UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Soo Green HVDC Link   
ProjectCo, LLC    

v.      

Docket No. EL21-103-000 

PJM Interconnection, LLC

COMMENTS OF NRDC AND SUSTAINABLE FERC PROJECT

Pursuant to Rules 212 and 214 of the Rules of Practice and Procedures of the Federal Energy Regulatory Commission (the Commission), 18 C.F.R. §§ 385.212, 385.214, the Natural Resources Defense Council (NRDC) and the Sustainable FERC Project file these comments in the above captioned proceeding in support of SOO Green HVDC Link Project Co, LLC (SOO Green).

I. Applying PJM’s External Capacity Rules to External Resources Importing Capacity via Controllable High Voltage Direct Current Transmission Lines Is Unjust and Unreasonable

Between 2013 and 2017, PJM Interconnection, L.L.C. (PJM) created and the Commission approved a series of technical rules regarding transmission service that serve to ensure external capacity resources provide similar services to internal resources (hereinafter the “External Capacity Rules”).\(^1\) SOO Green’s complaint demonstrates that the External Capacity Rules are based on the technical characteristics of traditional uncontrolled alternating current (AC) interties, and do not reasonably apply to high voltage direct current (HVDC) lines. The Commission should grant SOO Green’s complaint and find unjust and unreasonable the PJM

External Capacity Rules as applied to resources importing capacity over controlled HVDC lines because the External Capacity Rules create an unjustifiable barrier to entry. The External Capacity Rules are simply not needed to ensure external resources delivered over HVDC lines provide equivalent service to internal capacity resources. In multiple rulemakings, the Commission has found that barriers to resources providing all services they are “technically capable of providing” inhibit competition and so result in unjust and unreasonable rates.² Additionally, resource sharing across wider geographic regions improves reliability, resilience, and the ability to handle extreme weather in ways that may not be well-captured by existing market and resource adequacy constructs. The External Capacity Rules therefore act as an unjust and unreasonable barrier to market entry by otherwise capable external resources, thus creating unjust and unreasonable impacts to the entire market and interregional trade.

a. The compatibility services of the External Capacity Rules are unnecessary for external resources delivered over HVDC.

The External Capacity Rules are based on a set of assumptions relating to the operating functions of external resources delivered into PJM over uncontrolled AC lines. Specifically, PJM cited a need “to ensure that external resources providing capacity to PJM load meet the same technical standards and requirements for deliverability as internal resources.”³ The External Capacity Rules were not designed and the Commission never squarely addressed applying the Rules to external resources delivered via controllable HVDC transmission facilities.⁴ As SOO Green demonstrates, the control issues the External Capacity Rules are designed to address stem

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⁴ See SOO Green Complaint at 30-32.
from the particular electrical characteristics of uncontrolled AC lines, and “the External Capacity Rules are not necessary for reliability or operations in the case of external capacity resources delivering via a controllable HVDC transmission facility.”5 Because HVDC lines are physical connections that give PJM control, the underlying assumptions regarding uncertain deliverability from external resources motivating the External Capacity Rules do not apply to external capacity delivered over HVDC lines, and the Rules are therefore redundant. Applying the External Capacity Rules to external resources delivered over HVDC lines when the rules do not provide the operational benefits that were the basis by which the Commission approved the Rules make the application of the Rules to HVDC unjust and unreasonable.

PJM began its External Capacity Rules in 2014 when the Commission approved a Capacity Import Limit to control the amount of external capacity PJM accepted in its capacity auctions. The primary basis PJM proposed, and the Commission accepted, the Capacity Import Limit was because it provided PJM greater assurance on the delivery from external capacity. PJM explained that the Capacity Import Limit was needed because its current system did not “account for the risk that an external resource may be prevented from providing energy to PJM at critical times by curtailments of firm transmission by third party systems over which PJM has no control.”6 The Commission found the Capacity Import Limit just and reasonable because it would “help to address the risk that external resources may not be able to deliver capacity in the relevant delivery year because firm transmission may be curtailed by third-party systems and

5 SOO Green Complaint at 30.
6 PJM Interconnection, L.L.C. 147 FERC ¶ 61,060 at P 3 (2014).
external systems managing their own congestion may affect deliverability of energy to PJM load.”\(^7\)

PJM also recognized an exception to the Capacity Import Limit for external resources that entered pseudo-ties with PJM because they “do not present the risks contemplated by this filing.”\(^8\) Pseudo-tied resources address the same concerns that the Capacity Import Limit addressed regarding guaranteed delivery because a pseudo-tied resource “has taken steps to be much like a PJM’s internal resource.”\(^9\) For example, “even though a pseudo-tied generation resource is physically located in one balancing authority, it is treated electrically as being in another balancing authority,” and therefore such resources are subject to redispacht and locational pricing and are not subject to level 5 Transmission Loading Relief (TLR-5) curtailments.\(^10\)

In proposing and approving the exception to the Capacity Import Limit, PJM and the Commission never analyzed external capacity delivered over HVDC lines. But the fundamental purpose of the Capacity Import Limit – to address the concern that third-party systems will curtail transmission paths that external capacity relies on and so disrupt PJM operations – is inapplicable to external resources delivered over HVDC lines. HVDC lines are functionally and operationally different from AC lines. As SOO Green explains, an HVDC line, “establishes a single direct path that is not encumbered by deliverability concerns of the AC seam.”\(^11\) Unlike AC lines, “the amount of power that flows over an HVDC line is directly scheduled by the RTO

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\(^7\) *Id.* at P 25. See also *id.* P 27 (just and reasonable to address risk that TLR-5 will cause third-party system to curtail firm transmission).

