

State Clean Energy-Environment Technical Forum

The Electricity Grid: Implications for State Clean Energy Programs

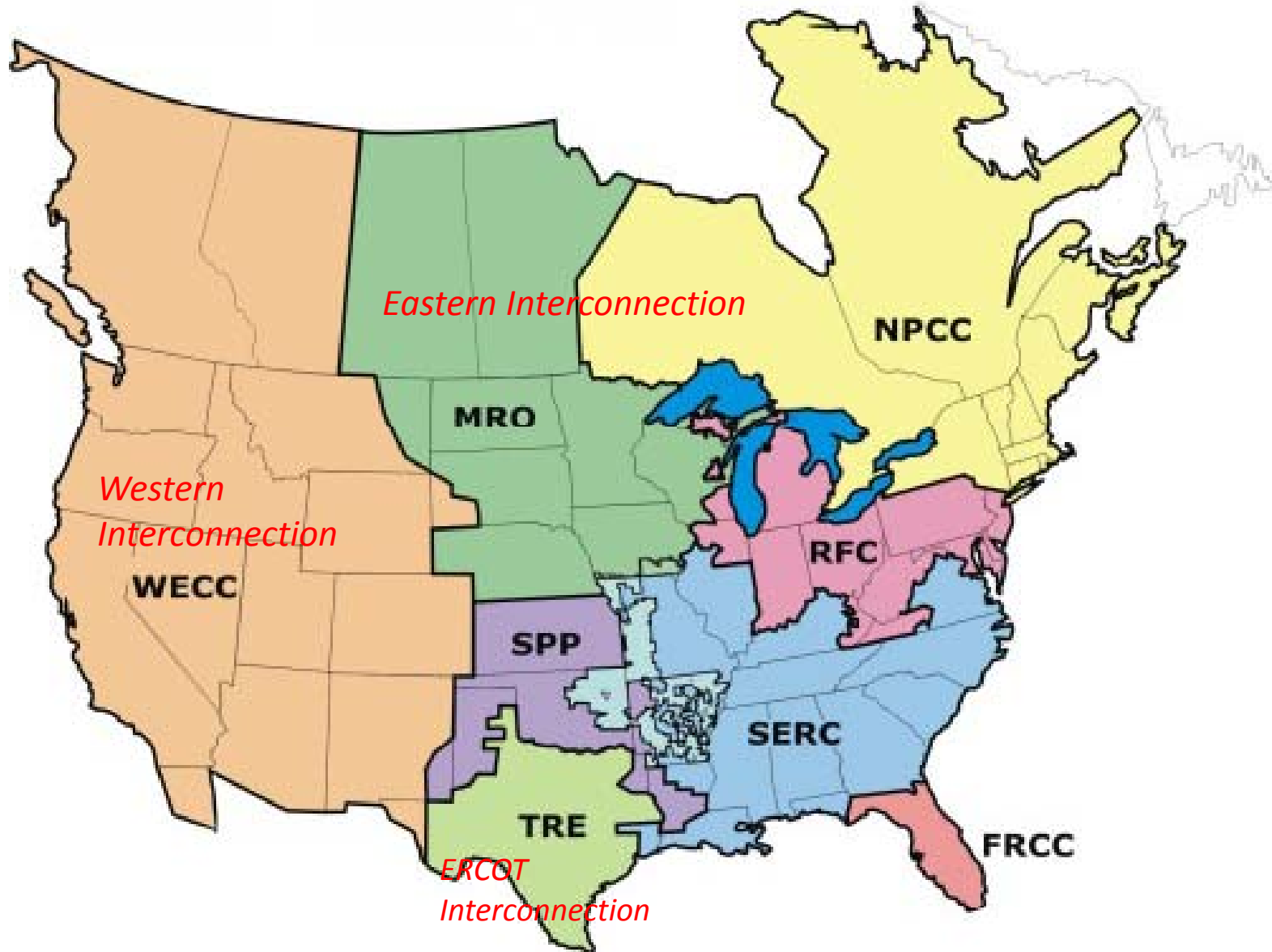
Rajnish Barua, Ph.D.
Executive Director
Organization of PJM States, Inc. (OPSI)
Email: raj@opsi.us; Tel: 302-757-2441

Disclaimer: Opinions expressed in this presentation and related discussions belong to the presenter and do not represent any views of his employer; employment affiliation is listed for information purpose only.

