Risking Growth in a Risky World:

Integrated Asset Value and Risk Analysis

A CCN/M.S.G. Management Counsel White Paper

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Executive Summary

Over the past decade utilities have gone down many seductive paths to growth. Most turned out to be dead-ends and companies now are retracing their steps back home. To reduce the chance of getting lost again, many companies are strengthening their risk management capabilities and hunkering down. For many, risk management has come to mean "Just say no!" Trying to avoid every possible risk is not the answer. Despite the temptation to lock the doors and stay inside, utilities will increasingly be under pressure to deliver growth.

The real lesson from recent strategic misfires is that growth will come from taking existing assets and strengths to new heights. There are tremendous opportunities to build asset value by applying to your assets new technologies, new business models and new skills to truly transition to the new energy marketplace. Seizing these opportunities entails some risks - not trying may entail even more.

Integrated asset value and risk analysis searches for growth opportunities and the risks associated with pursuing them. It builds on the fact that a firm's value is the sum of the values of all its assets – hard physical and financial assets as well as soft assets such as customer equity, regulatory capital and intellectual resources. In this information age, soft assets determine hard asset values yet soft asset risks are under analyzed and under managed.

Integrated asset value and risk analysis calls for taking a fresh look at the way value is created. Building on and extending the experience and tools successfully applied to generation to other corporate assets can create significant value. This paper in the CCN/M.S.G. utility white paper series outlines the need for and application of integrated asset value and risk analysis.

Once Burned, Twice Shy

Many utilities have been burned by the disappointing results of unregulated HVAC and ESCo subsidiaries, foreign adventures, over-built merchant plant capacity and, of course, the well publicized energy trading debacle. As a result many companies have announced plans to "return to the core business" and to "squeeze the assets harder". Some companies are trying to "re-rate base" previously liberated power plants. Too avoid future firestorms and asset fire sales many companies are creating "enterprise risk management" groups to identify and manage risks throughout the corporation.

At first glance, the market seems to support risk avoidance. Utility stocks that go neither up nor down much relative to the market seem to be prized. So maybe the best strategy is to trim any source of earnings volatility from the business. Exit any volatile business, avoid new ventures and hedge or insure whatever risks remain.

We applaud increasing the rigor of risk analysis but we believe that focusing only on trying to remove risks will not avoid swings in earnings. Avoiding all risks is not only impossible to achieve in a dynamic market but is perhaps the riskiest strategy of all.

Nothing Ventured, Nothing Gained

Most strategic failures are not caused by taking risks but taking the wrong risks. In almost every case the underlying problem was not failure to measure risks but failure to value assets adequately. Simply put, too much was paid for HVAC companies, too much was invested in ESCos, foreign utilities were overvalued and the continued growth in trading profits was vastly oversold. There are many ways to overvalue the prospects of assets; aggressively optimistic growth forecasts, naïve assumptions of synergy, unwarranted belief in the acquirer's superior management know-how and systems, adrenalin (or testosterone) induced bidding fever, unrealistic discount rates, etc. Together these factors swamp any deficiencies in traditional risk management.

Risk avoidance can go too far. Installing new risk management groups may itself prove risky. They will certainly find risks and they will certainly find ways to avoid them. But risk is only a component of a larger picture – asset value. Looking at one and not the other is risky. Opportunities can be missed and corporate atrophy will set in at a timid enterprise.

Ironically, the risks that seem to most often undo a company strategy are the "soft" risks that usually go unrecognized and unmanaged. These include regulatory risk, human capital risk, management process failure risk, etc. Most failures of foreign acquisitions resulted from regulatory and political risks, not physical or financial risks.

It is true that in some cases, most notably energy trading, fraud and misrepresentation played a part. But even here the implied asset values of energy traders and energy contracts should have (and in a few rare cases did) set off alarms. Indeed Enron, the most egregious manipulator, was trying to sustain its unsustainable asset valuations. When the crunch came, all the VAR calculations and all the counter-party assessments didn't do much. The failure of VAR and related risk management tools demonstrates that once the bad guys know what you watch that's what they manipulate.

