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Capacity Allocation

Hon. Mark Vannoy, Commissioner
Maine Public Utilities Commission

March 26, 2014



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Importance and Purpose

- Transmission and Generation are pieces of an overall system
- Economic optimization of the “machine” depends upon market price formation
- The price formation signals must be visible, transparent, and non-discriminatory
- Inherent in the discussion of capacity allocation are views of keeping low cost generation export constrained by congestion in order to depress local pricing



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Approaches to Capacity Allocation and Congestion Management

Contract Path Model – physical transmission rights (PTR)

Point to Point Model – implicit flows with financial transmission rights (FTR)

Maine is a part of the Independent System Operator of New England's operational area which utilizes a point to point model with implicit flows



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Point to Point Model

- How does the point to point model work?
 - Rides on a robust wholesale energy market
 - Transmission allocation is implicit to generator dispatch
 - Locational Marginal Prices
 - Financial Transmission Rights market



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Locational Marginal Prices

$$\text{LMP} = \text{Cost of Generation} + \text{Congestion} + \text{Losses}$$

Losses – this is the line loss that occurs when you move power from one location to another over the transmission system

Congestion – any condition that occurs when insufficient transmission capacity is available to support delivery of the least cost resources to serve load

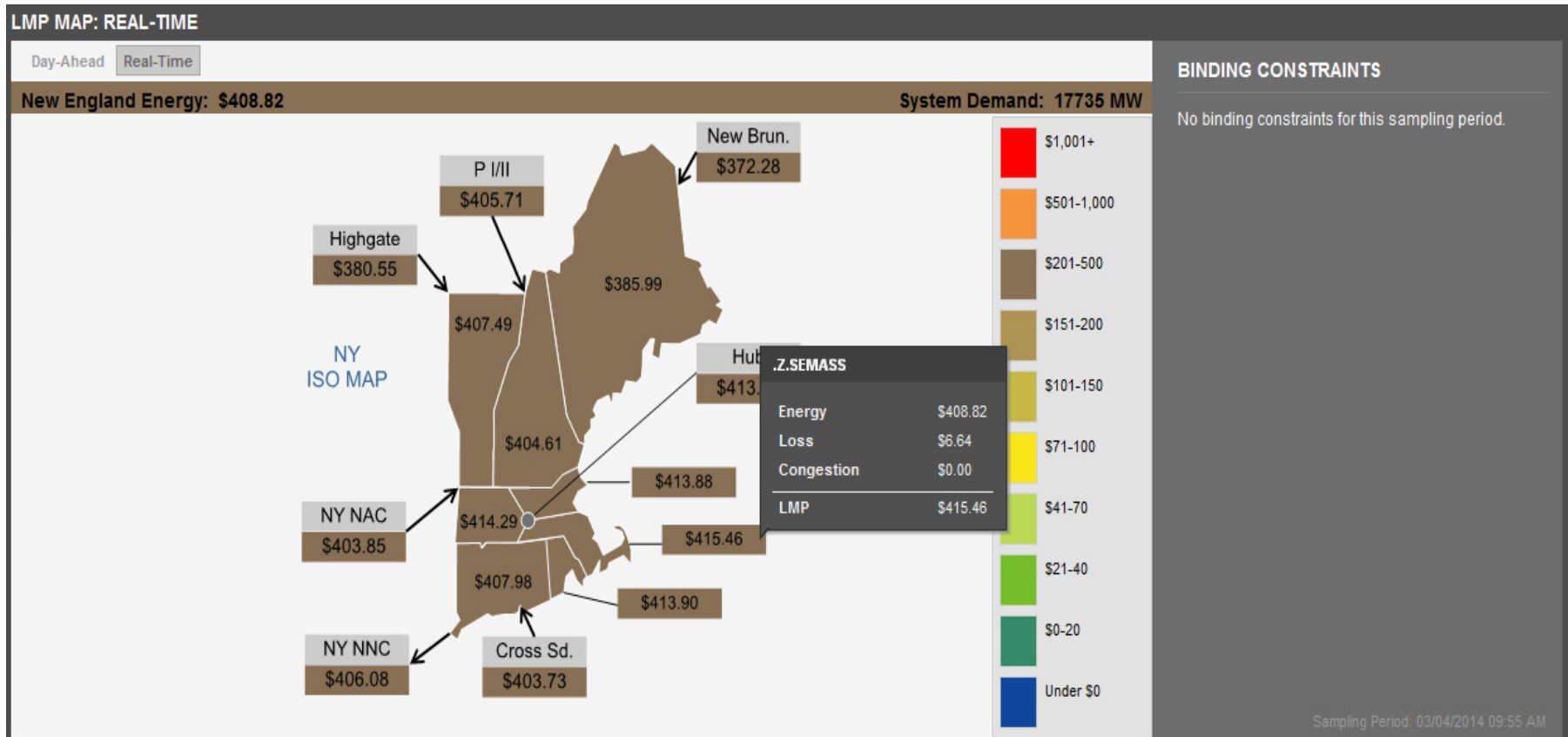


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Locational Marginal Price



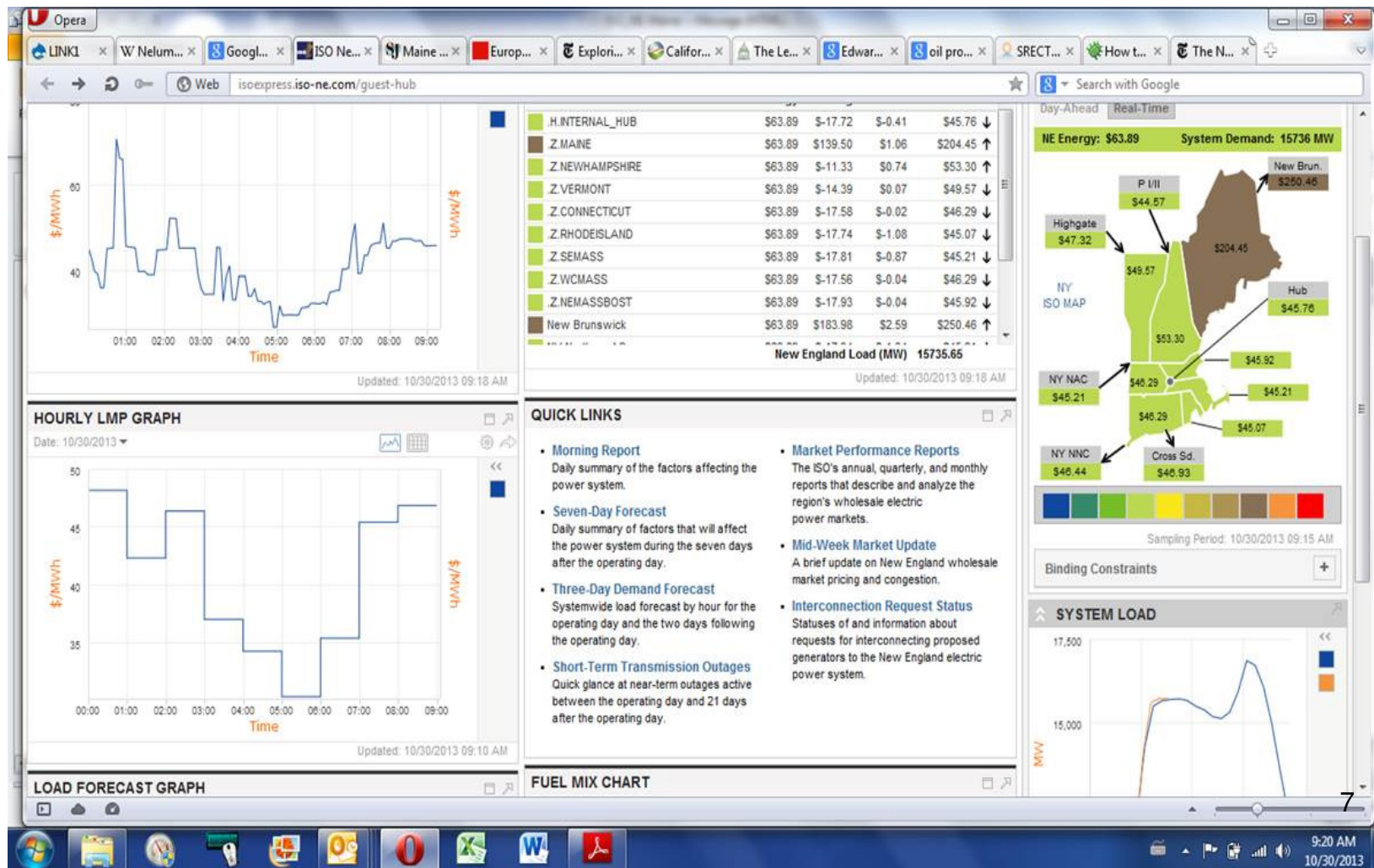


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Locational Marginal Price





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Congestion on the Transmission System

- Physically it occurs when a transmission system element is at its design limit
- Implications of Congestion
