



ELECTRICITY PRICE SUPPRESSION EFFECTS: AN EFFICIENCY BENEFIT IN ILLINOIS

STAKEHOLDER ADVISORY GROUP MEETING SPRINGFIELD, IL

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Chris Neme, Energy Futures Group
Paul Chernick, Resource Insight

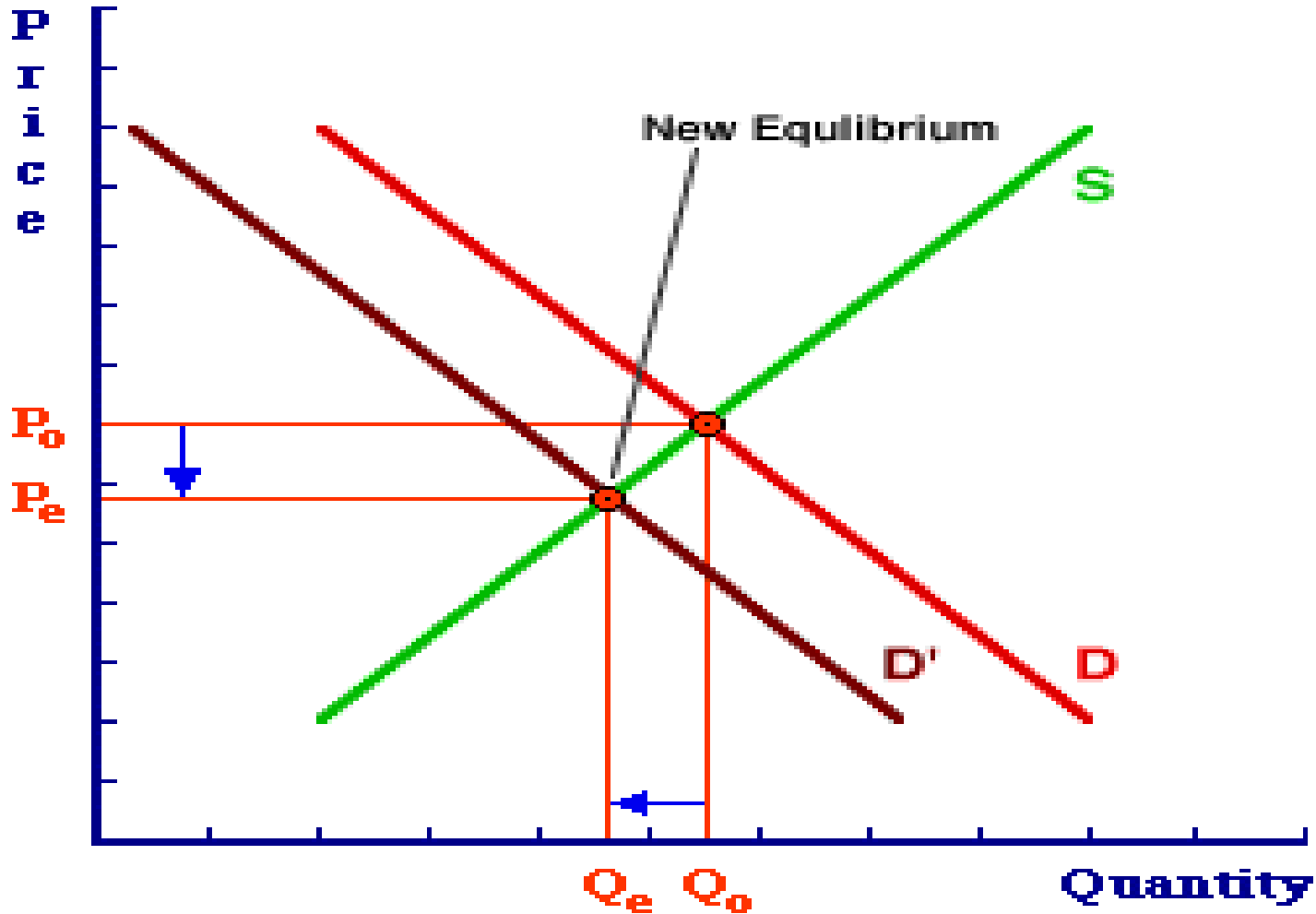
Summary

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- Economics 101: lower demand means lower prices
- NRDC study quantified effect for IL electric EE programs
- Lower price benefits all Illinois electricity consumers
- That benefit should be included in IL TRC screening

