The Capacity of a Public Utility Commission to Steward Power Sector Transformation

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What do I mean by Power Sector Transformation?

- Overhaul of resource types, grid function
- New expectations, behaviors by citizens
- Adaptation of regulation to climate science
- Changed utilities role and culture
- Changed utility regulators
Alternate Titles

- Why is Progress so Hard?
- Why does Progress take so Long?
- Despite obstacles, why is Progress Inevitable?
Sections

- Trends
- The PUC
- Utility Performance
- How Transformation Happens
- Risk
- A Menu of Options
- Examples
1 Trends

Foundation to the rest
# Forcers

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<th>Citizen-Consumers</th>
<th>Climate Science</th>
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<td>Digital Information</td>
<td>Active participants in energy system</td>
<td>Policy imperative. (to some) overlaying on existing system</td>
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A walk through time and trends

- **60s**: Growth, growth pays for growth
- **70s**: Oil crisis, growth slows
- **80s**: Responses, a wide range
- **90s**: Competition (dissatisfaction with utilities)
- **00s**: digesting competition, slowing continues
- **10s**: clean energy costs plummet, smart tech and the Internet, climate science (electrification)
Reflection on PUC task from one RAP staffmember

• **00s** about perfecting a relatively static system
  - Fix incentives
  - Illuminate value of planning, energy efficiency

• **10s** about keeping up with raging progress outside the PUC

• PUCs with a few exceptions react to utility ideas, avoid pro-active initiative
  - Exceptions of a few states, decoupling, choice
Emerging Power of Customers (not just choice of supplier)

- More service options outside utility
  - Efficiency
  - Generation and Resilience
  - Free-standing
  - Sounds like competitive substitutes
- Is a new relationship between utility and energy consumer is emerging?
Efficient Building Code
High-efficiency Heat Pump with Air Exchangers
Grid-Integrated Water Heater
Battery Storage
Electric Vehicles
Still Connected to the Grid
Where is the utility in the trends?

- Astute assessments of trends
- Guarded about leading
  - “No good deed goes unpunished”
  - Astute assessment of risks to cash flow, return
- Will follow government lead to solutions
- Will protect itself with vigor
- May rise to the occasion as a solutions provider
The Public Utility Commission
The place to resolve Power Sector Transformation Details
The Public Utility Commission: What is it?

- ¾ of states+, commissioners are appointed by the governor
- ¼ of states, commissioners are elected in varying ways

- Many learn want to be reappointed
  - Some don’t care
The Public Utility Commission: What is it?

- Authority over monopolies
- Authority comes from statutes
  - Statutes leave varying openings for implementation judgment
- Expert staff
- Quasi-judicial
  - What is this “quasi” thing?
PUC staffs: very important

- Staff composed of administrative lawyers, economists, power system engineers
  - Influential esp. with non-expert commissioners
  - Well composed for routine work
The Public Utility Commission: What does it do?

- Routine work
  - Sets revenue requirement and rates
  - Evaluates large investments and plans
  - Siting (many, not all)
  - Rules
- Exceptional work
  - Generic investigations
The PUC Exists in a Context (it is not all-powerful)

- An expert administrative agency, deference
- Nested in a political environment
- Statutes only begin to describe limits of PUC authority
- Latitude varies by state
  - “Leash” can be pulled by governor, legislature
  - Acting on behalf of stakeholders to “nudge” the PUC to do/not do
Stakeholders: A Rainbow of Interests

- Utility
  - What it specifically does
  - How it makes money (allowed return on equity)
  - How it raises money*** (investment grade debt)
- Consumers (all sizes, types, groups)
- Other interests (eco devo, environment, innovator)
- The Public Interest: some states have an office that advocates in the broad public interest
Regulatory Capture

- When the PUC is more interested in one group of stakeholders’ interests than the public interest
  - Not always easy to determine that this has happened until time passes
- Indicators of regulatory capture
  - Uneconomic behavior permitted, approved
  - Utility business protected against innovation
PUC staffs: very important, possibly miscast for the future

- Staff composed of administrative lawyers, economists, power system engineers
  - Influential esp. with non-expert commissioners
  - Well composed for an earlier time
  - New challenges (cyber-security, climate)
  - New opportunities (behavioral science, digital, population statistics, distribution engineering)
  - Transition (process capabilities)
Comments on Existing PUC Process

- Rigid: evidence-based and legalistic, apart
- Routine: designed for typical types of litigation
- Expert: arcane jargon speaks to regulars

- Think of a Victorian Era dance with all the rules and repetition and the bowing
  - Except these partners are trying to win
Why is the PUC Process the way it is? Protection

- Regulation is basically about protecting citizens from monopoly power of the utility
  - And in doing that, clarifying for the utility its job and how it will earn money
- “Sunshine” thought to avoid corruption
  - Public deliberations become theater, inhibit honest engagement by decision-makers
Manifestations of Protection

- Access to service for all
  - especially Hard to Reach Customers
- Fair dealing on
  - Connecting
  - Pricing
- Many other actions we rely on
  - Increasingly, barriers to entry
What business should the utility be in?

