

***FERC-State
NY/NE Joint Board Meeting***

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On behalf of the Neptune Project

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Neptune

- **Neptune**
 - 660MW HVDC from PJM to Long Island
 - Paradigm for development of an independent transmission project
 - Enables LIPA to diversify its sources of both capacity and energy



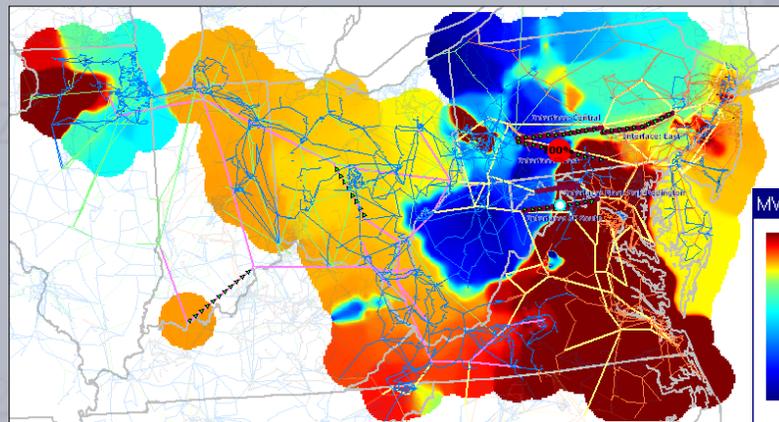
Perfect Markets?

- **Perfect markets, like perfect love and perfect government, exist only in people's imagination**
 - The restructuring of power markets is like the evolution of the MS Office suite; We are on version 2.5
- **Nevertheless, the evolution of power markets general and economic dispatch in particular in the Northeast has created a better platform for “dynamic innovation”**
 - Restructuring a complex industry is the work of a generation; we are still in the early days
- **Next ten years**
 - We are nearing an “angle of repose” in which regulation and wholesale competitive markets co-exist
 - Transmission is key...but in new ways

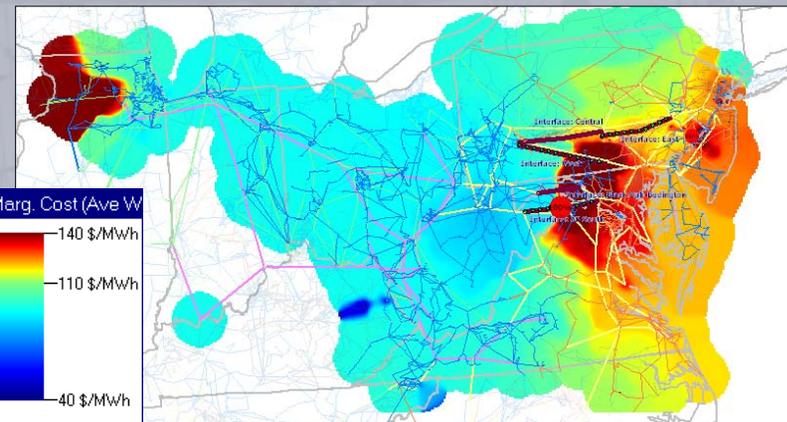
Economic Dispatch

- Quantitative and qualitative benefits of expansion of competitive markets have been realized – energy market effects

Pre-Integration Price Pattern



Post-integration Energy Price Pattern



This is an output from a PowerFlow model of the Expanded PJM Market before and after the effects of PJM integration – largely optimized Security Constrained Economic Dispatch across the expanded market – are realized. From Energy Security Analysis, Impact of the PJM RTO Market Expansion, available at <http://www.pjm.com/documents/downloads/reports/20051101-impact-pjm-expansion.pdf>

Economic Dispatch in NY/NE

- **Possible improvements to current economic dispatch practices**
 - Capacity market design
- **Weaknesses that currently exist that should be a high priority for improving**
 - Capacity market design; transmission development
- **Improvements that have been requested that the RTOs have not addressed**
 - Capacity market design; rules for transmission development
- **If we could start from scratch, how should economic dispatch be facilitated in NY/NE**
 - Capacity market design

Transmission

- **The next wave of benefits depends on the extent of transmission development**
 - Transmission determines capacity value...market depth and liquidity
- **Transmission paradigm shift is underway**
 - Historically, cities were the hosts for central power stations; today, cities don't want new ones and want to close the old ones down.
 - Recent construction of urban power plants difficult
 - Usually, we don't explicitly try to create diversity in generation portfolio; in the future, we will do so

Transmission

- **The three drivers of future transmission development**
 - Reliability ... RTEPs are suitable vehicles
 - Usually, large reliability projects have HUGE economic impact
 - Bringing power to the cities
 - Build power plants outside the cities and transmission into the cities
 - NStar and NU projects, Cross Sound Cable, and Neptune are all manifestations of the transmission needs of urban areas
 - Consciously valuing generation diversity
 - Transmission development is the key to enhancing future generation diversity...away from exclusive dependence on natural gas
 - Large scale wind development
 - PJM's Mountaineer concept would ultimately benefit NY City and Long Island

Transmission Development

- **LICAP and RPM – combined with some essential long-term contracting -- will ultimately be used as mechanisms to accomplish these objectives**
 - Bringing power to cities:
 - New York rules and PJM's RPM allows transmission projects to monetize how they reduce or satisfy locational capacity requirements
 - Valuing generation portfolio diversity
 - The cost of transmission projects needed to bring wind, coal, and nuclear power into the generation mix can be allocated in part to the projects themselves and in part to the network

Transmission Development

- **Long-term contracts**
 - Pendulum of contractual necessity
 - Five years ago, no need for long-term contracts
 - Today, peak need for long term contract
 - Even so, some deals are getting done on shorter tenors with some merchant exposure
 - Five years from now, with LICAP/RPM/Capacity demand curves approved and with some operating record, diminishing need for long-term contracts

Transmission

NE/NY reliability, efficiency of economic dispatch, and generation diversity depend on transmission development

- **New England**

- Active RTEP
 - Several major projects underway
 - Most costs shared across the pool
 - “works” in New England
- Transmission projects affect generation value
- Hence the need for LICAP

- **New York**

- Active transmission contracting by LSEs in load pockets
 - CSC, Neptune, others
 - Economically driven
 - Beneficiary pays
 - “works” in New York
- Transmission projects affect generation value
- Hence the need for Demand Curve

Economic Dispatch in NY/NE

- **Further consolidation of economic dispatch by integrating the two NY and NE dispatch systems into one system**
 - Not worth pursuing large-scale integration from the “top down” at this point
 - Keep focus on dealing with more specific “seams” issues
 - New England and New York are simply too different to try to integrate into a “joint and common” market

Conclusions

- **Restructuring is Work of a Generation**
 - After less than 10 years of introducing competition to electric markets, impacts of innovations in the NE/NY power markets are still in the early stages.
 - Relationship between regulation and competition will continue to evolve as LICAP/RPM and transmission development proceed
 - Markets are far from “free” but that is normal... trick is to find an “angle of repose” that works
- **Ultimately, the benefits of maximum practical extent of competitive power markets are ... “priceless”**