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Zambia Partnership: Monitoring of the Electricity Sector

Lusaka, Zambia
March 20-24, 2006

Chairman Wendell F. Holland



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Overview

- I. Pennsylvania and the Public Utility Commission
- II. Legal Obligations and Level of Service
- III. Philosophy of Monitoring
- IV. Pennsylvania Experience
- V. Summary and Conclusions



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I: Pennsylvania

- The 6th most populous state (over 12 million)
- The 32nd State by land size (116000 sq. km)
- Capital – Harrisburg
- Major cities – Philadelphia (1½ million)
Pittsburgh (335000)
- Nickname - “The Keystone State”



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Pennsylvania

Public Utility Commission (PUC)

- Commission was created in 1937 (replaced Public Services Commission, created in 1913)
- About 500 employees
- Decisions affect:
 - 5.7m electricity customers
 - 2.8m natural gas customers
 - 8.3m telephone customers
 - Also water, transportation customers
- Chairman and four Commissioners with staggered terms nominated by the Governor and confirmed by the Senate
- Main office in Harrisburg; with regional offices in Altoona, Philadelphia, Pittsburgh, and Scranton



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Companies Under PUC's Jurisdiction

Electricity

Natural Gas

Local Telephone Service

Water/Wastewater

Transportation Services

DO NOT REGULATE

Cell phone providers

Cable companies

Internet service providers

Long-distance telephone rates

School buses

Municipalities

1983-84

- **17** electric utilities
- **60** gas companies
- **50** telephone companies
- **430** water companies

2003-04

- **80** electric companies
- **120** gas companies
- **550** phone companies
- **179** water companies



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PUC Bureaus & Units

Chairman and 4 Commissioners (with Assistants/Aides)		
<u>Legal Functions</u>	<u>Administrative Functions</u>	<u>Technical Functions</u>
<ul style="list-style-type: none">•Admin. Law Judges•Law•Special Assistants•Trial Staff	<ul style="list-style-type: none">•Director of Operations<ul style="list-style-type: none">- Admin. Services- Communications- Legislative Affairs•Secretary's Bureau	<ul style="list-style-type: none">•Audits•Conservation, Economics & Energy Planning•Consumer Services•Fixed Utility Services•Transportation & Safety



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II: Legal Obligations

- Every public utility shall furnish and maintain adequate, efficient, safe, and reasonable service and facilities
- Tariffs have force of law
- The State Legislature has vested the PUC with exclusive jurisdiction over reasonableness, adequacy and sufficiency of public utility services



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Level of Service Expected

- No unreasonable discrimination
- Standards for service and facilities
- Approved policy and rules for discontinuance of service
- Testing of meters and other equipment of measurement
- Procedures for handling and reporting accidents
- Procedures for billing and collection
- Rules for penalties when violating terms of tariffs



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III: Philosophy of Monitoring

OUTLINE

- Objective of monitoring
- Classification of monitoring activities
- Preconditions for effective monitoring
- Access to relevant data
- Enforcement
- In-house organization of monitoring
- Enhancing in-house resources for monitoring and enforcement

Acknowledgement: Material from Dr. Péter Kaderják, Director, REKK, Budapest, Hungary



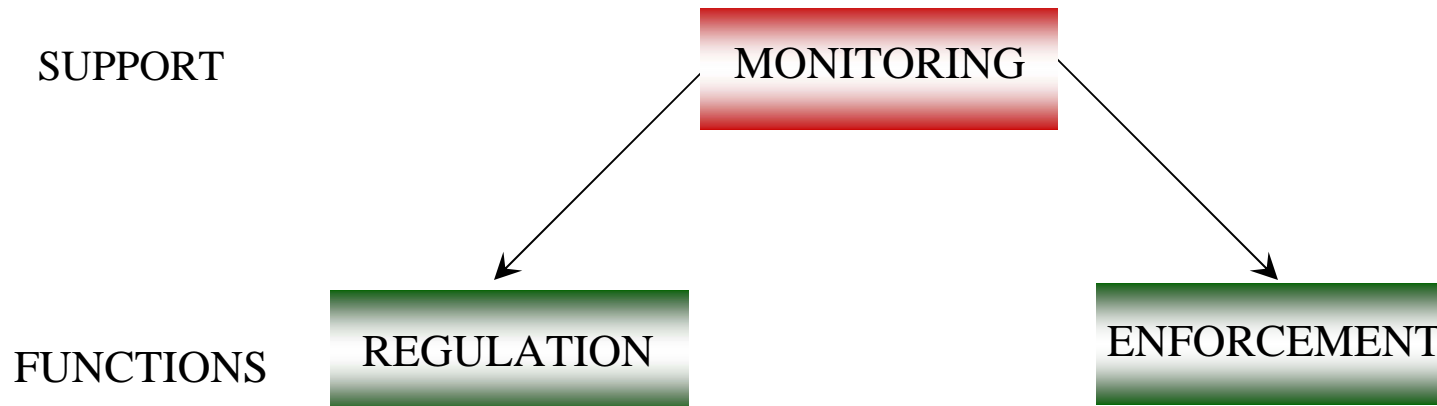
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Objective of Monitoring