Overview

- Regional electricity grid
- State organization
- Status of electricity restructuring
- Implications for State Clean Energy Programs

NERC Regions

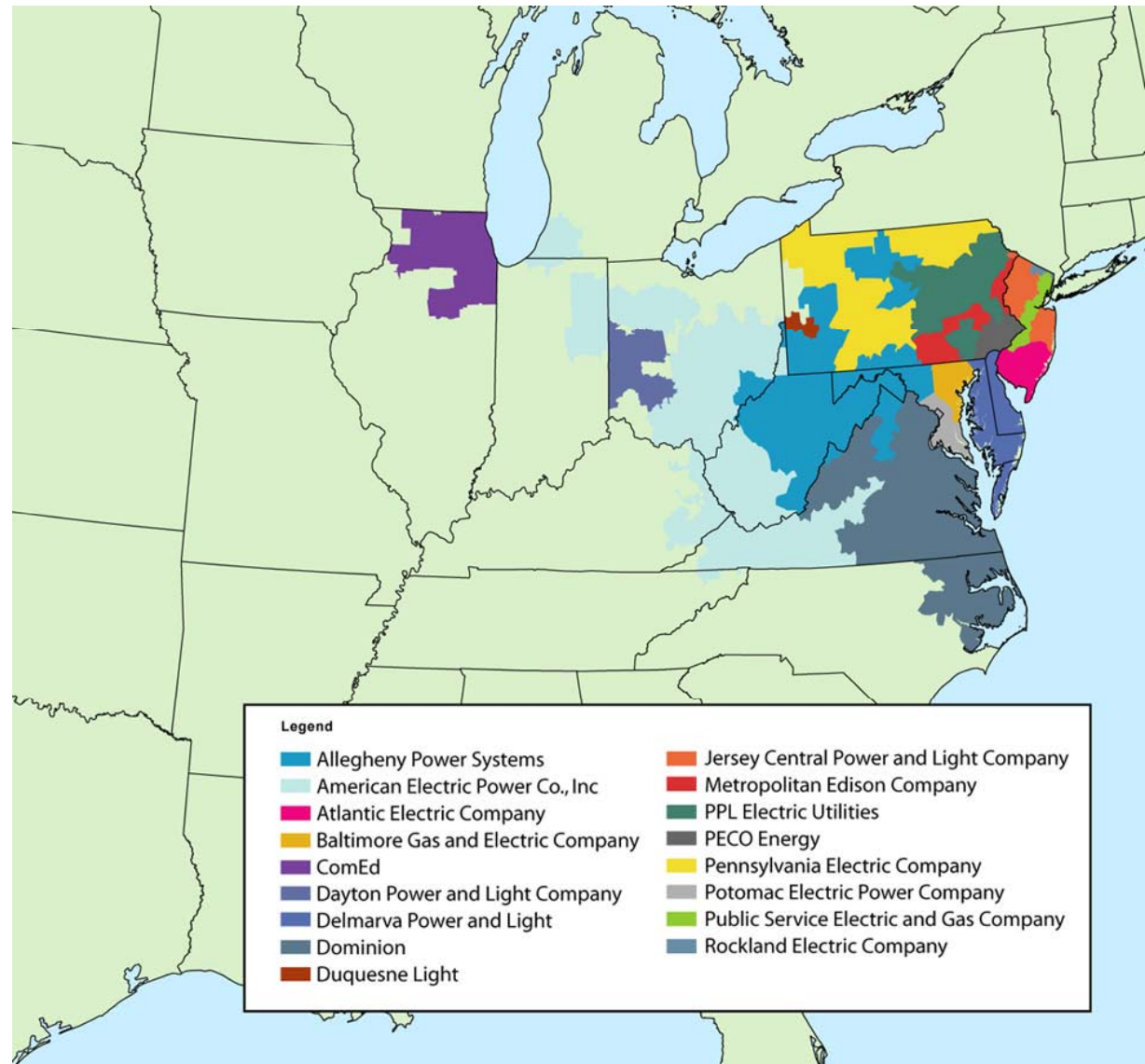


Source: NERC
(North
American
Electric
Reliability
Corporation)

PJM Service Territory

All or parts of:

- Delaware
- District of Columbia
- Illinois
- Indiana
- Kentucky
- Maryland
- Michigan
- New Jersey
- North Carolina
- Ohio
- Pennsylvania
- Tennessee
- Virginia
- West Virginia



