The Midwest Chapter of the Energy Bar Association Announces its Sixteenth Annual Midwest Energy Conference

March 4-5, 2013

Conrad Indianapolis Hotel
50 West Washington Street
Indianapolis, Indiana  46204
The Energy Bar Association is committed to the goals of fostering an inclusive and diverse membership and increasing diversity across all levels of the Association, so as to reflect the diversity of the energy industry and the Nation as a whole. Attorneys, non-attorney professionals in the energy field and law students are welcome to join our ranks regardless of race, creed, color, gender, ethnic origin, religion, sexual preference, age, or physical disability and are encouraged to become active participants in the Association’s activities.

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Emerging Issues Facing Midwest Energy Policy and Regulation

While some issues facing energy policymakers remain the same, the industry remains no less dynamic, and the environment within which these issues will play out continues to evolve. As the national economy emerges from a prolonged recession, policymakers confront continued challenges including assuring reliability, security, and sustainability of energy markets and delivery infrastructure that is core to Midwest economies and communities. Transmission development, dynamic commodity markets, EPA regulations and environmental policy, as well as a continued focus on infrastructure reliability and security dominate the issues policymakers and advocates must address. Our program for 2013 endeavors to update our members as well as professionals in the energy industry confronting these salient issues. We welcome an esteemed group of speakers, moderators and panelists to Indianapolis for what will no doubt prove to be an interesting and engaging program.

PROGRAM SCHEDULE

MONDAY, MARCH 4, 2013
(RTO Hot Topics Program at MISO in Carmel; all other Program Events at the Conrad Hilton Indianapolis)

12:00 p.m. - OPTIONAL PROGRAM - RTO HOT TOPICS FOR LAWYERS

The development of energy markets in regional transmission organizations (RTOs) – and their capacity and transmission infrastructure needs and regional reliability issues – has been a major focus of activity in recent federal practice. This additional program will take place at MISO’s facilities just north of Indianapolis in Carmel, and is oriented toward providing practical tips to the legal professional who is working with RTO issues. The program will include tours of the Midwest ISO’s control room, as well as panel discussions regarding RTO seams issues, gas-electric coordination and current NERC compliance issues. Speakers will include representatives of PJM, MISO and others. Attendees should arrange their own transportation to MISO (taxi may be most efficient), but free shuttle transportation will be provided from MISO to the Conrad Hilton Indianapolis. Box lunches will be available upon request.

5:30 p.m. - MIDWEST CHAPTER BUSINESS MEETING

5:45 p.m. - RECEPTION

TUESDAY, MARCH 5, 2013

8:00 a.m. - REGISTRATION

8:30 a.m. - WELCOME AND INTRODUCTION

Matthew R. Tomc
President, Midwest Chapter of the Energy Bar Association
Corporate Counsel
Ameren Services Company

Introduction: Susan A. Olenchuk
President, Energy Bar Association
Van Ness Feldman, LLP


To what extent will EPA regulations impact the RTOs’ approach to transmission planning and capacity markets or the dynamic of utility regulation in the Midwest? This distinguished panel will address the changes and issues that will arise as new EPA regulations continue to progress.

Moderator: The Honorable Doug Scott, Chairman Illinois Commerce Commission

Panelists: Dr. Michelle Michot Foss, PhD Chief Energy Economist (Program Manager) Center for Energy Economics Bureau of Economic Geology The University of Texas at Austin

Stephen Kozev General Counsel Midwest Independent Transmission System Operator, Inc.

Renee Cipriano Schiff Hardin LLP

10:30 - 10:45 a.m. NETWORKING BREAK

10:45 a.m. - 12:00 pm Electric Transmission Development and Cost Allocation

The highly qualified professionals on this panel offer the conference up-to-date information on the current state of transmission expansion and cost allocation in the Midwest.
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>12:00 - 1:30 p.m.</td>
<td><strong>LUNCHEON AND KEYNOTE SPEAKER</strong></td>
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<tr>
<td>Introduction</td>
<td>The Honorable David E. Ziegner</td>
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<td>Speaker</td>
<td>The Honorable Cheryl A. LaFleur</td>
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<td>1:30 - 2:45 p.m.</td>
<td><strong>Cybersecurity and the Industry’s Approach to Ensuring Electric Reliability with Increasing Vulnerabilities to the Grid</strong></td>
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<tr>
<td>Moderator</td>
<td>Christine F. Ericson</td>
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<td>Panelists</td>
<td>Jon Stitzel</td>
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<td></td>
<td>Andy Wright</td>
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<td>Scott Glaeser</td>
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<td>The Honorable Terry M. Jarrett</td>
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<td>2:45 - 3:00 p.m.</td>
<td><strong>NETWORKING BREAK</strong></td>
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<td>3:00 - 4:15 p.m.</td>
<td><strong>Interregional Gas, Electric, and RTO issues: Impact of Low Commodity Costs on Energy Policy</strong></td>
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Relatively low natural gas prices associated with increasing production of domestic natural gas now presents cross-industry and cross-regional dynamics that will impact regulatory policy. The panel will provide unique and diverse perspectives on this timely topic.

 Moderator: The Honorable Andre T. Porter
 Commissioner: Public Utilities Commission of Ohio
 Panelists: Glenn Rippie
 Rippie, Rooney, Ratnaswamy LLP
 Scott Glaeser
 Vice President
 Ameren Transmission Company
 Stacy Duckett
 Chief Compliance Officer
 and Corporate Secretary
 Southwest Power Pool

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**DON’T MISS OUT ON THE OPTIONAL CLE PROGRAM: RTO HOT TOPICS AT MISO!**
**THIS IS A COMPLIMENTARY PROGRAM FOR 2013 MIDWEST ENERGY CONFERENCE REGISTRANTS BUT YOU MUST COMPLETE THE SEPARATE REGISTRATION FORM AND RETURN IT DIRECTLY TO MISO IF ATTENDING.**
SAVE THE DATE!
EBA ANNUAL MEETING
MAY 1-2, 2013

Preparing for the Future of the Energy Industry

Superstorm Sandy serves as a reminder of the need for the energy industry to anticipate, plan for and respond to unforeseen circumstances. This applies equally to disaster preparedness for natural phenomenon such as hurricanes, superstorms, tornadoes and the like; preparing U.S. energy infrastructure for the needs of tomorrow; as well as preparing for and quickly reacting to national and international market forces.

Featuring two days of session on the U.S. energy markets, nuclear, gas, electric, reliability and so much more! CLE and Ethics credit approval pending.

Grand Hyatt Washington
1000 H Street, NW
Washington DC

Registration and Program Details available soon!
Visit www.EBA-Net.org

Midwest Chapter Conference
March 5, 2013
Themes

- We have a rich hydrocarbon resource base but bumpy road ahead
- Capital market constraints will affect all value chain segments
- Biases and lack of discourse on tradeoffs
- Demands for human skills that are not being produced quickly enough
- Inability to discern the present

Gas/Power Linkages

A Sample of Factors Impacting Gas Use for Power

- Demand-side response
- Large-scale electricity storage
- Decarbonization
- Capacity for gas-fired plants
- Energy security concerns
- Gas price
- Gas price: 20+ GE
- Gas price: 27
- Gas price: 37
- Natural gas: 137
- Lower demand growth
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Gas/Power Analysis

- Impacts on power sector gas use:
  - Natural gas price scenarios
  - EPA CSAPR for NOx and SO2
  - EPA MACT/MATS for mercury & other hazardous pollutants
  - CO2 ($14/t in 2018 to $40/t in 2030)
  - Renewable incentives ($15/MWh to $30/MWh)
  - CREZ transmission addition in ERCOT

- Joint modeling of multiple factors with AURORAmp
- Texas resource adequacy and other adventures

A Potential Widening Price Deck

- Higher, less stable prices to 2020 with supply constraints and demand recovery and growth
- Lower rather than higher prices to 2015 with new supply
- Spot price events below $3 can happen

Backs into Shales?

Dry Gas Production, 2011-2012 % Change
Natural gas price increases sharply...

...mainly because oil drifts down
Increase in Gas Use for Power - Results from Modeling*


Emission Regulations Force Coal Retirements

• Over 50 GW retire by 2030; ~40 GW before 2020 (consistent with current predictions)

New Builds Mostly Gas, Some Wind

M.M. Foss, 9/25/2012, ©BEG/CEE-UT
Gas Less Impacted by CSAPR

- Outer years, gas use driven more by factors other than CSAPR
- Coal declines by only 7% (as opposed to 20% w EIA forecast)

Power Price Changes

- CSAPR increases power prices as market takes time to adjust
- Gas price change of $1 results in more prolonged changes

Large Investments in Generation

- Even without regulation ~$750 billion is needed (includes control equipment, new builds, O&M)
- CSAPR case: $1,300 billion – more than $73 billion in ERCOT
CREZ, Renewable Incentives Mixed

- CREZ by itself does not lead to new renewables capacity
- CREZ with high subsidies will result in more renewables
- Coincidently, renewable builds start when CO2 prices are introduced

Resource Adequacy in Texas

- ERCOT is an energy-only market
- There is a reserve margin target of 13.75% (was 12.5%)
  - ERCOT's interpretation of "1 load-shed event in 10 years" is more stringent than "1 day of outage in 10 years"
- After the summer of 2011, a concern has emerged that generation capacity expansion would not keep up with demand growth in the future
- System-wide offer cap (price cap) was raised to $4,500 (from $3,000) on August 1, 2012; and will increase to $9,000 by 2015.
- We tested impacts of these price caps (AURORAxmp)

Departure from Normal Temperature (F)


Was this a "once in 100 years" event or more of a new normal? Evidence of cycles
ERCOT Forecasts of Reserve Margin

2012 Update 1: de-mothballed units
2012 Update 2: de-mothballed units, lower demand growth, new resources

Reserve Margin under Price Caps

Demand Curtailment under Price Caps
Conclusions

• On average, the reserve margin will be highest under the $9,000 price cap
  – 12.8%, 12.4%, 11.4% for $9,000, $4,500 and $3,000, respectively (but lower than 13.75% target RM).
• The 15-year (2013-2027) average nominal price is roughly the same for all 3 scenarios
  – In real terms, prices > average prices since 2009 but are similar to prices seen before 2009 because they reflect an increase in natural gas price from its lows in 2009-2012
• Curtailment is highest with $3,000 cap, increases over time while it is low, fairly stable with $9,000 cap

Conclusions – Sensitivity to NG Price

• Reserve margins slightly higher
  – 12.9%, 11.8% for $9,000 and $3,000, respectively.
• Average nominal prices are slightly higher
• Slightly more new builds earlier but less overall (also less retirements); lot more wind gets built earlier.
Open Questions

• What is the right price cap?
• What is the optimal reserve margin?
• What role can demand response play?
• What impact external factors will have on resource adequacy in Texas?
  – The paradox of cheap gas and cheap electric power
MISO’s latest EPA/coal survey

Coal Resources Affected – 4th Quarter Survey Capacity, GW

Post-EPA implementation resource adequacy is a concern

Summer Resource Adequacy 2013 – 2016 (GW)
Outage coordination pressures remain

Jan 2013 through Dec 2017
Daily Planned Maintenance
Compared to Rolling 31 Day Minimum Maintenance Margin

Retirements and fuel supply uncertainty create concerns for ensuring long term resource adequacy

Sixteenth Annual Midwest Chapter Energy Conference, March 4-5, 2013

H.R. Pufnstuf-The Living Island

EPA Regulatory Presentation Framework

Since we cannot be here all day, this presentation is divided into two parts:
• Quick snapshot of environmental regulations in play by media program and other relevant pressures; and
• Deeper dive into the key regulatory schemes impacting industry today.
Environmental Regulations By Media Program

- Federal and State Regulations are promulgated under “Media Programs”—the Key Programs are:
  - Air
  - Waste
  - Water
- Each Media Program has numerous subsets and there are a variety of specialty programs also impacting the electric industry
  - Examples include PCBs, Environmental Justice, Emergency Response
- Is there coordination across programs???

