

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UM 2164

ZENA SOLAR, LLC,

Complainant,

vs.

PORTLAND GENERAL ELECTRIC
COMPANY,

Defendant.

ORDER

DISPOSITION: CLAIMS DENIED WITH PREJUDICE, COUNTERCLAIMS
GRANTED IN PART AND DENIED IN PART

I. INTRODUCTION

In this order, we deny with prejudice the claims for relief of Zena Solar, LLC (Zena Solar), deny in part and grant in part the counterclaims of Portland General Electric (PGE), and find that PGE's evaluation of Zena Solar's independent System Impact Study (iSIS) did not violate the Interconnection Agreement (IA) between the parties, or Commission rules. Below we summarize the procedural history in this case, review the relevant factual background, and review the core dispute over interconnection upgrades in light of our rules, the IA, and the settlement agreement (SA) between the parties, determining that PGE prevails on the merits given the evidence on the record in this proceeding.

II. PROCEDURAL HISTORY

On May 21, 2018, Zena Solar filed a complaint under docket UM 1951, requesting that the Commission confirm Zena Solar's legally enforceable obligation, entitling it to the rates and terms in PGE's approved Schedule 201 then in effect. On July 2, 2018, the Commission dismissed Zena Solar's complaint in docket UM 1951 after Zena Solar filed a notice of dismissal. On May 15, 2020, Zena Solar filed a complaint against PGE under docket UM 2096, where Zena Solar was seeking to have its power purchase agreement terminated if Zena Solar was certified in the community solar program.

On August 21, 2020, the Commission dismissed Zena Solar's complaint with prejudice in docket UM 2096, in response to Zena Solar's filing a request that the Commission do so. On March 27, 2020, Zena Solar filed a complaint under docket UM 2074, asking the Commission, among other requests, to require PGE to allow Zena Solar to conduct an iSIS. Following settlement, on August 12, 2020, the Commission dismissed Zena Solar's complaint with prejudice in docket UM 2074.

On May 24, 2021, Zena Solar filed this complaint. In that filing, Zena Solar requested that we order PGE not to terminate PGE's Interconnection Agreement with Zena Solar for the pendency of this case. On July 2, 2021, PGE filed a response to Zena Solar's motion indicating that the interconnection agreement in question would be terminated no earlier than September 1, 2021. We ruled that pending review of the relief question, PGE would not be permitted to terminate Zena Solar's interconnection agreement. On September 29, 2021, we resolved the relief question in Order No. 21-319, which extended the relief granted to Zena Solar to December 10, 2021. In that same order, we declined to address requests for summary judgment or to order additional discovery in the proceeding. Subsequently, schedule changes in this proceeding led to PGE voluntarily extending that relief to March 31, 2022.

Over three days, the Commission held a hybrid in-person and remote hearing on October 25, November 1, and November 15, 2021. Following the hearing, Zena Solar requested leave to file additional testimony, and amend the procedural schedule. This request was denied. Following this, Zena Solar requested that Jonathan Nelson be granted authorized representative status, in advance of the final scheduled brief, and scheduled oral argument. This request was granted in part, and Mr. Nelson was permitted to participate in briefing and any potential oral arguments (which were not held in this case) subject to restriction on discussion of facts outside of the record or the provision of legal argument. We discuss Mr. Nelson's opinion as expressed in Zena Solar's closing brief within our order below.

III. FACTUAL BACKGROUND

Zena Solar is a 2.5-megawatt (MW) Community Solar project intended for development in Polk County, Oregon, and is the first on the waiting list to become part of the Oregon Community Solar Program. On February 8, 2019, Zena Solar made an initial request for interconnection with PGE. [REDACTED]

These elements included a New Primary Service and Metering Package, Two Electronic Recloser Banks, Dual SEL-487E Relays, and Transfer Trip via Mirror Bits Protocol over

Fiber Optic Line, with a total identified cost of \$804,926. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Zena Solar hired Nimbus Power Engineers LLC (Nimbus) to complete the iSIS. The principal for Nimbus is Jonathan Denman, a witness in this proceeding. PGE was supplied the iSIS completed by Nimbus on October 12, 2020. The iSIS concluded that an alternative 3V0 protection method was possible, though the method eventually put forward by Zena Solar in this proceeding was not described in the iSIS. Damaging 3V0 is a condition that occurs simultaneous with a ground fault and backfeed from a system generation resource, and can create effects harmful to the system. The iSIS also found that Zena Solar's incorporation into the system would necessitate additional mitigation to prevent harmful 3V0 conditions.

After review of the iSIS, [REDACTED]

[REDACTED]

[REDACTED], as the iSIS identified an existing bi-directional recloser at the facility.

PGE rejected all other alternatives in the iSIS, and Zena Solar disputed PGE's conclusions and review of its iSIS. On November 25, 2020, PGE sent a default notice to Zena Solar. The default letter stated that the iSIS study process had concluded and that the parties needed to move forward to carry out obligations under the IA.

