Electric Utility Business Models of the Future

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Overview

1) Brief Review of the Change Drivers

2) Energy Efficiency in a Changing Industry

3) Business Models of the Future
Electric Utilities Are Getting Hit By The Biggest Changes in Their History

- Climate Change and Renewable Energy Requirements
- Energy Efficiency Requirements and Overall Low Sales
- The Smart Grid
- Other Important Drivers:
  - continued U.S. population growth
  - high commodity prices
  - prolonged recession
Credit Suisse: “Hey, Rate Payers, Can You Spare a Trillion?”

Assumptions:
- EPA Compliance: $600/KW; RPS: 15% by 2020, Transmission Cost 1/3 of RPS Spend; Smart Meter: 85% Implementation;
- Nuclear Replacement: 25GW Replacement at $8000/KW

Based on Energy Velocity, NRC, Company Data, Credit Suisse Estimates
Energy Efficiency Policies Will Reduce Sales

- **Energy Efficiency Resource Standards** –
  - 18 states have EERS in place
  - 3 states have pending EERS

- **Waxman-Markey Bill:**
  - Require 20% EERS by 2020
  - Investments in EE, utilize 13% of allowance revenue
  - Building standards: 50% more efficient in 2016
  - New appliance and vehicle standards

- **State “Energy Efficiency Utilities”**
  - Delaware
  - Vermont

Source:
Total Electricity Industry Sales

2000-2008 Extended Actual Growth 1.06% / year
The Smart Grid - Valuable and Disruptive

Two way power and communications flow - valuable but disruptive.

Old Business Model – Under Assault

- Carbon limits and RPS
- High construction and fuel costs
- Rate case backlash
- Population growth -- new hookups
- Price elasticity lowers peak and sales

Need for transmission and Smart Grid investments

- Sell fewer and fewer kWh at higher and higher prices
- Yet required investments are trillions of dollars
Amidst All This Change, What Will Happen To Energy Efficiency?
Energy Efficiency Policies in a Changing Industry

♦ Obama Administration firmly backs EE
♦ 21 States are putting EE mandates on regulated IOUs
♦ 22 States are giving utilities incentives to save energy
♦ PACE financing is currently an extremely hot topic (www.pacenow.org)

But in the Long Run…
♦ …will EE be deployed through utilities?
♦ …local governments?
♦ …both?

The answer has vital implications for the future of utilities.
Alternative Business Models

Structure
What parts of the industry are owned within one firm?

Regulation and Competition
Which parts of the industry are regulated and how are regulated rates set?

Business Model
What business practices meet the goals and incentives regulation sets to maximize profits?
The Smart Integrator (SI)

The Smart Integrator operates a regulated smart grid offering independent power and other services at regulated prices.

- Distribution company (distco) is private, incentive-regulated or publicly owned
- The distco integrates upstream supply, local supply and storage, and operates the smart grid to ensure reliable service
- Regulated prices apply to products sold: energy delivery, information, and grid management services
- May directly control some customer systems for grid management – regulated tariff
- Emphasis is network operator, not commodity sales
The Energy Services Utility (ESU)

The Energy Services Utility changes utility from a pipes-and-wires business to a customer-service-centric model:

♦ Unlike the smart integrator:
  ♦ The utility is strongly and directly incentivized to get into the business of energy efficiency and do it well
  ♦ The ESU might own and generate power or buy generation to bundle with energy service technology

♦ Other roles are the same as the smart integrator:
  ♦ Delivering energy
  ♦ Operating smart grid
  ♦ Dynamic pricing – possibly less nodal
  ♦ A wide basket of products and services would be offered
  ♦ Prices set by COS or performance – based regulation
Could Selling Energy Services Relieve Rate Increases?

Figure 12. Price of Lighting from Electricity in the United Kingdom

Lighting Technologies Will Continue to Improve . . .

... And The Cost of Light Could Keep Falling

Massive Regulatory Challenges

♦ Energy service regulation would require a massive retooling of state regulation.

♦ Deciding and continuously modifying allowed energy services and setting their rates/incentive terms.

♦ How much pre-control over the amount of capital, approved measures, etc?

♦ What does the utility do in-house vs. outsource? Does this model squelch too much innovation?

♦ “ESU lite” might work better – strong EE incentives, some services pricing, less nodal pricing.
Are There Hybrid Scenarios?
Yes, many.
Will They Be Difficult to Regulate/Deregulate?
Yes.
Do we need An Academy for Energy Regulation?
Decarbonizing generation, EE policies, lower sales, and the smart grid together render current utilities unsustainable.

There are two pathways to future sustainable utilities:
- Smart Integrator: regulated utilities become network only
- Energy Service Utilities: Sell (regulated) energy services, not kWh

One path may not dominate, but the key economic forces to watch are vertical synergies versus new unregulated retail innovators.

The regulatory and institutional issues raised by the transition will be critical and call for more resources.

An extremely difficult simultaneous transition of business model, regulatory laws, and industrial architecture …

…but the status quo is not an option - - unless prices shock us by staying low!
About Us

The Brattle Group provides consulting and expert testimony in economics, finance, and regulation to corporations, law firms, and governments around the world. Please see the final slide for a list of recent Brattle reports.

Peter Fox-Penner is a Brattle Principal and Chairman Emeritus, former senior official at the DOE, and the White House Office of Science and Technology Policy. He serves on several boards including the Advisory Board for Enviance, Gridpoint, and the Solar Foundation.

Peter Fox-Penner’s, Smart Power: Climate Change, the Smart Grid, and the Future of Electric Utilities (Island Press, 2010), examines the future of the power industry. www.smartpowerbook.com.

"This book should be required reading for all industry regulators as they prepare to confront the challenges of this new paradigm."
– Mark Crisson, CEO of the American Public Power Association

"If you’re serious about policies that place energy efficiency on a level playing field with new energy supplies, and energy policy generally, this book is essential reading."
– Art Rosenfeld, former Commissioner of the California Energy Commission
"Comments of Peter Fox-Penner, Johannes Pfeifenberger, and Delphine Hou, regarding Docket No. AD09-8-000," by Peter S. Fox-Penner, Johannes P. Pfeifenberger, and Delphine Hou, *The Brattle Group*, December 18, 2009.


"Unlocking the €53 Billion Savings from Smart Meters in the EU," by Ahmad Faruqui, Dan Harris, and Ryan Hledik, *The Brattle Group*, October 2009.