Current World of Regulations for the Industry—A Snapshot By Media Program: AIR

- GHG Regulation and Permitting
- CAIR/CSPAR/Next Emission Transport Scheme?
- MATS-Mercury/Toxics
- NSPS-New Source Performance Stds.
- Regional Haze/BART
- NAAQS (Air Quality Stds.)

Current World of Regulation for the Industry—A Snapshot By Media Program: WATER

- Section 316(b): Cooling Water Intake Structures
- NPDES Permitting Issues: Thermal, Mercury, Nutrients
- Water Usage-Drought Conditions
- Groundwater Contamination Concerns-Ash Impoundments, Fracking
- Effluent Guidelines Review
Current World of Regulations for the Industry—
A Snapshot By Media Program: LAND

Coal Ash and Coal Ash-On
On-Site and Off-Site
MGP Sites: Focus on
Sediment Cleanups
Squeeze the Coal Supply-
tighter regulations by
by Interior and EPA
Fracking

NGO and Citizen Activism

Challenge Permits/Decisions
Regulator Paralysis/Reaction
Third Party/Citizen
Lawsuits (including
nuisance actions)
Intervention in
Enforcement and
Regulatory Actions
Greater Strength
Politically/Legally

Other Pressures on the Industry's Future

- EPA continuing with New Source Review Litigation
  - Recent AEP settlement provides incentive to keep
    pushing ahead
- Greater scrutiny in permit decisions by regulators and
  pushing for industry to do more than what is required
  - What is BACT for an existing or new coal plant??
- Move towards greater transparency and creating public
data bases that provide possibility for data
  misuse/misunderstanding
  - Especially in the environmental justice context
Other Pressures on the Industry’s Future (Cont.)

- General impact of regulatory uncertainty and state action taken in the absence of federal action
- Very recent developments include:
  - President’s commitment to attack climate change
    - Push for more renewables and investment in natural gas research
    - Greater use of Executive Order power in absence of Congressional action
  - Nomination of Air Chief Gina McCarthy as new EPA Administrator

Current Status of Key EPA Regulations and Associated Litigation

Cross State Air Pollution Rule (CSAPR)

- **Purpose:** to address downwind (transport) impacts of SO2 and NOx from coal-fired power plants in the eastern U.S.
- D.C. Circuit vacated CSAPR on August 21, 2012 (EME Homer City Generation v. EPA); En banc Hearing denied January 24, 2013
- Anything in Place? D.C. Circuit kept the earlier CAIR in place (CAIR was remanded back to EPA in 2008-originally promulgated in 2005)
- Next?? Appeal to the Supreme Court? Should be unlikely and it could take years before EPA proposes a replacement impacting air quality attainment for downwind states.
Greenhouse Gas Regulation-Two Aspects: Tailoring Rule

• Purpose: governs the emission of GHG from any large source that will be built or modified after January 2, 2011 (75,000 tons of carbon dioxide equivalent annually)
  – PSD Permitting Aspect—pre-construction requirements for new and modified sources
    • What is BACT? EPA will look at efficiency improvements
  – Title V Operating Permitting Aspect—operating permits must incorporate all applicable requirements
  – In effect and all States intending to implement except Texas

Greenhouse Gas Regulation-Two Aspects: New Source Performance Standards

• Purpose: to establish NSPSs that reflect the best achievable pollution limitations based on costs, non-air quality health and environmental impacts, and energy requirements
• EPA agreed to settle legal challenges for its failure to develop NSPSs for power plants by agreeing to a schedule to develop a proposed standard (Settlement entered in December 2010 and modified in June 2011)
  – Proposed standard for new units in April, 2012
  – No proposal for existing units
• Essentially new standard can be met by new natural gas combined cycle units without add on controls.

Mercury and Air Toxics Standard (MATS)

• Purpose: Addresses metals (mercury, arsenic, chromium and nickel) and acid gases and particulate matter. Considered a “technology based rule”
  – Proven and in use technologies such as emission controls, upgrades to emission controls, fuel switching
• February 16, 2012: EPA finalized MATS for new and existing coal and oil fueled power plants
  – Challenge: White Stallion Energy Center LLC v. EPA, No. 12-1100 and 12-1272 (fully briefed and awaiting decision), D.C. Circuit
  – EPA Reconsideration—announced July 20, 2012, for new power plant aspect of the rule only
MATS: What is the Problem???
Statutorily Constrained Compliance

• Compliance deadline is three years
  – 2015 at this point (April)
• Additional year if necessary if plan submitted but can’t get constructed
  – EPA 113(a) Order to extend one more year but will be rare an EPA will look at whether plant is critical for reliability
• If reliability impacted, additional year if requested (EPA Admin. Order) but will be rare EPA claims

National Ambient Air Quality Standards (NAAQS)

• Purpose: EPA is required to revisit and revise where appropriate national air quality standards at least every five years. EPA proposes the primary and secondary standards needed to protect public health, and the States are then required to develop plans to “attain” those standards
  – Focus is typically on imposing control requirements
• Currently, ozone, fine particulate, and nitrogen dioxide are in all play
• Very complex and confusing due to challenges and time mandated review and revision

Coal Combustion Residuals Rule (CCRs)

• Purpose: Establish for the first time an approach to regulate coal combustion by product at the federal level under the Resource Conservation and Recovery Act (RCRA).
• In June, 2010 EPA proposed two options: Subtitle C regulation as special waste; Subtitle D regulation as non-hazardous waste
  – Indication that coal ash used beneficially would not face regulatory status change but could be impacted by “stain” of special waste characterization
• Still waiting for EPA’s next move.
Cooling Water Intake Structures Rule (316(b))

• Purpose: reduce alleged environmental harm from existing cooling water systems.
  – Harm identified by EPA: trapping of large fish/aquatic life, entrainment of smaller aquatic life/eggs/larvae, and thermal heating of water body
• Rule proposed in March, 2011, with final expected in June, 2013
  – EPA’s preferred approach is to have a rule that does not reflect a “one size fits all”

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Electric Transmission Development and Cost Allocation

Midwest Chapter Conference
March 5, 2013
**Electric Transmission Development and Cost Allocation**

16th Annual Midwest Energy Conference
March 5, 2013

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**Planning the System – Long Ago, in a Galaxy Far, Far Away**

Integrated planning of generation, transmission and distribution
- Driven by load growth and location of new generation
- Generation additions driven by and linked to load growth
- Very few "economic lines" but lines built to remote generation or for interconnections
- Interconnections justified on reliability, ability to transfer emergency energy and economic energy
- Some joint development, mostly linked to ownership of generation
- Cost allocation to individual systems except for interconnections
  - Transmission costs included in bundled rates
  - Interconnection costs as agreed to be participants
- Siting
  - Lines benefited areas where lines were to be built
  - Generally reliability so need was easy to show

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**Planning the System – A New Hope**

Regional Planning
- Separation of transmission planning from generation planning and distribution planning
- Transmission for resource interconnections driven by generator additions
- Specific tests for economic transmission lines
- Cost allocation becomes contentious
- Regional projects get allocated outside of zone of owner
- Except for single state RTOs/ISOs
- Except for PJM, other multistate RTOs/ISOs have come to agreement
- Litigation in PJM continues
- Interregional planning just starting – seams issues develop
- Siting
  - Multistate lines could benefit those not in states where parts of lines were to be built
    - Trans-Allegheny Interstate Line Company, at n.20, Case No. 07-0508-E-CN (Pub. Serv. Comm’n W. VA, Aug. 1, 2008)(recognizing FERC authority to regulate cost allocation while encouraging FERC to move to a "beneficiary pays" concept in the future)
    - In re Trans-Allegheny Interstate Line Company (TALCo), Docket No. A-110172 et al. (PA Pub. Serv. Comm’n, Nov. 13, 2008)(Comm’r Christy dissenting)(construction of line will drive up costs in the west)
Planning the System – A New Hope

RM Cost Allocation Litigation
- January 31, 2005 Filing in Docket No. ER04-156-006
- PJM Interconnection, LLC, 116 FERC ¶ 63,007 (2006)(Initial Decision)
- PJM Interconnection, LLC, 110 FERC ¶ 61,063 (2007)(opinion No. 494, Order on ID)
- PJM Interconnection, LLC, 122 FERC ¶ 61,082 (2008)(Order on Rehearing)
- Illinois Commerce Comm'n v. FERC, 576 F.3d 470 (7th Cir. 2009)(partial remand)
- PJM Interconnection, LLC, 130 FERC ¶ 61,052 (2010)(Establishing paper hearing for remand)
- PJM Interconnection, LLC, 130 FERC ¶ 61,233 (2010)(Order on Rehearing)
- PJM Interconnection, LLC, 138 FERC ¶ 61,230 (2012)(Order on Remand)
- PJM Interconnection, LLC, Order on Rehearing (20??)
- Appellant v. FERC, Order on Appeal (20??)

Planning the System – The Empire Strikes Back

New Wind Generation, Low Gas Prices, High Coal Prices, Environmental Regulations
- Upgrades driven by many generation interconnections
- Many more interconnection requests than generation that will go in service
- Studies, restudies and more restudies
- Retirement of old coal plants
- Reliability upgrades needed in a short period of time
- Load estimates keep coming down
- Reliability lines driven by load growth get delayed or cancelled
- More scenario analysis
- Cost allocation issues
- Midwest Independent Transmission System Operator, Inc., 145 FERC ¶ 61,021 (2012)(Initial Decision on Filing to Allocate Costs in One RTO to other RTOs)

Planning the System – The Empire Strikes Back

New Wind Generation, Low Gas Prices, High Coal Prices, Environmental Regulations
- Siting
- More uncertainty – projects delayed, proceedings delayed
- Sometimes short deadlines for generation retirement - facing RMR costs
- Commonwealth Edison Co., Docket No. 10-0385 (IL Commerce Comm'n, Nov. 23, 2010)(issuing CPCN where generation owner may decide to shut down generation)
- Recovery of Abandoned Costs
- PJM Interconnection, LLC and Public Service Electric and Gas Co., 140 FERC ¶ 61,197 (2012)
- Southern California Edison, 137 FERC ¶ 61,252 (2011)
Planning the System – The Return of the Jedi?
Order No. 1000

- Hopes to better standardize planning and includes consideration of public policy requirements
- Hope to end cost allocation litigation
- PJM Interconnection, LLC, 142 FERC ¶ 61,074 (2013)(Conditionally Accepting and Suspending Cost Allocation Filing)

- Who gets to build?
- Need to maintain and respond to emergencies
- Need for spare equipment
- Short-term solutions vs. long-term solutions that include need to serve load

- Siting

- Who can be granted a CPCN?
- In The Matter Of The Application Of The Potomac Edison Company On Behalf Of PATH Allegheny Transmission Company, LLC For A Certificate Of Public Convenience And Necessity To Construct The Maryland Segments Of A 765 kV Electric Transmission Line And A Substation In Frederick County, Maryland, Case No. 9138 (Pub. Serv. Comm’n-MD 2009)(non-electric company affiliate may not seek authorization to construct a line)
MISO Planning Objectives

**Fundamental Goal**

The development of a comprehensive expansion plan that meets reliability needs, policy needs, and economic needs

- Make the benefits of an economically efficient energy market available to customers by providing access to the lowest electric energy costs
- Provide a transmission infrastructure that safeguards local and regional reliability and supports interconnection-wide reliability
- Support state and federal energy policy objectives by planning for access to a changing resource mix
- Provide an appropriate cost mechanism that ensures the realization of benefits over time is commensurate with the allocation of costs
- Develop transmission system scenario models and make them available to state and federal energy policy makers to provide context and inform the choices they face
Focus is on minimizing the total cost of energy delivered to consumers . . .

