



Market Monitoring Issues NICA Integration

EMC
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NICA Market Analysis

- MMU Report on competitiveness of markets after NICA integration
 - Issued August 7
- Analysis of expected market conditions post integration
- Expected competitiveness of NICA markets post integration

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- NICA area analysis
 - Components
 - Unit details
 - Unit ownership
 - Bilateral contracts
 - Load data
 - Tie flow data
 - Results
 - Supply curves
 - HHIs
 - Pivotal analyses

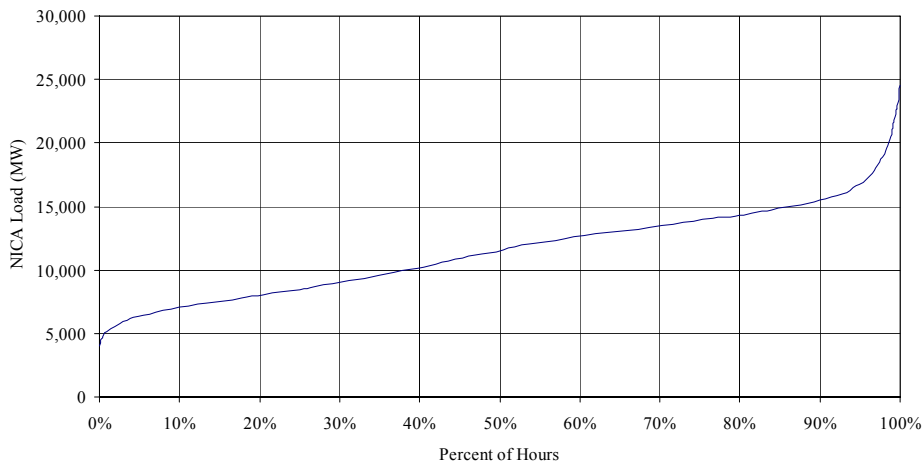
- Eastern Interconnection analysis
 - Components
 - Unit details
 - Transmission system
 - Economic dispatch
 - Hurdle rates
 - Pathway
 - Results
 - Flows on pathway
 - Dispatch

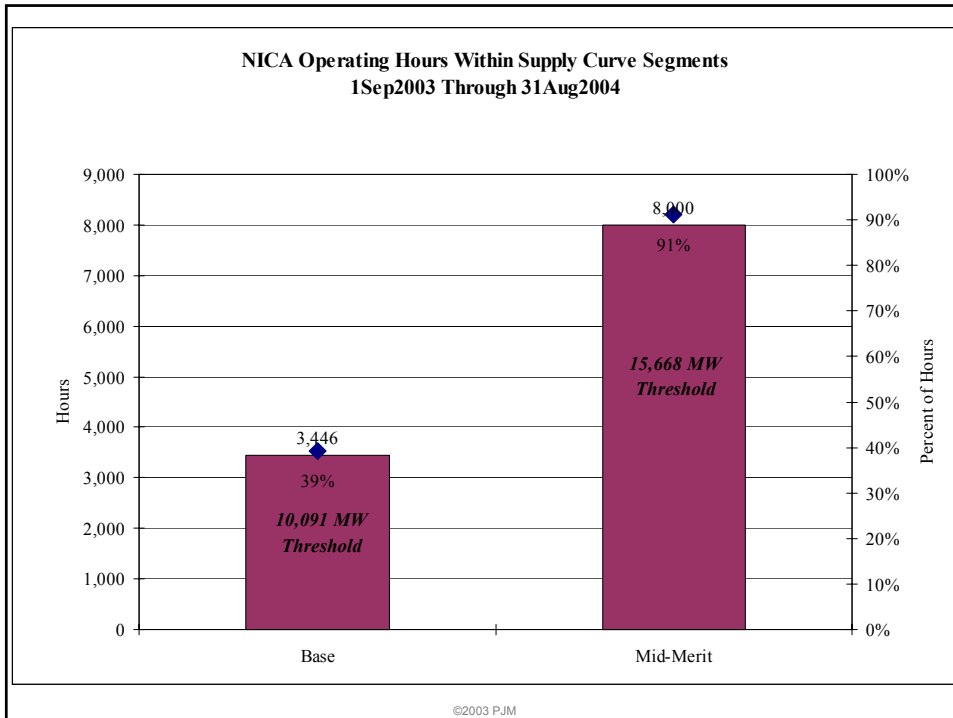
- Analysis
 - Energy Market
 - Capacity Market
 - Regulation Market
 - Spinning Reserves Market
 - Blackstart Market
 - Reactive Market

- Energy Market: Market Conditions
 - Relevant market
 - NICA market
 - PJM market
 - Surrounding control areas
 - Role of through and out transmission rates