- **The primary objective of monitoring activities is to provide the necessary information and support for the Regulatory Commission to perform both its regulatory and enforcement functions.**





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Support for Regulation

- **Monitoring that aims at developing or refining a particular regulation** should be based on a well designed system of regular and longer term data collection and careful analyses. Data:
 - From regulated companies
 - Independent sources
- Much of the work can be done in-house



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Support for Enforcement

- **Monitoring that aims at the enforcement of existing rules and regulations** might rely much more on
 - on-site inspection
 - *pre-announced*
 - *surprise*
 - non-routine casual audits



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Efficient Enforcement

- A major function of the ERB is to ensure compliance with the prevailing rules and regulations
- Non-compliance can be detected, but **not ensured** by monitoring
- Compliance can be achieved by
 - voluntary agreements between the regulator and the regulated firms
 - *contracts, high-risk and long-term issues*
 - enforcement



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Efficient Enforcement

- The most common options to punish non-compliance are
 - written note to the licensee about non-compliance
 - fining the licensee
 - *nominal dollar value*
 - *In percentage of some income indicator of the licensee (e.g. 1% or 10% of net income)*
 - a normative reduction of the income of the licensee in case of non-compliance
 - revoking the license
 - publishing the punishment in the media



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Preconditions for Effective Monitoring

- Reliable data (primary, self-reported, audited)
- Well focused, informed and independent analysis (in-house or contracted-out)
- Ability and willingness to regularly publish the results (reports, media)
- Effective power to intervene if necessary (changing the rules, detect and punish misbehaviour)
- Established institution



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Access to Relevant Data

- Highest level of regulation (e.g. the relevant Energy Act) should provide the ERB powers to require company data
- ERB has to be allowed to adjust its actual data need in a flexible manner
- In case of lack of powers on the side of the ERB to collect relevant business data it is advised to let the legislators to know that it will not be able to fulfil its functions



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Business Confidentiality

- Most common argument
- Depends much on local regulation
- Regulated companies' activities impact system security and regulated tariffs: BC can not be maintained
- International experience shows that transparency of data does not harm business operations
- Better to test powers in a litigation
- License only publicly traded companies



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Primary Data *VERSUS* Self-Reporting

- Justification to request primary data:
 - allows the company to arrange internally for monitoring and collecting the information requested
 - allows the company itself to react to regulatory expectations more efficiently
 - room for manipulating the submitted data is more limited
 - primary data allows the ERC to carry out independent analysis, even retrospective
 - allows for benchmarking



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Primary Data *VERSUS* Self-Reporting

- In case of lacking IT or human resources
 - require the regulated company to store historic data at a particular place in a pre-defined format
 - require the regulated company to publish the data on its website
 - without access to primary data, the regulator is left in its monitoring and enforcement activities with the self-reports of the companies



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Problems with Self-Reports

- ERBs often request regulated companies to submit regular reports on their technical and financial performance
- Self-reporting gives freedom for the licensee to represent itself and to send messages to the regulator
- Problems:
 - secondary, aggregated data
 - clear incentive for the company to represent data and analysis that will not imply regulatory sanctions



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In-House Organization of Monitoring

- Data collection
- Data processing and storage
- Analyses
 - HR needs. Outsourcing is possible but core in-house competence **is necessary**
- Inspection and auditing
 - Separate group?
- Reporting and Decision making
- Communication



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Enhancing In-House Resources for M&E

- NGOs
- Consumer groups
- Make data published
 - market analysts and
 - competitors will monitor for you!
- Hire Monitoring Units on a contractual basis (independent / academic resources of quality analysis)



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Other Issues in Data Access

- Information overload
 - amount, format might prevent understanding and analyses
 - avoid vaguely defined format or content!
- Regulatory audits and capture
 - Contracting-out auditing might be useful, but
 - *select the contractor by a non-discriminatory, open and transparent procedure*
 - *check for the potential conflict of interest*
 - *potential for capture is increasing with the money at stake*



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IV: Pennsylvania Experience

Monitoring by the PUC

- What are we monitoring?
- Why are we monitoring?
- Is monitoring an exact science?
- What are the parameters?
- How do we monitor?
- What resources do we use?
- Do we meet expectations?



