



Synapse
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Portfolio Management: Tools and Practices for Regulators

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Overview and Goals of Project

- Describe Portfolio Management
- Data, Models, and Tools for Portfolio Management
- Expertise and Staffing for Managers and Regulators
- Next Steps for Regulators

and...

- Survey of Current Portfolio Management Activities in Selected States

Key PM questions for utility regulators

- How important is price stability for various classes of customers?
- What public interest concerns should be advanced by portfolio management?
- Over what timeframe will the proposed strategy apply?
- How much flexibility is there to modify the strategy in response to changes in demand or supply conditions, at what points in time is that possible, and what is the process for doing so?
- What alternative strategies were, or should be, considered?
- How do those alternative strategies compare in terms of level, stability, and sensitivity of prices to changes in assumptions?

Answering such questions are central to successful implementation of portfolio management strategies.

Portfolio Management: Three Distinct Activities

1. Developing a Resource Plan

- Choose planning horizon
- Forecasts
- identify resource options

- Periodic adjustments due to changes in load requirements and market conditions.

3. Ongoing management of resource portfolio

2. Procure resources According to plan

- Find optimal mix of resources to balance risk and cost

- A systematic process and analytical tools for planning reliable service at reasonable rates.
- Transparency and objectivity in dealing with uncertainty and risk.
- Applies to the generation component of retail service, with or without retail competition.
- **Only as effective as the people who carry out and oversee those tasks.**

Required Skills for Utility Portfolio Managers

Knowledge:

- Market structure & operations
- Available supply and demand options
- Engineering/program design and operations to implement supply and demand options
- Transmission issues and constraints, including RTO/ISO rules and costs
- Relevant accounting rules (including rules for derivatives transactions and Sarbanes Oxley compliance)
- Environmental regulation costs and risks

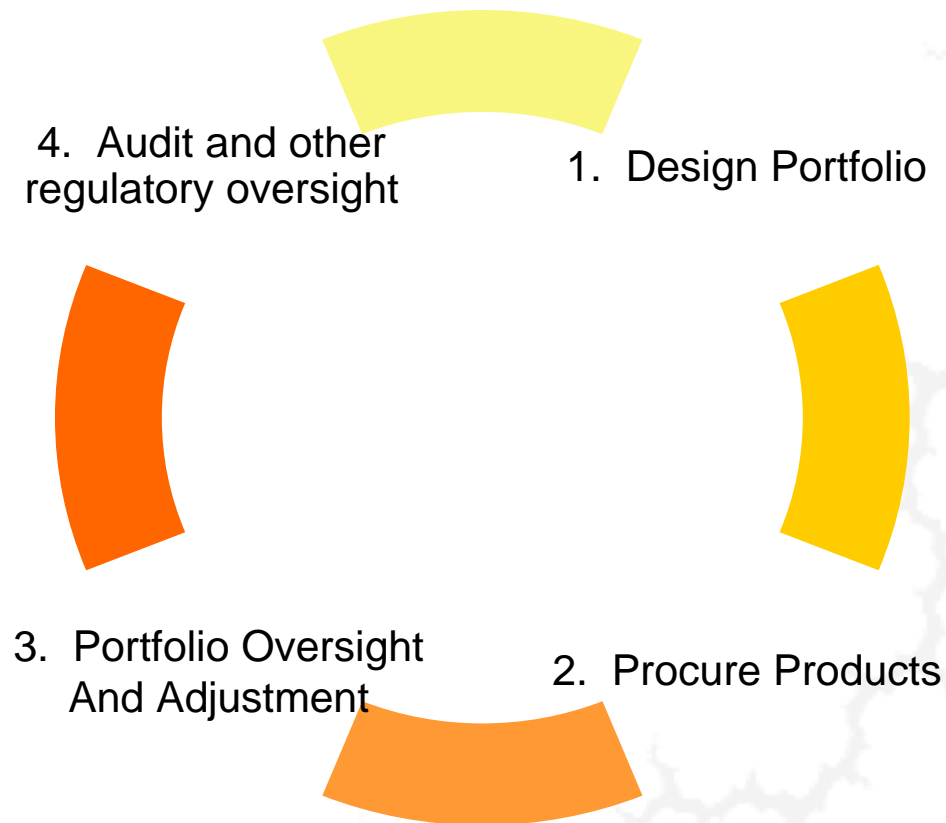
Technical Skills

- Quantitative modeling for trading, marketing, and hedging power and (possibly) fuels
- Use statistical and modeling tools
- Analyze risk exposure for both financial and physical positions
- Identify, evaluate, and understand actual and potential changes in markets
- Develop and evaluate risk mitigation options
- Take part in financial trades, potentially on a daily basis
- Translate the outcome of the portfolio into utility rates

Other Abilities

- Communication: Internal & external, complex issues, risks and options
- Develop and maintain detailed, traceable records regarding all trades and risk strategies
- Portfolio valuation reports
- Reporting to FASB, SEC, rating agencies, regulators, shareholders, and the public.