- NICA Energy Market
 - Highly concentrated ownership in base load and mid-merit portion of the supply curve
 - Market power concern in absence of external competitive pressures
 - PJM area via pathway
 - External control areas via imports
- PJM Energy Market
 - Competitive results

**NICA Load Duration Curve
01Sep03 Through 31Aug04**

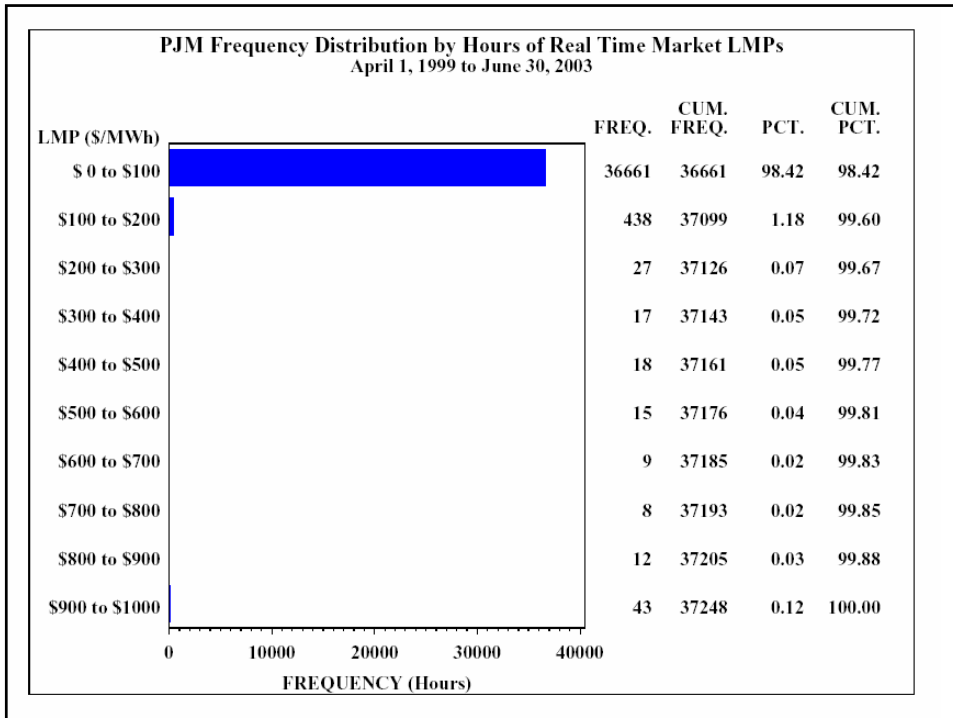




- **Unconstrained Pathway**
 - NICA and PJM areas jointly dispatched
 - Single energy market
 - Market results expected to be competitive
 - Simulation results
 - Pathway unconstrained 30% of hours under higher hurdle rate scenario
 - Pathway unconstrained 15% of hours under lower hurdle rate scenario

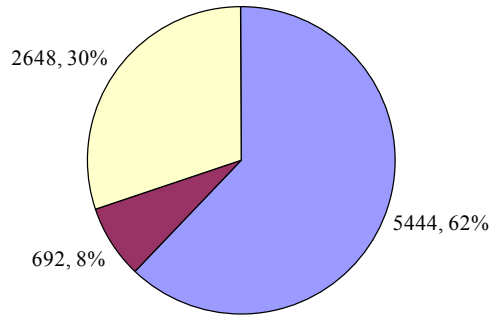
- Pathway Constrained: NICA to PJM – normal market conditions in PJM
 - Marginal generation cheaper in NICA than in PJM
 - Flows from NICA to PJM
 - Competitive constraint on NICA offers from PJM offers
 - Market results expected to be competitive under normal market conditions
 - Simulation results
 - Pathway constrained NICA to PJM 60% of hours under higher hurdle rate scenario
 - Pathway constrained NICA to PJM 80% of hours under lower hurdle rate scenario

- Pathway Constrained: NICA to PJM – extreme market conditions in PJM
 - Marginal generation cheaper in NICA than in PJM
 - Flows from NICA to PJM
 - Extreme demand conditions in PJM
 - Normal demand conditions in NICA
 - PJM offers do not provide competitive constraint on NICA offers
 - Market power concerns in NICA under extreme market conditions in PJM
 - Simulation Results/Historical analysis
 - Pathway constrained NICA to PJM 60% of hours under higher hurdle rate scenario
 - Pathway constrained NICA to PJM 80% of hours under lower hurdle rate scenario
 - PJM system prices >\$500/MWh for 0.19% of hours since April 1, 1999
 - Expected duration of this scenario is very short



- Pathway Constrained: PJM to NICA
 - Marginal generation cheaper in PJM than in NICA
 - Flows from PJM to NICA
 - No competitive constraint on NICA offers from PJM offers
 - Load in highly concentrated portions of NICA supply curve
 - Potential competition from non-pathway imports
 - Market power concerns in NICA
 - Simulation results
 - Pathway constrained PJM to NICA 10% of hours under higher hurdle rate scenario
 - Pathway constrained PJM to NICA 5% of hours under lower hurdle rate scenario

