects

But such balancing acts must be accomplished for energy systems to remain functional. To be sure all relevant projects get fair consideration, executives consider data from multiple groups before making their final decisions. These groups include:

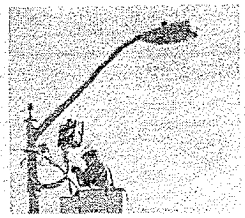
- the economic development team, which tracks financial trends and forecasts, internal cash flow and rate projections;
- the operations, engineering and maintenance teams, which report on maintenance requirements and forecasted loads for the coming decade, and on which projects require immediate attention;
- community liaisons, who track the needs of major customers, including data centres, steel mills or new subdivisions; and
- the legal and regulatory teams, which report on legislation and regulations that could affect existing infrastructure and new projects, such as new carbon legislation, deregulation or changes in water quality requirements.

Once the executive team defines the goals and requirements of the portfolio, they can more effectively prioritise individual projects, says Ms Mogensen. At Xcel, the portfolio team assigns a criticality rating to each project as part of the vetting process, to help executives determine which projects to push forward and which ones to delay.

Executives, of course, also consider the risks and potential return on investment of each project when they build the portfolio, Mr Kling says. A coal gasification plant, for example, may deliver high ROI, but carry high risk, so these investments might balance that with investments in new transmission lines, which deliver lower, but more predictable ROI. "Higher-risk projects [entail] a lot of contingencies, so those projects might be anchored with others that have a high degree of certainty," he says.

Even after establishing priorities for what they need to accomplish, there are always more projects than the annual budget will allow for, says Mr Bird. At NorthWestern Energy, his team at times has reviewed project plans equivalent to nearly twice its annual budget, which means only those most critical can be approved.

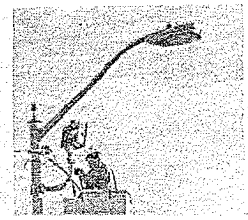
To reduce the sheer volume of proposals and speed up the selection process, many utilities require rigorous pre-planning by division leaders prior to the executive review. At EPCOR, the electric and water utility in Edmonton, Canada, executives have a mandatory project template for project ideas in the water utility. This template outlines scope, strategy, cost benefit analysis and required resources, says Susan



Ancel, director of EPCOR's water distribution and transmission. The executive team only assesses those plans that follow the standardised process during the annual portfolio review process.

Having a common submission process has increased the speed and efficiency of EPCOR's portfolio decision-making process because it eliminates duplication and poorly planned ideas, says Ms Ancel. "Before we started using it, if we had a US$30m budget, we might have US$100m in submissions." In comparison, last year the team was able to approve 80% of all the projects submitted.

Before these projects can move forward, stakeholders must update the proposal prior to starting construction to reaffirm scope and budget, and add a "risk of execution" plan, according to Ms Ancel. "This additional step ensures the executive team has up-to-date information before releasing funds."



Time to execute

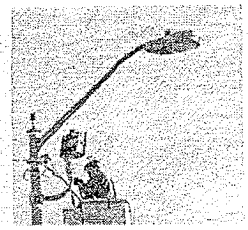
Once capital projects are approved, the leadership of that operational unit chooses project managers and utility executives relinquish control of the day-to-day operations, although they continue to receive regular reports, as well as metrics via dashboards, and they are ready to step in if trouble arises.

Project managers are expected to participate in regular checkpoint reports, progress updates and quarterly reviews with steering committees and to report on any major problems as they arise. In most utilities, if a project goes over budget by 10-15%, an executive review meeting is triggered to evaluate the situation before the project can continue.

Creating dashboards that keep executives informed of project progress at a high level and establishing triggers for highlighting issues or overruns empowers project leaders to make decisions, while enabling executives to remain at arm's length without losing control over projects, says Ms Mogensen. They remain in an oversight role until a problem arises that requires their attention. Whether that's a contract issue, a cost overrun, or a safety concern that cannot be handled at the project level, these triggers ensure that executives step in promptly to address problems that require senior leadership accountability. "One of the biggest risks on a long-term project is that you lose sight of what's going on, so having a process to monitor progress keeps things on track."

Executives across this industry agree that creating such formal reporting processes is vital to project success. In the Economist Intelligence Unit survey, 29% of executives believe that having more open lines of communication between leadership and management would improve the way they plan and prioritise projects.

Better communication would also help to manage the various risks these projects face, including cost fluctuations and changes in market demand, which 51% of executives say impact the success of projects. "It can be a challenge to create that constant flow of communication in large organisations," says Ms Mogensen, "but it's worth the effort."



CASE STUDY

Executive review prevents road collapse

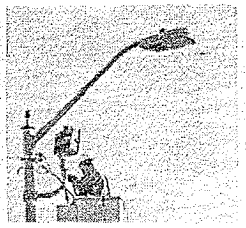
While it is important for executive committees to give project leaders the room to make decisions, they must also be ready to step in when major problems occur. And the sooner they get involved in these cases, the better, says Susan Ancel, EPCOR's director of water distribution.

"More projects come in on time and on budget when there is a better dialogue between stakeholders and project managers," Ms Ancel says. So EPCOR executives implement multiple communication strategies, including regular progress reports, steering committee reviews and frequent milestones. And if a major problem arises that threatens to push the project off track, the steering committee is automatically convened to assess the situation.

Such a trigger occurred in December 2010, when a project team was conducting a pipe installation to connect existing water lines on either side of the six-lane Anthony Henday freeway in Edmonton, Canada. The team had drilled halfway under the road when they noticed the soil slumping in unexpected ways in the median. "The risk was that the freeway lanes would collapse if we continued across the remaining lanes of traffic," says Ms Ancel. "It would also have been a major cost hit to the project to repair the freeway."

The team ceased work and alerted the executive-led financial review committee (FRC). After discussing possible solutions, they decided to stop construction until the spring thaw, while evaluating their options and the impact on the project delivery.

Because the change in project plan will likely push the budget beyond Epcor's 20% threshold for cost increases, the team needs the FRC's approval to move forward. But the FRC does more than just approve budgets, says Ms Ancel. It gives the project team guidance as they review their options and can adjust other projects in the portfolio to accommodate the changes. "Since the committee members include the more senior staff in the utility, we are able to draw on our knowledge of similar events to support the project team in getting to the final correction/design plan," says Ms Ancel "The committee was also able to use the remaining budget to accelerate another planned project that could be done in a few weeks to have both annual capital programme budgets remain whole."



Keeping up with regulators

Aside from cost fluctuations and changes in market demand, the other major risk these projects face, from planning through execution, is evolving regulations that could affect implementation and the ROI of the portfolio. "Regulations have huge implications for capital projects," says Scott Etnoyer, manager of reliability standards at ENMAX Corporation, an energy distribution company in Calgary, Canada. Mr Etnoyer spent a year as a regulator for the US government's Federal Energy Regulatory Commission (FERC), and understands the challenges utility companies face in dealing with regulators. "Executives need to understand what's going on in the regulatory environment and what could change," he says.

The greatest obstacle is the lack of clarity in the standards, which are loosely written and often left open to interpretation, he says. Because the federal government writes the standards, and the regulators

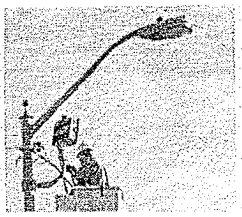
CASE STUDY Deregulation drives power plant project

In 2007 Legislative Bill 25 essentially "reregulated" utilities in Montana. For the first time in a decade, power companies in the state were able to build and own generation plants. NorthWestern Energy executives had worked closely with regulators and legislators for years to get the bill passed, and it came at a critical time, says Brian Bird, NorthWestern's CFO. In 2007 energy demand was booming, and the utility was facing rising costs and scarcity of resources on the generation market, which threatened the reliability of its system. House Bill 25 enabled the company to address these risks and generate a better return on its investments by investing in its own generation sources. "There's no profit in paying someone else to generate power," according to Mr Bird.

