

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

SOO Green HVDC Link ProjectCo,)	
LLC,)	
Complainant,)	
)	Docket No. EL21-103-000
v.)	
)	
PJM Interconnection, L.L.C.,)	
Respondent.)	

ANSWER OF PJM INTERCONNECTION, L.L.C.

PJM Interconnection, L.L.C. (“PJM”), pursuant to Rule 213 of the Federal Energy Regulatory Commission’s (“Commission”) Rules of Practice and Procedure,¹ submits this Answer to the Complaint filed by SOO Green HVDC Link ProjectCo, LLC (“SOO Green”) on September 21, 2021.² As shown below, the Commission should deny the Complaint.

I. INTRODUCTION AND SUMMARY

On September 21, 2021, SOO Green filed the instant Complaint under Federal Power Act (“FPA”) section 206, asking the Commission to exempt resources located outside of PJM from PJM’s Capacity Resource³ qualification requirements if they deliver energy to PJM via SOO Green’s unconstructed high voltage direct current (“HVDC”) line. Notably, the Complaint does not assert that PJM’s existing external capacity

¹ 18 C.F.R. § 385.213.

² Complaint and Request for Relief of SOO Green HVDC Link ProjectCo, LLC, Docket No. EL21-103-000 (Sept. 21, 2021) (“Complaint”).

³ Capitalized terms not defined herein have the meaning set forth in the PJM Open Access Transmission Tariff (“Tariff”), the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C. (“Operating Agreement”), or the Reliability Assurance Agreement Among Load Serving Entities in the PJM Region (“RAA”).

requirements are unjust or unreasonable for external resources connecting to PJM via an alternating current (“AC”) transmission system.⁴ Rather, the Complaint attempts to frame PJM’s rules for *external capacity resources* as providing a barrier to entry for the *HVDC line* and for external resources that pay to use SOO Green’s line. However, as detailed in this answer, SOO Green’s proposed alternative does not meet the reliability objectives that PJM’s current rules advance for both internal and external Capacity Resources.

Specifically, the Complaint requests that the Commission establish a different set of rules for yet-to-be identified external resources located within the geographic footprint of Midcontinent Independent System Operator, Inc. (“MISO”) that will deliver energy across MISO’s AC transmission system to SOO Green’s HVDC transmission line for re-delivery to PJM. In effect, SOO Green proposes to exempt external resources from Tariff-prescribed rules that require all external resources to pseudo-tie into PJM and meet unit-specific qualification criteria. SOO Green instead proposes to permit external resources to qualify as Capacity Resources ensuring reliability for PJM Region loads even though they may be: (1) located anywhere in the MISO footprint, which extends from Louisiana to Montana; (2) subject to MISO’s dispatch; and (3) delivering energy across MISO’s AC transmission system to SOO Green’s HVDC line for re-delivery to PJM.

SOO Green proposes the following process when the PJM Region needs energy from external resources that are not pseudo-tied with direct PJM control of such committed resources:

⁴ Complaint at 6 n.3.

- PJM would send a dispatch instruction to the HVDC transmission line instead of to the Capacity Resources;
- The HVDC line would then request energy from the external PJM Capacity Resources;
- MISO would be responsible for supplying the energy across its AC transmission system from the most economic source, without regard to PJM Capacity Resource status, as determined through MISO's security-constrained economic dispatch ("SCED"); and
- The HVDC line would deliver energy to PJM.⁵

The fact that SOO Green is developing an HVDC transmission line that may operate differently than transmission AC transmission systems is a red herring. Critically, SOO Green's proposal relies on the fact that the external resources would still be interconnected to MISO's AC transmission while not being required to meet PJM's pseudo-tie requirements, which are designed to ensure reliability to PJM loads. Nothing in SOO Green's proposal alleviates PJM's reliability concerns given that the external resources must first utilize an external AC system in order for such resources' energy to be delivered to PJM, irrespective of whether the final delivery into PJM may be transmitted via an HVDC line.⁶ In other words, the mere presence of an HVDC line does not address PJM's operational and deliverability concerns with such external resources. Indeed, there may be congestion on MISO's AC system inhibiting the delivery of a resource's energy to the HVDC's injection point in the first instance, thereby preventing its delivery to PJM when needed. Ultimately, congestion or curtailment events on

⁵ Complaint at 49-57.

⁶ Complaint at 14-15 ("SOO Green was established to develop, finance, and construct a merchant HVDC transmission project linking [MISO] and PJM.").

MISO's system are controlled by MISO and could result in reliability issues on PJM's system (unless the resource is pseudo-tied into PJM).⁷

The Complaint argues that PJM's current rules requiring external resources to meet PJM's external capacity rules are unjust and unreasonable because SOO Green's HVDC line provides a different means to deliver power to PJM than historical AC transmission systems.⁸ But, as shown in Table 1 and further explained in detail below, SOO Green's proposal is no substitute for PJM's Commission-approved external capacity requirements. In fact, there are significant gaps between SOO Green's proposal and PJM's existing rules, as Table 1 highlights, which would eliminate comparability among PJM's internal and external Capacity Resources and adversely affect PJM's ability to maintain reliability.

⁷ See *supra* Section II.A.v.

⁸ Complaint at 2.

Table 1: Comparison of PJM External Capacity Requirements to SOO Green Proposal

Internal PJM Generator	External Capacity Resources under PJM’s Tariff	SOO Green Proposal	Gap in SOO Green Proposal
Deliverability study performed using PJM standards with upgrades required as necessary	Requires deliverability study to be performed on external AC transmission system for the Firm Point-to-Point service using PJM standards	Firm Point-to-Point on external Host Regional Transmission Organization (“RTO”) AC system using Host RTO standards	Ignores repeated Commission findings that PJM is entitled to require resources committed to ensure reliability to PJM loads to meet PJM deliverability standards. ⁹ (<i>see infra</i> section II.B.v)
Annual RTEP ensures continued deliverability	Requires annual studies to ensure continued deliverability on external AC system	No annual study performed using PJM standards	Ignores repeated Commission findings that PJM is entitled to require resources committed to ensure reliability to PJM loads to meet PJM deliverability standards.
Uses PJM-Internal Network Integrated Transmission Service (“NITS”)	Network External Designated (PJM) Point-to-Point service (External)	Point-to-Point service (External)	MISO Point-to-Point service is not planned to provide same level of deliverability to PJM Region
No NERC Interchange Tagging	No NERC Interchange Tagging, because resource is considered electrically part of PJM via pseudo-tie	NERC Interchange Tagging required for actual generators under NERC standard because resource not pseudo-tied into PJM	Tagged transactions could be curtailed via the NERC TLR process, which would deny PJM access to Capacity Resources committed to ensure PJM Region

⁹ See *Brookfield Energy Mktg. LP v. PJM Interconnection, L.L.C.*, 171 FERC ¶ 61,151, at P 39 (2020) (“Brookfield Complaint Order”) (“As the Commission recently found . . . firm transmission service by itself is insufficient to ensure that an external resource, even one that PJM can dispatch under a pseudo-tie, will be available and deliverable to PJM. Because PJM’s dispatch software does not include full visibility into all aspects of the external system, PJM cannot be sure of the factors that may affect whether the external resource’s generation will be deliverable inside of PJM.”); *PJM Interconnection, L.L.C.*, 161 FERC ¶ 61,197, at P 25 (2017) (“External Capacity Enhancements Order”) (noting PJM’s explanation of the deliverability requirement as a “reasonable solution[] to challenges that can arise when loads in one Balancing Authority Area rely on generation physically located in other Balancing Authority Areas that have different planning, operating, and market rules and practices.”), *reh’g denied*, 170 FERC ¶ 61,217 (2020) (“External Capacity Enhancements Rehearing Order”).

			reliability. (<i>see infra</i> section II.B.vii)
Real-time Dispatch on 5-minute intervals	Real-time Dispatch on 5-minute intervals because resource is considered electrically part of PJM via pseudo-tie	Real-time Dispatch on 15 minute intervals (Even if the HDVC can be controllable to 5 min, the tagged transactions from generator to HVDC line is 15 min)	Dispatch limited by requirement that Interchange Tagged transactions must be 15 minutes
Can provide Ancillary Services	Can provide Ancillary Services because resource is subject to PJM dispatch via pseudo-tie	Cannot provide Ancillary Services	Ancillary Services are not available from physical generators on MISO system because PJM does not control external generators unless pseudo-tied. ¹⁰

In short, by removing the pseudo-tie requirement, SOO Green’s proposal would eliminate PJM’s ability to have necessary dispatch control over the external resources that use SOO Green’s line for the final delivery into PJM.¹¹ SOO Green’s suggested replacement for PJM’s external capacity rules would also eliminate the external Capacity Resources’ commitments to provide capacity when called upon by PJM. Instead, SOO Green would effectively shift the obligation to MISO, and would allow that obligation to be satisfied on a slice-of-system approach, rather than the PJM-required unit-specific approach.¹² The Complaint thus asks for unduly preferential treatment for external resources delivering energy to SOO Green’s HVDC transmission line compared with

¹⁰ See External Capacity Enhancements Rehearing Order, 170 FERC ¶ 61,217, at P 55 (citing *Long-Term Firm Transmission Rights in Organized Electricity Markets*, Order No. 681, 116 FERC ¶ 61,077, at PP 78-83 (2006), *reh’g denied*, Order No. 681-A, 117 FERC ¶ 61,201, *reh’g denied*, Order No. 681-B, 126 FERC ¶ 61,254 (2009)).

