

# BY SHOW OF (WHICH) HANDS: Empirical Analysis of Regional Transmission Organization Stakeholder Voting

## BACKGROUND

**80s:** Cost-of-Service Regulation of Vertically Integrated Infrastructure

**90s:** Privatization of Generation & Open Access to Transmission, FERC Call for RTO Formation

**2000s:** RTOs Maturing (*Timeframe of Study*)

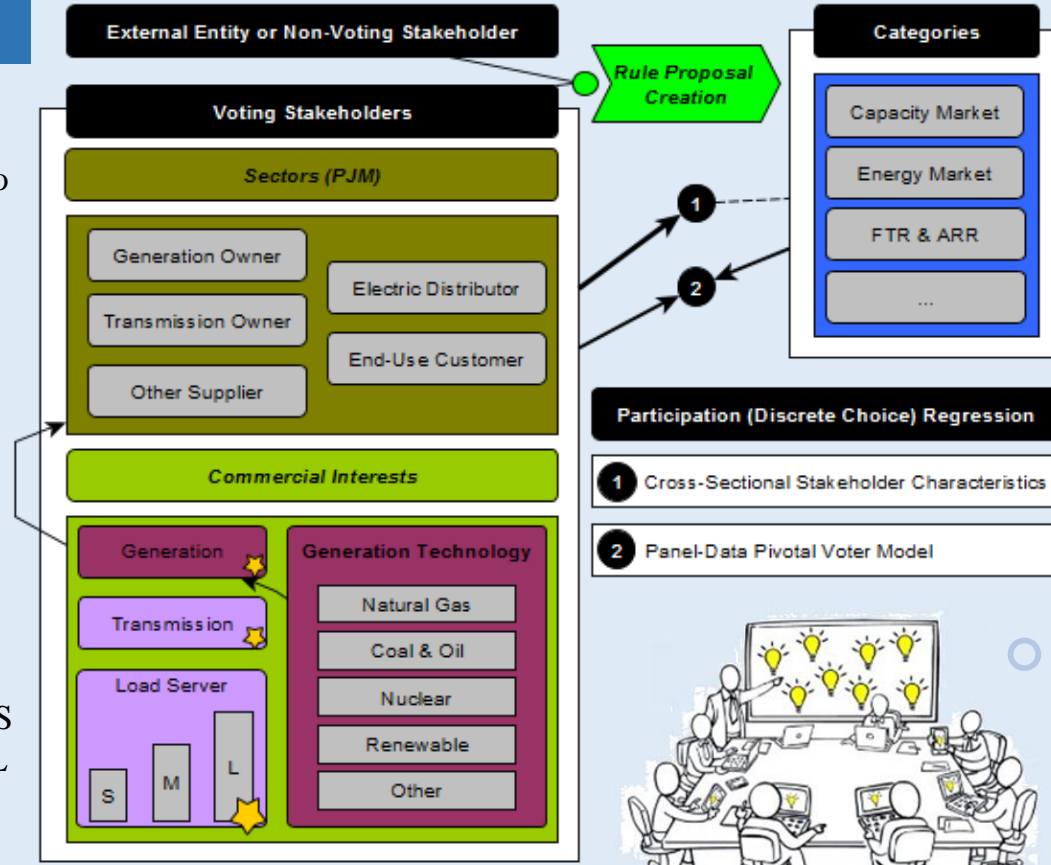
### RTO Responsibilities:

- Dispatch of Electric Generation
- Transmission and Generation Infrastructure Planning
- Market Management and Monitoring
- Non-Profit Collection of Transmission Line Compensation

*Establish/Host Stakeholder Committees that Design the Electricity Market via Vote:*

$$V_k = \sum_{j=1}^{n_k} \frac{\delta_j}{n_k - a_k} \quad V = \sum_{k=1}^5 V_k \quad \left. \begin{array}{l} \geq 3.335 \text{ PASS} \\ < 3.335 \text{ FAIL} \end{array} \right\}$$

$\delta_j$  affirmative vote by  $j$ -th voter  
 $n_k$  voters in attendance in sector  $k$   
 $a_k$  abstentions by voters  
 $V_k$  sector vote score  
 $V$  total vote score



## RESULTS

- **46 PJM Members Committee Rule Proposal Votes**
- Zero-Inflated Vote Count Distribution – Two Stages of Regression (Binary: “Active”, Poisson Count)
- **Capacity Market (CM)** is Most Frequent Issue Category
- Generation Owner & Other Supplier Sector Less Participatory Than Other Sectors
- **Large & Natural Gas GO** More Participatory Than **Small & Renewable GO**
- Sector x Category ( $B$ ) – Overall, Significant
- GO x Category – Significant (Excluding CM Votes)
- Close Vote Outcome ( $p$ ) – Statistically Significant

## EX: FMU ADDER VOTE

Sector	Eligible	Attended	Yes	No	Abstain	$V_k$
TO	14	14	5	5	4	0.500
GO	70	20	3	10	7	0.231
EUC	28	15	14	0	1	1.000
ED	38	31	28	0	3	1.000
OS	304	48	6	5	37	0.545
<b>Total</b>	<b>455</b>	<b>128</b>	<b>56</b>	<b>20</b>	<b>52</b>	<b><math>V = 3.276</math></b>

- $V = 3.276$  FAILED (0.057 Below Threshold)
- Proposal to Reduce Frequently Mitigated Unit (FMUs) “Adders” from 112 units to 5 units
- Revenue Stream (Subsidy to “Peakers” + CM)
- GO & OS Killed the Rule Proposal – Two Additional “Yes” Votes in GO Sector Would Pass Threshold
- Independent Market Monitor Estimated FMU “Adders” were approximately \$79MM in 2012

## OBJECTIVES/METHODS

Compile Northeastern RTO Senior-Level Stakeholder Voting Data & Determine Patterns in 2010 Decade (Focus on PJM in this Analysis):

- Which Market/Operational Levers are Being Deliberated?
- **Who** is Participating? *Econometric Tests of:*
  - 1 Claims that Stakeholder Committees are “Private Clubs” for Incumbents
  - 2 Pivotal Voter Model: Participation is Driven by **Net Return to Voting**



... If (1.) Confirmed, Would Marginal Participation of a Less Participatory Stakeholder Class Matter?

$$R = pB - c + f$$

**R** Net Return to Voting

$p$  Probability of Casting a Pivotal Vote

$B$  Benefit of Rule Proposal

$c$  Cost of Voting

$f$  Fulfillment of Civic Duty to Grid