Shortly thereafter, the executive team approved construction of the US$200m Mill Creek Generating Station, which would balance load and supply on NorthWestern's transmission system in Montana and enable additional wind power to be integrated into the network to meet future renewable energy portfolio needs. The assigned project leader, Bill Rhoads, immediately began compiling engineering and environmental assessments, producing cost-of-impact reports and assembling other data required to win the approval of the regulatory commission.

After months of negotiations, NorthWestern received regulatory approval on the condition that NorthWestern pay for a regulatory consultant to oversee the project. "That wasn't typical, but we knew that in order to make this project work we had to view the regulators as our partners," observes Mr Bird. Having the regulatory advisor on the team also ended up being an advantage to the project. "The project went well, and it was his job to report our progress back to the commission."

By January 1st 2011 the plant was operational, on budget and on schedule. Mr Rhoads attributes much of the project's success to the support he received from the executive leadership. "Respect, teamwork and communication are so important to a project like this," he says. "Their trust in me helped make the project a success."



Higher risk, higher reward
Regulated vs non-regulated

The North American utility industry is made up of both regulated and non-regulated companies. And while both kinds of organization want to see a strong return for their capital investments, non-regulated companies face greater financial risks, says Northwestern Energy's Brian Bird. "Non-regulated utilities have to be concerned about whether they will make money on the asset, while a regulated utility just needs to be sure they are getting a reasonable price for the capital expenditure," he says.

As a result, unregulated utilities must be more rigorous in their assessments of individual project risks and ROI analyses, because they rely on these projects to deliver profits. "For non-regulated companies, risk needs to be fully accounted within the project itself," notes Duke's Paul Kling. "Regulated utilities face uncertain prudency judgment from regulators, but are typically in a better risk management position."

If a regulated utility can demonstrate that a project is good for customers, it will get it into the rate base agreed by regulators. If it's reasonable to believe that energy prices will rise, for example, investing in a new project that creates a stable if slightly higher rate base makes sense for regulated companies. Once a project is approved, regulated utilities do not then have to worry about volatility.

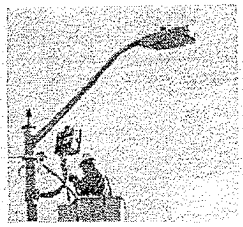
Independent power producer (IPPs), however, must constantly assess market volatility against the projected ROI of the project. If they predicted that energy prices would rise and instead they fall, that project can lose its profit margin. However if prices rise higher than expected, they gain even more. "Right now IPPs are underperforming utilities, but if commodity price rise they could outperform us," says Mr Bird. "The risks are higher, but so are the rewards."

merely approve or reject them, the process of change is painfully slow. In the meantime, utility companies are left to interpret the existing standards and to try to convince regulators that their project plans align with those requirements.

He points to pending Cyber Security Standards (CIP 002-009), from The North American Electric Reliability Corporation (NERC), which enforces reliability standards for North America. The Cyber Security standard lays out preventive measures to protect against cyber vulnerabilities and enforce the security of the electric system. How those standards are ultimately defined will have dramatic ramifications for project costs and requirements for blackout-recovery technology, Mr Etnoyer says. "That poses huge risks and every utility company is watching closely to see what will happen."

Faced with a nebulous regulatory environment, utility companies often take a wait-and-see approach to innovation. This is slowing progress in the industry. "Anxiety delays decision-making and causes executives to be more conservative," Mr Etnoyer says. "There is a risk in being the leader in innovation when there is so much uncertainty."

To offset this risk, many utilities partner with regulators and participate on regulatory task forces and work on pilot projects to shape the future of regulatory language and best practice. "Working with regulators helps us understand the implications of new regulations, and find solutions that make sense for the industry," says Ms Ancel.



Conclusion

The utility industry will experience dramatic changes in the coming years as it strives to meet renewable energy requirements while maintaining competitive rates for end-users. Executives who embrace stricter project planning methodologies and implement more thorough oversight will deliver a better financial return to investors and stakeholders, while meeting the needs of their consumers. And because they are held accountable for failed projects, this approach will help them to protect their own reputations as well.

Executives who have already implemented the changes offer these tips:

Formal portfolio and project oversight eliminates surprises. In an industry that spends billions of dollars on capital expenditure and millions of dollars managing risks, having a process to identify problems earlier in the project has obvious impact on the bottom line, says Xcel's Ms Mogensen. "When you have a defined milestone review process and a constant flow of information, you are rarely caught off guard."

Build contingencies into the overall portfolio, not the individual project. Companies that allocate budgets to a group of projects have more flexibility around how, when and where they spend their money. And when problems occur, they can more easily adjust their spending in response. According to Mr Kling "It appropriately accounts for risks and provides greater control over costs."

Put talented people in charge of execution and let them do their jobs. Project managers need to be empowered to make decisions while feeling confident that they have their stakeholders' support, says Mr Bird. "It streamlines the project management process and makes for better communication across the organisation."

Think of regulators as allies, not adversaries. Utility companies that work in partnership with regulators achieve faster resolutions and have greater input into regulatory language. "Maintaining an open dialogue with regulators is the most cost-effective approach," says Mr Etnoyer.

LONDON
26 Red Lion Square
London
WC1R 4HQ
United Kingdom
Tel: (44.20) 7576 8000
Fax: (44.20) 7576 8476
E-mail: london@eiu.com

NEW YORK
750 Third Avenue
5th Floor
New York, NY 10017
United States
Tel: (1.212) 554 0600
Fax: (1.212) 586 0248
E-mail: newyork@eiu.com

HONG KONG
6001, Central Plaza
18 Harbour Road
Wanchai
Hong Kong
Tel: (852) 2585 3888
Fax: (852) 2802 7638
E-mail: hongkong@eiu.com

GENEVA
Boulevard des Tranchées 16
1206 Geneva
Switzerland
Tel: (41) 22 566 2470
Fax: (41) 22 346 93 47
E-mail: geneva@eiu.com

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TAB 2

Curing capital addiction

Practical ways to reduce a company's excess appetite for capital.

NOVEMBER 1996 • MARGOT SINGER AND KEITH TURNIPSEED

For all their attention to cost reduction and restructuring, many companies are only now discovering a puzzling exception to the laws of economic gravity: capital programs keep going up, but show no sign of ever coming down. Despite top-level decrees and well-defined budgeting processes, the appetite for non-discretionary capital inexorably continues to grow. This should not, however, be surprising. Although senior managers can approve broad spending outlines and review major projects, they are powerless to drive out capital "from the top": real decision making gets done at the grassroots level. That is where the concrete opportunities lurk to make substantial, sustainable cuts in capital spending. And that is where they often remain hidden—unless and until managers come to view their company's whole capital program not as an addiction to be fed, but as a rich vein of untapped value to be mined.