\(^8\) PJM Interconnection, L.L.C. 147 FERC ¶ 61,060 at P 36 (2014).

\(^9\) *Id.*

\(^10\) *Id.* at P 50.

… [and] the amount of power that flows over an HVDC line is directly controlled by the
to the operator.”12 Simply, PJM has operational control over HVDC lines, which eliminates the risk
PJM sought to address with the Capacity Import Limit.

Moreover, like pseudo-ties, HVDC facilities also “do not present the risks contemplated
by [the] filing” because they are “much like a PJM internal resource.”13 For example, as the
Commission has recognized, “[A controllable HVDC transmission facility] requires extensive
amounts of interconnection studies and a service agreement with PJM, much like the
interconnection studies and interconnection service agreements that internal generators in PJM
are required to have.”14 Additionally, with an HVDC facility, PJM directly schedules the flows
to meet its market and reliability demands.15 Moreover, the risk of a TLR-5 event on an HVDC
is along the same lines as a TLR-5 event with a pseudo-tie.16

In 2015, PJM conducted significant reforms to its capacity market, including amending
its External Capacity Rules. PJM decided to procure 100% of its capacity from resources that
met Capacity Performance requirements and made pseudo-ties mandatory for all external
resources. PJM argued, and the Commission agreed, that requiring all external resources be
pseudo-tied would ensure that external resources are on equal footing with internal resources.17
In finding a need for pseudo-ties, the Commission agreed with PJM’s explanation that “external
interchange schedules are not unit-specific and cannot be tied to any specific external

12 Affidavit of Marc D. Montalvo at P 25.
13 Id. at P 36.
15 Affidavit of Marc D. Montalvo at P 32.
16 SOO Green Complaint at 39.
resource.” However, PJM and the Commission again did not consider HVDC lines in this analysis. An HVDC line creates a direct physical connection that PJM controls, creating interchange that is, in fact, unit-specific and able to be tied to a specific external resource.19 HVDC lines thus put external resources on equal footing with internal resources. A pseudo-tie is a virtual connection to give PJM primary control over the resource, but in the case of an HVDC interconnection, PJM already has a real tie giving this level of control, already providing the capability a pseudo-tie simulates. Like with the Capacity Import Limit, the basis for mandatory pseudo-ties simply does not apply to HVDC lines.

Finally, in 2017, in response to an overall increase in pseudo-tie requests and the challenges that caused to PJM’s modeling, congestion management, and planning and operation,20 PJM enhanced its limits on external capacity by requiring resources meet certain engineering requirements and tests to pseudo-tie. As with the original 2014 order and 2015 update, the basis for PJM proposing and the Commission approving the 2017 rule update for external resources was that the “revisions should help ensure that external resources bidding into the auction are comparable to internal resources in assuring that they will be deliverable to PJM’s system when needed.”21 Specifically, PJM argued that incorporating external resources “require[ed] direct visibility and controllability of the external resource by the attaining Balancing Authority in order to meet the unit-specific standard of a capacity commitment in

19 See Affidavit of Marc D. Montalvo at P 52.
20 PJM Interconnection, L.L.C., 161 FERC ¶ 61,197 at P 5 (2017) (“incorporating more distant external pseudo-tied resources into PJM has increased the risk of errors in the Energy Management System (EMS) model and posed congestion management problems… PJM also does not have the ability to model all generator impacts for qualifying external market-to-market flowgates.”).
21 Id. at PP 18, 27.
PJM.” The Commission explained that external resources have operational and deliverability concerns different from internal resources, and PJM’s pseudo-tie rule addresses these unique concerns.

Again, HVDC lines do not have the same operational and deliverability concerns as AC lines and thus it is unreasonable to apply PJM’s rules requiring pseudo-ties to resources importing via HVDC lines. As SOO Green’s expert explains, each requirement for a pseudo-tie arrangement addresses specific concerns of importing capacity across an AC line and are inapplicable to HVDC. For example, PJM requires a Market-to Market (M2M) flowgate test to coordinate flow between regions and an electrical distance limit to ensure that external resources are located geographically close enough to make M2M coordination possible. But regions do not need to coordinate flow over HVDC lines because, unlike with a free-flowing AC interface, “only scheduled transactions will flow over the HVDC facility.” Because HVDC creates a physical tie between the regions, not a virtual tie like pseudo-ties, it obviates the need for these tests.

