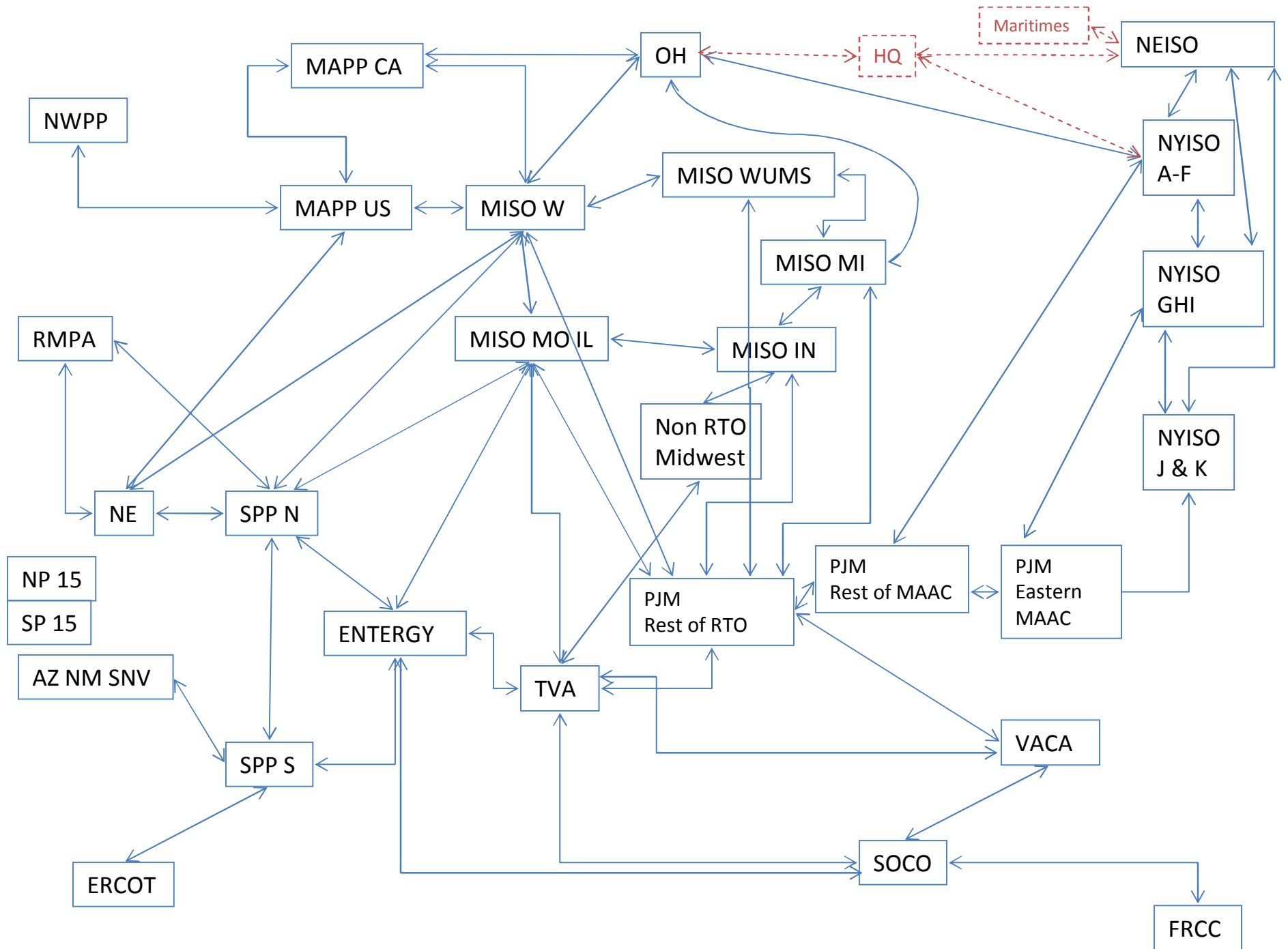


**EIPC Recommendations for
NEEM “Bubbles”
(MISO, NYISO & PJM Regions)**

January 7, 2011 (draft)



PJM NEEM REGIONS

PJM - Eastern MAAC

- Atlantic Electric (AE)
- Delmarva Power & Light Company (DPL)
- Jersey Central Power & Light Company (JCPL)
- PECO Energy Company (PECO)
- Public Service Electric & Gas Company (PSE&G)
- Rockland Electric (RECO)

PJM - Rest of MAAC

- Baltimore Gas & Electric Company (BG&E)
- Metropolitan Edison Company (METED)
- Potomac Electric Power Company (PEPCO)
- PPL Electric Utilities (PPL)
- Pennsylvania Electric Company (PENELEC)

PJM - Rest of RTO

- AEP
- Allegheny Energy (APS)
- Commonwealth Edison(ComEd)
- Dayton Power & Light
- Dominion
- Duquesne Light Company
- Toledo Edison
- Cleveland Electric Illuminating Company
- Ohio Edison Company
- Duke Energy Kentucky
- Duke Energy Ohio