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What are we monitoring?

- Adequate service
- Efficient service
- Safe service
- Reasonable service
- Proper use of approved tariffs
- Non-discrimination in providing service



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Why are we monitoring?

- By law, PUC's exclusive jurisdiction
- Ensure service and facilities
- Approve discontinuance of service
- Correct consumption data for billing and collection
- Meter testing
- Procedures for accidents
- Appropriate penalties for violations
- Legislative inquiries



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Is monitoring an exact science?

- **Yes?** **No?**
- Dealing with too many variables
 - Within EDC territory
 - Within state, region, country
 - Most important, all customers are not identical



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What are the parameters?

- EDCs and suppliers under jurisdictions
- Approved rules and regulations
- Quality of service standards
- Appropriate procurement process
- Terms and conditions in tariffs
- Other factors such as price and supply conditions
- Type of data: confidential or public?



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How do we monitor?

- Staff observes market conditions regularly
- Each bureau has different part of monitoring function
- Staff reports to the Commissioners on a regular and as-needed basis
- Technical analyses followed by recommended legal actions



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Do we meet expectations?

- We believe we meet the expectations of our statutory obligations
- Annual budget process is the check-and-balance
- Media coverage
- Transparency in the regulatory process is one of the most important aspects



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V: Summary & Conclusions

- Major issues: customer protection and market monitoring
- Various levels/types of review/monitoring
- Response to legislative mandates
- Built in checks-and-balances
- Coordination among other agencies
- Regionalism



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Monitoring assignments

- Review of daily and future electricity prices
- Monitor natural gas pipeline activity
- Designated staff members to receive confidential data
- Regular discussions current and relevant energy issues with staff from other states
- Maintain historical database of energy markets
- Monitor utility websites regularly



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Contents in a Report

- Summary of Equity Returns
- Summary of Returns
- Definitions and Explanations
- Summary of Company Adjustments
- Allowed Rates of Return on Common Equity
- Market Based Returns on Equity
- Formulas Used in DCF Calculations
- Formulas Used in CAPM Calculations
- Formula Used in Risk Premium Calculations
- Secretarial Letter to All Parties of Record



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Contents in a Report

- Follow-up Recommendation Number
- Staff's Follow-up Finding And Conclusion
- Staff's Follow-up Recommendation
- Recommendation Status
- Implementation Status
- Implementation Date
- Action
- Responsible Person (in the utility)



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Contents in a Report

- Introduction
- Summary of Management Effectiveness and Operating Efficiency
- Executive Management
- Customer Services
- Management Information Services
- Materials Management
- Diversity
- Affiliate Relations
- Corporate Governance
- Acknowledgements



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Market Monitoring Report

- Average Electric Wholesale Prices at Major Hubs
- NYMEX prices
- PJM Daily and Monthly Capacity Market
- Proposed Generation Summary
- Generation Air Permit applications
- Power Plant Outages
- Quarterly Average Retail Price comparisons for state, region, and country



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Market Monitoring Report

- Electric Customer activity
- Coal spot prices
- Wholesale Natural Gas, Crude Oil, Propane, and Fuel Oil prices
- Natural Gas Storage & Futures
- Natural Gas Customer Activity
- EIA Natural Gas and Crude Oil Short Term Forecast
- Gulf of Mexico storm recovery



