

Impact of Restructuring on Distributed Resources Development

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About RAP

- Who We Are

- Non-Profit Organized in 1991
- Former State Regulators

- What We Do

- Regulatory Policy Development
- Publications, Workshops and Training
- Support and Training for
 - ➔ Public Utility Commissions
 - ➔ FERC
 - ➔ Foreign Governments



About RAP

- Supported by

- DOE

- EPA

- Private Foundations including:

- ➔ The Energy Foundation

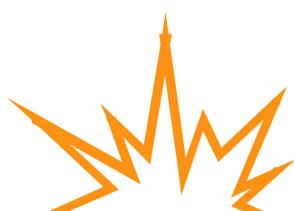
- ➔ The Pugh Charitable Trust

RAP Work On



Distributed Resource Issues

- ***Profits and Progress Through Distributed Resources***, David Moskovitz, February 2000
- ***Performance-based Regulation for Distribution Utilities***, November 2000
- ***Accommodating Distributed Resources in Wholesale Markets***, Frederick Weston, September 2001
- ***Distributed Resources and Electric System Reliability***, Richard Cowart, September 2001
- ***Distribution System Cost Methodologies for Distributed Generation***, Wayne Shirley, September 2001
- ***Distributed Resource Distribution Credit Pilot Programs: Revealing the Value to Consumers and Vendors***, David Moskovitz, September 2001
- ***Draft Model DG Emissions Rule***, DR Emissions Working Group, November 2001
- ***New England Demand Response Initiative***



Effects of Restructuring

- In Restructured States:
 - Shift in Jurisdiction
 - Results Extremely Sensitive To Market Structure
 - Regulators Redefining Role
- In Non-Restructured States:
 - Impacted by Greater Regionalization
 - FERC Preemption?
- Problem Areas: Uncertainties Over Service Unbundling, Market Mechanisms and Retail Customer Relationships
- Opportunities: Revealing Previously Embedded Values



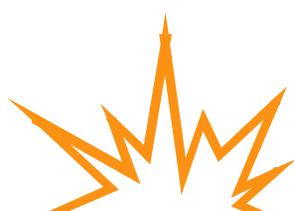
Two Worlds

- State Regulation
 - Close To
 - Consumer
 - Utilities
 - Used To Be Closed Loop -- Not So Anymore
 - Historically Resistant To Change
 - For Regulators It's All About Rates and Reliability
 - For Company It's All About The Relationship With The Customer



Two Worlds

- Federal Regulation
 - Removed From Customer
 - Not So Removed From Utilities
- For FERC, It's All About the "Market"
- For Generation, It's All About Access and Transmission Pricing
- For Transmission Owners/ISO/RTO, It's All About Operations and Reliability



Most Important Issues For Distributed Resources

- Procedural Issues:

- Regulators Still Heavily Involved

- Both State and Federal Regulation Are Important

- Substantive Issues:

- Well-Known Issues:

- ➔ Access to Customer

- ➔ Interconnection to System

- ➔ Rate Design: Backup and Standby Charges

- Less Obvious Issues:

- ➔ Revealing Values

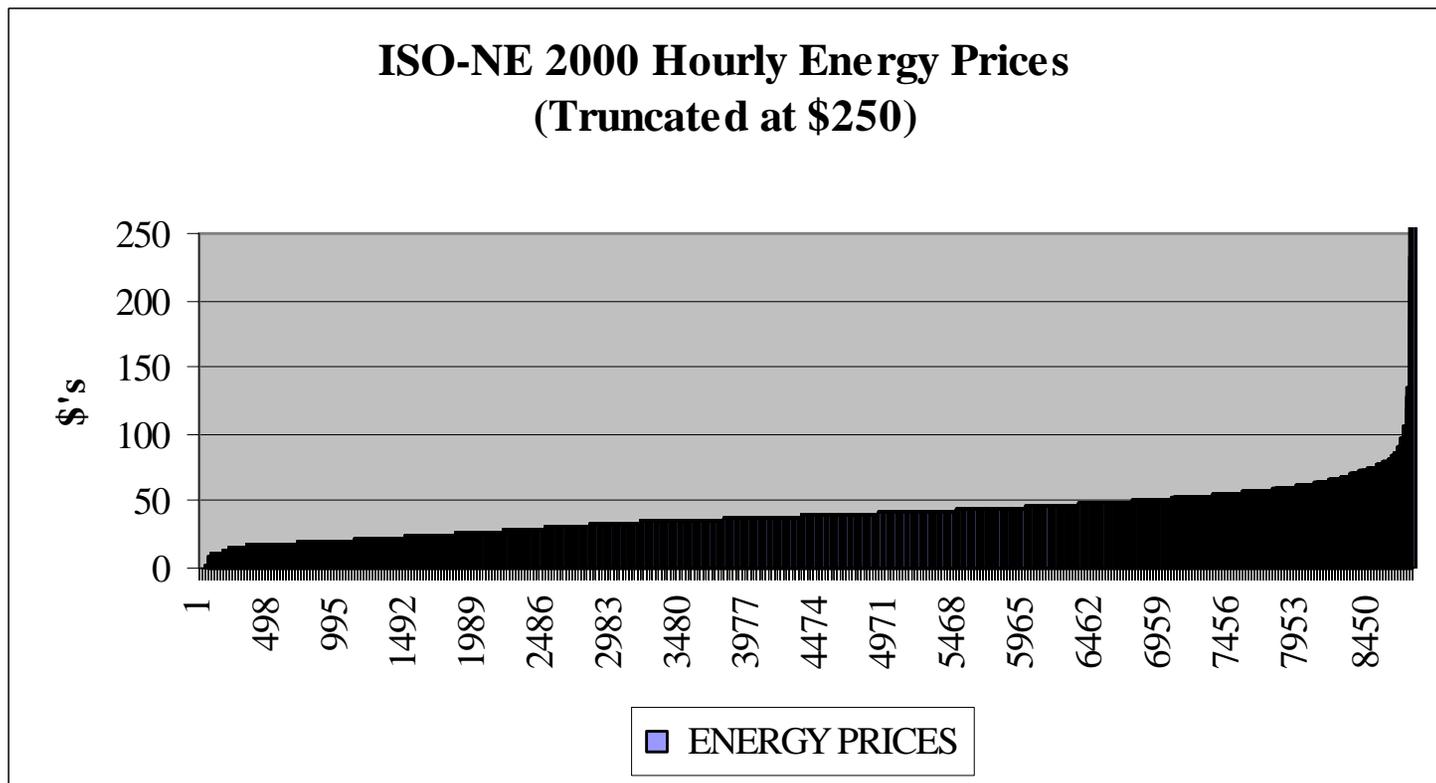
- ➔ Overcoming Incentive Structures



Retail Market: Energy Values

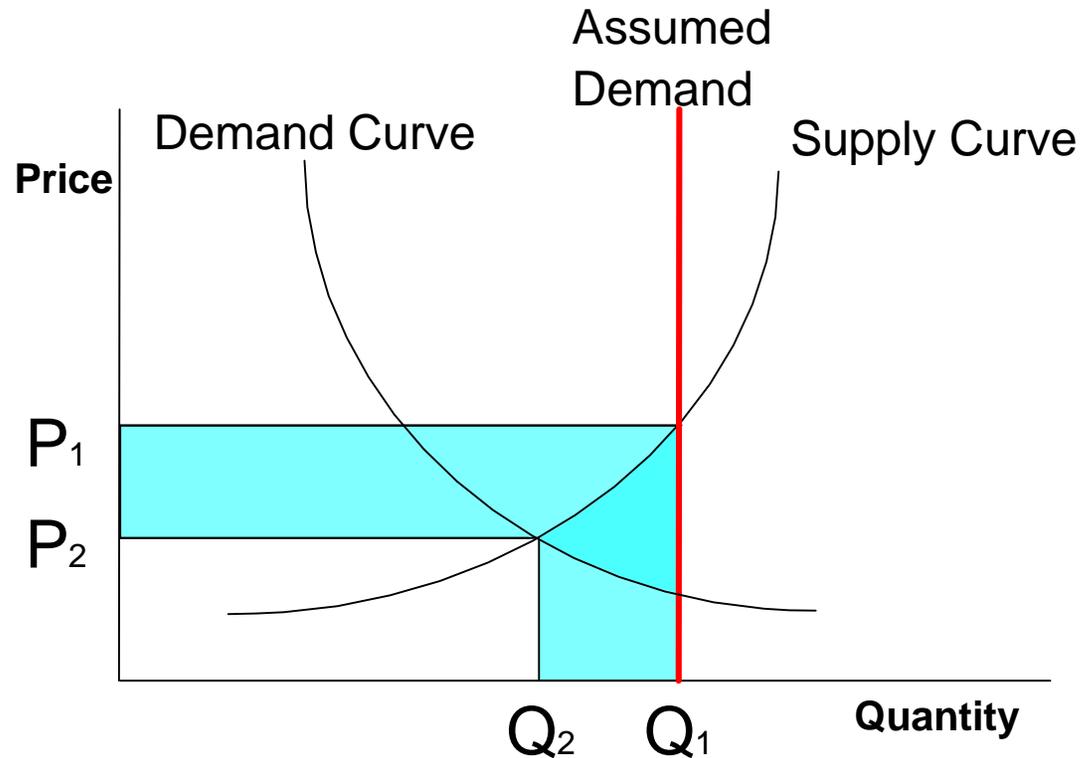
- On-Peak
- “Price taking” Value
- On-peak Prices Yield High Value
 - 1% of Hours Produce 20% of Revenues
- But:
 - 10% Of Installed Capacity Needed Only 1% Of The Hours in a Year
 - High On-Peak Values Mean High Volatility -- Not Politically Tolerable