[REDACTED]

[REDACTED]

[REDACTED]

██████████ A compliant against PGE to this effect was subsequently filed, and in November 2021, dismissed by OSBEELS.

IV. DISCUSSION

Zena Solar's first amended complaint explains that there are two primary issues which the Commission must resolve in this case. First, that PGE's proposed interconnection upgrade costs of \$654,926 are not the responsibility of Zena Solar and that the conditions these upgrades are designed to protect against already exist. In the alternative, Zena Solar argues these costs are excessive and unreasonable, inconsistent with Oregon's Small Generator Interconnection Rules, agreements between Zena Solar and PGE, and Good Utility Practice.

PGE responds that Zena Solar's claims are barred by claim preclusion, release, or the Commission's lack of subject matter jurisdiction to enforce ORS Chapter 672 or OAR Division 820. PGE asserts the affirmative defenses of waiver, failure of condition precedent, material breach, and failure to state a claim. PGE requests Commission determinations that Zena Solar has breached its IA, that Zena Solar's refusal to enter into an amendment was a breach of the SA and IA, and seeks a Commission determination that its evaluation of the iSIS complied with the requirements of the SA, IA, and the Commission's rules.

We review and resolve all claims and counterclaims of the parties in six parts. First we consider whether or not PGE violated the IA, OAR 860-082-0035, the remainder of our Small Generator Interconnection Rules, the SA, or the Contractual Duty of Good Faith and Fair Dealing consistent with Good Utility Practice in determining that Zena Solar's interconnection would create damaging 3V0 conditions at the Wallace Substation. Determining that PGE, consistent with all legal and contractual obligations, properly determined that Zena Solar's interconnection would create harmful 3V0 conditions at the Wallace Substation that required mitigation, we then briefly address Zena Solar's claims that seek enforcement of Oregon's engineering standards.

Third, we address Zena Solar's final proposal, as expressed in this litigation, to address and mitigate adverse system impacts and determine that this solution on the record before us is not consistent with OAR 860-082-0035, and that Zena Solar has not demonstrated that direct transfer trip represents the imposition of an unreasonable cost. Fourth, we review PGE's reverse power flow supervision requirement, finding similarly that without an acceptable alternative to consider, PGE is not in violation of our rules, the SA, and the IA by imposing this requirement; though we note that PGE has not demonstrated here that reverse power flow supervision is necessary to mitigate adverse impacts caused by Zena Solar. Fifth, we review PGE's evaluation of the iSIS, finding no evidence on the record that PGE violated our rules or its contractual obligations in its review. Finally, we

briefly review the few remaining counterclaims not addressed in the body of this order, and dismiss them without prejudice.

A. The Need for Any System Upgrade Attributable to Zena Solar's Interconnection

1. Party Positions

a. Zena Solar

Prior to the filing of initial and final briefs in this proceeding, Zena Solar argued that it was not responsible for 3V0 conditions at the Wallace Substation in any event, and that these conditions exist currently—therefore any costs associated with measures taken to mitigate these circumstances must be borne entirely by PGE. However, after briefing of the case began, Zena Solar abandoned this argument, ultimately concluding in agreement with PGE witnesses that “Because the 57KV system is effectively grounded, there is no existing need for 3V0 protection for ground faults at the Wallace substation.”¹ Effectively, in its final brief technical discussion, Zena Solar agrees that the introduction of Zena Solar as a DER on the system can cause harmful 3V0 conditions that do not currently exist, and that some action to address this harm is warranted.

Zena Solar disagrees with the reasonableness of the 3V0 protection scheme imposed by PGE. Additionally, Zena Solar argues that its less costly 3V0 protection scheme is appropriate, commensurate with the levels of system risks PGE is currently willing to expose itself to during 3V0 conditions, and that by demanding a more expensive solution PGE is explicitly discriminating against Zena Solar. Principally, Zena Solar argues that reverse power flow supervision features are not necessary under these circumstances, and therefore a much less costly solution is available to Zena Solar.

b. PGE

PGE explains that its system was not built with reverse power flow in mind, having been designed and constructed prior to the proliferation of distributed energy resources (DERs) on the system. With the addition of Zena Solar on the system, there will be enough DER generation to exceed the daytime minimum load on the Wallace Substation transformer and cause reverse power flow. In testimony, PGE explained that it is currently subject to 3V0 conditions not capable of causing system damage, because of the current lack of reverse power flow.

¹ Zena Solar Revised Consolidated Closing Brief at 34, citing PGE/100, Cloud/45:8-10.

2. *Resolution*

Zena Solar's first and fifth claims for relief are denied with prejudice. PGE has amply demonstrated on the record that Zena Solar's project will necessitate a new 3V0 protection scheme. Zena Solar no longer disputes this fact.² Accordingly, we deny the first claim for relief as well as the fifth claim for relief, which is predicated on a claim of pre-existing protection 3V0 conditions. As a result of this determination, we also take no action on Zena Solar's fourth request for relief requesting that the Commission find that PGE's 3V0 protection upgrade is not attributable to Zena Solar, as well as Zena Solar's fifth request for relief requesting a finding that Zena Solar is not responsible for paying for any 3V0 protection upgrade.

