



MARS Topology Discussion

Presenter Name

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KCC

MARS Topology Development

- ◆ *Begin with 2016 IRM study topology*
- ◆ *Review most recently completed studies for consistency (ATR, Operating Studies, etc) and identify areas of change*
- ◆ *Detailed study of critical interfaces identified in next slide*
- ◆ *Results and Quality Assurance in June and as assumptions change*

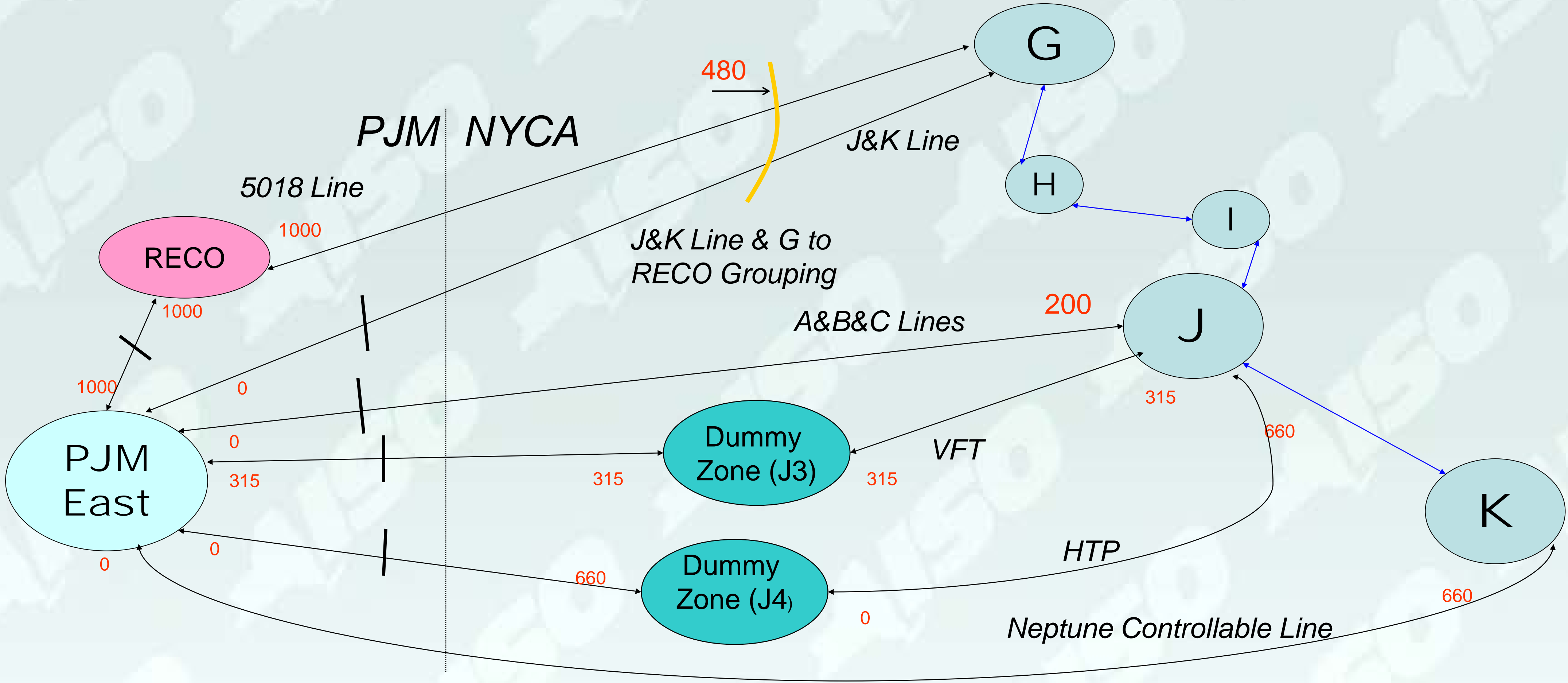
Potential Interfaces to Update

- ◆ *PJM East to G and J*
 - Wheel cancellation related impacts on UPNY-SENY, UPNY-ConEd, and I to J&K Grouping
- ◆ *UPNY/SENY*
- ◆ *Central East*
- ◆ *Dysinger East*
- ◆ *Additional monitored interfaces*

