

Attachment D

Supplemental Affidavit of Susan L. Pope

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

<i>Alabama Power Company</i>	)	Docket No. ER21-1111-000
<i>Dominion Energy South Carolina, Inc.</i>	)	Docket No. ER21-1112-000
<i>Louisville Gas and Electric Company</i>	)	Docket No. ER21-1114-000
<i>Duke Energy Progress, LLC</i>	)	Docket No. ER21-1115-000
<i>Duke Energy Carolinas, LLC</i>)	
<i>Duke Energy Carolinas, LLC</i>	)	Docket No. ER21-1116-000
<i>Duke Energy Progress, LLC</i>	)	Docket No. ER21-1117-000
<i>Louisville Gas and Electric Company</i>	)	Docket No. ER21-1118-000
<i>Georgia Power Company</i>	)	Docket No. ER21-1119-000
<i>Kentucky Utilities Company</i>	)	Docket No. ER21-1120-000
<i>Mississippi Power Company</i>	)	Docket No. ER21-1121-000
<i>Alabama Power Company</i>	)	Docket No. ER21-1125-000
<i>Dominion Energy South Carolina, Inc.</i>	)	Docket No. ER21-1128-000 (Not Consolidated)

**SUPPLEMENTAL AFFIDAVIT
OF
SUSAN L. POPE**

**ON BEHALF OF
THE MEMBERS OF THE SOUTHEAST ENERGY EXCHANGE MARKET**

June 7, 2021

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SUPPLEMENTAL AFFIDAVIT OF SUSAN L. POPE

I. INTRODUCTION

1. In this Affidavit I provide information to facilitate response to certain questions posed by the Federal Energy Regulatory Commission (“**Commission**”) in its May 4, 2021 letter (“**Deficiency Letter**”) to Members of the Southeast Energy Exchange Market (“**Members**”) in Docket Nos. ER21-1111-000, et al. I address questions related to my February 12, 2021 Affidavit (“**February Affidavit**”) in this proceeding and clarify certain aspects of the Southeast Energy Exchange Market (“**Southeast EEM**”) Proposal (“**Proposal**”).

A. Assignment by Counsel

2. Counsel for the filing Members has asked me to respond to three questions about the Southeast EEM Proposal. The Commission does not directly ask these questions in the Deficiency Letter but responding to them provides pertinent detail about how the Southeast EEM will operate. This additional information is directly relevant to the Members’ responses to questions 3, 4, and 6 of the Deficiency Letter and aids in understanding their responses to other Commission questions.
 - **Is the Southeast EEM a balancing market?** What are the key differences between the Southeast EEM and typical energy balancing markets? In particular, how are real-time balancing services provided and priced in the Southeast EEM versus balancing markets? Do these differences increase or decrease the potential for the exercise of market power or the potential for market manipulation in the Southeast EEM in comparison with typical balancing markets?
 - **Could the Southeast EEM fully use all residual Available Transmission Capacity (“ATC”) on one or more of the ATC limits in the Southeast EEM Territory (“Territory”)?** If and when this occurs, could it create a potential for the exercise of market power or an opportunity for market manipulation?
 - **Could a Southeast EEM Participant (“Participant”) profit by intentionally failing to physically consummate bilateral transaction matches arranged by the Southeast EEM?** Could a Participant exercise market power or manipulate the market by intentionally failing to consummate one or more of its Energy Exchange matches?

B. Assumptions

3. In responding to the above questions, I have relied on the same assumptions and information about the Proposal that I relied on in my February Affidavit. For reference, I repeat these assumptions with minor updates to include changes introduced in the Members’ response

to the Deficiency Letter (“**Member Response**”).¹

4. *First*, I assume that the implementation of the Southeast EEM will adhere to the market rules as presented in Appendix B (“**Market Rules**”) to the Southeast Energy Exchange Market Agreement (“**Southeast EEM Agreement**”), inclusive of all changes to the Market Rules proposed in the Member Response, and in Attachment C to the Southeast EEM Agreement, the Affidavit of Mr. McGeeney and Mr. Sellers (“**Operations Affidavit**”), *i.e.*, the implementation will not include any material additions to or deletions from the market rules explained in the Market Rules and the Operations Affidavit.
5. *Second*, I assume that all bilateral transactions arranged through the Southeast EEM will occur under Members’ and Participants’ existing Commission-approved Market Based Rate (“**MBR**”) authority and existing Open Access Transmission Tariffs (“**OATTs**”) for jurisdictional entities. The Member OATTs will be revised to include Non-Firm Energy Exchange Transmission Service (“**NFEETS**”) per the terms of the Southeast EEM Agreement. Southeast EEM transactions by non-jurisdictional entities will occur under the authority of their existing arrangements for market-based sales and transmission service.²
6. *Third*, I assume that jurisdictional Southeast EEM Participants will use the functionality of the Southeast EEM System to ensure that their participation in the Southeast EEM abides by all market power mitigation measures that the Commission imposes on them. As explained in the Operations Affidavit, Participant offers into the Southeast EEM can include counterparty and geographic restrictions to enable them to abide by market power mitigation measures limiting the parties with whom and the locations at which they may sell at market-based rates. Additionally, the Energy Exchange Prices determined by the Southeast EEM Algorithm, (“**Algorithm**”), will be capped at the level set by any applicable MBR order.
7. *Fourth*, I assume that the software to implement the Southeast EEM platform will maximize the total benefits of the set of Energy Exchanges arranged every 15 minutes with a reasonable degree of consistency. If and when the software implementation requires a rule to resolve ties or ambiguities, I assume that it will use a random number generator.
8. *Fifth*, I assume that the Commission will continue to monitor adherence to the rules, restrictions, and requirements that apply to some Members’ pre-Southeast EEM bilateral trading activity to address the potential for the exercise of horizontal or vertical market power. Likewise, the Commission will continue to have the authority it has today over Participating Transmission Providers’ OATTs and uphold the underlying principles of open

¹ See Response to Deficiency Letter, dated June 7, 2021.

