Inherent Risks in the Utility Industry and Risk-Aware Electricity Regulation

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Presented by Carl Linvill
Introducing RAP and Carl

• RAP is a non-profit organization providing technical and educational assistance to government officials on energy and environmental issues. RAP Principals all have extensive utility regulatory experience.

  – Dr. Carl Linvill is Principal with RAP. He has been an academic economist, Commissioner with the NV PUC, and was Energy/Economic Advisor to NV Gov. Kenny Guinn.
Agenda

• Carl’s experience with risk
• RAP principles and the five biases in regulation
• Risk aware regulation – a description
• Concluding observations
Carl’s Experience with Risk

• PG&E in 1980’s
• Transition economies/shock therapy
• Restructuring in NV
  – De-regulation skepticism
  – Resource planning function
  – Problems encountered
  – Digging out
• California/NV/West planning post 2001
RAP Principles

• Promote economic efficiency
• Protect the environment
• Ensure system reliability
• Allocate system benefits fairly among all customers
Five Biases in Regulation

• Information Asymmetry
• Averch-Johnson Effect
• The Throughput Incentive
• Rent Seeking
• “Bigger is Better”
Enter Risk Aware Regulation ...
Background Resource Published by CERES

• Authors
  – Ron Binz with
  – Richard Sedano (RAP)
  – Denise Furey
  – Dan Mullen
High Stakes

• The US electric industry is entering a build cycle with much higher investment
  – Brattle Group estimates $2 trillion by 2030

• Causes
  – Aging fleet and infrastructure
  – Much stronger air, GHG and water regulation
  – New transmission requirements
  – Demand side and smart grid advances
  – Fuel economics
Challenging Environment

• Challenges faced by utilities
  – Flat load growth
  – Distributed generation
  – Uncertain economy
  – Financial metrics less forgiving than in 1980s
  – AND ➔ Rate of investment > Rate of depreciation
    Means upward rate pressure!
Breakdown of Brattle's $2.0 Trillion Investment Requirement

- Generation: 47%
- Transmission: 15%
- Distribution: 29%
- AMI and EE/DR: 9%
Capital Expenditures 2001–2011

U.S. SHAREHOLDER-OWNED ELECTRIC UTILITIES

($ Billions)

<table>
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<tr>
<th>Year</th>
<th>Expenditures</th>
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r = revised

Source: SNL Financial and EEI Finance Department

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Definition of Risk in the Paper

• Risk characterized by:
  – Probability of negative events known
  – Cost risks – expected loss of discrete, independent events that could occur today or in the future
  – Time risks – risks expected to evolve over time, tend to be uncertainties

• Uncertainties considered
  – Potential negative events, prob. unknown
Examples of Cost and Time Risks of Supply/Demand Resources

• Cost-related
  – Construction
  – Capital
  – Fuel & Operations
  – Management
  – Resources limited
  – Reaction to rates

• Time-related
  – Construction
  – Markets
  – Environment
  – Load
  – Technology
  – Catastrophe
  – Contingencies
  – Government
Indicative Composite Risk

• Scoring of generation risks considers
  – Construction cost
  – Fuel and Operating cost
  – New Regulation
  – Carbon Price
  – Water Constraints
  – Capital Shock
  – Planning
Interlude: Some Observations on Risk and the Regulatory Process
Implicit Risk Considerations

• Risk to whom?
  – Utility, Investor and Consumer Risk

• Risk analysis depends on plan frame
  – Near term (within 2 years)
  – Mid-term (3 to 5 years)
  – Long term (5 to 20 years)

• Focus of Risk Aware: Mid to long term supply/demand resource investment
In Fact, though often not in appearance,

• Consumer, Utility and Investor interests are intertwined
• All are served by strategies that limit risk

• But who advocates for this societal perspective?
Rewards for Sound Decision-making

- For consumers: Keep more $$, Quality
- For utilities: Corporate health, purpose
- For investors: Safety, value, expectations
- For employees: safety and welfare, pride
- For the regulatory process: confidence
- For society: key role for power in society

A process that promotes shifting risk rather than minimizing risk is inherently unstable
A Realistic Attitude towards Risk

• Risks should be managed and limited
  – Nobody is perfect
• Consequences of poor outcomes will be shared
• Ignoring risk (hope) is not a strategy

• All regulation is incentive regulation (Kahn)
Back to the Risk Aware Story: Recommendations
Seven Essential Strategies for Risk-Aware Regulation

• Diversify Utility Supply
• Utilize Robust Planning Processes
• Employ Transparent Ratemaking Practice
• Use Financial and Physical Hedges
• Hold Utilities Accountable
• Active, “Legislative” Regulation
• Reform, Re-invent Ratemaking Policies
And Consider an Eighth:

- Consider the value of building a robust, flexible infrastructure
  - Positions you to respond to short term crises
  - Positions you to adapt as technological and environmental uncertainties reveal themselves
Concluding Observations

- Regulation and Operating Utilities will get more challenging, with more risk
- New business models, regulatory practices and paradigms are timely
- Affirmative risk management can avoid expensive mistakes
- Ratepayer funds are a precious resource
- A Flexible, Robust Infrastructure will be essential to manage risk
Concluding Observations

• Risk shifting is not risk minimization
• Some current best practices will still be good ideas
• Regulators have the tools they need, though some can be sharpened, but they should strive to be informed, active, consistent, curious and courageous
About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

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