MARS Topology – The Wheel

- ◆ *The effect of cancelling the PSEG/ConEd Wheel starting from April 2017*
 - Emergency assistance will be limited over JK lines and ABC due to constraints in PJM and NY systems
 - A,B and C lines merged into one interface and VFT separated from A
 - Dummy Zone J2 eliminated and Zones G and J tied directly to PJM East

Recommended PJM-SENY MARS Model Post Cancellation



$(PJM\ East\ to\ RECO) + (PJM\ East\ to\ J) + (PJM\ East\ to\ J3) + (PJM\ East\ to\ J4) + (PJM\ East\ to\ G) = 2,000\ MW$

UPNY-SENY

◆ *Impacted by the following*

- Athens and Two Gilboa units coefficient changed from 1.4 to 1.5 with TOTS
- Loop Flows from various sources to sinks
- CPV in service – Not applicable to IRM
- Wheel cancellation puts 1,000 MW more into Zone G, but this flow loops up and through UPNY-SENY constraints for approximately 100 MW reduction

◆ *Recommend changes to accommodate impact of CPV and potential looping*

- ◆ *System Deliverability Upgrade associated with CPV increases UPNY/SENY by 100 MW*

UPNY-SENY CPV Impact Calculation

- ◆ *New bubble with CPV capacity and tie to Zone G added*
- ◆ *Add CPV to Zone G to UPNY-SENY grouping with coefficient of 0.3 and keep the limit of 5,600 MW*
 - ◆ *Add new grouping of CPV to Zone G with coefficient of 0.9 and E to G with coefficient of 1 and a limit of 2,275 MW*
 - ◆ *With CPV off vs CPV on, for Athens on and off, the delta in the limits was approximately 200 MW. The coefficient was calculated by dividing the 200 MW delta by the 656 MW output for CPV and rounding to 0.3*

	CPV	Off - On
Athens off	5,480	– 5,293 = 187 MW delta for UPNY/SENY
Athens on	4,942	– 4,736 = 206 MW delta for UPNY/SENY

Central East

- ◆ *Updated limit to reflect TOTS and FitzPatrick retirement impacts captured in dynamic limit table*

Dysinger East

- ◆ *Remove dynamic limit tables and maintain Zone A grouped interface*
- ◆ *Limit increased 50 MW on Dysinger East to 1,700 MW*

