MONTHLY AUDIT REPORT ON THE SOUTHEAST ENERGY EXCHANGE MARKET

FOR November 2023

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I. OVERVIEW

This is the Auditor report for the month of November 2023 on the Southeast Energy Exchange Market (SEEM). SEEM is a regional energy market that uses a centralized intra-hour energy exchange to create bilateral trade among its trading participants every 15 minutes. It uses available transmission capability (ATC) of the SEEM members under a transmission service designed for SEEM called Non-Firm Energy Exchange Transmission Service (NFEETS). It has operated since November 2022 and now has 24 members.[1]

Trading volumes eased from 76,000 MWh in October to 72,000 MWh in November but were substantially above the market-to-date monthly average of 53,000 MWh. Trading among SEEM members relies on individual transmission segments connecting the members and trade may span multiple segments. Transmission availability on individual segments varied widely. For many segments capacity is available in every interval. For other segments, availability is zero in many intervals. Considering all intervals and segments, ten percent of the time availability was zero. Due to transmission constraints, transmission loss costs, and participant-specific constraints, about 13,000 MWh of potential economic exchanges were left uncleared in November. As explained herein, these are uncleared offers and bids in the same interval where the offer price was less than the bid price by more than the average cost of losses.

SEEM is governed by the SEEM Membership Board. The automated architecture of SEEM was developed and is operated by Hartigen, who also serves as the SEEM Administrator. Our auditing role is directed by the Membership Board in accordance with elements specified in the Market Rules as developed by the Membership Board and approved by the Federal Energy Regulatory Commission (FERC). The results of our auditing are reported to the Membership Board through submission of this Monthly Report. We also have a duty under the Market Rules to respond to inquiries made by regulators and other oversight authorities, including FERC. We received no such inquiries during the period of this report.

The SEEM auditing framework is based on the provisions of the SEEM Market Rules Section VI.D. (Auditing Process). These duties are in four main categories. The first duty is to analyze SEEM input, constraints, and matching results to determine if SEEM operates in

[1] The initial 18 members are: Alabama Power Company; Georgia Power Company; Mississippi Power Company; Associated Electric Cooperative, Inc.; Dalton Utilities; Dominion Energy South Carolina, Inc.; Duke Energy Carolinas, LLC; Duke Energy Progress, LLC; Louisville Gas & Electric Company and Kentucky Utilities Company; North Carolina Municipal Power Agency Number 1; PowerSouth Energy Cooperative; North Carolina Electric Membership Corporation; Tennessee Valley Authority; Georgia System Operations Corporation; Georgia Transmission Corporation; Municipal Electric Authority of Georgia; Oglethorpe Power Corporation; and South Carolina Public Service Authority. The Florida member joining in June 2023 are: Seminole Electric Cooperative; Tampa Electric Company; Duke Energy Florida; Florida Power Corporation; TEA Gainesville Regional Utilities; and TEA JEA.

accordance with the SEEM Rules (SEEM Rules Sections VI.D.1, VI.D.1.4). This is the main day-to-day auditing work and represents most of the activities reported herein.

A second auditing responsibility is ensuring participants have access to SEEM data in accordance with the SEEM Rules (Sections VI.D.2). Access to SEEM data involves allowing each SEEM participant to review its own bids and offers and to view matches made by the system. We are in receipt of the bid and offer data and have verified that this data is available daily.

A third area of responsibility is to report to the Membership Board regarding (1) the reliability and accuracy of the SEEM System, and (2) any complaints received from a Participant to the Membership Board and to investigate further any such complaint at the Board's direction (SEEM Rules Sections VI.D.3, VI.D.1.5). Section II of this report fulfils our responsibility to report on the reliability and accuracy of the SEEM system to the Board. Regarding complaints from participants to the Board, we were not directed by the Board to investigate any such complaints during the period of this report.

Finally, we have the duty to respond to written questions from Participants, FERC, NERC, state commissions in the region, Tennessee Valley Authority's Inspector General, and any other applicable regulators that oversee the electric operations of any Member regarding the integrity of the matching process (SEEM Rules Sections VI.D.6). We received no inquiries in November. An inquiry concerning data confidentiality was received in October and was resolved satisfactorily in early December.