The social risks demonstrated on August 14, 2003 will probably create new risk bearing and sharing structures. If past experience holds, utilities may wind up being the risk-holder-of-last-resort. Following the "imprudence" disallowances of the late 80's many utilities were advised to transfer generation cost risks to customers. Wall Street seers favored power purchases over plant ownership as a way of limiting regulatory risk. Some utilities hoped to collect guaranteed but unregulated returns by transferring their generation assets to merchant subsidiaries and buying power from them. The upshot? To avoid self-dealing, regulators and legislators froze utilities out of most unregulated opportunities. Then, when customers felt the impact of market risks, regulators found ways to transfer those risks back onto regulated entities anyway.

The Need to Take Well Considered Risks

A utility CEO recently interrupted us in mid-presentation and asked "Is this just another approach to telling me what not to do? Can't you find some good things to do for a change?"

As this CEO understood, executives exist to take appropriate risks in pursuit of increased shareholder value. To do this they need an integrated approach that simultaneously searches for opportunities while unearthing the risks those opportunities entail. Then management can judge if the "game is not worth the candle" or the risk of being burned.

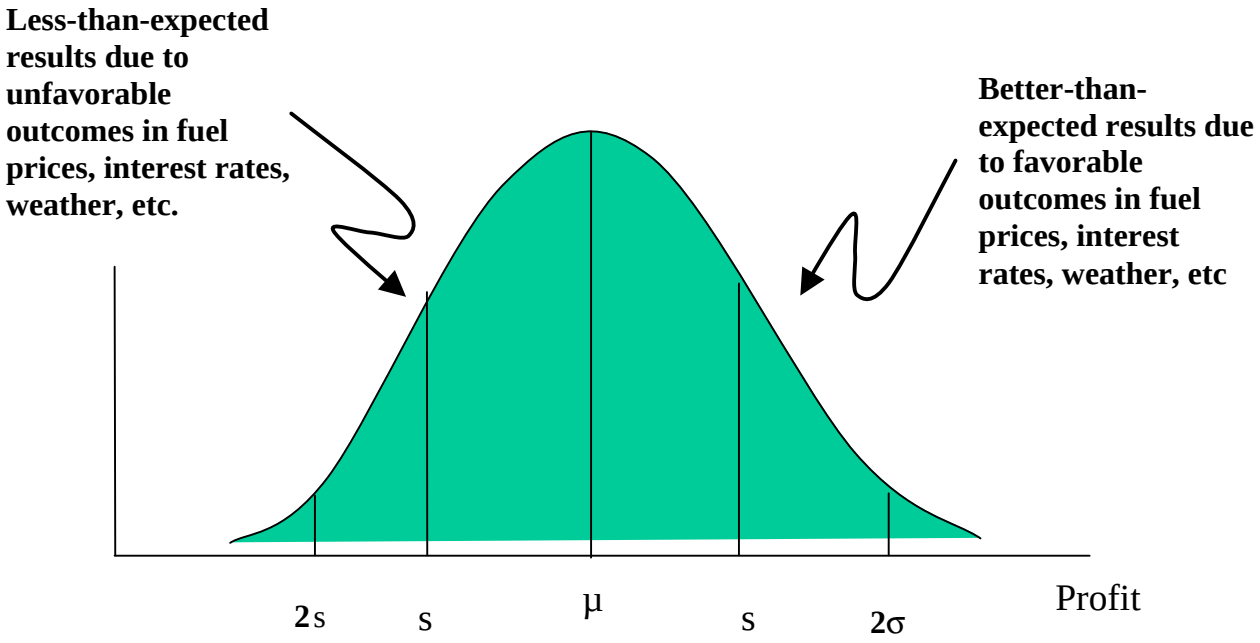
We believe strongly that there are still untapped opportunities in the utility business and that they can be uncovered by thoughtful analysis of asset values. The risks of not taking risks, of simply hunkering down and "squeezing the asset harder", are many but they are often the mirror image of increased opportunity as illustrated in the table below.

