IAPA Annual Conference

Illinois Energy Markets

λ Latham, Ervin, Vognsen & Associates, Inc.
150 1st Avenue NE, Suite 300, Cedar Rapids, IA 52401

Agenda

- Introduction
- Electric Industry Overview
  - Top Down Structure
- Natural Gas Industry Overview
  - Utility vs. Supplier
  - Pricing Components
  - Market Drivers
- Aggregation
- Regulation
  - IAPA Intervention in Nicor storage case
- Polar Vortex 2021

Who are we?

Latham, Ervin, Vognsen & Associates (LEV)

- Established 1995 in Cedar Rapids, IA
- Dr. Robert Latham, Louie Ervin Sr., Louie Ervin II, Dave Vognsen & Associates
- Economics, Finance, Business and Engineering
- Energy focus (natural gas, electricity and steam)
- 130+ yrs combined utility industry experience
- Primary client bases: Illinois, Iowa, Missouri, Wisconsin, Nebraska
- Rate analyses and design, strategy and expert testimony before federal and state regulatory commissions and courts
- Formation, implementation of electric and natural gas aggregation groups
- Solicitation, evaluation and negotiation of wholesale and retail electric and natural gas supply contracts
- Economic feasibility studies on acquisition and divesture of electric, natural gas and steam utilities, steam plants, solar and wind electric generation

LEV Aggregation & Advisory Groups

- Electric:
  - IL schools & colleges – 375,000,000 kWh/yr (730 accts)
  - IL Grain Assoc. – 1,000,000,000 kWh/yr (426 accts)
  - Resale Power Group of Iowa, Advisors - 25 Municipal and Rural Electric Cooperatives, 560,000,000 kWh/yr
  - Large Energy Group of Iowa, Advisors - 23 Commercial, Industrials, Non-profits, 2,000,000,000 kWh/yr

- Natural Gas:
  - IA Hospitals and Clinics – 1,500,000 Dth/yr (16 Accounts)
  - MO schools – 3,000,000 Dth/yr (2,000 accts)
  - IL schools & colleges – 2,400,000 Dth/yr (1,000 accts)
  - NE schools – 400,000 Dth/yr (350 accts)
  - IL Grain Assoc. – 1,000,000 Dth/yr (138 accts)

Electric Industry 101: From the Top Down

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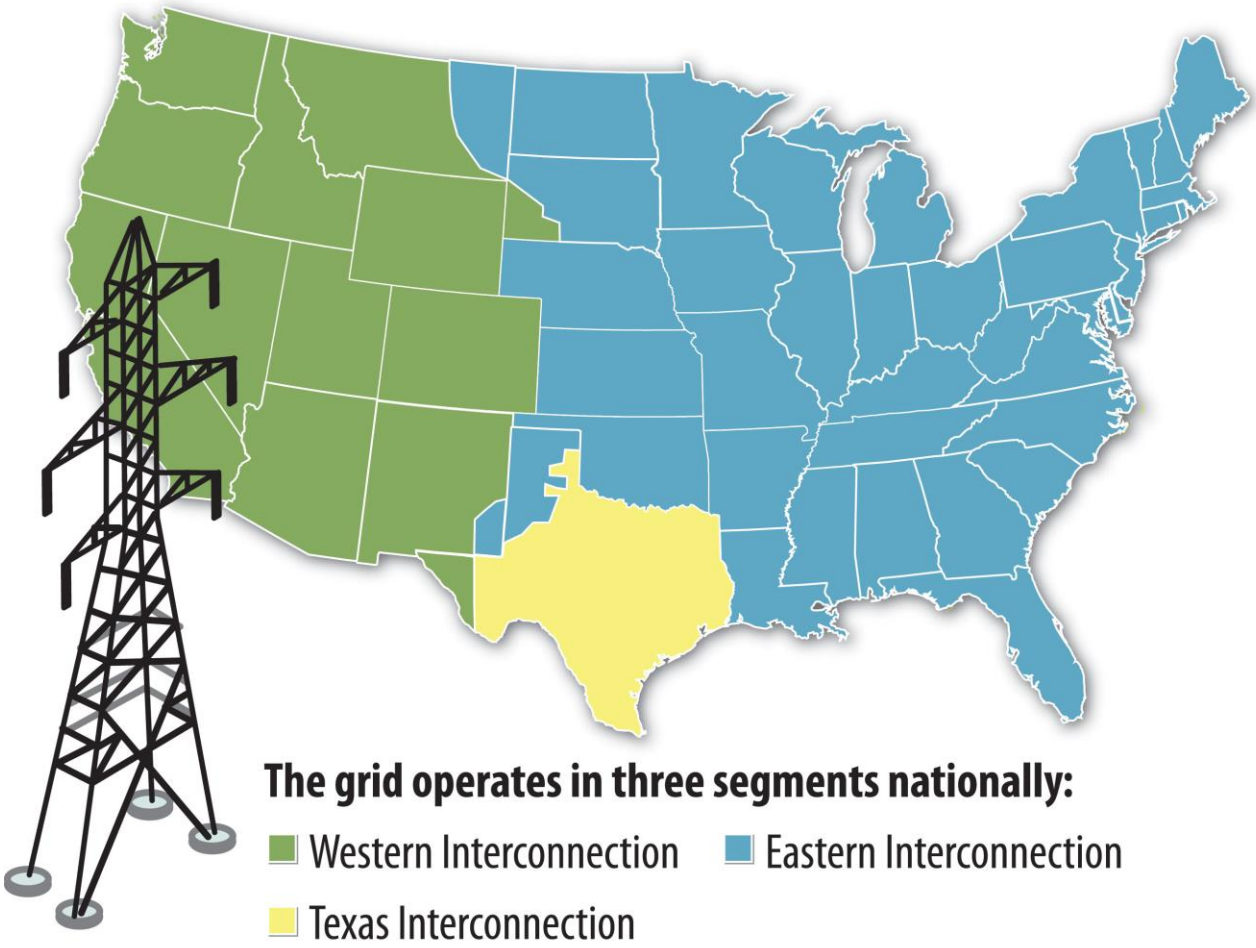
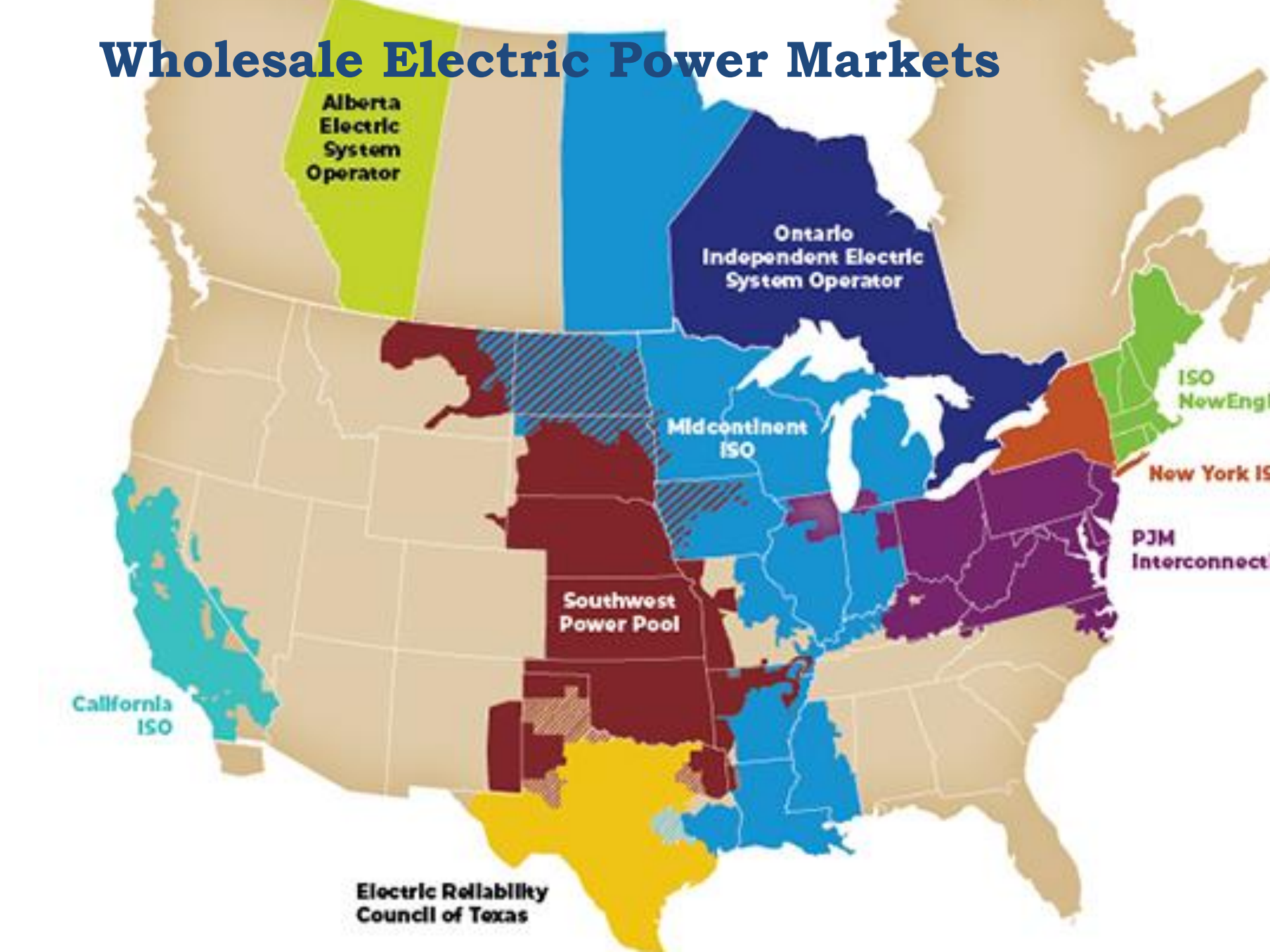
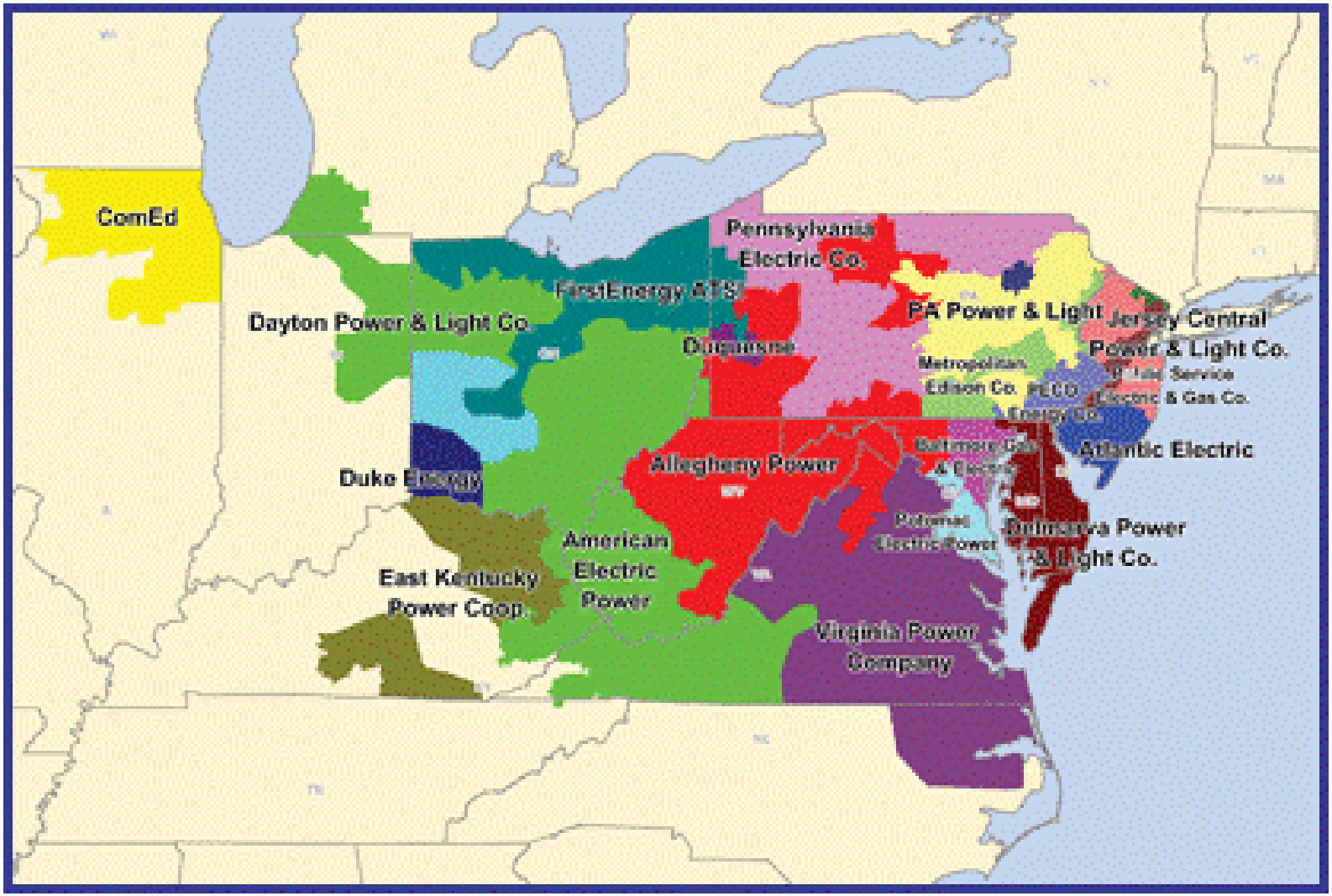
North American Grid