¹¹ See *infra* Section II.B.iii and accompanying text.

¹² Complaint at 56 (“[T]he proposed rules support system reliability by supplying capacity from a geographically diverse portfolio of competitive generating resources and using MISO’s SCED to economically manage congestion and support scheduled deliveries at the HVDC facility.”).

PJM-internal Capacity Resources and external Capacity Resources that do not contract with SOO Green to use its line for the final delivery into PJM.

The effect of granting the Complaint would be to relieve such external generation resources from the obligations and requirements that form the essential attributes of capacity committed in PJM (e.g., being available for scheduling and dispatch by PJM, being visible to PJM on a unit-specific basis, being deliverable to PJM, and being accountable for performance on a unit-specific basis). In essence, the Complaint asks the Commission to simply wave away the long line of Commission precedent supporting PJM's external capacity requirements. Sellers of resources without those obligations would therefore have a competitive edge over all other PJM Capacity Resources and would be incented to offer a lower price for what is in essence a lesser product.

The Commission approved PJM's external capacity rules, including the use of pseudo-ties, as a reasonable means to ensure sellers of external generation comply with the capacity obligations, even ordering PJM to make clear that pseudo-tying is an eligibility requirement for Capacity Performance Resources.¹³ Moreover, the Commission recently evaluated and rejected a similar proposal for MISO to be responsible for delivering an external Capacity Resource's energy to PJM, finding that "PJM's capacity market is not unjust and unreasonable because it requires external resources to be responsible for their own capacity obligations, just as internal resources are responsible for their capacity obligations."¹⁴ The Commission should likewise reject

¹³ *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 96 (2015) ("Capacity Performance Order"), *order on reh'g*, 155 FERC ¶ 61,157 (2016) ("Capacity Performance Rehearing Order").

¹⁴ *Potomac Econ., Ltd. v. PJM Interconnection, L.L.C.*, 171 FERC ¶ 61,039, at P 67 (2020) ("MISO IMM Complaint Order").

SOO Green's proposal to relieve external Capacity Resources of their unit-specific obligation to provide capacity to PJM.

PJM emphasizes that its opposition to this Complaint is not about the unquestioned value of HVDC transmission development. PJM's opposition, rather, is to the Complaint's central premise that an HVDC line, standing alone, moots all of PJM's carefully developed and repeatedly upheld Tariff requirements for ensuring that Capacity Resources located outside the PJM Region meet the same reliability standards as Capacity Resources located inside the PJM Region. Notably, there are ready alternatives under the existing rules that would support the development of HVDC facilities without PJM's external capacity rules, which have been well-litigated and purposefully developed to ensure reliability and resource comparability.¹⁵ Specifically, external resources that pseudo-tie into PJM could utilize the HVDC line to get the energy delivered to PJM. In addition, SOO Green could extend its HVDC line into PJM by proposing a transmission solution, through PJM's Order No. 1000 competitive window process, to address specific identified reliability and market efficiency issues in the western part of PJM. Further, similar to existing HVDC transmission lines that interconnect with PJM, SOO Green could schedule energy and request rights on the merchant transmission facility. In short, this is *not* a case about promoting development of HVDC or increasing overall transfer capability between regions. Rather, SOO Green has focused the Complaint on displacing PJM's external capacity rules, thus removing from discussion—at least in this case—all of the other options available to SOO Green and others to promote cost-effective development of HVDC resources both within PJM and across the PJM/MISO seam.

¹⁵ See *infra* Section II.D.

II. ANSWER TO COMPLAINT

The Complaint should be denied. At bottom, it fails to meet its burden of demonstrating that PJM's external capacity rules, as applied to unidentified resources located in MISO that might deliver energy via the MISO AC transmission system to an HVDC line for re-delivery to PJM, are unjust and unreasonable.¹⁶ The Complaint also fails to show that the numerous other previously approved Generation Capacity Resource obligations (including dispatchability, deliverability, resource visibility, and outage scheduling rules) are unjust and unreasonable.¹⁷

What is more, the Complaint proposed an unduly discriminatory alternative that would exempt a subset of resources from the qualification rules for external resources to participate in PJM's capacity market that were designed, and approved, to ensure comparability between internal and external Capacity Resources. Compounding the undue preference, SOO Green's alternative would even effectively relieve the favored resources—those that contract with SOO Green—of the fundamental PJM Region obligation on *all* PJM Capacity Resources to commit capacity on a unit-specific basis. Those favored external resources could instead rely on other resources in MISO, as expressly contemplated by SOO Green's proposed slice-of-system approach, to help them meet the capacity obligations for which they are being paid by PJM loads. SOO Green offers little to justify the broad spectrum of changes it demands to PJM's market rules.

¹⁶ See *infra* Section II.B, nn.45-47 and accompanying text.

¹⁷ See *infra* Section II.B

The Complaint effectively asserts that because an HVDC line is used at one step in the process for delivering energy from unidentified resources in MISO to PJM, such resources should be exempt from a wide swath of PJM’s capacity market qualification rules.¹⁸ However, the presence of an HVDC line does not alleviate the need for such external capacity qualification rules. The rules exist to ensure reliability while providing comparable treatment for internal and external resources.¹⁹ Indeed, the external capacity requirements were carefully crafted and calibrated to ensure external generation resources’ offers of capacity are held to comparable standards and treatment as internal resources to ensure system reliability, and for all resources to fairly compete in providing PJM capacity. The Complaint purports that the rules regarding external Capacity Resources operate as a barrier to entry “that block market participation of both the HVDC transmission line itself and the external capacity resources delivering via the line.”²⁰ But qualification rules that treat all resources on a comparable basis are not unduly discriminatory and “do not create unreasonable barriers to entry.”²¹

Below, PJM more fully rebuts the Complaint’s allegations and shows that the Complaint fails to demonstrate that PJM’s existing external capacity rules are unjust and unreasonable as applied to potential resources that may deliver energy to PJM via SOO Green’s HVDC line. PJM also explains that SOO Green’s proposed replacement is not

¹⁸ See Complaint at 30-40.

¹⁹ See External Capacity Enhancements Order, 161 FERC ¶ 61,197, at PP 18, 60, 87, 99, 115.

²⁰ Complaint at 4.

²¹ External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 27. It is well recognized that all similarly situated entities must be treated the same, unless there justification for disparate treatment. See *PacifiCorp Elec. Operations*, 54 FERC ¶ 61,296, at 61,855 (1991). PJM’s external capacity rules are designed to ensure all resources, internal and external, are treated as close to the same as possible while meeting reliability objectives.

just and reasonable and instead would confer an undue preference on a subset of external resources.

A. *Background of PJM’s External Capacity Requirements.*

At the outset, it must be remembered that capacity is a reliability product with comparable obligations on all entities that bid to provide capacity. The Commission has found PJM’s external capacity rules to be just and reasonable,²² necessary for PJM to meet its reliability needs,²³ and necessary to ensure external resources are treated comparably to internal resources.²⁴ In particular, PJM’s capacity market is based on physical Capacity Resources committing to provide capacity in a future Delivery Year. Because Capacity Resources committed in the capacity market “are critical to maintaining regional reliability,”²⁵ PJM’s governing documents provide specific capability and deliverability requirements for resources to qualify as Capacity Resources. “[I]t is not enough simply to ensure that ‘capacity,’ . . . is procured to meet reserve targets; rather, that capacity must carry with it meaningful performance obligations, and corresponding incentives and penalties, to ensure that those resources actually deliver when needed.”²⁶ To that end, PJM’s capacity market is “designed to ensure that resources committed as capacity to meet PJM’s reliability needs will deliver the promised energy and reserves when called upon in emergencies, and thus . . . provide the reliability

²² External Capacity Enhancements Rehearing Order, 170 FERC ¶ 61,217, at P 11.

²³ See External Capacity Enhancements Rehearing Order, 170 FERC ¶ 61,217, at P 16; External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 60; see also *Cube Yadkin Generation, L.L.C. v. PJM Interconnection, L.L.C.*, 171 FERC ¶ 61,152, at P 46 (2020) (“Cube Yadkin Complaint Order”).

²⁴ See External Capacity Enhancements Rehearing Order, 170 FERC ¶ 61,217, at P 11; External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 18.

²⁵ Capacity Performance Order, 151 FERC ¶ 61,208, at P 9.

²⁶ Capacity Performance Order, 151 FERC ¶ 61,208, at P 9.

that the region expects and requires.”²⁷ PJM’s current capacity market design also is intended “to ensure that the competitive wholesale markets continue to meet the needs of customers.”²⁸

i. PJM Capacity Offers and Commitments Are Unit-Specific.