• A: Monopoly businesses only
• B: A plus business lines with economies of scope
• C: Anything the utility wants to do
What business should the utility be in? Answer:

- If you want the easiest answer to manage for the PUC, then A, monopoly business only
- Typically in the US, the answer is B, monopoly +
  - See energy efficiency
  - Now, what about EV charging, other customer solutions
- Effects on competition and innovation: complex
What’s the Concern about utility business lines?

• On the one hand, utility scope is powerful
  • Great way to **stoke demand** across population fast in infant industry

• On the other hand
  • Could also be a great way to **stifle innovation**
  • Monopoly power could be a problem unless actively managed by the PUC
Protections if Utility gets Competitive

- Complicated, but PUC has tools
- Create **Affiliate** to compete
  - With Affiliate Transaction Rules
- Codes of Conduct for **competitive activity within the utility company**
- Harder to oversee than a pure bright line test
  - Accept this burden if there is a public interest
One way to think about Power Sector Transformation:

- Reset the balance between Regulation and Markets
As the Power Sector Transforms, how do we know how we are doing?
Let’s look at utility performance

• Should we measure performance?
• How to measure performance?
  • Performance of what?
• How much should performance matter for utility earnings?
• Does public airing of utility performance do all we need to motivate the utility?
Reflection: What we want from the utility changes

- 60s and previous: we wanted growth the match the nation’s
  - Earnings on invested capital matches imperative
    - Plus positive margins on sales growth
- Since: utility growth increasingly problematic
  - Cost, Risk, Environment and Land use
  - Service more important
  - Externalities more important
Likely categories of performance metrics

- Cost
- Carbon
Figure 2. Dimensions of Utility Performance That May Warrant Tracking or Incentives

Traditional Goals
- Reliability
- Power plant performance
- Employee safety
- Customer safety
- Lower costs

New Business Models
- Innovation
- Resiliency
- Customer engagement
- Customer-targeted services
- Flexible Resources

Environmental Goals
- Smart grid
- Renewable energy
- DG
- Reduced emissions
- Improved load factor
- Reduced losses
- Energy efficiency
- Planning

How are these changes in public interest and expectations reflected in utility earnings?
Performance-Oriented Earnings

- Weighted Average Cost of Debt
- Earnings from rate base investments
- Return on Equity determined by the PUC

Earnings available from overall utility performance, note upside.
What goes into Rate Base? And is there a Capital Asset Bias?

- Assets go into rate base, of course
  - Traditional system motivates utilities to expand rate base by building more assets
- What about asset substitutes?
  - There are more of these than ever
    - Non-wires alternatives to grid challenges
    - Software as a service (cloud computing)
  - States finding ways to reverse capital asset bias
4 How Transformation Happens
Pressure for Transformation has been building (this is global)

• A visit to a home store will discover many ways the utility business is under siege
  • Citizen/consumers/communities taking more agency in their energy choices
    • Saving or electrifying
    • Managing
    • Producing
    • Storing
What Triggers Transformation as Government Policy?

- Leadership
- Crisis
Nature of Innovation Applied to Power Sector

• Sources and Effects of innovation need space and dialogue, need perspectives of market actors
  • Many of these voices are unfamiliar with the PUC
Innovation and PUC process

- Safest path for utility is what got approved before
- Innovation is in opposition to routine
- Other vested interests use PUC process to block innovation

- If PUC only responds to utility proposals, transformation is far less likely
Once Transformation is Policy, what now?