 - The next MW to serve an area must come from a different generator over a different path
 - In the Maine context – Maine could be served by a \$40/Mwh generator but due to export constraints the rest of the system needs to dispatch a \$52/Mwh
 - In ISO this difference is considered congestion revenue and is used to pay FTR (Financial Transmission Rights) holders



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Financial Transmission Rights

- A FTR is a financial instrument that may be purchased to insulate against congestion costs in the Day-Ahead Energy Market
- It does not represent a right for physical delivery of power
- The holder is entitled to receive compensation (charge/credit) for congestion costs in the Day-Ahead Energy Market
- ISO NE administers an auction of FTRs



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Contract Path Model

- Contract Path Model – physical transmission rights (PTR)
- This is the method envisioned in EC 1228/2003 and EC 714/2009
- The EC documents highlight the need for a market based scheme as opposed to an administrative scheme
- The market based process can be either implicit or explicit in allocating capacity



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Contract Path Model

- Contract Path Model – physical transmission rights (PTR)
 - A PTR is a carve out of transmission capacity on a specific contract path
 - Typically it has time horizons associated with it yearly/monthly/daily
 - Often times it is tradable in a secondary market



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Implicit and Explicit Auctions

- **Implicit Auction**
 - Underlying idea is that both capacity and energy are auctioned simultaneously
 - The market participant buys/sells energy on a market trading platform – the market operator and the transmission system operator would implicitly ensure that grid capacity is adequate to deliver the energy
- **Explicit Auction**
 - The Transmission System Operator holds an auction for simply Physical Transmission Rights
 - The market participant then uses the PTR to move energy



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PTR Auctions

- Both implicit and explicit PTR auctions have been functioning in Europe for the allocation of capacity