² See Operations Affidavit at P 10.

access and non-discrimination.³

C. Qualifications

9. Please refer to my February Affidavit for a description of my qualifications and a copy of my *curriculum vitae*.

II. SUMMARY OF CONCLUSIONS

10. Based on the assumptions set forth above and the explanations below and in my February Affidavit, I conclude as follows:

- The data the Members will transmit to the Commission weekly, per the changes proposed in this Member Response, will enable the Commission to continuously monitor for attempts to exercise market power and attempts to manipulate Energy Exchange Prices or access to NFEETS. Weekly receipt of data on the implied marginal benefit of ATC limits, if it can be provided, could substantially assist the Commission in monitoring competition in the Southeast EEM.
- The Southeast EEM is not a proposal for a region-wide real-time balancing market similar to the Western EIM. A distinguishing feature of real-time balancing markets is that participating entities are required to settle all of their energy imbalances—whether positive or negative—at the real-time price(s) resulting from the balancing market operation. This is not the case for the Southeast EEM Proposal. Because key elements of the Southeast EEM design fundamentally differ from the design of real-time balancing markets, concerns about horizontal market power and market manipulation specific to real-time balancing markets are very unlikely to apply to the Southeast EEM.
- Participating Transmission Providers are expected to have residual ATC that they will make available for NFEETS and, after the matching process, the scheduled Energy Exchange matches at times will be likely to fully use all of the residual ATC on one or more ATC limits. However, scheduling of residual ATC will not reduce the availability or firmness of any previously arranged OATT transmission service because all such non-NFEETS service will be scheduled prior to when the Southeast EEM operates.⁴ Additionally, when residual ATC is fully scheduled, it will not create congestion with the potential to affect bilateral markets operating in advance of the Southeast EEM. Scheduling of residual ATC will not enable the exercise of market power and, to the

³ 18 C.F.R. Part 1c (2020).

⁴ Paragraph 35 of the Operations Affidavit illustrates the timing of the scheduling of the Southeast EEM NFEETS in comparison with timing of scheduling of non-NFEETS OATT service. It shows, in particular, that e-Tags for non-NFEETS service are completed prior to the operation of the Southeast EEM and the issuance of e-Tags for Southeast EEM matches.

best of my understanding, is very unlikely to provide an opportunity for market manipulation.

- There is no material potential for a Participant to consistently profit by intentionally failing to consummate matches scheduled by the Southeast EEM.

III. DATA TO BE PROVIDED TO THE COMMISSION WEEKLY ENABLES CONTINUOUS MONITORING

11. The data the Members will transmit to the Commission weekly, per the changes proposed in the Member Response, will enable the Commission to monitor for attempts to exercise market power or manipulate the Southeast EEM. This data, in addition to *a priori* assessments of the proposed Market Rules that I have undertaken, provides assurance that this new design for a regional energy exchange is very unlikely to be manipulated, misused, or distorted by unanticipated Participant actions.

A. Data to Be Provided

12. Appendix D of the revised Market Rules provided within the Member Response lists the data Members commit to provide weekly to the Commission. It includes input data the Southeast EEM Algorithm will use to arrange Energy Exchange matches for each 15-minute Delivery Interval and also relevant output data for each Delivery Interval. As stated in Appendix D, the Members will provide:

- a. Participant, bid/offer price, quantity, location, and All or Nothing information for each bid and offer in each interval;
- b. Specific parameter data for each Participant for all 15-minute intervals, including counterparties the Participant has elected to not be matched with for an interval and Balancing Areas (“BAs”) for which the Participant has elected not to be matched with a counterparty during an interval;
- c. Enabling Agreement counterparties for each Participant;
- d. The Network Map, updated as necessary;
- e. For each interval, ATC made available to the Southeast EEM by each Participating Transmission Provider, as well as the amounts of such ATC that are not used by the Southeast EEM;
- f. Price caps, as relevant for each Participant;
- g. Matched bids and offers with their associated scheduled MWh quantity and Energy Exchange Price;

- h. Implied marginal benefit information for each ATC limit for each interval, to the extent such information can reasonably be produced by the Southeast EEM Algorithm; and
 - i. Descriptive information, such as market participant names and unique identifiers.
- 13. The price caps listed as part “f” above cannot be greater than the maximum Energy Exchange Prices which Participants, subject to mitigation under their MBRs, are permitted to charge for sales to particular buyers or to buyers in particular BAs.
- 14. In Section III.B below I will elaborate on the meaning of the implied marginal benefit of each ATC limit listed as part “h” above.
- 15. Commission Staff could use this information to monitor competition in the Southeast EEM. If the set of matched bids and offers varied, for example, in a somewhat predictable way with gas prices or temperature differences between sub-regions, monitoring could detect significant changes in this pattern as a trigger to instigate more detailed examination of the data.