Before transmission is built a number of conditions must be met:
- Increased consensus on energy policies (current and future)
- A robust business case that demonstrates value sufficient to support the construction of the transmission project
- A regional tariff that matches who benefits with who pays over time
- Cost recovery mechanisms that reduce financial risk
Effective Long Term Regional and Interregional Planning

Location of Load and Resources
Transmission System
Policy
Stakeholder Review
Demand and Energy
Resource Mix
Planning Models

Probabilistic Resources Expansion Production Cost Reliability

Final Transmission Plan Implementation

MISO Board of Directors Approval
Transmission Construction
State Regulatory Approval
Transmission Placed In-Service
Transmission Owner Obligation to Construct—or—Alternate Construction Arrangements
Transmission Cost Allocation

In the MISO cost allocation approach the business case (i.e. benefits) defines the spread of dollars:

- Benefits of Multi-Value Projects are spread regionally consistent with the widespread benefits from regional plan
- Economic benefits of Market Efficiency Projects spread farther beyond the local zone
- Reliability benefits of Baseline Reliability Projects primarily stay in the zone in which the reliability issue exists
- Generator Interconnection Projects paid primarily by Interconnection Customer
- Participant funded projects are paid by the party proposing the project

MISO Transmission Planning Results

**Multi-Value Projects**
- Develop a regional transmission network that provides economic, public policy and reliability benefits
- $5.2 billion in new transmission projects
- 1.8 to 3.0 benefit-cost ratio
- 650 reliability constraints solved
- Multiple generation policies enabled

**Market Efficiency Projects**
- Create transmission to unlock the economic benefits provided by the MISO market
- $20.1 million in new transmission projects
- 1.5 - 2.3 benefit/cost ratio
- 56 mitigation plans analyzed in 2012 congestion study
- 3 plans selected for additional analysis
- 1 project approved

**Baseline Reliability and Other (Reliability) Projects**
- Ensure the system is reliable and in compliance with all applicable standards
- 1,066 new transmission projects
- $2.6 billion due to NERC standards
- $3.0 billion due to local standards or needs

**Generator Interconnection and Transmission Service Delivery Projects**
- Reliably and efficiently interconnect new generators
- Facilitate the reliable transfer of power through and across the MISO footprint
- 627 Requests Processed
- 13.0 GW of new generation interconnected
- 5.5 GW of new transmission service requests approved
- $675 million in new transmission projects approved

*Statistics reflect all projects approved or requests processed from 2008 - 2012*
Grain Belt Express Clean Line

Midwest Energy Bar Association Conference

March 4, 2013

Clean Line Energy is developing HVDC transmission lines to bring low-cost renewable energy to market

Wind Speed m/s

- < 40
- 40
- 50
- 60
- 70
- 80
- 90
- 100
- > 100

Existing Transmision => 500 kV
Grain Belt Express will deliver wind energy from Kansas to Missouri, Illinois, Indiana, and states farther east.

- 700-mile overhead, high-voltage direct current (HVDC) transmission line
- $2 billion project that will enable $7 billion investment in new wind farms
- 1.4 million homes powered per year

High voltage direct current transmission is ideal for moving large amounts of power over long distances.

More efficient – Over long distances, DC transfers more power with lower line losses than comparable AC lines
Smaller footprint – DC requires a narrower right of way to move an equivalent amount of power over AC lines
Lower cost – Less infrastructure and lower line losses result in lower cost transmission and competitively priced renewable energy delivered to the market.
HVDC facilitates Clean Line’s merchant model

- Wind farms connect with AC lines to converter station, likely in Ford County, KS
- Converter station converts AC power to DC power
- HVDC transmission line delivers power to markets further east

Wind Resource

- DC power converts to AC power at delivery interconnection points
- Existing AC lines distribute energy to end consumers

High capacity factor wind is competitive with other sources of new generation, including gas at $4.50/MMBtu

Levelized Cost of Energy

1. Cost of generation based on mid-point of Lazard’s LCOE estimates. Unless noted, costs shown are unsubsidized.
2. Assumes 75-mile transmission at $2 m per mile, and point converter costs of $300 m each and mid-point converter at $150 m, and development cost of ~$100 m.
3. Assumes capital costs of $1,700/MW, O&M costs of $0.15/MWh. Production tax credit - cost of capital of 8%.
4. High capacity factor wind cost uses low-end Lazard estimates for which the capacity factor is 48% and capital cost is $1,500/MW.
5. Assumes $4.50/MMBtu gas price. With 10% variation in the fuel price, the Combined Cycle Gas Turbine LCOE ranges from $61 - $81/MWh and the IGCC LCOE ranges from $68 - $116/MWh.

Source: Clean Line, Lazard’s 2012 Levelized Cost of Energy Analysis
Clean Line is developing the Grain Belt Express in a methodical, open and transparent manner.

**GRAIN BELT EXPRESS CLEAN LINE SCHEDULE**

Ongoing efforts include public outreach, siting, permitting, and technical studies:
- Conducting studies with three regional transmission organizations – SPP, MISO, PJM
- Held dozens of community roundtables to seek routing input from stakeholders in 107 counties
- Obtained feedback on potential routes from more than 2,200 Kansans at public open houses

**Seeking regulatory approvals in four states to site and construct the project**

- **Kansas**
  - Kansas Corporation Commission granted public utility status in December 2011
  - Will submit line siting application with proposed Kansas route in Summer 2013

- **Missouri**
  - Apply to Missouri Public Service Commission for Certificate to Construct and Operate Regulated Facilities after identifying proposed route in Missouri

- **Illinois**
  - Apply to Illinois Commerce Commission for a Certificate of Public Convenience and Necessity after identifying a proposed, and perhaps an alternative, route in Illinois

- **Indiana**
  - Submitted application to Indiana Utility Regulatory Commission in November 2012 to become a public utility and obtain authority to construct facilities in Indiana
Cybersecurity and the Industry’s Approach to Ensuring Electric Reliability with Increasing Vulnerabilities to the Grid

Midwest Chapter Conference
March 5, 2013
Ameren Illinois Smart Grid and Cybersecurity

05 Mar 2013
Jon Stitzel
Cybersecurity Analyst – Smart Grid

Ameren & Ameren Illinois
• 1997 – Central Illinois Public Service (CIPSCO) & Union Electric (UE)
• 2003 – Central Illinois Light Company (CILCORP)
• 2004 – Illinois Power Company
• 2010 – Ameren Illinois

Modernization Action Plan
• IL SB1652
  • PA 097-0616
• Electric System Upgrades
  • $265 Million over 10 years
• Smart Grid Programs
  • $360 Million over 10 years
Illinois Smart Grid Cybersecurity

- Advanced Cybersecurity
- Assess Threats and Risk
- Multi-Layered Security
- Education & Training

Source: http://www.willhackforsushi.com

Initial Cybersecurity Challenges (Technology)

- Network Segmentation
- Merging IT and OT
- Large-scale Encryption
- Unfamiliarity

Source: http://www.chicagotribune.com

Initial Cybersecurity Challenges (Personnel)

- That’s not the way we do things!
- That’s too complicated
- Cybersecurity is your responsibility

Cybersecurity Message = Safety Message

Source: http://www.welivesecurity.com
In Summary
• Taking Cybersecurity Seriously
• Cybersecurity Technology is Limited
• Planning, Communication, and Education
• Cybersecurity Must be Seen as a Benefit to the Business

Thank You

Jon Stitzel
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The Problem

- America under attack
- Cyber crime and cyber espionage
  - Businesses attacked hundreds of times per day
    - Foreign businesses and, increasingly governments
    - Business secrets
    - Stealing the jobs of tomorrow

Cyber War

- June 1982 Trans Siberian Pipeline Explosion
- Stuxnet
- Russia invades Georgia
- Potential for attacks on critical infrastructure
  - Electric Grid, railroads, financial institutions military command and control
  - Tracking threat to China’s PLA and Iran
Current Law

- No federal statute imposes general cybersecurity obligation on business
  - Chemical Industry
    - Department of Homeland Security
    - Chemical Security Facility Anti-terrorism Standards (CFATS)
  - Electrical Utilities
    - North American Electrical Reliability Corporation (NERC)
    - Reliability Standards

Legislation

- Legislation is possible in 2013, but finding a workable strategy remains elusive
  - At issue is whether standards will be voluntary, mandatory, or in between
  - Industry already spending over $80 billion per year
  - Government and industry concerns are different
  - Industry and Republicans are determined to not give DHS additional authority
  - Opponents fear that the voluntary guidelines contained in the bill will eventually become mandatory

- Increased costs
- Risk of disclosure of proprietary and confidential information
- Civil and criminal liability
- Exposure to civil liability for new regulatory "Standard of Care"
Legislation - House

- House - Intelligence Committee Chairman Mike Rogers (R-MI) and Ranking Member Dutch Ruppersberger (D-MD) reintroduced the bipartisan Cyber Intelligence Sharing Protection Act (CISPA)
  - designed to help businesses protect against cyber attacks through information sharing;
  - does not grant federal agencies new regulatory authority over critical infrastructure.

Legislation - Senate

- Senate - New Homeland Security and Government Affairs Committee Chairman, Tom Carper (D-DE), along with Senators Jay Rockefeller (D-WV), Diane Feinstein (D-CA) and Carl Levin (D-MI) are soon to introduce comprehensive cybersecurity legislation:
  - Likely be similar to the Cybersecurity Act of 2012
    - Senate Republicans rejected as new regulations on the private sector by the Department of Homeland Security.
    - Senate Democrats will offer liability protections and antitrust exemptions for information sharing.
    - Senate Republicans, as well as business interests such as the U.S. Chamber of Commerce, have expressed a desire to pass legislation to improve information sharing, but they insist that they will oppose any legislation that gives the federal government new regulatory authority over critical infrastructure.

Administration Action

Congress has failed to act so Administration released an Executive Order
- On February 12, 2013, the President released Executive Order on cybersecurity (the "EO")
  - Voluntary program to support the adoption of cybersecurity standards (called a "Cybersecurity Framework") by owners and operators of critical infrastructure.
  - "Critical infrastructure" will be identified using a risk-based approach by the Department of Homeland Security.
  - National Institute of Standards and Technology (NIST), within the Department of Commerce, will develop the Cybersecurity Framework that sector-specific agencies will use to establish a voluntary critical infrastructure cybersecurity program.
Administrative Action

The EO permits agencies to:

- Add supplemental materials as necessary to address risks that are specific to its sector;
- Use existing statutory authority to regulate the cybersecurity of critical infrastructure;
- Identify additional authority necessary to enhance the cybersecurity of critical infrastructure.