Capacity offers and commitments in the PJM Region have long been unit-specific. The Commission has rejected protests advocating market rule changes that “could transform the [Reliability Pricing Model] bidding process from an individual unit approach to a portfolio bidding approach.”²⁹ Instead, PJM’s capacity market rules properly “assur[e] that offers into the PJM auction reflect physical resources that it reasonably can anticipate being available in the delivery year.”³⁰ Because PJM’s capacity construct requires specific, identifiable resources, undifferentiated “slice-of-system” commitments do not qualify as PJM Capacity Resources.³¹ This simple rule applies regardless of whether capacity is committed from resources within the PJM Region or located outside its borders.³²

Capacity Market Sellers committing a generation resource as a Capacity Resource assume several, unit-specific obligations—all designed to ensure reliability for the PJM

²⁷ Capacity Performance Order, 151 FERC ¶ 61,208, at P 8.

²⁸ Capacity Performance Order, 151 FERC ¶ 61,208, at P 8.

²⁹ Capacity Performance Order, 151 FERC ¶ 61,208, at P 102; *see also* Capacity Performance Rehearing Order, 155 FERC ¶ 61,157, at P 51 (“[I]ndividual-unit bidding approach . . . is central to PJM’s capacity auction process.”).

³⁰ *PJM Interconnection, L.L.C.*, 146 FERC ¶ 61,150, at P 25 (2014).

³¹ *See, e.g.*, RAA, Schedule 8.1.D, section 4 (“A Capacity Resource submitted in an FRR Capacity Plan must be on a unit-specific basis, and may not include ‘slice of system’ or similar agreements that are not unit-specific.”).

³² *See* MISO IMM Complaint Order, 171 FERC ¶ 61,039 (rejecting complaint seeking to remove unit-specific requirements for resources located outside of the PJM Region); *see also* External Capacity Enhancements Order, 161 FERC ¶ 61,197, at PP 114-18; External Capacity Enhancements Rehearing Order, 170 FERC ¶ 61,217, at PP 32-37.

Region. In particular, the Operating Agreement is explicit that “[a] Generation Capacity Resource committed to service of PJM loads . . . shall be made available for scheduling and dispatch at the direction of the Office of the Interconnection [i.e., PJM].”³³ That is, generation resources with a capacity commitment “are subject to a Day-ahead Energy Market must-offer requirement and a Real-time Energy Market must-offer requirement and pursuant thereto shall submit offers for the available capacity of such Generation Capacity Resource” into the PJM energy markets every day (if not on a PJM-accepted outage or a forced outage).³⁴

To ensure that the PJM Region actually has available all the capacity it pays for, Generation Capacity Resources must be deliverable to PJM load, as required by the RAA.³⁵ Deliverability is assessed on a unit-specific basis, from the location of the specific Generation Capacity Resource.³⁶ In addition, Generation Capacity Resources cannot offer more capacity than the resource is physically capable of reliably providing. Such capability is determined on a unit-specific basis in accordance with the RAA, Schedules 9 and 9.1. To that end, the Commission recently accepted PJM’s Effective Load Carrying Capability (“ELCC”) rules for determining the relative amount of capacity that each variable, limited duration, and combination resource may offer to provide the PJM Region.³⁷

By committing its generation resource to the PJM Region as a Generation Capacity Resource, the Capacity Market Seller empowers PJM to withhold approval of

³³ Operating Agreement, Schedule 1, section 1.10.4(a) (emphasis added).

³⁴ Operating Agreement, Schedule 1, section 1.10.1A(d).

³⁵ RAA, Schedule 10.

³⁶ RAA, Schedule 8.1.D, section 4.

proposed Generator Planned Outages and Generator Maintenance Outages, based on PJM’s consideration of the adequacy of reserves in the PJM Region and reliability of the PJM Region.³⁸

ii. PJM’s Pseudo-Tie Rules Ensure that All Generation Capacity Resources Meet the Same Obligations.

Generators located outside the PJM Region can serve as Generation Capacity Resources, but they must abide by all PJM terms and conditions of Generation Capacity Resource status, including the obligations discussed above. To ensure external Generation Capacity Resources can meet these obligations, the Tariff requires each external resource to pseudo-tie into PJM and specifies requirements for such pseudo-ties.³⁹ A pseudo-tie ensures that:

- an external Generation Capacity Resource can comply with its energy market must-offer obligation under the Operating Agreement, i.e., to “be made available for scheduling and dispatch at the direction of [PJM],”⁴⁰
- an external Generation Capacity Resource can meet the deliverability requirement that the RAA imposes on all Capacity Resources;⁴¹
- an external Generation Capacity Resource’s energy delivery into PJM is not treated as an interchange transaction, which would be subject to curtailment under North American Electric Reliability Corporation (“NERC”) Transmission Loading Relief (“TLR”) procedures; and
- an external Generation Capacity Resource’s operations are visible to PJM enabling PJM to (1) ensure sufficient quantity of reserves are maintained and (2) measure individual resource performance as needed to assess Non-Performance Penalties or credit Performance Payments.

³⁷ See *PJM Interconnection, L.L.C.*, 176 FERC ¶ 61,056 (2021).

³⁸ Operating Agreement, Schedule 1, sections 1.9.2 (Planned Outages), 1.9.3 (Generator Maintenance Outages).

³⁹ See Tariff, Attachment DD, section 5.5A(b).

⁴⁰ Operating Agreement, Schedule 1, section 1.10.4(b).

⁴¹ RAA, Schedule 10.

The pseudo-tie requirement therefore is not only an approved Tariff requirement, it also is the vehicle by which external Generation Capacity Resources comply with multiple other approved Tariff, RAA, and Operating Agreement provisions that define what it means to be a Generation Capacity Resource.

The Commission has found that “[b]ecause the pseudo-tie requirements address the operational and deliverability concerns of external resources, they also do not create unreasonable barriers to entry.”⁴² Only last year, the Commission rejected a complaint seeking to remove the pseudo-tie and other unit-specific requirements for external resources, finding that “PJM’s capacity market is not unjust and unreasonable because it requires external resources to be responsible for their own capacity obligations, just as internal resources are responsible for their capacity obligations.”⁴³

To be eligible to pseudo-tie, a resource must meet the following pseudo-tie requirements prescribed by the Tariff⁴⁴:

- (1) external resource must have a specified minimum electrical distance from the PJM Region (the “Electrical Distance Test”);
- (2) for each eligible coordinated flowgate that would result from establishing the pseudo-tie, there must be at least one PJM-internal generation resource that has a specified minimum flow impact on that flowgate;
- (3) external Balancing Authority provides written acknowledgement that transactions from the external resource do not require NERC tagging and that firm flow allocations associated with any coordinated flowgates applicable to the external resource will be allocated to PJM;
- (4) each external entity with which PJM may be required to coordinate flowgates maintains a network model that produces results that are within two% of the results produced by PJM’s model;

⁴² External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 27.

⁴³ See MISO IMM Complaint Order, 171 FERC ¶ 61,039, at P 67.

⁴⁴ See Tariff, Attachment DD, section 5.5A(b).

- (5) the resource has arranged for long-term firm point-to-point transmission service that is evaluated for deliverability from the unit-specific physical location to PJM load, in accordance with PJM deliverability criteria to ensure uniformity for internal and external resource deliverability requirements; and
- (6) the seller must offer the resource's capacity into the PJM capacity market for each Delivery Year, just as for internal General Capacity Resources.

An external generating resource that meets these requirements may pseudo-tie into PJM, meaning that the resource is treated electrically as if it were in PJM, i.e., subject to PJM's operational control and dispatch instructions.

B. SOO Green Has Not Shown that the Presence of HVDC Renders PJM's External Capacity Requirements Unnecessary.

Under section 206 of the FPA,⁴⁵ SOO Green as the complainant bears the burden of proving that PJM's external capacity resource rules are unjust, unreasonable or unduly discriminatory. SOO Green also bears the burden of proving that PJM's application of its Tariff to SOO Green or the unidentified external generation resources is unjust, unreasonable, or unduly discriminatory.⁴⁶ If SOO Green fails to meet its burden of proof, the Commission must deny the Complaint.⁴⁷

⁴⁵ 16 U.S.C. § 824e.

⁴⁶ *Ameren Servs. Co. v. Midwest Indep. Transmission Sys. Operator, Inc.*, 125 FERC ¶ 61,161, at P 9 (2008) (“Complainants carry the burden of proof . . . and therefore must demonstrate, on the basis of substantial evidence . . . that the rate in effect is unjust and unreasonable.”), *order on reh'g*, 127 FERC ¶ 61,121 (2009), *petition for reviews denied sub nom. Ameren Servs. Co. v FERC*, 739 F. App'x. 646 (D.C. Cir. 2018); *see also Cal. Mun. Utils. Ass'n v. Cal. Indep. Sys. Operator Corp.*, 126 FERC ¶ 61,315, at PP 69-72 (2009); *Nantahala Power & Light Co.*, Opinion No. 139, 19 FERC ¶ 61,152, at 61,276, *reh'g denied*, Opinion No. 139-A, 20 FERC ¶ 61,430, *order on clarification & reh'g denied*, Opinion No. 139-B, 21 FERC ¶ 61,222 (1982).