Risks of Not Taking Risks	Opportunities Involving Risk
Sacrificed opportunities	Taking advantage of new technologies and market needs to create new value
Vulnerability to innovative, aggressive competitors	Leveraging natural advantages to become innovative, aggressive competitors
Potential takeover by growth oriented acquirer	Creating a superior, scalable and transferable acquisition business model
Dissipation of intellectual capital and know-how	Addressing the growing know-how deficit
Regulators begin to question premiums and compensation	Correcting the flaws of first stage restructuring

Of only one thing are we certain. The successful utility of the future is going to look a lot different than yesterday's. You can't go backwards to the future.

But, before you can go forward, you need to appreciate not only the potential gains but also the level and likelihood of the risks associated with achieving those gains. Of course, as illustrated below, sometimes chance deals you a favorable hand. In hindsight the basic mistake of the 90's was in betting every hand would be favorable. The question today is – what can you do to minimize the unfavorable outcomes and improve the odds of the favorable.

Expected Profitability Distribution

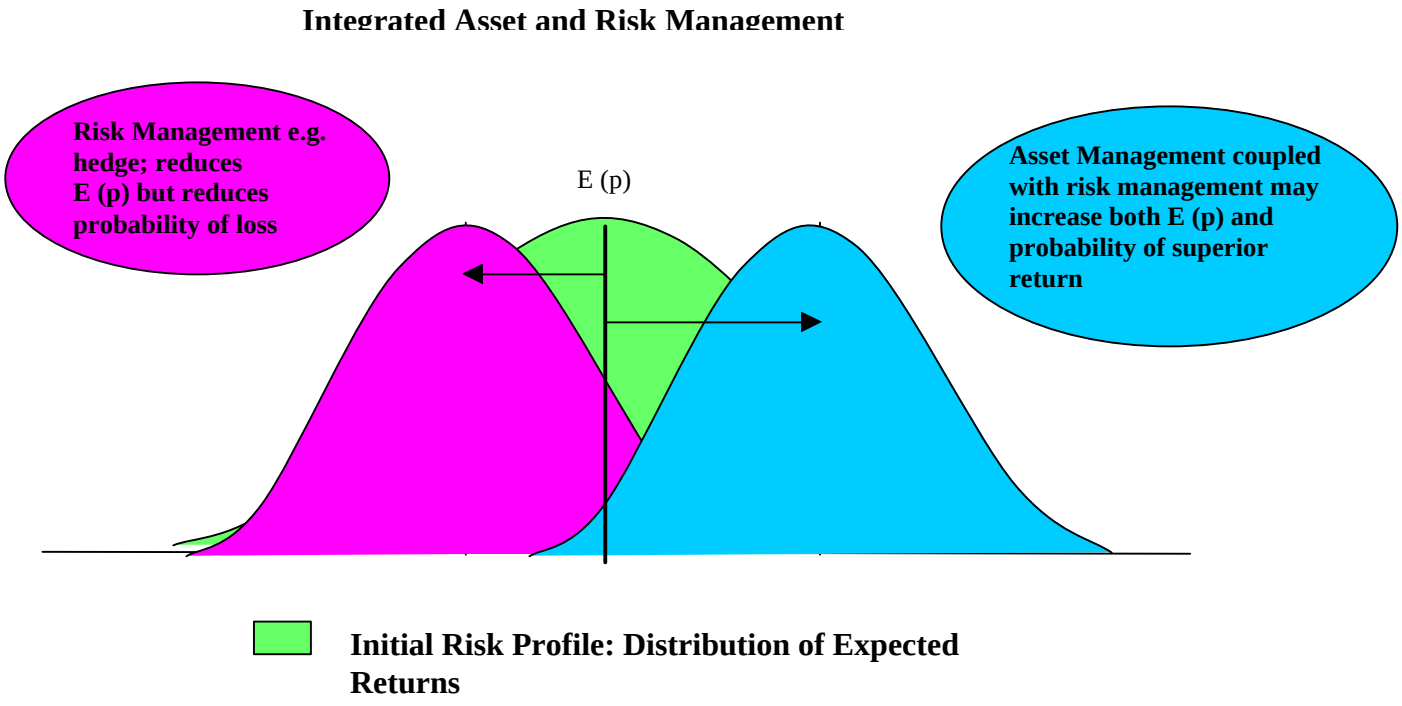


Principles of Integrated Asset Value and Risk Analysis

Integrated asset value and risk analysis is a structured method of searching for ways to grow shareholder value by analyzing the firm's assets, identifying ways of growing those assets' contribution to corporate value while managing the associated risks. Integrated asset value and risk analysis calls for a different way of looking at the business than is implicit in most planning and budgeting processes. The following principles and observations underlie the concept and its application.

- The firm's objective is to increase the asset value of the firm – not to avoid risks.
- Firms increase their value by taking calculated risks.
- The firm's appropriate level of risk-taking is defined by investors and reflected in the cost-of-capital to the firm.
- The value of a firm is the aggregate value of all of its assets – not just those measured by accountants and not necessarily as measured by accountants.
- Many of the most important but "soft" assets such as customer equity, human capital and vendor relationships are usually not measured or managed as assets.
- Many asset values are linked. Regulatory capital depends, for example, in part on service quality and customer satisfaction.