Information Sharing

- Improve Government information sharing with the private sector by increasing the volume, timeliness and quality of information about cyber threats.
- Unclear whether private entities will share information with other entities and the government as envisioned by the EO until Congress adopts antitrust exemptions and additional liability protections for this type of information sharing.
- Congressional reaction to the EO will depend upon how sector-specific agencies use their existing authorities to regulate cybersecurity best practices or implement the voluntary cybersecurity program.
- Republicans in Congress, as well as the U.S. Chamber of Commerce, have expressed concern that, while voluntary, the cybersecurity program could result in new and unnecessary regulations for the private sector.

Legal Issues

If Congress imposes increases cybersecurity regulation on “Critical Infrastructure,” those businesses will face additional exposure to civil and criminal liability as well as additional exposure to civil liability from private suits.

- Regulations may impose civil and criminal penalties
- Federal regulatory scheme could create standard of care
  - Establish Tort Liability Under State Law
  - Per Se negligence
  - Performance standards As new negligence standard of care

Legal Issues

- Access to confidential business information
  - Freedom of Information Act Disclosure
  - Exemptions
  - Ex Parte Communications
Thank you!

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EFFECTIVE REGULATORY APPROACHES TO SMART GRID CYBERSECURITY

Terry M. Jarrett
Commissioner, MO PSC
Chair, NARUC Committee on Critical Infrastructure
March 5, 2013

DISCLAIMER

The opinions expressed in this presentation are mine, and mine alone, and are not those of the Commission, any Commissioner (other than myself) or any member of the staff of the Commission. Further, nothing in this presentation should be attributed to any case or matter before the Commission, to any member of the staff of the Commission, other Commissioner or the Commission.

AGENDA

- Why Cybersecurity?
- A Few Helpful Cybersecurity Concepts
- What Regulators Can Do
- Developing Expertise: Resources for Regulators
WHY CYBERSECURITY?

Just Look at Recent Headlines in the News . . .

- “Exclusive: Cyberattack Leaves Natural Gas Pipelines Vulnerable to Sabotage,” csmonitor.com, February 27, 2013
- “Hackers Take Aim at Key U.S. Infrastructure,” money.cnn.com, February 20, 2013

Cyber Threats

- The power grid is transitioning from a previously isolated environment to a complex interconnected one
- Smart grid may be vulnerable to cyber attacks because it has extensive information systems and communications systems components
- As new smart grid technologies are deployed, new vulnerabilities and risks increase
Threat Sources

- Hackers
  - Alone or in a group (like Anonymous). They are doing it primarily for fun, to cause embarrassment, or to make a political statement.
- Organized Criminal Elements
  - These are malicious actors interested in stealing information for financial gain
- Nation-states
  - Malicious actors interested in taking down the grid as part of a larger attack or cyber warfare
  - This is increasing

What is the Goal of Cybersecurity?

- Goal is not to have a response to a cyber threat that is piecemeal, reactive, or fragmented
- Aim is to encourage proactive and strategic action on the part of utilities, rather than a patchwork response

Goals for Regulators

- Develop internal cybersecurity expertise (both Commissioners and Staff)
- Ask good questions of their utilities
- Engage in partnerships with the public and private sectors to develop and implement cost-effective cybersecurity
- Begin to explore the integrity of their own internal cybersecurity practices
A Few Helpful Cybersecurity Concepts

Concepts That Should Inform a Regulator’s Assessment of a Utility’s Cybersecurity Performance

- Prioritizing systems and networks over components
- Ensuring that human factors are considered
- Deploying defense-in-depth
- Promoting system resilience

Securing Systems and Networks vs. Devices on the Network

- Cybersecurity may call for securing entire networks, in addition to devices on that network.
- For example, the meters within a smart grid system can be fortified against attack, but in order to ensure that the entire network of the smart grid system is secure, the components linking those meters, as well as every other component in between, must be secured as well.
Securing Systems and Networks vs. Devices on the Network

- That way, if an attack occurs at one meter, the rest of the system linked to that meter is not also at risk because the components linking them have been protected.

Personnel Surety: Securing People As Well As Systems

- A system is only as secure as the people who run and operate it.
- Training is essential to ensure that in the event of a cyber attack, personnel are skilled in identifying and responding to the impacts.
- Personnel can also be "insiders" involved in a deliberate or accidental cybersecurity breach. Identifying key personnel and using background checks is a potential strategy to mitigate this, but once they have been hired, policies that limit an individual's ability to inflict harm may also be important.

Defense-in-Depth

- An overall cybersecurity policy that calls for multiple measures and employs cybersecurity strategies such as identifying authentication and authorization, admission control, encryption, integrity checking, detections of policy violations, data logging and data auditing.
- Effective cybersecurity often encompasses physical as well as technological measures – restricted access to server rooms, locks on smart meters, security fencing and cameras at key substations, for example.
Resilience and Recovery

- Resilience ensures that the unexpected will not persist indefinitely
- A resilient system will not only be prepared for deterring, defending against and mitigating attacks, but also for ensuring quick and efficient restoration in the event that an attack compromises the system, through disaster recovery planning

What Regulators Can Do

Regulatory Oversight

- Regulatory role is increasing
- More cyber attacks to business processes and NERC CIP Standards compliance are driving new cybersecurity expenditures by utilities that may be featured in future rate cases
- Deployment of smart grid adds new cost and reliability elements
Regulator's Role

- Regulators don’t have to be cybersecurity experts, but they should know enough to be able to ask the right questions of their regulated utilities.
- Then, regulators must be able to evaluate the answers to determine whether the amount being invested is insufficient or excessive and whether it is allocated appropriately.

Regulator's Role

- Regulators must then help prioritize these investments along with all the other proposed spending that a utility proposes in a rate case.
- Regulators’ duty is to keep the cost of electricity affordable for customers while asking utilities to spend more on cybersecurity in the face of increasing media attention on stories of cybersecurity threats and vulnerabilities.

Developing Expertise: Resources for Regulators to Become Familiar With
State regulators should understand the four key areas that motivate and inform utility investments in cybersecurity:

- Good business practices by the utilities
- Laws
- Enforceable standards
- Voluntary best-practice guidance

Good Business Practices

- It's good business for utilities to avoid power outages
  - Customer complaints
  - Regulatory, political and public scrutiny
- So, it's good business to prevent cyber attacks on their systems

Laws

- State laws require that utilities must provide safe and adequate (reliable) service
  - In Missouri, statute is § 393.130.1, RSMo
Enforceable Standards


  - These standards already drive a good deal of cybersecurity investments and, as greater coverage is applied to protection of the electric grid, this process will only become more important.

- NERC’s CIP efforts include standards development, compliance enforcement, and supporting and providing technical subject matter expertise to the program.

Voluntary Best Practice Guidance


Voluntary Best Practice Guidance

- National Electric Sector Cybersecurity Organization (NESCO)/National Electric Sector Cybersecurity Organization Resource (NESCOR)

  - Formed by DOE, NESCO creates a “comprehensive public-private partnership to coordinate the efforts in the industry to meet the growing challenge of securing the electric sector.”

  - Formed by EnergySec and the Electric Power Research Institute (EPRI), NESCOR is intended to strengthen the cybersecurity posture of the electric sector by establishing a broad-based public-private partnership with the Department of Energy (DOE) for collaboration and cooperation.

  - The two organizations bring together experts to strengthen the cybersecurity posture of the electric sector by working with the DOE Electricity Sector Information Sharing and Analysis Center and industry.
National Association of Regulatory Utility Commissioners (NARUC)

- NARUC Committee on Critical Infrastructure
  - Meetings, workshops, panels, newsletters, conference calls relating to cybersecurity
- Version 2.0 update released in February 2013
  - Includes sample questions for regulators to ask utilities

Conclusions

- Absolute cybersecurity is neither attainable, nor is it the end goal
- Cybersecurity is best approached through a nimble and complex balance of functionality, security and cost
- Planning for, protecting against, detecting and responding to cyber attack must take into account a dynamic relationship of systems, physical components, people and their function

Conclusions

- State utility regulators can and should:
  - Create expertise within their own organizations
  - Ask the right questions of utilities
  - Assess their own cybersecurity and information protection capabilities
  - Participate in collaborative efforts, led by the private sector, state agencies or federal officials, as well as engaging with processes that link these sectors

Midwest Chapter Conference
March 5, 2013
A New Economic Model for Delivery Ratemaking: Structure and Opportunity

E. Glenn Rippie
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March 5, 2013
Indianapolis
Overview

- For decades, utilities’ delivery rates were set by aiming imperfectly at a “test year” that itself only approximated utilities' actual costs.

- For decades, the underlying cost and price of electricity generally increased with time.

- “This is a new year. A new beginning. And things will change.” -- Taylor Swift
Premises of Regulation

- Electric utilities are a monopoly – at least as to **delivery**
- Regulation should restrain monopoly power
  - To impose above competitive prices
  - To recovery unreasonable or imprudent costs
  - To provide inadequate or improper service
- The regulatory scheme should benefit customers in the long term
In 2011, Illinois implemented a new regulatory structure for delivery utilities that chose it the Energy Infrastructure Modernization Act

- Illinois Public Act 097-0616, as amended by PA 097-0646.

Passed by overwhelming majorities of both houses of Illinois’ General Assembly

Largest electric utilities in Illinois have elected to participate
Premises of EIMA

- Delivery system investment benefits customers
  - System reinforcement
  - System modernization
  - Economic stimulus / jobs
  - Smart Grid technology
- Imperfect and uncertain rate regulation can impede investment
- Rates need not impede cost recovery to protect customers
Core Principles of EIMA

- Rates should be based on costs
  - Costs should be prudent and reasonable
  - Capital costs should be tied to the market
- Long-term beneficial investments require cost recovery
- Actual costs change; so should rates
  - Actual costs cannot be known in advance
  - Stale rates (lag) do not reflect costs
- Utilities, once given the means, should meet verifiable performance standards
EIMA Formula Ratemaking

- Revenue Requirement (RR) defined by a formula
  - FERC precedential; but not the same
- Formula bases RR on operating and capital costs
  - Many costs defined by reference to FERC Form 1
  - Equity costs mathematically tied to the market
  - Costs subject to legal prudence and reasonableness tests
- Rates and RR (re)set annually, for collection in the year after the case (the “rate year”)
- RR is subject to reconciliation for accuracy
  - Rule against retroactive ratemaking overruled
EIMA Formula Ratemaking

- Initial RR for a “rate year” set based on:
  - Operating expenses two years prior (1 year prior to case)
  - Additional capital investments forecast for the year prior (the year of the case)
  - Capital costs based on actual capital structure

- Reconciliation adjustment calculated after rate year
  - Actual costs then known and reviewable
  - Reconciliation adjustment collected / credited in next year
  - Interest compensates for time value of money

- Reconciles RRs – not
  - Utilities retain “sales risk”
EIMA Investments

- Utilities must commit to making substantial additional investments above baseline levels
  - Estimated $2.6 Billion (ComEd) / $625 Million (Ameren)

- Specific investment requirements
  - Infrastructure improvements
  - Job training facilities
  - Additional storm hardening
  - Smart Grid
  - AMI

- Specific job creation targets
EIMA AMI Programs

- Utilities must plan to deploy AMI over ten years
  - Planned penetration up to all customers
- AMI Plans have been designed to produce
  - System benefits to customers (e.g., cost savings)
  - Direct benefits to customers (e.g., control over use)
  - Benefits > $1 Billion in accepted studies
- AMI Plans must be proven to be cost-beneficial
  - Broad societal definition, includes environmental factors
- Peak Time Rebate (PTR) program w/ AMI meters
EIMA Performance

- Utilities must meet specific and detailed statutory performance standards
  - Reliability indices (SAIFI/CAIDI)
  - Reduced bill estimation
  - Reduced uncollectibles and unaccounted for energy
  - Opportunities for MBE / WBE
- Financial penalties applied for failure to meet targets with limited exceptions
Status ....