⁴⁷ *See Cal. Indep. Sys. Operator Corp.*, 111 FERC ¶ 61,337, at P 27 (2005) (stating that current rates “must first be found to be unjust, unreasonable, or unduly discriminatory before alternative proposals are ripe for consideration” (quoting *Cal. Indep. Sys. Operator Corp.*, 106 FERC ¶ 63,026, at P 346 (2004)).

- i. *The Complaint Overlooks that Resources Will Need to Rely on MISO's AC Transmission System Before Delivering to SOO Green's HVDC Line.*

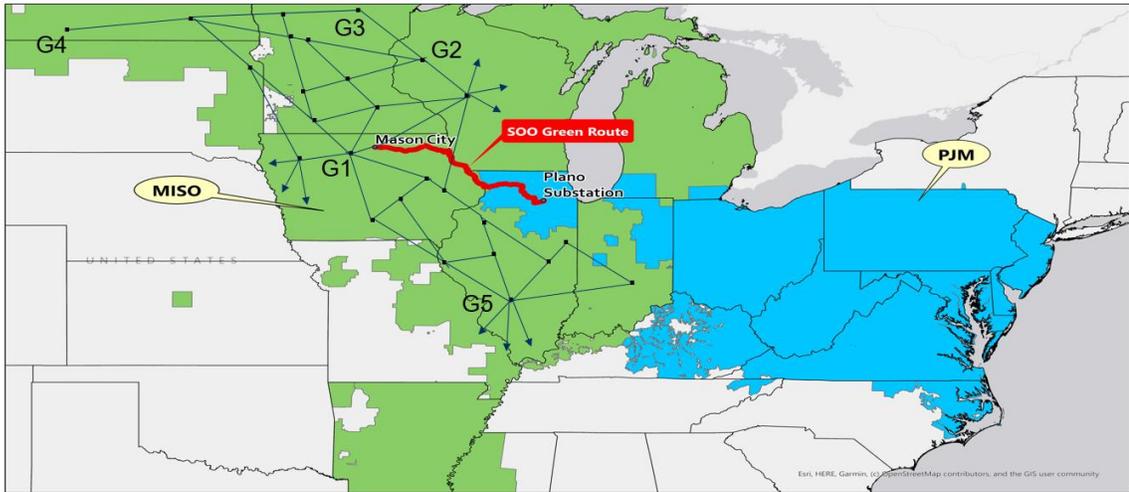
While SOO Green's proposed HVDC line would provide a direct connection between PJM and MISO, it would not eliminate the need for the external capacity rules (as set forth in Tariff, Attachment DD, section 5.5A) to be applied to the external generation resources that may desire to utilize the HVDC line to become PJM Capacity Resources. SOO Green repeatedly asserts that PJM's external capacity requirements are "unnecessary" for resources contracted to deliver energy to an HVDC line for re-delivery to PJM and are therefore unjust and unreasonable.⁴⁸ However, this argument ignores the fact that under SOO Green's proposal, *external resources would still use MISO's AC transmission system* to reach the HVDC line.

Figure 1 below provides a visual depiction of the SOO Green proposed HVDC transmission line, and shows how the HVDC line would directly connect north-central Iowa in MISO and north-central Illinois in PJM. Regardless of the location of SOO Green's receipt point in MISO, under its proposal, generation resources could be located anywhere in MISO and bypass PJM's external capacity rules to become PJM Capacity Resources as long as the resource has a firm transmission service agreement with MISO to deliver energy to SOO Green's HVDC line. Indeed, under SOO Green's proposal, there would be no limitation on where an external resource could be located within MISO and be considered a PJM Capacity Resource. Figure 1 provides representative illustrations of where five hypothetical generators may be located (marked as G1 thru G5). Based on SOO Green's proposal, each generator would first deliver the energy to

⁴⁸ Complaint at 5, 8, 13, 15, 28, 30, 32, 37, 41, 58 (generally characterizing PJM's external capacity

the withdrawal point of the SOO Green HVDC line by utilizing the MISO AC transmission system, shown in simplified form the black lines) on Figure 1.

Figure 1: SOO Green HVDC Line and MISO AC system



Under SOO Green’s proposal, these five external generators would not need to meet any of the Tariff requirements, listed above, to serve as PJM Capacity Resources, e.g., unit-specific deliverability to PJM load, limits on electrical distance from PJM, limitations on imposing new flowgate coordination responsibilities on PJM, assurance of external Balancing Authority Area, model consistency, and assurance of no NERC transaction tagging, even though these five resources may rely as much, if not more, on MISO’s AC transmission system as external PJM Capacity Resources that do not become SOO Green customers.

Illustrative resources G1 through G5 all could be physically located in an external Balancing Authority Area with an extensive complex transmission network, outside of PJM’s control, and with different market, planning, and deliverability rules than PJM. They thus would be subject to all of the added contingencies and complications that

requirements as “unnecessary”).

PJM’s external capacity rules are designed to ameliorate so that PJM loads can rely on external resources as PJM Capacity Resources in a manner comparable to internal PJM Capacity Resources. PJM’s external capacity requirements have been approved, affirmed, challenged, and repeatedly upheld because they reasonably address these reliability and comparability concerns.⁴⁹ As Figure 1 highlights, the *only* difference under SOO Green’s proposal is that those MISO resources that contract with SOO Green for final delivery into PJM over the HVDC line are exempt from PJM’s external capacity rules, while those that do not use the HVDC line are not exempt from those rules.

As PJM shows below, the sole fact that an HVDC line is involved for part of the movement of energy from these external resources to the PJM Region does not resolve the concerns PJM’s rules address, or render those rules unnecessary. But Figure 1 also suggests an additional concern that raises the stakes on the relief sought by the Complaint. HVDC lines can fill important needs and market participants may have many reasons to contract for service on an HVDC merchant line. The Complaint’s proposed relief, however, would encourage specifically those external generators that *cannot* meet PJM’s external capacity rules to contract for service on SOO Green, to gain an exemption from those rules. The circumstances of those generators could raise multiple red flags (from the perspective of PJM Region loads relying on a Capacity Resource) as to deliverability, electrical distance, model enlargement, flowgate coordination, and potential transmission service curtailment, yet the Complaint would simply shunt aside

⁴⁹ See *Cube Yadkin Complaint Order*, 171 FERC ¶ 61,152; *Brookfield Complaint Order*, 171 FERC ¶ 61,151; *Tilton Energy LLC v. PJM Interconnection, L.L.C.*, 171 FERC ¶ 61,150 (2020) (“Tilton Complaint Order”); *MISO IMM Complaint Order*, 171 FERC ¶ 61,039, at P 67; *External Capacity Enhancements Rehearing Order*, 170 FERC ¶ 61,217, at P 11; *External Capacity Enhancements Order*, 161 FERC ¶ 61,197, at P 18; *Capacity Performance Rehearing Order*, 155 FERC ¶ 61,157, at P 44; *Capacity Performance Order*, 151 FERC ¶ 61,208, at P 96.

all such concerns. The Complaint should face a heavy burden to warrant such relief, and does not meet that burden.

ii. *SOO Green's Proposal Would Not Provide Comparability and Reliability Assurance Inherent in a Pseudo-Tie.*

PJM developed its pseudo-tie and other external capacity requirements to both ensure comparability among internal and external Capacity Resources *and* provide PJM with a necessary level of reliability assurance with respect to external resources. The Commission accepted PJM's existing external capacity rules based in part on its finding that "the additional proposed pseudo-tie requirements *would apply equally to all external resources* that wish to pseudo-tie into PJM and . . . *are transparent and codified* within PJM's Tariff and RAA."⁵⁰ The Commission also determined that the reforms "strik[e] an appropriate balance between allowing external resources to participate in PJM's capacity auctions, while providing PJM with a level of reliability assurance."⁵¹ On rehearing, the Commission upheld PJM's reforms with the specific principle of comparability between external and internal resources forming a basis of its holding.⁵² The Commission also reaffirmed that the purpose of capacity markets is to ensure the long-term reliability and adequacy of the system, and the market rules should reflect that purpose.⁵³ Indeed, the

⁵⁰ External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 29 (emphasis added); *see also id.* at P 27 n.33 ("PJM's proposal is intended *to better define the requirements* for becoming a pseudo-tied resource *to promote a level playing field between external and internal resources.*" (emphasis added)).

⁵¹ External Capacity Enhancements Order. 161 FERC ¶ 61,197, at P 60.