- This physical contract path model of PTR auctions has worked well where the physical connections are radial in nature
- Significant complexity is added if you have looped flows or mesh networks. It becomes very difficult to provide tracking and accounting of actual flow paths.



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Document Review

Points for Discussion

1. Section 3 item 10: Reallocation of unused capacity? How is this accomplished?
 - Use of allocation auction followed by a nomination process?
 - What is the timing typically associated with market participants making decisions on the use of transmission capacity?
 - In Maine's context this reallocation occurs in the day ahead and during the operational day (natural gas market nomination process)
 - Resale of capacity on the secondary market appears to require approval from the market regulator – Maine practice does not require transaction approval simply notification to the market monitor.



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Document Review

Points for Discussion

2. Section 3 item 19: Underlying regulatory principle of relieving congestion where economically justified...how does this tie back to the transmission planning process?



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Document Review

Points for Discussion

3. Section 5 Auctions: How do you address questions of participants financial security, provisions for confidentiality during the auction/bid process, provisions to protect against market power?



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Document Review

Points for Discussion

4. Section 5 item 46: Appears to be a descending auction with a uniform clearing price.

-Is there regulatory consistency with the Ukraine on cross border transmission allocation?



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Document Review

Points for Discussion

5. Section 8: Is there a means for cross-border transmission planning?



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Document Review

Points for Discussion

7. It appears that the preamble to EC 714/2009 repeals EC 1128/2003. If so there are some additional requirements to mirror the regulatory document to the new EC standard.