West Central

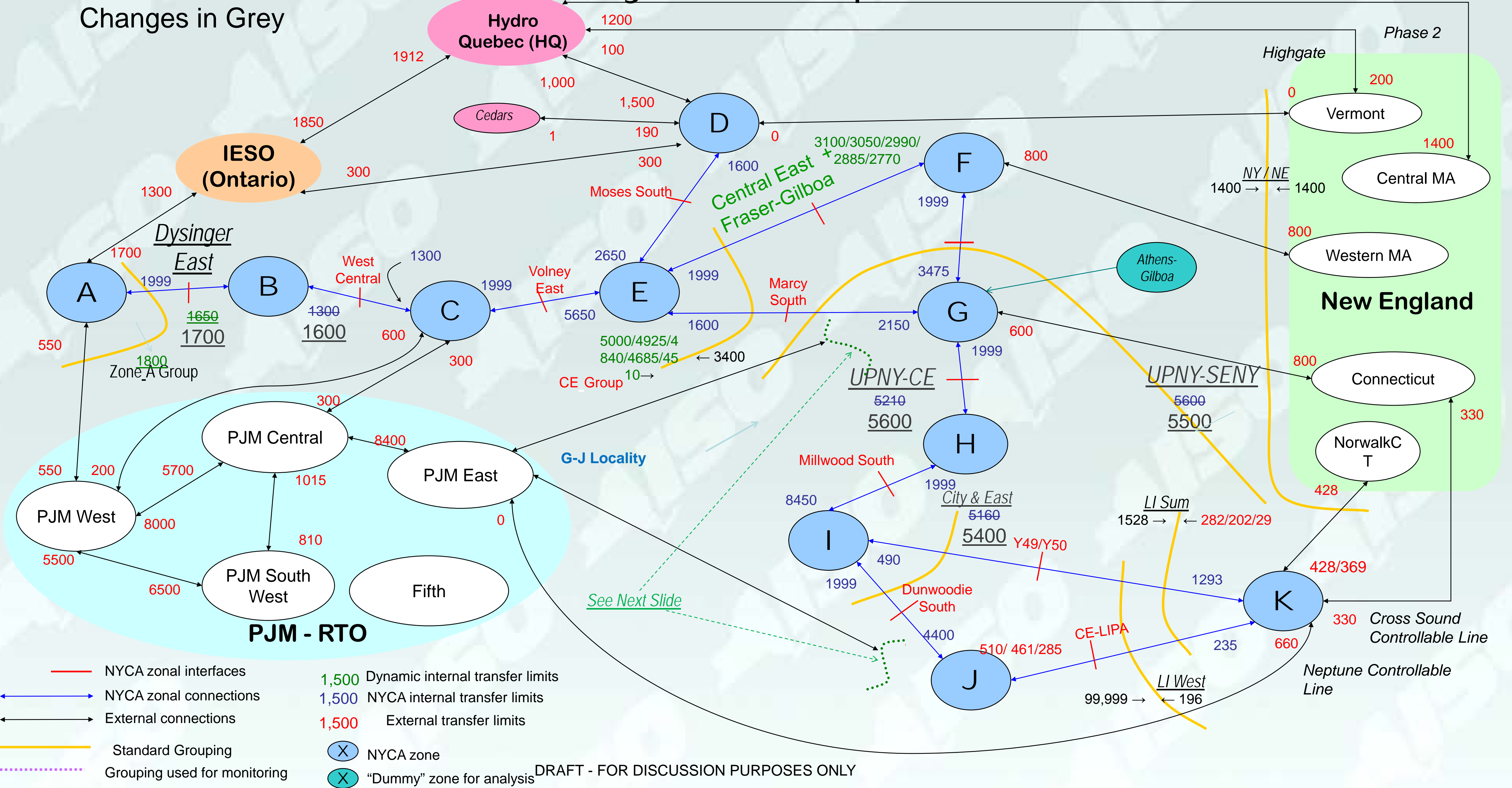
- ◆ *Updated reverse limit from 1,300 MW to 1,600 MW*

Monitored and Import Limit Interfaces

- ◆ *Following interfaces are presently being monitored*
 - NYCA emergency and total import
 - Zones G-J
 - Zones G-K
 - Zone J
 - Zone K
 - NE to F and F to G

