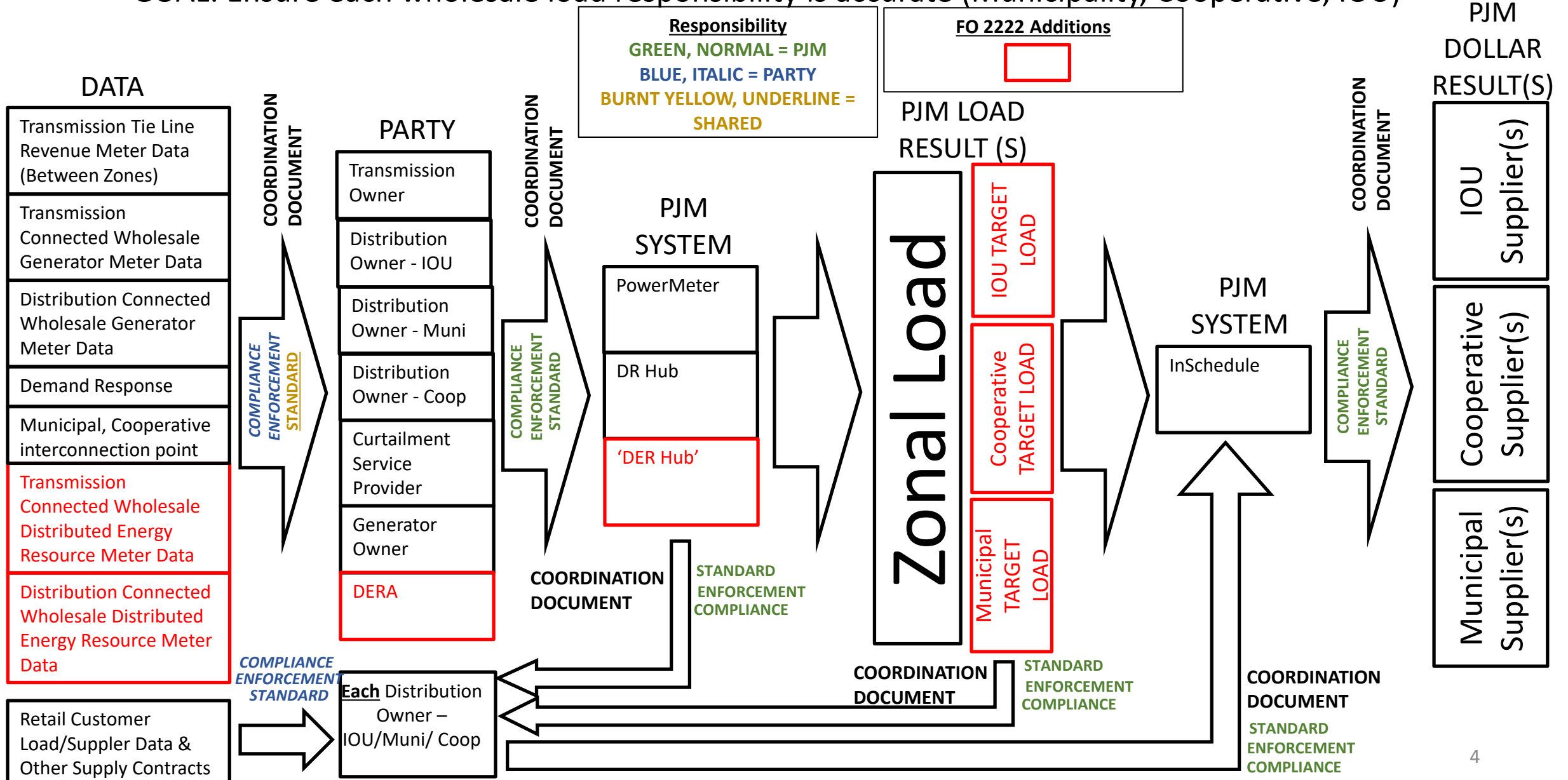# EDC / PJM WORKSHOP

October 26, 2021

AGENDA

- Settlements

- Summary of EDC Recommendations

- Pnode Mapping

- Registration

- Metering and Telemetry

- Planning

- Implementation Timeline

FO 2222 SETTLEMENTS

Compliance and Governance

High Level – Revenue Data Movement - ENERGY

- GOAL: Ensure each wholesale load responsibility is accurate (Municipality, Cooperative, IOU)