Wholesale Electric Power Markets

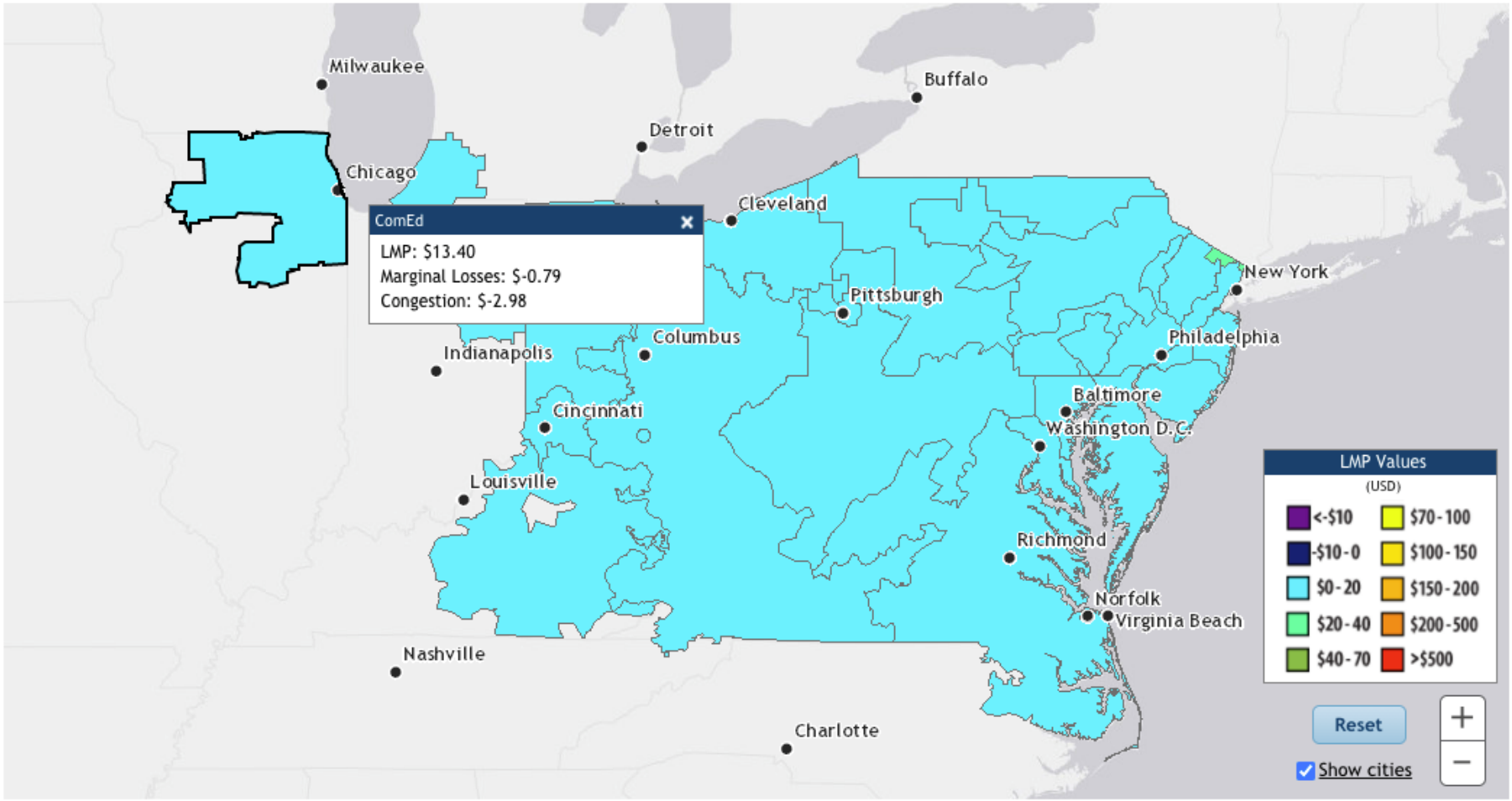


PJM: Regional Transmission Operator / Wholesale Power Market



PJM Market Pricing

Locational Marginal Pricing Map



PJM Market Pricing

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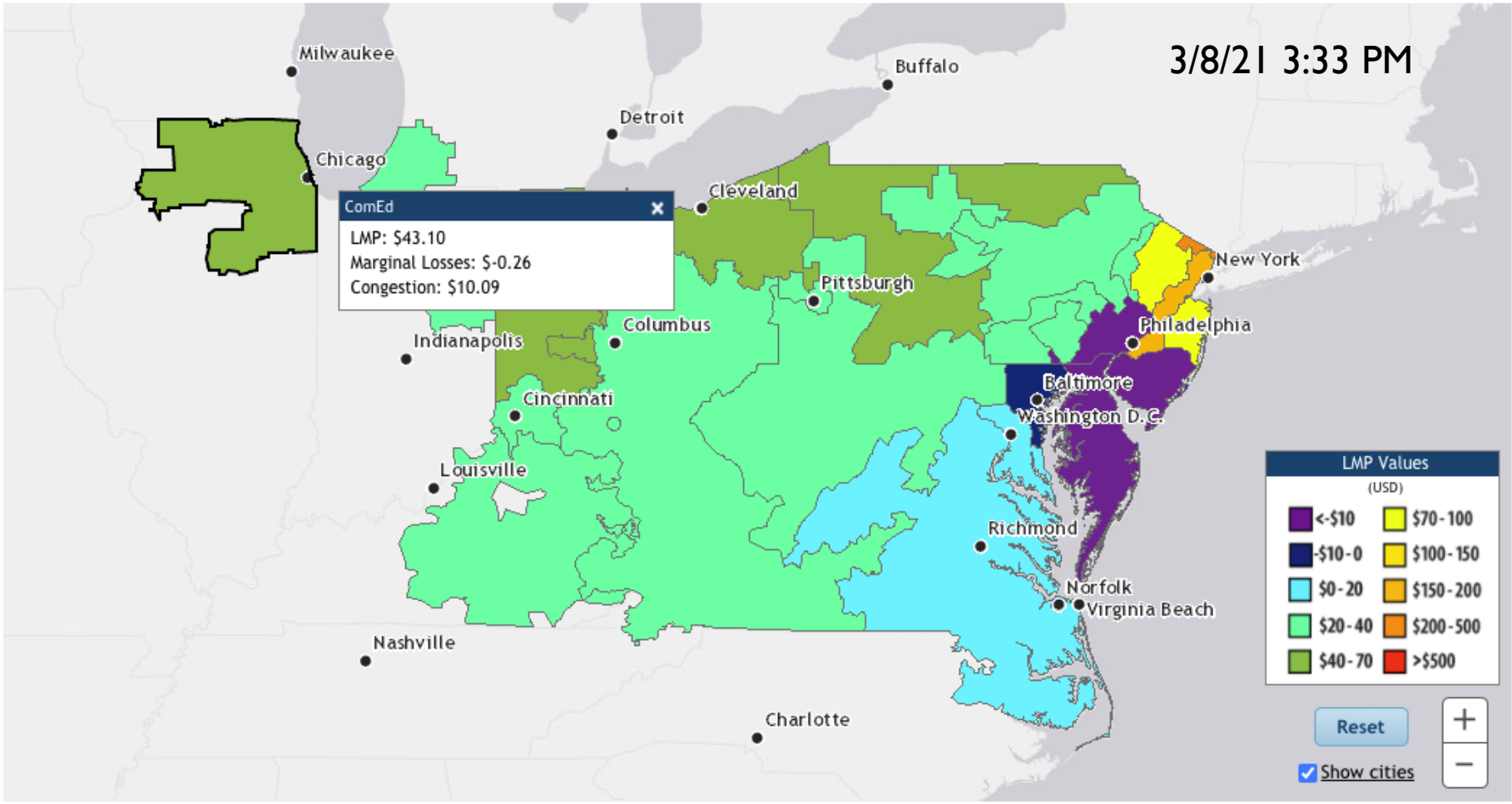

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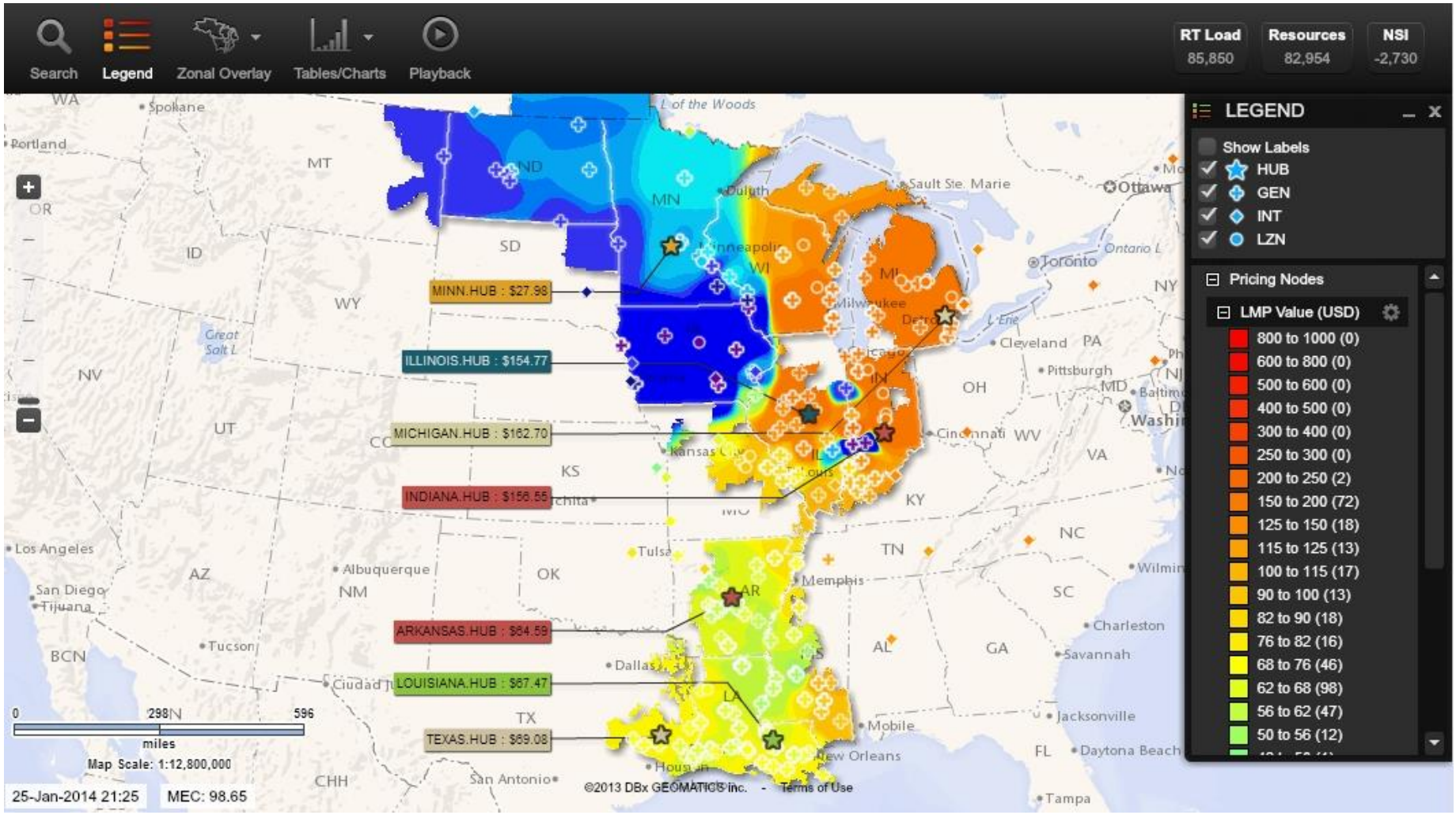
MISO Pricing