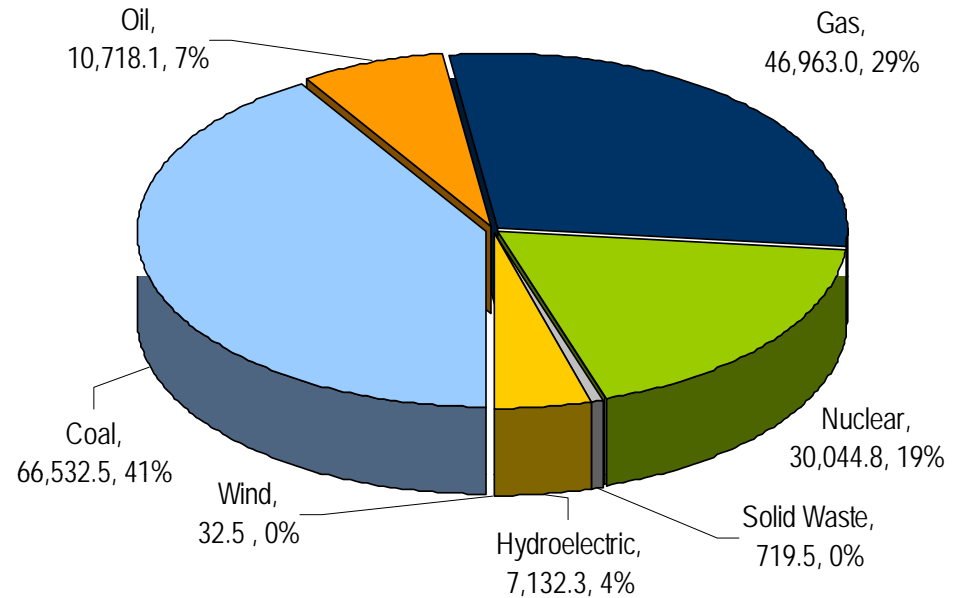
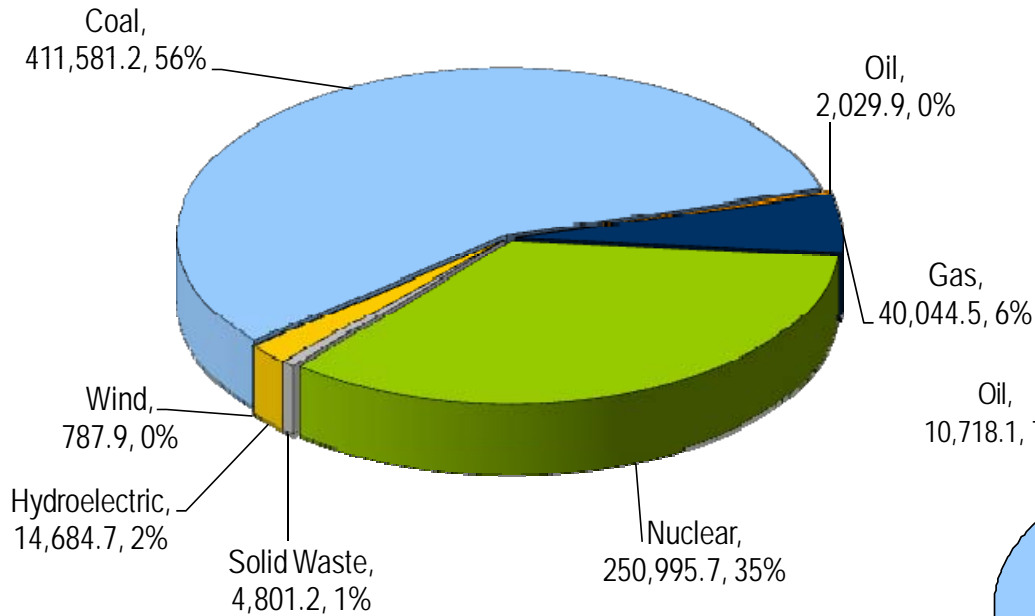
Around the region

- PJM – from power pool to regional transmission organization (RTO)
- Expanded from Mid-Atlantic to whole or parts of 13 states and DC
- Grid operator and bulk electricity market
- Current Issues
 - Market monitoring
 - Building of generating assets
 - Transmission upgrades and new corridors/lines
 - Positions among restructured states and states with vertically integrated companies