- Process innovation is key
- Innovation not compatible with a hearing room
- Innovation is about new ideas, new voices
  - Many not comfortable with rigid PUC process
- Engagement in informal settings
- Dialogue, best if facilitated with direction based on state priorities
Process Innovation > actual innovation
Hint: think ADR methods

• Open it up
  • Diversify from Evidence-based hearings
• Deploy workshops and informal opportunities
  • Dialogue, engagement, synthesis
• Build community of problem-solvers
• Tee up solutions for required decision hearings
• Process Innovation for Actual Innovation
A new dance: Policy Adoption Iterates with PUC Implementation

• Informal process engages community
• Informal process must lead to action at the PUC
• Action at the PUC leads to new questions suited for informal process
• And back and forth

• Informal process may need to be led by executive branch if PUC can’t/won’t
As many ways forward as there are states

- Common qualities for progress
  - Recognition by leaders of opportunity
  - A problem solving culture
  - Engagement of anyone
  - A dedicated website
A+ efforts

- Integrated state interests, redefining scope of the utility
- State leadership in command of issues, taking initiative in an orderly, stable manner
- Regional awareness
  - Including effects on wholesale markets
5 Risk
Risk Aversion is a Characteristic of Utility Regulation

- Instinct to Protect
- Traditionally, best strategy is “stay out of sight”
Some Risks we worry about

- Spending too much money
- Spending money on the wrong stuff
  - Other stuff more suited for public interest
  - Obsolescence, no longer useful
  - Poor decision criteria (ex. Lost Externalities)
- Personal career path
- Inaction, indecision, lost opportunity
- Consumer confusion, abuse, backlash
With all this complexity, the way forward can seem foggy
Good news, there are solutions
How to approach this big honking issue of PST? Prioritize

- **Money** issues
  - How we pay? (time sensitive pricing, others)
  - How utilities earn? (return on performance)

- **Engineering**
  - Push technology out (smart grid, smart meters, data management and analytics)

- **Planning**
  - Open up distribution system
How to approach this big honking issue of PST?

- **Resources** Overhaul Options
  - Which ones are rising/falling in cost/risk?
  - More **efficient** devices, processes, enterprises
  - Drive **renewables** faster (portfolio standards)
  - Keep the **nuclear** we have (ditto)
  - **Procurement** (esp at distribution level)
  - **Aggregation** (consumer choice aggregation)
  - **Pricing** as a resource (big data and behavior)
How to approach this big honking issue of PST?

- Role of delivery utility could be quite different
  - Utility as a Platform
  - A business environment matching sellers and buyers of energy products and services
  - All consistent with managing the system with baseline reliability and protections
    - Utility compensated in ways consistent
Process Innovation

- Stable problem solving
- With political leadership
  - Inter-agency collaboration
- With clarity, vision from PUC
- With increasingly capable community of interests
- Don’t fail to take advantage of a crisis
What if Climate Science were as important as Protection?

- Greening grid, electrification
- Social Cost of Carbon would factor into all utility investment and operating decisions
- Barriers to entry for clean energy resources would be minimized
- Customers free to choose more clean energy, causing additional investment
- Utility earnings connected to reducing carbon
State to State Competitiveness

- Race to the Top
  - In innovation
  - In spreading innovation to hard to reach places
  - In cost/carbon management
Transactive Energy: A visionary concept or a likely destination?

- Peer to peer transactions
  - On a platform
  - An N-way system, participants have full access and visibility to markets to monetize services and grid capabilities they produce
Are Grid Operators a Part of this Innovation?

- Challenge/Opportunity to “manage” millions of points of entry to the grid (EVs, DG, GEB, storage)
  - Evolving from “controlling” a some thousands for grid assets
- New skills and perspectives
- New awareness from FERC, redefining (while not fundamentally changing) jurisdictional line
Experiences of some note
New York

- Ambition to change everything
- Minimal use of traditional regulatory methods
  - Staff white papers
  - Workshops and working groups
  - Comments and Reply Comments
  - Public Hearings (outside the state capitol)
California

- Approaching topics serially
  - Meanwhile, fires are disrupting everything
- Rate design
- Smart grid deployment
- Aggressive reform of wholesale markets
Most states don’t relate to NY and CA – others to watch

- Rhode Island – Power Sector Transformation
- Minnesota – e21
- Michigan – Power Grid
- Maryland – Empower, PC44
- Arkansas – DER and Grid Mod
- Illinois – Future Energy Jobs Act
- Nevada, Oregon, Carolinas, Washington, Texas
Suddenly, knowing a lot about the U.S. power grid became sexy at cocktail parties.
Resources: Transformation Websites

- New York Reforming the Energy Vision
- Transforming Maryland’s Electric Grid PC44
- Rhode Island Power Sector Transformation
- Michigan Power Grid
- Minnesota e21
- North Carolina Clean Energy Plan
About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

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