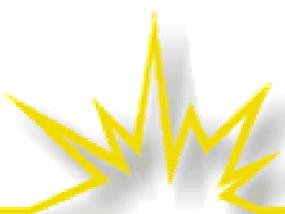


How Do Regulators Think About CHP?

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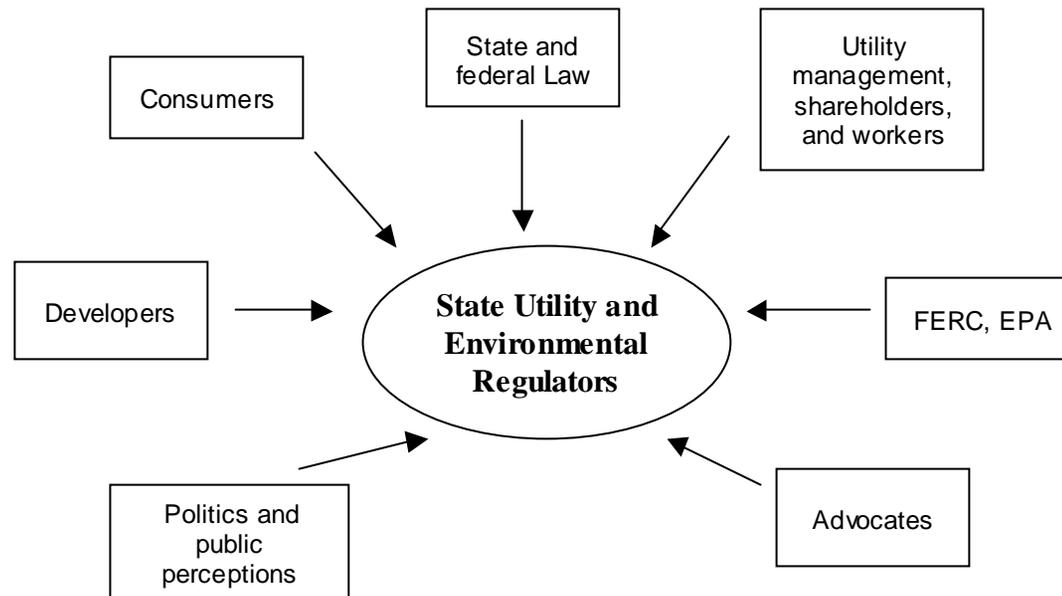
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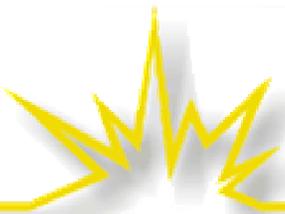


- There is nothing either good or bad but thinking makes it so.



Regulatory Cosmos (Chaos?)

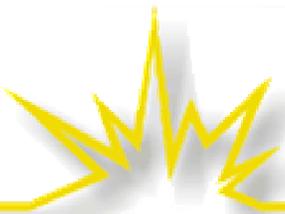




Existentialism

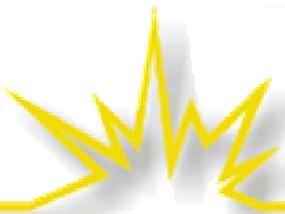
➤ What is a regulator?

- A creature of the legislature, whose job is defined by enabling statutes
- Typically cautious, occasionally bold
 - Integrated resource planning and energy efficiency, implementation of PURPA
 - Clean Air Act enforcement, cap-and-trade regimes
- A person with “awesome power and confusing roles”



Regulatory Objectives

- Of public utility commissions:
 - To promote economic efficiency and equity in the delivery and use of public utility services
 - Reliable electric service, on demand
 - Reasonable cost, low risk, environmentally sustainable
 - James Bonbright, Alfred Kahn, NARUC
- Of environmental regulators
 - “. . . to conserve, improve and protect the natural resources and environment . . . in such a manner as to encourage the social and economic development of [the state] while preserving the natural environment and the life forms it supports in a delicate, interrelated and complex balance, to the end that the state may fulfill its responsibility as trustee of the environment for present and future generations.”
 - Connecticut Department of Environmental Protection
- In short, to promote the public good



The World Regulators Inhabit

➤ Public utility commissions

- “Just and reasonable” retail electric rates
 - Integrated utility service
 - Default service and delivery charges
- Siting
- Planning and investment
- Market structure
 - FERC jurisdictional, except in Texas, but still of critical importance to state regulators
 - Bidding rules and regional demand response programs
 - System expansion