Issues/Solutioning

- Issues
    - Enforcement of data accuracy and deadlines
    - Development of data standards
    - Limiting unnecessary data movement for purposes of financial settlements
        - Control of data
    - Determining distribution owner load responsibilities
        - Transparency, etc.
        - Before Inschedule
    - Establishment of accountability for accurate financial settlements under PJM OA, OATT and RA (Governing Documents)
    - Memorialization of settlements operations responsibilities
- Expected Solutions
    - Creation of a data compliance paradigm that sets explicit expectations to properly and transparently account for load obligations of all Distribution Owner retail and wholesale LSEs
    - Recall presentation on 6/14/2021 that put together mathematical solutions

SUMMARY: EDC RECOMMENDATIONS

- **Operations Coordination Model**
  - The EDC shall be the designator of the Dispatch Agent role.

- **Single Pnode Model Requirement**
  - EDCs support PJM's proposal to allow energy market participation of a DERA up to a single Pnode.
  - EDCs propose EDC/TO provides PJM with Enode mapping of individual DERs participating in PJM wholesale markets as part of a DERA for PJM to then assign the appropriate Pnode to the DERA.

- **Data Sharing**
  - Order 2222 implementation must respect state jurisdictional boundaries and requirements, including, but not limited to, those for data sharing, cyber security, Dx/Tx modeling for planning and operational separation.

