



**lines ratings through the implementation of DLRs to ensure just and reasonable wholesale rates? Why or why not? If yes, please explain whether a requirement by the Commission to adopt DLRs is needed.**

The use of DLRs by Transmission Owners (“TO”)/Transmission Operators (“TOP”) in SPP is limited. Due to limited data and experience, SPP cannot quantify the impact of DLRs on the accuracy of operational or market performance. At this time, SPP recommends the Commission allow further assessment and analysis by the industry to determine if DLRs are needed to increase the level of transmission line rating accuracy to ensure wholesale rates are just and reasonable. Prior to any requirement from the Commission for the broad use of DLRs, SPP recommends the Commission allow for the following:

1. Implementation of Commission Order No. 881;
2. North American Electric Reliability Corporation (“NERC”) to perform a risk assessment of DLRs on the Bulk Electric System (“BES”); and
3. The creation of a DLR pilot program to aid with a benefit and impact assessment that DLRs will have on reliability and wholesale markets.

These suggested efforts will allow entities to gain experience using AARs implemented pursuant to Commission Order No. 881, and leverage that experience, and possibly the design and infrastructure created to facilitate the submission of AARs, with implementation of any requirement of broad use of DLRs. The proposed efforts are critical so that the industry can identify challenges that may occur in system design and market operations. These efforts will allow the industry to assess the impacts broader use of DLRs will have on RCs and their wholesale markets.

SPP has a number of specific concerns with the Commission requiring broad implementation of DLR, without first gaining needed experiences. SPP has concerns that broad implementation of DLR will increase the risk of volatility on the SPP Transmission System and will cause added workload to the SPP's Reliability Coordinator function and affect its ability to respond to more frequent changing System Operating Limits ("SOLs"). This concern increases even more if Operational Planning Analysis and look-ahead assessments overestimate transmission facility ratings leading up to real-time. A frequently changing rating can cause generation dispatch volatility as SOLs vary in their ability to transfer flows economically. Additionally, AARs and DLRs could be a source of Day-Ahead-Market and Real-time divergence as these will cause uncertainty and variable between the two horizons.

**(Question 2) What, if any, barriers to DLR implementation exist today? Are potential requirements to implement DLRs necessary to address these existing barriers? Why or why not?**

Current SPP systems allow the use of DLR, and no barrier exists for any TO/TOP to submit DLRs. If the use of DLRs becomes more extensive, then SPP will need to assess all of its Information Technology applications to determine SPP's ability to perform its current functions while also receiving substantial information, updated sub-hourly because of an exponential increase in the number of transmission lines utilizing DLRs. Currently, SPP allows TOs/TOPs to submit DLR via ICCP consumed into the Energy Management System ("EMS"), but SPP will likely pursue a different data exchange if DLRs are used more extensively.

**(Question 3) If the Commission were to require DLR implementation, should it require the implementation only on certain transmission lines, and, if so, what set of criteria should be considered to identify transmission lines for DLR implementation? Examples of such criteria could include congestion, curtailment levels, voltage levels, infrastructure, and/or**

**geography/terrain. Explain why such criteria would identify the set of transmission lines on which DLRs need to be implemented in order to produce just and reasonable wholesale rates.**

SPP recommends developing criteria to limit the number of transmission lines for which DLR is “required” to those where DLR application will provide benefits without introducing reliability risks. Some requirements to identify transmission lines for which DLR could be:

- Frequently congested transmission constraints that limit economic energy transfers;
- Conductor limited transmission elements with sufficient rating margin to other equipment limitations on the same facility; and
- In an area where the number of hours the DLR rating is expected to be higher than the AAR rating, at a frequency that would support justifying the cost and risks mentioned earlier associated with the implementation of DLRs.

As part of the assessment, analysis, or a pilot program, it is important to appreciate the beneficiaries of the implementation of DLRs and considerations for cost allocation may be warranted.

**(Question 4) How should transmission lines be evaluated for whether they satisfy such criteria, both initially and going forward? Please estimate the number and proportion of transmission lines that would likely be implicated by any criteria you recommend.**

Each of the three recommended criteria listed above in response to Question 3 will require further analysis and determination of appropriate thresholds when applying the requirements. SPP maintains a database of historical congested transmission elements (SOLs and Interconnection Reliability Operating Limits); this would be the main source of any evaluation. At this time, SPP has not performed this analysis.