Capital planning and budgeting processes rarely focus on uncovering new ways to deploy assets as efficiently as possible

Let's start with an uncomfortable fact: capital planning and budgeting processes rarely focus on uncovering new ways to deploy assets as efficiently as possible. Nor do they address the root causes of higher than necessary levels of capital spending: the entrenched tradeoffs and assumptions rooted in a corporation's culture, incentive systems, and operational biases. As a result, ever more stringent project prioritization schemes, larger armies of financial analysts, and higher hurdle rates do little to stem the constant upward pressure for capital. Making a rigorous budgeting process even more rigorous is not the answer. It will never satisfy an institutionalized addiction to capital. Nor will it cure the mindset that such addiction breeds. What is needed, instead, is a different mindset entirely: an organization-wide commitment to search for—and free up—the value hidden by established policies and operational practices.

Such improvements in capital efficiency—that is, in the fundamental relationship between assets and revenue—are indeed possible.[1] During the past few years, for example, a number of electric utilities, telecommunications services providers, paper mills, natural gas pipelines, and other types of industrial companies, both regulated and non-regulated, have cut their annual capital requirements by an average of 25 percent.

These companies have succeeded by getting behind the misleading information and sub-optimal decision rules that usually obscure opportu-nities to reduce capital spending. Rather than setting out to fix the budgeting process—an effort that often results in walls covered with brown-paper process diagrams, but few bottom-line benefits—they have focused directly on the performance objective of improving cashflow. Rather than trying to tighten spending controls, they have fundamentally challenged the underlying tradeoffs, assumptions, and incentives that drive capital spending in the first place. In short, by uncovering and attacking the root causes of the capital hunger that leads to addiction, they have found a way to break their spending habit.

Capital hunger

Cultural attitudes and incentives exert a powerful influence on levels of capital spending

An organization's cultural attitudes and incentives exert a powerful influence on levels of capital spending. A corporate culture that revolves, for example, around an ethic of "high quality at all costs" often leads to capital inefficiency. As a young, growing company strives to capture market share and consolidate its competitive position, it will often make capital decisions that trade off lower costs for higher service levels. Frequently, however, it will continue to make

these tradeoffs as it matures—even when the basis of competition shifts. This mentality sets up an inexorable hunger for capital: front-line managers learn to focus on providing top-notch customer service, reliability, and product quality without ever examining the real economic implications of their decisions.

One large paper company faced constantly mounting capital demands, especially for purchases of new production equipment. Investigation revealed that plant managers, under heavy pressure to boost production levels and reduce down time, were upgrading to larger, more modern machines. They had not realized that scheduled repair time and annual maintenance programs could provide far less expensive ways to meet the same goals. By introducing a rotation and repair scheme and by incorporating capital charges into profitability measurements to discourage unnecessary spending on replacement equipment, the company was able to prune its annual capital budget by more than 50 percent.

Capital hunger grows where no incentives for improving capital efficiency exist, but penalties for poor operational performance are harsh

Capital hunger also grows where neither explicit nor implicit incentives for improving capital efficiency exist, but penalties for poor operational performance are harsh. When held accountable for revenue and profit targets, managers naturally tend to be concerned more with attracting and satisfying customers than with improving the return on the marginal capital dollar. To such managers, the risk-return equation is quite clear: better to be on the safe side, overengineer, and ensure high service levels than strive to be an unsung hero for cutting costs. The result is layers of excess safety stock buried in a company's asset base and capital budget.

The common practice of setting budgets based on the previous year's spending is another example of how incentives can blindly ratchet up expenditure. By encouraging managers to spend their entire budget, this approach consistently results in the "Christmas spending spree" syndrome—a huge December burst of spending, amounting to as much as 25 percent of the full year's budget, just in advance of the annual capital budgeting cycle. Even in well-run companies, when no reward is offered for finding more efficient ways of using existing assets or cheaper solutions to new capital needs, budget negotiations become little more than a game in which managers strive to retain control over funds.

A third source of capital hunger is weak accountability for capital spending. Not carefully measuring the impact of capital programs reinforces the mentality that capital is "free." So do the usual conventions for allocating depreciation on shared assets among individual business units. Virtually all companies monitor sales and earnings performance against budget, but few track actual capital project results against projections over time. Consequently, engineers and project leaders feel little pressure to search for cheaper alternatives or to scrutinize an investment's real payoff.

Regulated companies, in particular, tend to view capital spending quite differently from operating expense. Even as these companies face deregulation and mounting pressures on performance, such attitudes persist. As one telecommunications company executive put it, "We used to refer to operating expense as 'green dollars' and capital expenditure as 'brown dollars.' Capital just allowed us to increase our rate base." But even in non-regulated companies, managers who have never focused on tight value management often view capital programs as an entitlement rather than as a set of options that must be carefully weighed and traded off against other possible solutions.

Management processes

An organization's culture is not, however, the only thing that contributes to upward pressure on capital spending. Formal management processes are also often at fault. Inadequate information and analysis are at the root of planning processes that fail to clarify the real economic implications, assumptions, and options associated with the capital program. Given the information normally available, it is not surprising that managers have trouble highlighting potential opportunities to reduce capital hunger. At one telecommunications company, misleading measures of capacity and utilization concealed large pockets of excess spare capacity. Although standard reports indicated utilization of around 80 percent, the true rate was only half as high—about 40 percent. Moreover, error-ridden databases obscured assets that could have been put to productive use. Since "you can't manage what you can't see," non-existent or, equally troubling, faulty information can be a major stumbling block to capital efficiency.

Capital budgeting methodologies often require a good deal of financial detail, but little analytic rigor

Another source of upward pressure on spending is the lack of sound analysis of capital programs and their impact. Many companies' capital budgeting methodologies require a good

deal of financial detail, but little analytic rigor. On close examination, the business cases for many large projects rest on murky assumptions or on patently unrealistic revenue or cost projections. At one telecommunications company, for example, the business case for a major switch expansion project omitted the cost of the additional capacity required to link the new switches to all the other locations in the network. Having initially approved the program (as a "strategic" imperative), senior managers were dismayed to watch the capital budget more than double. They finally halted construction and set about finding a more practical solution.

The approval of a "strategic" project often rests on nothing more substantial than high-level assumptions

In fact, major projects justified as "strategic" are frequently the worst culprits of weak analysis. Although most companies generate reams of paper to make the case for large capital outlays, the approval of a "strategic" project often rests on nothing more substantial than high-level assumptions. When an electric utility launched a major program to improve service reliability, engineers began to add transformer capacity, justifying the expenditure in terms of its strategic value. A closer look led, however, to an unexpected finding: adding transformers did not measurably improve reliability. What did was simple: trimming trees regularly to protect the lines. This allowed the company to reduce annual capital requirements by 15 percent and increase reliability at the same time.

Notwithstanding these difficulties, large capital projects do at least tend to command a fair share of management scrutiny. Most capital programs, however, are largely made up of hundreds of individual projects—most too small to receive any significant attention. The volumes of analysis that support them are usually full of unchallenged assumptions, unexplored sensitivities, and justifications based primarily on non-economic criteria.

Budgeting systems can drive up capital spending by focusing too narrowly on "the answer," rather than stimulating debate about alternatives

Even when budgeting systems are sufficiently rigorous, they can still drive up capital spending by focusing too narrowly on "the answer," rather than stimulating debate about alternatives. Few systems explicitly require the generation of multiple options or careful tradeoff analyses in justifying capital investments. The absence of such features inevitably limits the time spent searching for lower-cost solutions.

Asset use

A third root cause of capital inefficiency lies in the operational practices that govern the deployment of assets. The causes of excess spending often lie within the well-defined guidelines and processes that govern the activities of the planners and engineers responsible for deploying and maintaining assets and inventories.