MISO NEEM REGIONS

Planning Area	NEEM Region	Notes
Ameren Corporation Control Area	EMO	MISO_MO-IL
Columbia (MO) Water & Light	EMO	MISO_MO-IL
Algona Municipal Utilities	MAPP_US	MISO W
Allele (Minnesota Power)	MAPP_US	MISO W
Alliant Energy-West	MAPP_US	MISO W
Ames Municipal Electric System	MAPP_US	MISO W
Atlantic Municipal Utilities	MAPP_US	MISO W
Central Minnesota Municipal Power Agency	MAPP_US	MISO W
Great River Energy	MAPP_US	MISO W
Harlan Municipal Utilities	MAPP_US	MISO W
Hutchinson Utilities Commission	MAPP_US	MISO W
Marshall Municipal Utilities	MAPP_US	MISO W
MidAmerican Energy Company	MAPP_US	MISO W
Minnesota Municipal Power Agency	MAPP_US	MISO W
Montana-Dakota Utilities Company	MAPP_US	MISO W
Muscatine Power & Water	MAPP_US	MISO W
New Ulm Public Utilities	MAPP_US	MISO W
Northern States Power Company	MAPP_US	MISO W
Otter Tail Power Company	MAPP_US	MISO W
Pella (City of)	MAPP_US	MISO W
Rochester Public Utilities	MAPP_US	MISO W

MISO NEEM REGIONS

Planning Area	NEEM Region	Notes
Willmar Municipal Utilities Commission	MAPP_US	MISO W
Consumers Energy Company	MI	MISO MI
Detroit Edison Company	MI	MISO MI
Wolverine Power Supply Coop Inc	MI	MISO MI
Duke Energy Corp.	MISO_E	MISO IN
Hoosier Energy REC, Inc.	MISO_E	MISO IN
Indianapolis Power & Light Company	MISO_E	MISO IN
Northern Indiana Public Service Company	MISO_E	MISO IN
Southern Indiana Gas & Electric Company	MISO_E	MISO IN
Wabash Valley Power Association	MISO_E	MISO IN
Indiana Municipal Power Agency	MISO_E	MISO IN
Big Rivers Electric Corp	MISO_E	MISO IN
Ameren (Illinois Power Co. Control Area)	SCIL	MISO MO-IL
City of Springfield	SCIL	MISO MO-IL
Southern Illinois Power Coop	SCIL	MISO MO-IL
Alliant Energy-East	WUMS	MISO WUMS
Dairyland Power Coop	MISO_W	MISO W
Madison Gas & Electric Company	WUMS	MISO_WUMS
Upper Peninsula Power Company	WUMS	MISO_WUMS
Wisconsin Electric Power Company	WUMS	MISO_WUMS
Wisconsin Public Service Corporation	WUMS	MISO_WUMS
WPPI Energy	WUMS	MISO_WUMS

General Comments on NEEM REGIONS Changes

The EIPC Economic Working Group discussed the NEEM Model and determined the following:

- 1) Major changes were made to the PJM, MISO and NY regions as described separately
- 2) HQ and the Maritimes are shown as dotted to reflect that they are treated as injections
- 3) AECI, SPP, TVA and Entergy agreed to show a pipe between Entergy to SPP N as a result of including AECI in the Entergy bubble
- 4) Simplification of the model with removal of dummy zones and less bubbles.
- 5) The NEEM model is primarily a capacity expansion model and not intended for detailed transmission analysis
- 6) Actual transmission limitations vary hourly based on changing generation and transmission configurations and resulting thermal, reactive and stability limitations. Given that Modeling of transmission limitations in a pipe and bubble model does not reflect these actual dynamics, the representations that are most reasonable are simplified regional representations at a high level. This affords the best opportunity to structure a reasonable model.
- 7) Additionally this phase of the study is intended to produce high level screen results of capacity expansion scenarios. More detailed consideration of necessary transmission expansions based on more detailed transmission modeling will follow.

MISO NEEM REGIONS

MISO did not make a lot of changes from original NEEM region definition, the changes made are:

- 1) Add a new region called MISO_W, and move the MISO companies originally in MAPP_US Region to this new region
- 2) Move Dairyland Power Coop from MISO_WUMS to MISO_W
- 3) Combine the SCIL and EMO region, as they represent the same company (AMEREN) in two states. The new region is called MISO_MO-IL
- 4) AECI originally is combined with AMEREN Missouri in EMO region, as we remove the EMO region, AECI is combined to ENTERGY.
- 5) Move Big Rivers Electric Corp to MISO_IN region
- 6) Separate Duke Energy Corp into three companies (Duke Energy Ohio, Duke Energy Indiana, Duke Energy Kentucky), move Duke Energy Indiana to MISO_IN region, and Duke Energy Ohio, Duke Energy Kentucky to PJM Rest of RTO region.

The main change we made is to separate MISO companies from other companies. NEEM needs the planning reserve requirement to perform the study. By separating MISO companies from other companies, we can use our own planning reserve requirement.

The MISO regions definition also reflects the main transmission constraints within MISO.

NYISO NEEM REGIONS

NYISO did not make a lot of changes from original NEEM region definition, the changes made are:

- 1) Combine Zones A through F into one bubble.
- 2) Combine Zones G through I into one bubble.
- 3) Combine Zones J and K into one bubble
- 4) Remove all dummy zones.

The main change involved reducing the total number of bubbles representing NY as this level of detail is not required for this study. This still allows for the use of a planning reserve requirement for different bubbles and to reflect major transmission constraints within NY.

PJM NEEM REGIONS

PJM's recommended structure for the NEEM bubbles reflects the following considerations:

Considering the general comments above, the PJM model is structured to balance the necessity to keep the model simple and at the same time represent the major interregional and regional transmission limitations. The PJM model is structured to reflect PJM interregional interfaces as well as the dominant internal energy and capacity market interfaces.