B. Explanation of Implied Marginal Benefit of ATC Limits

- 16. In my view, the Members’ commitment to provide the Commission with weekly data on the implied marginal benefit of each ATC limit for each Delivery Interval, if the information can reasonably be provided by the Algorithm, could substantially assist the Commission in monitoring for the possible exercise of market power or attempts to manipulate the Southeast EEM. In this section, I explain the meaning of implied marginal benefit, how this information could be useful to the Commission, and why there is uncertainty at this time about whether the information will be produced by the Algorithm.
- 17. The building blocks for understanding the meaning of implied marginal benefit reside in explanation of how the Algorithm will make Energy Exchange matches from Bid Prices and Offer Prices. As proposed, the Southeast EEM will arrange for Energy Exchange matches using data submitted by load (i.e., Bidders) and supply (i.e., Offerors). Loads will submit bids (i.e., Bid Prices) for the maximum they would be willing to pay for energy delivery in a match arranged by the Algorithm. Similarly, suppliers will submit offers (i.e., Offer Prices) for the minimum price they would accept for energy they supply via an arranged match. The benefit of each match arranged by the Algorithm will be the Bid Price of the load, less the Offer Price of the supplier, and less charges for financial losses for the bilateral transaction. Leaving aside losses, the benefit of the match will be the spread between the Bid Price and the Offer Price. Intuitively, it will be the savings from

substituting the supplier's lower cost supply for the load's higher-cost energy resource.⁵

18. The benefit of each arranged match will be split equally between the Bidder and Offeror, as will be the total financial cost of losses, per the equation for split-the-savings pricing applied after the Algorithm has determined matches.⁶ The benefit of a match will be determined when the match is made and subsequently divided equally between buyer and seller via the Energy Exchange Price.
19. Many different sets of matches could be constructed from the pool of load bids and supplier offers submitted for each Delivery Interval. The allowed matches will be limited, to an extent, by a number of constraints described in the Market Rules. Participants could specify, for example, participant-specific constraints, such as that a bid or offer must be matched in full or not at all.⁷ Additionally, the Market Rules will impose constraints applying to all matches, such as a requirement for all matches to yield a positive benefit for both the buyer and the seller.⁸ Finally, the feasible set of matches the Algorithm will assemble from the pool of bids and offers will be constrained by ATC limits. The Algorithm will generate e-Tags to schedule NFEETS on a contract path connecting the seller in each match to the buyer, so there must be sufficient residual transmission capacity on each ATC limit to accommodate all e-Tags generated in a Delivery Interval. Even after considering the constraints described in this paragraph, there will be many different ways the pool of bids and offers in an interval could be feasibly paired into beneficial matches.
20. The Market Rules direct the Algorithm to be designed and implemented to choose the set of matches in each interval that will have the greatest total benefits, considering all of the constraints. The "benefit maximization" approach will enable the Southeast EEM to use residual ATC to maximally benefit the Southeast as a whole. The Algorithm will determine, to the greatest extent reasonably possible, how to match bids and offers to achieve maximal benefits from the residual available ATC. It will schedule additional feasible matches using up this residual ATC as long as there are still benefits to be obtained.
21. At times, the Algorithm will not be able to schedule additional beneficial matches because no residual ATC remains on one or more ATC limits. When this occurs there will be, in principle, a positive implied marginal benefit of residual ATC on each of these limits. The

⁵ The accuracy of this intuitive explanation, in practice, will depend on the strength of the incentive for buyers to submit bids equal to their marginal avoided cost and for suppliers to submit offers equal to their marginal production cost. In my February Affidavit (at P 62), I concluded that "[a]s long as robust competition occurs as expected in the Southeast EEM, I expect market uncertainty to incent rational Participants to bid and offer close to their underlying costs most of the time."

⁶ See February Affidavit at P 39.

⁷ See Operations Affidavit at PP 39 - 42.

⁸ See Market Rules at Section IV.C.6.b and Operations Affidavit at P 38.

benefit of the next 4 MWh match that would have been made if residual ATC on a limit were not exhausted is the implied marginal benefit of the ATC limit.⁹ Implied marginal benefit is, in concept, the spread between the bid and offer price of the next match that would have been made (but could not be made) using capacity on an ATC limit, after subtracting the cost of financial losses. The implied marginal benefit is not what the split-the-savings price would have been for the hypothetical match.

22. In the Algorithm developed for the Southeast EEM, the implied marginal benefit data reported might be defined as described above, as the benefit of the “next match that would be made” if there were additional residual capacity on an ATC limit, or in some other way.¹⁰ Assuming the Southeast EEM software vendor determines a reasonable way to define the implied marginal benefits of ATC limits, the data reported will depend on the Network Map, bids, offers, and all the constraints the Algorithm will consider in determining a final set of matches for an interval. The implied marginal benefit of ATC limits will not depend on Energy Exchange Prices, because prices are calculated after-the-fact from the data produced when the Algorithm has completed the matching process (i.e., from the Energy Exchange matches), whereas the implied marginal benefits will be *part of* the Algorithm solution but possibly difficult at times to pinpoint.
23. When the value of the implied marginal benefit is small, the spread between the bid and offer of additional beneficial matches that could use capacity on an ATC limit would be small. Conversely, if the implied marginal benefit of an ATC limit is high, the benefit of scheduling additional matches across the limit would be high.¹¹ If the implied marginal benefit is zero, the matches in an interval will not have used all of the residual capacity on the ATC limit.
24. Continuous receipt of data each week on the implied marginal benefit of ATC limits could

⁹ Southeast EEM bids, offers, and matches must be made in 4 MWh increments per 15 minute period. The Members adopted this rule so that a 4 MWh match for 15 minutes could, when necessary or convenient, be reported as a 1 MWh match.