B. **Applicability of ORS Chapter 672 and OAR Division 820 to Interconnection Studies**

1. *Party Positions*

a. *Zena Solar*

In its complaint, Zena Solar argues that it is partially entitled to relief in this case because PGE has violated ORS Chapter 672, in that interconnection work requires the practice of engineering and is therefore subject to the statutes and rules under ORS Chapter 672 and OAR Division 820. Accordingly, Zena Solar argues that PGE violated these rules when it did not stamp its evaluation of Zena Solar's iSIS. In its final brief, Zena Solar withdrew this claim for relief, but argues that the Commission may still act to enforce Zena Solar's sixth claim, but does not need to do so.³

b. *PGE*

PGE argues that the Commission lacks the jurisdiction to enforce OSBEELS rules. PGE notes that OSBEELS has examined the issue of the engineering standard that PGE's interconnection study is subject to, and dismissed the OSBEELS complaint against PGE's engineers. PGE requests that the Commission make a determination that it lacks the jurisdiction to hear claims related to enforcement of engineering standards under ORS Chapter 672 and OAR Division 820.

² *Id.*

³ *Id.* at 14.

2. *Resolution*

Zena Solar withdrew its sixth claim for relief. The OSBEELS has examined the allegations against PGE that its review of Zena Solar's iSIS did not meet applicable engineering standards, and dismissed that complaint.⁴ Because this complaint has been fully addressed by OSBEELS, we do not need to reach the question of our jurisdiction to enforce engineering standards in this case, and therefore do not address PGE's affirmative defense that we lack subject matter jurisdiction for ORS Chapter 672 and OAR Division 820.

C. The Effect of Zena Solar's Proposed 3V0 Protection Scheme to Mitigate System Impacts Consistent with OAR 860-082-0035(4), and the Reasonableness of the Direct Transfer Trip Requirement

Our Small Generator Interconnection rules require a utility to identify the "adverse system impacts" that the small generator's interconnection will cause, "determine what actions or upgrades are required to mitigate these impacts" and require the interconnection customer to "pay the reasonable costs" associated with mitigating those impacts.⁵ An adverse system impact is defined as "a negative effect caused by the interconnection of a small generator facility that may compromise the safety or reliability of a transmission or distribution system."⁶

As of final briefs, both parties agree that the system as currently configured without the addition of the Zena Solar DER is effectively grounded. Additionally, both parties also agree that a 3V0 overvoltage scenario in an un-grounded system can be an adverse system impact as defined in rules which must be mitigated against.

At the Wallace Substation, overvoltage conditions can result from a fault, *i.e.* a 3V0 event, on the high side of a substation transformer where there is reverse power from a DER, such as Zena Solar, through the transformer. This condition, if its duration is long enough, can damage transformers and line insulators and impact power quality for existing customers.⁷ To address this issue, 3V0 sensing is required to rapidly detect the overvoltage condition and remove the transformer as a source of overvoltage caused by reverse power flow. Both parties have proposed 3V0 sensing schemes.

⁴ PGE/409, PGE/1 (Nov. 10, 2021, OSBEELS Letter to PGE Engineers).

⁵ See OAR 860-082-0035 (4).

⁶ See OAR 860-082-0015 (1).

⁷ PGE/320, PGE/4 (2019 PGE Small Generator Interconnection Program, Interconnection Technical Requirements at 4).

Zena Solar's proposed mitigation scheme would cost, according to Zena Solar, \$130,200.⁸ PGE argues that its actual cost, after accounting for deficiencies in design and in improper cost estimates, is \$600,360.⁹ To mitigate against the adverse system impact of a 3V0 overvoltage scenario created by the introduction of the Zena Solar DER on the system, Zena Solar proposes the following:

- Usage of existing SEL751 relay or relays
- Three new 5 kV voltage transformers
- Feeder Trip from the Transformer, as opposed to Direct Transfer Trip
- SCADA Updates and Equipment

Briefly summarized, Zena Solar's proposal would serve to trip the feeder during any 3V0 event, regardless of whether or not Zena Solar was causing simultaneous reverse power flow.

This contrasts to PGE's proposed solution, which includes the following elements:

- Two new SEL-487E relays
- Three new 5 kV voltage transformers
- Direct transfer trip

Briefly summarized, PGE's proposal would employ a direct transfer trip to trip the Zena Solar DER directly during a 3V0 event, rather than the entire feeder from the transformer. Additionally, PGE's solution would detect reverse power flow from Zena Solar, thereby allowing Zena Solar to remain online during a 3V0 event when no reverse power flow occurs.

