The Role of the Regulator

Market Monitoring Wholesale and Retail Markets







US Energy Markets

- Market Operators
 Regional Transmission Operators
 Independent System Operators
- Regulators
 Federal Energy Regulatory Commission
 State Regulators
 Regional Entities

Federal Energy Regulatory Commission

Regulates the transmission and sale of natural gas and electricity for resale in interstate commerce to ensure that customers have dependable, affordable energy through competitive wholesale markets

Federal Energy Regulatory Commission

- ➤ Market Power Determination
- ➤ Market based Rate Authority vs. Cost-Based Rates
- Merger/sale of assets approval involving regulated providers
- ➤ Standards for Operators

State Regulatory Commissions

➤ Our mission is to assure all residential and business consumers access to adequate, safe and reliable utility services at fair prices, while facilitating an environment that provides competitive choices

State Regulatory Commissions

- ➤ Establish whether local markets are ready for competition
- ➤ Price caps and other customer protections in early years of development
- > Identify structural problems and remedies

Federal vs. State

Federal Energy Regulatory Commission

Wholesale Markets

State Regulatory Commissions

Retail Markets

Regulators

 Vigilant oversight of energy markets, both wholesale and retail

- More than enough to do
- Different markets/players/scopes

FERC and the states work together

- ➤ Wholesale flows to retail
- ➤ Information sharing both ways
- Behavior implications/market reactions
- ➤ Unexplained price movements and market activity around extreme weather

State Regulatory Bodies

Various structures but...

....duties, activities and products are much the same, on a state-by-state basis, as well as reflective of the federal monitoring requirements.

Ohio Statute

- Ensure retail electric service consumers protection against unreasonable sales practices, market deficiencies and market power
- Retail electricity prices are strongly correlated to wholesale market prices
- Therefore, wholesale is of concern to the state commissions

FERC Office of Market Oversight and Investigations

"...serves the public interest by guiding the evolution and operation of energy markets to ensure effective regulation and protecting customers through understanding markets and their regulation, timely identification and remediation of market problems, and assured compliance with commission rules and regulations."

OMOI Functions

- Principal advisor to Commission on regulation and oversight of energy market structure, performance and compliance of market participants with the Commission's rules
- Conduct analytical studies of market structures and activities to assess the state of the markets, provide early warning of vulnerable market conditions and propose policy for improvement

OMOI Functions

- Initiate and execute investigation of possible violation of the Commission rules, standards, orders and regulations; recommend remedies to address violation and pursues remedies through negotiation, litigation or financial penalties.
- Maintains a forum to informally resolve disputes and advises the Commission on Market enforcement and compliance issues

OMOI Functions

- Maintain Enforcement Hotline to informally resolve disputes concerning any matter subject to the Commission's jurisdiction, including barriers to competition or price responsiveness to market conditions
- Conduct market research and develop market models and simulation.
- Report on the state of energy markets

Market Monitoring Electricity

- Retail Market
- Wholesale Market
- Corporate Separation
- Consumer Intelligence
- Demand Forecasting
- Supply Estimation
- Supplier Complaints
- Price stabilization/volatility

- Supply
- Behavior
- Service quality/reliability
- Investment in new infrastructure
- Innovative products
- Risk management

Existing State Role in Wholesale Markets

- Understand the wholesale market
- Understand decisions utilities must make in the wholesale market
- Shape the wholesale market for the benefit of the state's residents and businesses
- Decide value of reliability
- Assure adequate supply for future usage levels
- Land use for new facilities

Independent Market Monitors

- ➤ Under the Independent Transmission Operator
- ➤ Generally monitor and report on markets at large and potential abuses
- ➤ Detect structural problems
- ➤ Identify unusual behavior
- ➤ Suggest modifications
- ➤ In some instance, impose penalties and mitigation strategies

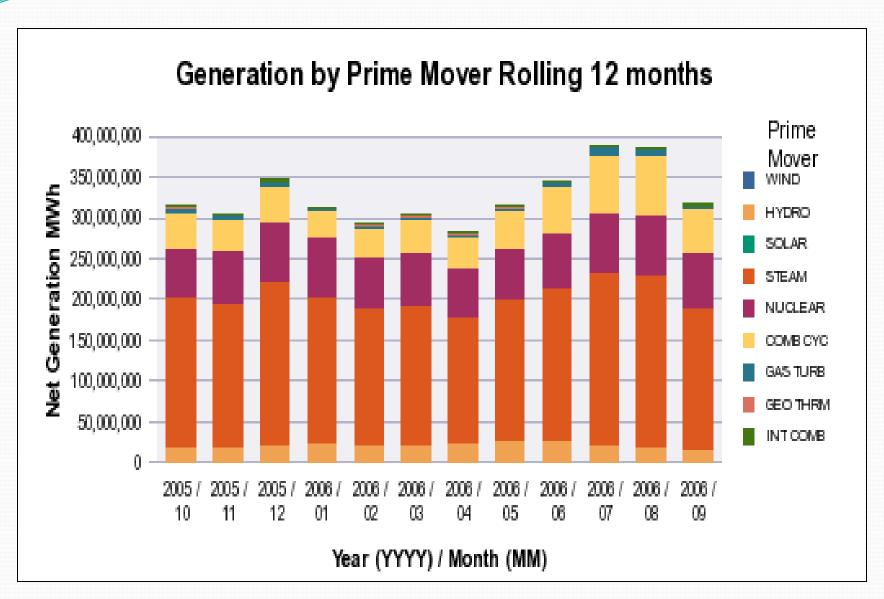
What to watch for...