¹⁰ If the optimization of benefits did not require a “mixed-integer linear programming concept” (Operations Affidavit at P 36) for the Algorithm, the choice between defining and calculating the implied marginal benefit of an ATC limit based on the “next” or “last” match for the limit, or in some other way, would likely not be required.

The Southeast EEM software vendor will likely need to make choices to determine how the implied marginal benefit of ATC limits will be defined and reported. The software vendor should work with the Members to select a definition of implied marginal benefit that can be implemented in the software, if and when reasonably possible, and an explanation should be provided in the BPMs. The BPMs also should describe, in general, situations in which the implied marginal benefit of an ATC limit cannot be calculated or, if calculated, would not be meaningful because the Algorithm will be a “mixed integer linear programming concept.”

¹¹ This sentence and the one immediately preceding assume the software vendor determines a reasonably sound way to report the implied marginal benefit data.

substantially assist the Commission in monitoring competition in the Southeast EEM. If the implied marginal benefit of an ATC limit were inexplicably and consistently high at particular times or under particular market conditions, it could simply reflect market fundamentals, but certain patterns could also indicate where the Commission might check for the exercise of market power or market manipulation. This situation could trigger analyses of the bid and offer data provided to determine, for example, whether particular bids or offers are consistently driving the high implied marginal benefit of the ATC limit, whether these bids and offers appear likely to be unreasonably disconnected from underlying costs, or whether the bids and offers originate from a small number of Participants.¹²

25. As I have stated, I do not see a potential for the exercise of market power under the Market Rules for Energy Exchange matches. Also, I have not identified *a priori* any ways in which the Southeast EEM might be manipulated. By providing data, if possible, on the implied marginal benefits of ATC Limits, the Members will assist the Commission in continuously monitoring the outcomes of the Southeast EEM.
26. I cannot presume the software programming techniques the Southeast EEM's software vendor will use to solve the Algorithm to determine Energy Exchange matches. The non-linear constraints described above, plus the requirement for all bids and offers to be submitted in 4 MWh increments, will complicate determination of an optimized set of matches and may also complicate reporting of the implied marginal benefit of the ATC limits. My understanding is that the Members will report back to the Commission, when they provide the Commission with advance notice that the Southeast EEM is ready to launch, on whether the software developer has been successful in developing rules for defining and reporting implied marginal benefits and, if not, will provide an explanation.

IV. THE SOUTHEAST EEM IS NOT A BALANCING MARKET¹³

27. The Southeast EEM will match buyers and sellers in bilateral Energy Exchanges every 15-

¹² Additionally, implied marginal benefit data could assist the Commission and Auditor in roughly checking the reasonableness of the Algorithm results. If a seemingly high unmatched bid cannot be paired with an unmatched offer so as to yield a benefit higher than the sum of the implied marginal benefits of the ATC limits on all alternative contract paths connecting the buyer to the seller, the fact that the bid is unmatched generally would be reasonable given the Algorithm solution for the interval.

¹³ With regard to the issues discussed in this Affidavit, the terms "real-time balancing market," "energy imbalance market," "balancing market," "real-time energy market," "real-time market," "regional real-time market," and "regional real-time balancing market," are synonymous. I will use the term "balancing market" throughout.

A key characteristic of balancing markets, for purposes of comparison to the Southeast EEM proposal, is that their schedules implicitly include all imbalances participants have not resolved prior to the when the balancing market is run. Participants cannot choose to resolve these remaining imbalances in another way. Additionally, settlements for balancing market schedules are based on prices calculated from the regionally coordinated bid-based economic dispatch

minutes only for the quantities that the buyers and sellers voluntarily submit to the Southeast EEM, and utilizing the residual ATC available in the Southeast EEM region. These Energy Exchanges will be settled based on split-the-savings prices, which are not market clearing prices. The existing Balancing Authorities in the Southeast EEM Territory will remain responsible for balancing load and generation in real time and Southeast EEM Participating Transmission Providers will charge for imbalance services for point-to-point transmission service according to the terms of their OATTs.

28. There are fundamental differences between the Southeast EEM and balancing markets:

- Balancing markets do not arrange bilateral transaction matches;¹⁴
- Participants in a balancing market are required to settle their imbalances through the market, and based on prices determined from the balancing market;¹⁵ and
- The prices used to settle balancing markets are typically market-clearing prices.

29. These differences between the Southeast EEM Proposal and the market rules of typical balancing markets are critical to understanding why competitive concerns often arising in balancing markets do not extend to the Southeast EEM.

A. Balancing Markets Do Not Arrange for Bilateral Transactions

30. The way the Southeast EEM will operate fundamentally differs from how balancing markets

used to effectuate the balancing market. Most balancing markets elect to use prices intended to “clear” the balancing market.

A second relevant and distinguishing characteristic of balancing markets is that they determine the set point schedules for control area interchange among BAs. *After* the operation of balancing markets, BA’s adjust the output of resources affiliated with the BA (when the Balancing Authority is a vertically integrated utility) or resources designated and generally compensated to provide regulation or ramping services to the BA to offset any subsequent net imbalances within its control area. This balancing function of Balancing Authorities, to maintain set control area interchange schedules with neighboring Balancing Authorities, is a reliability function and has not changed with the introduction of balancing markets. The Southeast EEM is not a Balancing Authority, so does not arrange or maintain set points for control area interchange.

¹⁴ Balancing markets are unable to arrange for new bilateral transactions but typically can accommodate bilateral transactions arranged by a deadline prior to when the balancing market runs.

Non-discrimination in the Southeast EEM is effectuated by scheduling matches under the terms of the Commission-approved Member Transmission Service Provider OATTs. Unlike balancing markets, the Southeast EEM is not intended to be a new mechanism to provide for non-discriminatory transmission service but, rather, to extend the non-discriminatory practices established in the Members’ OATTs.