Sometimes guidelines are simply ignored. One natural gas company found that workers were installing riser clamps on its pipelines 15 feet apart, when the spacing recommended by design was actually 25 feet. In other cases, guide-

lines are closely linked not to genuine economic drivers, but to extremely conservative assumptions made by risk-averse and highly quality-conscious engineers. In fact, the spacing recommended by outside contractors for the pipeline noted above was 50 feet, not 25. Following this recommendation cut annual capital spending on riser clamps by more than 60 percent.

Another problem is presented by the barriers between functional "smokestacks" that often block effective communication and coordination. Close interaction between marketing and operations, for example, is critical in assessing how to meet customers' performance needs in the most cost-effective manner. Yet often the communication is one way at best. Pricing and promotion decisions can easily be a major driver of capital spending, since they affect peak capacity loads and fluctuations in demand. Such marketing decisions, however, are all too often presented to engineering as sacrosanct. Even worse, since marketing is usually rewarded for getting the customer—not on profitability criteria—capital appears "free."

This failure of communication can have a big impact on capital spending decisions. One telecommunications company set out to replace all its older switches on the strength of marketing's belief that customers required service capabilities that could be delivered only by a newer switch. Closer examination, however, revealed that very few customers needed these capabilities—and that selectively upgrading a small number of older switches was a much more economic solution than wholesale replacement.

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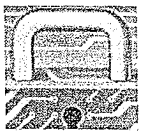
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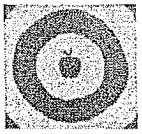
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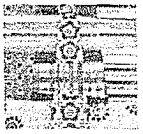
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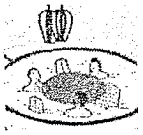
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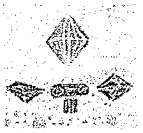
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Finding the hidden opportunities

Improvements in capital efficiency reduce capital hunger by extending the life of existing assets and/or by reducing what is spent on new assets

Recognizing the causes of capital inefficiency is a necessary first step toward identifying specific opportunities for improvement. Because these are usually well hidden, it may take a structured investigation to uncover the largest potential savings and develop plans for capturing them. Such an investigation should concentrate on two questions: How can existing capacity utilization be increased? And how can new capacity be added more cheaply? These questions matter; overall improvements in capital efficiency reduce capital hunger—as well as the addiction to which it leads—by extending the life of existing assets (capital deferral) and/or by reducing the absolute amount spent on new assets (capital avoidance).

Increasing utilization

When managers uncover spare capacity "hidden" in an existing asset base, utilization may actually get worse before it gets better

The first step toward improving capital efficiency is to uncover the spare capacity "hidden" in the existing asset base. The initial impact of this exercise is somewhat counterintuitive: utilization may actually get worse before it gets better. Not only do companies discover excess capacity they did not know was there; they also create more of it by changing decision rules and guidelines to free up assets for sale, write-down, or re-use.

Simply cataloguing the location and value of owned or leased assets can be highly revealing

"Hidden" capacity. Because spare capacity is often masked by misleading measurements and incomplete or inaccurate databases, simply cataloguing the location and value of owned or leased assets can be highly revealing. A telecommunications company, for example, began its search for hidden capacity by examining its inventory of switch plug-ins—the computer boards that make up most of the value of a switch. Although headquarters' reports indicated that the majority of the plug-ins were utilized, the true picture was quite different. Managers in the field were hoarding them, literally piling them up in closets and dark corners. Not visible in databases, these spares had no real cost to field managers, who viewed them as necessary insurance against the risk of a switch failure, given the unreliability of the central warehouse replenishment process. Fixing this process and recalling the spares allowed most new purchases to be deferred for more than three years, achieving a substantial saving.

Another telecommunications company found that much of its network capacity was either "reserved" or in the process of being disconnected owing to customer churn. This spare capacity showed up in databases as being "in use." But it was not—nor was it really needed. Engineers routinely overestimated capacity requirements for projects, since there was no charge for reserving capacity and no mechanism for clearing out superfluous capacity later on. Moreover, extended disconnect cycle times—caused by a historical bias that new customer service orders should take precedence over "re-work"—meant that capacity scheduled to be disconnected could not be factored into the company's growth plan. As a result, "unavailable" capacity accounted for nearly 75 percent of planned capacity additions, which relentlessly forced up capital spending.

Engineering guidelines. Managers can also boost utilization by taking a fresh look at spare capacity requirements and at the possibility of re-using equipment. One company reduced its stock of spare equipment by more than 60 percent by adopting an "inventory model" approach to classifying it (whether installed or in warehouses) as "work-in-process stock," "safety stock," and "maintenance spare." It then identified what created demand for each category. Key drivers of maintenance spare levels, for example, included equipment failure rates and replacement/repair cycle times. By replacing longstanding rules of thumb with economically sound targets, the company was able to identify over $80 million of existing equipment that could be used in place of new purchases.

Altering the "triggers" of capacity growth is another way to delay capital spending. Relying on historical decision rules or past experience, engineers regularly propose adding new plant well in advance of demand. This is not always necessary. By calculating the value of building a new substation now as compared with four years from now, an electric utility found that waiting would reduce investment cost by more than 10 percent—with only a low risk of bumping up against the capacity limits of existing facilities. In fact, delaying the investment significantly reduced the risk of stranding plant should expected demand not materialize.

Identifying hidden spare capacity and revising decision rules to free up additional assets have an immediate impact on capital spending. As spare assets are sold, written off, or re-used, both utilization and cashflow increase. In addition, tighter capacity guidelines generate ongoing savings by reducing overall demand. Creating such guidelines has other beneficial effects—among them, improved analysis and decision making, tighter capacity management processes, and better information systems.

Adding capacity

The second step toward improving capital efficiency—finding ways to meet business needs at a lower capital cost—requires just as much investigation and analytical rigor as "mining" spare capacity out of the existing asset base.

Requiring engineers to develop a range of design alternatives can illuminate possible tradeoffs

Lower-cost designs. There are numerous ways to reduce the cost of new capital investments that are never—or only rarely—considered. In many companies, risk-averse engineers trade off lower cost for quality long before senior management reviews design recommendations. Simply requiring engineers to develop and present a range of design alternatives can illuminate possible tradeoffs between new and used equipment, between standard and substitute materials, and between labor and capital.

These new options can often produce dramatic cost reductions with little impact on quality. A paper mill, for example, slashed its investment in pulp grinders by purchasing used equipment—at one-tenth of the cost of new machines—and by transferring spare grinders from another mill—at just one-fiftieth the cost. Similarly, engineers at a natural gas pipeline determined that putting up an outdoor enclosure shed with acoustic insulation for their compressor equipment, rather than a traditional building, would halve costs.

Developing a reliable fact base can help break down the controversy associated with challenging conventional wisdom

Developing a reliable fact base can help break down the controversy associated with challenging conventional wisdom. Because the managers at an electric utility were convinced that service interruptions due to gas plant outages must be avoided at all costs, the company invested millions each year in petroleum back-up. Yet no one had ever explored alternative ways of supplying power if the gas plants failed. In fact, many existed, including buying electricity from other plants and shifting production within the system. Selecting carefully from these options allowed management to reduce costs while continuing to provide ample back-up capacity.

Execution costs. Improving the "blocking and tackling" of day-to-day execution is another important lever for adding new capacity more cheaply. Consider, for example, the effects of strong project management skills. The familiar lack of up-front coordination between planning and engineering can easily lead to management's approving projects too early in the design stage. The likely result: designs that do not meet real needs, serious delays, and an even more serious run-up in costs. The same problems occur when rigorous contingency planning does not get done. As one telecommunications company recently learned, not anticipating long delays in operating systems development almost tripled the investment required to deploy a new switch.