- EIMA in operation
- Formula rates charged since 2012
- Pending disputes re rates, revenues, and AMI deployment under consideration by courts and General Assembly
A Fine Time

- Investment increases, even those with major benefits, will tend to increase rate base and total required revenues (all other things equal)

- Customer bill impact can be moderated by many other factors:
  - Energy management, including efficient EE / DR
  - Pricing / rate design
  - Supply cost changes
Supply Cost’s Role in the Story

▶ Trends in US generation
  • Increasing use of gas-fired generation
  • Including displacing existing generation
  • Low gas prices, spot and future
  • Gas being dispatched in cases where coal had been

▶ Depresses overall prices and changes price shape

▶ Impact on customer rates vary
  • Wholesale prices are generally market based
  • Retail prices may or may not be
Supply Cost’s Role in the Story

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Supply Markets’ Role in the Story

- Depending upon the regulatory model, energy market prices may or may not be rapidly reflected in customers' bills.
- Observers are detecting differential impact:
  "Current wholesale spot and forward electricity prices are reflecting lower gas costs in rapidly declining retail prices in customer choice states."
- Competitive efficiencies also play a critical role.
Supply charges – driven down by competitive efficiency and access to wholesale electric markets – combine with efficient delivery service operations.

In its last EIMA rate case (2012), ComEd examined the total effect of delivery and supply costs over time, adjusting for inflation:

“[E]lectric service for a typical ComEd residential customer will be substantially less expensive in real dollars in 2013 ... than it was some fifteen years earlier, in 1997, before restructuring” in Illinois.
Some Illustrative Comparisons

Source: ICC Docket No. 12-0321, ComEd Ex. 1.0.
Some Final Thoughts

- Future of rate setting and rate regulation hard to predict
- Increased investment can benefit customers
- Innovating ratemaking does not require abdication of regulatory review responsibilities
- Customer costs can be measured in different ways, but do not always increase with increased investment in delivery systems

Apologies for being stuck in Chicago and please join me in thanking Matt for stepping in. -- Glenn
Interregional Gas, Electric and RTO Issues: Impact of Low Commodity Costs on Energy Panel


The Shale Gas Revolution

Energy Bar Association
Midwest Energy Conference
Scott Glaeser
Vice President
Ameren Transmission Company

Shale Gas Revolution a “Game Changer” for U.S. Energy

- North America has vast resources of shale gas formations
- Technological breakthroughs by Independent Producers – horizontal directional drilling and hydraulic fracturing – have unlocked these vast reserves of shale gas
  - Marcellus Shale (“Beast in the East”)
    - Stretches from west-central New York, across Pennsylvania and West Virginia
    - Production for Marcellus increased 45% from 6.3 Bcf/d in 2011 to 9.3 Bcf/d in 2012
- The Potential Gas Committee estimates 3,347 trillion cubic feet (Tcf) of recoverable domestic gas reserves
  - Enough to supply the U.S. for about 150 years at current demand levels
- Ameren’s Point of View: Natural gas will be the preferred energy choice for the future
  - Growth in gas demand for electric generation, industrial load, and natural gas vehicles (CNG/LNG)
  - Gas generation is in position to compete directly with coal, new nuclear and renewables

Horizontal Drilling and “Fracking”

- Shale gas development enabled by advanced horizontal directional drilling and hydraulic fracturing (“Fracking”)
  - “Fracking” injecting water (99%), sand (silica), & certain chemicals (“Slick Water”) under HP
  - Techniques were originally perfected by Mitchell Energy in the Barnett shale near Dallas, TX
- Producers making great productivity gains unique to each shale basin
  - Efficiency gains from single well with multiple horizontal laterals – minimize well pad footprints
  - Shale gas production continues to grow even with gas prices below $4/MMBtu
- Result has been a dramatic production growth in lower-48 states
  - From 50 Bcf/d in 2006 to 64 Bcf/d in 2012
  - During period when rig count declined from peak 1,600 in 2008 to less than 800 in 2012
Environmental Issues with “Fracking”

- Environmentalists attacking “Fracking” on potential impacts to underground water aquifers
- “Fracking” used by oil & gas producers since 1940’s
- Basis of hydraulic fracturing in NY and Vermont
- No proven cases of “Fracking” operations contaminating water aquifers
  - Former EPA Administrator Lisa Jackson, testifying before U.S. House Oversight Committee (5-24-14)
    - “I’m not aware of any proven case where the fracking process itself has affected water, although there are investigations ongoing.”
- Potential risk to aquifers is from failed casings near the surface in proximity to water aquifer
  - Increased regulations for well casing design and completion
- EPA study on potential impacts of hydraulic fracturing on drinking water and groundwater to be released in draft form for public and peer review in 2014

Impacts to Natural Gas Prices

- Over the 2013-2025 period we expect natural gas prices to average $4 to $6 per MMBtu (in 2012 $)
- “Wet” shale gas production growth driven by oil prices even with gas prices $5
- Additional (dry) shale production capacity emerges at prices $9
  - Effectively becomes a rising to long term price, even with demand growth
- Producers maintaining strong productivity growth and drilling efficiency gains
- Vast shale reserves creating excess supply – gas industry looking for demand growth
  - LNG exports to Asia and Europe: 9 U.S. export terminal projects announced – DOE export license granted to Chenier's Sabine Pass (4) LNG facility with regas capacity of 2.2 Bcf/d
- Shale production is more of a manufacturing process, rather than exploration process
  - Creates large resource base ready to be tapped when gas prices move moderately higher

Changes to Gas Pipeline Infrastructure for Shale Gas

- New shale basins located throughout U.S., some in close proximity to large market demand areas
  - Marcellus shale in the Northeast
- U.S. Natural Gas Infrastructure will undergo a dramatic conversion from cross-country long-haul system to a regional networked system
- Existing long-haul pipelines may become bi-directional header systems – i.e. Rockies Express Pipeline
- New pipeline and storage facilities will be required to provide market accessibility to new shale plays and to increase reliability and operational flexibility for varying load profiles
  - Power generation will need firm capacity for reliability and storage for daily/weekly flexibility
- National Petroleum Council estimates 35,600 miles of new pipeline will need to be built by 2035 requiring an investment of over $107 Billion
Natural Gas Demand Growth with Abundant Supply and Low Prices

- Demand expected to grow from 68 Bcf/day in 2011 to 92 Bcf/day by 2030 (Wood Mackenzie)
  - Power generation expected to be 15 Bcf/day of this growth
- Generation demand growth from construction of new plants and conversion of coal plants to gas
  - In 2012, 37.4% of electricity was generated from coal versus 30.3% from natural gas
- "Industrial Renaissance" in U.S. with 41% industrial gas demand growth by 2030
  - Petrochemicals, fertilizers, steel
- Transportation sector also expecting strong growth
  - CNG and LNG vehicles
- LNG exports have potential for significant demand
  - Political debate on how many LNG export terminals should be built in U.S.
- Distributed Generation (fuel cells) also showing promise

Natural Gas Generation

- Environmental regulations are stacking up against coal generation
  - Mercury, cooling water, ash disposal, ...
- Expected coal retirements of 30 to 50 GW, potentially up to 85 GW, over next 30 years
- EIA expects gas to make up almost 60% of new generation capacity between 2010 and 2035
  - Out of 253 GW of total expected capacity additions, gas expected to constitute 149 GW
- Increased use of renewable generation resources requires gas generation for dispatchable backup
  - EIA forecasting upwards of 155 MW of renewable generation installed between 2010 and 2035

Impacts to Generation in Midwest

- Coal generation being displaced with gas generation
  - Potential for gas generation in Midwest rising from 4% in 2011 to 37% in 2022 (and potentially as high as 45%) depending on economy and environmental regulations
- Increasing wind power requiring more flexible gas generation
- Pipeline infrastructure changes will be required
  - Customer commitments for firm capacity to support new pipeline facilities
- Improved coordination between Pipelines, Independent System Operators and Generators will be essential
  - FERC addressing Gas/Electric coordination in AD-12-12
- Reliability for gas generation on pipelines will require increased firm transportation capacity and storage to be held by generators
Summary

- U.S. has vast natural gas resources that will last 150 years and still growing.
- Resource base and producer efficiency/technology gains will keep gas prices moderate in the $4 to $6 range.
- Tighter regulations for "Fracking" and well completions but no ban.
- Natural gas will be the preferred energy choice for energy applications across all sectors, especially generation.
- Significant growth of natural gas generation with coal retirements and renewable energy growth.
- Energy independence and economic growth for U.S.
Natural Gas Impacts in the SPP Region

Stacy Duckett
VP and Chief Compliance Officer
EBA Midwest Chapter Meeting
February 20, 2013

Helping our members work together to keep the lights on... today and in the future

BACKGROUND
Our Beginning
- Founded 1941 with 11 members
  - Utilities pooled electricity to power Arkansas aluminum plant needed for critical defense
- Maintained after WWII to continue benefits of regional coordination

SPP Milestones
1968  Became NERC Regional Council
1991  Implemented operating reserve sharing
1994  Incorporated as non-profit
1997  Implemented reliability coordination
1998  Implemented tariff administration
2001  Implemented regional scheduling
2004  Became FERC-approved Regional Transmission Organization
2007  Launched Energy Imbalance Service market; became NERC Regional Entity
2012  Moved to new Corporate Center

68 SPP Members
- Cooperatives
- Municipal
- State Agencies
- Marketers
- Investor-Owned
- Independent Transmission Companies
- Independent Power Producers/Wholesale Generation
Members in 9 states
Arkansas
Kansas
Louisiana
Mississippi
Missouri
Nebraska
New Mexico
Oklahoma
Texas

Operating Region (2011)
- 370,000 miles service territory
- 915 generating plants
- 6,408 substations
- 48,638 miles transmission:
  - 69 kV – 11,966 miles
  - 115 kV – 10,302 miles
  - 138 kV – 10,129 miles
  - 161 kV – 5,066 miles
  - 230 kV – 3,787 miles
  - 345 kV – 7,023 miles
  - 500 kV – 93 miles

2011 RTO Generating Capacity and Energy
63 GW Capacity
226,011 GWh Energy Produced

12% annual planning capacity requirement
Impacts of Lower Cost and Abundant Supply of Natural Gas

- Market Implications
- Transmission Planning
- Operations

MARKET IMPLICATIONS

Energy Prices and Gas Prices
Background

- FERC began the formal Gas/Electric Coordination initiative in February 2012
- In late 2012 SPP Staff surveyed members on a number of coordination topics
- FERC continued to focus the discussion in an Order issued on November 15, 2012 directing the following:
  - Each RTO/ISO to appear before the Commission on May 16 and October 17 to share experiences from the winter and spring, and summer and fall
  - Describe progress in refining existing practices to provide better coordination to ensure adequate fuel supplies

Operations

**2010 ITP20**
- Henry Hub gas price for 2030 = $15.68/mmBtu*
- 7,470 MW additional CC & CT
- 800 MW additional coal

**2013 ITP20**
- Henry Hub gas price for 2033 = $9.49/mmBtu*
- 15,190 MW additional CC & CT
- No additional coal

*Costs are in nominal dollars
**Situational Awareness**

Goal is to develop situational awareness as relates to the gas industry to then relate that to the electric operating day to ensure reliability

- Develop list of gas pipeline and gas supplier contacts and capability to blast call during specific operational situations
  - extreme weather conditions
  - critical unit requirements
- Identifying useful gas information to be monitored in real time

**Status/Moving Forward**

- Established stakeholder group
  - Develop and recommend changes to SPP business practices, protocols, and tariff, when needed
  - Develop and implement specific plans for the improvement of the coordination between the gas and electric utilities in the SPP region
  - Develop responses to standards and regulatory bodies relating to the impacts of gas and electric coordination
  - Serve as a resource to SPP Staff with the perspectives of the members who are the actual fuel users

**IMPLICATIONS AND CONSIDERATIONS**
Lower Cost and Abundant Supply of Natural Gas

- Overall generation costs trend down, as well as the cost of congestion
- The most efficient use of gas is direct use
  - the gas system was not designed for the fuel needs of power plants, especially of peaking plants
- More gas generation in the SPP region means less diversity
  - greater impact if high price volatility or interruption of supply

Lower Cost and Abundant Supply of Natural Gas

- Less interest in green power due to economics
- Little interest in nuclear power plants
  - Natural gas must be at $15/mmbtu for nuclear to be competitive
- Natural gas units are often located closer to load than other types of plants, so the need for transmission may be reduced
- Developing situational awareness to understand the reliability intersection of gas and electric systems
Conference
Speaker Biographies
Commissioner Bennett was appointed by Governor Mitch Daniels on January 13, 2011 to the Indiana Utility Regulatory Commission. She currently serves as President of the Organization of MISO States (OMS) and is a member of the National Association of Regulatory Utility Commissioners' (NARUC) committee on energy resources and the environment, as well as the task force on environmental regulation and generation.