- **BTM Metering + Telemetry**
  - Order 2222 compliance must comport with EDC/state/RERRA requirements for metering & telemetry to allow for accurate and timely wholesale and retail billing and settlements.
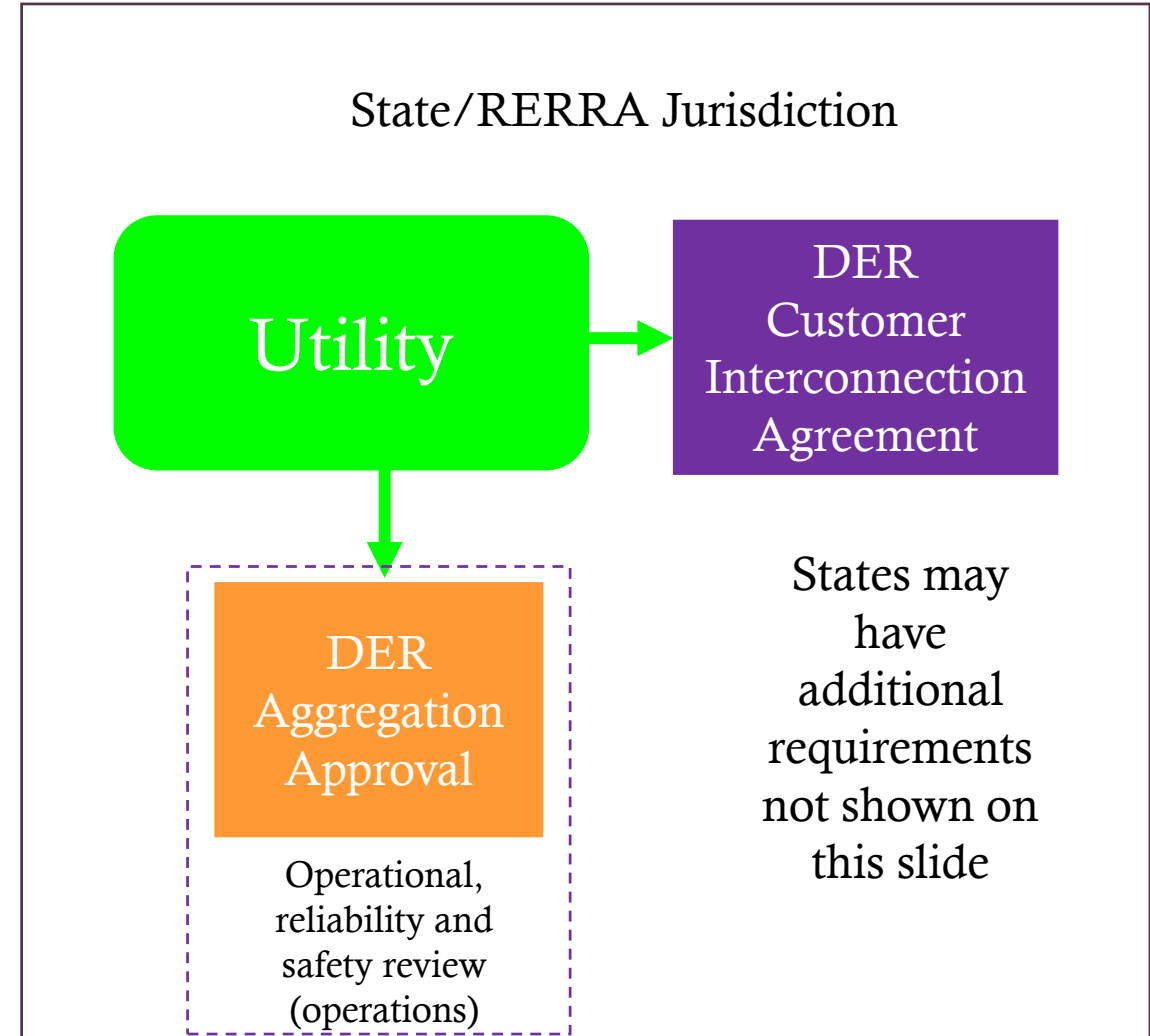 - We agree with PJM's recommendation of one DER Aggregator per POI or retail premise meter.
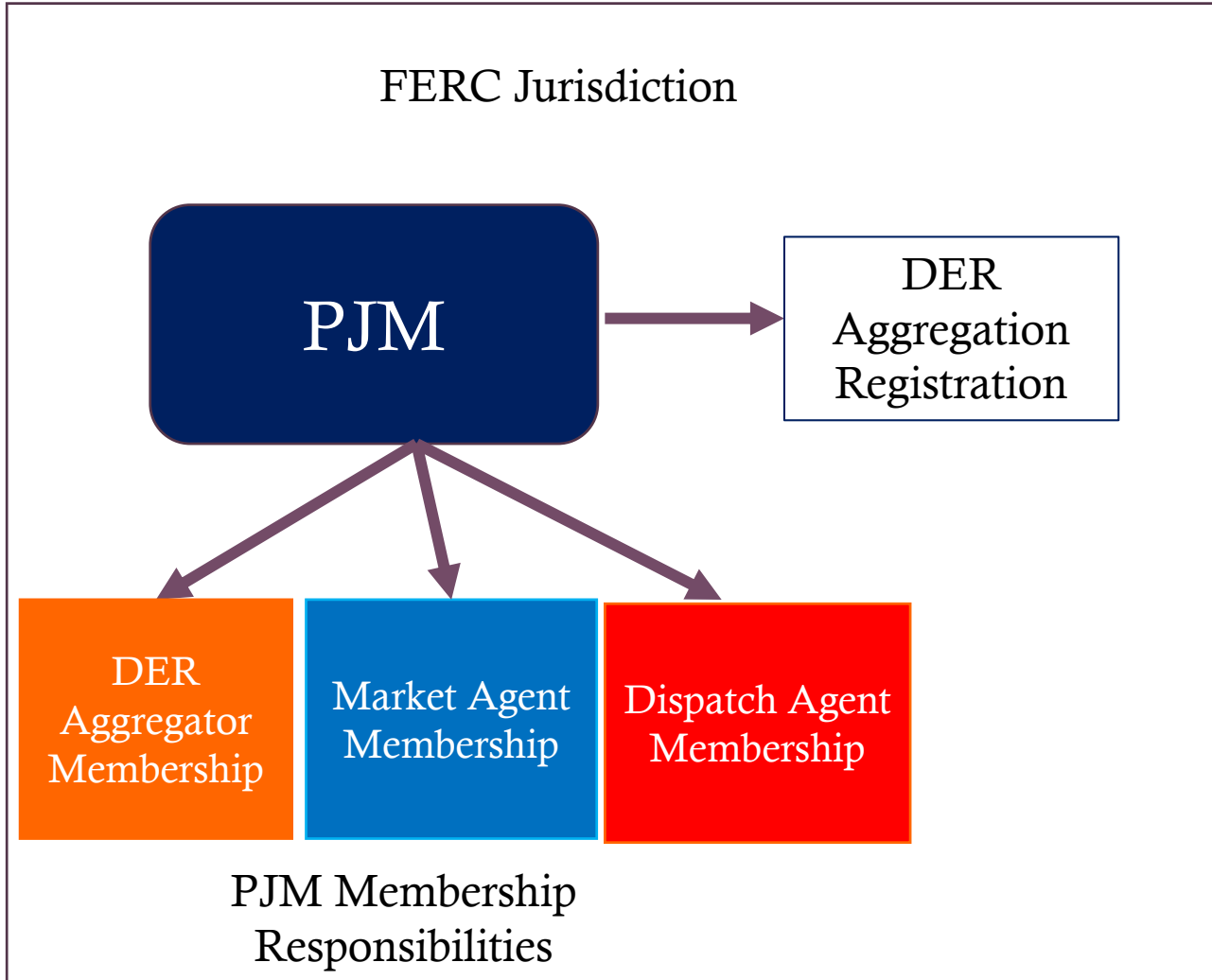
- **Cyber Security**
  - Cyber Security will be critical, and EDCs will need to implement appropriate requirements at the distribution level consistent with individual state cyber security obligations

Draft

PNODE MAPPING

- **Joint EDC / TO mapping**
  - Provide DER mapping to transmission Enode levels currently modeled under normal system configurations.
  - Data provided shall be handled respecting current EDC/TO consumer privacy and FERC Code of Conduct policies.