By itself, however, tight project management is not enough. Faulty general management processes also allow costs to creep up. When the telecommunications company described above uncovered a hoard of spare switch plug-in equipment, it found that inadequate asset management processes were at the root of the problem. Materials managers focused on meeting accounting and regulatory requirements, not on core activities such as ordering, repair, distribution, and tracking. "Administered" rather than "managed," the plug-in inventory management process was out of control. By refocusing efforts, developing clear metrics, and instituting accountability for stock levels, the company quickly cut both cycle times and administrative costs.

Curing capital addiction—and making the cure stick—requires a fundamental rethinking of the way capital decisions are made and executed. Hunting for "hidden" capacity—and the value hidden within it—must become standard practice. So, too, must management processes that realign incentives and generate lower-cost options for all new claims on capital. Business-as-usual approaches will not work. Old habits die hard. But they can be changed—if managers are prepared to make the effort.

About the Authors
Margot Singer is a consultant in McKinsey's New York office and Keith Turnipseed is a consultant in the Atlanta office.

Notes

[1] Editor's note: See Thomas E. Copeland and Kenneth J. Ostrowski, "The hidden value of capital efficiency," *The McKinsey Quarterly*, 1993 Number 2, pp. 45–58.

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TAB 3

The hidden value of capital efficiency

When a budgeting process—at any level—is not continuously focused on using capital efficiently, potential sources of value remain hidden.

MAY 1993 • THOMAS E. COPELAND AND KENNETH J. OSTROWSKI

Most capital budgeting processes are out of control. On the big decisions—the major investments—disciplined analyses of expected returns do, of course, get done. But on the countless smaller capital requests that flow up the decision-making channels of most organizations, such discipline is usually lacking. What's missing, however, is not a top-down commitment to using net present value techniques. The problem is not methodological. What's missing is a consistent management focus at the grass-roots level on identifying all opportunities to generate and capture value by using capital more efficiently.

The chief financial officer of a large, regulated company recently noticed a problem. He was seeing increased demand for capital to fund new projects at the same time that his company was suffering from a shortage of internally generated funds. Because conditions in the capital markets were unfavorable, he was not prepared to issue new debt or equity in the necessary amounts to keep the company's capital structure unchanged. So he proposed to raise the hurdle so that fewer projects would be accepted.

A reasonable solution—but somehow the CFO felt uncomfortable. Would raising the hurdle really cut the number of requests? Or would the numbers simply be "cooked" to show higher forecasted returns? The CEO was uncomfortable too. Was this, at best, only a superficial fix that neglected a much deeper problem?

The company's capital budgeting process was fairly standard in its approach. All capital requests above $2 million had to be approved by the CFO's office and had to show an expected 12 percent rate of return. Every year about 200 requests were submitted for review. Despite the formal review process, however, only a few dozen of these actually received careful attention.

Moreover, in most cases the CFO's staff lacked the time and/or expertise to challenge the underlying technical assumptions or design of the proposed projects. The staff were no match for the seasoned engineer who could rattle off technical details and compellingly link just about any project to higher-order issues such as safety, reliability, or customer service.

The CFO had little confidence that the best skills had been applied in finding least-cost options or alternatives to what had been proposed. Rumors from the field suggested that projects were often gold plated, and external benchmarking confirmed that invested capital levels were well above best practice both within and outside the industry. Field personnel had strong incentives to overengineer because they got into trouble only if there was a shortage of supply to customers. Design engineers were criticized only when something went wrong with a piece of equipment. In addition, about 60 percent of total expenditure was approved automatically because it fell below the $2 million limit and policy dictated that such projects were not reviewed by the CFO's office at all. They fell into the category of "blanket" spending: small outlays, too numerous to analyze in detail, that were part of routine spending.

Whether the CFO was aware of it or not, capital budgeting at his company was seriously out of control.

Managing value

Using proper analytic methods does not, and cannot, by itself ensure real capital efficiency

Finance textbooks wax eloquent about capital budgeting methodologies as if the use of theoretically correct techniques inevitably results in an optimal allocation of capital. From time to time, academic surveys of CFOs look to see how many of their companies regularly use DCF, IRR, or NPV when evaluating significant investment decisions.[1] But using proper analytic methods does not, and cannot, by itself ensure real capital efficiency—the greatest possible enhancement of free cash flows by making sensible reductions in the need for working and/or physical capital.

Capital efficiency starts with a managerial understanding of the ways in which capital-dependent projects get defined and implemented at the front lines

In other words, capital efficiency is not the product only, or even primarily, of methodological choice. It starts, instead, with a managerial understanding of the forces that drive the demand for capital and shape the ways in which capital-dependent projects get defined and implemented at the front lines of an organization. And it rests on a management process that aligns the day-to-day behavior and mindset of the employees who plan and execute such projects with the organization's overall value-creation objectives.

There is nothing magical about a management process focused on value. It simply recognizes that the greatest part of capital spending is controlled by decision makers at the grass roots of an organization. These people have the information required to improve capital efficiency dramatically but—if they are to share it effectively—need top management support in the form of better understanding, more feedback, and, especially, appropriate guidelines and incentives.

The potential impact of improved capital efficiency is enormous. Companies can often cut their capital expenditures by between 10 and 25 percent without any change in revenues or in the quality of services provided to their customers. At the same time, they can often reduce maintenance costs and implementation times (as projects get simplified) and improve interfunctional cooperation (as the new approach gets embedded in general managerial practice). One company, for example, reduced its working capital by $500 million in one year. This dramatic improvement had nothing to do with budgeting methodology, but everything to do with developing a value-based approach to capital management throughout the organization.

As well as generating millions of dollars of value for shareholders, improving capital budgeting has a real, direct impact on a company's overall economic health. For example, in 1990, capital spending in electric utilities and telecommunications—two industries where capital budgeting problems often arise—was $110 billion, fully 21 percent of all capital spending in the United States. A disciplined value-based approach typically pares yearly budgets between 10 and 25 percent. That means adopting it in these industries alone could free up tens of billions of dollars a year for investment in new and useful enterprises.

The attention that does get paid to capital efficiency usually comes from far too high up the chain of command

Today, capital efficiency represents such a huge and largely untapped source of value because only limited attention is usually paid to it. And what attention does get paid usually comes from far too high up the chain of command.

Why does it matter?

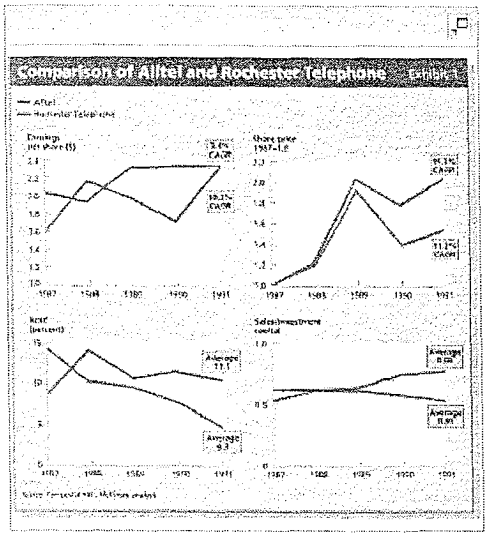
The advantages of improved capital efficiency for unregulated companies are obvious. Those that can do more with less are rewarded by the capital markets. If the same operating cash flows can be achieved by using less working capital or less physical capital, a company's free cash flow increases, which is reflected in a higher market price for its shares. A company that generates a dollar of earnings by spending twenty cents of capital will enjoy a higher share price than a competitor that generates a dollar of earnings by spending fifty cents of capital.