Conceptually Simple – Law of Supply & Demand

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Estimating IL Electric Price Suppression Effects

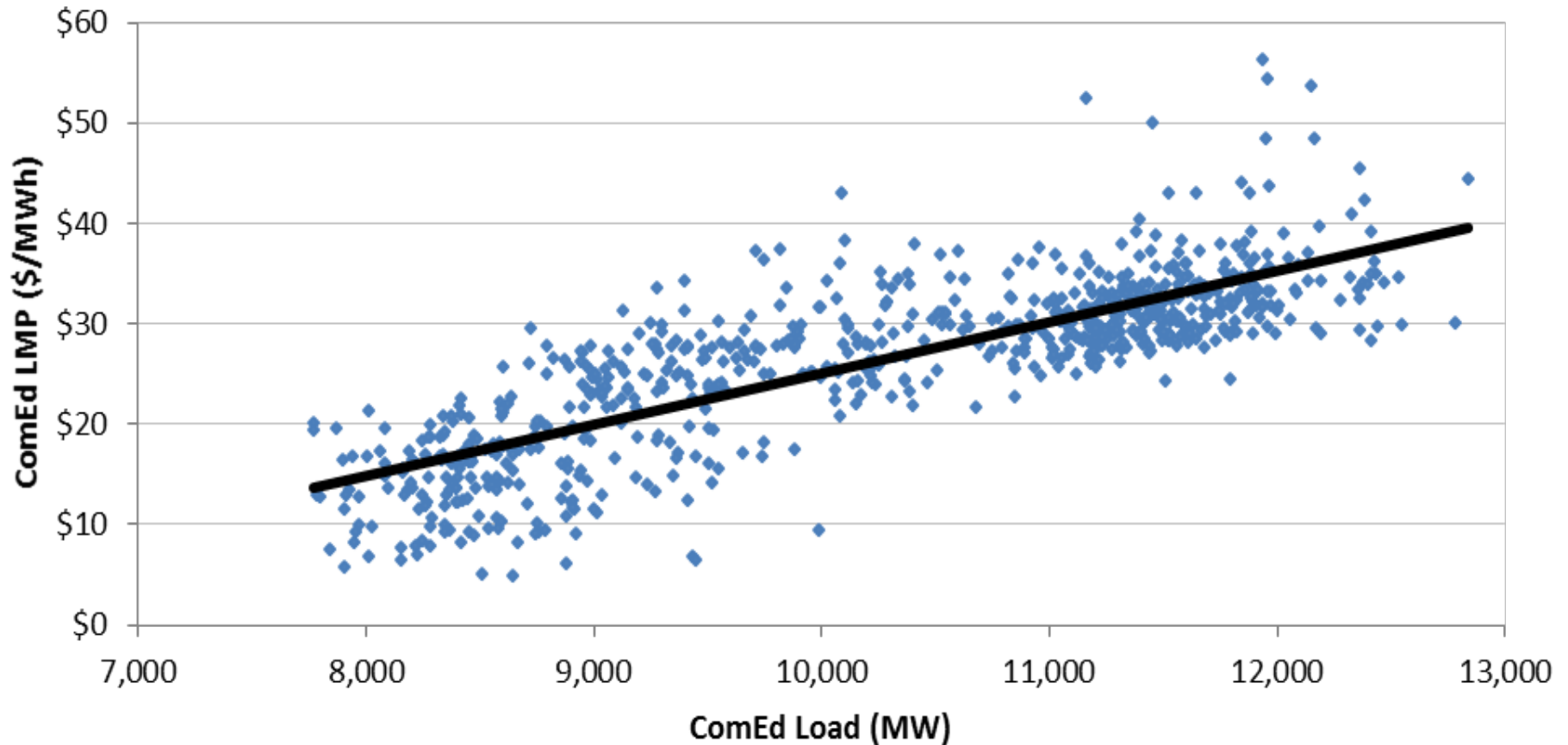
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1. Estimate effect of 1% reduction in load on price
 - ▣ Regress historical hourly prices as function of loads
 - ▣ Separately analyze on-peak and off-peak hours
 - ▣ July 2009 to December 2012 data from PJM, MISO
 - ▣ Adjust for % of regional load affected by IL EE
2. Adjust for short-term mitigation of effects by existing contracts
3. Adjust for erosion of effects over time due to several factors:
 - ▣ Price-induced demand increases
 - ▣ Accelerated plant retirements, delayed capacity adds
 - ▣ Shift in new capacity to peakers (higher energy prices)