Prior to joining the Commission, she was the chief legal counsel of the Indiana Department of Natural Resources, where she was involved in all aspects of the agency’s mission, including protection and enforcement of natural resources, land acquisition, and agency management and administration.

From 2005 to 2007, Commissioner Bennett was Policy Director for Environment and Natural Resources for Indiana Governor Mitch Daniels. She developed and advocated policy on significant national, regional, and state issues, including air quality standards and attainment designations, mercury emission reduction requirements for electric utilities, and Great Lakes issues.

Commissioner Bennett also practiced law at Barnes & Thornburg LLP, focusing on environmental law and government services, and served in various positions at the Indiana Department of Environmental Management before and after law school. She graduated from Miami University of Ohio with a degree in environmental science, and received her J.D. from the University of Minnesota.
RENEE CIPRIANO
Partner

Renee Cipriano’s practice focuses on providing environmental strategic planning and counseling with respect to statutory and regulatory requirements, enforcement and compliance. Her work also includes providing high level assessment of legislative, regulatory, and policy initiatives at the national, state and local levels. Ms. Cipriano’s practice includes a heavy emphasis on government relations and public law and policy, particularly in the state of Illinois.

She has extensive experience handling:

- Complex regulatory authorization/permitting matters
- Federal, state and local government approvals and local siting
- Enforcement
- Public hearings and community outreach
- Situational and crisis management

She also has overseen complex multidimensional infrastructure projects, brownfields redevelopment projects and energy projects.

Experience

Highlights of Ms. Cipriano’s private practice include:

- Assisting an Illinois county with the negotiation of an agreement for the construction and operation of a landfill gas-to-electric energy facility. Further assisted with securing the approval of the county board.
- Developing and implementing strategy for a power company to obtain a modification to thermal limits applicable to its cooling water discharge at one of its power plants.
- Developing and implementing strategy for a company to obtain regulatory relief from air emission requirements applicable to one of its plants.
- Assisting municipal client with an attempt by a neighboring village to move into an unincorporated area where client had been preparing to seek boundary approval from the Chicago Metropolitan Agency (CMAP) and the Illinois Environmental Protection Agency (IEPA).
- Negotiating solution to an impasse involving Section 401 permits for transfer of water to a power plant cooling lake.
- Negotiating innovative and one-of-a-kind alternative regulations with the State of Illinois to implement a multi-pollutant strategy as part of the state’s mercury regulations.
- Assisting a major power plant company with sensitive PSD permitting for a coal-fired power plant in Illinois.
- Assisting a municipal utility with negotiating an innovative agreement with an environmental group to allow construction of a new coal-fired power plant.
- Providing comprehensive strategic counsel on permitting and third-party outreach to a specialty steel and forgings plant regarding the relocation and expansion of its facility.

“Public/Private Environmental Experience Sets Her Apart”
— Leading Lawyers Network, November 2010
• Assisting numerous clients with responses to Information Requests under Section 114 of the Clean Air Act
• Assisting utility clients with the review, drafting and negotiation of legislation impacting Illinois coal-fired plants, including coal combustion waste beneficial use and air rulemaking
• Assisting new biomass electric generating facility with PSD permitting, community and government outreach and state legislation
• Assisting three major natural gas distribution pipeline companies with an investigation by the U.S. EPA and Illinois Attorney General into PCB Mega Rule compliance
• Lobbying for the passage of the State of Illinois law requiring installation of carbon monoxide detectors in all dwellings
• Lobbying for the passage of legislation banning new or expanding landfills in the state of Illinois.

Publications

"States and Local Governments Lead the Way on Product Content Regulation," (co-author) Environmental Leader (October 18, 2011)

"Keep Chicago Beautiful, Scott's and the Chicago Park District Put "Two Green Thumbs Up" for Earth Day," WINGS Newsletter (Spring 2011)

Speeches and Presentations

Highlights of Ms. Cipriano's recent speeches and presentations include:


"Chicagoland Brownfields: From Obstacles to Opportunities," Chicago Real Estate Women, Panel Moderator (March 28, 2012)


"EPA's Clean Air Act Standards for Boilers and Incinerators," Law Seminars International Telebriefing (April 20, 2011)


"Will County Landfill Gas Purchase Agreement," Eighteenth Annual Conference of the Illinois Counties Solid Waste Management Association (September 23, 2010)

"U.S. and Illinois EPA: "What Co-ops Should Expect on Climate and Other New Regulations — This is Not a Simple Game of Darts,"


"USEPA Proposes Major Changes to the PCB Use Authorization: Is a Mandatory PCB Phase-Out Imminent?" Schiff Hardin LLP and Weston Solutions, Inc. Webinar (May 06, 2010)

Previous Experience

• Partner, Sonnenschein Nath & Rosenthal (2005 - 2007)
• Director of the Illinois Environmental Protection Agency, State of Illinois [under
the administrations of Governors George H. Ryan and Rod R. Blagojevich (2001 - 2005)
- Senior Adviser on Environment and Natural Resources to Illinois Governor George H. Ryan (1999 - 2001)
- Partner, Schiff Hardin (1998 - 1999)
- Associate Director and Chief Counsel, Illinois Environmental Protection Agency (EPA) (1995 - 1998)
- Associate, Schiff Hardin (1992 - 1995)

In her capacity as Illinois EPA Director, (cabinet-level) Ms. Cipriano advised the governor on environmental and energy policy and legislation while overseeing a staff of 1,200 and a budget exceeding $1 billion. In this position, she served as an Illinois Commissioner on the Great Lakes Commission; the Environmental Chair of the National Brownfields Association, Illinois Chapter; the Board of Directors for the Clean Energy Community Foundation; and on the Special Task Force on the Condition and Future of the Illinois Energy Infrastructure.

Highlights of Ms. Cipriano’s government service include:

- Creating the Green Illinois Initiative, a state program to promote environmental stewardship, sustainability, and planning for a healthier and greener future
- Launching of the Green Fleets Program, the Green Dealers Program, and Illinois Clean School Bus Program. These efforts promote the use of clean fuel technology and alternative fuels, including specifically bio-diesel and ethanol.
- Spearheading the development and passage of the state’s comprehensive Right to Know Law. This legislative program makes Illinois the nation’s leader in public notification and community relations activities when a release of a contaminant is discovered.
- Launching the national recognized program "Green Pays on Green Days." This program was successfully implemented through partnership efforts that included Illinois EPA, WMAQ-TV/Chicago, various Illinois companies, Partners for Clean Air, and others to promote voluntary actions to improve air quality.
- Expanding of one of the nation’s most successful brownfields program to clean up and redevelop abandoned industrial sites
- Creating the Basinwide Management Advisory Group as initiate the review and redefinition of how Illinois plans for the protection of water quality
- Creating the first-ever Environmental Justice Officer position in the State of Illinois and Advisory Group to continue development of an environmental justice policy in Illinois
- Implementing Illinois EPA’s first uniform Enforcement Management System for compliance and enforcement activities
- Served as Chair of the Governor's Environment and Natural Resource Cabinet; Governor's Energy Cabinet, and Governor's Balance Growth Cabinet

Awards and Honors

Best Lawyers in America, Environmental Law; Litigation – Environmental
Best Lawyers in America, Chicago Environmental Law Lawyer of the Year (2012)
Illinois Super Lawyers — Environmental
Fellow, American Bar Foundation
Leading Lawyer — Environment, Chambers USA — America’s Leading Lawyers for Business
Leading Lawyer — Environmental, Illinois Leading Lawyers Network
"Top Ten" Environmental
"Top Ten" Women Business Lawyers
"Top Ten" Women Real Estate-Related
"Top 50" Women Real Estate-Related
"Top 100" Real Estate-Related
"Top 100" Women Lawyers
"Top 100" Business Lawyers
AV Rated — Martindale-Hubbell
President’s Lifetime Volunteer Service Award, President’s Council on Service and Civic Participation
Who’s Who Legal — Illinois, Environment

Education

http://www.schiffhardin.com/attorneys/attorney-search/cipriano-renee
Loyola University Chicago School of Law (J.D., 1988)
Loyola University Chicago (B.A., Sociology, 1985)

Professional Memberships

American Bar Association
   Section of Environment, Energy and Resources
   Past Vice Chair
   Special Committee on Section, Division and Forum Coordination
   Vice Chair
Illinois' Carbon Capture and Sequestration Legislation Commission
Illinois Bar Association
Justinian Society of Lawyers
Keep Chicago Beautiful
   Co-Chair

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Schiff Hardin LLP is a general practice law firm representing clients across the United States and around the world. We have offices located in Ann Arbor, Atlanta, Boston, Charlotte, Chicago, Lake Forest, New York, San Francisco and Washington. Our attorneys are strong advocates and trusted advisers — roles that contribute to many lasting client relationships.
Stacy Duckett

As Vice President, Chief Compliance Officer and Corporate Secretary, Stacy Duckett is responsible for overseeing compliance and market monitoring, serves as Chief Security Officer, supports the Board of Directors and recently assumed duties as liaison to state and federal regulators. Ms. Duckett began her work at SPP as an attorney in the transmission and regulatory policy group, quickly assumed project management responsibilities, was named Director, Corporate Affairs and served as General Counsel prior to serving in her current position. Before joining SPP in 2000, Ms. Duckett served as Vice President and Assistant General Counsel for TCBY Enterprises, Inc. Ms. Duckett has a BA from Hendrix College. Her law degree is from the University of Arkansas- Little Rock and she is licensed to practice in Arkansas.
Christine F. Ericson  
Deputy Solicitor General and Special Assistant Attorney General  
Illinois Commerce Commission, Office of General Counsel

Ms. Ericson has served in the ICC Office of General Counsel since 2002. She has over twenty years of experience in public utility and energy regulatory law. She is a trial attorney in electric, gas, and telecommunications matters, including transmission and oil pipeline siting, rates, and contract arbitration. Ms. Ericson has handled federal energy and telecommunications legal issues for the ICC, representing the Commission before the Federal Energy Regulatory Commission (FERC), the Federal Communications Commission and the United States Court of Appeals, for the D.C. and 7th Circuits. She has advised on numerous transmission issues including formula rates and protocols, as well as cost allocation, such as the PJM high voltage transmission cost allocation proceedings resulting in the petition granted in the 2009 7th Circuit decision in ICC v. FERC, which has helped to save Illinois consumers from over a billion dollars in transmission cost allocation for which there was no commensurate benefit. Ms. Ericson has advised the Commission on issues involving regional transmission organizations, as well as the regional state committees, including the formation and implementation of both the Organization of MISO States (OMS), and Organization of PJM States (OPSI). She served as Co-Chair of the OMS Markets and Tariffs Work Group from 2007-2012, and completed a two-year term as a State Government Representative on the North American Electric Reliability Corporation (NERC) Planning Committee from 2010-2012, addressing reliability assessments, Critical Infrastructure Protection standards, and threats to the grid such as geomagnetic disturbances, malware embedded in smart-grid components, and modeling approaches based on insufficient data.