The rationale for capital efficiency at regulated companies, such as utilities and telecoms, is different, especially if the rate of return on their capital base is regulated. Even in this situation, though, capital efficiency has compelling benefits.

First, the regulatory environment is improved: regulators typically benchmark across jurisdictions and reward companies that provide higher-quality service without cost overruns and other inefficiencies. Second, being regulated does not mean that a company can afford to be uncompetitive. Electric utilities, for example, can lose their power contracts with those businesses able to switch to alternative forms of energy, generate power for themselves, or gain access to other

electricity supply options such as municipalized service. Telecommunications companies that use their capital inefficiently can lose traffic volume if business customers find it more efficient to build their own systems. Finally, regulated companies that spend capital more efficiently will find that they do not have to go to the capital markets so often.

Exhibit 1 compares Alltel and Rochester Telephone, two regulated telecommunications companies. Between 1987 and 1991, Alltel had lower growth in earnings per share (3.4 percent for Alltel; 10.2 percent for Rochester), but the share price of Alltel grew at 19.3 percent annually, while at Rochester Telephone growth was only 11.2 percent. The difference between them was primarily capital efficiency. Rochester's return on invested capital (ROIC) declined from 14.5 percent to 4.6 percent in the same period, and its ratio of sales to invested capital (capital turns) fell from 0.62 to 0.54. Over the same five years, Alltel's ROIC rose from 8.8 percent to 10.4 percent, and its capital turns improved from 0.54 to 0.76. Clearly, the market was responding to capital efficiency as well as to earnings.



Locating inefficiencies

In general, improvements in capital efficiency result from eliminating non-value-based drivers of demand for capital, promoting creative exploration of lower-cost options, and intensifying attention to day-to-day project execution. Although most CFOs and line managers would agree that additional effort along each of these dimensions will produce incremental benefits, few anticipate the magnitude of savings that can actually be captured. When realization finally dawns, their first reaction—after the initial shock—is to question the motives or intelligence of field personnel. Surely they must have been aware of these inefficiencies?

As the following case examples show, however, most inefficiencies are grounded in "legitimate" past practices, hidden constraints, or misaligned incentives. Left undetected, these subtle influences will continue to deprive companies of significant capital improvement opportunities for years to come.

Focus on value

Eliminating non-value-based drivers of capital spending requires careful analysis of the root causes and assumptions that lead to capital requests in the first place. Deferral or elimination of projects is often the greatest source of savings, but it is not always readily apparent where the opportunities lie. Take, for example, the determination of how much capacity is required to meet projected demand. Measurement of capacity utilization can be tricky, as an example from a telecommunications company demonstrates.

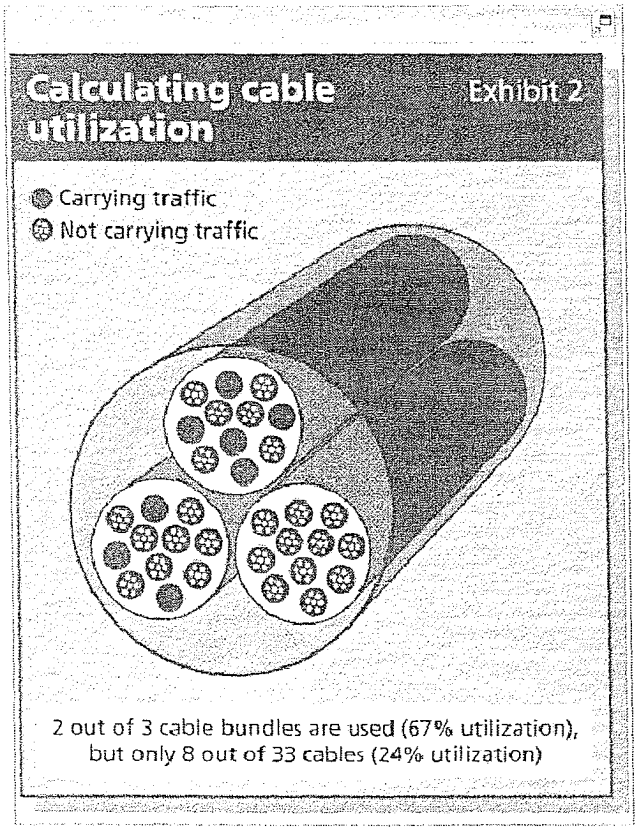
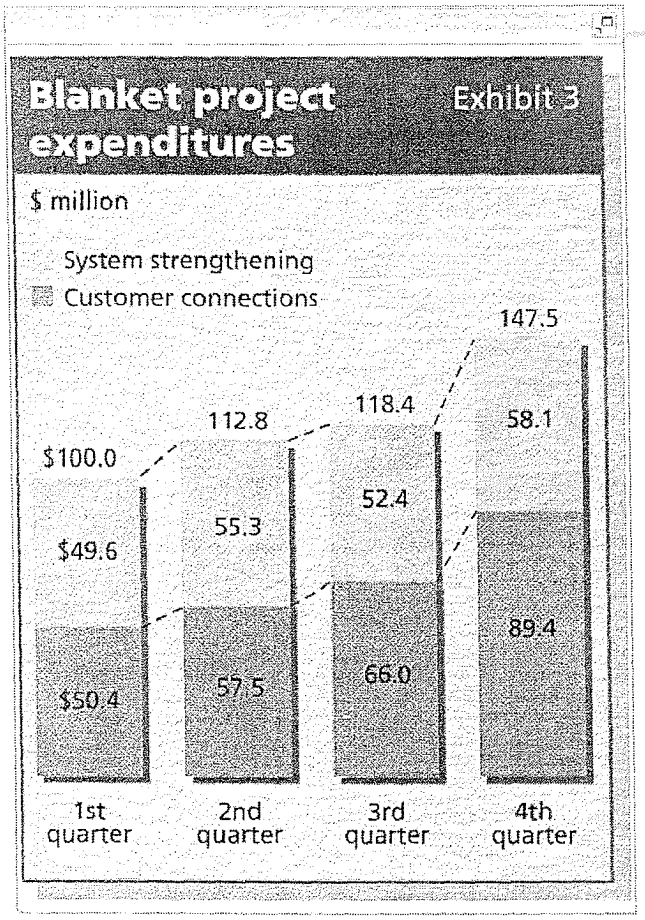


Exhibit 2 shows a hypothetical cable that is 67 percent used, according to the following "logic": the large cable carries three smaller cables, only one of which is not used. Partial use of a smaller cable counts as full use. Therefore, the large cable is operating at two-thirds capacity. Note, however, that if we turn to the basic unit of transmission, the smallest cables, we see that only 8 out of 33 cables are actually carrying traffic. The real capacity utilization is thus only 24 percent. Anomalies like this cannot be easily discovered by the CFO from his or her vantage point at the top of an organization.

In an electric utility system, the proper sizing of transformers is an important element in ensuring adequate capacity. At one company, design en- gineers were responsible for specifying transformer requirements, though the funding came from operation's capital budget. People barely noticed the engineers unless the transformers became overloaded, causing reliability and quality problems. Then they got yelled at. Consequently, the engineers took the initiative to forecast circuit and customer load patterns in an attempt to assess future capacity requirements.

To protect against unforeseen requirements, they scheduled projects for installation up to two years in advance, and added an extra safety margin of 50 percent to the rated capacity of the equipment, which was already lower than its actual capacity. Sometimes, of course, the projected demand failed to materialize, and the net result was that the utility had a number of transformers in place capable of carrying an overload of about 80 percent. By adding reliability and capital efficiency to the criteria used to select and prioritize projects and by shortening installation lead times in order to improve forecast accuracy, the company was able to reduce its capital expenditure budget by 20 percent.



