

A Global Energy Decisions Perspective

Enterprise Portfolio Management:
Turning Strategy into Results

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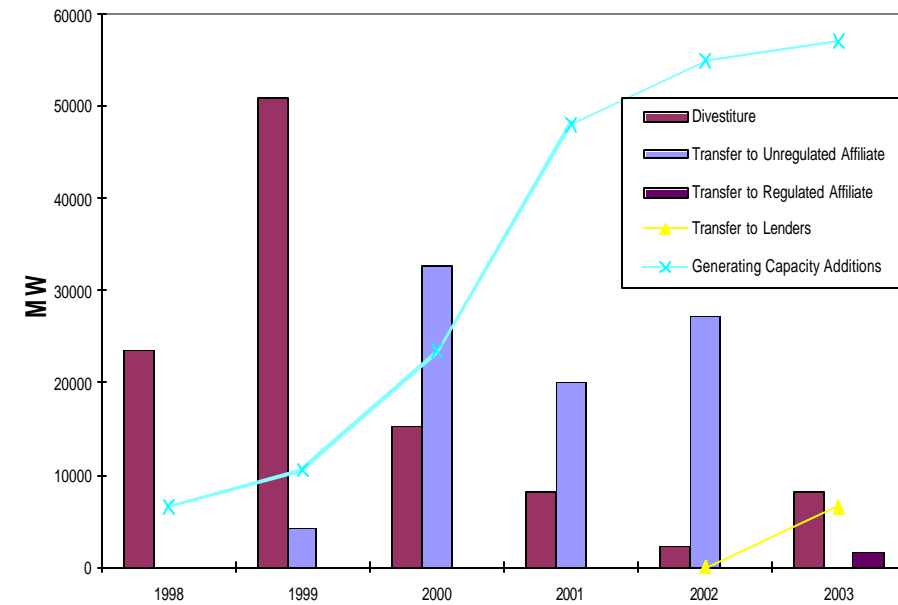
Turning strategy into results has never been more difficult than it is in today's volatile energy environment. Energy executives not only must be agile in responding rapidly to changes and dynamics in the marketplace, but also must align and adapt their organization to actively produce the desired results in an uncertain business environment.

In *Enterprise Portfolio Management: Turning Strategy into Results*, we examine how the advent of Enterprise Portfolio Management (EPM) gives executives a common framework to optimize business decision for success in a volatile and uncertain market. EPM is the end-to-end integration of strategy, enterprise systems, and processes to turn strategy into results.

An Era of Challenge

It's no secret that the United States' \$250 billion-a-year electricity industry has been battered over the last few years. Traditional energy organizations were literally torn apart and rebuilt. Companies began slicing off pieces of the business, creating separate units. Some of these newly formed business units were regulated, while others were not — making them sorely incapable of handling the regulatory and market changes sweeping the industry.