Effect of Load on Price - Example

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ComEd LMP as Function of ComEd Load (October 2012)



Effect of Load on Price - Results

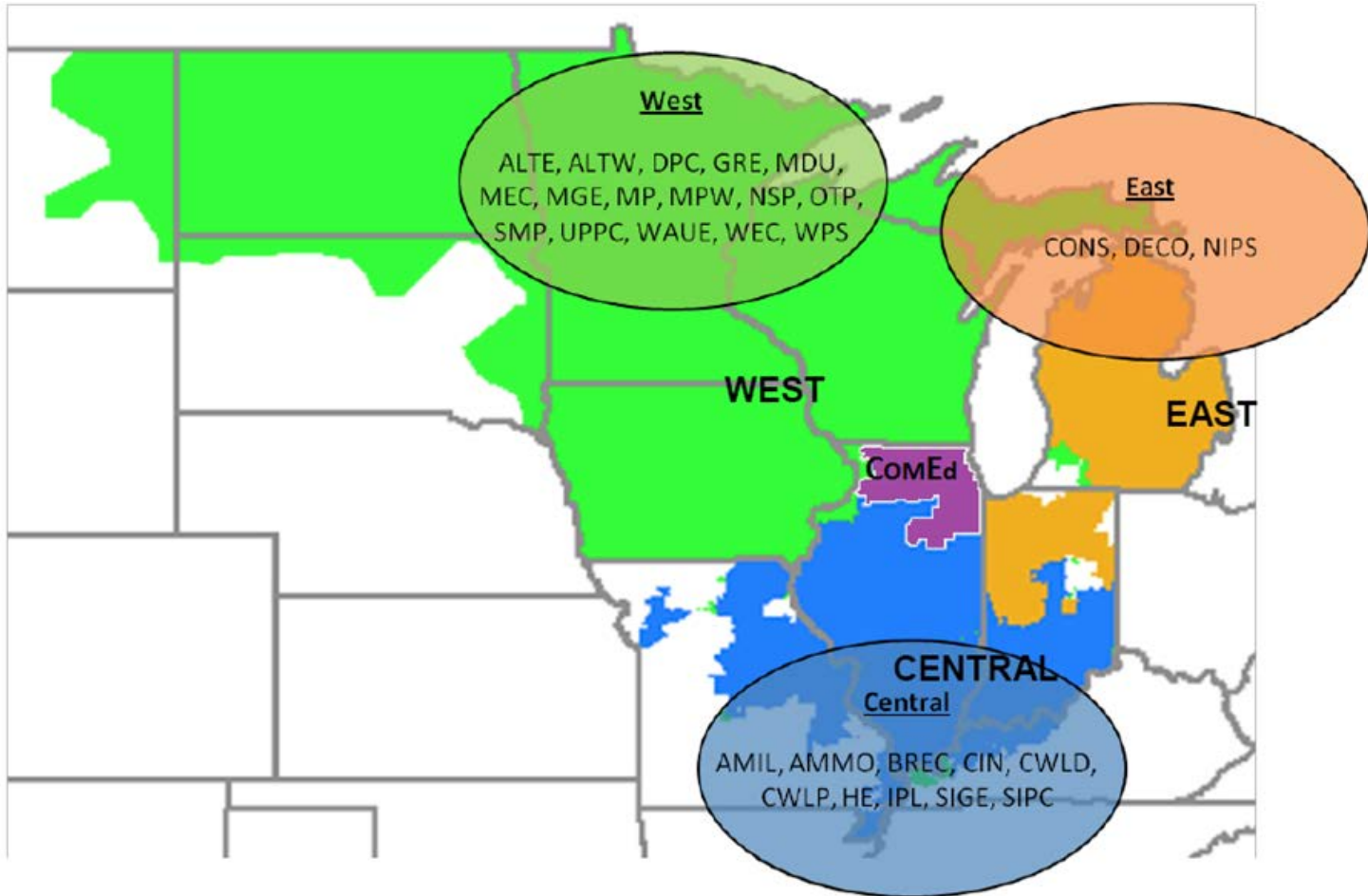
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- 1% Reduction in Load = ~2% Reduction in Price
 - Very consistent result across varying region definitions
 - For both on-peak and off-peak periods
 - For both ComEd and Ameren
- IL prices driven by loads in wider Midwest region
 - So 1% reduction in IL load alone reduces IL price <2%
 - The impact of IL EE on IL price proportional to IL share of load for total price-setting region