Role of Regulators



To make sound portfolio decisions, regulators now need to be highly knowledgeable about:

- financial products
- resources and their cost
- analytics

■ Regulatory involvement in each role will vary with state's situation and priorities

Possible Objectives for Regulators

Primary objective: Just & Reasonable Rates?

- Mix of resource options that minimizes costs to ratepayers
- Mix of resource options that results in stable costs to ratepayers
- Consider:
 - Commercially available resource options
 - Fuel diversity targets
 - Renewable energy targets
 - Carbon dioxide targets and other environmental goals
 - Service to low-income customers
 - Impacts on the local economy
 - Flexibility to respond to major changes in market conditions and public policies over time.

In each state, Regulators must determine specific goals and should then use PM tools to advance them.

Portfolio Risk Metrics

Value at risk	Estimates the likelihood that a given portfolio's losses will exceed a certain amount.
Component value at risk	Measures the marginal contribution to value at risk of each element within the overall portfolio.
Credit value at risk	Measures potential credit exposure on individual transactions as well as the total credit value at risk for the portfolio.
Enterprise wide risk measures	Aggregates market, operational, credit, and regulatory risk.
Costs at risk	Measures likelihood that a portfolio's costs will go up or down by more than a certain amount
Rates at risk	Measures likelihood that a portfolio's end user rates will go up or down by more than a certain amount

Another way to measure risk: Stress testing the portfolio helps determine maximum losses that might result from unexpected events.

Types of Tools Available

- Load and Price Forecasting
- Integrated System Planning
- Forward Prices and Contracts Management
- Risk Analysis

Multiple tools may be needed to address all needs.

Problems with current tools:

- Most planning models treat uncertainty as an “add on” OR focus on short-term modeling.
- Short-term uncertainty more easily quantified statistically than long-term uncertainty.
- Most financial tools focus on the shareholder/manager perspective and not on the customer.
- Demand-side options and non-traditional resources are not well represented in most models.
- Societal benefits are not generally represented.

Deregulated States (NJ, MD, DE, DC, ME, IL)

- Default service procurement uses fixed-price contracts of one or more term length, up to three years, possibly overlapping in a ladder sequence
- Procurement in annual auctions or RFPs
- No ongoing resource management between annual auctions.

A narrow, relatively passive PM approach, but delivers *basic* benefits.

- Stabilizes rates against short-term risks, except at start up.
- Relies on competitive wholesale markets, but at risk if those are flawed.
- Planning considers only a short time frame and few resources.
- No procedure for periodic reviews and updates or adjustments.

What States are Doing

Regulated States (CA, WA, MT, OR)

- Often have a comprehensive, active approach to portfolio management.
- Generally have some form of long-term, periodic planning.
- Procurement is not tied to an annual cycle of auctions, and ongoing management is in effect.
- Planning in most of those jurisdictions included some analyses of uncertainty generally in the form of "sensitivity analyses."
- Wholesale competitive forces may not apply.

However, extensive quantitative analysis of the risks of various alternatives from a customer or public policy perspective was rare.

Key Conclusions Regarding Portfolio Management for Electric Utilities

- PM is a process and a set of tools that can be applied in order to achieve objectives specified by the user.
- PM can be applied to the provision of the generation component of retail service, regardless of the presence or absence of retail competition.
- PM can be applied comprehensively and actively or narrowly and passively.
 - A broader and more comprehensive approach to portfolio management exposes retail customers to fewer market risk, but requires more active planning, management and oversight.

Legislators or regulators (or both in concert) have the authority to determine how they want portfolio management to be applied in their state, and by what entity.

Next Steps for Regulators (1)

- Barriers to PM
 - Legislative & rulemaking limitations
 - Staffing and resource limitations; utility cut backs or transfers
 - Lack of familiarity and acceptance
 - Regulators can do much to reduce such barriers over time.
- Insufficient attention to software tools for realistic analysis of long-term risks and comparison of long-term decisions under uncertainty.
 - Regulators may wish to promote research and development of open source algorithms or software in these areas.
- Existence and public availability of necessary data is unclear
 - Load profiles and volatility, plant outage rates and heat rates
 - Market prices for many products thinly available
 - Begin with available data
 - Consider new information needs and how maximize the feasibility and usefulness of risk analysis.