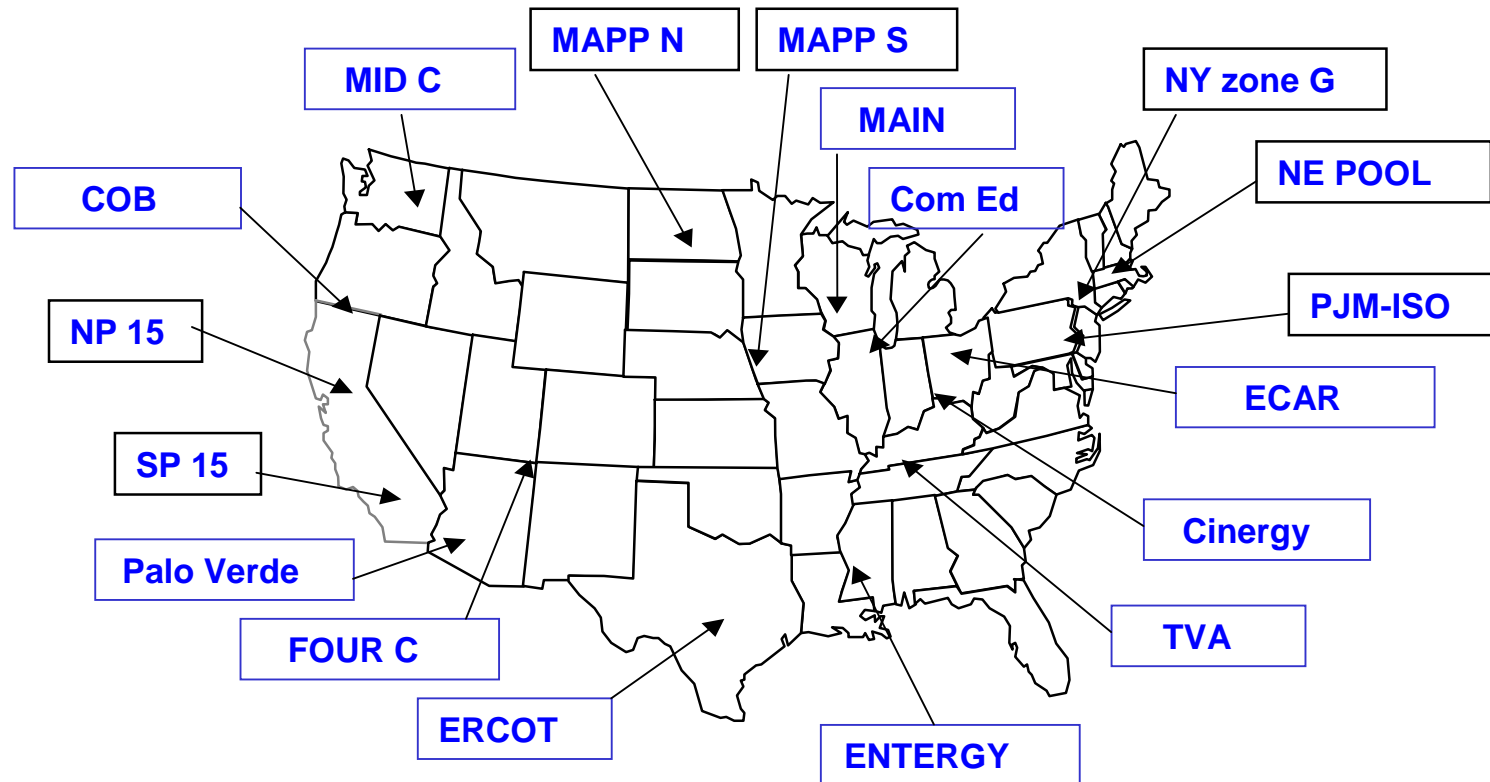
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Resources