PGE estimates the cost of this solution at \$654,926.¹⁰

1. Party Positions

a. Zena Solar

In its final brief, Zena Solar argues that its proposed protection scheme will not result in any incremental customer impact as compared to PGE's proposal outlined in the IA, and will effectively address the adverse system impact. Zena Solar notes that PGE has

⁸ Zena Solar/411, Denman/3 (Zena Solar's Revised Cost Estimate at 3).

⁹ PGE Opening Brief at 46.

¹⁰ Zena Solar/101, Nelson/26 [REDACTED] Complaint at 2 ("PGE has proposed specific interconnection upgrades at the cost of \$654,926.")

maintained that in the operation of Zena Solar's proposed protection scheme, customers would be negatively impacted, because in the event of 3V0 conditions that trigger feeder trip, the system would trip off approximately 2,800 customers, potentially for hours because breakers would need to be manually re-closed.¹¹

[REDACTED]

Similarly, Zena Solar argues that its indirect fault detection method is superior, as opposed to PGE's direct transfer trip method. Zena Solar asserts that tripping the feeder breaker at Wallace upon 3V0 overvoltage will guarantee that all potential backfeed sources are disassociated from the system in all scenarios. Zena Solar also notes that this method has been referenced as a possible solution by IEEE-1547, as opposed to direct transfer trip, which may result, as in this case, in high costs. Zena Solar argues that tripping the feeder breaker upon detecting 3V0 overvoltage will not result in any over-tripping, as asserted by PGE. Zena Solar states that because dangerous 3V0 conditions can only occur due to Zena Solar's backfeed, Zena Solar will need to be tripped in any 3V0 event, and therefore will not be overtripped using feeder trip, which will trip the system in any 3V0 event. Zena Solar notes that if this is not the case, then PGE must be fundamentally mistaken about lack of need for 3V0 protection currently, and there must be other potential sources of backfeed on the system.

b. PGE

PGE contends that Zena Solar's new proposal to automatically reclose a feeder trip using existing relays has not been tested by the parties and is not supported by the record. PGE continues to contend that Zena Solar's protection scheme will result in 2,800 customers offline for hours, in contrast to the minimal outage that would be experienced under PGE's proposed scheme.¹³ PGE notes that Zena Solar's automatic feeder trip proposal was effectively outlined for the first time in Zena Solar's final brief, and was not described in the study process or through the presentation of evidence and testimony in this proceeding. PGE argues that Zena Solar's discussion of automatic reclosing is lay

¹¹ Zena Solar Closing at 68, PGE Opening Brief at 41.

¹² Citing Zena Solar/105, Nelson/49-50; Zena Solar/202, Denman/4, Denman/12; Zena Solar/203, Denman/14.

¹³ Cloud Live Testimony at 30:12-22 & 35:17-22.

opinion about the meaning of the SEL-751A relays, but that Mr. Nelson, the author of the technical portion of Zena Solar's closing brief, has no expertise on this topic.¹⁴

Fundamentally, PGE argues that the sources Mr. Nelson relies on to base his conclusion that automatic feeder trip reclosing is possible do not support his statement in the brief, and therefore this statement is conjecture and unsupported opinion. PGE notes that there is no testimony on the record regarding the simplicity or complexity of automatically reclosing the feeder breaker, or that these components can perform both their existing and these new additional roles. PGE states that there is no testimony regarding the timing, logic, or fault detection considerations that will apply if PGE were to attempt to use existing relays to automatically reclose. PGE questions how this scheme would perform after a feeder event, versus a transmission event. Finally, PGE observes that there is no testimony on the record as to whether the scheme will perform similarly in a high-side or low-side event, whether introducing additional DERs complicates that scheme, if the scheme will be blocked where a DER other than Zena Solar is still online, or whether or not each DER connected to the system will go offline in a trip event consistent with IEEE requirements.

PGE contends the Commission should reject Zena Solar's argument on feeder trip versus direct transfer trip because it is unsupported on the record. PGE states that Zena Solar's argument is based exclusively on Mr. Nelson's own opinion and own interpretation of technical documents that he has no training to interpret. PGE notes that testimony offered by Mr. Denman was ultimately unsupported and that this was demonstrated during cross examination of Mr. Denman. PGE further notes that IEEE 1547-2003 requires that Zena's inverter must trip-off within two seconds, and that this capability for the feeder trip scheme has not been demonstrated anywhere in the record. PGE states that the installation of a SEL-751 relay at the Zena Solar facility, which Zena Solar cites as evidence direct transfer trip is not necessary, does not support this conclusion because there is no testimony on the record that the Zena Solar facility cannot create an unintentional island for at least two seconds.

2. Resolution

We find that a preponderance of the evidence demonstrates that Zena Solar's proposed protection scheme will cause, at a minimum, incremental adverse system impacts, and therefore that it is not a viable alternative to PGE's protection scheme, because it does not mitigate adverse system impacts as required by our rules. Accordingly, we deny with prejudice Zena Solar's second claim for relief with respect to PGE's rejection of Zena Solar's mitigation alternative and with respect to Zena Solar's second claim that the direct transfer trip requirement is not necessary or reasonable.