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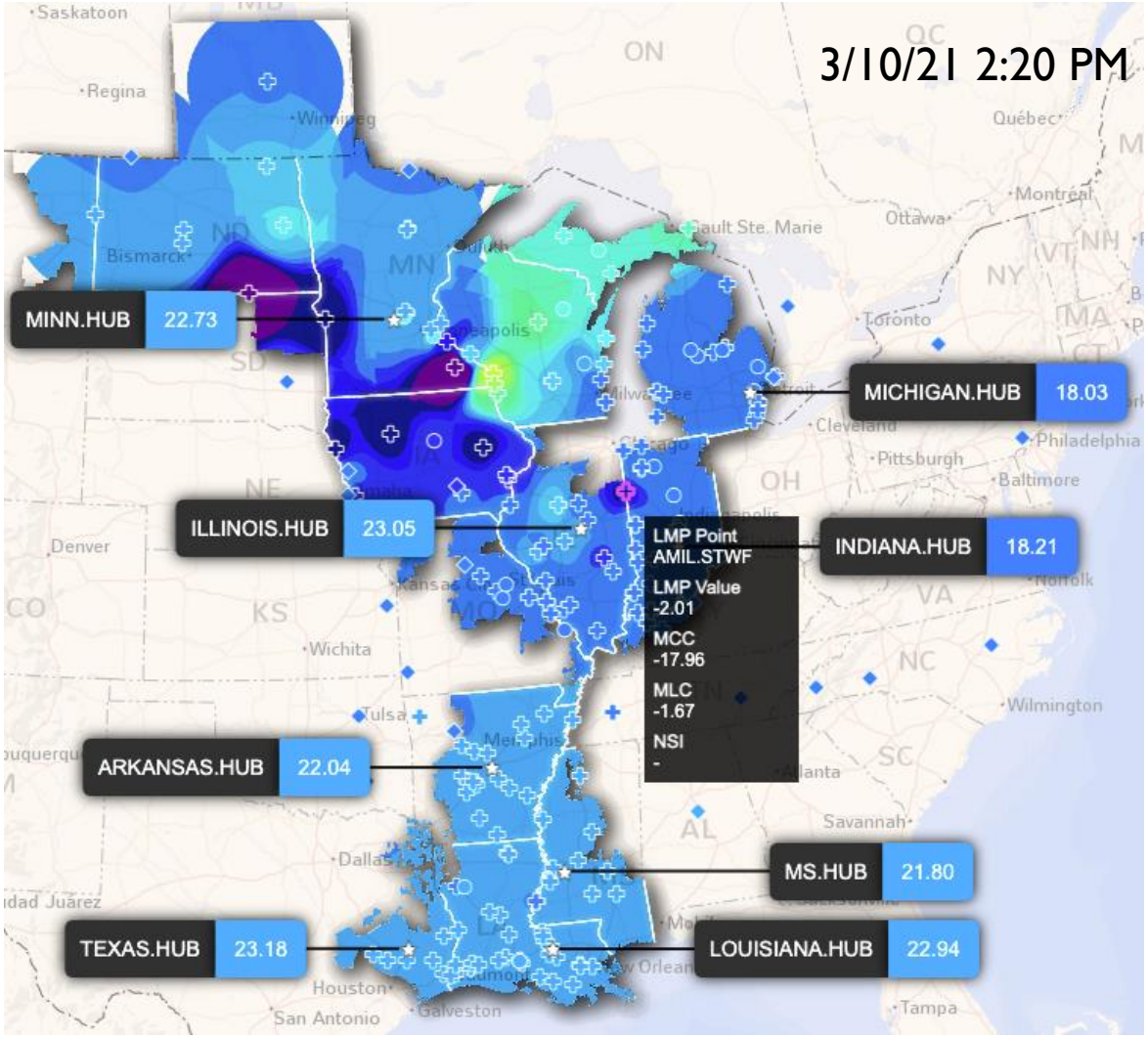
MISO Pricing



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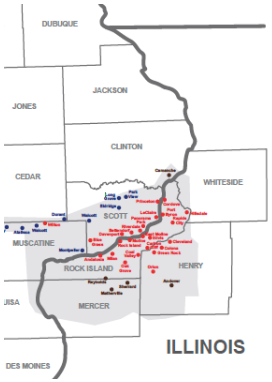
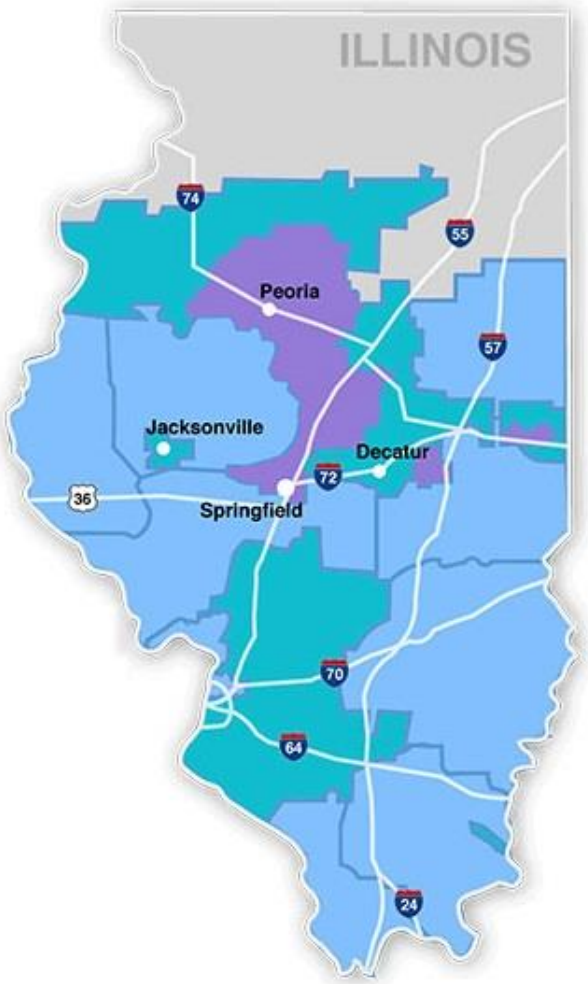
IL Electric Utilities