- Transparency of information for effective behavior/response
- Efficient allocation of resources
- Incentives for efficient production as well as investment
- New service options
- Innovation and investment in new technologies

- Price stabilization/volatility
- Supply
- Behavior
- Service quality/reliability
- Investment in new infrastructure
- Innovative products
- Risk management

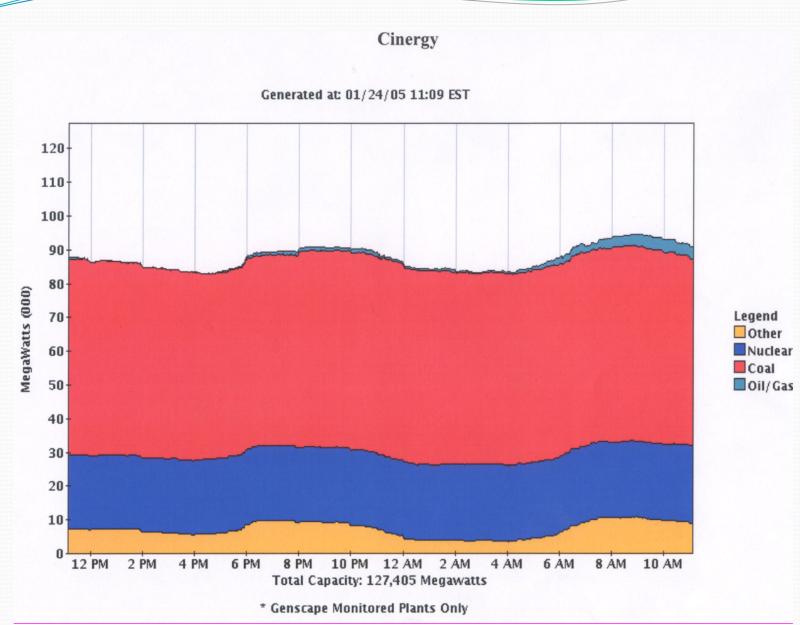
Supply Monitoring

- Regional Scope
- Existing Generating Capacity
- Retirements
- New Power Plants
- Input Prices
- Regional Demand/Supply Assessment
- Transmission Congestion



Generation by Fuel - Most Recent 12 Months

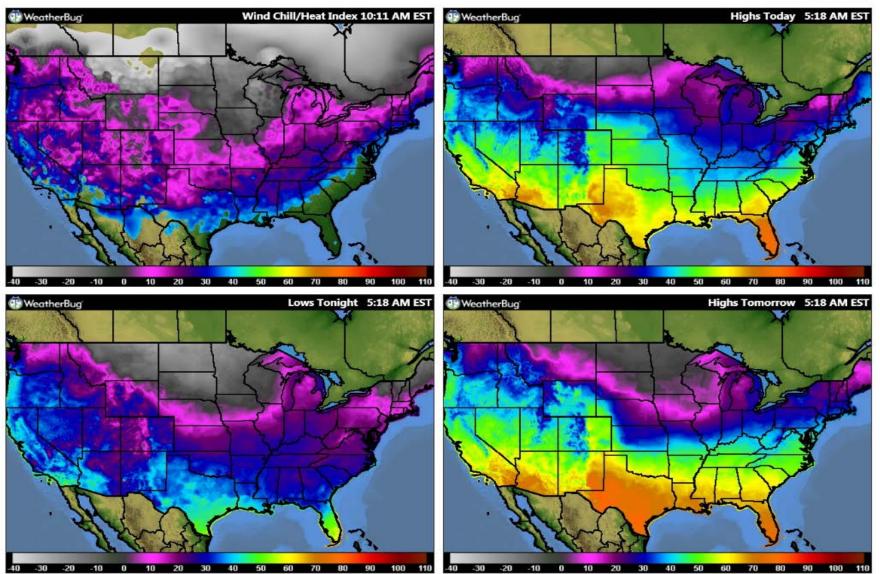
Fuel Type	Net Generation MWh	Percent of Total Generation
Coal	1,963,597,320	50.00%
Uranium	793,710,701	20.21%
Natural Gas	740,884,164	18.87%
Water	247,085,595	6.29%
Other	104,842,514	2.67%
Oil	57,182,439	1.46%
Petcoke	19,852,230	0.51%
Sum:	3,927,154,963	