- **PJM mapping**
  - PJM to map DER assets from the Enode provided by the TSO to its respective Pnode.

- **Abnormal Distribution Configurations**
  - EDCs may need to isolate or reduce output for DERs during abnormal distribution system configurations not studied via interconnection process. Such abnormal configurations would preclude the individual DER from participating through the DERA in the wholesale markets.

REGISTRATION: ROLES & RESPONSIBILITIES

FERC Jurisdiction

PJM → DER Aggregation Registration

PJM → DER Aggregator Membership | Market Agent Membership | Dispatch Agent Membership

PJM Membership Responsibilities

State/RERRA Jurisdiction

Utility → DER Customer Interconnection Agreement

Utility → DER Aggregation Approval

Operational, reliability and safety review (operations)

States may have additional requirements not shown on this slide

Business Use

Draft

ROLES & RESPONSIBILITIES - PJM

- DER Aggregator Membership (which could be the utility)

- Market Agent Membership (which could be the utility)

- Dispatch Agent Membership (which could be the utility)

- DER Aggregation Registration

- PJM Processes

- Regulated by FERC

- Designed to address PJM's requirements for the DER Aggregator, Market Agent and Dispatch agent to participate in designated roles in the wholesale markets

Draft

REGISTRATION: ROLES & RESPONSIBILITIES – EDC

- Interconnection Agreement – Utility responsibility, regulated by State/RERRA

  - Interconnection Agreements need to be reevaluated after receiving the DER/DERA Registration for potential modifications.

- DER Aggregation Approval* – Utility responsibility, consistent with obligation to provide safe, adequate and proper service. EDC/Host Utilities may have additional requirements for:

  - DER Aggregators

  - DER Dispatch Agents

  - DER Market Agents

  *Note - Potential for States/RERRAs to also establish obligations in this area.

DER AGGREGATION APPROVAL BY EDC

- The following points are required but may not be exhaustive:

  - Individual DER customers must have a valid Interconnection Agreement with the EDC prior to requesting inclusion in a DER Aggregation registration.

  - The 60-day clock does not begin until all data needed by the EDCs for the review has been received by the EDC

    - If during the EDC's review of the Aggregation, significant data changes or gaps are identified, the 60-day clock will reset

    - The EDCs and Aggregator may agree to a longer review period

  - A DER Aggregation must be affirmatively approved prior to operation.

  - If a reliability or safety issue is identified, the Aggregation will not be approved, and the PJM registration is denied. The EDCs will work with the DER Aggregator to resolve the issues for the Aggregation to become enabled.

  - If the Aggregation is approved, EDCs recommend it remain in place, unchanged, for a period of one year, with the exception of individual DER customers leaving the aggregation.

METERING + TELEMETRY + SETTLEMENT

- **Customer Participation**
  - State/RERRA will determine retail tariff program(s) interaction with wholesale market participation.
  - Injections and related retail credits will need to be coordinated in accordance to EDC's tariff programs.

- **Metering Data Coordination**
  - State regulators/RERRA will have jurisdiction over DER metering / submetering requirements.
  - It is the understanding of the EDC's that PJM expects meter information to be submitted to PowerMeter for each DER/DERA.
  - EDC/TO will require a mechanism to receive individual DER meter data from the DER Aggregators in a timely manner to allow for accurate wholesale and retail settlements.
  - As proposed, DER participants can use POI meters for wholesale meters for injections (similar to PJM DR currently) and gain access to utility meter data and pulses for pulse counters but could change depending on the customer system configurations.
  - EDC will require access to all metering and telemetry data for DERA/DER.

- **Physical Customer Modifications Over Time**
  - DER system metering / telemetry configurations can be reevaluated during EDC's interconnection processes or annual PJM DER registration reviews.
  - State/RERRA programs that require special retail rates for load or injections will require additional DER submetering.