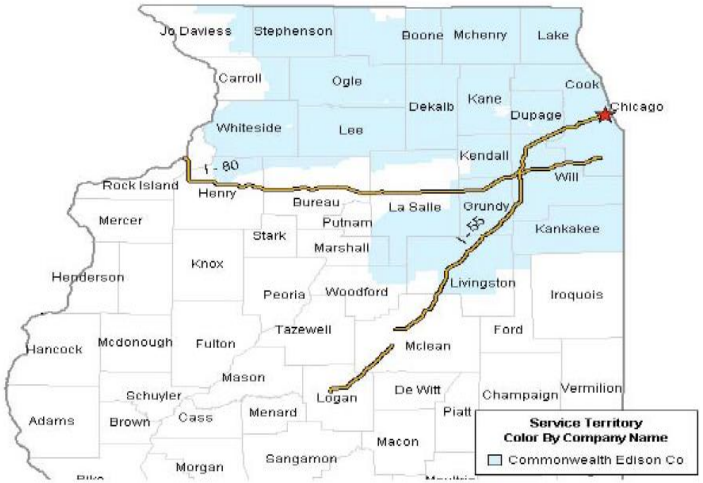
MidAmerican Energy



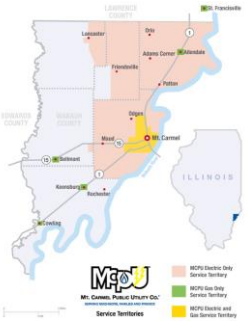
Ameren Illinois



ComEd



Mt. Carmel



Natural Gas Industry 101: Utility & Supply

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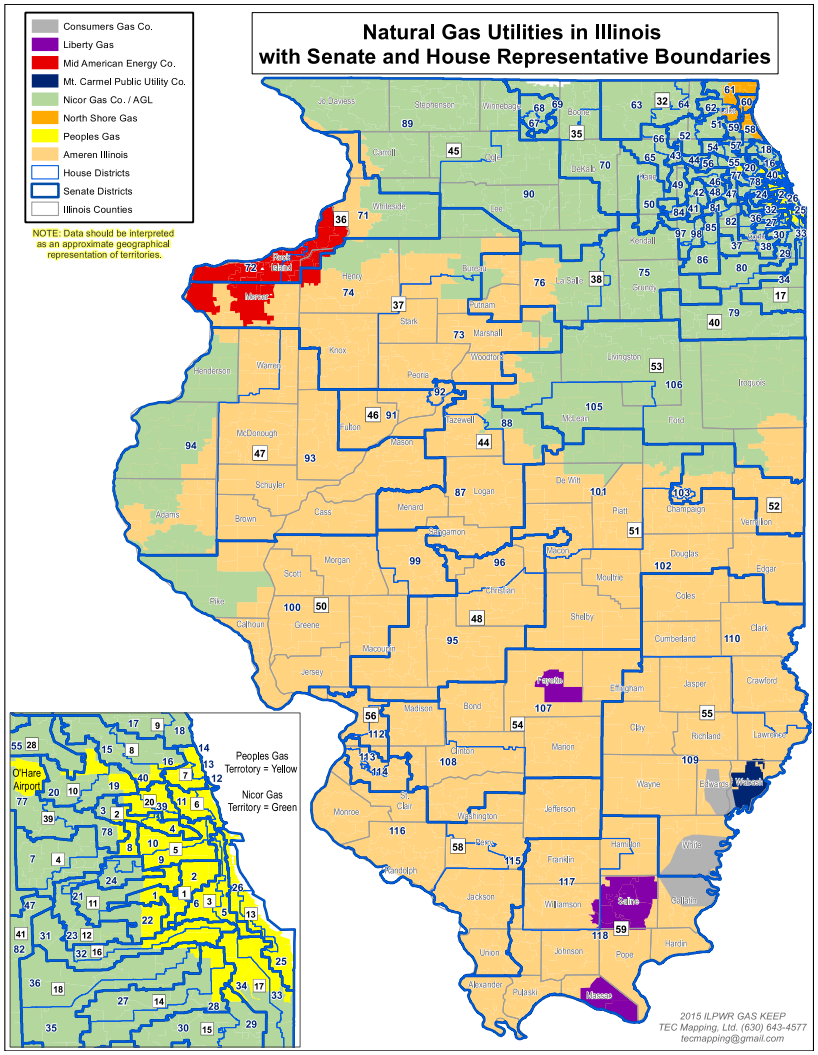
IL Natural Gas Utilities



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System Sales or Transport Customer

- Utility System Sales Customer
  - Utility/Local Distribution Company (LDC) provides:
    - Distribution delivery service

      AND
    - Commodity/gas supply

OR

- Transportation Customer
  - LDC provides distribution delivery service
  - Third party supplier provides gas supply
  - Participants can receive one consolidated invoice

Transport Customer Natural Gas Invoice Components

1. Supply from third party
   - Price includes variable market Commodity and Basis
     - Commodity/NYMEX = National index trading point at Henry Hub in Louisiana
     - Basis is the price differential between Henry Hub and a specific location (e.g. Chicago Citygate)
2. Delivery service from LDC
   - Includes pipeline charges
   - All LDC charges, including pipeline charges, are straight pass through and would be the same regardless of NG supplier

- Participants can receive one consolidated invoice

Types of Commodity Price

1. **Fixed Price Gas**
   - Locked positions / Hedges (% of forecasted usage)
   - Consists of Commodity and Basis Futures

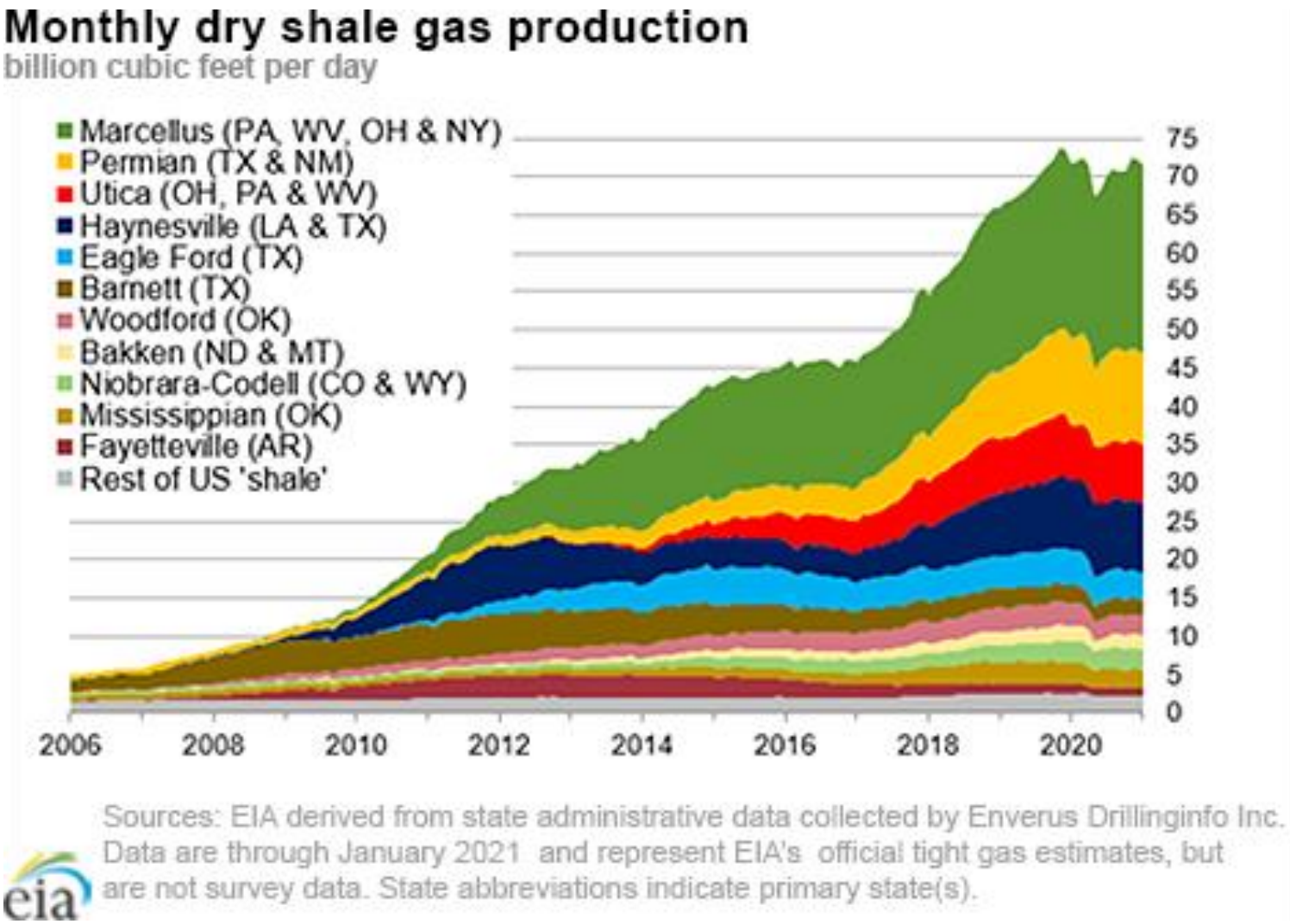
2. **First of Month (FOM) Index Gas**
   - Physical gas delivery priced at published market indices + specified contract adder (excluding Fixed amount)
   - Nominated in advance so there will always be an imbalance between expected usage and actual usage (due to weather for example)
   - Percent of FOM Index = 100% – Locked%

3. **Weighted Average Cost of Gas (WACOG)**
   - Total cost of natural gas purchased during a period divided by the total quantity purchased
   - Suppliers will purchase gas at different times and different amounts and for many customers