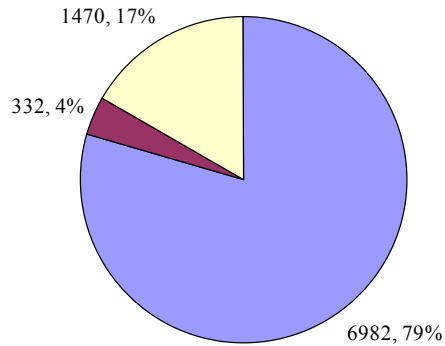
**Pathway Congestion Hours
15/9 Hurdle Rate
1Sep2003 - 31Aug2004**



■ NICA-PJM ■ PJM-NICA ■ Unconstrained

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**Pathway Congestion Hours
Variable Hurdle Rate
1Sep2003 - 31Aug2004**



■ NICA-PJM ■ PJM-NICA ■ Unconstrained

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- **Monopsony Market Power**
 - Single large buyer of energy
 - Potential concerns
- **Local Market Power**
 - Local market power issues may emerge in NICA
 - Inadequate data to evaluate expected frequency or duration
 - Ongoing analysis

- **Market Power Mitigation – NICA Energy Market**
 - Unconstrained pathway
 - No mitigation necessary
 - Pathway constrained: NICA to PJM
 - No mitigation necessary during normal demand conditions in PJM
 - Mitigation necessary during extreme demand conditions in PJM but not in NICA
 - Pathway constrained PJM to NICA
 - Mitigation necessary

- **Market Power Mitigation – NICA Energy Market**
 - Monopsony issue
 - No automated mitigation measures
 - Local market power
 - Cost capping
 - All units with local market power included

- **Capacity Market: Transition mechanism**
 - Through May 2004
- **Capacity Market: Market Conditions post Transition**
 - Relevant market
 - NICA market
 - PJM market

- NICA Capacity Market
 - Concentrated ownership
 - Pivotal suppliers
 - Capacity market issues
 - Market power concern

- Market Power Mitigation – NICA Capacity Market
 - Offers limited to marginal cost
 - Definition of marginal cost is inclusive
 - Direct costs
 - Opportunity costs
 - Risk
 - Pricing during shortage periods
 - Monopsony issue

- **NICA Regulation Market: Market Conditions**
 - Relevant market: Internal to NICA
 - Highly concentrated ownership
- **NICA Regulation Market: Market Power Mitigation**
 - Cost based market
 - Market clearing price
 - Costs include opportunity costs

- **NICA Spinning Reserves Market: Market Conditions**
 - Relevant market: Internal to NICA
 - Highly concentrated ownership
- **NICA Spinning Reserves Market: Market Power Mitigation**
 - Structure market like that in PJM
 - Tier 1 price: LMP plus adder during spinning events
 - Tier 2 price: Availability price based on costs, plus a defined margin, plus opportunity costs

- **NICA Blackstart Market: Market Conditions**
 - Relevant market: Internal to NICA
 - Structural conditions do not support market solution
- **NICA Blackstart Market: Market Power Mitigation**
 - Structure like that in PJM
 - Blackstart services provided based on unit-specific costs per tariff

- **NICA Reactive Market: Market Conditions**
 - Relevant market: Internal to NICA
 - Structural conditions do not support market solution
- **NICA Reactive Market: Market Power Mitigation**
 - Structure like that in PJM
 - Reactive services provided based on unit-specific costs per FERC-approved rate

- Summary of MMU Conclusions
 - NICA energy market expected to be competitive under most conditions (90 to 95% of hours)
 - MMU will propose specific market power mitigation measures that would be applied to the aggregate energy market if required
 - Market power mitigation measures in the aggregate energy market must balance the prevention of market power and ensuring a competitive market price signal

- Summary of MMU Conclusions
 - NICA capacity market is not expected to be competitive
 - MMU will propose specific market power mitigation measures
 - Capacity market power mitigation measures must balance the prevention of market power and ensuring a competitive market price signal

- Summary of MMU Conclusions
 - NICA regulation market is not expected to be competitive
 - MMU proposes that the regulation market be cost based until conditions for competitive market evolve
 - NICA spinning reserves market is not expected to be competitive
 - MMU proposes that the spinning reserves market be structured as it is in the PJM Eastern Region

- Summary of MMU Conclusions
 - NICA blackstart services market is not expected to be competitive
 - MMU proposes that the blackstart services market be cost based per the PJM tariff
 - NICA reactive services market is not expected to be competitive
 - MMU proposes that the reactive services market be cost based per FERC approved rates