¹⁵ In the Western EIM, EIM participants that are Balancing Authorities have elected to modify their OATTs to financially settle all imbalances within their control areas at the EIM-determined balancing market prices.

operate. The Southeast EEM provides a new opportunity for voluntary 15-minute bilateral trading in the Southeast EEM Territory. It will use residual ATC (i.e., any transmission capacity on ATC limits remaining after all transactions using OATT service other than NFEETS have been scheduled) to arrange for mutually beneficial Energy Exchanges between a willing buyer and a willing seller. The exchange of energy through the Southeast EEM will be supported by the Members' agreement to offer NFEETS—the lowest priority OATT transmission service—for free and by the implementation of an automated platform to arrange for Energy Exchanges.

31. As I explained in my February Affidavit, the elimination of transmission rate pancaking and the use of automation to arrange for Energy Exchange matches will offer an opportunity for 15-minute bilateral transactions to be scheduled in the Southeast EEM that may not otherwise be economic.¹⁶ The set of Energy Exchanges matched in each interval will be chosen to optimize the benefit of the matches, in total, subject to residual ATC limits and other constraints. The Southeast EEM will enable efficiency gains because residual ATC can be used to allow Southeast entities to substitute lower-cost energy supply sources for higher-cost sources to serve load in the Southeast EEM Territory. Settlement prices for Energy Exchange bilateral transactions will be calculated separately for each match, based on the bid of the matched buyer and the offer of the matched seller.
32. In contrast to the Southeast EEM, the core function of balancing markets is to manage regional energy imbalances efficiently and without discrimination, not to provide a regional platform to efficiently schedule incrementally beneficial bilateral transactions. System operators effectuate real-time balancing markets by running a least-cost dispatch of physical supply and (infrequently) physical load, based on offers and bids, to produce real-time schedules for energy injections and withdrawals at specific locations. These schedules are constrained by the requirements that they balance load and supply in the balancing market region and that the resulting physical power flows on the regional transmission grid do not violate physical transmission constraints (“**security-constrained economic dispatch**”). Assessment of the feasibility of energy injections and withdrawals in balancing markets is based on the physical power flow on the regional transmission grid instead of ATC limits.
33. In a balancing market, there is no “link” between energy injections and withdrawals, as there is in bilateral transactions. Instead, the balancing market ensures that energy injections into the regional market as a whole are balanced against total withdrawals in order to maintain reliability. Injections and withdrawals scheduled in balancing markets are typically settled at balancing market clearing prices, determined so as to be consistent with

¹⁶ See February Affidavit at P 31.

balancing market schedules.¹⁷

B. Balancing Market Participants Must Resolve Real-Time Imbalances in the Balancing Market

34. Participation in the Southeast EEM will be voluntary, with each Participant free to determine how much—if any—energy it is willing to transact in each 15-minute interval. There will be no must-offer requirement, or must-purchase obligation. The incentive to participate will be to incrementally lower the cost of power (for a Bidder) or increase sales revenues (for an Offeror).
35. Participants may bid or offer into the Southeast EEM to attempt to economically address real-time load or generation imbalances identified 15 or more minutes in advance of real time, but there will be no guarantee a match will be made to resolve the imbalance. In my February Affidavit, I explain that Participants will not be able to depend on any bid or offer into the Southeast EEM being matched in any interval, because a match will depend on the availability of residual ATC in the interval and the bids and offers of potential match counterparties and competitors.¹⁸
36. Also, to be clear, the Southeast EEM is not designed to prioritize matches that will resolve Participant imbalances. The Southeast EEM will schedule bilateral Energy Exchanges for the purpose of maximizing aggregate benefits to the region from the use of residual ATC, not to enable load-serving entities to fulfill obligations to provide electricity to end-use loads. Resource adequacy obligations will continue to be the responsibility of Participants according to current rules established by the states or other entities. Participants *may* use the Southeast EEM to attempt to manage imbalances, but are not *required* to do so, nor will they necessarily be successful if they voluntarily bid or offer for this purpose.
37. The Southeast EEM will provide a new alternative for prospectively managing imbalances known 15 minutes before the Delivery Interval, but because matches are not guaranteed, Participants will continue to rely on the same mechanisms for handling imbalances that they use today. They can resolve imbalances by adjusting the injections or withdrawals of their own resources, when possible and allowed under the terms of their OATT service.¹⁹ Participants will also continue to obtain and pay for real-time imbalance service, when needed, subject to the terms of their Transmission Service Provider OATTs. The Southeast EEM will not be a Balancing Authority; it will not perform a centralized economic dispatch

¹⁷ Settlements for real-time balancing market schedules in the U.S. are for the difference between real-time schedules and day-ahead schedules except in the CAISO. In the CAISO the real-time settlement is for the difference between real-time schedules and 15-minute schedules.

¹⁸ See February Affidavit at PP 52, 71, and 82.