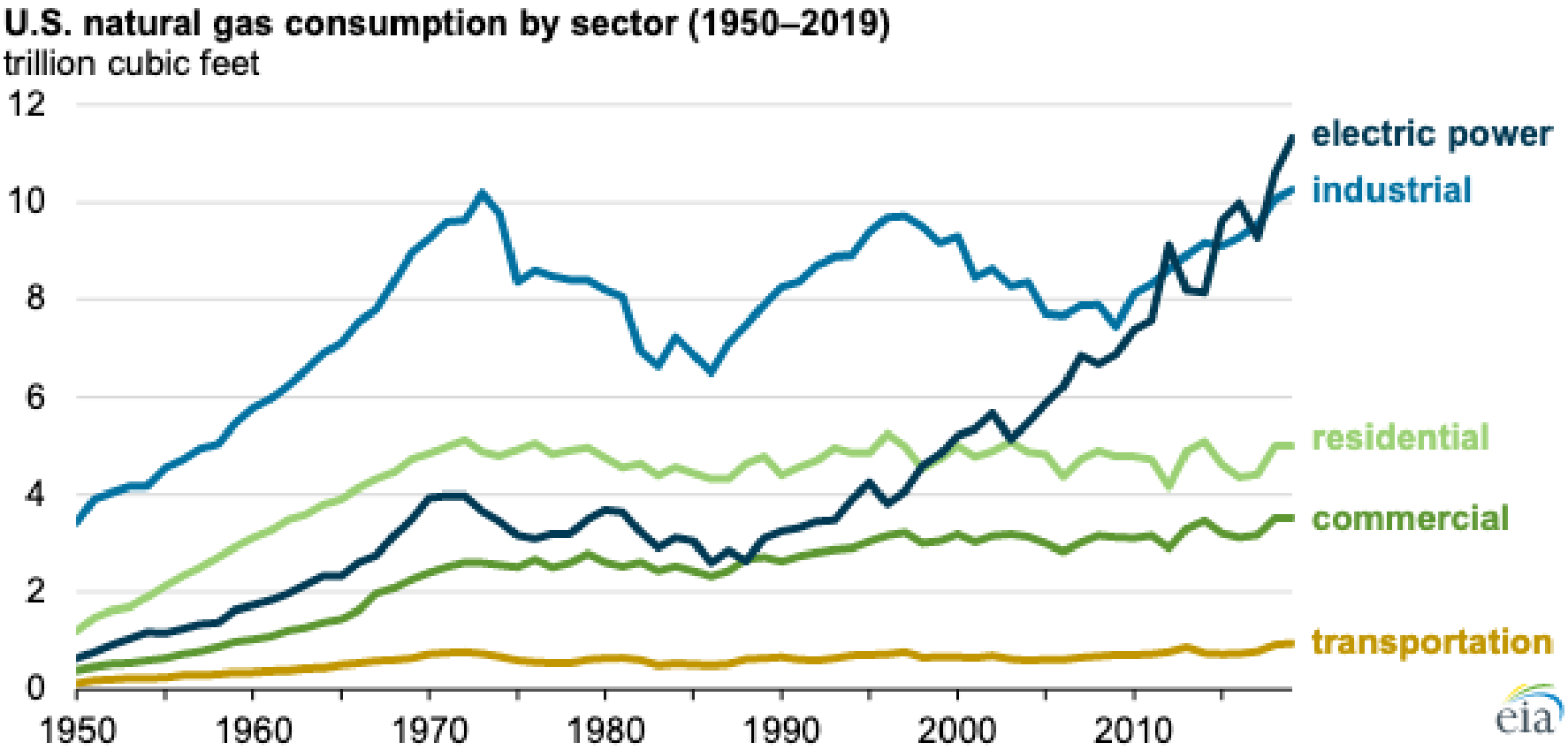
4. **Post-month Cashout Gas (Balancing)**
   - Gas bought or sold AFTER ACTUAL usage is known
   - Physical gas bought/sold at a daily published index

- **Purchasing Strategies Can use any or all of the above**

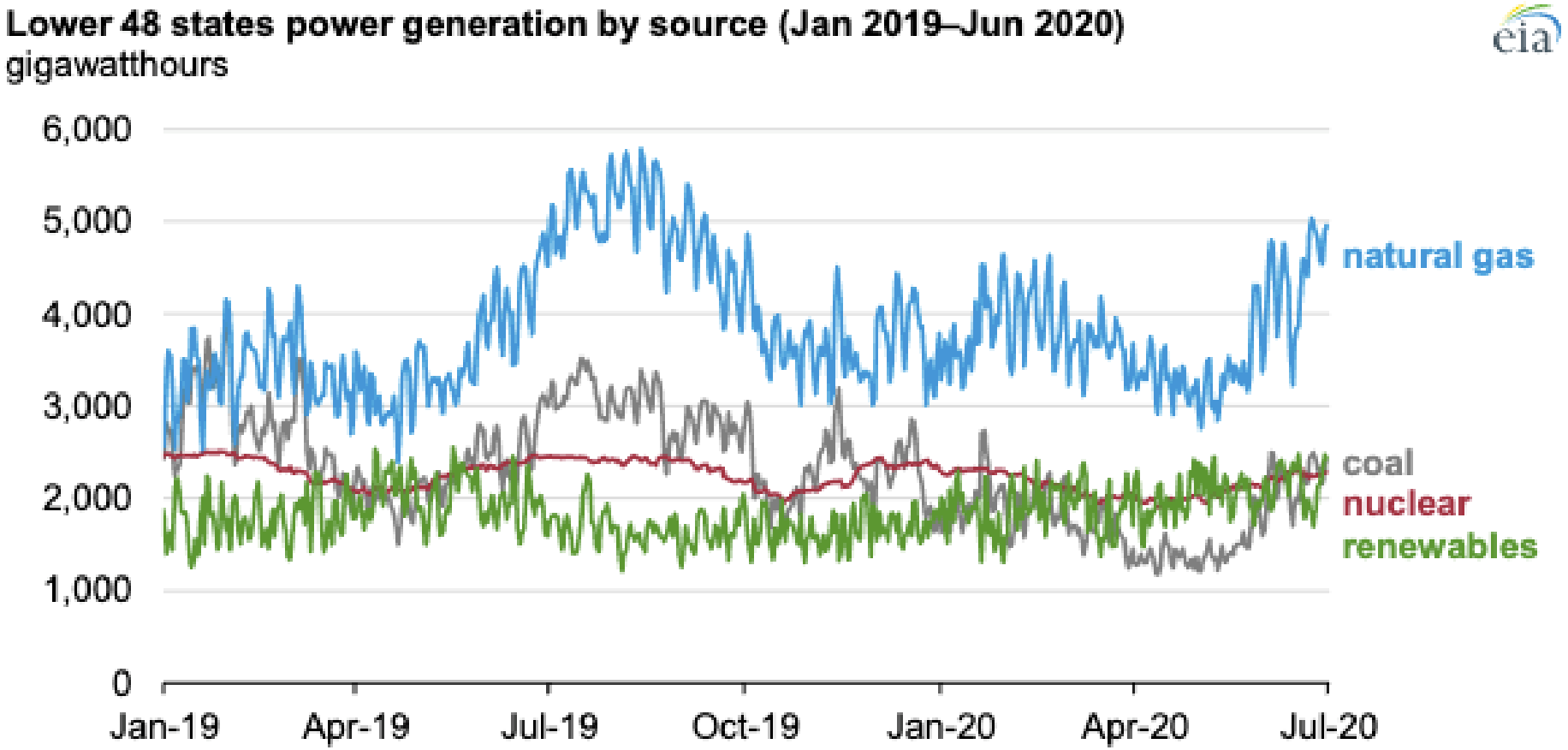
Natural Gas Production



Natural Gas Consumption



Natural Gas-Fired Electric Generation



Electric and Natural Gas Aggregation

Electric, Natural Gas Aggregation Consortium

- Economies of scale savings through bulk purchasing
- Directed by a committee of IAPA member representatives
- Cost savings over current supplier or recommendation not to switch
- Lower group-negotiated supplier fees and consolidated agreements
- Fixed and Transparent supplier markup regardless of market dynamics
- Annual bill reviews for accuracy confidence, rate verification, methods, volumes, etc.
- Trusted energy advisor who is independent of supplier (not a broker)
- Contract flexibility and portfolio of purchases mitigates individual price risk
- Availability of market intelligence for fixed-price decisions
- Pooled deliveries to mitigate utility purchased-used imbalance charges
- Consolidated account invoices on some utilities