Opportunities also exist to reduce the appetite for capital consumption by addressing the underlying drivers of "blanket" spending. Anyone who has controlled a blanket budget knows the temptation to underspend during the first three-quarters of the fiscal year, then load up during the fourth quarter. Exhibit 3 illustrates one company's pattern of spending by quarter. The fourth quarter shows levels 25 to 50 percent higher than in each of the previous three. Management had many explanations, but two were particularly compelling and worrisome:

"If we don't spend it this year, we lose it, and our budget for next year will be lower."

"I'm out of operating budget, but still have room in my capital budget, so I need to find capital jobs to assign my people [read: labor costs] to."

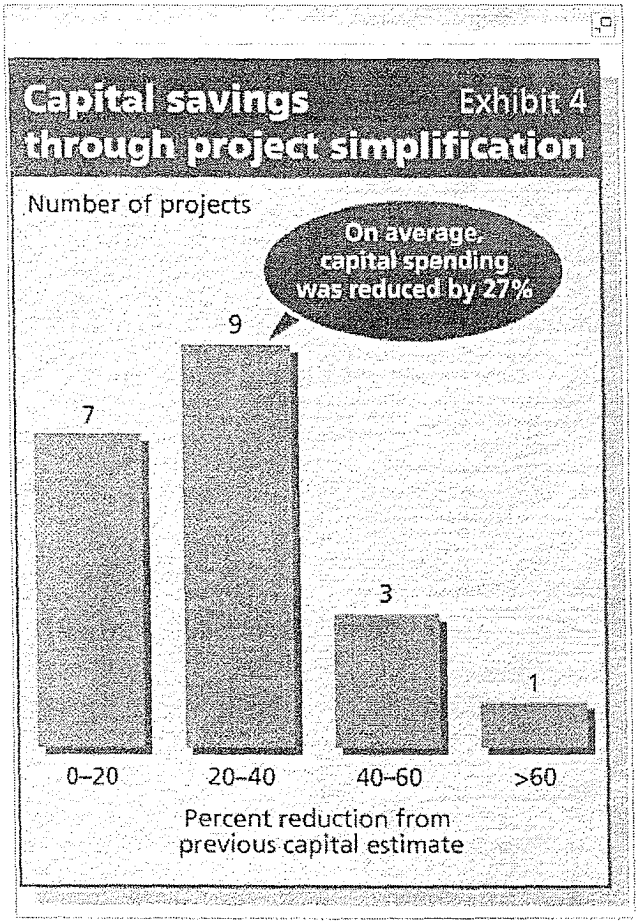
These statements reflect the organizational reality of most capital-spending programs. The result is that projects of lower value are taken on, and work is conducted in less efficient ways—for instance, by expediting materials or working overtime. Thus, actions that attack the attitude of fundamental entitlement in setting annual budgets and that evaluate performance on the basis of demand, productivity, and management of input costs can have dramatic impact in bringing blanket programs under control.

Focus on costs

Promoting creative exploration of lower-cost options involves examining opportunities for improvement on a "total system," rather than a component, basis, and undertaking a value-based review of projects on a line-item basis. Taking a total system view of projects can help identify, upstream or downstream of the proposed fix, lower-cost alternatives that are capable of delivering equal or greater impact.

For example, a company might be about to invest in a project for removing impurities from the downstream phase of a process. By reviewing total system costs, it might discover that there are cheaper options that prevent impurities from entering the system in the first place, perhaps through investment in better maintenance of equipment upstream. Such lower-cost options are, however,

often overlooked when individual operating units seek ways to reduce annual operating budgets. But if the distinction between operating and capital funds is relaxed, creative ways to reduce total costs are more likely to be uncovered.



Conducting a value-based review of a project's line-item features is analogous to the "line-item veto" privilege often sought by heads of government in dealings with their respective legislatures. In business, however, the challenge is less to master the politics of the situation than to get the necessary expertise in place to review projects effectively on a disaggregated basis. As one steel company discovered, the payoff for doing so can be significant: involving field personnel in generating, evaluating, and selecting ideas for project simplification led to a 27 percent reduction in the capital required to complete 20 projects (Exhibit 4).

Focus on execution

Intensifying day-to-day attention to project execution can be a source of improvement for most companies. Frequently, the opportunity manifests itself in the form of chronic budget overruns. These are always a problem, of course, but we have found that overruns in blanket spending are more frequent and add up to a larger overall figure.

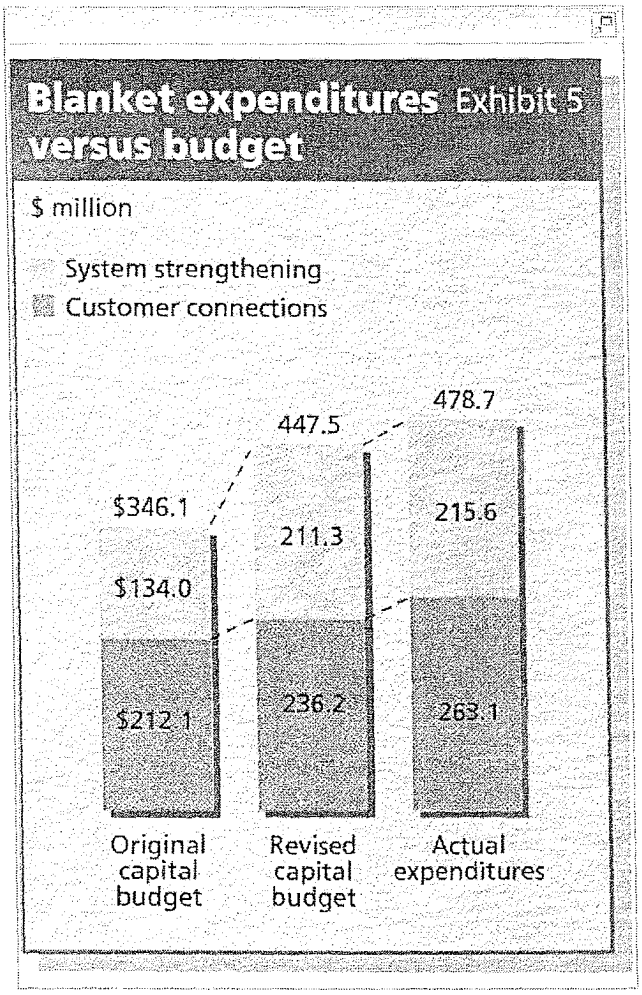


Exhibit 5 shows the evolution of one company's blanket capital spending during the course of a year: actual expenditures ended up 38 percent higher than initially forecast. Nor was there any follow-up audit that held people responsible for overspending. Not surprisingly, interviews with managers indicated that they tended to emphasize timeliness rather than capital efficiency:

"My task is to get the job done by the deadline."

"I don't care what planning says the estimated cost is; I just know I have to get the job done."

"I estimate the cost of a specific task, but I never see what the actual cost of doing the job was. Nowhere in the system do we compare estimated and actual job costs other than in aggregate."

Even where jobs do get completed on budget, opportunities for improvement frequently exist. More insightful balancing of cost with time, more accurate reporting of performance to front-line personnel, and more careful removal of barriers to implementation can usually add 5 to 10 percentage points to gains in efficiency already realized.