The basis provided in each order creating the External Capacity Rules do not apply to external capacity delivered over HVDC lines.

b. PJM’s External Capacity Rules create unreasonable barriers to market participation for HVDC lines.

As shown, there is no basis for the application of the External Capacity Rules to resources delivered over HVDC lines, and therefore the External Capacity Rules are an unjust and unreasonable barrier to entry for otherwise capable resources. In approving the External

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22 Id. at P 25.
23 Id. at P 27.
24 Affidavit of Marc D. Montalvo at PP 24-43.
Capacity Rules without considering HVDC lines, the Commission explained that PJM’s “pseudo-tie requirement addressed the operational and deliverability concerns of external resources, and in doing so, do not create unreasonable barriers to entry.” But, as these same operational and deliverability concerns do not exist for capacity delivered on HVDC, the External Capacity rules have simply become a means to limit competitive entry into the market and thus are unjust and unreasonable.

As SOO Green explains, the Commission disapproves of unnecessary barriers to market participation. Where resources that are technically capable of providing services are precluded from competing with resources that are already participating in the RTO/ISO markets, the result is reducing the efficiency of the RTO/ISO markets, potentially leading an RTO/ISO to dispatch more expensive resources to meet its system needs. The Commission has previously noted “that market rules designed for traditional resources can create barriers to entry for emerging technologies.”

This appears to be such a case. Because PJM requires all external resources to meet External Capacity Rules designed for traditional AC interconnects, otherwise capable new resources that could be delivered over HVDC lines do not have access to PJM’s market. The External Capacity Rules limit the market for HVDC lines and the number, type, and location of innovative external resources by creating redundant hoops for technically capable resources to

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26 Potomac Econ., Ltd., 171 FERC ¶ 61039 at P 8 (2020).
jump through. These resources are technically and operationally capable of meeting all substantiative requirements to provide capacity to PJM’s market through HVDC lines yet are barred from contributing their full value due to unreasonable application of rules developed for a different technology. As applied to external resources delivered over HVDC lines, the External Capacity Rules are unjust and unreasonable.

c. The Rules create unreasonable impacts to the entire market and interregional trade.

By unreasonably restricting competitive external resources, PJM’s External Capacity Rules also unreasonably constrain interregional reliability and trade, resource adequacy, and market efficiency. As the Commission has explained, “[i]mproving the competitiveness of organized wholesale markets is integral to the Commission fulfilling its statutory mandate to ensure supplies of electric energy at just, reasonable and not unduly discriminatory or preferential rates.” Removing barriers to the market enhances competition, which in turn ensures that markets produce just and reasonable rates. Here, with capable resources available over HVDC lines, the External Capacity Rules are mere barriers to competition in the market and are therefore unjust and unreasonable as applied to external capacity delivered over HVDC lines.

Now more than ever, energy commerce among states and regions is important. Greater geographic and diverse resource sharing across regions has shown to be necessary in the face of

ever increasing extreme weather events\textsuperscript{33} and barriers must be removed to develop the renewable resources needed to meet climate challenges.\textsuperscript{34} There is vast potential to build new wind and solar generation throughout the heart of the nation, but it requires modern HVDC power lines to bring that power from where it is generated to where it is needed. PJM’s External Capacity Rules are a barrier to this much needed interregional trade.

d. Neighboring RTO/ITOs do not bar entry from HVDC lines.

Other RTOs recognize HVDC facilities’ unique capabilities while maintaining operational capabilities. The Commission has rejected proposed rate changes as not just and reasonable in part because “of claims that [the RTO’s] proposal creates barriers to entry that do not exist in neighboring RTOs/ITOs.”\textsuperscript{35} As SOO Green explains, both ISO New England, Inc. (ISO-NE) and New York Independent System Operator (NYISO) have external capacity delivered over HVDC lines without sacrificing operating services.\textsuperscript{36} Although the Commission approves different treatment when justified by different conditions across regions, that does not appear to be the case here. PJM’s different treatment of HVDC appears to rest not on technological or market factors, but simply on the issue not being considered when PJM’s rules were developed. PJM’s External Capacity Rules are a holdover from addressing concerns with old technology, not an intrinsic need for capacity markets. The Commission should find the

\textsuperscript{36} SOO Green Complaint at 44-46.
External Capacity Rules unjust and unreasonable for creating barriers to entry that do not exist in neighboring RTOs/ISOs without sufficient justification.

**Conclusion**

Unnecessary barriers to entry into a market reduce competition and lead to unjust and unreasonable rates. Precluding resources that are technically capable of providing services from competing reduces the efficiency of the RTO/ISO markets. The Commission should remove such barriers to market participation and interregional trade by finding the External Capacity Rules unjust and unreasonable for external capacity delivered over HVDC lines and provide a replacement rate for PJM.

Respectfully submitted,

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Dated: October 22, 2021
CERTIFICATE OF SERVICE

I hereby certify that I have on this 22nd day of October 2021, served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

/s/ Caroline Reiser
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