Electric and Gas Industry Regulation

Regulatory Bodies

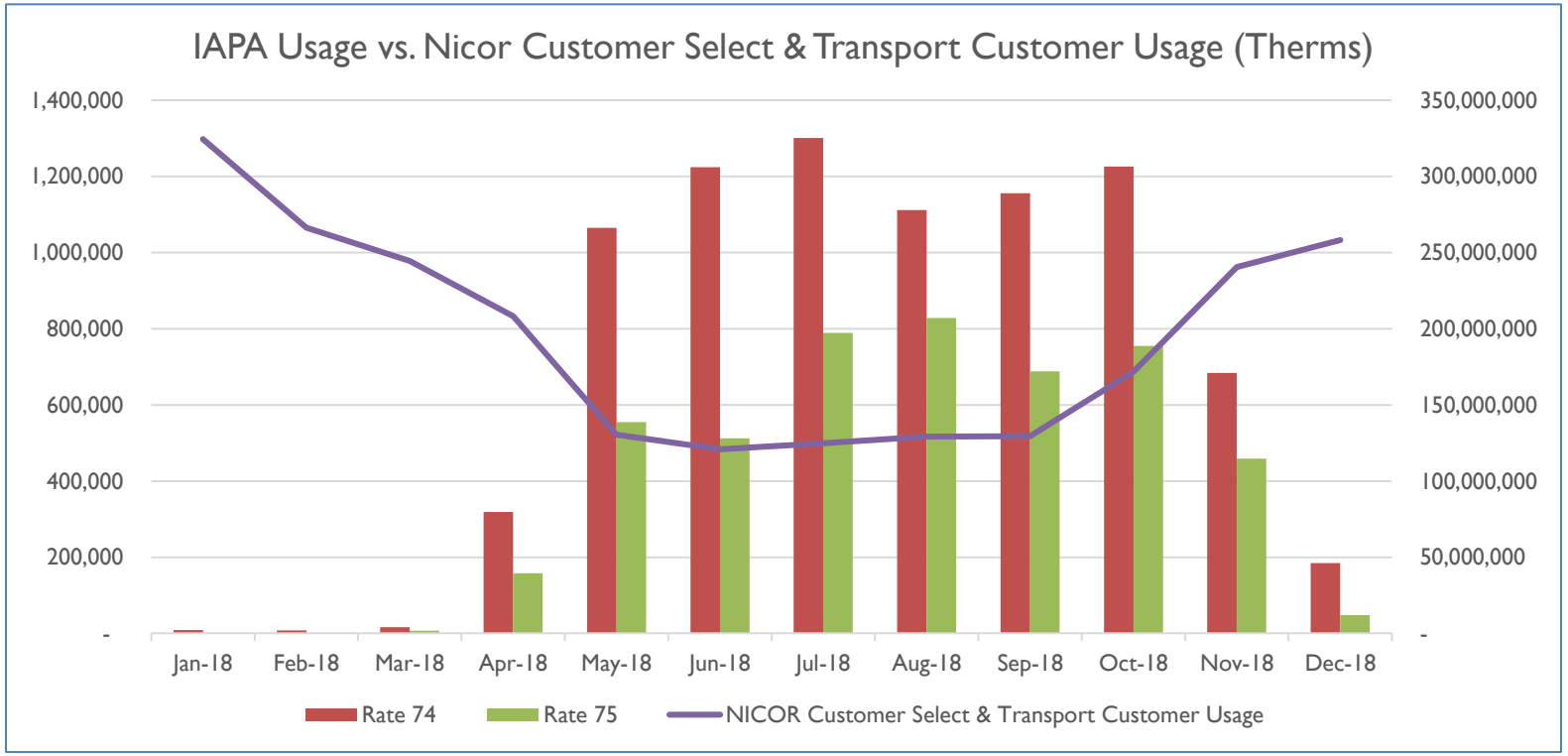
- Federal Level
  - Federal Energy Regulatory Commission (FERC)
    - Regulates the interstate transmission of electricity, natural gas, and oil
    - Reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines
- State Level
  - Varies some by state but is typically a governing body that regulates the rates and services of a public utility
  - Illinois Commerce Commission (ICC)

IL ICC: Nicor Gas Storage Case

- Nicor 2017 tariff filing - Docket No. 17-0124
  - ICC: "must be convinced that the storage fields are not subject to operational risk"
  - Directed Nicor Gas to prepare a storage study to assess the implications Transportation Customers' use
  - Nicor 2018 Storage Study - Docket No. 18-1775
  - Commission ordered Nicor Gas to initiate a separate proceeding by June 30, 2020 to propose revenue-neutral tariff changes to address issues raised by the Storage Study.
- Nicor 2020 Storage Revisions - Docket 20-0606
  - IAPA Intervened partnering with Grain & Feed Association of IL
  - Final Briefing is underway
  - Expecting ICC decision in May 2021

IAPA Activity in Nicor Storage Case

- Evaluated 29 IAPA accounts for usage and Nicor cost
- Demonstrated that IAPA load profile is not like most Nicor customers



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Nicor's Tariff Change Proposal

- Nicor proposed several tariff changes impacting Transportation Customers
  1. 30 Days of Storage Requirement
     - For 29 IAPA accounts reviewed, this along would have increased cost for the 2018-2020 period by more than $627,000
     - IAPA's intervention helped force Nicor to withdraw this request
  2. System Balancing Charge to Transportation Customers
     - For 29 IAPA accounts reviewed, this alone would have increased cost for the 2018-2020 period by $1,311,000
     - IAPA's intervention helped cause Nicor to reduce its proposed rate by almost 50%
  3. Daily and Monthly min/max withdrawal/injection requirements
     - IAPA usage is a function of the weather, can't adhere to these stringent requirements
  4. Punitive Cashout provisions would penalize customers for the imbalance caused by not correctly predicting usage
     - Again, IAPA usage is not able to be adequately modified to avoid these penalties
- IAPA's intervention will result in avoiding a substantial increase in reoccurring charges

February 2021 Polar Vortex

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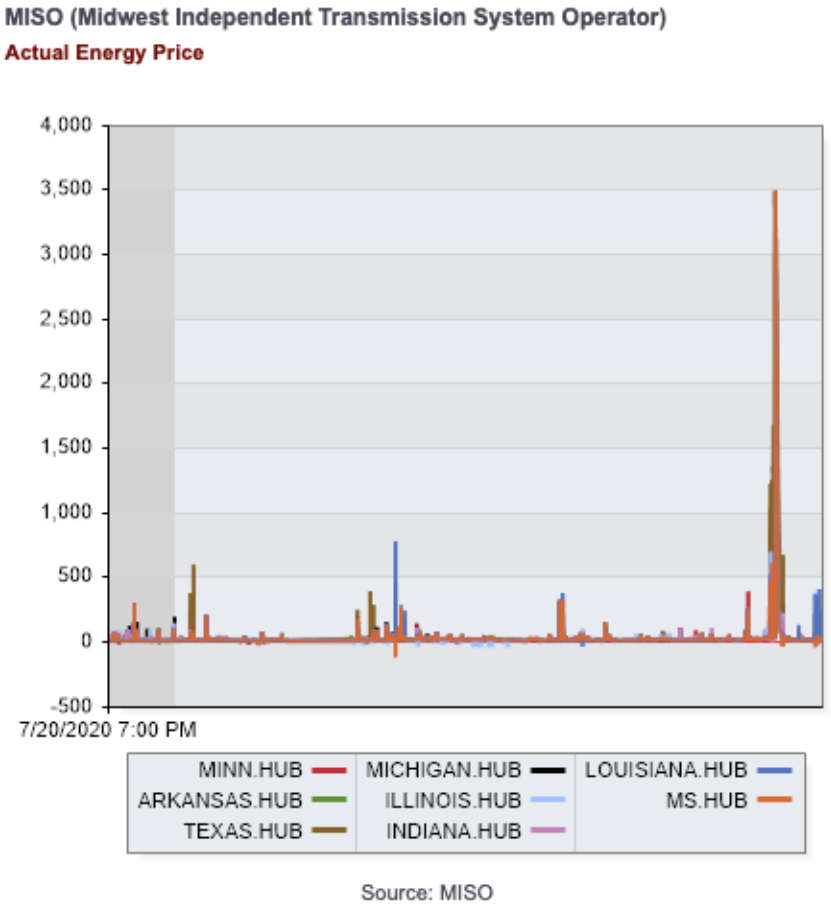
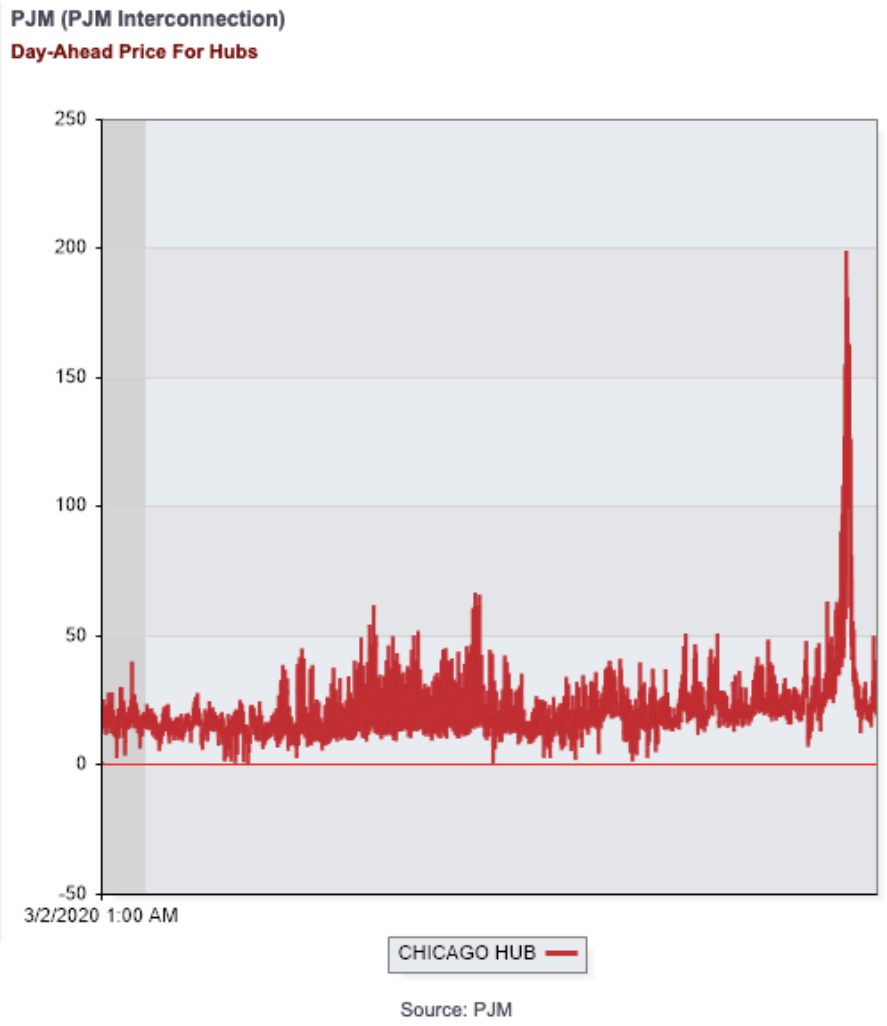
February 13-19, 2021 Polar Vortex