Changes in U.S. Generating Capacity

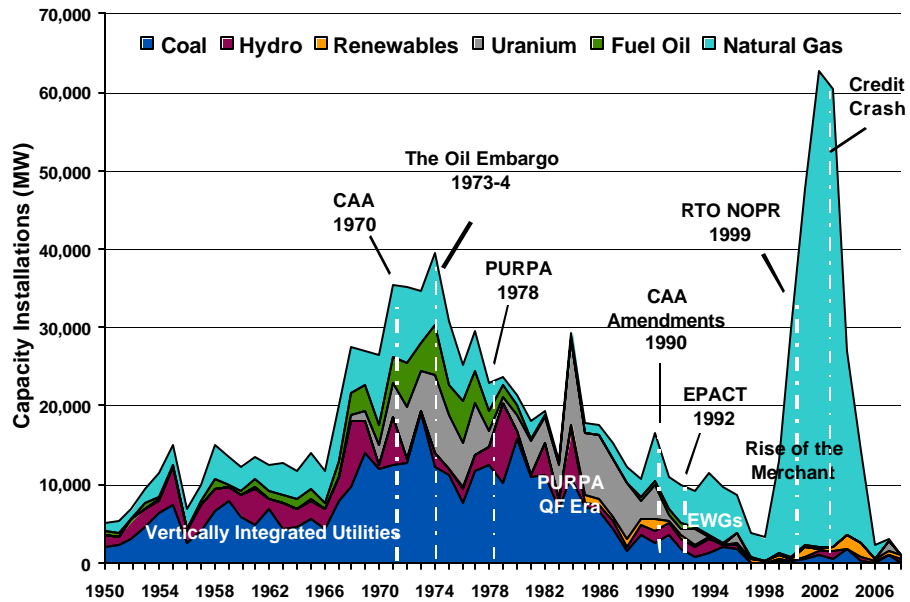


Source: Henwood Energy Services, Inc.

Today it is the core business of these companies that remain, while most of the unregulated units have died. For investor owned utilities that core is still a rate-base regulated energy distribution and transmission business that may or may not include generation assets. For merchant generators the core business is managing a portfolio of assets, contracts, and obligations to meet customer needs — often across diverse regional markets.

Nothing illustrates the rollercoaster ride we have experienced better than the following figure, which shows the current spike in the industry's power plant construction.

New Generator Capacity by Fuel Since 1950



Today, survival and success in this volatile energy climate depends on the implementation and execution of a sound corporate strategy. The keys to doing this are:

1. **Aligning the business** around a flexible strategy based on market fundamentals
2. **Developing the agility** to quickly respond to changes in market conditions, price and demand
3. **An action plan** that translates corporate strategy into measurable results

Return to Strategy

To many, right now is the most exciting time to be in the energy industry since Thomas Edison was alive. With a wildly fluctuating supply-demand balance, there is the potential for large returns. However, the current industry challenges are more than enough to keep any energy executive up at night. As an example, high reserve margins have left many generators facing stiff competition for sales of the power. This has led to depressed spark spreads for merchant plant owners. As a result, many merchant owners have had a difficult time realizing net operating revenues sufficient to make debt service payments on money borrowed to build their plants. Debt restructuring, distressed asset offerings, and bankruptcy filings have become a common place.

Although these problems have made it hard for many energy companies to operate profitably, there is hope for companies that link their strategy to a clear understanding of market fundamentals. Clearly, any strategy that has not been seriously reconsidered in view of this market volatility is suspect. Meeting the diverse demands of today's (and tomorrow's) market has caused many energy players to literally reinvent both themselves and their corporate strategy on the fly.

With these newly created strategies in place, energy CEO's - from vertically integrated electricity utilities to merchant wholesale generators - now face the same questions:

- How do I align my organization to focus on this new strategy as I go along?
- How do I get my organization to understand what the strategy is, and to work from a common data model for uniform business decisions?
- How do I make sure that they are actually following the strategy from a daily operational standpoint?

In the recent past, answers to these questions have not easily been found. Most of today's energy management solutions consist of specific solutions aimed at individual business units, rather than an end-to end, enterprise-wide solution. This is because, up until now, portfolio business decisions have typically been made by the individual business units - each with their own agendas and objectives.

Now, with the stakes of doing business higher than ever, individual solutions no longer cut it. Energy executives need a clear, consistent corporate strategy for their business to become agile. And to do this they need tighter control over the finances and information flow of the entire company to understand the cash flow at risk. This requires an enterprise-wide solution that meets the quickly changing business demands of today and positions them for competitive advantage in the future.

Meeting the Challenge: Enterprise Portfolio Management

In order to turn strategy into results, today's energy companies need a single solution that can integrate and align people, systems, and processes around a consistent strategy across and beyond the enterprise – with one common framework. Enterprise Portfolio Management (EPM) is that solution.

What is EPM?

EPM is an integrated system that facilitates tight alignment of strategic objectives, portfolio risk analysis, and operational actions. EPM works by enabling separate business units to use a common data platform, common analytical tools, and a common market fundamentals framework for optimal business decisions.