Regions Examined

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MISO Load Regions and PJM ComEd Zone



Which Regions Matter?

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- Difficult to say definitively
- So estimated range of price effects
 - ▣ ComEd + MISO Central (probably too small)
 - ▣ ComEd + All of MISO (probably too large)

	ComEd + All MISO	ComEd + Central MISO
ComEd Load as % of Region	17%	35%
Ameren Load as % of Region	7%	15%
Total IL	24%	50%
Price Impact of 1% Regional Load Reduction	-2.00%	-2.00%
Price Impact of 1% IL Load Reduction	-0.48%	-1.00%

ComEd load reduction affects Ameren prices and vice versa – both impacts addressed

Note: This example uses typical 2%. Our analysis uses all actual regression values.

Translating Price Reduction to Avoided Cost

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- 1% lower price has same total bill effect as 1% lower use
- Value of lower usage expressed in avoided energy costs
- Therefore, (additional) benefits of 1% drop in load
 - ▣ = ~100% of avoided energy costs
 - ▣ Effectively doubles avoided energy costs
- Thus, IL EE price suppression effects = ~50% to 100% of avoided energy costs before adjusting for...
 - ▣ short-term price hedging (fixed contracts)
 - ▣ long-term erosion effects

Short-Term Price Hedging Effects

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- IPA 2013 Procurement Plan suggest goal of hedging:
 - 75% of energy in current year
 - 50% for next year
 - 25% for year after that
- Difficult to assess hedging by competitive retailers
 - Res. customers offered fixed rates for 1 to 24 months
 - Bus. customers offered both fixed price & indexed products
 - But little info available on distribution of contracts by duration
- Study assumes
 - 60% hedged 1st year
 - 40% hedged 2nd year
 - 20% hedged 3rd year
 - 2% hedged subsequent years

Long-Term Erosion of Price Suppression Effects

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- Price elasticity of demand - offsets 1½ -3% of effect

 - Pressures on power plant fleet:
 - to increase retirements
 - to delay construction
 - to defer improvements
 - to shift mix more to peakers
- Assumed to decay price suppression effects by:
- 5%/year for first 5 yrs
 - 10%/year thereafter
 - no effect after year 12
- Consistent w/ New England avoided cost study

Net Effect of All Adjustments

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- Depends on measure life:
 - 5 years: 30% to 60% increase in energy avoided costs
 - 10 years: 30% to 50% increase in energy avoided costs
 - 15 years: 20% to 40% increase in energy avoided costs
 - 20 years: 20% to 35% increase in energy avoided costs

Note: all estimates above assume a real discount rate of 6%

Effects Not Addressed by Current Study

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- Suppression of electric capacity prices (\$/MW-day)
- Suppression of gas prices from reduced electric demand
 - To extent gas power plants are on the margin & run less
- Suppression of gas prices from gas efficiency programs
 - Lowers price of gas purchased by consumers
- Reduction of electric prices from reduced gas price
 - Lower cost to gas generators → savings to electric consumers

Are Price Suppression Effects a TRC Benefit?