Next Steps for Regulators

- Exploratory proceedings to develop and communicate risk management and portfolio management goals and criteria
- Further research and development

Regulators should consider promoting development of PM tools that:

- **Target the needs of the electric industry**
- **Support long term risk analysis and regulatory oversight**
- **Better reflect needs of consumers.**

Recent PM Cases:

Recent proceedings and actions in states with retail competition:

- Com Ed Auction Case: IL CC Docket 05-0159
- Delaware - Executive Order No. 82, House Bill 6

Recent cases and proceedings in states that are fully regulated:

- CA– Rulemakings 01-10-024 and 04-04-003
- OR IRP policy: OR PUC Dockets UM-1056 and UM-1066 (ongoing)
- MT– Montana Administrative Rules, sub-chapter 20: Least Cost Planning – Electric Utilities. 38.5.2004

- Draft report and this presentation are available at:

www.synapse-energy.com

(look under “New Reports” in yellow block)



SLIDES FROM LAST PRESENTATION:



- Review available models for PM and resource acquisition
- Advise regulators on how to choose and utilize such models in making regulatory decisions
- Describe skills needed for effective oversight and policy making on portfolio management
 - analytical skills
 - policy analysis

What's New about the Project's Perspective on Risk?

Utility risk from the shareholder perspective:

- Environmental regulation risk
- Fuel price risk
- Credit risk
- Volumetric (demand) risk
- Construction delay risks
- Risk of outages
- Security risks
- Cost recovery risk
- Etc...



Utility risk from the consumer perspective:

- Costs at risk
- Rates at risk
- Blackout risk

A theme of our work is to ask how can portfolio management strategies and tools mitigate risks from the *consumer's perspective*.

- Own and contract
- Mix of long and short term
- Mix of resources/fuel types
- Balance of supply and demand resources
- Mix of hedging instruments
- Central and distributed
- Laddering
- Procure over time

We surveyed the following states regarding their current portfolio management requirements and practices:

Deregulated States:

ME, NJ, MD, MA, TX, DC, IL

- PM primarily achieved via contract laddering.
- Laddering terms generally established via negotiated settlements.
- Once the ladder is established, little further analyses or adjustments.

Regulated States:

- IRP is usually yardstick for PM practices.
 - IRP not required (AL, LA)
 - IRP required (HI, ID, NC, OR, UT, WA)
 - IRPs, however, do not guarantee a quantitative risk review (HI).
- PM & risk often handled qualitatively during rate cases.
- Many utilities in West conduct sophisticated risk analyses, but approach to risk analysis varies significantly.
 - Analyses evolved from reliance on hydro and 2000 energy crisis

Even in regulated states, most utilities have considerable latitude in PM choices and practices.

Available software tools to assess risk management

Long-term Horizon:

- Ascend Analytics's PowerSim
- Henwood's Global Energy Decision Software

Short-term Horizon:

- Risk Advisory's BookRunner
- SunGard's Energy and Epsilon
- OpenLink's Endura and Financial
- And many more...

There are many products available for assessing short-term risk for utilities, but only a few for assessing long-term risk.

Common risk metrics used to evaluate a portfolio

Value at risk	Estimates the likelihood that a given portfolio's losses will exceed a certain amount.
Component value at risk	Measures the marginal contribution to value at risk of each element within the overall portfolio.
Credit value at risk	Measures potential credit exposure on individual transactions as well as the total credit value at risk for the portfolio.
Enterprise wide risk measures	Aggregates market, operational, credit, and regulatory risk.
Costs at risk	Measures probability that a portfolio's costs will go up or down.
Rates at risk	Measures potential change in end customer's rates as a result of generation supply portfolio.

Another way to measure risk: Stress testing the portfolio helps determine maximum losses that might result from unexpected events.



Recent cases involving portfolio risk from consumer perspective:

- Nevada Power Company: NV PUC Docket 01-11029
- Com Ed Auction Case: IL CC Docket 05-0159
- Pacificorp IRP: UT PSC Docket 90-2035-01, ID PUC Case PAC-E-01-15
- PGE resource valuation mech.: OR PUC Order 02-772
- Idaho Power Co.: ID PUC Docket IPC-E-01-16
- OR IRP policy: OR PUC Dockets UM-1056 and UM-1066 (ongoing)