Simply put, an EPM system helps energy CEO's to quantify the cash flow risk to management strategy, align business units to improve execution and optimize portfolio performance, and allows them to focus specifically on their long-term strategy.

The Building Blocks of EPM

The three core values of EPM that allow energy companies to become more focused can be summarized as: *Alignment*, *Agility* and *Action*.

Alignment – Energy executives need to know if business units are following the corporate strategy or if they are doing their “own thing”. EPM forces business units to use a common decision-making framework at the beginning of each decision-making process, thereby giving the CEO the ability to make sure that the business unit is on the same page with the corporate strategy. In addition,

EPM provides the CEO with real-time reports that will clearly indicate whether or not the business unit is on board with the implemented strategic objectives.

Agility – EPM is using data from a consistent enterprise-wide framework measured against the company’s risk and tolerance strategy, thus preventing executives from making critical financial decisions blindly. If a portfolio is underperforming because of depressed prices, and cash flow is not enough to cover debt, CEO’s need to know when that cash flow is going to turn around. EPM gives executives the tools to calculate what the cash flow risk is and to determine if their available options are consistent with their risk tolerance strategy.

Action – Once a strategy is in place, CEO’s need to know if the company can actually implement it on a day-to-day operational basis. The essence of EPM in the operational time horizon is the optimization of the tradeoffs between operational performance, financial performance, and load and contractual obligations in a fashion that is consistent with overall corporate strategy. What is the cash flow risk in that portfolio? What day-ahead and real-time decisions have to be made to maximize the value of the generating assets? Has a plant gone down for maintenance longer than originally scheduled? Because EPM links all of the pieces from separate business units together, data on each of them can be sent back to the CEO informing him in real-time as to how they are doing.

The Key Components of an Enterprise Portfolio Management Solution

EPM software solutions are a new approach to integrating software around a common data framework linked to a particular business strategy, giving the management team more effective control of the enterprise from strategy to results. When choosing a software solution to implement EPM, companies need to make sure that the solution is indeed end-to-end (from fuel source to financial settlement). In addition, it is crucial that an EPM software solution have effective capabilities in the following areas:

- **Strategy Analysis**
- **Market Analysis**
- **Risk Analysis and Planning**
- **Corporate Finance**
- **Business Structures**
- **Generation Management**
- **Trading and Scheduling**
- **Load Forecasting**

As an example of a specific EPM software solution and its functionality, let us look at EnerPrise 2.0 from Henwood Energy. EnerPrise provides best-of-class

software modules for each of the above categories, but also integrates them throughout the enterprise with independent analysis, price forecasts and data, creating a singular EPM solution to turn strategy into results. EnerPrise is built on n-tier technology and leverages the .NET framework throughout its architecture. In addition, EnerPrise is powered by PROSYM, perhaps the best-known and most trusted energy system simulation engine available in the industry.

Strategy Analysis

Today, executives are rethinking their fundamental business strategy and the models that drive them. Anticipating future trends and developing strategy options that maintain a sense of alignment, agility and basis for action is key to success.

EnerPrise offers a strategic framework for thinking about future scenarios in the industry, and a set of integrated strategic planning tools and services to help energy executives make course corrections over time.

Benefits

- Detailed analysis of future strategies with a scenario-based 15-year big picture look at changing energy fundamentals, trends and prices across North America
- Comprehensive testing of alternative strategy options, business models and initiative across alternative views of the industry and market future

Market Analysis

Executives need fundamental market analysis to understand both nodal and zonal prices for energy and ancillary services. EnerPrise 2.0 provides regional power market databases covering North America, Europe, Australia and Asia that offer comprehensive, robust and accurate electric supply and demand data, including evaluation of restructured power markets, and generation asset valuation.