⁵² External Capacity Enhancements Rehearing Order, 170 FERC ¶ 61,217, at P 11 ("In accepting PJM's Pseudo-Tie Enhancement Filing, the Commission found that PJM's new pseudo-tie requirements would help ensure that *external resources bidding into the PJM capacity auctions are comparable to internal resources* in assuring that they will be deliverable to PJM's system when needed. *With this principle in mind*, we continue to find that PJM's proposed treatment of pseudo-tied resources is just and reasonable and not unduly discriminatory or preferential." (emphasis added)); *see also id.* at P 37 ("We find that the comparability standard is one of the tenets of the Commission pricing policy.").

⁵³ External Capacity Enhancements Rehearing Order, 170 FERC ¶ 61,217, at P 54 n.119.

Commission has independently re-affirmed the necessity of four elements of the pseudo-tie requirements cited in the Complaint: the electrical distance requirement;⁵⁴ the market-to-market (“M2M”) Flowgate Test;⁵⁵ the tagging assurance and transfer of firm allocation requirement;⁵⁶ and the requirement for deliverability on comparable terms for all Capacity Resources.⁵⁷ As discussed in more detail below, each of these requirements remain necessary to ensure reliability and to ensure comparability among internal and external Capacity Resources.

SOO Green has not shown that its HVDC transmission line should allow external resources to be subject to different external capacity rules that treat such resources in an incomparable manner or compromise reliability; and such treatment, in fact, would be unjust and unreasonable.⁵⁸

iii. SOO Green Mischaracterizes the Purpose of the Pseudo-Tie Requirement.

The Complaint asserts that PJM’s pseudo-tie requirement is unnecessary for resources contracted to use the HVDC line since “dispatch control over external generators is unnecessary in the first place because PJM can directly economically schedule power flows through the controllable HVDC facility’s converter stations within its balancing authority.”⁵⁹ This argument mischaracterizes the purpose of the pseudo-tie

⁵⁴ See Cube Yadkin Complaint Order, 171 FERC ¶ 61,152.

⁵⁵ See Brookfield Complaint Order, 171 FERC ¶ 61,151; Tilton Complaint Order, 171 FERC ¶ 61,150.

⁵⁶ MISO IMM Complaint Order, 171 FERC ¶ 61,039. Complainant does not specifically challenge or address the necessity of the fourth requirement (i.e., “seams coordination model consistency”).

⁵⁷ Brookfield Complaint Order, 171 FERC ¶ 61,151, at P 87.

⁵⁸ See External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 27 (“[U]nder its current capacity construct, these rules *are needed* to help ensure that external resources are treated comparably to internal resources.” (emphasis added)).

⁵⁹ Complaint at 38.

requirement as limited solely to dispatch, and shifts responsibility for meeting PJM capacity needs from the external Capacity Resources to third parties.

PJM’s pseudo-tie rules were designed to allow external resources the opportunity to serve as PJM Capacity Resources while ensuring a comparable quality of service and comparable treatment to internal resources. This is essential because capacity is a reliability product that is critical to meeting the load needs within the PJM Region. Pseudo-ties provide multiple benefits in addition to making the resource directly subject to PJM’s dispatch instructions—benefits that would not be available if a resource simply contracts to delivery energy into PJM over an HVDC line. A pseudo-tie electrically moves the output of an external generator into the PJM Balancing Authority Area and the resource then becomes subject to PJM as its Balancing Authority.⁶⁰ In so doing, the external resource is subject to PJM’s dispatch. However, the issue is not simply “dispatch,” but also visibility, responsibility, and control that increase PJM’s ability to rely on the Capacity Resource to provide energy when needed and make the external resource comparable to PJM internal resources.

Pseudo-tying external Generation Capacity Resources provides greater certainty and predictability to the PJM loads that rely on those resources for capacity than relying on external transmission systems to deliver the resource’s energy to PJM.⁶¹ A pseudo-tie provides PJM the same operational control and visibility of an external resource that PJM

⁶⁰ Without a pseudo-tie into PJM, the resource remains subject to the requirements and directives of its Balancing Authority. *See* External Capacity Enhancements Rehearing Order, 170 FERC ¶ 61,217, at P 42 (with a pseudo-tie, “PJM can be assured that the external resource meets PJM’s deliverability requirements for capacity resources and will not be subject to curtailments based on the internal requirements of the other Balancing Authority.”). That Balancing Authority is obligated to consider first and foremost the requirements and needs of its Balancing Authority Area in dispatching resources under its control.

⁶¹ External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 169 (finding that pseudo-tie requirements for external resources “ensure that capacity is deliverable when PJM needs it.”).

has of internal Capacity Resources.⁶² It provides PJM the authority to coordinate when the resource is on outage (without a pseudo-tie that authority would remain with MISO).⁶³ In short, consistent with the reliability needs of the system, a pseudo-tie affords PJM the same level of operational flexibility and visibility of external resources as it has with internal resources, operational flexibility and visibility that would not be available to PJM under SOO Green’s proposal.⁶⁴ In addition, as the Commission has explained, “absent the pseudo-tie requirement, PJM will not have the unit-specific visibility of external resource performance necessary to accurately apply Non-Performance Charges to external resources.”⁶⁵ The Commission therefore held that “the pseudo-tie requirement is necessary for Capacity Performance Resources within the new market design.”⁶⁶

iv. The Complaint Understates the Importance of Capacity Resources Not Being Subject to Curtailment.

Energy deliveries from external resources that are not pseudo-tied into PJM are interchange transactions that are identified using NERC’s tagging process. Interchange transactions are not resource specific. Rather, they are identified by customer account and the external Balancing Authority from which the energy being scheduled into PJM is sourced. Further, NERC explicitly recognizes the difference between dispatch of a pseudo-tied resource and an interchange transaction: an interchange transaction over the

⁶² External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 99 (PJM requires “unit-specific visibility such that it can assess resource performance for pseudo-tied resources and accurately apply nonperformance charges in accordance with the Capacity Performance requirements.”).

⁶³ External Capacity Enhancements Order, 161 FERC ¶ 61,197, at PP 43-47 (accepting interregional coordination requirements for Pseudo-Ties).

⁶⁴ *See supra* Section II.A.

⁶⁵ Capacity Performance Order, 151 FERC ¶ 61,208, at P 97.

⁶⁶ Capacity Performance Rehearing Order, 155 FERC ¶ 61,157, at P 44.

MISO AC transmission system, whether final delivery to PJM is via an AC line or HVDC line, is subject to a TLR Level 5 (“TLR-5”) firm curtailment while dispatch of a pseudo-tied resource is not.⁶⁷

Because pseudo-tied resources are (1) under the operational control of PJM and considered the equivalent of internal resources (i.e., subject to PJM’s dispatch instructions); (2) meet PJM’s deliverability requirements; and (3) are not subject to NERC tagging or TLR-5 curtailments, PJM revised its market rules to make pseudo-tied resources eligible to provide ancillary services.⁶⁸ That is, because pseudo-tied resources are deemed within the metered boundary of PJM, they are considered internal resources and eligible to provide synchronized reserves, non-synchronized reserves, and regulation services.⁶⁹

While the Complaint acknowledges that pseudo-ties address the risk of curtailment of firm transmission by surrounding systems,⁷⁰ it asserts that MISO and PJM can reduce curtailment risk through “manage[ment of] transmission constraints through economic dispatch of their respective systems.”⁷¹ In other words, SOO Green’s proposal would allow MISO to meet the HVDC line’s request for energy through economic dispatch and not directly from the external resource with firm transmission service to the

⁶⁷ Answer of PJM Interconnection, L.L.C. to Protests and Comments, Docket No. ER14-503-000, at 27 (Jan. 6, 2014).

⁶⁸ Dynamic Transfers, Docket No. ER16-1985-000, at 5-7 (June 21, 2016); PJM Interconnection, L.L.C., Letter Order, Docket No. ER16-1985-000 (July 18, 2016).

⁶⁹ See Operating Agreement, Schedule 1, section 1.12(d) (“Pseudo-Ties are eligible to provide Regulation, Synchronized Reserve and Non-Synchronized Reserve as further described in the PJM Manuals.”).

⁷⁰ Complaint at 39-40.

⁷¹ Complaint at 38.

HVDC line, effectively meeting the external resource's capacity obligations with the energy from whichever resource in MISO its SCED identified as the least cost solution.

Although such an approach could be appropriate for delivery of energy-only service between the two RTOs, it fails to provide the reliability assurance that is the basis for capacity (and for which resources are compensated through the PJM capacity market). Specifically, the SOO Green approach deviates from the PJM capacity market's unit-specific approach. The Commission already evaluated and rejected this alternative approach in *Potomac Economics*. There, the Commission rejected "Potomac's primary argument [] that individual external resources should not be responsible to PJM for delivery, but that the entirety of the MISO system should be responsible for these deliveries."⁷² Specifically, the Commission held that "PJM's capacity market is not unjust and unreasonable because it requires external resources to be responsible for their own capacity obligations, just as internal resources are responsible for their capacity obligations."⁷³ The Complaint does not confront this directly applicable precedent, but implies that the presence of an HVDC line somehow alters the equation. It does not.

v. *SOO Green Has Not Demonstrated that the Electrical Distance Test Is Not Applicable to External Resources Connecting to SOO Green.*

All external Capacity Resources desiring to pseudo-tie into PJM must satisfy the Electrical Distance Test,⁷⁴ which was the result of "significant analysis" and is an "analytical measurement [standard] that communicates the amount of operational and

⁷² MISO IMM Complaint Order, 171 FERC ¶ 61,039, at P 67.

