

# Introduction to EPNodes and CPNodes

**MISO** current process overview

DERTF August 30, 2021

# Purpose & Key Takeaways



Introduce the Elemental Pricing Node and Commercial Pricing Node designation process

#### **Key Takeaways:**

- Elemental Pricing Nodes (EPNode) link the Commercial Model to the physical representation within the Network Model
- Commercial Pricing Nodes (CPNode) are the financial settlement points for the Market Participant
- More information can be found on the MISO Learning Center under Network and Commercial Models.

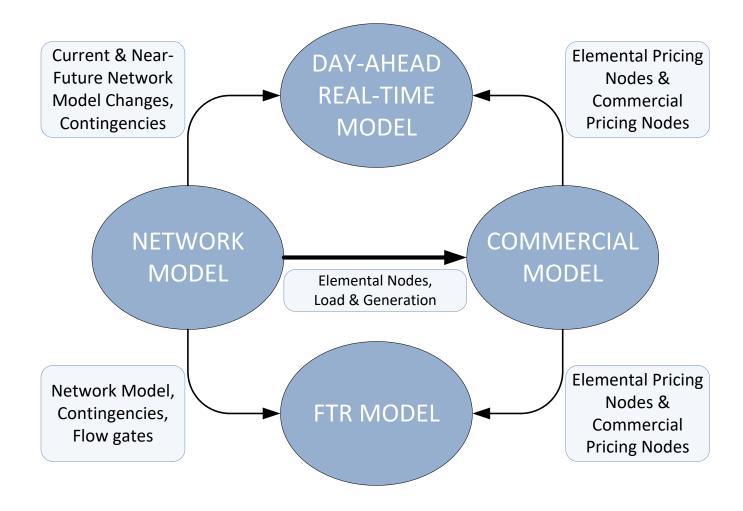


### MISO Modeling Relationships











### Modeling directly influences Business Processes & Financial position



#### **Network Model**

- Physical definition of the network
- Specifies capabilities, ratings, and flowgates

#### Commercial Model

- Defines the participant's financial participation
- Defines injection and withdraw nodes

#### **Market Participation**

- Bids
- Offers
- Schedules
- Trades
- Auctions

#### Settlements

- Energy Market
- AncillaryServices
- Transmission
- •FTR/ARR



### Modeling Resources



## Modeling Resources in the Network Model

#### What Must be Modeled?

- Generation, Dispatchable Intermittent Resources (DIRs), DRR-Type II, SERs and EARs Participating in Energy and Operating Reserve Markets
- Resources not registered to participate in Energy and Operating Reserve Markets but are connected to the MISO Transmission System

#### Additional Resource Modeling Scenarios

- Below Threshold Generation
- Modeling of Multiple Small Generating Units at a Single Bus
- Behind-the-Meter Generation
- Modeling of Demand Response Resources Type I
- Intermittent Resources



## Hierarchy of 5 Commercial Model Components



MP

- Highest-level data component of the Commercial Model
- Financially responsible for settling with MISO

AO

• All Bid/offer submittals, portal and XML security, Settlement Statements, and Bilateral Transactions are conducted at this level

Asset

- Primarily consist of Generation and Load including DRR and Stored Energy.
- Hubs, External Interfaces, and Loop Nodes do not require an Asset Owner
- Referenced by CPNode Type

. CPNode

- Each CPNode consists of a grouping of one or more EPNodes
- LMPs are calculated and published at each CPNode and used for Settlement

EPNode

- Lowest level of the hierarchy of data in the Commercial Model
- Directly related to the Network Model representation
- Can have one-to-many relationship with CPNodes

Terms:

- Market Participant (MP)
- Asset Owner (AO)
- Commercial Pricing Node (CPNode)
- Elemental Pricing Node (EPNode)

The relationship of EPNodes and CPNodes determines how the LMP is aggregated for use by Market Settlements



## EPNode and CPNode Naming Conventions

#### **CPNode**

Types: Generator CPNode, Load Zone CPNode, HUB, or Interface

Started by NERC Registered BA acronym + "." (dot)

Followed by unique name, total length cannot exceed 14 characters

No special characters in name, except dot "." and underscore " "

e.g., CIN.GIBSON\_4

#### **EPNode**

Types: Generator EPNode, Load EPNode or a Noninjection Non-withdrawal (NINW) EPNode

Derived from Network Model

Gen: U+ID\_CO+ID\_ST+ID\_UN

e.g., U CIN NOBLESVI UN1

Load: L+ID\_CO+ID\_ST+ID\_LD

e.g., L CIN NOBLESVI LD1

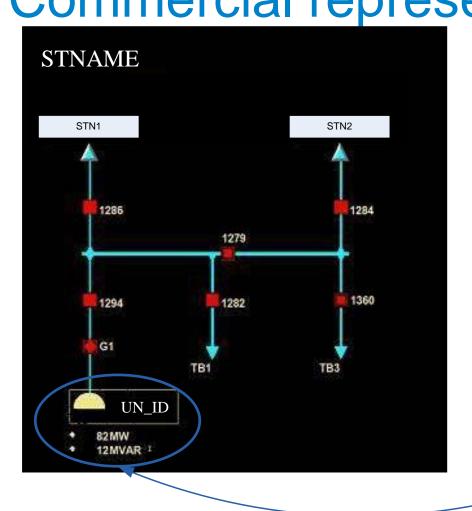
NINW: N+ID\_CO+ID\_ST+ID\_ND

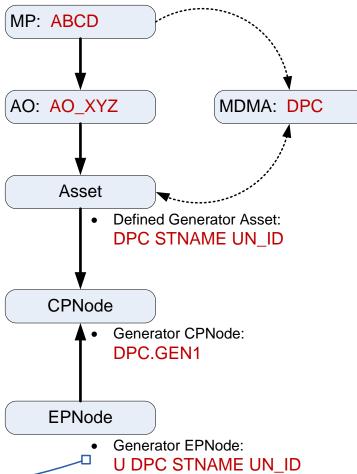
e.g., N CIN NOBLESVI ABC



## Linking Network and Commercial representation







### **Submitting Information**



#### Network Model Changes

- Transmission Owner
- MISO Network Model Web Tool.\*

\*Data requirements and
"How To" guide are provided
in the MISO Network Model
Data Modification Web Tool
document.

MISO Model Update Process

### Commercial Model Changes

- Market Participant
  - Submitted via Attachment B of MP Registration.‡

<sup>‡</sup> MISO provides MS Excel templates for submitting commercial model updates.

MISO Model Manager will become the new tool to submit Network and Commercial information in 2022.







### MISO Learning Center – Customer Training/Modeling

- Level 100 Network and Commercial Model
- Level 200 Network and Commercial Model

