Risk-aware Regulation and the Modern Utility

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PRACTICING RISK-AWARE ELECTRICITY REGULATION: What Every State Regulator Needs to Know

How State Regulatory Policies Can Recognize and Address the Risk in Electric Utility Resource Selection

A Ceres Report
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High Stakes

- US power industry is entering a “build cycle” with much higher investment than in recent history
  - Brattle Group estimates $2 trillion by 2030

- Challenges
  - Aging infrastructure
  - New transmission requirements
  - Air and water regulation much stronger
  - Demand side and smart grid
  - Uncertain economy
  - Financial metrics less forgiving than in 1980s
Breakdown of Brattle's $2.0 Trillion Investment Requirement

- Generation: 47%
- Transmission: 15%
- AMI and EE/DR: 9%
- Distribution: 29%
The US generation fleet is aging
Figure 6
Regional Capacity Additions and Generation Capital Costs
In Prism RAP Scenario with Carbon Policy (2010-2030)

- **Renewables**
- **Combustion Turbine**
- **Nuclear**
- **Conventional Combined Cycle**
- **Coal**
- **Coal w/CCS**

West:
- $189.7 B
  - 41.2 GW

Midwest:
- $220.6 B
  - 58.0 GW

South:
- $444.9 B
  - 97.1 GW

Northeast:
- $95.9 B
  - 19.3 GW
US Electric IOUs Rating History
1970 – 2010

Source: Standard & Poor's, Macquarie Capital
The Key Question for Regulators

How do we ensure that $2$ trillion is spent wisely?
A Catalog of Investment Risk

• Cost-related
  – Construction cost overruns
  – Capital availability
  – Operational surprises
  – Fuel cost escalation
  – “Bet the company” investments
  – Management imprudences
  – Resources limited
  – Consumer reaction to rates

Scoring considers risks from
  – Construction cost
  – Fuel and Operating cost
  – New Regulation
  – Carbon Price
  – Water Constraints
  – Capital Shock
  – Planning

• Time-related
  – Construction delays
  – Changing markets
  – Environmental regulations
  – Changes in load
  – Technology advancement
  – Catastrophe
  – Contingent projects
  – Government policies
**Relative Cost Ranking of New Generation Resources**

- **Highest Levelized Cost of Electricity (2010)**
  - Solar Thermal
  - Solar—Distributed*
  - Large Solar PV*
  - Coal IGCC-CCS
  - Solar Thermal w/ incentives
  - Coal IGCC
  - Nuclear*
  - Coal IGCC-CCS w/ incentives
  - Coal IGCC w/ incentives
  - Large Solar PV w/ incentives*
  - Pulverized Coal
  - Nuclear w/ incentives*
  - Biomass
  - Geothermal
  - Biomass w/ incentives
  - Natural Gas CC
  - Onshore Wind*
  - Natural Gas CC
  - Onshore Wind w/ incentives*
  - Biomass Co-firing
  - Efficiency

- **Lowest Levelized Cost of Electricity (2010)**

**Relative Risk Ranking of New Generation Resources**

- **Highest Composite Risk**
  - Nuclear
  - Pulverized Coal
  - Coal IGCC-CCS
  - Nuclear w/ incentives
  - Coal IGCC
  - Coal IGCC-CCS w/ incentives
  - Natural Gas CC
  - Biomass
  - Coal IGCC w/ incentives
  - Natural Gas CC
  - Biomass w/ incentives
  - Geothermal
  - Biomass Co-firing
  - Geothermal w/ incentives
  - Solar Thermal
  - Solar Thermal w/ incentives
  - Large Solar PV
  - Large Solar PV w/ incentives
  - Onshore Wind
  - Solar—Distributed
  - Onshore Wind w/ incentives
  - Biomass Co-firing
  - Efficiency

- **Lowest Composite Risk**
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
- Practice active, “legislative” regulation
- Reform, re-invent ratemaking policies
TVA Analysis of Resource Plan Costs & Financial Risk

- **Strategy A**: Limited Change in Current Resource Portfolio
- **Strategy B**: Baseline Plan Resource Portfolio
- **Strategy C**: Diversity Focused Resource Portfolio
- **Strategy D**: Nuclear Focused Resource Portfolio
- **Strategy E**: EEDR (Energy Efficiency/Demand Response) and Renewables Focused Resource Portfolio
Rewards for Sound Decision-making

• For consumers: keep more $$, quality
• For utilities: corporate health, predictability
• For investors: safety, value, expectations
• For employees: safety and welfare, pride
• For the regulatory process: public confidence
• For society: spending precious capital wisely
Utilities 2020

- Foundation funded
- Run by two former state regulators
- Advised by board of experts
- Goal: to explore new business models and advocate new regulatory models to enable new utility business models to evolve.
• Methods:
  – Interviews with utility CEOs and leading states regulators
  – Evaluations of other systems here and abroad
  – Dialogues with CEOs and commissioners

• Preliminary conclusions:
  – Regulation must change significantly
  – We’re not rewarding utilities for desired behavior
  – Utilities have little incentive for innovation, firm level efficiency
  – Utilities want clearer, more consistent direction
Conclusions

• Operating and regulating utilities will get more challenging, with more risk
• New business models, regulatory paradigms are needed
• Affirmative risk management can help avoid expensive mistakes
• Investors are more vulnerable in this build cycle
• Energy efficiency performs well in risk-aware regulation
• Risk shifting is not risk minimization
• Not all “credit positive” cost recovery mechanisms are sustainable policies
• Regulators should strive to be informed, active, consistent, curious and courageous
Take-Aways for Legislators

• The utility business model is changing; regulation must also change.
• There is much at stake; it’ll take good regulators
• To be effective, regulators need the right tools
  – IRP authority
  – EE & DR authority
  – Budget flexibility
  – The right kind of staffing
• Regulators need to be more than judges; they must also operate in “legislative mode.”