⁷³ MISO IMM Complaint Order, 171 FERC ¶ 61,039, at P 67.

⁷⁴ See Tariff, Attachment DD, section 5.5A(b)(i)(A). The Tariff defines "Electrical Distance" as "for a Generation Capacity Resource geographically located outside the metered bounds of the PJM Region the

compliance risk that PJM is willing to take on when expanding its State Estimator.”⁷⁵ In other words, this test sets the Electrical Distance from the PJM Region that can be accommodated “without raising undue risk that a real time assessment of model failure or model performance solution problems could not be performed.”⁷⁶

The Commission found the Electrical Distance Test just and reasonable and that it strikes “an appropriate balance between allowing external resources to participate in PJM’s capacity market while providing PJM with a level of reliability assurance.”⁷⁷

In *Cube Yadkin Generation, L.L.C.*, a complainant argued that the Electrical Distance requirement was unjust and unreasonable as applied to complainants’ resources, and requested that the Commission order PJM to revise its Tariff to include an “industry-wide” definition of impedance for purposes of conducting the Electrical Distance Test on resources seeking to pseudo-tie.⁷⁸ The Commission rejected the complaint, reaffirming its findings that the Electrical Distance requirement is just and reasonable and strikes an appropriate balance between accommodating external resources and providing PJM with “a level of reliability assurances.”⁷⁹

Here, SOO Green argues that the Electrical Distance Test is inapplicable to resources delivering energy to PJM via HVDC transmission lines because the test was designed for resources connecting to PJM across an AC transmission system. SOO

measure of distance, based on impedance and in accordance with the PJM Manuals, from the Generation Capacity Resource to the PJM Region.” Tariff, Definitions E – F.

⁷⁵ External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 61.

⁷⁶ External Capacity Enhancements of PJM Interconnection, L.L.C., Docket No. ER17-1138-000, at 14 (Mar. 9, 2017).

⁷⁷ External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 60.

⁷⁸ Cube Yadkin Complaint Order, 171 FERC ¶ 61,152, at P 13.

⁷⁹ See Cube Yadkin Complaint Order, 171 FERC ¶ 61,152, at PP 42, 46.

Green contends its contemplated HVDC connection would not create additional coordinated flowgates and therefore would not pose any modelling challenges to PJM.⁸⁰

Even assuming that SOO Green is correct that the Electrical Distance Test was designed only to apply to deliveries across an AC network, it has not established why the Electrical Distance Test should not apply to resources delivering *across an AC network* to an HVDC line. PJM’s concerns regarding modelling a resource across an AC system to the PJM border apply equally to modelling a resource across an AC system to an HVDC line, as would be the situation here as resources utilize the MISO AC system to connect to the HVDC line. As the Commission found in *Cube Yadkin*, the external capacity rules are not designed to be tailored to individual resources—they should apply in the same nondiscriminatory manner to all external resources seeking to offer capacity to PJM.⁸¹ Exempting resources delivering to PJM simply because there is an HVDC facility that interconnects with PJM would not treat such resources in a comparable manner to all other internal and external Capacity Resources, resulting in unlawful preferential treatment.

Moreover, because resources delivering to SOO Green would rely on the MISO AC network for such deliveries, SOO Green’s rationale disappears entirely. That is because such resources would remain under the operational control of MISO, subject to MISO’s outage scheduling and dispatch instructions, and thus may not be available to serve PJM’s needs in a manner consistent with a capacity commitment. The Commission

⁸⁰ See Complaint at 36-38.

⁸¹ *Cube Yadkin* Complaint Order, 171 FERC ¶ 61,152, at P 46 (agreeing that the Electrical Distance Test is a “bright-line screen to communicate the amount of operational and compliance risk that PJM is willing to take on when expanding the State Estimator model to incorporate pseudo-ties”).

should therefore uphold application of the Electrical Distance Test and reject the Complaint.

- vi. *SOO Green Has Not Demonstrated that the M2M Flowgate Test Is Not Applicable to External Resources Connecting to SOO Green.*

The M2M Flowgate Test establishes limits on the number of coordinated flowgates PJM must add to accommodate pseudo-tying an external resource into PJM. This test ensures that PJM has adequate dispatch options to manage congestion on each flowgate for which PJM must assume responsibility to accommodate pseudo-tying the external resource.

In simplified terms, the M2M Flowgate Test entails (1) identifying external flowgates that would, as a result of flows from the external generator seeking to pseudo-tie, become eligible for coordination under a coordination agreement between PJM and another Balancing Authority Area; and (2) assessing whether dispatchable resources located in the PJM Region can affect flows by 1.5 percent or more on those identified flowgates. If there are any flowgates that would become eligible for coordination for which there are *no* PJM-internal resources capable of affecting flows on that flowgate by 1.5 percent or more, then the external generator fails the test.⁸² The Commission found that the M2M Flowgate Test was “not an undue barrier to entry, but an appropriate measure to provide PJM options to relieve or mitigate congestion on market-to-market flowgates between PJM and MISO, as well as other Balancing Authorities and non-market areas, beyond the sole recourse of redispatching a pseudo-tied resource.”⁸³

⁸² See Answer of PJM Interconnection, L.L.C., Docket No. EL19-34-000 (Feb. 8, 2019), Horger Aff. ¶ 10. Conversely, if there are no flowgates that would become eligible for coordination as a result of the pseudo-tie, or if every flowgate that would become eligible for coordination has at least one PJM-internal generator that can move flows on that flowgate by 1.5 percent or more, then the pseudo-tie passes the test.

⁸³ External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 76.

The M2M Flowgate Test has been the subject of two complaints before the Commission; each time the Commission rejected the complaint and affirmed use of the test. In *Tilton*, a complainant argued that application of the M2M Flowgate Test to the complainant’s resource resulted in the unjust and unreasonable exclusion of that facility as an external Capacity Resource.⁸⁴ In rejecting the complaint, the Commission concluded that the M2M Flowgate Test should be interpreted broadly, so that it “reasonably permits PJM to reject pseudo-ties that *could* create new coordination and congestion costs.”⁸⁵ The Commission also noted that “the purpose of the [M2M] Flowgate Test is to ensure PJM has adequate options to manage congestion and coordination costs on new flowgates resulting from pseudo-ties, and is part of a suite of requirements that—together—are designed to ensure that external resources are comparable to internal resources.”⁸⁶

In *Brookfield*, a complainant similarly argued that the M2M Flowgate Test was unjust and unreasonable, both on its face and as applied to complainant’s resources.⁸⁷ Specifically, complainants argued that the M2M Flowgate Test was only applicable to pseudo-ties with market BAAs and should not be applied to resources within non-market BAAs.⁸⁸ The Commission rejected this reasoning and held that the M2M Flowgate Test “continues to be an important mechanism to ensure that PJM transmission customers are

⁸⁴ See *Tilton Complaint Order*, 171 FERC ¶ 61,150.

⁸⁵ *Tilton Complaint Order*, 171 FERC ¶ 61,150, at P 47 (emphasis added).

⁸⁶ *Tilton Complaint Order*, 171 FERC ¶ 61,150, at P 68.

⁸⁷ *Brookfield Complaint Order*, 171 FERC ¶ 61,151, at P 63.]

⁸⁸ *Brookfield Complaint Order*, 171 FERC ¶ 61,151, at P 47.

not subjected to unnecessary congestion costs as a result of a proposed pseudo-tie,” regardless of the specific circumstances of a particular resource.⁸⁹

The instant Complaint does not offer reasoning that meaningfully differs from the arguments offered in *Tilton* and *Brookfield*. Here, SOO Green argues that use of the M2M Flowgate Test is not “appropriate” or “necessary” for resources delivering to controllable HVDC facilities (i.e., as applied to resources delivering energy through SOO Green’s HVDC line, the M2M Flowgate Test is unjust and unreasonable).⁹⁰ As with the Electrical Distance Test, SOO Green again fails to explain or establish why resources delivering *across an AC network* to an HVDC line or to resources directly connected to an HVDC line should be treated differently than any other external resource that delivers across an AC network to the PJM border. To accommodate a pseudo-tie, regardless of whether it delivers to an HVDC line or the PJM border, PJM should not have to take on responsibility for coordinating a flowgate unless PJM has adequate options to manage congestion on that flowgate *in addition to* reducing the output of the pseudo-tied resource itself. If PJM’s only option was to back down the pseudo-tied resource (i.e., send a dispatch instruction to reduce output), that simply may not be enough dispatch control to protect PJM loads from the cost of congestion on that flowgate.