Transmission System Representation - 2017

Changes in Grey



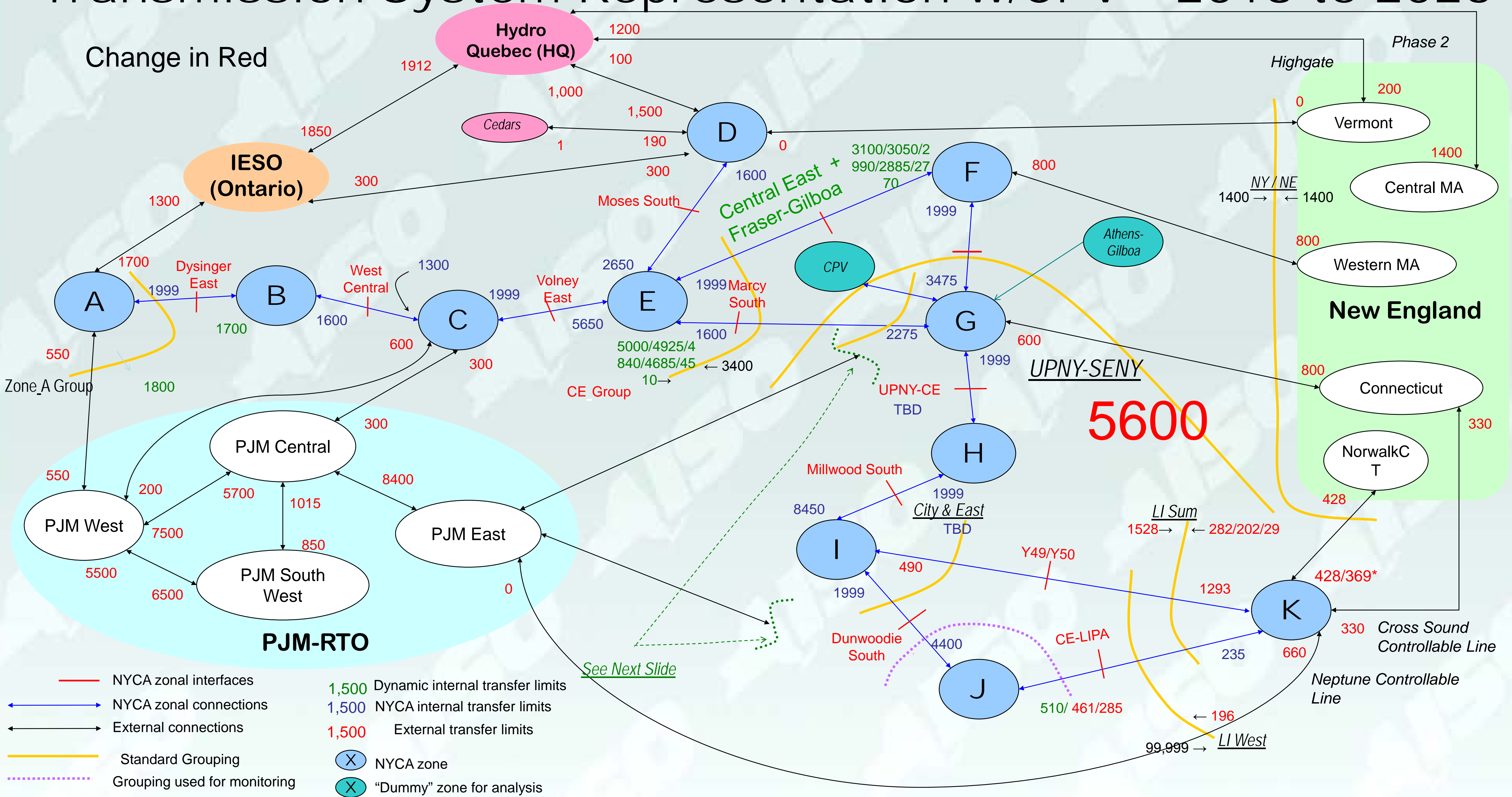
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DRAFT - FOR DISCUSSION PURPOSES ONLY

- NYCA zonal interfaces
- ←→ NYCA zonal connections
- ←→ External connections
- Standard Grouping
- ⋯ Grouping used for monitoring
- 1,500 Dynamic internal transfer limits
- 1,500 NYCA internal transfer limits
- 1,500 External transfer limits
- ⊗ NYCA zone
- ⊗ "Dummy" zone for analysis

Transmission System Representation w/CPV - 2018 to 2026

Change in Red



- NYCA zonal interfaces
- ↔ NYCA zonal connections
- ↔ External connections
- Standard Grouping
- - - Grouping used for monitoring
- X NYCA zone
- X "Dummy" zone for analysis
- 1,500 Dynamic internal transfer limits
- 1,500 NYCA internal transfer limits
- 1,500 External transfer limits

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The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefit to consumers by:

- *Maintaining and enhancing regional reliability*
- *Operating open, fair and competitive wholesale electricity markets*
- *Planning the power system for the future*
- *Providing factual information to policy makers, stakeholders and investors in the power system*

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