¹⁴ PGE Reply Brief at 49.

Specifically, PGE has introduced persuasive evidence on the record that Zena Solar's proposal, by not utilizing direct transfer trip, will trip off all power sources in the substation and all 2,800 distribution customers on the feeder. [REDACTED]

[REDACTED] This proposal has not been tested in the study process, much less pursuant to evidentiary examination in this proceeding.

[REDACTED]

Because automatic feeder trip has not been established as a viable alternative, PGE's evidence that Zena Solar's proposed protection scheme would require manual closing of feeder breakers is not persuasively rebutted. PGE testimony demonstrates that manually closing the feeder breakers would likely take hours or a full day, even in instances where ground faults on the 57kV system would typically result in a temporary interruption to customers.¹⁵ In contrast, PGE's proposed protection scheme will result in a short outage, similar to what is experienced under the current system configuration.¹⁶

Similarly, this incremental customer impact means that the record also does not support the indirect fault detection method as an alternative to direct transfer trip. We cannot find PGE has violated the SA, IA or our small generator interconnection rules by requiring direct transfer trip on the evidence before us.

OAR 860-082-0035 requires utilities to work through interconnection studies to identify adverse system impacts associated with DER interconnection. All parties agree in this case that Zena Solar's introduction to the system without an accompanying protection scheme will cause adverse system impacts. We interpret OAR 860-082-0035 in part to require mitigation of those impacts to a degree that leaves customers and the system in an equivalent position relative to safety and reliability as it was prior to the introduction of the DER in question. Where a solution results in significant negative customer impacts, it does not adequately mitigate adverse system impacts as required by OAR 860-082-0035.

Here, the evidence on the record demonstrates that Zena Solar's proposed alternative solution will result in significant negative customer impacts. Though the frequency of events which will require the operation of the 3V0 protection scheme at the Wallace Substation has not been clearly defined, the record persuades us that these events must be planned for and addressed. Under PGE's proposal, when events occur in the future, customers will experience them in the same way they do under current conditions.

¹⁵ Cloud Live Testimony at 30:12-17 & 69:2-8; PGE 100, Cloud/28:8-13; PGE/200, Gross/15:23-16:17; Denman Cross-Examination Testimony at 217:8-15.

¹⁶ Transcript of Hearing at 30:7-11, 37:1-6 (Nov 1, 2021).

Conversely, on the evidence in the record, Zena Solar's protection scheme would result in significantly longer outages. Accordingly, Zena Solar's proposal is inconsistent with OAR 860-082-0035(4).

D. The Need for Reverse Power Flow Supervision

Reverse power flow Supervision provides technical means to identify, and therefore manage, backflow from a DER on the system. As discussed above, direct transfer trip is a method of avoiding a broader trip of many resources by tripping a select DER rather than the entire feeder. Reverse power flow supervision is a second system component which allows PGE greater control and management of its system. This element of PGE's solution senses whether backflow from a specific DER is occurring, so that it can be selectively tripped, only when backflow, which can cause system damage during a 3V0 event, is present.

1. Party Positions

a. Zena Solar

Zena Solar argues that PGE has not justified its reverse power flow supervision requirement in this proceeding. Zena Solar states that PGE's evidence in favor of this standard is contradictory. Because PGE states that reverse power supervision is necessary to distinguish between different 3V0 events on PGE's 57kV system, and only trip Zena Solar when it is the true cause of a harmful backflow event, then implicit with this supervising requirement is that there are other causes of harmful 3V0 without Zena Solar backfeeding. Zena Solar goes on to argue that other sources of harmful 3V0 events should not be present, given the grounded and effectively grounded nature of the system.

Zena Solar also states that, per PGE's Distribution Interconnection Standard, the utility requires tripping when overvoltages reach 120 percent of nominal voltage with a 0.16 second clearing time. Zena Solar contends that if overvoltage from other events can be detected at Wallace on the 57kV system and reach the same 120 percent voltage magnitude trip thresholds, but be caused by a source other than Zena Solar, then this would indicate there is a preexisting need for overvoltage protection that requires tripping to prevent damage.

Furthermore, Zena Solar argues that the 120 percent threshold indicates that PGE is acting in a discriminatory manner to Zena Solar. As explained by Zena Solar, if other 3V0 events can cause voltages to rise above 120 percent but Wallace remains connected to the fault for 1.5 seconds and PGE does not have harmful 3V0 protection installed currently, then this means PGE currently experiences non-backfeed overvoltages above 120 percent for a longer period than overvoltages will be permitted from Zena Solar of

the same potential magnitude. Zena Solar argues that allowing this to occur presently while requiring Zena Solar to take on the costs of reverse power flow supervision is discriminatory.

Reverse power supervision provides no benefit to DERs, and in general has no use or purpose, according to Zena Solar. Zena Solar states that because reverse power flow is the only scenario that allows for 3V0 overvoltage to occur, then PGE's reverse power supervision feature serves no good purpose to "select" when to trip DERs like Zena Solar because the 3V0 overvoltage event will only ever coincide with reverse power. Contrary to PGE's assertions, Zena Solar argues there is no need to prevent "overtripping."