MOffice1

➤ Environmental regulators

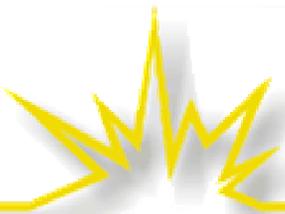
- Emissions standards
 - NO_x, SO₂, PM, CO, VOCs, CO₂
- Allowance trading regimes and allocations (credits or set-asides) for non-emitting resources
- Land and water use

➤ Point-Counterpoint

- Decisions of utility regulator have environmental consequences
 - Anything that affects behavior affects the environmental profile of the electric sector
- Decisions of environmental regulators have economic consequences

MSOffice1 Utility regulators often believe that they do not have a role in the environmental regulation of utilities, simply because their enabling statutes grant them no such jurisdiction. Even where they have siting authority, they may regard their role as limited. And in many ways it is. However, the fact is that just about everything they do has some kind of impact on utility behavior and therefore on production and consumption decisions, and these can all have serious environmental consequences, good and ill. It's your job to remind them of this.

, 11/2/2004



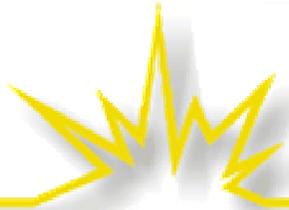
What Do Regulators Hear?

➤ CHP folks:

- We're no different than others customers
- We provide benefits to the system
- We're more efficient
- Why should we pay for *not* using the grid?
- System operations can deal with us easily

➤ Utilities:

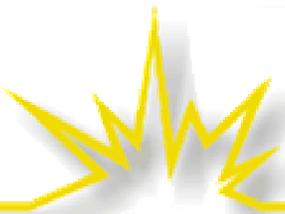
- CHP load profiles are wildly unpredictable
- CHP imposes costs on the system
- We're more reliable
- The grid has value, even for the rare user
- DG/CHP requires new operational methods



Perspectives

- Alvy (lamenting):
Hardly ever, maybe
three times a week.
- Annie (complaining):
Constantly, I'd say
three times a week.





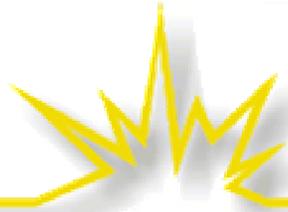
Finding a *lingua franca*

➤ What do regulators want?

- Emissions reductions
- Reduced grid congestion
- Reliability, diversity
- Reduced land impacts
- Reduced line losses
- Natural gas savings
- Economic development
- Wholesale electric price mitigation

➤ What does CHP have?

- High efficiency combustion
- Generation at loads
- Dispersed generation
- On site, no central generation or transmission
- Reduced demand for grid power
- High efficiency combustion
- In-state resources
- Reduced demand for grid power, sales into the market



What Do Regulators Need?

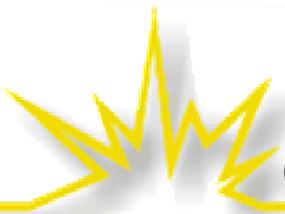
- Proof and, sometimes, a little encouragement



What Can Regulators Do?

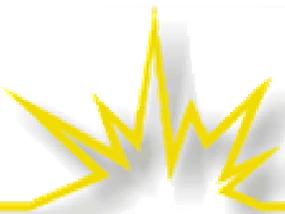
- Erect barriers or tear them down





Regulators see CHP as part of a wider array of resources

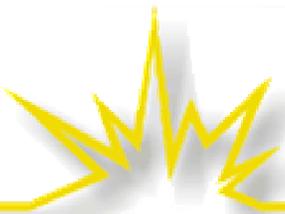
- Demand response (DR)
 - Customer-sited
 - Short-term load management (LM)
 - Regional (ISO) programs, utility programs, curtailment service providers
 - Distributed generation, combined heat and power
 - Long-term end-use energy efficiency (EE)
 - Consumer response to prices
- These resources can produce value at all points in the electric system (“the value chain”)
 - The challenge is finding the means of rebundling those values that once were fully internal to the vertically integrated utility
- What’s good for demand response generally is good for CHP specifically