In the remainder of the report (Section II), we provide the results of our analysis of the first main area of responsibility: to analyze of input, constraints, and matching results to determine whether SEEM operates in accordance with the SEEM Rules. This is in two main parts. First, we review various daily screens that ensure specific inputs, constraints, and energy exchanges have met certain validation metrics. Second, we review the economic activity in SEEM to provide insight into its functioning and performance.

II. AUDITING RESULTS

In this section, we discuss the results of our monthly auditing. In subsection A, we show the results of our daily screening. In subsection B, we present an overview of the economic activity.

A. Market Operation Screens

We calculate screens, metrics, and other analyses on a daily basis using market data and other data to meet the auditing obligations in the Market Rules. The screens and metrics are developed in accordance with specific Market Rules requirements and are divided into three main categories:

- Verification of bid/offer parameters;
- Evaluation of SEEM matching; and
- Verification of SEEM System Constraints.

The following three subsections describe the screens used for our auditing. Unless otherwise indicated, these screens are calculated daily for all fifteen-minute intervals.

1. Bid/Offer Parameters

The following screens audit the information provided in participant bids and offers.

- Offers (bids) from a participant must have Participant-Specific Constraints identifying at least three other non-affiliated Participants that can be matched as counterparties;
- All offers and bids properly must include a source or sink;
- Each offer and bid must have a delivery interval;
- Bids and offers must be 4 MW increments;
- "All or Nothing Selection" must be indicated; and
- The Network Map must be accurate (monthly).

2. Matching

The following screens are used to audit the SEEM matches:

- Match price must not exceed the bid price and must be greater than the offer price;
- Buyer and seller must be distinct participants;
- Participant-specific constraints must be check for any changes (monthly);
- SEEM benefit calculation must be verified;
- Any maximum offer price declared must bind the transaction; and
- Each match must have a NERC Tag.

3. Constraints

The following screens audit the SEEM constraints.

- Transaction volume must not exceed offer or bid volume;
- The SEEM algorithm must only make energy exchanges that yield positive benefits to both buyer and seller; and
- Transaction volume over each segment must not exceed the segment ATC.

We have data transfer and storage architecture in place to receive SEEM data that supports the calculation of these screens. With the exception of screening the network map and the participant-specific constraints (described below), the screens are calculated daily, and we have developed data processing procedures for each of the daily screens. We applied the screens to the November SEEM data and found that in all intervals the screens have indicated that requirements have been met.

For the monthly audit of the network map, we use the initial map developed by Hartigen and the SEEM working groups as a basis for comparing subsequent maps. This map is an electronic file of all sources, sinks, balancing areas, and SEEM transmission segments that comprise the SEEM system. A SEEM segment is an interface between two balancing areas and in many cases is synonymous with the path used by the system. In some cases, the segments are linked together to allow SEEM matches across multiple systems, forming a multi-segment path. The SEEM model allows any number of SEEM segments to be linked in order to find a beneficial trade.

By using this initial map as a basis of comparison, we will take advantage of the lengthy technical process used by SEEM and the SEEM members to develop the map and assume it is accurate. It would not be practicable to replicate this initial map. To monitor the map over time, we use the SEEM model's static path configuration database that is used by the model to assess possible paths associated with the sources and sinks offered and bid in each interval. We save a snapshot of this database and compare it to the path configuration database used at the start of each month. We identify and evaluate any changes. We found no changes in November and therefore we conclude the network map is accurate for the current sources and sinks participating in SEEM.

In a similar fashion, we evaluate changes to participant-specific constraints. These are counterparties and balancing areas acceptable to each participant for trades in SEEM, as well as any maximum price constraints. In each interval SEEM uses a set of participant-specific constraints for all participant bids and offers. We check each participant for any excluded sellers or buyers and any max price constraints and identify any constraints that changed during the month. There were no changes to participant-specific constraints in November.