- In this information age, soft assets and their risks usually determine the success of efforts to increase hard or financial asset values.
- An asset's expected value can be estimated as a probability distribution defined by its mean or expected value and the variance around that mean which reflects risk and uncertainty.
- All asset values, whether hard like generation or soft like brand equity can be expressed in dollars of contribution. For example, the asset value of regulatory capital's equals the NPV of granted and realized profits over the base level – i.e. what would have been earned in the absence of a change in regulatory policy.
- An asset's expected value is a function of the expected value of underlying variables. For example, customer equity is a function of customer purchase rate, retention rate or tenure, acquisition cost and margin on purchases.
- The variance of an asset's expected value is a combination of the variances of the underlying value-driving factors. For example, the variance of expected power plant value reflects the variances around the expected future electricity price, fuel and other input prices, plant availability and load levels.

These dry-sounding principles underlie a very powerful way of growing value. In short, asset management seeks to move the expected value of an asset to the right while risk management tries to trim the potential for bad outcomes. The graphic below illustrates how an integrated application of these tools it possible to both increase expected value and to reduce risk.



Creating an Asset Value and Risk Profile

Wouldn't it be great to have a profile of all your major assets indicating which ones were under-developed, what risks they were subject to and the most promising strategies for realizing their value while managing that risk? Fortunately, here is a 4-step process for recovering from risk phobia.

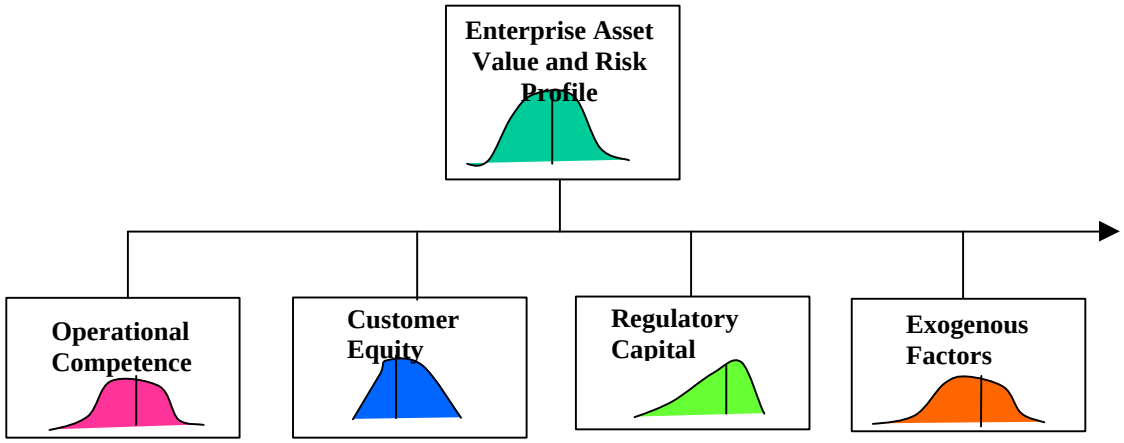
- Define your critical assets:
- Model asset value(s) and risk profiles
- Ask the right questions
- Integrate asset value and risk analysis into corporate management

Define Your Critical Assets

Not all companies are ready to apply integrated asset and risk management to all of their assets. Most utilities start with major categories of physical assets such as generation or transmission. But many companies start on the revenue side by looking at customer equity or brand equity, etc.