Prior to joining the Commission, Ms. Ericson practiced energy regulatory law in Washington, DC. She served in the Office of General Counsel at FERC, as a trial attorney in the Office of Hydroelectric and Electric Litigation and as an advisory attorney in the Office of Hydroelectric Licensing. Ms. Ericson also practiced for seven years in the private sector, with Verner, Liipfert, Bernhard, McPherson and Hand, as well as Swidler, Berlin, Shereff, Friedman, LLP. She has represented a wide array of clients, including utilities, independent system operators, municipalities and cooperatives.

Ms. Ericson has degrees from Duke University, the University of Paris IV, Sorbonne, and Washington University School of Law in St. Louis. She is licensed in Illinois and the District of Columbia and is admitted to the United States Court of Appeals for the District of Columbia and the Seventh Circuits. She serves on the Board of Directors for the Charitable Foundation of the Energy Bar Association, and has completed three-year terms as a Director on the Boards of the Foundation of the Energy Law Journal (ELJ) and the national Energy Bar Association (EBA). She currently serves as the International Articles Editor on the ELJ Editorial Board. She has served on the Board of Directors for the EBA, Midwest Chapter, since 2003, which has included completion of terms as President (2007-2008), Vice President (2006-2007), and Secretary/Treasurer (2005-2006). She also serves on the NARUC Staff Subcommittee for Critical Infrastructure and has participated as a featured speaker at the MacArthur Workshop on Cyber-Security.
With more than 30 years of experience, Dr. Michot Foss directs and conducts research; advises U.S. and international energy companies; publishes and speaks widely on energy issues; and provides public commentary and testimony to governments. Prior to UT, Dr. Michot Foss led CEE’s precursor program at University of Houston where she was also an assistant research professor and Shell Scholar, and has worked in energy investment banking (Simmons & Company International), at Rice Center, and other research/consulting organizations. Areas of emphasis include global upstream oil, natural gas, and LNG value chains and supporting investment frameworks and business models; national oil companies (NOCs); electric power and gas-power linkages; energy scenarios, outlooks and commodity markets. She is steering development of BEG/CEE’s analytics and modeling for integrated research on upstream, midstream, end use scenarios with economic impacts and dynamic energy portfolios. Over the years she developed and led Commercial Frameworks for LNG in North America; Commercial Frameworks for National Oil Companies, including World Bank collaboration; CEE’s international development assistance initiatives including USAID and State Department funded projects in various countries and regions; and international capacity building mainly through CEE’s own “New Era” training platform and partnerships with UT McCombs School of Business where she is an Executive Education Instructor for the UT ExxonMobil, Sinopec, Petrobras, and other programs. Dr. Michot Foss and the CEE team were selected as experts for U.S. EIA’s Energy and Financial Markets Initiative and for a new DOE review of oil and natural gas sector developments and issues in Iraq. She served on the National Academy of Sciences Committee on Earth Resources, National Petroleum Council’s North American Natural Gas and Oil Resources (“Prudent Development”, September 2011) Demand Study Group and the advisory board for the Moratoria Study Group hosted by the National Association of Regulatory Utility Commissioners (2010). In 2006, Dr. Michot Foss was chosen a Senior Fellow by the U.S. Association for Energy Economics for her contribution to the profession and association. In 2003 she was selected one of the Key Women in Energy-Americas and recognized by the Scientific Council, 50th Anniversary of ENI Commemorative Encyclopedia of Hydrocarbons. She was the 2003 president of the International Association for Energy Economics (IAEE) and 2001 president of the USAEE. She is a member of the Council on Foreign Relations; Society of Petroleum Engineers; USAEE and IAEE; is a past board member and education advisory board member of the Association of International Petroleum Negotiators (AIPN). She serves on the technical advisory council, Natural Resource Charter; the advisory board of the Institute for Energy in the 21st Century (U.S. Chamber of Commerce); economics advisory board for the Oil & Gas Journal; and on the program committee for LNG 17 Houston 2013. She holds degrees from University of Louisiana-Lafayette, Colorado School of Mines, and University of Houston. CEE-UT is a non-contributory member of the Society of International Gas Tanker and Terminal Operators (SIGTTO), GridWise Alliance, and WTO Energy Services Coalition. CEE-UT was named a finalist in the World Oil Awards competition for best outreach program in both 2006 and 2007.

www.beg.utexas.edu/energyecon
Mr. Glaeser graduated from the Missouri University of Science and Technology with a Bachelor of Science degree in Mechanical Engineering in 1986. He started his career in the steel industry working as a combustion engineer at an integrated steel mill managing energy supply/distribution and combustion systems engineering. In 1991, Scott moved to Union Electric Company (UE) with responsibilities for natural gas supply supporting the LDC and gas generation facilities. With UE’s growth from acquisitions of CIPS, CILCO, and IP (which formed Ameren Corporation) and the significant growth of the gas business, he was promoted to various management positions up to the Vice President level over various areas of the gas business including gas supply, gas control, storage operations/engineering, transmission engineering, metering, regulatory compliance and fleet services. Scott’s current position is Vice President of Gas Transmission for Ameren Transmission Company.
Terry M. Jarrett

Commissioner Terry M. Jarrett was appointed by Governor Matt Blunt to the Missouri Public Service Commission for a six-year term on September 11, 2007. Commissioner Jarrett received unanimous Senate confirmation on January 17, 2008.

Commissioner Jarrett serves as Chairman of the Missouri Universal Service Board. He additionally serves, by gubernatorial appointment, on the Committee on 911 Service Oversight.

Commissioner Jarrett is a member of the National Association of Regulatory Utility Commissioners (NARUC). He serves on the NARUC Board of Directors and is Chairman of the NARUC Critical Infrastructure Committee, a member of the NARUC Gas Committee and the NARUC/FERC Smart Response Collaborative. Commissioner Jarrett is also a member of the NARUC Subcommittee on Clean Coal and Carbon Sequestration and a member of the Energy Bar Association. He is a member of the New Mexico State University Center for Public Utilities Advisory Council and chair of the Military Law Committee for the Missouri Bar.

Prior to his appointment to the PSC, Commissioner Jarrett was the Presiding Commissioner of the Administrative Hearing Commission. He formerly served as general counsel to Matt Blunt in both the Office of the Governor and the Office of the Secretary of State. A veteran, he served as a Judge Advocate officer in the Army Reserves and Missouri Army National Guard from 2002-2010.

Commissioner Jarrett received a B.S. degree from Central Missouri State University (now the University of Central Missouri) and a J.D. degree from the University of Missouri-Columbia School of Law. While in law school, he was Editor-in-Chief of the Missouri Law Review. In 2005, Jarrett was honored with the Most Recent Distinguished Graduate Award by the University of Missouri-Columbia, School of Law.

Commissioner Jarrett and his wife, Joan, live in Jefferson City. They have four children.
Stephen Kozey  
*Senior Vice President, Legal and Compliance Services, General Counsel & Secretary*

Mr. Kozey is Senior Vice President, Legal and Compliance Service for MISO. He also holds the positions of General Counsel and Secretary. He is responsible for providing advice to address the company’s legal concerns including all federal and regulatory legal matters and oversees the company’s compliance responsibilities and NERC/NAESB relations.

Mr. Kozey’s career positions have involved electricity trading and marketing, state and federal electric utility rate and regulatory matters, mediation, as well as expertise in industry mergers and acquisitions and antitrust litigation.

Mr. Kozey earned his J.D. degree in 1976 from the Law School of the University of Pennsylvania in Philadelphia. He graduated Magna Cum Laude from Haverford College in Haverford, Pa., where he received a Bachelor of Arts degree in religion and political science and was elected to Phi Beta Kappa.

Mr. Kozey has studied at Oxford University and has taught as an adjunct professor at the Indiana University School of Law, Indianapolis.

He is a member of the bar in the District of Columbia, North Carolina, Maryland and Indiana.
Commissioner Cheryl A. LaFleur

Commissioner Cheryl A. LaFleur was nominated by President Barack Obama to serve as a member of the Federal Energy Regulatory Commission in 2010 and confirmed by the U.S. Senate for a term that ends in June 2014.

Among Commissioner LaFleur's priorities at the Commission are strengthening reliability and grid security, promoting regional transmission planning, and supporting a clean and diverse power supply. She serves as the FERC liaison to the Department of Energy's Electricity Advisory Committee. She is also a member of the NARUC Committees on Electricity and Critical Infrastructure and co-chair of the FERC/NARUC Forum on Reliability and the Environment. She is a frequent speaker on energy issues.

Commissioner LaFleur has more than 20 years' experience as a leader in the electric and natural gas industry. She served as executive vice president and acting CEO of National Grid USA, responsible for the delivery of electricity to 3.4 million customers in the Northeast. Her previous positions at National Grid USA and its predecessor New England Electric System included chief operating officer, president of the New England distribution companies and general counsel. She led major efforts to improve reliability and employee safety. Earlier in her career, she was responsible for leading award-winning conservation and demand response programs for customers.

Commissioner LaFleur has been a nonprofit board member and leader, including as a trustee of Beth Israel Deaconess Medical Center, Worcester Polytechnic Institute, United Way of Central Massachusetts, and several other organizations. She is also active in several women’s energy organizations. She has been honored by the Greater Boston Chamber of Commerce, Bryant University, and the YWCA of Central Massachusetts, among others.

Commissioner LaFleur began her career as a lawyer at Ropes and Gray in Boston. She has a J.D. from Harvard Law School, where she was an editor of the Harvard Law Review, and an A.B. from Princeton University. A native of Massachusetts, she is married to William A. Kuncik, a retired attorney, and they are the parents of two grown children.

Sworn In: July 13, 2010
Term Expires: June 30, 2014

Staff:
Kim Shannon, Confidential Assistant
Joshua Konecni, Legal Advisor
Lisa Luftig, Legal Advisor
Kurt Longo, Technical Advisor
Patricia Herrion, Secretary

Contact Information:
202-502-8961
Suite 11-C
888 First Street, NE
Washington, DC 20426
Steven T. Naumann

Steven T. Naumann is Vice President – Transmission and NERC Policy at Exelon Corporation. He is responsible for developing policy for Exelon on transmission pricing, cost allocation, and high level transmission planning policy nationwide. He also directs the development of reliability policy issues relating to standards, compliance and other issues involving the North American Electric Reliability Corporation (NERC), the Electric Reliability Organization certified by the Federal Energy Regulatory Commission (FERC). Mr. Naumann joined Commonwealth Edison Co. following service as an officer in the United States Air Force. During his over 35 years at Exelon and Commonwealth Edison, Mr. Naumann has held a number of engineering, managerial and executive positions responsible for the planning, operation, and security of the electric delivery system. He has participated on a number of committees, working groups and task forces of NERC and the Mid-America Interconnected Network Regional Reliability Council (MAIN), including serving as Vice Chairman of MAIN from 2004-2005. Mr. Naumann has served on NERC Member Representatives Committee as a representative of the Investor Owned Utilities and later served as Vice Chairman and Chairman. He has testified before Congress, FERC, the Illinois Commerce Commission and the Public Service Commission of Wisconsin.