Electric Market Hubs

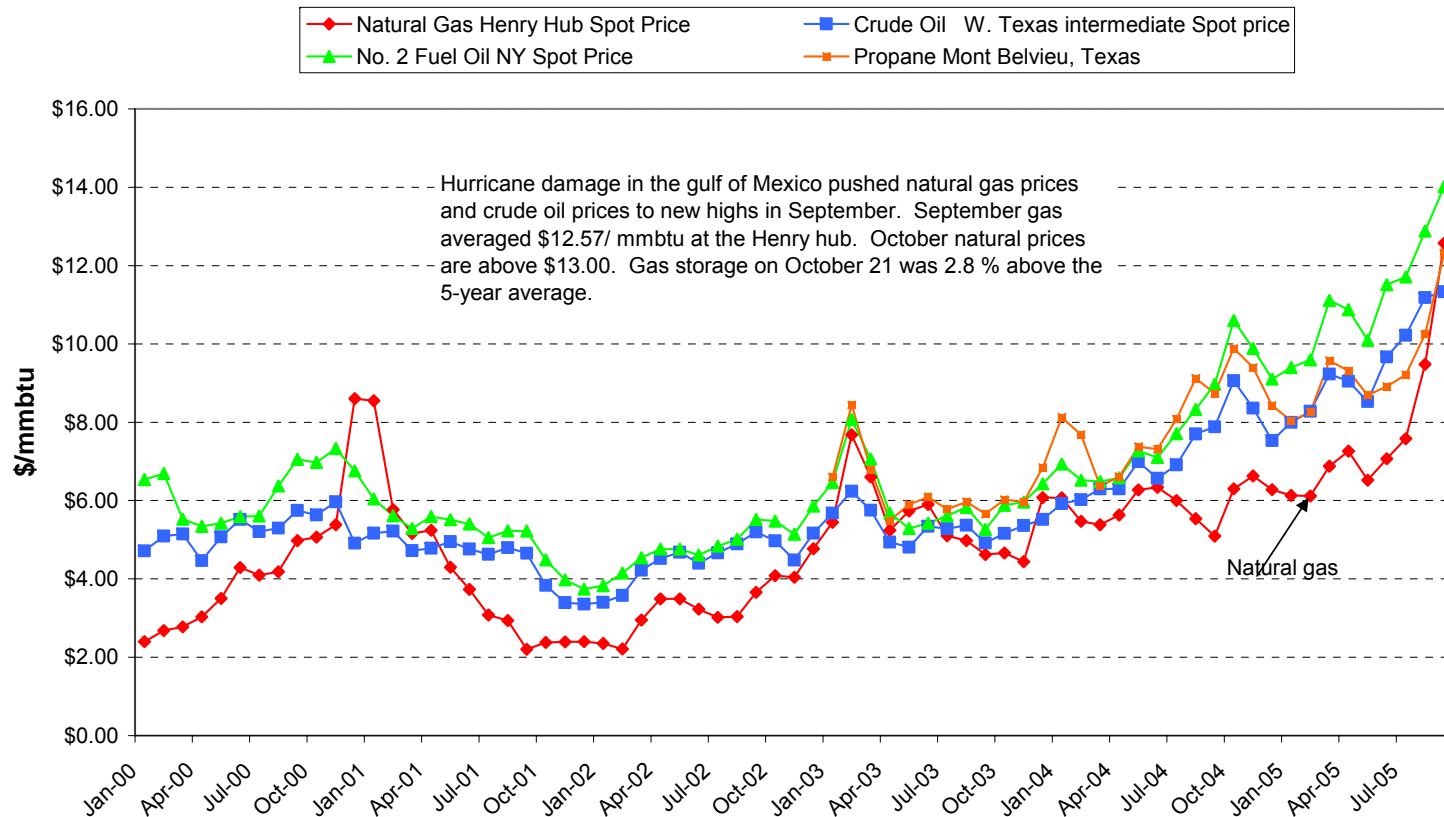


Resources

Wholesale Fuel Prices by Heat Content

Data from EIA *Weekly Gas Report* and EIA *Weekly Petroleum Status Report* (unweighted average)