Critical assets may be defined in different ways depending upon a company's situation:

- The set of assets that generate the vast majority of operating contribution
- Assets that are particularly prone to changes in the regulatory and business environment
- Assets that appear to offer substantial opportunities for gain or which seem to be underperforming
- Fundamental assets, often soft assets, that may be small budget items but critical to success



There will be overlaps among revenue flows associated with different assets. For example, achieving an improvement in a PBR affects regulatory capital, physical asset values and customer equity. It's important to be aware of these overlaps when aggregating results and when allocating credit for performance.

Model Asset Value(s) and Risk Profiles

Building asset valuation models is a fairly straightforward process, very similar to other valuation efforts. However the complexity of generation and power markets makes it difficult to model these assets at home. There are commercially available generation asset valuation and risk assessment models such as M.S. Gerber & Associates' RISK ANALYST©. For other assets, a tailored model can be built and combined with existing financial model such as MIDAS GOLD©.

In modeling the important things are to identify the major value-drivers and their relationship to one another. Defining the exogenous factors that most affect your asset values and risks is crucial. These typically comprise interest rates; fuel costs and other things you can't affect but can often use financial instruments to hedge.

Hedge and insurance costs can be modeled as a charge in each period. The actual magnitude of, say, interest rate swings are not important in determining asset value- only that they are judged to be worth hedging. The cost of the hedge will reflect the magnitude

of the swings. Since asset values are estimated over the mid-to-long-term, uncertainties and short-term risk factors such as weather that tend to even out over time often can be ignored. However, if a risk management program calls for a series of short-term hedges (e.g. weather) the costs should be estimated as with other asset operation and ownership costs.

Keep the models accessible to the people making decisions. A lot of the new ideas that emerge from this process come from playing with different scenarios and assumptions.

Ask the Right Questions

Many risk managements systems rely almost exclusively on the brakes to avoid accidents. Brakes are often useful but the accelerator and steering wheel also have their places in corporate development. Asking the right questions about assets is a good way to keep your eyes on growth.

Managing all assets as if they are financial capital calls for a mindset different from a traditional operating orientation. The asset management perspective has taken hold most deeply in generation. In the cost-plus regulation operating model, generation managers sought to maximize unit availability and minimize heat rate. When IPPs and co-generators emerged, utilities often scoffed at the way the new plants were designed, built and operated. The new guys were treating each plant as an asset with it's own P&L and they were achieving better-than-respectable performance and returns by standardizing designs, leveraging technical skills and focusing on maximizing asset value. They pushed ideas such as "tolling" and offered a whole new range of power purchase contract options. While recent events suggest that some of the new guys didn't always manage risks as well, utility and affiliated generators have largely adopted their approach to plant asset management.

We've developed a structured diagnostic to lead people through the initial phases of asset management. The following questions suggest the nature of the diagnostic.

What really matters around here? Or what are first things you'd change if you could? We're frequently surprised by the mismatch between answers to this question and the things management spends its time and thought on. Partly this reflects a belief that some things are immutable and partly it reflects the lack of a framework for putting asset management issues on a more quantitative and analytical basis.

Seasoned managers often "know" certain asset improvements would pay handsomely but can't quantify the business case adequately within the budgeting process or are averse to being held responsible for making another set of numbers.

What's it really worth? If you sold the asset to someone else, how would they value it and why? How much is it worth to you and, if this is different than its sale value, why? In one of the best business books of recent years, Michael Lewis' **MoneyBall**, we learn that GM Billy Beane has made the low-budget Oakland A's a perennial contender by

discarding old shibboleths about player values (the only real assets a team has) and conducting rigorous analyses of how games are actually won. This enables Beane to acquire player assets more economically than his rivals and to put together a formidable team with a payroll a fraction that of other successful clubs.