Mr. Naumann received a Bachelor of Science degree in Electric Power Engineering in 1971 and a Master of Engineering degree in Electric Power Engineering in 1972, both from Rensselaer Polytechnic Institute in Troy, New York. He later received a J.D. degree from Chicago-Kent College of Law in 1988. Mr. Naumann is a Registered Professional Engineer in the State of Illinois and is licensed to practice law in Illinois.
Andre T. Porter  
Term ends April 10, 2016  

Commissioner Andre T. Porter was appointed to the Public Utilities Commission of Ohio (PUCO) by Governor John Kasich in 2011. Commissioner Porter serves as the vice-president of the Organization of PJM States, Inc. (OPSI); the PUCO’s representative to the Eastern Interconnection States’ Planning Council (EISPC); and the president of the Independent State Agencies Committee (ISAC). In his work at each of these organizations, Commissioner Porter addresses challenges related to the electricity grid and wholesale electricity markets.

On the national level, he is a member of the National Association of Regulatory Utilities Commissioners (NARUC) where he serves on the Washington Action Committee, Water Committee, Clean Coal Subcommittee, and Critical Infrastructure Committee.

In addition to his responsibilities at the PUCO, Commissioner Porter is active in his local community. He serves as a trustee at his undergraduate alma mater, Capital University, where he chairs the governance and presidential assessment committees. Previously, he served as a member of the Gahanna City Council, chair of the Gahanna Board of Zoning Appeals, president of the Gahanna Community Improvement Corporation, member of the Olde Gahanna Study Committee, and member of the Gahanna Convention and Visitors Bureau.

Before being appointed to the PUCO, Commissioner Porter was an attorney at the law firm of Schottenstein Zox & Dunn in Columbus, Ohio which is now known as Ice Miller, LLP. His legal practice focused on public utilities, including electricity and telecommunications. Commissioner Porter received his undergraduate degree in political science from Capital University and his juris doctor from The Ohio State University Moritz College of Law.
Laura is a Manager of Expansion Planning at MISO, where she leads efforts to analyze long-term reliability and ensure NERC compliance for the MISO members in Michigan, Indiana, Illinois, and Missouri. Throughout her career, she has been responsible for many long-term planning efforts, including the evaluation of transmission service and generator interconnection requests. She was also responsible for managing the reliability study team for the Regional Generator Outlet Study and directing the business case development for MISO’s Multi Value Project (MVP) portfolio. These studies resulted in a $5.2 billion set of transmission projects that will reliably enable the renewable energy mandates of the MISO states while providing benefits ranging from 1.8 to 3.0 times the transmission’s estimated cost. Recently, Laura led the effort to ensure compliance with the regional planning requirements of FERC Order 1000, including all provisions related to the elimination of a federal right of first refusal.

Laura holds a Bachelor of Science degree in Electrical Engineering from Michigan Technological University and a Master of Business Administration from Indiana University. She is a Professional Engineer, registered in the state of Indiana.
E. Glenn Rippie

E. Glenn Rippie is a partner with Rooney Rippie & Ratnaswamy LLP. He primarily represents natural gas and electric industry clients before regulatory agencies such as state public utility commissions and the Federal Energy Regulatory Commission, and before state and federal courts.

Mr. Rippie’s practice focuses on complex regulatory, operational, and commercial matters ranging from strategic planning and counseling to trial and appellate work. Representative engagements encompass:

- Preparing and litigating bundled and delivery rate proceedings, including seven recent natural gas and electric general rate cases, five as lead outside counsel.
- Representing clients in the planning, design, permitting, and construction of new energy facilities, and subsequent representation before courts and regulatory bodies in connection with approval of the facilities and efforts initiated by opponents to interfere with their construction or operation.
- Advising clients with respect to new capabilities and services, including the deployment of Smart Grid technologies and applications and rates designed to facilitate price responsiveness, other forms of demand response, and efficiency.
- Wholesale and retail energy sales, including representing utilities in each of the recent general supply procurement proceedings in which Illinois electric utilities have been supplied with over $20 billion of electricity, capacity, and related services.

Mr. Rippie also represents clients on a variety of projects infused with technical and operational issues, including interconnections; station and backup power; transmission and distribution planning, operation, and reliability, including compliance with regulatory requirements; and rates and regulation of regional transmission organizations.
Mr. Rippie has been consistently named a #1-rated energy lawyer in Illinois by Chambers USA – America’s Leading Business Lawyers, and is the only lawyer in Illinois to have been so rated for five straight years. He is cited by The Best Lawyers in America® and the Illinois Leading Lawyers Network® for his work in energy and administrative law, and was selected in 2005, 2007, 2008, 2009 and 2010 as an Illinois Super Lawyers® for energy work.* He formerly was a partner at Foley & Lardner LLP.

Mr. Rippie received his law degree from Yale Law School (J.D., 1985), where he was a Coker Fellow. He is also trained in economics and mathematical modeling, having received undergraduate and graduate degrees in mathematics and economics from Northwestern University (A.B., highest distinction & M.A., 1982).

Mr. Rippie is a member of the bar of Illinois and of the U.S. District Courts for the Northern and Central Districts of Illinois, the U.S. Court of Appeals for the Seventh Circuit, and the U.S. Supreme Court. He is a member of the American Bar Association and its Public Utilities, Litigation, and Natural Resources, Energy & Environmental Law Sections, the Chicago Bar Association and its Public Utilities Committee, and the Energy Bar Association.
Diana Rivera,
Project Development Manager at Clean Line Energy Partners

Diana is a lead developer of the Grain Belt Express Clean Line, a 700-mile high voltage direct current transmission line that will deliver 3,500 megawatts of low-cost wind energy from Kansas to Missouri, Illinois, Indiana, and states farther east. In this role, Diana manages project development efforts, including siting, permitting, engineering studies, and public outreach throughout the four-state project area. Prior to joining Clean Line, Diana gained manufacturing experience as a Lean Six Sigma Black Belt at GE Energy and transitioned into energy development at Horizon Wind Energy. Diana holds a Bachelor of Science in Operations Research & Industrial Engineering from Cornell University and an MBA from Harvard Business School.

Prior to his appointment Scott served as director of the Illinois Environmental Protection Agency from 2005 to 2011. During those years he chaired the Illinois Governor’s Climate Change and Advisory Committee and was a member of the Midwestern Governors’ Association panel charged with developing a regional cap-and-trade system. He was a member of the Air Committee for Environmental Council of States (ECOS) and the USEPA Environmental Financial Advisory Board. He served as chairman of The Climate Registry Board of Directors and co-chair of the Keystone Foundation Energy Board.

He was elected and served as mayor of Rockford, Illinois from 2001 to 2005. As mayor he held leadership positions in the Illinois Municipal League, United States Conference of Mayors and the national League of Cities. He also served as president of the Illinois Chapter of the National Brownfield Association.

Scott was elected a state representative from the 67th district in 1995 and served in the General Assembly until 2001 when he became mayor. Scott also served the city as city attorney.
A native of Rockford Scott received his undergraduate degree with honors from the University of Tulsa in 1982 and a juris doctorate with honors from Marquette University, Milwaukee, WI in 1985.

Scott is married to Tammy Scott.
Jon Stitzel, CISSP, CISA

Jon Stitzel is a senior Cybersecurity Analyst at Ameren Services. He is the cybersecurity lead for the Ameren Illinois Modernization Action Plan to provide our customers with an improved, more reliable and modernized electric distribution system. Jon has 25 years of experience in the information technology industry, including more than 15 years specializing in cybersecurity. He has served as an administrator, manager, and consultant in many diverse industries, including energy, manufacturing, financial, telecommunications, and DOD. Jon participates in the smart grid cybersecurity efforts of the Smart Grid Interoperability Panel, and holds professional certifications in Information Systems Security and Information Systems Auditing.
Andy Wright brings a unique mix of political, legal and policy knowledge to Polsinelli Shughart's Public Policy practice. Mr. Wright is an attorney with nearly 30 years experience in Washington, D.C. engaged in lobbying, strategic planning, policy and staff development, association management, and public service. He provides leadership and direction to the firm's Energy, Environmental and Natural Resources and Telecommunications practices. In that capacity, he lobbies and provides consulting and strategic advice on behalf of energy, environment, telecommunications and financial services clients.

Prior to joining the firm, Mr. Wright was managing principal to a multidisciplinary, global government affairs, public relations and management consulting firm. He twice served as Chief of Staff for former Congressman Rick Boucher (D-VA) and as Chief of Staff to Congressman Brad Sherman (D-CA).

Mr. Wright was president of the Satellite Broadcasting and Communications Association, a trade association that represented the satellite television, radio and broadband industries. Prior to that, he served as the vice president of government affairs for the American Insurance Association, a national trade association representing the property-casualty insurance industry.

Mr. Wright is a frequent speaker on political and policy issues. In 2011 he was honored as one of Washington's “Top Lobbyists” by The Hill newspaper.

**PUBLICATIONS & PRESENTATIONS**

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<td>July 13, 2012</td>
<td>VIDEO - Focus Washington Features D.C. Shareholder Andy Wright on Energy Issues</td>
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DAVID E. ZIEGNER  
Appointment: Commissioner  
Appointed: August 25, 1990, by Governor Bayh  
Term Expires: April 2015

Commissioner Ziegner was appointed to the Indiana Utility Regulatory Commission on August 25, 1990, by Governor Evan Bayh and reappointed to a full, four-year term in April of 1991 and again in December of 1995. He was reappointed by Governor Frank O'Bannon in 1999 and 2003. Commissioner Ziegner was reappointed by Governor Mitch Daniels in March 2007 and again in April 2011. A Democrat, Ziegner's term expires April 2015.

Commissioner Ziegner is the Treasurer of the National Association of Regulatory Utility Commissioners' (NARUC) and vice-chair of the National Association of Regulatory Utility Commissioners' (NARUC) Committee on Electricity and is former chairman of its Clean Coal and Carbon Sequestration Subcommittee. He is also a member of the Mid-America Regulatory Conference.

Additionally, Ziegner was also former chairman of the Advisory Council of the Center for Public Utilities at New Mexico State University and a member of the Consortium for Electric Reliability Technology Solutions (CERTS) Industry Advisory Board. He is a former member of the Advisory Council of the Electric Power Research Institute (EPRI).

Ziegner is a native Hoosier. He earned his B.A. in history and journalism from Indiana University in 1976. He obtained his J.D. degree from the Indiana University School of Law in Indianapolis in 1979 and was admitted to the Indiana Bar and U.S. District Court in that same year.

Prior to joining the Commission, Ziegner served as a staff attorney for the Legislative Services Agency, where he developed his background in both utility and regulatory issues. As the agency's senior staff attorney, he specialized in legislative issues concerning utility reform, local measured telephone service, the citizen's utility board and pollution control. Most recently, Mr. Ziegner was the General Counsel for the IURC.

Ziegner, his wife, Barbara, and their daughter, Jennifer, reside in Greenwood and are members of the Northminster Presbyterian Church.