



# Managing Transmission Line Ratings

September 10-11, 2019

AD19-15-000

## Agenda

### Day 1 – Tuesday, September 10, 2019

**8:45 am – 9:00 am:**            **Welcome and Opening Remarks**

**9:00 am – 10:30 am:**        **Panel 1: Introduction to Transmission Line Rating Methodologies**

Panel 1 will provide an introduction to transmission line rating methodologies including static line ratings, seasonal line ratings, ambient-adjusted line ratings (AARs), and dynamic line ratings (DLRs). For the more technically advanced AAR and DLR methodologies, this panel will provide a technological overview, discuss the implementation process, and discuss the extent of current use and expected future adoption.

### **Panelists:**

- Joey Alexander, Ampacimon SA and Elia System Operator
- T. Bruce Tsuchida, The Brattle Group, Inc.
- Rob Gramlich, Grid Strategies LLC, Working for Advanced Transmission Technologies (WATT), and the American Wind Energy Association (AWEA)
- Jake Gentle, Idaho National Laboratory
- Jack McCall, Lindsey Manufacturing Co. and WATT
- Hudson Gilmer, LineVision, Inc.

**10:30 am – 10:45 pm:**        **Break**

**10:45 am – 12:45 pm:      Panel 2: DLR and AAR Implementation Benefits and Challenges**

Panel 2 will discuss benefits and challenges to DLR and AAR implementation, including economic and operational/reliability benefits/challenges, practical lessons learned, and factors that may favor one approach over another. DLR or AAR implementation benefits could include economic benefits, operational/reliability benefits, and/or open access benefits (e.g., reducing instances where transmission capability above a static or seasonal rating is released only on an *ad hoc* basis, and not made generally available). DLR or AAR implementation challenges could involve DLR sensor placement, forecasting, applicability given other limiting elements, market alignment between either the real-time and day ahead markets or between energy markets and the financial transmission rights markets, coordination, cyber security issues, and/or reliability margins. This panel will also discuss any best practices towards implementing DLRs or AARs in a way that maximizes benefits and addresses challenges. This panel will discuss whether transmission owners could perform a periodic study of the cost-effectiveness of implementing DLRs on their most congested transmission lines. Finally, panelists should discuss how the Commission could encourage the adoption of DLRs or AARs when despite being cost-effective, DLRs or AARs are not implemented by the transmission owner.

**Panelists:**

- Swaraj Jammalamadaka, Apex Clean Energy, Inc.
- Francisco Velez, Dominion Energy, Inc.
- Chad Thompson, Electric Reliability Council of Texas (ERCOT)
- Babak Enayati, National Grid USA Service Company, Inc.
- Chunchuan (Charlie) Xu, New York Power Authority (NYPA)
- Howard Gugel, North American Electric Reliability Corp. (NERC)
- Shaun Murphy, PJM Interconnection, L.L.C.

**12:45 pm – 2:00 pm:      Lunch**

**2:00 pm – 4:00 pm:      Panel 3: Discussion of a Possible Requirement for Transmission Owners to Implement AARs**

Panel 3 will build on the background from panels 1 and 2 to discuss whether transmission owners should be required to implement AARs and, if so, how such a requirement might be structured.

Related to this proposal for discussion, staff poses the following additional questions:

- Would a requirement for transmission owners to implement AARs be appropriately applied to all transmission lines, or a subset of transmission lines? If a subset, how would the appropriate set of transmission lines be determined?
- Are there any anticipated benefits, challenges, or costs related to incorporating AARs into RTO/ISOs' energy management systems (EMS) (or other systems) that should be considered when evaluating this proposed requirement?
- How would AARs be incorporated into the determination of available transfer capability (ATC)? Specifically:
  - a. How would AAR-related changes to ATC affect point-to-point transmission service and network transmission service?
  - b. Would such changes to ATC have different effects on point-to-point transmission service in bilateral markets versus point-to-point transmission service in RTOs/ISOs (where point-to-point transmission service is largely relegated to through-and-out, and similar types of service)?
  - c. For what point-to-point transmission products (hourly, daily, etc.) should AARs affect ATC values?
- What, if any, updates would need to be made to RTO/ISO and/or transmission owner software and communications to accommodate their accepting and using an AAR data stream?