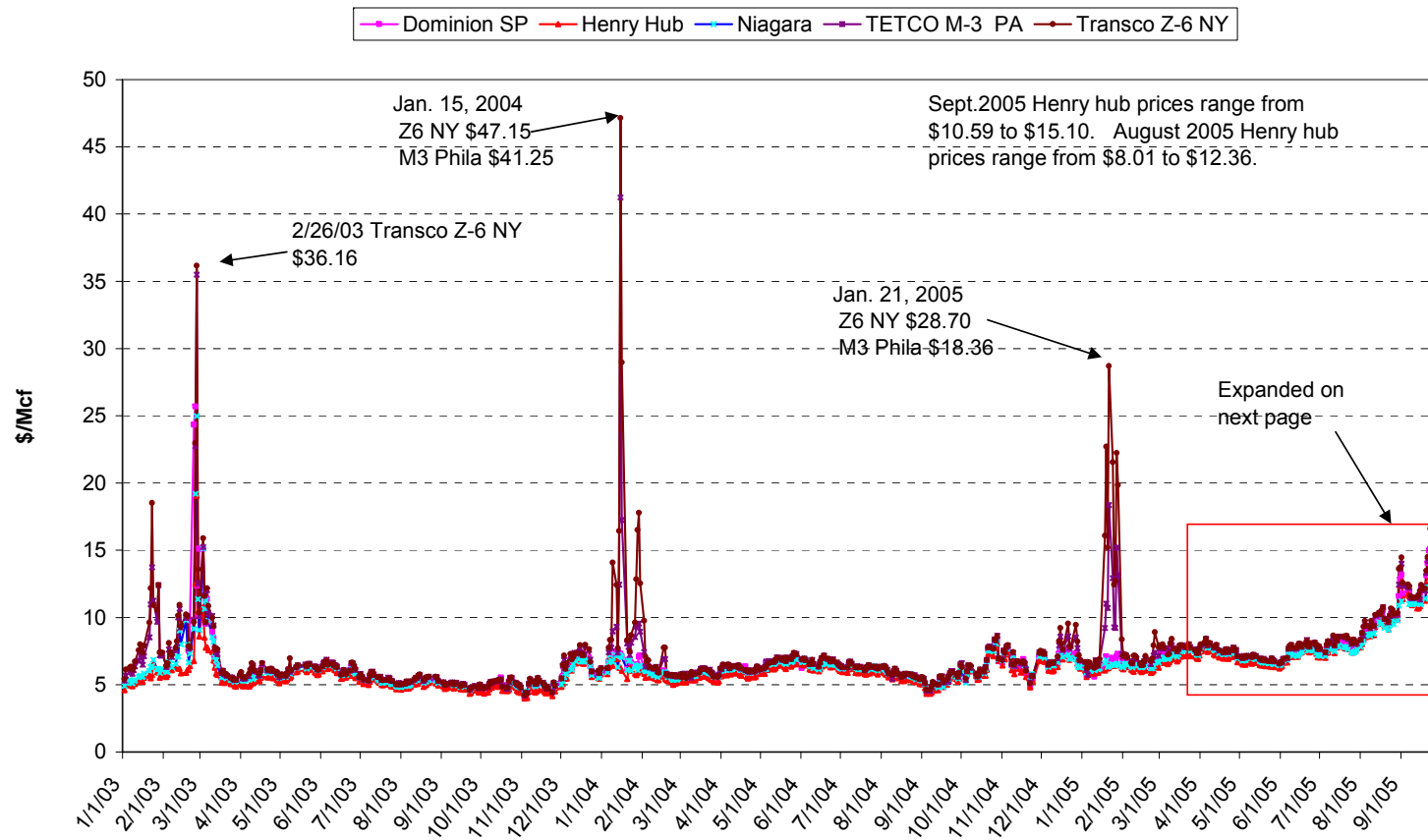
Contact Bill Hall 3-1547, docs 311132



Resources

GAS WHOLESALE PRICES AT SELECTED HUBS

Data from Enerfax Daily. Additional charts available in DOCS 529094, 227770. Contact Bill Hall 3-1547





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Examples of data resources

(please note the following resources are NOT endorsed by the presenter and are for information purposes only)

- www.doe.gov
- www.eia.doe.gov
- www.ferc.gov
- www.nymex.com
- www.bloomberg.com
- www.pjm.com
- Wall Street journal



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Reliability Performance Measures

- Benchmarks and standards established by PUC
- Based on 4 indices adopted by the Institute of Electrical and Electronic Engineers (IEEE)
 1. Customer Average Interruption Duration Index (CAIDI)
 2. System Average Interruption Frequency Index (SAIFI)
 3. System Average Interruption Duration Index (SAIDI)
 4. Momentary Average Interruption Frequency Index (MAIFI)
- Submitted by EDCs on quarterly and annual basis
- EDCs required to report on analysis of outage causes
- Provide analysis of worst performing 5% of circuits



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Major Events

- To analyze and set measurable goals, major events are excluded from calculation
- Major events are defined as:
 - **Interruption** beyond control of EDC which affects at **10% of customers** for **5 minutes** or more
 - Unscheduled interruption by an EDC to maintain adequacy and security of system
- In 2004,
 - 24 requests for exclusion of major events
 - Commission approved 21



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Filings and Reports

- Quarterly financial statements are filed by companies
- Annual Rate Comparison Report
 - all rate elements from all gas and electric companies
 - the Commission and the State Legislature get reports
- Annual reports, compliance tariffs, quarterly revenues, utility operations, supplier bonding monitored and forwarded to Law Bureau for prosecution when deficiencies occur or violations detected