Barriers to DR

➤ At wholesale

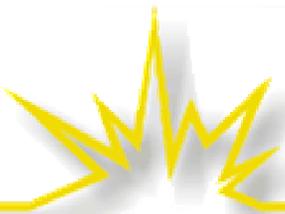
- Supply-only bidding
 - Demand should be required to bid; demand reductions should be allowed to bid
- Load profiling by pools and RTOs
 - Customers (or their load-serving entities) don't receive full credit for their load reductions
- Reliability rules and practices excluding demand-side resources
- Historic subsidies for wires and turbines
- Transmission pricing and expansion policies don't allow for lower-cost demand-side resources
 - Transmission pricing rules that penalize low-capacity factor resources
- Markets have failed to fully value the risk hedges that alternative resources provide
 - Fossil-fuel price risk
 - Environmental risk



Barriers to DR

➤ At retail

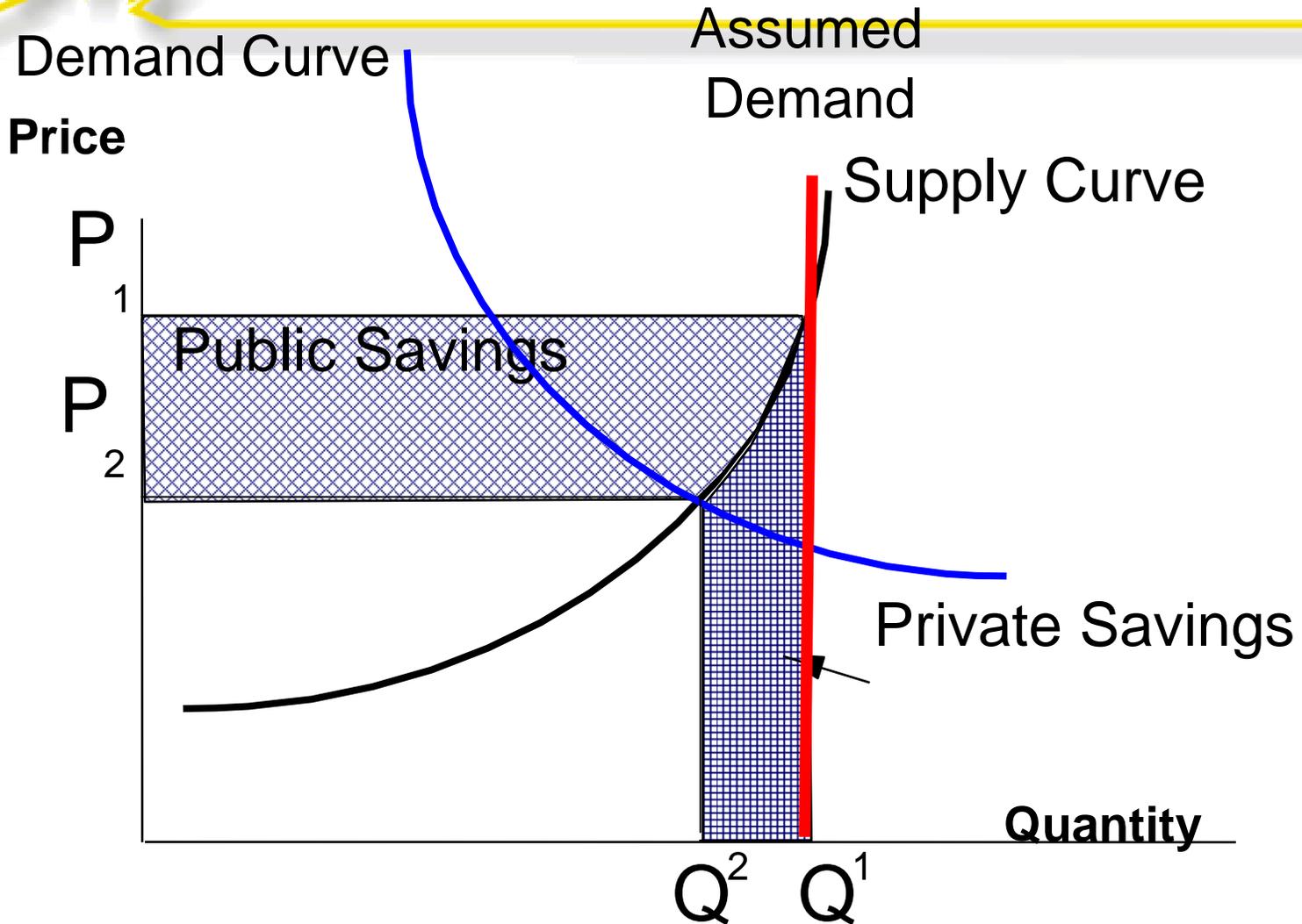
- Averaged rates and default service plans block price signals, slow innovation
- Traditional ratemaking promotes throughput
 - Efficiency's threat to utility profitability is a huge obstacle
- Avoided cost calculations rarely recognize the full value of distribution savings
- Metering traditions, costs, and standards