Moreover, to the extent an external PJM Capacity Resource is not-pseudo-tied (as SOO Green proposes) and uses MISO’s AC network to deliver energy to the HVDC line, SOO Green’s argument falls apart. Such a resource would be subject to MISO’s dispatch instructions and congestion management, and therefore the resource would have no

⁸⁹ Brookfield Complaint Order, 171 FERC ¶ 61,151, at P 67.

⁹⁰ Complaint at 32-36.

control over whether it would be available when PJM calls upon it to meet its capacity commitments.

Further, the fact that an HVDC line may not be subject to the same congestion and coordination issues as AC facilities does not undermine the validity of the M2M Flowgate Test; rather, it raises as-yet-unexamined questions as to how the HVDC line may alter PJM's analysis. Nothing about these external resources warrants exempting them from the purposefully broad application of the M2M Flowgate Test.⁹¹ The M2M Flowgate Test, like the Electrical Distance requirement, is designed to ensure the primary objectives of the external capacity rules: (1) ensuring that PJM can rely on each resource with a capacity commitment to maintain reliability and (2) comparability between internal and external resources. Eliminating the M2M Flowgate Test for resources connecting to PJM via SOO Green's HVDC line would not further these objectives and would be unduly discriminatory against all other Capacity Resources.

vii. SOO Green Has Not Demonstrated that the Tagging Assurance and Transfer Requirement Is Not Applicable to External Resources Connecting to SOO Green.

PJM's external capacity rules require approval from the resource's home Balancing Authority that an external resource does not require NERC tagging and that firm flow allocations associated with any coordinated flowgates applicable to the external resource will be allocated to PJM.⁹² This requirement is specifically designed to ensure reliability and comparability between internal and external resources with respect to

⁹¹ Brookfield Complaint Order, 171 FERC ¶ 61,151, at P 63 (holding that the M2M Test "helps to ensure that external resource[s] qualifying as capacity resources in PJM will be available and dispatchable when PJM needs power from these resources on terms generally equivalent to the service provided by internal resources").

⁹² See External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 72.

compliance with PJM dispatch during NERC TLR-5 events.⁹³ In approving this requirement, the Commission found that “it is just and reasonable for PJM to expect to receive the full capacity service for which a resource would be compensated, and this requirement enables such comparable treatment of external resources vis-à-vis internal resources, which do not implicate coordination of market-to-market flowgates or modeling agreement with external transmission providers.”⁹⁴

In *Potomac Economics*, the independent market monitor for MISO argued that this requirement was not just and reasonable because it “locks in” the source of the export, thereby reducing the overall deliverability of external supply to PJM and creating reliability or operational harms in MISO.⁹⁵ The Commission was not swayed, holding that the requirement of not being tagged is a just and reasonable means of ensuring reliability given the potential for curtailment of external resources pseudo-tied into PJM under NERC TLR-5 procedures.⁹⁶

SOO Green attempts to undermine the need for this requirement by asserting that the risk that firm transmission exports from the physical units “to the HVDC facility due to a TLR-5 event will be subject to curtailments is extremely low.”⁹⁷ In support, SOO Green alleges that there have been few TLR-5 curtailments in MISO over the past five years in the area where SOO Green’s contracted resources may be located.⁹⁸ SOO Green again ignores that external resources that are not pseudo-tied must still deliver energy to

⁹³ See MISO IMM Complaint Order, 171 FERC ¶ 61,039, at P 88; see also *id.* at P 4 n.8 (defining TLR-5 event).

⁹⁴ External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 100.

⁹⁵ MISO IMM Complaint Order, 171 FERC ¶ 61,039, at P 72.

⁹⁶ MISO IMM Complaint Order, 171 FERC ¶ 61,039, at PP 87-88.

⁹⁷ Complaint at 39.

the HVDC injection point for delivery to PJM *via the MISO AC transmission system to get to SOO Green*. Although PJM pseudo-tied resources also use the MISO transmission system, they are not subject to TLRs called within MISO because the unit is subject to PJM dispatch as if it were located in PJM. Moreover, as a Tariff condition of its resource becoming pseudo-tied, the seller must secure affirmation from the Balancing Authority that its transactions *will not* be subject to NERC tagging.⁹⁹

By contrast, under the SOO Green proposal, if MISO dispatches these resources to support the firm transmission service, such energy transfers would be subject to tagging because they are not PJM pseudo-tie units. Thus, the ability of the resource's energy to reach SOO Green for delivery to PJM would be outside of PJM's visibility and control, adversely impacting PJM's ability to rely on such resource to provide capacity when needed.¹⁰⁰ Any risk of curtailment under TLR-5 would also lessen the reliability value of the capacity offered by such resources as compared to all other external Capacity Resources who must guarantee *no* risk of curtailments.¹⁰¹ Moreover, historical occurrence is not representative or a guarantee of future occurrences, so the risk of curtailments could increase in the future as additional generation and demand is added to MISO's transmission system and as the system topology evolves.¹⁰²

Finally, since scheduling of energy from the physical generator and across the HVDC line requires NERC tags, it must be scheduled as an interchange transaction,

⁹⁸ Complaint at 39.

⁹⁹ Tariff, Attachment DD, section 5.5A(b)(i)(D).

¹⁰⁰ See External Capacity Enhancements Order, 161 FERC ¶ 61,197, at PP 99-100; External Capacity Enhancements Rehearing Order, 170 FERC ¶ 61,217, at P 33.

¹⁰¹ External Capacity Enhancements Rehearing Order, 170 FERC ¶ 61,217, at PP 33-34.

which must be in 15-minute increments. This 15-minute scheduling duration is inconsistent with PJM’s 5-minute dispatch, potentially hindering PJM’s ability to rely on such resources in response to emergency conditions. SOO Green does not explain or justify why the PJM Region should take the risk of acquiring a lesser capacity product at the same price it pays all other resources.

viii. *External Resources Must Be Able to Meet PJM’s Deliverability Requirements.*

While the Complaint dismisses the application of PJM’s external capacity rules to resources contracted to deliver to SOO Green as “unnecessary,”¹⁰³ to the extent such resources must deliver over the MISO AC network to reach SOO Green’s HVDC line, such rules remain very much necessary. In particular, to participate in PJM’s capacity market, an external resource must show that the firm point-to-point transmission service it secures for delivery of its resource’s output is “evaluated for deliverability from the unit-specific physical location of the resource to PJM load pursuant to a study that is reviewed and approved by PJM in accordance with PJM deliverability criteria to ensure uniformity for internal and external resource deliverability requirements.”¹⁰⁴

Assurance of PJM’s deliverability standards is a critical component of PJM’s pseudo-tie requirements. As the Commission has noted, PJM’s planning process requires continued deliverability for internal resources as system conditions change.¹⁰⁵ By

¹⁰² See Brookfield Complaint Order at P 42 (rejecting argument that historical performance merits exception from pseudo-tie deliverability requirements applicable to all external resources).

¹⁰³ Complaint at 28.

¹⁰⁴ Tariff, Attachment DD, section 5.5A(b)(ii).

¹⁰⁵ See, e.g., Brookfield Complaint Order, 171 FERC ¶ 61,151, at P 59 (PJM “applies to pseudo-tied external generators the same assurance of continued deliverability (notwithstanding changes to the transmission system) that it applies inside the PJM Region.”); External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 115.

requiring PJM’s deliverability standards as a condition of pseudo-tying into PJM, PJM obtains the same assurance of continued deliverability (notwithstanding changes to the transmission system) to all Capacity Resources, internal and external.¹⁰⁶ In other words, the external capacity rules ensure “comparable transmission standards to all resources, whether they are internal to PJM or located external in another [Balancing Authority Area].”¹⁰⁷

While the choices that operators and planners of external Balancing Authority Areas may make about how and when to expand their transmission facilities, and how to allocate the costs, are outside PJM’s control, it does not mean PJM cannot reasonably require deliverability of capacity resource output *to serve PJM Region loads during periods of capacity emergencies* to be the same standard along the complete path from generator to load. Indeed, it is because other transmission systems change from year to year that PJM’s rules require annual re-studies regarding whether an external resource’s deliverability remains compliant with PJM’s standards.¹⁰⁸ In *Brookfield*, the Commission rejected a complainant’s contention that firm service from the host Balancing Authority should be sufficient and a resource should not be required to meet PJM’s deliverability

¹⁰⁶ PJM’s rules for evaluation of Pseudo-Ties expressly note this comparability, stating that “[o]ngoing study requirements for the study of generation in the PJM footprint [which includes Pseudo-Ties] must be maintained under these same standards as is conducted in the annual [Regional Transmission Expansion Plan] studies. *PJM Manual 12: Balancing Operations*, PJM Interconnection, L.L.C., Attachment F (June 6, 2021), <https://www.pjm.com/-/media/documents/manuals/m12.ashx>.

¹⁰⁷ External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 115.