**Panelists:**

- Carlos Casablanca, American Electric Power Company, Inc. (AEP)
- Dennis Kramer, Ameren Services Company
- Dede Subakti, California Independent System Operator Corp. (CAISO)
- Michelle Pivach Bourg, Entergy Services, LLC
- Rikin Shah, PacifiCorp
- Mike Wander, Potomac Economics
- Amanda Frazier, Vistra Energy

**4:00 pm:****Adjourn**

**Day 2 – Wednesday, September 11, 2019****8:45 am – 9:00 am: Welcome and Opening Remarks****9:00 am – 10:30 am: Panel 4: Ability of RTOs/ISOs to Accept and Utilize DLRs in Operations and Markets**

The panel 4 discussion will focus on the ability of RTOs/ISOs to accept and use DLRs. Staff does not propose for discussion a requirement for transmission owners to implement DLRs but rather proposes to discuss the ability of RTOs/ISOs to accept and use DLRs. Even if a transmission owner sought to implement DLRs, an RTO/ISO may have limited capability to accept a DLR signal. Such limitations could serve as a barrier to implementation of DLR technology. Panel 4 will discuss whether it would be appropriate to require the RTOs/ISOs to modify their market software and communications capabilities and standards to accommodate the use of DLRs by transmission owners.

For this discussion, staff poses the following additional questions:

- Can RTOs/ISOs currently accept and use a DLR data stream from a transmission owner? What needs to be modified to address any barriers to RTOs/ISOs accepting and using DLR data streams?
- How does the implementation of AARs by an RTO/ISO differ from implementation of DLRs? If an RTO/ISO implements the use of AARs in its software and communications capabilities and standards (data formats, internet protocols, cyber security requirements, etc.), what else must it do to implement DLRs?
- What responsibilities, if any, should the RTOs/ISOs have with regard to any verification of values provided by the transmission owners? How should any disputes regarding disagreements of values between the transmission owner and RTO/ISO be resolved?
- If DLRs or AARs were adopted, what if any additional coordination might be necessary? For instance, coordination across RTO/ISO seams, across transmission owner seams, or within or between reliability coordinators.

**Panelists:**

- Adam Rousselle Sr., Alternative Transmission Inc. (ATI)
- Sean Morash, EnerNex
- Brett Wangen, GridSME and Western Interconnection Regional Advisory Body (WIRAB)
- J.T. Smith, Midcontinent Independent System Operator, Inc. (MISO)
- Aaron Markham, New York Independent System Operator, Inc. (NYISO)
- Garrett Crowson, Southwest Power Pool, Inc. (SPP)

**10:30 am – 10:45 am: Break**

**10:45 am – 12:15 pm: Panel 5: Discussion of Transparency of Transmission Line Rating Methodologies**

Panel 5 will discuss whether additional transparency is necessary with regards to each transmission owners' transmission line rating methodology. Outreach participants have commented that transmission line rating methodologies can be opaque. With this in mind, Panel 5 will address whether such methodologies should be posted publicly, should be incorporated into Commission-approved RTO/ISO and transmission owner tariffs, or made transparent in other ways. Related to this proposal for discussion, staff poses the following questions:

- Are there examples of best practices for documenting line rating methodologies, either in tariffs or other documents, which might serve as models for how to make such methodologies transparent?
- What calculation considerations, and what communication processes are used when transmission owners change transmission line ratings in transmission planning models and in transmission operations?
- Should methodologies, assumptions, and/or line ratings for specific transmission lines be available for review and challenge by market participants, and/or for audit by the Commission? What, if any, changes to information and document retention with respect to line ratings might be needed?
- How would this proposal for discussion overlap or coordinate with the existing requirement for transmission providers to include their ATC calculation methodologies in an appendix to their tariff?

**Panelists:**

- Carlos Casablanca, American Electric Power Company, Inc. (AEP)
- Dennis Kramer, Ameren Services Company
- Devin Hartman, Electricity Consumers Resource Council (ELCON)
- Michelle Pivach Bourg, Entergy Services LLC
- Michael Kormos, Exelon Corp.
- Joe Bowring, Monitoring Analytics
- Michael Chaisson, Potomac Economics

**12:15 pm – 12:30 pm:     Adjourn**