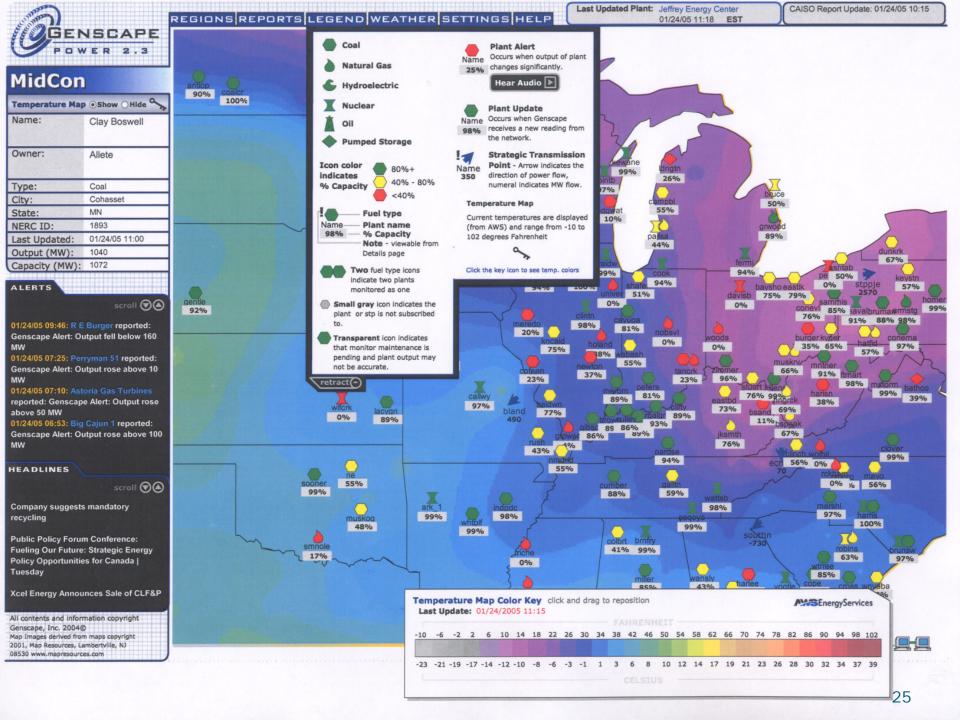


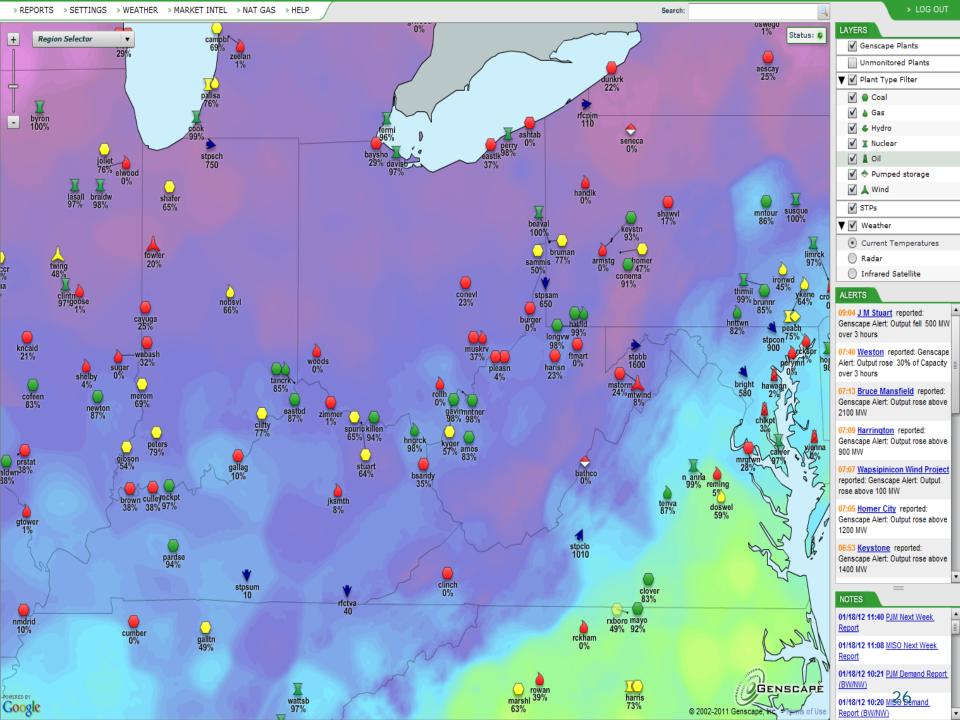


Weather









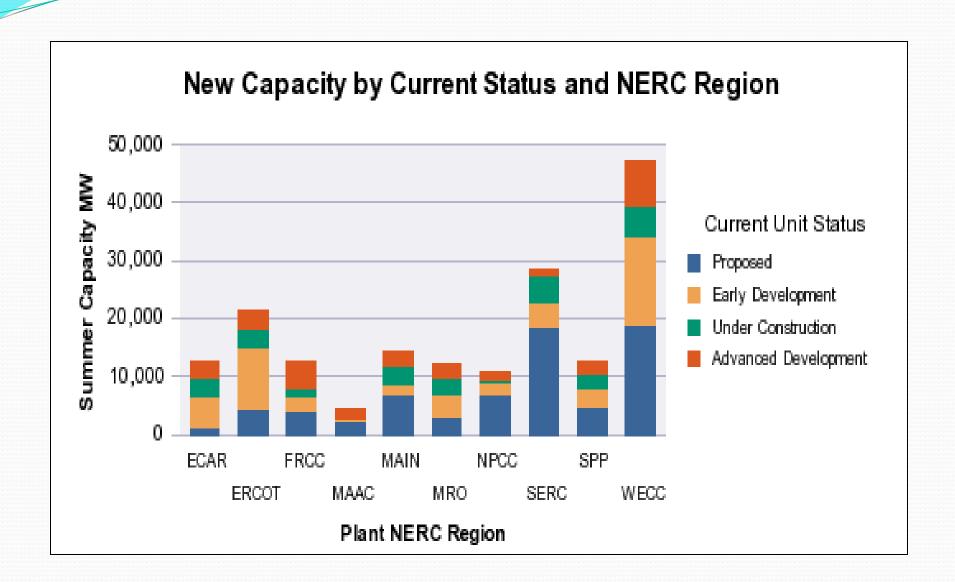
Plant Details



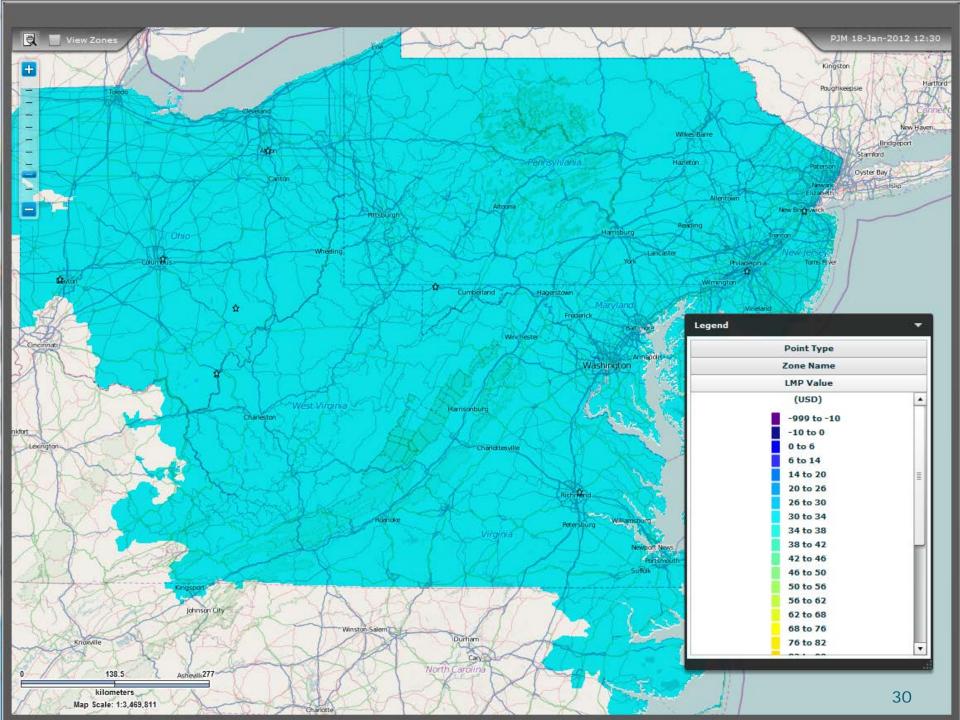


PLANT DETAILS

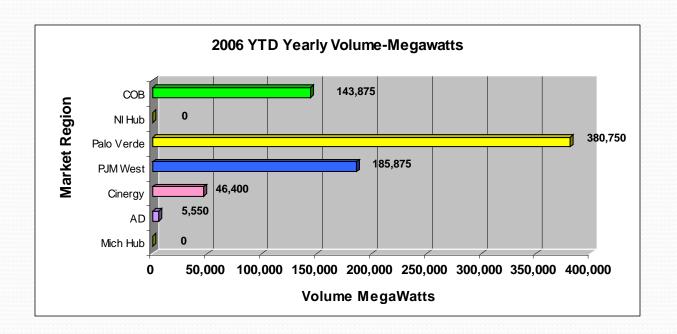
Perry: 01/11/12 - 01/18/12 1400 Capacity Current Output Maintenance 1200 GRAPH SETTINGS 1000 Perry 800 From 01/11/12 600 To 01/18/12 400 Days 7 90 Day Max 200 New Graph 0 Thu 12 Fri 13 Sat 14 **Sun 15** Mon 16 Tue 17 Wed 18 PLANT INFO GENERATING UNIT INFO Plant Name: Perry Unit Name Unit Capacity Unit Fuel UR PERRY 1 1312 Plant Type: Nuclear Owner: First Energy City: Perry State: OH NERC ID: 6020 NERC Region: RFC Last Update: 01/18/12 11:02 Codes for Energy Sources Output (MW): 1280 Confidence: High Capacity (MW): 1312 01/15/12 Genscape Alert: Output rose 10% of Control Area: PJM Interconnection 21:58 Capacity over 3 hours Heat Rate: N/A 01/14/12 Genscape Alert: Output fell 10% of Capacity 14:43 over 3 hours Genscape Alert: Output fell 10% of Capacity 12/13/11 21:21 over 3 hours 12/11/11 Genscape Alert: Output rose 10% of 13:21 Capacity over 3 hours