Finally, Zena Solar contends that PGE's reverse power supervision feature is not expected to work reliably, and that PGE never rebutted the evidence put forward on this point in the record.

b. PGE

Without reverse power flow supervision, PGE argues, Zena Solar would be "overtripped," meaning that it would initiate a trip even where there is no backfeed from the 13 kV system. PGE's proposal, in contrast, allows the system to detect a 3V0 event, and confirm that there is reverse power flow occurring through the substation transformer, before tripping the Zena Solar DER. PGE argues that this benefits the DER, because it will prevent unnecessary tripping.

PGE states that Zena Solar misunderstands the purpose of reverse power flow supervision, that it does not distinguish between 3V0 events, but instead detects whether backfeed is occurring at the same time that a 3V0 event is detected somewhere on the system, and only trips when both occur. PGE further explains that consistently detectable 3V0 events, such as a tree branch momentarily brushing a line, can occur and be detected even when there is no backfeed from a DER on the 13 kV system.

PGE emphasizes that "[f]or there to be a 3V0 overvoltage that risks causing damage to the high side of Wallace, there has to be a ground fault that causes 3V0, plus the system has to be ungrounded, plus there has to be 'generation source (such as a DER) to supply voltage to the ground fault.'"¹⁷ PGE's scheme would verify all these conditions before tripping Zena Solar.

In contrast, Zena Solar's proposal only detects a 3V0 event, and does not distinguish a harmless 3V0 event from a damaging 3V0 overvoltage event. PGE argues that Zena Solar is conflating the fact that damaging 3V0 can only occur when there is backfeed from the 13 kV system, with the fact that detectable 3V0 can occur when there is no

¹⁷ PGE Reply Brief at 28, Quoting PGE/200 Gross/6:12-14.

backfeed and when Wallace remains grounded. PGE states that “If PGE tripped Zena as soon as elevated 3V0 is detected, PGE could be tripping Zena when it is unnecessary (*i.e.*, when there is no backfeed and no danger to Wallace).”¹⁸

PGE asserts that Zena Solar fundamentally misunderstands the 120 percent voltage magnitude trip threshold, discussed in its closing technical brief. Specifically, PGE states that Zena Solar’s assertions are not supported on the record, that Zena Solar misunderstands the applicability of PGE’s Distribution Interconnection Standard, and that in any event, PGE has established on the record that it sets the trip threshold on the relays below the point where damage will start occurring to PGE’s equipment; *i.e.* below 120 percent of normal voltage levels.

According to PGE, Zena Solar’s assertions that PGE discriminatorily tolerates non-DER overvoltages is based on several inaccurate assertions and selective use of PGE testimony. PGE asserts that Zena Solar has failed to demonstrate that PGE’s reverse power supervision will not be effective or reliable. PGE states that Zena Solar’s evidence for this assertion is inadequate. Specifically, the only citation presented by Zena Solar is a quote during live reply testimony by Mr. Denman that current transformers will not be able to reliably measure low current during a backflow event. PGE argues that this testimony cannot be relied upon because Mr. Denman is not a substation or protection engineer, and his testimony is not consistent with PGE’s approach to reverse power flow supervision, and therefore is inapposite.

Finally, PGE asserts that, consistent with OAR 860-082-0035(4), reverse power flow supervision is required in order to mitigate adverse impacts. Essentially, PGE argues that Zena Solar’s solution would over-mitigate for damaging 3V0 conditions, and that in order to be compliant with OAR 860-082-0035(4), the solution must only trigger mitigation when the adverse impact occurs.

2. Resolution

On the record before us we have not been presented with an alternative to PGE’s 3V0 mitigation scheme that would be viable under our interconnection rules. Additionally, PGE’s proposed approach includes reverse power flow supervision as part of a scheme that we find would appropriately mitigate the adverse impacts to customers from the interconnection of Zena Solar. Therefore, we cannot find, on this record, that PGE’s requirement of reverse power flow supervision violates our rules, the IA, or the SA. Accordingly, we deny with prejudice Zena Solar’s second claim for relief with respect to Zena Solar’s claim that the reverse power flow supervision requirement is not reasonable. Additionally, we find that PGE has established in evidence that its protection scheme is capable of differentiating between 3V0 events which do not require a trip at the Zena

¹⁸ *Id* at 29.

Solar facility, and those which necessitate such action because of potentially harmful backflow.

Despite our finding above, we note that we do not as part of our decision here necessarily conclude that reverse power flow supervision is required to mitigate adverse impacts of an interconnection under OAR 860-082-0035(4). Additionally, we do not find that PGE's reverse power flow supervision requirement is justified by PGE's position that it is for the benefit of Zena Solar. Rather, the record here does not support these conclusions for two reasons.