PJM: Regional Electricity Market

- Population - 51 million
- Generating sources – over 1,200 with diverse fuel types
- Generating capacity – nearly 165,000 MW
- Peak load – nearly 145,000 MW
- Annual energy delivery – 729,000 GWh
- Transmission lines - 56,250 miles
- Members (energy companies) - 500
- Cumulative billing – over \$28 billion since 1997
- PJM, acting neutrally and independently, operates the largest wholesale electricity market in the world

PJM: Fuel Resources and Output



States' Relationship With PJM

- In 1998, PJM and state utility commissions in the PJM region signed MOU to create a State Commission Liaison Committee
- Committee was a direct channel of communication between PJM's Board of Managers and all of the state commissioners in the PJM region
- With the expansion of PJM, the Organization of PJM States, Inc. (OPSI) was formed to include all 14 jurisdictions

Background of OPSI

- Organization of PJM States, Inc. established in May 2005
- Non-profit corporation
- Members are the 14 utility regulatory agencies that regulate electricity/distribution rates within the footprint of PJM
- Its primary purpose is to act as a liaison group to:
 - PJM Interconnection, LLC (PJM)
 - PJM's Board of Managers
 - Independent Market Monitor for PJM
- OPSI is not a member of PJM

14 Members of OPSI

- Delaware
Public Service Commission
- District of Columbia
Public Service Commission
- Illinois Commerce Commission
- Indiana
Utility Regulatory Commission
- Kentucky
Public Service Commission
- Maryland
Public Service Commission
- Michigan
Public Service Commission
- New Jersey
Board of Public Utilities
- North Carolina
Utilities Commission
- Public Utility Commission of Ohio
- Pennsylvania
Public Utility Commission
- Tennessee
Regulatory Authority
- Virginia
State Corporation Commission
- Public Service Commission of West Virginia

Functions of OPSI

- Each member has one commissioner on the Board of Directors
- Each have an equal vote on all issues
- All other commissioners and staff members of 14 states are considered members of OPSI
- Organizes its annual meeting in fall of each year
- Most meetings are held via teleconferences

Resolving Issues

- Wholesale generation is not under the purview of the state regulators.
- Some states are net exporters of electricity and some states are net importers of electricity
- Dominant resources for electricity generation vary by state, such as, nuclear, coal, natural gas, oil, etc.
- Transmission cost allocation:
 - to socialize all transmission costs, or
 - to assign such costs to beneficiaries of the transmission projects

Around the nation

- Regional differences
- Federal – state relationship
- Changes in the composition of FERC
- Mega-mergers
- Convergence of industries
- Long-term effects of EPAAct

State Role

- Distribution – the electric distribution companies put forth proposals
- Transmission – Transmission-owning companies put forth proposals
- Challenges when transmission line is inter-state
- Reliability – broad authority and different interpretation under the “safe and reliable” service

Modernization of Grid

- How have the energy, environment and utility regulatory agency in your state worked together to tackle modernization and expansion of the electricity grid?
- Cannot speak for energy and environmental agencies
- Difference in jurisdiction within state for each agency
- Energy and environmental agencies are executive branch
- Utility regulators are independent and quasi-judicial
- Differences in approach
- Modernization is a broad term
- Expansion only based on needs

State Clean Energy Initiatives

- How has the capacity and operation of the electricity grid enhanced or been an impediment to the implementation of your state clean energy initiatives?
- Clean energy mandates are by state authority, not regulatory commission authority
- Difference in requiring alternative energy resources being built within state and only requiring energy input
- Load forecast primary input for expansion; load is “resource-neutral”
- Grid built to maximize efficiency of meeting load

Clean Energy & Grid Operation

- How have your state clean energy programs or policies helped improve the operation of the electricity grid, e.g. how has clean distributed generation and energy efficiency reduced transmission and distribution congestion?
- Minor part of the equation of meeting load expectation
- Engineering aspect – has to be available when needed
- Energy output is based on economics unless needed to meet state mandated requirement
- “Subsidy” to meet economics of output cannot be provided by utility commission
- Somebody has to pay - ratepayers or general population

State Cooperation

- In what way are states working together to improve the operation and increase available capacity of the transmission system to support clean energy goals? What are the most significant barriers to regional cooperation on transmission planning and upgrades?
- Clean energy goals can be met by standardizing “product” – energy, certificates, etc.
- Inter-state line approval process is state-by-state
- DOE does not have authority to mandate where to build
- FERC does not initiate where to build
- Planning is regional but permitting/building is local!