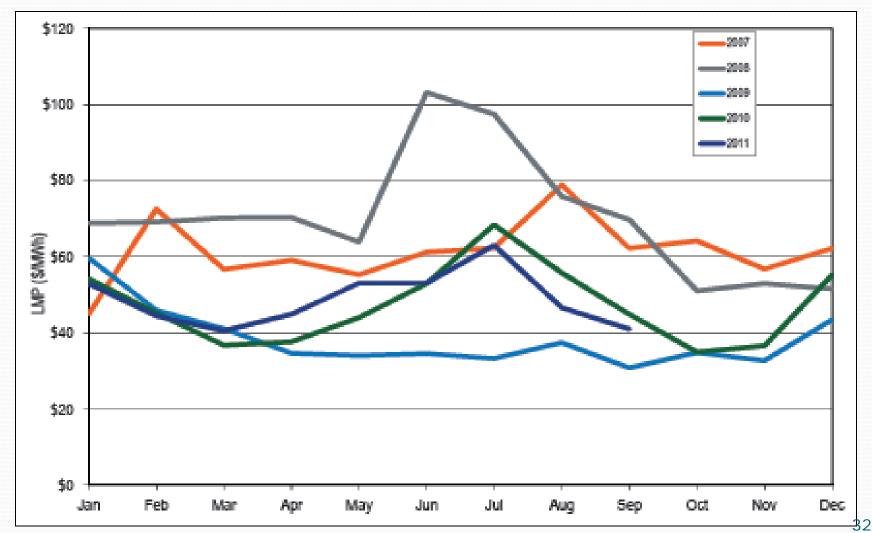




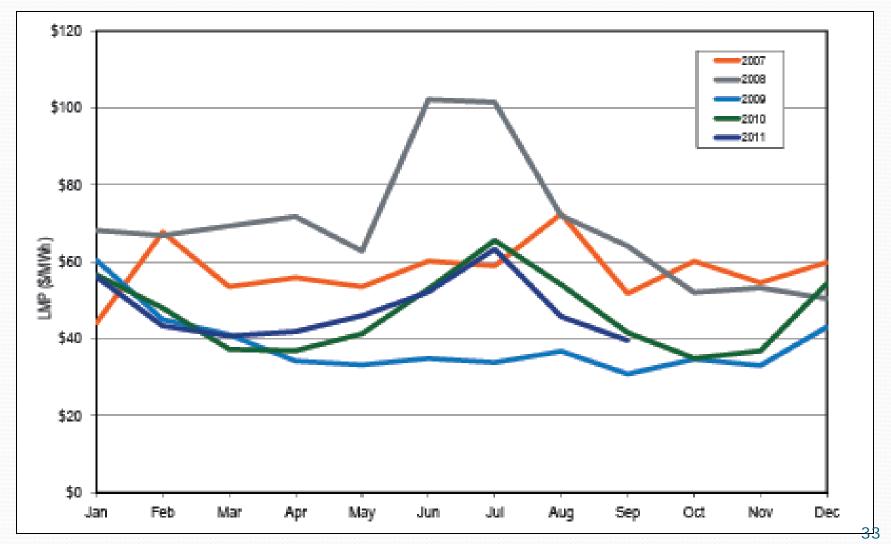
Annual Megawatts by Region

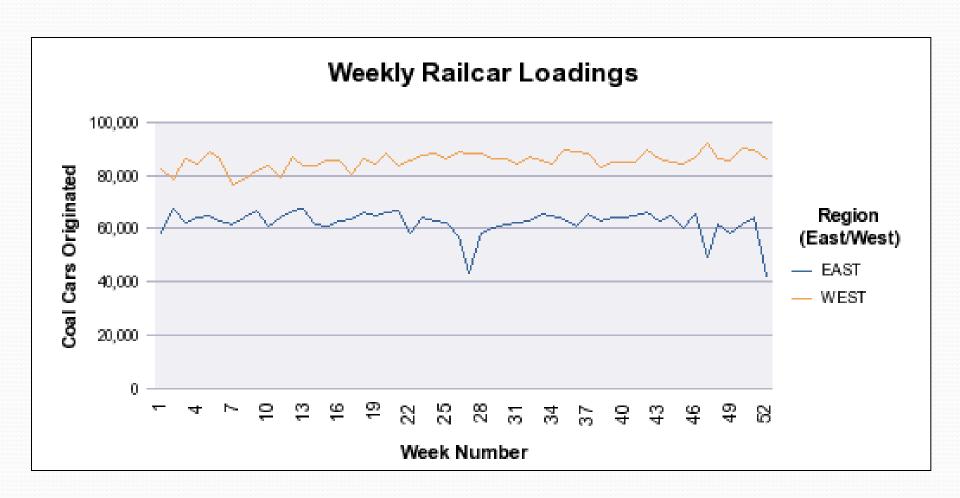


PJM Real-Time, Monthly, Average LMP