¹⁹ This will happen automatically for generation and load affiliated with the BA.

in real time, so it will not be able to provide imbalance service by balancing injections and withdrawals in real time like Balancing Authority.²⁰

38. Unlike the Southeast EEM, entities choosing to participate in a regional balancing market commit to settling their real-time imbalances based on the schedules and prices determined by the operation of the market. Participants are generally allowed to manage imbalances in advance of the balancing market through changes to their schedules. However, in balancing markets there is generally a time at which any further schedule changes are subject to financial settlement as imbalances.²¹ After this time, all remaining imbalances are addressed within the overall balancing market dispatch for the region, which economically adjusts the dispatch set points of bid-in suppliers and loads to maintain the supply/demand balance for the BA as a whole. Participants in balancing markets cannot elect to pay for another type of imbalance service or self-supply imbalances after the cutoff time.
39. In a balancing market, participants commit to financially settle all imbalances (relative to schedules at a defined cut-off time) through the balancing market at the balancing market prices. The Southeast EEM will be entirely different: if a participating utility's load is higher than forecast in real time, it will not automatically be deemed to purchase that energy from the Southeast EEM, nor could it do so. Likewise, if its load is lower than forecast in real-time, it will not and could not automatically be deemed to sell that energy to the Southeast EEM. In a balancing market, in contrast, the utility would be charged or paid the price the balancing market determines for its load imbalance, and the market operator would dispatch all available resources to meet the aggregate BA imbalance needs at least bid-cost.

C. The Prices Used to Settle Balancing Markets Are Typically Market-Clearing Prices

40. Settlement prices in the Southeast EEM are not clearing prices resulting from a region-wide security-constrained economic dispatch as in balancing markets. Energy Exchange Prices will be calculated separately for each Energy Exchange match, based on the bid price of the matched buyer and the offer price of the matched seller.²² The Energy Exchange Price load at a single location pays will be different for each of its matches in a Delivery Interval. Similarly, the Energy Exchange Price a supplier at a particular location is paid for each of its matches in an interval will be different.
41. Southeast EEM split-the-savings Energy Exchange Prices are completely different than the market clearing prices typically used to settle balancing market schedules. With a clearing price design, all load at a location pays the same balancing market price and all supply at a

²⁰ U.S. ISOs, the Western EIM, and the Western EIS perform this Balancing Authority function through their balancing market, i.e., they perform an economic dispatch to balance load and supply.

²¹ The deadlines and practices for bilateral transaction scheduling vary among balancing markets.

²² See February Affidavit at P 39, Equation 1.

location is paid the same price.²³

42. Moreover, if the balancing market settlement prices are locational or zonal, they will systematically differ based on the degree to which injections (or withdrawals) at a location affect energy flows on constrained transmission lines or interfaces. For example, an injection at a location causing a substantial increase in flow on a constrained transmission line would be paid a lower price than an injection causing less flow on the constrained line, and the difference in prices would be directly related to the difference in these flows.
43. Settlement prices in a balancing market are also interrelated by connection to the offers of the marginal suppliers scheduled to balance energy injections and withdrawals in the region in an interval.²⁴ If there are no transmission constraints in the balancing market region, the dispatch of supply will be in merit order and the last supplier scheduled to balance load is the marginal supplier. The balancing market in this case would have the same clearing price at all locations, equal to the offer of the marginal supplier.²⁵ In balancing markets, the number of marginal suppliers increases with increases in the number of transmission constraints limiting the merit-order dispatch. All settlement prices in balancing markets are related to the offer(s) of one or more of these marginal suppliers.
44. Concerns about the exercise of horizontal market power in balancing markets arise largely because of the interrelationships among the clearing prices used for balancing market settlements.²⁶ The exercise of supply-side market power could cause the balancing market to use a marginal supplier with a substantially higher offer price than the supplier that would otherwise have been used.²⁷ When this occurs, the higher marginal offer price could cause an increase in settlement price(s) across the whole region or a sub-region, with the degree of impact on the prices at different locations varying based on the pricing interrelationships described above.
45. The exercise of supply-side market power is profitable in balancing markets when the lost

²³ This statement is intended to include different approaches to determining clearing prices for a balancing market (LMP, zonal, same price at all locations), although there are important differences in how efficiently alternative pricing approaches “clear” the market.

²⁴ The marginal entity could be a load rather than a supplier. For simplicity, I will refer use the term “marginal supplier” herein with the caveat that it is intended to generalize to dispatchable load.

²⁵ For simplicity, this description ignores the effect of marginal losses on settlement prices in balancing markets.

²⁶ The same interrelationships and concerns about the exercise of horizontal market power or manipulation of clearing prices exist, in principle but generally less so in practice, for day-ahead electricity markets designed similarly to the balancing markets described in this Affidavit.

²⁷ Analogous scenarios could be described for the possible exercise of buyer-side market power to decrease prices in balancing markets. Buyer-side market power is a second type of horizontal market power. For simplicity, in this Affidavit I explain the potential for horizontal market power in balancing markets from the perspective of the supply-side, without providing a parallel explanation for the buy-side.

profits a participant incurs from economically or physically withholding a relatively small quantity of supply are less than the increased profits it receives from the higher settlement prices it causes to be applied to a large quantity (MWh) of its other scheduled injections. Participants might be able to profit in this way when the market structure conditions enable the withholding of a relatively small quantity of supply to cause a material increase in the offer price of one of the marginal suppliers selected to balance the market. Concerns about supply-side market power arise when competition is not sufficient to constrain the ability of a single supplier, or possibly a group of suppliers, from withholding supply so as to materially increase settlement prices.