Benefits

- Accurate forecasting of electric wholesale energy and ancillary services prices
- Rapid development of both discrete and stochastic prices for zonal and wholesale pricing paradigms
- Accurate valuation of congestion revenue rights
- Better assessment of portfolio impact of locational marginal pricing
- Hourly chronological product costs analytics and expected wholesale prices
- Consistent analysis of all internal business units across the enterprise

Risk Analysis and Planning

Understanding the cash flow at risk in the enterprise has never been more critical to success than it is today. Vertical utilities, generation owners, and load-serving entities all need to actively manage price, quantity, and credit

exposure risks in order to optimize the risk versus reward tradeoff of their energy portfolio, avoid extremely bad outcomes, set appropriate risk controls, and dialogue constructively with stakeholders. What is the value of different portfolios of assets over the short and medium-term horizons? How do prospective buyers make sure they do not over pay? When is the right time to profitably exit?

EnerPrise helps energy executives answer these questions by providing comprehensive risk analysis capabilities for generators and load serving utilities to assess the impact of key drivers that affect the organizational risk and optimize supply portfolios.

Benefits

- Comprehensive and accurate valuations of:
 - Individual generation assets
 - Retail customer loads
 - Complex generation and fuel contracts

- Comprehensive and accurate portfolio valuations of:
 - Physical generation
 - Load assets
 - Physical and financial contracts

Corporate Finance

A critical question associated with any selected strategy is the impact on corporate finances. Earnings per share, coverage ratios, debt-to-equity mix – without the ability to clearly assess the impact of a strategy on these and other key financial measures, executives are unable to paint a complete picture for the Board, for Rating Agencies, and for Wallstreet.

EnerPrise addresses these issues by producing detailed financial results (e.g. income statements, balance sheets, and cash flow reports) that combine the risk analytics of a strategy with its financial health.

Benefits

- Captures the intricacies of the capital and tax portions of a strategy and derives measures of enterprise value such as free cash flow, earnings per share and shareholder value.
- Used to determine the financial implications of mergers, acquisitions and divestiture of assets.
- Provides robust budget projections that incorporate their risk impact on earnings and cash flow.

Business Structures

The sweeping changes of the industry have caused executives to view their organizations differently. Overnight, vertically integrated companies restructured into holding companies with subsidiaries and business units. The question of the day became, “which business units are profitable and which are not?”

A complete enterprise-wide solution addresses this question by producing detailed profit and loss statements by strategic business unit.

Benefits

- Detailed financial results of all strategic business units with roll-ups to the holding company.
- Integrated with risk analytics providing risk analysis by strategic business unit.

Generation Management

Plant owners need optimal generation operations support from a fleet level down to an individual plant level. Day-ahead and real-time decisions require a full knowledge of generation availability, market prices, fuel prices, marginal operating costs, and plant characteristics. Decisions on dispatching generation for sale or to serve native load affect reliability and set conditions on profitability.

EnerPrise 2.0 provides generation management solutions to support combined cycle plants, steam turbines, hydroelectric, pumped storage, Demand Side Management (DSM) programs, cogeneration, and other power system resources. EnerPrise 2.0 is integrated across the entire range of analytics tools for trading and scheduling operations, load forecasting, power market analysis, and generation operation support with analytical software that assists generation dispatch decisions, simulation applications for forecasting the impacts of plant modifications, fuel budgeting, and maintenance planning.

Benefits

- Optimize and validate generator schedules for an entire fleet or a specific unit:
 - Combined Cycle Plants
 - Hydroelectric systems
 - Thermal Units
 - Pumped Storage Plants
- Develop real-time and after-the-fact reports on profit and loss, settlements, positions, after the fact analysis, audit trails, etc.
- Build optimal maintenance schedules based on maximizing profit or lowest cost.

Trading and Scheduling

Trading groups and power marketers need to have complete front, middle and back office functionality for capturing and managing energy trades; including contract management, settlement, and invoicing. Today's utility industry participants face fundamental decisions regarding the operation of their business, especially the operations of generation assets and dispatchable power contracts.

For non-ISO/RTO participants these decisions include:

- How much to self-generate vs. purchase?
- How to track loads, generation, and purchases?

- How to decide which transactions to enter into given limited resources?

In addition, ISO/RTO participants will need to decide:

- How much to self-generate vs. procure in the market?
- How to bid generation and load in the day-ahead and real-time markets?
- How to reconcile with the ISO? And how to handle wholesale settlements?