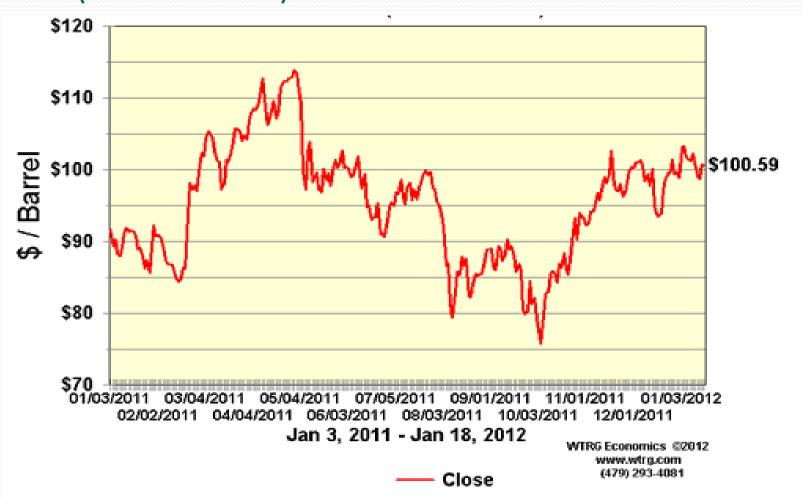
PJM Day-Ahead, Monthly, Average LMP



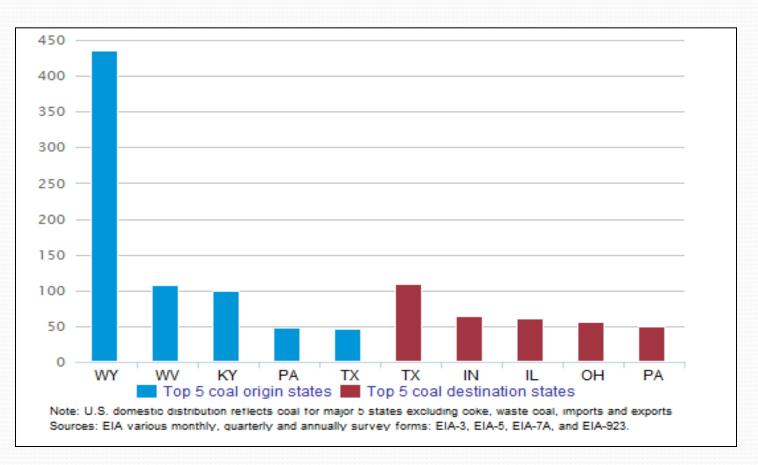


NYMEX Crude Oil Futures

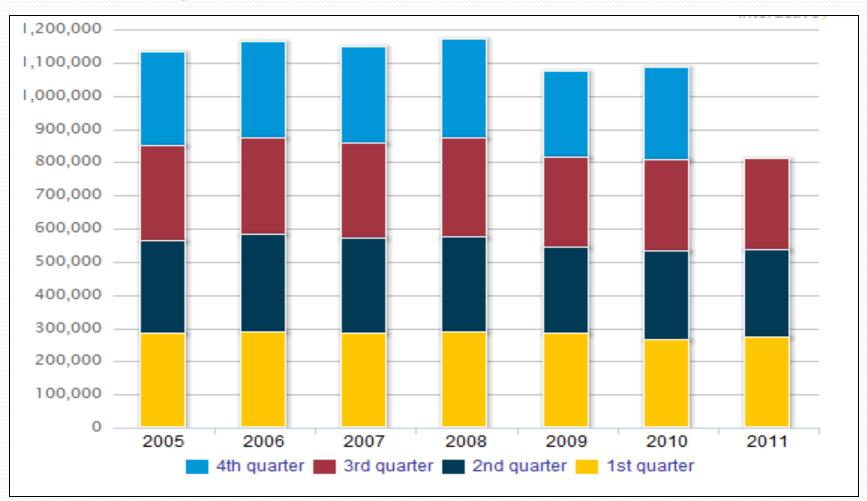
Close (Front Month)