National Expert Opinion

	PAC Test	TRC Test	Societal Cost Test
Energy Efficiency Program Benefits:			
Avoided Energy Costs	Yes	Yes	Yes
Avoided Capacity Costs	Yes	Yes	Yes
Avoided Transmission and Distribution Costs	Yes	Yes	Yes
Wholesale Market Price Suppression Effects	Yes	Yes	Yes
Avoided Cost of Environmental Compliance	Yes	Yes	Yes
Reduced Risk	Yes	Yes	Yes
Other Program Impacts (utility-perspective)	Yes	Yes	Yes
Other Program Impacts (participant-perspective)	---	Yes	Yes
Other Program Impacts (societal-perspective)	---	---	Yes
Energy Efficiency Program Costs:			
Program Administrator Costs	Yes	Yes	Yes
EE Measure Cost: Program Financial Incentive	Yes	Yes	Yes
EE Measure Cost: Participant Contribution	---	Yes	Yes
Other Program Impacts (participant costs)	---	Yes	Yes

Woolf, Tim et al. (Synapse Energy Economics), "Energy Efficiency Cost-Effectiveness Screening in the Northeast and Mid-Atlantic States: A Survey of Issues and Practices, With Recommendations for Developing Guidance to the Regional Evaluation, Measurement and Verification (EM&V) Forum", prepared for the Regional EM&V Forum, a project of the Northeast Energy Efficiency Partnerships, October 2, 2013.

IL Legislative Language on Cost-Eff Test

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TRC test *“compares the sum of avoided electric utility costs, **representing the benefits that accrue to the system and the participant in the delivery of those efficiency measures, as well as other quantifiable societal benefits...**”*

- Lower bills for all customers are a benefit to the system
- Impacts on supplier profits are generally excluded from “the system” in regulatory decision-making:
 - when evaluating QF rates and IPP contracts
 - when selecting T&D equipment
 - when reviewing IPA’s procurement – of both energy and efficiency
 - when determining cost of DSM contractor services

Q&A

Chris Neme
Energy Futures Group
cneme@energyfuturesgroup.
com
Phone: 802-482-5001
Cell: 802-363-6551

Paul Chernick
Resource Insight
[pchernick@resourceinsight.c
om](mailto:pchernick@resourceinsight.com)
Phone: 781-646-1505 x207



Results for Com Ed LMP as a Function of Load

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	Load Coefficients			
	ComEd Load	ComEd + MISO	ComEd + Central MISO	ComEd + Central MISO + East MISO
On-Peak regressions against load of				
1. ComEd	1.979			
2. ComEd + MISO		2.228		
3. ComEd + Central MISO			1.989	
4. ComEd + Central MISO + East MISO				2.080
Off-Peak regressions against load of				
1. ComEd	1.519			
2. ComEd + MISO		2.155		
3. ComEd + Central MISO			1.824	
4. ComEd + Central MISO + East MISO				2.151

Results for MISO IL LMP as a Function of Load

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	Load Coefficients	
	ComEd + MISO	ComEd + Central MISO
On-Peak regressions against load of		
1. <u>ComEd+MISO</u>	2.430	
2. <u>ComEd+Central MISO</u>		2.051
Off-Peak regressions against load of		
1. <u>ComEd+MISO</u>	2.359	
2. <u>ComEd+Central MISO</u>		2.103

Full IL Legislative Language on



TRC

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- TRC test “*compares the sum of avoided electric utility costs, **representing the benefits that accrue to the system and the participant** in the delivery of those efficiency measures, as well as other quantifiable societal benefits, including avoided natural gas utility costs, to the sum of all incremental costs of end-use measures that are implemented due to the program (including both utility and participant contributions), plus costs to administer, deliver, and evaluate each demand-side program, to quantify the net savings obtained by substituting the demand-side program for supply resources. In calculating avoided costs of power and energy that an electric utility would otherwise have had to acquire, reasonable estimates shall be included of financial costs likely to be imposed by future regulations and legislation on emissions of greenhouse gases.*”(emphasis added)