First, PGE has presented no evidence on the record that demonstrates that reverse power flow supervision is specifically necessary to mitigate an impact on its system, or on its customers. Instead, PGE demonstrated that its proposed approach to interconnection upgrades, which *includes* a reverse power flow supervision component, is the alternative that comports with our interconnection rules. We note that there is clear and convincing evidence on the record that reverse power flow supervision supports PGE's effective management of DER integration and generation, and prevents unnecessary tripping that may serve to benefit customers and PGE by ensuring that DERs are on the whole more available and are generating during 3V0 events without harmful backflow.¹⁹ And, we agree with PGE that "overtripping of DERs for transmission events to ensure grid reliability as we become increasingly reliant on distributed resources * * *" is an important objective and helps justify utility investments in reverse power flow supervision.²⁰

However, these system and customer benefits from reverse power flow supervision do not justify, of themselves, imposing such a scheme on Zena Solar because that benefit is not an adverse impact that must be mitigated under 860-082-0035(4). Over-mitigation of the 3V0 harm (*i.e.* limiting Zena Solar's power flow onto the system more often than would otherwise be needed) is not itself an adverse system impact under our interconnection rules.

Second, though PGE argues that reverse power flow supervision is a benefit to the DER because of increased availability, in this case the DER does not consider the expense associated with reverse power flow supervision to be worth the considerable cost of its inclusion in the upgrade package. The interconnection customer is the best arbiter of the value of a system feature that is intended to benefit it. Accordingly in this case the benefit to the DER alone does not justify this requirement.

These conclusions do not avail Zena Solar of relief, however. On the record before us, as stated above, there is simply no effective alternative to PGE's proposal, no viable path

¹⁹ See Cloud Live Testimony at 70:8-71:17 & 77:15-19.

²⁰ PGE Opening Brief at 22.

forward in this evidence that achieves the required mitigation of harmful 3V0 conditions which also does not include reverse power flow supervision. Moreover, we do not have indication in the evidence that it is possible to develop such a solution.²¹

PGE has established that reverse power flow supervision could in some circumstances provide system, customer, and DER benefits. Because of this, our conclusion should not be interpreted as having established that PGE cannot reasonably require upgrades for reverse power flow supervision as part of its interconnection requirements, but it should also not be interpreted as having established that in all instances interconnection customers must pay the costs associated with reverse power flow supervision, where a viable alternative exists.

E. Adherence of the Parties to the Study Evaluation Requirements of the IA, SA, and Oregon’s Small Generator Interconnection Rules

1. Party Positions

a. Zena Solar

In its complaint, Zena Solar made extensive allegations regarding PGE’s failure to evaluate Zena Solar’s iSIS in good faith and consistent with Good Utility Practice, but those arguments have narrowed through briefing. Zena Solar argues PGE spent a limited amount of time reviewing the iSIS, and that PGE rejected Zena Solar’s proposed cost saving measures by asserting without appropriate rationale that they were unacceptable because they were non-standard. In its closing brief, Zena Solar argues PGE did not adequately review the iSIS produced by Zena Solar.

First, Zena Solar alleges that there is evidence on the record that PGE withheld information from Zena Solar in a manner inconsistent with SA and IA. Zena Solar alleges that it did not learn of PGE’s reverse power flow supervision requirement until well into this litigation. In another example, Zena Solar asserts that it did not learn of PGE’s requirement for dual redundancy from differential relays until well into the litigation. Zena Solar summarizes that “since the reverse power supervision feature is the primary criteria that PGE claims as reason to disqualify the use of the existing relays at Wallace for 3V0 overvoltage protection, per the terms of the IA and SA PGE was obligated to note and explain this feature in its evaluation of the iSIS.”²²

²¹ We note that PGE has proposed changes to Zena Solar’s alternative, and estimated a total cost of \$600,360 for this alternative. (See PGE Opening Brief at 46.) Zena Solar disputes this alternative, has not agreed to its terms, and this alternative solution has not been tested on this record.

²² Zena Solar Revised Consolidated Closing Brief at 60.

b. PGE

PGE argues that it reviewed the iSIS seriously and thoroughly, and as evidence points to the 31 separate substantive review comments within the iSIS document made by PGE. In addition, PGE notes that it wrote an in-depth seven-page evaluation of the iSIS. PGE argues that it did not reject Zena Solar's iSIS because the solutions proposed were non-standard, but instead because they would not result in any effective cost savings. PGE asserts that Zena Solar's proposed solution was not rejected solely on the grounds of lack of reverse power flow supervision, and that there were significant other deficiencies.

2. Resolution

There is not sufficient evidence on the record to conclude that PGE violated the SA or the IA by not adequately or in good faith reviewing the iSIS. Therefore, we deny Zena Solar's third and fourth claims for relief. Additionally, we grant PGE's third counterclaim in part, finding that PGE's evaluation of the iSIS did not violate the IA or Commission rules.