Top 5 Coal Origin and Destination State, 2010

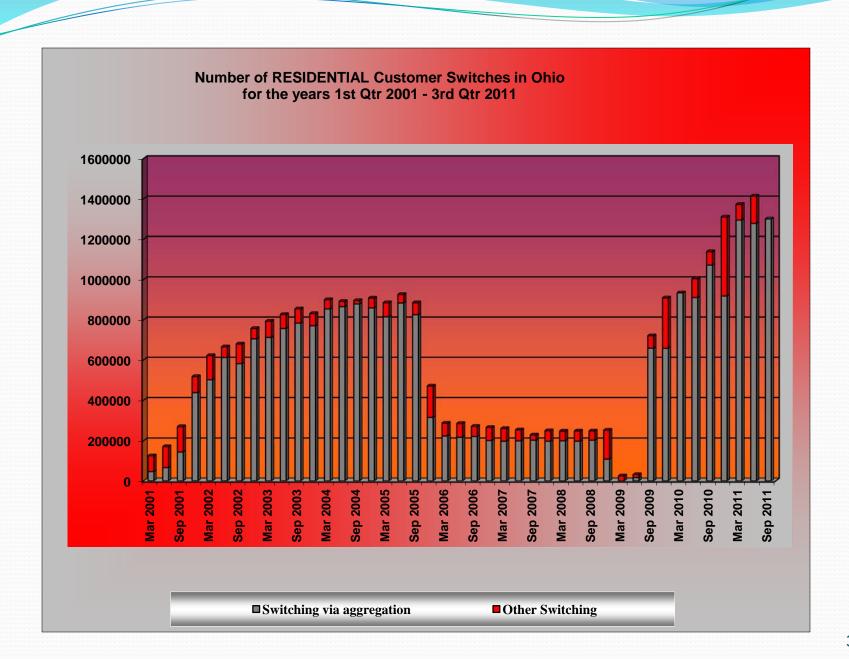


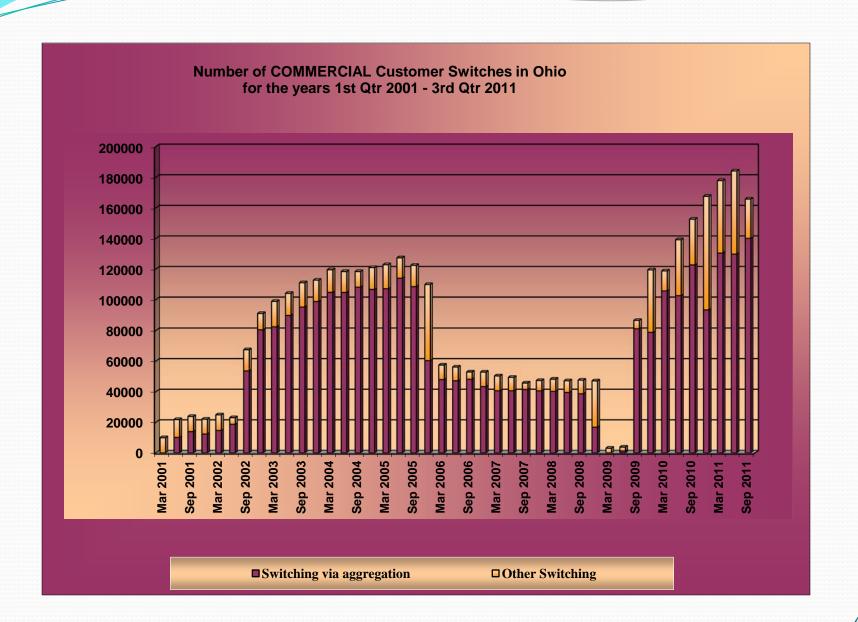
Quarterly(Q3) Coal Production

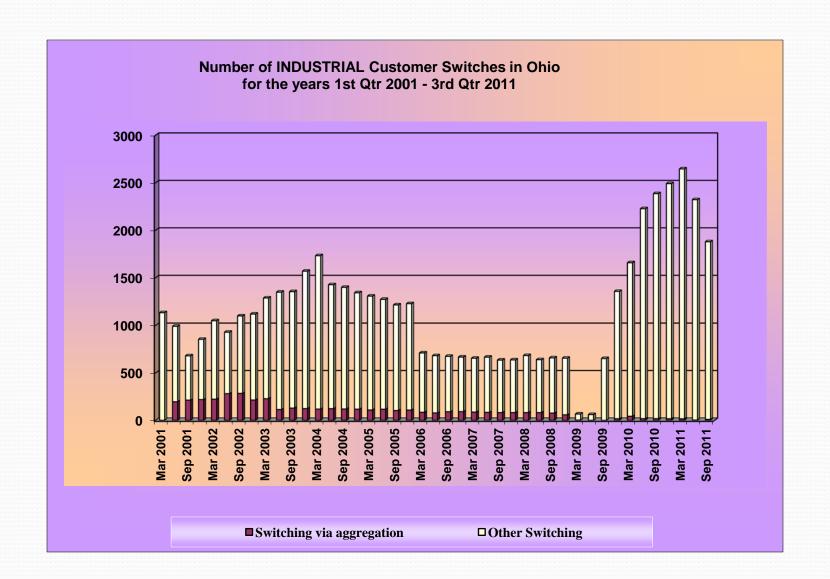


Retail Market

- Customer Switching
- Alternative Supplier Availability
- Barriers to Entry
- Market Power Abuses