What's it worth to do better or worse? This is especially helpful in looking at difficult-to-quantify soft assets such as regulatory capital. Project the "required" rate relief then assign probabilities to achieving all, more or a fraction of that figure under your current approach – then ask what makes the needle move and how much it might take to achieve the movement.

Is there an analogy to other business? Exploring a reasonable analogy to the asset might suggest different ways of managing it. If you conceptualize your wires assets as a "store on poles" you might find sales per square foot of retail space suggestive of sales by circuit and begin to see a pattern of over and under performing circuits. This might suggest sale prices to attract load to some and premiums to avoid uneconomical investments on others. It might also suggest asking regulators to de-average outage standards by circuit depending upon customer preferences or values.

What could go wrong? Look not only at the risk factors but also at the system you are using to manage the risk. For example, does your counter-party risk assessment assume that the reported and audited data used is accurate and truthful? Scoundrels look for holes in your defense and so should you.

What risk hedge, insurance, avoidance and mitigation options are there? In recent years investment bankers have taken financial engineering to new levels (some people dispute the direction of change) and now construct derivatives for almost any risk that can be correlated to financial market events. It's also possible to roll-your-own risk instruments by carefully structuring input/output contracts and by looking for natural hedges in the form of negatively correlated phenomena. In some cases old-fashioned risk-sharing arrangements such as interruptible rates and service level guarantees can be refined and used effectively.

Are there alternative business models? Sometimes adopting a new business model can move you into a whole new asset and risk management territory. IPPs introduced a plant-profitability model to manage generation assets. Southwest Airlines clung to point-to-point networks while the sophisticates adopted hub-and-spoke configurations. Puget Sound outsourced the operation of its own delivery assets to a couple of contractors and built a utility engineering firm, Infrastrux, to leverage its technical competencies.

Who should do this? Once you've figured out where the untapped value lies and the risks to achieving it, you need to execute. The first step in successful execution is to identify the right person or team. Again, look at team formation as creating a new asset faced with some risks. Will these men and women create more value in this role than elsewhere? Will you be able to capture the intellectual capital they create during the start-up phase? A lot of companies are going to find that they don't have the expertise in-

house to fill all the roles. As dangerous as putting an internal candidate in the wrong role is, relying on an external hire without an adequate incentive and control system is can be even riskier. During the first round of restructuring, a lot of people were handsomely rewarded for beating flawed targets and incentive systems. These people built up their personal asset value but didn't do much for their employers.

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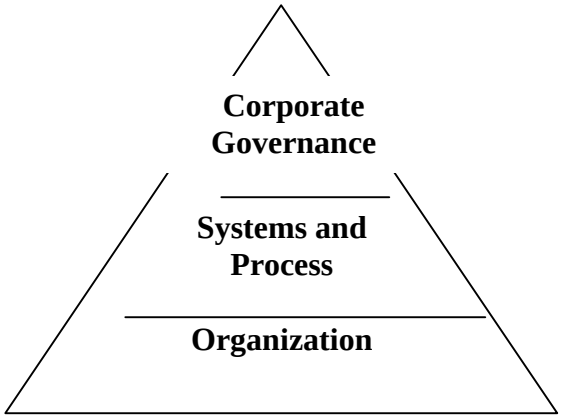
These are just some of the questions we've found make good grist for an asset and risk management assessment but they suggest the range of the undertaking. Once you start looking at elements of the business as assets instead of simply processes or functions, you'll think of lots of questions.

Integrate Asset Value and Risk Analysis Into Corporate Management

You can get quite far by looking at specific assets on a project basis but the biggest pay-off comes when the company's systems and process are aligned to support a continual search for ways to build asset value while managing the related risks. Generation asset management took off when plants were seen and treated as profit centers. Clearly there is a point at which the cost and hassle of accounting for the profitability of individual assets outweighs the benefit but that point is getting ever smaller.