**(Question 6) If such criteria included the magnitude of congestion on a transmission line, what metrics exist that assess the magnitude of congestion in both or either RTO/ISO and/or non-RTO/ISO regions? For any congestion metrics suggested, what data sources are available?**

SPP has a database of historical congestion and can develop appropriate metrics to aid with recommended criteria in response to Question 3. SPP records historical power flow cases and the congestion experienced on the transmission system utilizing its Market System and EMS as a reliable source of any analysis and metrics.

**(Question 7) Implementation of the requirements adopted in Order No. 881 are expected to change congestion patterns. How should these congestion pattern changes be accounted for when considering whether a transmission line satisfies the criteria established as part of any potential DLR requirements?**

Congestion patterns change from year to year due to various factors such as topology, generation retirement, and neighboring Balancing Authorities' parallel flows. SPP expects on-going evaluation of transmission equipment that meet the criteria for a DLR implementation. As such, TOPs should be provided flexibility to move DLRs as they see appropriate and beneficial to the transmission system.

**(Question 14) What are the expected costs and challenges of implementing DLRs (separate from the costs associated with Order No. 881 implementation)?**

TOPs will likely bear the majority of the costs for implementing DLRs. RTOs and ISOs would also require software and technology to support the broad utilization of DLRs, which would be an added cost of implementing DLRs. While SPP has not performed an impact assessment for these changes, it expects the need to enhance data exchange mechanisms that would require various validations and record-keeping for analysis and compliance purposes.

**(Question 16) If the Commission were to require DLR implementation, should the Commission direct NERC to evaluate how this requirement could**

**introduce new risks to the reliable operation of the BES and whether any standards require modification to address any risks?**

SPP recommends that if the Commission requires DLR implementation, the Commission should direct NERC to complete a study to assess any risks associated with DLR implementation on the Bulk Electric System's reliability and operation. SPP has several concerns related to the impact DLRs could have on reliability:

1. The accuracy of DLRs could be a challenge considering the dynamic nature of wind direction and wind speed for each of the span lengths of a transmission line;
2. The large volume of data exchange associated with the implementation of DLRs poses several challenges: the ability to consume and validate the appropriate rating in real-time and apply those ratings timely to SPP's EMS and market studies. An ever-changing transmission element ratings may result in added volatility associated with SOLs, the resulting generation dispatch, and the operator's actions required to mitigate congestion; and
3. SPP has concerns about using different ratings in real-time and in the day-ahead market solutions causing less convergence between real-time and day-ahead market studies.

As recommended in response to Question 1, SPP proposes a phased-in approach that will allow Transmission Providers, TOPs, and RCs to develop a pilot program will allow the RCs and TOPs to assess the implementation of DLRs, acquire the necessary experience, document lessons learned on all areas of concern, and be better prepared with an appropriate design and implementation as required. Based on the lessons learned from a pilot program, RCs and TOPs can develop a plan for further expansion of DLRs throughout SPP.

**(Question 20) In Order No. 881, the Commission adopted exceptions from the AAR requirements to ensure the safety and reliability of the transmission system and for transmission lines with transmission line ratings that are not affected by ambient air temperature or solar heating. Please explain whether the Commission should adopt the same or similar exceptions for DLR requirements. Are there any different/other exceptions from the application of DLR requirements that the Commission should consider? If so, what are these exceptions?**

SPP recommends that the Commission adopt similar exceptions as were included in the AAR requirements in Order No. 881.

**(Question 26) What would be the appropriate amount of time, either from your experience or by your estimation, necessary for each of the following DLR implementation steps identified below?**

**(a) Transmission line identification for DLR system application.**

**(b) DLR System design.**

**i. Field sensors and/or monitoring equipment design including specification, procurement, and installation.**

**ii. Communication infrastructure design, including specification, procurement, and installation.**

**iii. Process coordination between DLR field data and EMS, including any line rating database upgrades or necessary modifications.**

**iv. DLR system integration and testing.**

**(c) Any other steps needed to implement DLR system.**

As previously stated, SPP believes a pilot program should be completed before the implementation of DLRs through a FERC Notice of Public Rulemaking or any other order to allow affected entities the necessary and sufficient experience to assess and evaluate the impacts of DLRs.

## II. CONCLUSION

SPP respectfully requests that the Commission consider these comments in developing a Notice of Proposed Rulemaking.

Respectfully submitted,

/s/ Justin A. Hinton

Justin A. Hinton

Attorney

Southwest Power Pool, Inc.

201 Worthen Drive

Little Rock, AR 72223

(501) 482-2468

[jhinton@spp.org](mailto:jhinton@spp.org)

**Attorney for Southwest Power Pool, Inc.**

Dated: April 25, 2022