- **TO zonal aggregated load and generation reporting**
  - Need to discuss the methods of data submission (i.e Inschedule, Powermeter, …)
  - Need to separate municipalities and cooperatives from EDC/TO due to the complexities added by wholesale BTM assets.

PLANNING

Discussion Item

- Proposed strawman slides for planning are relatively vague on requirements surrounding planning model data granularity, processes data exchange, and model maintenance requirements associated changes for FERC 2222.

Recommendations

- Data exchange limited to only information necessary to perform associated studies.
- EDC Modeling Information Provided to Transmission Owner
    - TO provides PJM with sum of DER impacts by resource type at each Enode.
    - EDCs agree with PJM's resource types as shown below:
        - Invertor-based Resources (IV-B), Non-Invertor based Resources (NIV-B), Battery Energy Storage System (BESS), Relocatable Storge – Electric Vehicles (RS-EV), Demand Response (DR)
- PJM or TO will not release any non-transmission asset information, maps, models or modeling data unless provided authorization from EDC/DO.

PLANNING

Transmission Bus (ENODE)

Load less DR

DR · IV-B · NIV-B · BESS · RS-EV

Sum of DER Impacts by Resource Type
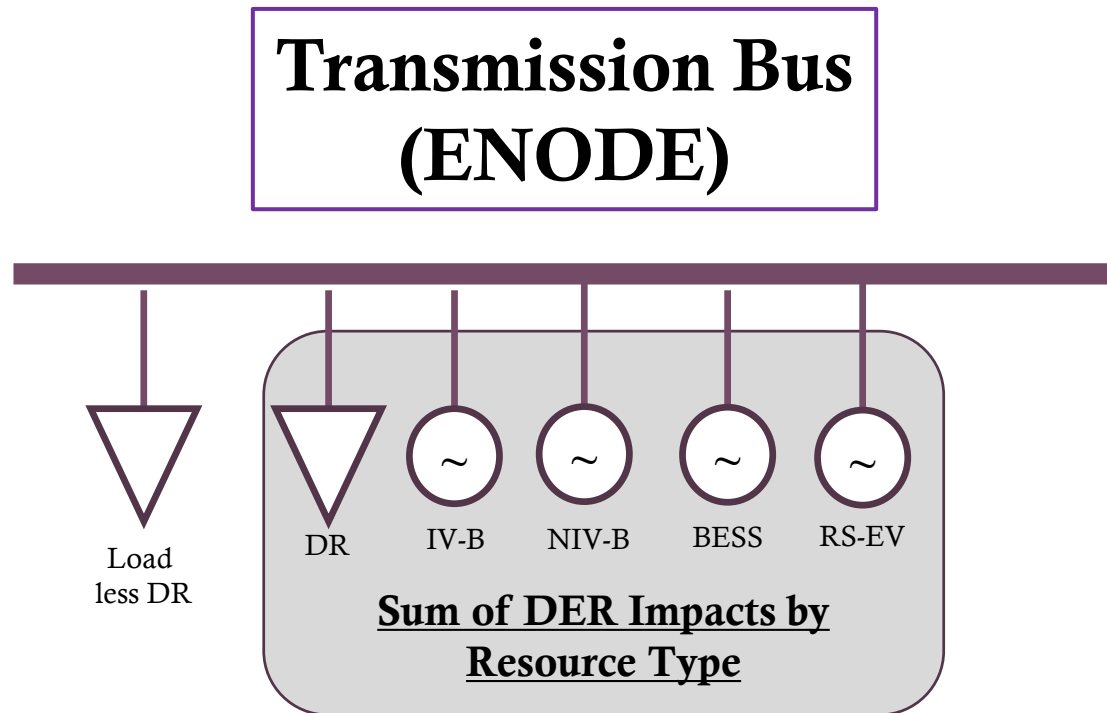
- DERA component data is provided in the form of a consolidated model for each resource type

- Multiple DER resource types summed to a singular transmission bus point based upon affiliated DERA

- Routine updates provided by EDC to TO and incorporated into annual RTEP models utilizing existing RTEP processes

IMPLEMENTATION TIMELINE

- Implementation timeline must reflect possibility of need for state/RERRA approvals prior to certain TO/EDC efforts.

  - IAs may need to be amended. Tariffs may need to be written and approved. Rules and regulations may need to be written. Cost Recovery may need to be approved.

- EDCs should have flexibility in the implementation timeline and the functionality.

- Need to have clear definition of what constitutes "implementation."

  - What is PJM anticipated implementation start date?

  - What is the acceptable minimum functionality that is needed?

  - Will implementation include some form of piloting of functionality?