46. The exercise of supply-side market power in balancing markets typically becomes a possible concern if there is transmission congestion. When there is transmission congestion, sometimes only a small number of competing supply offers can feasibly be scheduled to balance some of the load in the balancing market region. To take an extreme example, if transmission congestion isolates a “load pocket,” only supply within the load pocket can be dispatched to balance the load in the load pocket. Assessment of the potential for supply-side market power in balancing markets focuses on situations in which transmission congestion leads to structural concentration, i.e., leads to competition among only a small number of different suppliers to balance some loads.
47. The profitability of manipulating balancing market prices (as opposed to exercising market power) is also often related to a participant’s ability to change prices at many balancing market settlement locations, or for many transactions, though actions that increase (or decrease) the offer price of a marginal supplier. As an example of fraud, consider the impact of a participant scheduling a large export prior to the balancing market and then purposefully failing check-out with one of the neighboring BAs with which it has scheduled.²⁸ This fraud decreases market prices because supply will be scheduled in advance to serve the fraudulent export and, when the export load does not materialize, balancing market prices will decrease. The perpetrator of this fraud might profit in a number of ways, such as through contracts for related transactions that are more profitable when the balancing market price is low.
48. The supply-side market power concerns and market manipulation concerns I have described for real-time balancing markets do not extend to the Southeast EEM for a number of reasons. Energy Exchange Prices will be calculated separately for each match. They will not be interrelated market clearing prices like balancing market settlement prices. The inability to systematically affect the prices used to settle many megawatt-hours of Southeast EEM transactions by taking losses by withholding a much smaller number of megawatt-hours of energy rules out the possible exercise of horizontal market power in the way I

²⁸ “Check-out” refers to the process by which importing or exporting parties verify that the transaction is acceptable to all relevant Balancing Authorities, and that the information in the transaction’s E-Tag meets various criteria.

describe above.

49. In addition, I have not identified any ways to manipulate the Southeast EEM, other than the scheme addressed by imposing the 3 eligible counterparty requirement.²⁹ Market manipulation schemes that depend on being able to predictably change Energy Exchange schedules or prices by taking relatively small losses on a few transactions do not appear to be possible. As I discuss in my February Affidavit, Energy Exchange matches and prices will typically not be predictable because the Southeast EEM will be a residual market and also because of the use of spilt-the-savings to calculate prices.³⁰
50. Finally, because the Southeast EEM will be a residual market, the potential price impact from the exercise of market power or manipulation of the market is effectively capped at a lower level than the price caps imposed in U.S. balancing markets. Since bidding into the EEM will be voluntary, load will not rationally bid more than the cost of its cheapest alternative source of supply. When a load bid is matched, the total price for its match (including the cost of losses) will not exceed its bid, which means that the price will not exceed the cost of the load's cheapest alternative supply resource (or the estimated cost of its Transmission Service Provider's imbalance service, if this is less).

V. FULL USE OF RESIDUAL ATC IS VERY UNLIKELY TO CAUSE COMPETITIVE CONCERNS

51. The Southeast EEM will be designed to fully use residual ATC to schedule beneficial Energy Exchanges whenever possible. This will be facilitated by the proposal to charge \$0/MWh for NFEETS and to automate the process of pairing buyers and sellers. Since the costs of bidding and offering into the Energy Exchange and effectuating matches will be small, it is reasonable to expect buyers and sellers to bid and offer whenever they see the possibility of a benefit. As I discussed earlier, the Algorithm will continue to schedule feasible transactions using residual ATC until no additional benefits can be attained by matching the remaining unmatched bids and offers.
52. If bids and offers are plentiful, it is likely that Energy Exchange matches will use all of the capacity on one or more ATC limits in at least some intervals. Because the Southeast EEM will seek to use residual ATC to arrange for beneficial trades, even if the benefit of the final trades arranged is small, all of the residual ATC on one or more ATC limits will likely be used, even during the first weeks and months of the Energy Exchange.³¹ If and when all

²⁹ See February Affidavit at PP 77 - 85.

³⁰ See February Affidavit at PP 51 - 52, and 71.

³¹ The Guidehouse Study suggests that the final matches made in the Southeast EEM may have only a small gap between the buyer's bid and the supplier's offer, stating "intra-hour trades are scheduled in the model even if their margin is low, until no further trades are possible due to ATC limits." Southeast EEM Filings, Attachment E-1, Benefits Analysis at at 17.

residual ATC on one or more ATC limits is scheduled, it will indicate that the Southeast EEM Algorithm is functioning as intended, and would not be a cause for concern.

53. Full use of residual ATC will not reduce the availability or firmness of any non-NFEETS OATT transmission service, because all other forms of OATT transmission service must be arranged prior to when the Southeast EEM operates. The ATC available to support Southeast EEM matches will be the residual capacity remaining after accounting for the transmission scheduled for transactions using non-NFEETS types of OATT transmission service.³² For this reason, when granting of NFEETS results in residual ATC becoming fully scheduled, it will not create congestion with the potential to affect bilateral markets operating in advance of the Southeast EEM.
54. The likelihood of the Algorithm scheduling all residual ATC on one or more ATC limits does not alter the conclusion I reach in my February Affidavit about the potential for the exercise of horizontal market power. I stated that “the Southeast EEM is a voluntary, residual market, in effect ruling out the possibility of one or more Participants exercising horizontal market power as defined by the Commission.”³³ This conclusion does not hinge on whether or not Southeast EEM ATC limits will be fully scheduled. The Southeast EEM provides Participants with a new option for scheduling non-firm bilateral transactions, in addition to the alternatives they have today, for which the Commission imposes mitigation to prevent the exercise of market power, if required, in the process of evaluating and approving applications for MBRs. It is unclear how a strictly additive new option for arranging for bilateral transactions could be anything other than pro-competitive. Access to NFEETS is not required to serve load. It simply enables the substitution of lower-cost supply for higher-cost supply to serve load.
55. The likelihood of the Southeast EEM fully scheduling all residual capacity on one or more ATC limits also does not impact my prior conclusions about the potential for market manipulation. Energy Exchange prices will generally be difficult to predict and, therefore, to manipulate, even when residual ATC is fully scheduled, because they are calculated separately for each match and are not interrelated and connected to the offers of marginal suppliers as in a balancing market.
56. For these reasons, concerns about congestion enabling the exercise of horizontal market power or providing an opportunity for market manipulation that may arise in the context of balancing markets do not appear to extend to the scheduling of residual ATC in the Southeast EEM.
57. To remove all doubt, the Members are revising the Market Rules to include a commitment

³² See February Affidavit at P 13.