Integrated asset and risk management is very different from traditional budgeting and planning. True, many of the things done look similar but there is a world of difference between optimizing the value of customer equity and meeting mandated customer service standards. There is a big difference between viewing regulatory relations as an asset and optimizing its value and complying with regulations.

To realize fully the benefits of integrated asset and risk management, a company needs to address governance, process and organization.



Corporate Governance

A lot of board members are taking the heat for approving unfortunate acquisitions and not reining in the worst instincts of executives. Sarbanes-Oxley makes every director a risk-manager but it may well make him or her aggressive risk-avoiders. Increasing board vigilance of unwarranted risk-taking and risk-hiding without unduly inhibiting healthy risk-taking will be a challenge. The CEO has to certify the accuracy of past performance to shareholders but he or she needs also to find a way to present future risks and returns in a way that board members can understand and feel comfortable with. A comprehensive corporate asset and risk profile can help to balance the board's perspective and give them ammunition to ask what's being done to grow shareholder value as well as to protect it.

Inside board members have been blamed for not being tough enough on the CEO and not demanding more exposure of risk positions. (On the other hand there is little evidence that outsiders brought in to provide risk analysis expertise saw the dangers any more clearly.) There's something to this criticism but replacing all insiders with unknowledgeable outsiders may just stimulate inaction. The new "independent directors" may not know much about energy business opportunities but they'll certainly understand the personal risk of damaged reputations and maybe worse when large investments go sour. If insiders are politically untenable, companies must keep at least a few knowledgeable industry experts on board.

Systems and Processes

Measuring and internally reporting asset value and risk profiles will help to focus efforts and stimulate improvement through learning-by-doing. Generation asset management has evolved from humble and intuitive origins to a fairly sophisticated process at some companies.

Incentive systems that reward managers for riding the bull should be reconsidered in light of the ability to estimate real asset value changes and compare those to the general level and movement of the market or among peer companies.

If you've painfully implemented a process management or an enterprise resource planning system you're not to going to like hearing that you should be focusing on managing assets and risks. Process management is not necessarily incompatible with asset management but it's important to keep the ends and means clear. By all means improve the customer service process but only insofar as it increases customer equity and regulatory capital. Certainly streamline unit outage management but only up the point where it increases generating asset value.

As the events of August 14, 2003 indicate, some asset risks – especially transmission – are difficult to independently manage. In these cases companies have a responsibility to

push hard to develop effective risk management systems at the regional level. The evidence that even externally shared risks can be managed better is borne out by the fact that some RTOs and ISOs within the Eastern Interconnection performed better than others.

The typical separation between operating and capital budgets makes it hard to see asset values and risks as a whole. Capital budget proposals frequently impute operating cost savings to justify projects but responsibility for achieving those savings often rests elsewhere. A new substation may require less maintenance and increase delivery asset value but if those operating "savings" are never realized or the resources are just redirected the delivery asset value may actually decrease. Capital costs increase for the new station while operating costs for the system remain the same.

Organization

In most organizations critical asset values and risks are driven by a number of groups, often reporting to different executives. One group may decide to manage an asset, say distribution, to merely satisfy regulatory constraints but may not consider the implications for customer equity or long-term regulatory capital.

There is no neat organizational solution to this issue. It is relatively easy to determine responsibility for hard physical and financial assets but soft assets are often difficult to assign. There will always be some cut-across responsibilities and conflicts are inherent within large businesses. But, being aware of these issues and seeking to measure and report the change in asset value and risk profiles can help stimulate searches for innovative and joint solutions.

Conclusion

It's understandable that utilities would become cautious after their experiences with a host of disappointing growth strategies. But the pendulum may be swinging too far, threatening the unintended consequences of stagnation and decline.

The market has changed, the role of utilities in that market has changed, and it will change even more. There are tremendous opportunities to create the utility of the future on the foundation of today's assets. It will take some courage to risk to grow. It will even take some risk management to keep everyone sober and focused. But don't put the brakes on before the vehicle is moving.