EnerPrise provides a single point of entry to manage the complex nature of physical scheduling under current and emerging market designs.

Benefits

- Seamless integration of:
 - Risk analysis
 - Energy scheduling and Web communications
 - Contract settlements and billing
 - Physical energy management
 - Energy and load forecasting scheduling
 - Generator bid management
 - Communications with Independent System Operators (ISOs) and Regional Transmission Organizations (RTOs)
- Quick assessment of cost of service for new proposal pricing

Load Forecasting

Accurate forecasting of electric loads is fundamental to the daily process of optimizing generation, purchasing need, and possible sales opportunities. Errors in load forecasting result in over/under purchasing or sales and possible exposure to imbalance markets and penalties and hence are critical to profitably for load serving entities. EnerPrise supports the daily operations of competitive retail providers on both the system and retail sides of the business with load forecasting, pricing analysis, energy scheduling, and energy settlements.

System Forecast Benefits

- Accurate forecasting of
 - Multiple system meters and weather stations
 - Multi-variable regression based forecasts
 - Meter level consumption
- Enhanced ability to forecast by zone or meter

Retail Forecast Benefits

- Accurate forecasting of meter level consumption
- Enhanced ability to forecast by zone customer class, and SIC codes
- Accurate load profile and weather data storage capabilities
- Powerful forecasting algorithms

Conclusion

Although industry doomsayers may say the glass is half empty because of overcapacity, credit and liquidity issues, and price volatility, the potential for profit in this fluctuating market is very real – and so is the risk involved. Energy executives navigating these treacherous waters need to be aware of two certainties. One is that effective use of information will be the key to executing a successful long-term strategy, fostering growth and creating value. The other is that only the most agile companies will be able to succeed by aligning their business units around a consistent strategy, common analytics and data framework to improve the consistency of results and by taking decisive action to use the power of information and insight to turn strategy into results. Those companies implementing an EPM system solution will have the advantage because they will be able to use real-time information to make more informed decisions. This will allow them to adapt to market changes, predict future trends, and forecast what is needed from an internal operational standpoint.

In the end, EPM will provide these companies with the opportunity to create something new, better and more valuable in the energy market than ever before.

Gary L. Hunt

Gary Hunt directs Henwood's business unit leveraging Henwood software and data to provide strategic consulting and advisory services in power market fundamental analysis, risk analysis and resource planning, asset valuation and project finance, transmission economics and LMP impacts.

Gary has 30 years experience as a state public utility regulator, utility executive and strategic energy consultant. Before joining Henwood, he was Director of Electric Power at Cambridge Energy Research Associates (CERA) and Principal in the Utility Economics Group of Standard & Poor's/DRI. He served as CEO of Massachusetts Municipal Wholesale Electric Company (MMWEC), a wholesale power producer in New England, Assistant City Manager-Utilities & Finance for City of Austin, Texas, and Chief Operating Officer at East Bay Municipal Utilities District, Oakland, California. Gary also served as a state public utility regulator in two states as Minnesota Deputy State Public Service Director and chief of staff at the Illinois Commerce Commission. He holds a B.A. from Wright State University, Dayton, Ohio and an MPA from the University of Kansas where he was a HUD Fellow.

Mr. Vikram Janardhan

Vikram Janardhan leads the product management and product marketing activities for Henwood's software division. He has several years of experience with the U.S. deregulated energy market. He has worked in the retail, wholesale and ISO/central market spheres of the industry, focusing on business process automation and IT applications for electricity trading and marketing, risk management, and transmission access.

Prior to joining Henwood, Vikram was Group Marketing Manager for ABB EIS North America where he had similar responsibilities for three business units ("BUs") in Raleigh NC, Santa Clara CA and Oakland CA. Vikram has over 25 publications to his credit. He has a B.S in Electrical Engineering & Computer Science from the University of Madras and an M.S in Electric Power Engineering from Rensselaer Polytechnic Institute, NY.