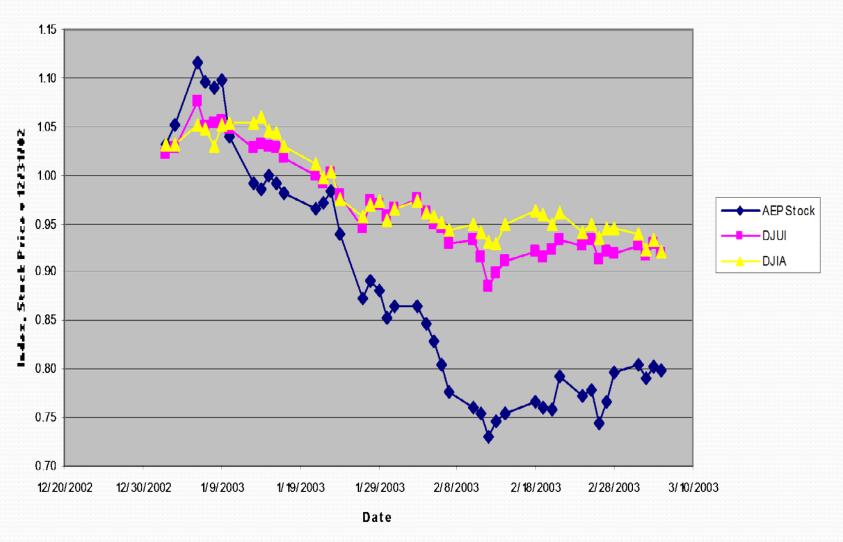




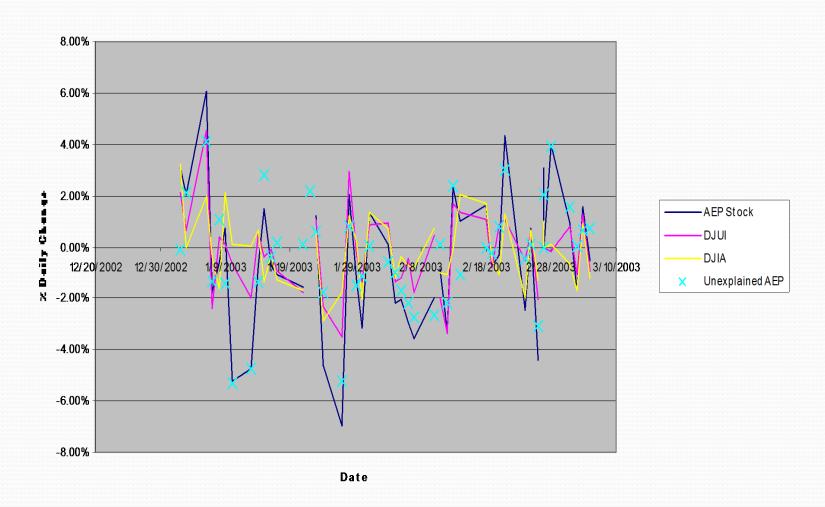
Demand Forecasting

- Independent Forecast of Demand
- Economic growth
- Weather
- Demand-Side Management Opportunities
- Transmission Planning/Forecast
- Congestion

AEP Data



Daily Change in Stock and Indexes



Access to Transmission Provider's Data and Information

- ➤ Hourly schedules, offers, actual output of generation resources
- > External imports and exports
- > Reserved and scheduled transmission service into, out of, or through the region
- > Transmission limits (including temporary deratings)
- > Hourly flows
- > Generation and transmission facility outage data
- > Records of complaints by customers

Strategic Transmission Points



» SELECT OTHER REPORTS

REPORTS

Genscape STP Report Generated 01/18/12 15:05 EST

Select a region to generate report: » GENSCAPE » CONTROL AREA

PJM

SHOW ALL GRAPHS	STP NAME	ORIGINATION	TERMINATION	DATE & TIME EST	OPERATING CAP PRIMARY DIRECTION (MW)	OPERATING CAP SECONDARY DIRECTION (MW)	CURRENT MW	CONFIDENCE
► <u>Show Graph</u>	<u>STP Black Oak -</u> <u>Bedington</u>	Black Oak	Bedington	01/18/12 14:47	2500	-2500	1600	High Confidence
► Show Graph	<u>STP Cloverdale -</u> <u>Lexington</u>	Cloverdale	Lexington	01/18/12 14:50	2000	-2000	1010	High Confidence
► Show Graph	STP Conastone - Brighton	Conastone	Brighton	01/18/12 14:39	1650	-1000	910	High Confidence
► Show Graph	STP Doubs - Brighton	Doubs	Brighton	01/18/12 14:39	1650	-1400	570	High Confidence
► Show Graph	STP Eau Claire - Arpin	Eau Claire	Arpin	01/18/12 14:53	750	-750	350	High Confidence
► Show Graph	STP Leeds South	Leeds	Hudson Valley	01/18/12 14:48	5769	-5769	2360	High Confidence
► Show Graph	STP RFC - TVA	RFC	TVA	01/18/12 14:58	1800	-1800	40	High Confidence
► Show Graph	STP RFC1	RFC	РЭМ	01/18/12 14:51	4500	-4000	110	High Confidence
► Show Graph	STP Sammis - Wylie Ridge	W H Sammis	Wylie Ridge	01/18/12 14:40	1548	-1548	650	High Confidence
► Show Graph	STP Schahfer - Burr Oak	R.M. Schahfer	Burr Oak	01/18/12 14:36	1000	-1000	720	High Confidence
► Show Graph	STP Southern to Duke	SOUTHERN	DUKE	01/18/12 14:47	2000	-2000	190	High Confidence
► Show Graph	STP Summer Shade	Paddy's Run	Summer Shade	01/18/12 14:40	500	-500	10	High Confidence
► Show Graph	STP Weston - Stone Lake	Weston	Stone Lake	01/18/12 14:51	1000	-1000	-210	High Confidence

Transmission

- ➤ Dispatch of generation for energy, regulation, frequency or other operational orders
- ➤ Redispatch of generation or other actions for transmission congestion management
- > Transmission service request logs, including the explanation for any refused, retracted or annulled requests
- ➤ Generator interconnection request logs, including the disposition of the request and the explanation of any refused requests;

Data from Market Participants

Additional data or other information required to accomplish the objectives of the monitoring plan

- > Production costs
- Opportunity costs
- Generating Logs
- > Transmission Logs

- It is important to have clear rules and protocols that will enhance investor confidence and trust. Certainty and clarity will lead to this.
- Accountability, autonomy, and authority. Regulatory bodies have to prove their stability and independence and impartial decision- making capabilities.
- Formal or semi-formal institutions.

- Coordination and communication problems can occur, including between regulators. Understand personalities and respect positions. This conflict and protection of interest grows as the geographic boundaries expand (e.g., as you expand from state/national to regional/international approaches).
- Keep channels of communication open and have regular exchange of information and ideas. While parochial interests cannot necessarily all be met, these should at least be understood by all stakeholders. Strive for consensus and compromise when possible. Constructive dialogue keeps the goals in sight and progress can be made.

Why we do it...

- Independent monitoring improves reliability and fairness
- Transparency ensures fair pricing
- The more watching, the better and more effective monitoring
- Keeps states from being "Balkanized"
- Opens markets/assures competitiveness
- Keep the lights on and keep the oil/gas flowing