REGIONAL TRANSMISSION OPERATORS (NIPSCO)
Overview of RTOs
- What they are
- Who participates
- What they do
- How they benefit Indiana’s customers

RTOs and the IRP
- Relevancy to Indiana’s IRP process

RTOs and Utilities – Information Exchanged

Questions
Overview of RTOs – What is an RTO?

- Regional Transmission Organizations (RTOs) or Independent System Operators (ISOs) are independent, non-profit organizations that optimize the operation and planning of the transmission systems of their region
  - Reliably operate their portion of the Bulk Electric System
  - Provide regional and interregional reliability planning for the system
  - Administer capacity, energy, financial transmission rights, and ancillary services markets
- RTOs are required to comply with Federal Energy Regulatory Commission (FERC) Orders and North American Electric Reliability Corporation (NERC) Standards
There are 7 RTOs across the US

Indiana participates in two:
- PJM
  - Indiana Michigan Power
- MISO
  - Duke Indiana
  - Indianapolis Power & Light
  - NIPSCO
  - Vectren
Overview of RTOs – Why are there RTOs?

- FERC envisioned RTOs as a way for existing US power pools to satisfy the requirement of providing non-discriminatory access to transmission for competitive generation.

- Subsequently, FERC encouraged the voluntary formation of RTOs to administer the transmission grid on a regional basis throughout North America (including Canada).

- State participation in RTOs has slowly expanded since the mid-1990’s and holdouts remain.
Overview of RTOs – Who makes up an RTO?

- Participants - operationally and/or through stakeholder process
  - Transmission owners
  - Load serving entities
  - Transmission developers
  - Generators and independent power producers
  - Power marketers
  - End use customers
  - State regulators and consumer groups
  - Environmental organizations
  - Municipalities, Co-Ops and other transmission-dependent entities
  - Coordinating members
Overview of RTOs – What does an RTO do?

- Reliably operates a portion of the Bulk Electric System
  - As transmission service provider, RTOs facilitate the scheduling of electric transmission
  - As transmission operator* and reliability coordinator, RTOs ensure the real time reliability of their region’s transmission system
  - As balancing authority*, RTOs balance load and generation and maintain frequency for their region

* Can be a shared function with local utility
Provides reliability planning for the electric system
- Transmission studies including impact of new generator interconnections
- Generation assessments (not generation reliability planning)
- Coordination for outage planning
- Coordinated regional and interregional transmission planning
  - Performs open and transparent long-term system planning
  - Identifies reliability adequacy on a larger regional basis and ensures that the transmission plans of each member company are compatible with one another
  - Interregional planning studies evaluate transmission issues/solutions for the areas where RTOs adjoin one another (seams)
Overview of RTOs – What does an RTO do? (cont.)

- Administers the energy and ancillary services markets on a daily basis
  - Dispatches the system by matching generation resources to load to provide the needed electrical energy
    - Security constrained, economic dispatch
      - Lowest cost available resources are dispatched before higher cost resources unless reliability is jeopardized
    - Utilities can buy and sell electricity on behalf of their customers depending on how competitive and available their resources are both in the “day ahead” and real time
    - Price of electricity changes constantly during the day and is influenced by multiple factors including:
      - Weather, electrical load, system constraints, available generation, available fuel, environmental considerations, etc.
Overview of RTOs – What does an RTO do? (cont.)

Administers the annual capacity market/auction

- Capacity markets (or MISO’s auction) provide a competitive structure for generation owners to sell their available capacity to load serving entities like Indiana utilities
  - Utilities can also purchase or sell capacity through bilateral agreements outside of the capacity construct.

- Utilities serving load are obligated to procure enough resources to satisfy their Planning Reserve Margin which is based on their contribution to the RTO’s system peak
  - A utility can satisfy this obligation by showing it has enough Unforced Capacity resources available
  - Utilities have the option to self schedule or provide a fixed resource adequacy plan or participate in the auction/market to obtain the necessary capacity
  - Depending on its resource position, a utility can buy additional capacity in the market or sell any excess

- Once a generation resource is “cleared” in the capacity market, it must be offered into the daily energy market unless it is in outage
  - Resources are also obligated to perform when dispatched
MISO’s Single Year Capacity Construct (Duke, IPL, NIPSCO, Vectren)
- Auction for the next Planning Year running June 1 – May 31
- Capacity obligation established to meet summer peak and carried for entire year
- Footprint is separated into individual local resource zones which limits over-importing/exporting
- MISO is planning to move to a two-season approach with Winter and Summer auction periods

PJM’s Three Year Forward Capacity Market (I&M)
- Auction for the Planning Years running June 1 – May 31
- Three-year forward market with multiple auctions
  - Base Residual auction, then yearly secondary auctions provide a longer-term price signal
  - Generation pay-for-performance recently implemented
    - Higher performing resources receive a higher capacity payment than underperformers

While capacity markets show the value of capacity in the future, these markets/auctions are relatively near term when compared to the 20-year timeline for Indiana’s IRP process
Some benefits of the RTO/ISO approach

Optimized Transmission System
- Real Time Operations
- System Planning
- Overall Enhanced Reliability

Economies of Scale
- Centralized operating activities v. locally duplicated activities

Available Capacity Reserves
- Available at competitive prices

Potential Long Term Price Signal
- Bringing more certainty to capacity price in distant years

Evolving Markets
- Capacity, Energy & Ancillary Services
- Can match products to address customer needs or solve operational / reliability issues
RTOs AND THE IRP
The Indiana Utility Regulatory Commission (IURC) is the regulator of Indiana’s resource adequacy.

The IURC regulates the resource requirement for each utility.

- Through the IRP, utilities demonstrate that they have enough resources to meet the forecasted system peak in future years plus an additional reserve margin.

Many of the concepts between the IRP and the way MISO and PJM conduct their capacity auction/market are similar, but differences exist.

- Some examples:
  - A utility’s system peak may not peak at the same time as the RTO’s system peak.
  - Unforced capacity in the IRP may not equal the utility’s Unforced Capacity (UCAP) in the RTO.

In the IRP, utilities include RTO energy and capacity cost forecasts in order to model market dispatch and select the preferred resource plan in multiple scenarios.
RTOs perform an analysis role for the region’s resource adequacy

- RTOs also evaluate the ability of smaller areas in the region to meet their Planning Reserve Margin requirements
- These areas do not break cleanly on state boundaries and are even more complicated for states like Indiana that are separated between two RTOs
- While obligated by FERC to perform this verification function, the authority and obligation to ensure Indiana’s resource adequacy lies with Indiana
Information exchanged includes:

- Load and Resource forecasts
- Maintenance outage plans
- Plans for generation retrofits, retirements and additions
- Environmental compliance plans
- Demand side resources
- Generation fuel assumptions
- Transmission investments and upgrades
- Historical performance of generation resources (NERC-GADS)
- Historical performance of demand response resources (NERC-DADS)
- Scenario planning and risk assessment
- Emergency recovery planning