- Record-breaking cold across much of the U.S.
- Gas pipelines seized up, wind turbines in TX froze, oil wells were shuttered due to frozen water vapor
- Consumers raised demand for heating to record levels
- Prices of heating fuels, including oil and natural gas, surged
- Wholesale electricity prices in Texas skyrocketed to $9,000 a megawatt-hour, the maximum allowed in the market
- Natural gas spot prices reached $1,250 per MMBtu before falling back to around $4, in line with prices the prior week
- Ercot and SPP implemented rolling blackouts to save the grid
- MISO ordered controlled blackouts in AK, LA, MI and SE TX

Polar Vortex: MISO and PJM Electric Prices





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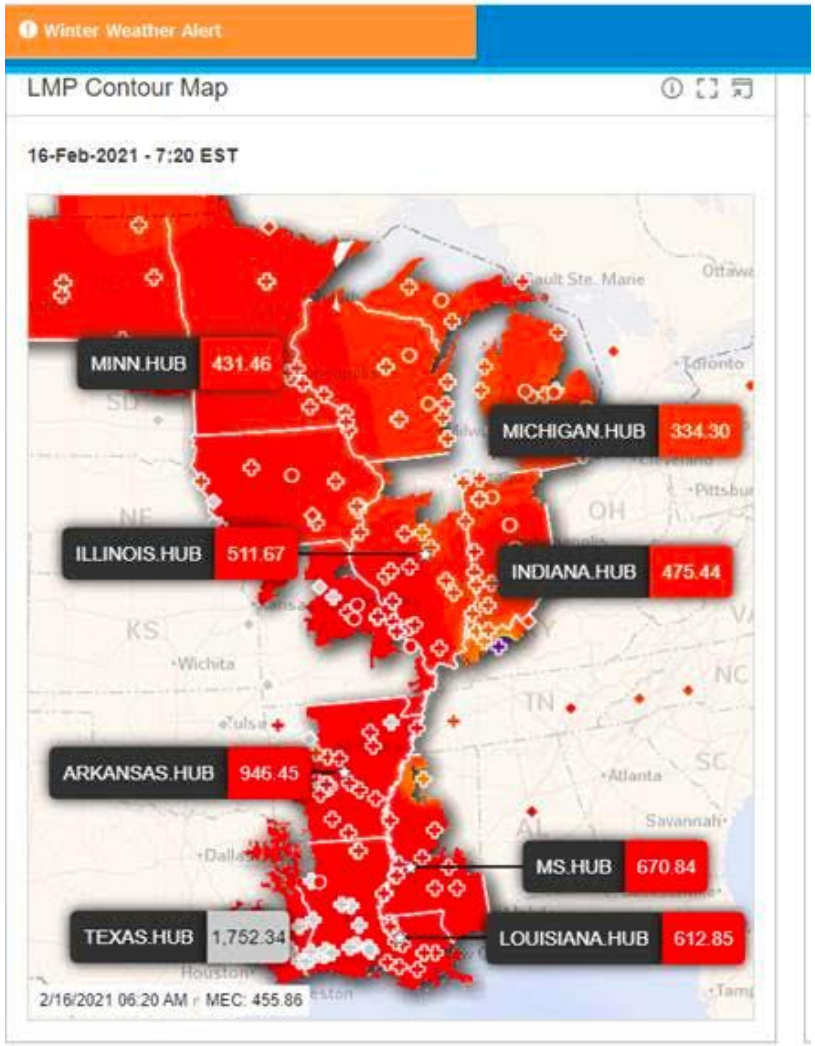
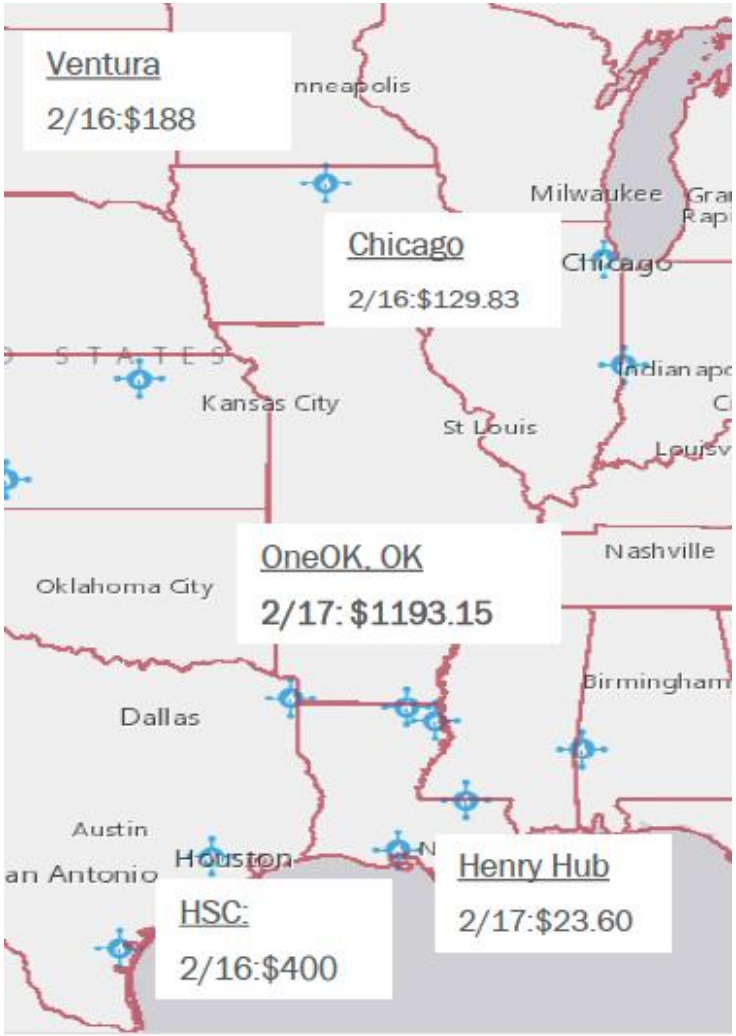
Polar Vortex: MISO Spot Market Prices



Polar Vortex: Midwest Natural Gas Spot Prices



Polar Vortex Cost Impacts

- Massive costs have been incurred on electricity and natural gas
- The largest and oldest power cooperative in Texas is filing for bankruptcy protection, many others have huge financial impacts and likely more bankruptcies will result, especially those who took unreasonable risks
- Centerpoint Energy reported $2.5B in incremental gas costs for February
- Black Hills reported $600M over forecasted February costs
- Exelon $750-$900M preliminary impact estimate
- Vistra $950M-$1.3B estimates one time impact

- Hedging purchases in the futures markets help provide some insurance against price spikes