Our rules give interconnection customers the right to conduct an iSIS, and provides such customers this opportunity to ensure that proposed upgrades are reasonable, cost-effective, and justified by the system impacts caused by the customer in question.²³ The iSIS should be reviewed in a non-discriminatory manner consistent with Good Utility Practice. We find Zena Solar's argument that PGE did not conduct a serious review its iSIS unpersuasive. For example, at stages of this litigation Zena Solar contended that PGE spent as little as fifteen minutes to develop comments on its iSIS based on marginal comments, despite the fact that these comments could have been formulated over a long period of time and typed later during a discrete period.

The evidence demonstrates that PGE provided substantive comment, and submitted its own separate response to Zena Solar. Similarly, the fact that Zena Solar only understood the reverse power supervision requirement or the dual redundancy requirement in the midst of litigation does not, in the absence of additional evidence, indicate that PGE did not live up to its obligations in the SA, IA, and our small generator interconnection rules.

We also note that despite our determination above that Zena Solar's alternative mitigation scheme is not adequate due to the customer impacts associated with feeder trip, there are additional potential deficiencies that we have not fully explored in this order given that threshold determination. Specifically, that PGE alleges Zena Solar's proposed method is not fast enough, has no redundancy, that the SEL-751A is not a primary device and

²³ OAR 860-082-0060(7)(h).

would not receive immediate repair in case of damage, and that Zena's non-standard approach would create ongoing operational risk and expenses.²⁴

Though it is clear that Zena Solar learned a great deal more about PGE's system through the course of this litigation, and certainly would have completed a different iSIS initially had this information been known and understood, there is evidence that Zena Solar had the opportunity to access this information, and no evidence that PGE sought to obfuscate or prevent Zena Solar from learning and understanding it.

Finally, we note that this docket demonstrates the complexity in the interconnection process. A project, which conducted its own iSIS, seemingly discovered a new aspect of the operation of PGE's system at every stage of this litigation, and adjusted its proposed solution accordingly. Access to information, necessary to formulate interconnection alternatives at the sole expense of the interconnection customer, should not require litigation. Though we do not find that PGE acted to violate the SA, the IA, or our Small Generator Interconnection Rules in its review of Zena Solar's iSIS, we encourage PGE to proactively work with similarly situated interconnection customer to allow them to understand PGE's requirements, PGE's system, and the justifications for the costs imposed in interconnection studies. Similarly, just as a project should not be compelled to resort to litigation in order to gain access to relevant information, a project should not utilize the complaint process as a means for determining the nature of its complaint, or to gather information that potentially could have been gained in advance of filing a complaint. We encourage the sharing of information between interconnection customers and utilities prior to initiating litigation.

F. Remaining Counterclaims

PGE's first and second counterclaims are denied without prejudice. Given the overall outcome reflected in this decision, we see no need to reach a conclusion on whether or not Zena Solar breached the IA, or to determine that Zena Solar's refusal to enter into Amendment #1 is a breach of the SA and IA. PGE has prevailed on the merits in this proceeding, and may seek to proactively implement the terms of the SA and IA consistent with this decision.

V. ORDER

1. The Claims of Zena Solar that it is entitled to relief because the system upgrades that PGE has required are not attributable to Zena Solar's interconnection; that Zena Solar is entitled to relief because the system upgrades that PGE has required are not necessary or reasonable; that Zena Solar is entitled to relief because PGE must evaluate potential system upgrades according to Good Utility Practice, and

²⁴ PGE Opening Brief at 20-25.

- PGE has not done so; that Zena Solar is entitled to relief because its IA and SA require PGE to implement these agreements in good faith, and PGE has not done so; and that Zena Solar is entitled to relief because PGE violated ORS 757.020 and 757.325 and the federal PURPA; are all denied with prejudice.
2. The Claim of Zena Solar that it is entitled to relief because PGE has violated ORS Chapter 672 and OAR Division 820 is denied.
 3. PGE's counterclaim requesting a determination that PGE's evaluation of the iSIS did not violate the IA or Commission rules is granted. PGE's counterclaims requesting that the Commission declare that Zena Solar has breached the IA, finding that Zena Solar has breached multiple provisions and that PGE may terminate the IA; determine that Zena Solar's refusal to enter into Amendment #1 is a breach of the SA and IA; and determine that in evaluating and responding to an iSIS, PGE need not provide engineering services to the interconnection customer, and that it complied with rules in its iSIS review are denied.

Made, entered, and effective Apr 29 2022.

Megan W. Decker

Megan W. Decker
Chair

COMMISSIONER TAWNEY WAS
UNAVAILABLE FOR SIGNATURE

Letha Tawney
Commissioner

Mark R. Thompson

Mark R. Thompson
Commissioner



A party may request rehearing or reconsideration of this order under ORS 756.561. A request for rehearing or reconsideration must be filed with the Commission within 60 days of the date of service of this order. The request must comply with the requirements in OAR 860-001-0720. A copy of the request must also be served on each party to the proceedings as provided in OAR 860-001-0180(2). A party may appeal this order by filing a petition for review with the Court of Appeals in compliance with ORS 183.480 through 183.484.