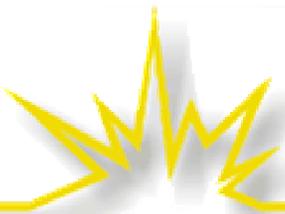


Relinking the Value Chain: Areas for Policy Action

- At wholesale:
 - Build the demand side into the market
 - Regional (ISO-sponsored) price-response programs
 - Funded by charges on all participants in the market
 - Demand bidding and demand-reduction bidding
 - DR for reliability: ancillary services, emergency curtailments
 - Resource adequacy policies
 - Sufficiency of capacity over the longer term
 - Capacity credits, payments for customer efficiency
 - Transmission: congestion relief, prices, and expansion plans
 - Least-cost, resource-blind solutions
 - Emissions requirements, trading regimes
 - Output-based standards

Build Demand-Side into Market

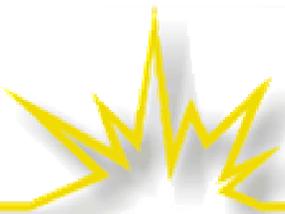




Relinking the Value Chain: Areas for Policy Action

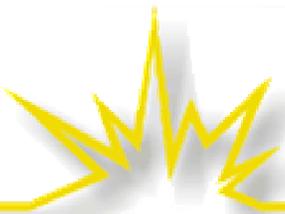
➤ At retail

- Performance-based ratemaking
 - Get the incentives right
- Pricing and advanced metering
 - Economically efficient pricing
- Long-term demand response: embedded energy efficiency
 - Funding comprehensive EE programs
- Renewable portfolio requirements and public benefits programs
 - Are there ways for CHP to participate?
- Integrated resource planning (vertically integrated utilities) and portfolio management (default service)
 - A company's least-cost plan of action should also be its most profitable



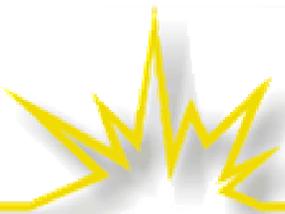
Customer-Sited Resources: The Ratemaking Problem

- Investments on the customer side of the meter generally reduce utility sales and profits
 - Rate design (\$/kWh and \$/kW) links profits to sales
 - Incremental revenues almost always exceed incremental costs;
 - Utility makes money even when the additional usage is wasteful, and loses it even when the reduced sales are efficient
- In three decades, the problem hasn't changed: how do we align utility incentives with the public good?
 - Restructuring has made its solution a little more complicated, that's all



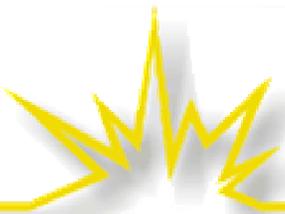
Customer-Sited Resources: Ratemaking Solutions

- Decouple sales from profits
 - Performance-based regulation
 - Revenue (not price) caps that reward utilities for improving the efficiency of their customers' usage
- Maintain unit-based pricing, though with rate structures that better reflect the economics (including environmental costs) of generation and delivery
 - TOU, critical peak, inverted tailblock, real-time
- Fund comprehensive efficiency programs, including CHP
 - For example, pending Vermont legislation



Rates for Partial Requirements Customers

- Regulators aren't yet ready to accept “damn the torpedoes” arguments
- Regulators' mantra: Those who cause costs should pay them.
 - The dispute, then, is what are the costs?
 - But what about the benefits?
- Compromise?
 - Stand-by charges that reward superior performance of on-site generation



Regulators Depend on Advocacy

- Strategic intervention, two examples:
 - Northeast CHP Initiative
 - PUC proceedings and environmental rulemakings in Massachusetts, New York
 - USCHPA in the Mid-Atlantic Distributed Resources Initiative (MADRI)
 - John Jimison's presentation
 - http://www.energetics.com/MADRI/pdfs/jimison_030305.pdf