Hockey Stick Values



Wholesale Markets: Demand Response Value

- Moves Price Down Supply Curve



 Savings to Wholesale Customers



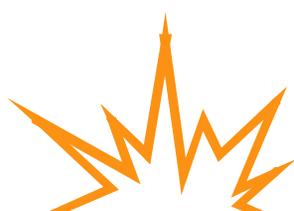
Other Values

- Reserves
- System Regulation (Voltage support, VARs, etc.)
- System Stability
- System Security
 - Relieves Stress On Existing System
 - Avoids Potential Security Costs -- No Need To Protect Transmission and Distribution Assets



Necessary Components

- DG Market Must See Prices For Non-Energy Values
- ISO Must “See” DR To Realize Value
 - Must Be Quantifiable
 - Must Be Dispatchable
- Demand Should Be “Biddable” In Market



Distribution and Transmission Costs

- DG Can Avoid or Delay Distribution and Transmission Investment
- Most Effective Where System Has Slow To Moderate Growth And Is Nearing Capacity
- Absent Changes, Only Distribution or Transmission Company Can Realize Value From These Investments

Distribution Values Can Be Very High

Central Vermont Public Service Corporation				
Marginal \$/MW →	Transformers & Substations		Lines & Feeders	
	\$302,586	\$2,229,074	\$407,747	\$12,541,195
Deferral Years	\$/kW Case		\$/kW Case	
	Low	High	Low	High
1	\$37	\$270	\$49	\$1,520
2	\$71	\$521	\$95	\$2,933
3	\$101	\$744	\$136	\$4,185
4	\$128	\$941	\$172	\$5,293
5	\$151	\$1,115	\$204	\$6,273
10	\$234	\$1,724	\$316	\$9,699
15	\$278	\$2,045	\$375	\$11,505
20	\$300	\$2,209	\$405	\$12,428
25	\$311	\$2,289	\$419	\$12,878
30	\$316	\$2,325	\$426	\$13,080



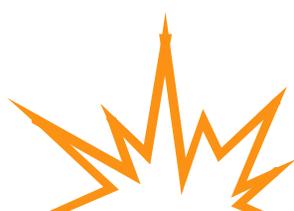
Even For “Low Cost” Utilities

Southwestern Electric Power Company				
Marginal \$/MW →	Transformers & Substations		Lines & Feeders	
	\$7,621	\$56,142	\$12,914	\$397,210
Deferral Years	\$/kW Case		\$/kW Case	
	Low	High	Low	High
1	\$1	\$7	\$2	\$48
2	\$2	\$13	\$3	\$93
3	\$3	\$19	\$4	\$133
4	\$3	\$24	\$5	\$168
5	\$4	\$28	\$6	\$199
10	\$6	\$43	\$10	\$307
15	\$7	\$52	\$12	\$364
20	\$8	\$56	\$13	\$394
25	\$8	\$58	\$13	\$408
30	\$8	\$59	\$13	\$414



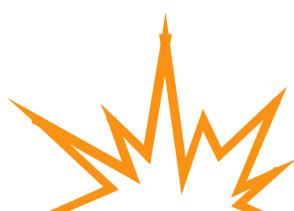
Deferral Values

- Highly Variable Among Utilities
- Highly Variable Within Utilities
- Project Specific
- With Average Distribution Pricing
 - Only Distribution Utility Can Realize Value
 - Insurmountable Barrier To Competition



Incentive Problems

- Volumetric Revenues Creates Incentive Barrier for Customer-side Investments
 - Best Case -- Average Per Customer Revenue Cap
 - Customer Prices Remain Volumetric
- Experience Shows Profit Incentives Will Overwhelm Other Incentives
- May Be Single Largest Barrier To DR Deployment



Incentives: Lost Profits Math

➤ Vertically Integrated Utility

- Utility with \$284 million rate base
- ROE at 11% -- \$15.6 million
- Power costs \$.04/kWh, retail rates average \$.08; Sales at 1.776 TWH
- At the margin, each saved kWh cuts \$.04 from profits
- If sales drop 5%: profits drop \$3.5 M
- DR equal to 5% of sales will cut profits by 23%

➤ Wires Only Company

- Utility now has \$114 Million in Rate Base
- ROE of \$6.2 Million
- Distribution rate of \$.04
- If DR located in low cost area each kWh cuts profits \$.04
- If sales drop 5%: profits drop \$3.5 M
- Reduction in sales of 5% lowers profits by 57%!



Solutions

- PBR: Revenue Caps
 - Not Price Caps
 - Removes Incentive Barriers
- De-Average Distribution Tariffs
 - Not Politically Acceptable
- Alternatives to De-Averaged Pricing
 - De-Averaged Distribution Credits
 - Distribution Development Zones



Understand Your Forum

- Restructuring Does Not Equal Deregulation
- History of Regulation and Role of Regulators
- Utilities Understand Regulation And How To Use It To Their Advantage
- Don't Be a Victim of the "Who's Not Here" Syndrome
- Regulatory Forum Is Receptive To Participation
 - Must Learn to Speak "Regulation"
 - Requires Continued Presence