In some cases, for example, the budget may have been achieved, but the project was not completed on time or in full scope. In others, costs have been transferred between projects to "average out" performance reporting, in the process distorting and obscuring opportunities for leveraging best practices or addressing problem areas. Finally, unless there are explicit rewards for bringing projects in below budget, employees have little incentive for extracting efficiencies from a project that is unlikely to exceed its budget.

Value-based management

Disciplined efforts to achieve capital efficiency must, therefore, start with a management commitment to value creation and a managerial process for getting all levels of an organization, particularly the front line, to act in ways consistent with that commitment. Such an orientation is

especially important for companies that need to take a long-term view of their business and have relatively high capital intensity. For large projects, the analysis of investment decisions should follow traditional textbook NPV methodology.[2] But for the thousands of smaller decisions that arise from the design of property, plant, and equipment, or from blanket spending, there is need for a consistent but less cumbersome way of thinking. We call this process value-based management.

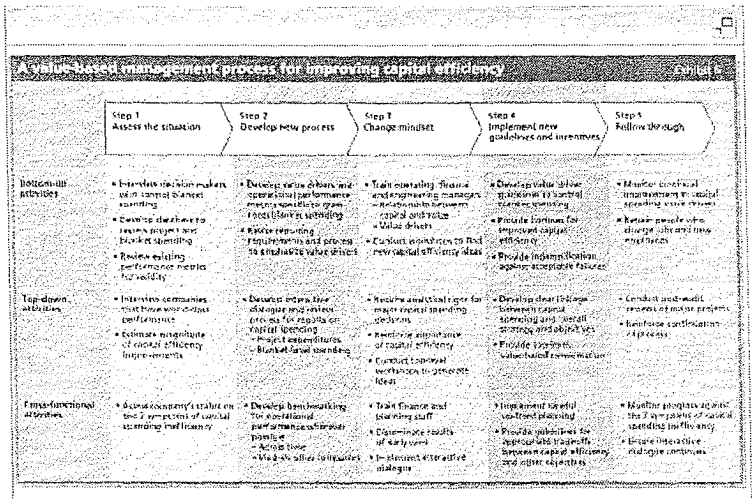
Value drivers are the specific, easily tracked metrics that link micro-level decisions to capital efficiency

Detailed net present value calculations do not work here. The scale is all wrong. Value drivers do. Value drivers are the specific, easily tracked metrics—cost per foot of installed cable or pipeline, peak-load transformer utilization, or time to completion of a project—that link micro-level decisions to capital efficiency.

Nurturing and leveraging grass-roots awareness of such drivers of value are, thus, essential parts of any process genuinely focused on value creation. At one company, for example, engineers hoarded vital equipment, in violation of policy, as protection against a breakdown in operations. The resulting excess inventory of components amounted to virtually a year's supply. Only when the engineers, together with procurement and stores personnel, were able to establish a guaranteed 24-hour delivery time for replacement parts could this wasteful practice be corrected—and capital efficiency improved.

Similarly, following the destruction of facilities in south central Los Angeles in 1992, PepsiCo experimented with a rapid construction concept and learned how to build a new Taco Bell in 48 hours from start to finish. The company determined that rapid construction was a value driver because its incremental cost was offset by the acceleration of the revenue stream, and because start-to-finish construction time was easy both to communicate and to measure. PepsiCo is now working to implement rapid construction as a key program throughout its whole organization.

Whatever form they take, value drivers can help unlock many hidden sources of improvement in capital efficiency. Exhibit 6 details a general management change process for identifying and tapping these and other types of capital-related improvements.



The value-based management process starts with a diagnosis. Does the company exhibit any of the tell-tale symptoms of inefficient capital management? (*See* the insert.) How much potential is there for capital efficiency improvements? How valid are the existing performance metrics, such as capacity utilization? How accurate a database is there for reviewing levels of blanket spending? How do decision makers at grass-roots levels actually make blanket spending decisions? What incentives do they have to improve capital efficiency?

Having gained a better understanding of how decisions are actually made, an organization can move to the second step: developing a new process that focuses on grass-roots activity, but with good support from the top as well as across functions on such tasks as developing benchmarks. Bottom-up activities include careful identification of value drivers that can be monitored for continuous improvement, coupled with revised reporting requirements to focus on them. At the top, there must be a review process that centers on a two-way dialogue about both blanket spending and major

projects. Its purpose is to make all levels of management smarter about where—and how—value gets created. Senior management needs better to understand the design of projects and the reasoning behind blanket spending; grass-roots managers, the importance of efficient capital spending.

Perhaps the most important part of the VBM process is the third step—changing the mindset of the organization. Workshops should be conducted at the grass-roots level to identify value drivers and brainstorm new capital efficiency ideas. Step 4 then reinforces the change in mindset by revising guidelines and incentives. Incentives are always a thorny issue. It is important, for example, to understand tradeoffs between customer needs and potential equipment failures, then to work toward agreement on guidelines that concentrate on capital efficiency and indemnify field engineers against sporadic equipment breakdowns.

Boosting capital efficiency is a "piano tuner" problem. The task is never finished

There is always a tendency to slip back into bad habits after an initial capital efficiency program has achieved its first success. The final step, therefore, is follow through. The goal is to have ongoing advances in value-driver performance via continuous improvement programs. Post-audit reviews of major projects enable learning about what went wrong and how to do things better next time. Boosting capital efficiency is a "piano tuner" problem. The task is never finished. But the benefits are clearly worth the continuous application of energy and attention. Value-based management pays.

The seven symptoms of capital inefficiency

Capital budgeting problems often reveal themselves in subtle ways. The presence of one or more of these symptoms should act as a warning that there are capital inefficiencies at work:

Blanket spending. A large portion of the capital budget is spent "automatically" by operating personnel or field engineers via guidelines or procedures that do not require economic justification.

Unintegrated approach. Company budgeting and planning processes treat operating and maintenance spending and capital expenditure as separate rather than integrated uses of company resources.

Myopic planning. It is either "feast or famine" with capital spending, depending on current earnings or cash flow. Alternatively, budgets are set on an annual, incremental basis rather than as part of a multi-year investment program.

"Entitled" spending. An approach to setting annual capital budgets based on expenditure levels in previous years, this is often accompanied by significant year-end spending sprees to "make budgets."

Missed budget targets. There is a skewed bell-shaped curve of project spending results, with many projects over but few under initial spending projections, particularly after adjustments for the scope of work accomplished.

Badly aligned incentives. A de facto performance management system admonishes field personnel and engineers for breakdowns and capacity constraints without placing adequate emphasis on prudent risk management or economic efficiency.

No post-audit procedure. There is limited follow-up to assess the magnitude or timing of benefits generated by capital programs.

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About the Authors
Tom Copeland is a principal in McKinsey's New York office. **Kenneth Ostrowski** is a principal in the Cleveland office.
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Notes

[1] See, for example, the articles by Klammer and Schall et al. listed in "Suggested reading" at the end of this article.

[2] See, for example, the books by Brealey and Myers or Weston and Copeland in "Suggested reading" at the end of this article.

Suggested Reading

R. Brealey and S. Myers, *Principles of Corporate Finance*, New York, McGraw Hill, 4th edition, 1991

T. Klammer, "Empirical evidence of the adoption of sophisticated capital budgeting techniques," *Journal of Business*, July 1972, pp. 387–97

L. Schall, G. Sundem, and W. Geijsbeek, Jr, "Survey and analysis of capital budgeting references," *Journal of Finance*, March 1978, pp. 281–7

J. F. Weston and T. Copeland, *Managerial Finance*, Fort Worth, Texas, Dryden Press, 9th edition, 1992

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