¹⁰⁸ Tariff, Attachment DD, section 5.5A(b)(ii) (requiring external resources to obtain “long-term firm point-to-point transmission service (evaluated for deliverability from the unit-specific physical location of the resource to PJM load pursuant to a study that is reviewed and approved by PJM in accordance with PJM deliverability criteria to ensure uniformity for internal and external resource deliverability requirements), with rollover rights for the term of the transmission service that is confirmed by the Balancing Authority for the Balancing Authority Area where such resource is geographically located.”); *see also* External Capacity Enhancements Order, 161 FERC ¶ 61,197, at PP 115, 118.

standards, holding that it is “reasonable for PJM to continue to require external resources to meet PJM's deliverability criteria as transmission topography regularly changes.”¹⁰⁹

PJM’s deliverability concerns apply regardless of whether the resource is delivering directly to the PJM border or to an HVDC line within MISO for re-delivery to MISO; PJM should be assured that the capacity that it is paying for can reach PJM loads when needed.¹¹⁰ The Commission has found that “[w]hile [PJM’s pseudo-tie and deliverability] rules may operate to exclude resources from participating in the PJM capacity market, that exclusion is justified as those resources would not be sufficiently reliable to meet PJM’s capacity needs.”¹¹¹

ix. Contrary to SOO Green, the External Capacity Rules Do not Provide an Unlawful Barrier to Entry for Resources Connecting Via an HVDC Line.

The Complaint contends that PJM’s external capacity rules are an unjust and unreasonable barrier to entry for external resources delivering to an HVDC line for re-delivery to PJM.¹¹² The Complaint’s arguments are misplaced. All qualification rules inherently act as a barrier to entry for some. That fact does not render such rules unjust and unreasonable. Qualification rules ensure that only those that meet transparent requirements can participate in the market. With respect to the rules in question, the Commission has explicitly rejected the notion that they are “unduly discriminatory or create[] unreasonable barriers to entry,” because PJM’s external capacity rules “apply

¹⁰⁹ Brookfield Complaint Order, 171 FERC ¶ 61,151, at P 42.

¹¹⁰ See External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 168 (“We find that the Operationally Deliverable standard appropriately allows external generating resources to participate in PJM's market, while helping to ensure reliability by requiring that they be deliverable in a manner consistent with internal resources.”).

¹¹¹ MISO IMM Complaint Order, 171 FERC ¶ 61,039, at P 107 (citing External Capacity Enhancements Order at P 27).

equally to all external resources that wish to pseudo-tie into PJM and that the requirements are transparent and codified within PJM's Tariff and RAA."¹¹³

Indeed, PJM designed the external capacity rules with two objectives: (1) to ensure PJM can maintain reliability by relying, to an extent, on resources physically located outside of PJM, but electrically located within in it via pseudo-ties and (2) to ensure comparable treatment between internal and external resources. As a result, PJM's external capacity rules permit external resources to qualify as Capacity Resources only if PJM can reasonably rely on those resources to provide capacity, and if those resources can meet standards comparable to those required of internal resources. To allow resources that cannot meet the same standards and assume the same obligations as all Capacity Resources (e.g., being available for scheduling and dispatch by PJM, being visible to PJM on a unit-specific basis, not imposing undue flowgate coordination obligations, not threatening modeling sufficiency, and being accountable for performance on a unit-specific basis) would lessen the value of the capacity product paid for by PJM loads and could risk reliability.

While the Complaint does not contest the reasonableness of PJM's existing external capacity rules for resources tied to an AC transmission system,¹¹⁴ the Complaint argues that the presence of an HVDC line, standing alone, should allow external resources to be held to different standards than other external and internal resources. Yet the Complaint fails to provide any evidence or otherwise demonstrate why this should be the case, as it ignores the fact that resources delivering energy to PJM across the HVDC

¹¹² Complaint at 40-41.

¹¹³ External Capacity Enhancements Order, 161 FERC ¶ 61,197, at P 29.

¹¹⁴ Complaint at 33.

line must first use the MISO AC transmission system in order to reach the HVDC line, despite not satisfying PJM's pseudo-tie requirements that provide operational control of such external resources.

C. Comparisons To External Capacity Requirements of Other RTOs Are Inapposite.

SOO Green asserts that other RTOs (specifically, New York Independent System Operator, Inc. ("NYISO") and ISO New England Inc. ("ISO-NE")) have "confronted similar circumstances" and allow external HVDC transmission resources to participate in capacity markets "in a far more pro-competitive and market-friendly manner."¹¹⁵ However, the fact that other RTOs employ different market designs than PJM does not make PJM's capacity market design unjust and unreasonable, or unduly discriminatory.¹¹⁶ Indeed, the Commission has consistently held that "regional markets are not required to have the same rules."¹¹⁷

D. HVDC Transmission Facilities Have Many Options to Provide Services in PJM.

HVDC transmission facilities already have numerous opportunities to competitively provide services to resources external to PJM. First, HVDC transmission resources, like all merchant transmission facilities, can contract with external resources to

¹¹⁵ Complaint at 44.

¹¹⁶ See, e.g., MISO IMM Complaint Order, 171 FERC ¶ 61,039, at P 67.

¹¹⁷ *PJM Interconnection, L.L.C.*, 169 FERC ¶ 61,239, at P 204 n.431 (2019); see also *Midcontinent Indep. Sys. Operator, Inc.*, 162 FERC ¶ 61,176, at P 57 (2018) ("[T]he Commission has consistently rejected a one-size-fits-all approach in the various RTOs/ISOs due, in large part, to significant differences between each region and that there can be more than one just and reasonable rate.") (citing *Sw. Power Pool, Inc.*, 158 FERC ¶ 61,063, at P 13 (2017) ("[M]arket rules need not be identical among the regions to be just and reasonable, and there can be more than one just and reasonable rate."); *Midwest Indep. Transmission Sys. Operator, Inc.*, 127 FERC ¶ 61,109, at P 20 (2009) ("[I]t is well established that there can be more than one just and reasonable rate."); *PJM Interconnection, L.L.C.*, 119 FERC ¶ 61,063, at P 39 (2007) ("[T]he Commission has permitted different just and reasonable rate designs reflective of particular system characteristics and stakeholder input.")).

provide energy-only delivery into PJM. Second, as noted above, an HVDC transmission resource can contract with external resources providing capacity pursuant to a pseudo-tie to act as a conduit to satisfy those resources' capacity obligations. Third, as specified in the Tariff and Operating Agreement, merchant transmission developers are eligible to select from certain rights associated with or created by a Transmission Interconnection Request, including Incremental Available Transfer Capability Revenue Rights, Incremental Deliverability Rights, and Incremental Capacity Transfer Rights.¹¹⁸ Finally, merchant transmission developers can pursue HVDC transmission projects addressing specific identified reliability and market efficiency issues through PJM's Order No. 1000 competitive window process.¹¹⁹ Accordingly, denial of the Complaint should not be understood as foreclosing opportunities for the development of HVDC facilities in PJM.

III. ADMISSIONS AND DENIALS PURSUANT TO 18 C.F.R. § 385.213(c)(2)(i)

Pursuant to Rule 213(c)(2)(i) of the Commission's rules of Practice and Procedure,¹²⁰ PJM affirms that any allegation in the Complaint is not specifically and expressly admitted above is denied.

IV. AFFIRMATIVE DEFENSES PURSUANT TO 18 C.F.R. § 385.213(c)(2)(ii)

PJM's affirmative defenses are set forth above in this answer, and include the following, subject to amendment and supplementation.

1. SOO Green, as the Complainant, has failed to satisfy its burden of proof under FPA section 206 (16 U.S.C. § 824e), and has not demonstrated that PJM violated any Commission order, the Tariff, the Operating Agreement,

¹¹⁸ See Tariff, Subpart C—Rights Related to Customer-Funded Upgrades; Operating Agreement, section 6; see also *PJM Manual 14E: Upgrade and Transmission Interconnection Requests*, PJM Interconnection, L.L.C., section 3.3 (July 1, 2020), <https://pjm.com/-/media/documents/manuals/m14e.ashx>.

¹¹⁹ See generally *PJM Manual 14F: Competitive Planning Process*, PJM Interconnection, L.L.C. (June 23, 2021), <https://pjm.com/-/media/documents/manuals/m14f.ashx>.

¹²⁰ 18 C.F.R. § 385.213(c)(2)(i).

RAA, or any other Commission-jurisdictional governing document.

V. COMMUNICATIONS AND SERVICE

PJM requests that the Commission place the following individuals on the official service list for this proceeding:¹²¹

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¹²¹ To the extent necessary, PJM requests a waiver of Commission Rule 203(b)(3), 18 C.F.R. § 385.203(b)(3), to permit more than two persons to be listed on the official service list for this proceeding.

VI. CONCLUSION

For the reasons set forth in this answer, the Commission should deny the Complaint on the merits for the reasons provided herein.

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Respectfully submitted

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October 22, 2021

CERTIFICATE OF SERVICE

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

Dated at Washington, D.C., this 22nd day of October 2021.

/s/ Elizabeth P. Trinkle

*Attorney for PJM Interconnection,
L.L.C.*