³³ See February Affidavit at P 71.

to provide the Commission with data to support continuous monitoring to detect potentially anti-competitive actions by Participants in the Southeast EEM. The data transfer will include information about the quantity of unscheduled residual capacity on each ATC limit. Therefore, the Commission can evaluate how the scheduling of all residual capacity on an ATC limit impacts Energy Exchange matches and prices. Also, the data on implied marginal benefits for each ATC limit, if available, will further support assessments of whether or not full scheduling of ATC limits is systematically connected to potentially anti-competitive market outcomes.

VI. MANIPULATION BY INTENTIONALLY NOT CONSUMMATING MATCHES IS VERY UNLIKELY TO OCCUR

58. I have not identified a way for a Participant to predictably or consistently profit from bidding or offering so as to be matched in an Energy Exchange with the intention of not consummating the match. Concerns about manipulating the market by scheduling transactions and then intentionally failing to consummate them that might arise in U.S. balancing markets do not appear to extend to the Southeast EEM.
59. The reason for my conclusion in this regard is the same as the reason, discussed earlier in this Affidavit and in my February Affidavit, why other types of potential manipulations of Southeast EEM prices are very unlikely to be profitable: it does not appear to be possible to sufficiently manipulate the Energy Exchange Price used to settle a sufficient quantity of matches or other transactions to make it profitable to engage in a manipulative scheme that requires taking losses on other matches. This is because the Southeast EEM will be a voluntary, residual, bilateral market in which the settlement price for each individual transaction will be calculated separately. These characteristics of the Southeast EEM differ from typical balancing markets. They mean it will be virtually impossible to manipulate the settlement price at many locations through actions affecting the scheduling of just one supplier (or a few suppliers), and that settlement prices will be capped by the avoided costs of loads bidding into the exchange. These characteristics greatly limit the potential to profit by manipulating prices.
60. For the specific case at hand, the failure to physically consummate transactions would not directly or predictably confer a higher (or lower) price for the perpetrator's other matches or related transactions. The scheduling of the fraudulent trade would not have the potential to ripple through settlement prices as in a real-time balancing market. Thus, it would not lead to a substantial change in the reported weighted average price if the plan were to manipulate this in order to profit on the settlement of related transactions.
61. In addition to schemes intended to manipulate settlement prices, I also considered the potential for participant actions intended to foreclose the matches of competitors. It appears that these might be tried in some circumstances but would be extremely unlikely to be profitable. For example, a supplier might offer below its cost (or, equivalently, offer energy

it does not intend to supply so that it likely ends up paying for imbalances at a higher price than its Energy Exchange match price) to attempt to foreclose a competing supply offer from being matched. In the unusual circumstance in which both suppliers knew they were competing to use exactly the same scarce residual ATC to be matched with buyers, the perpetrator might be able to offer uneconomically so as to prevent its competitor from being matched with a load. However, this would require it to incur losses on each MWh for which it is scheduled rather than the competing supplier. Unless its competitor mistakenly submitted an offer that had to be matched as a whole (e.g., a 100 MWh block offer), there would be no multiplier effect whereby the perpetrator could take losses on a small number of MWh in order to foreclose its competitor from being matched for a much larger number of MWh. Without this type of multiplier effect, intentionally offering so as to attempt to foreclose matches by competing suppliers would be very unlikely to occur.

62. To clarify discussion of unconsummated matches, I would like to explain that it does not appear to be possible to identify *physically* unconsummated Energy Exchange matches. If a supplier with point-to-point transmission service has imbalances, it will pay its Transmission Service Provider's rate for imbalance service. It will not be possible, though, to specifically attribute its imbalances to failure to consummated one or more of its (possibly many) bilateral supply contracts. The only available information will be the total injections of the supplier in comparison to its total scheduled injections. Similarly, a Balancing Authority dispatches its supply, as a whole, to manage imbalances in its BA, so it is not possible to determine the imbalance of any particular BA-affiliated supplier or load, or to associate any imbalance with a particular BA bilateral contract. All deviations of BA-affiliated suppliers from their schedules, BA loads from load forecasts, and imports/exports from control area interchange schedules are pooled together and managed by the Balancing Authority to abide by its control area interchange schedule. For these reasons it will not be possible to identify when a particular NFEETS match is unconsummated except, possibly, in unusual circumstances. However, as I state above, I have not identified a way for a Participant to predictably or consistently profit from bidding or offering so as to be matched in an Energy Exchange with the intention of not consummating the match.
63. To address any remaining concerns about market manipulation, as part of this filing the Members have committed to provide data about inputs to and outputs from the Southeast EEM Algorithm to the Commission, so that it can perform its own assessments.
64. This concludes my affidavit.

VERIFICATION OF SUSAN L. POPE

Pursuant to 18 U.S.C. § 1746 (2020), I state under penalty of perjury that the foregoing affidavit is true and correct to the best of my knowledge, information, and belief.

Executed this 3RD day of June, 2021.



Susan L. Pope
FTI Consulting, Inc.
Managing Director