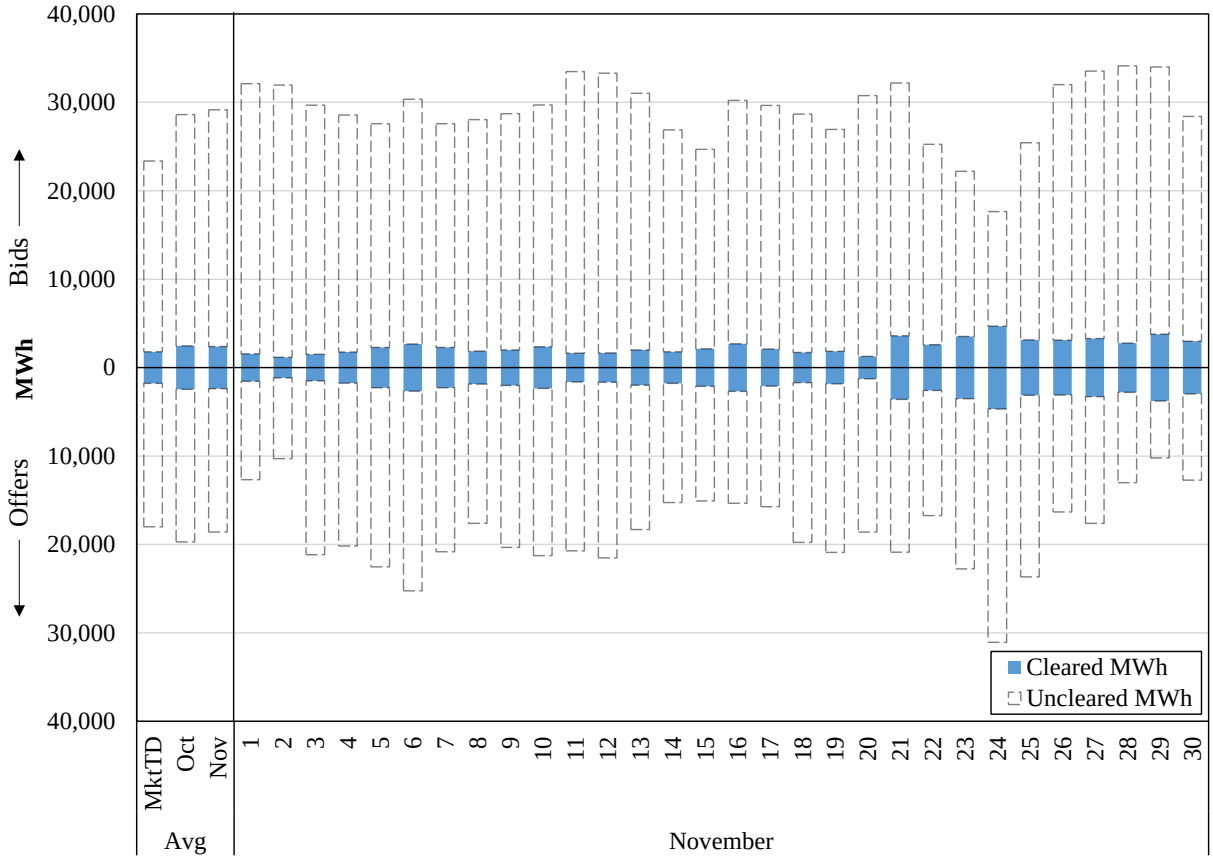
B. Market Activity

In this section, we summarize and discuss SEEM operations and outcomes to illuminate any potential operating or market issues. Our evaluation is in two principal areas. First, is an overall review of the market trading, including volumes, prices, and characteristics of participation. Second is an evaluation of network usage, focusing on the key transmission paths and constraints.

1. Market Outcomes

SEEM cleared 72,000 MWh of energy in November, averaging approximately 2,400 MWh per day. Figure 1 shows the daily SEEM bids and offers for November. Each bar represents the daily total MWh volume of SEEM activity. The bids and offers are divided between cleared bids to buy (blue bar above the x axis) and cleared offers to sell (blue bars below the x axis). The transparent bar stacked above the bids and below the offers are the uncleared bids and offers. The left side columns show activity relative to the previous month and relative to the market to date (MktTD). MktTD is the monthly average of all months since SEEM began in November 2022 (i.e., the November 2022 – November 2023 average).

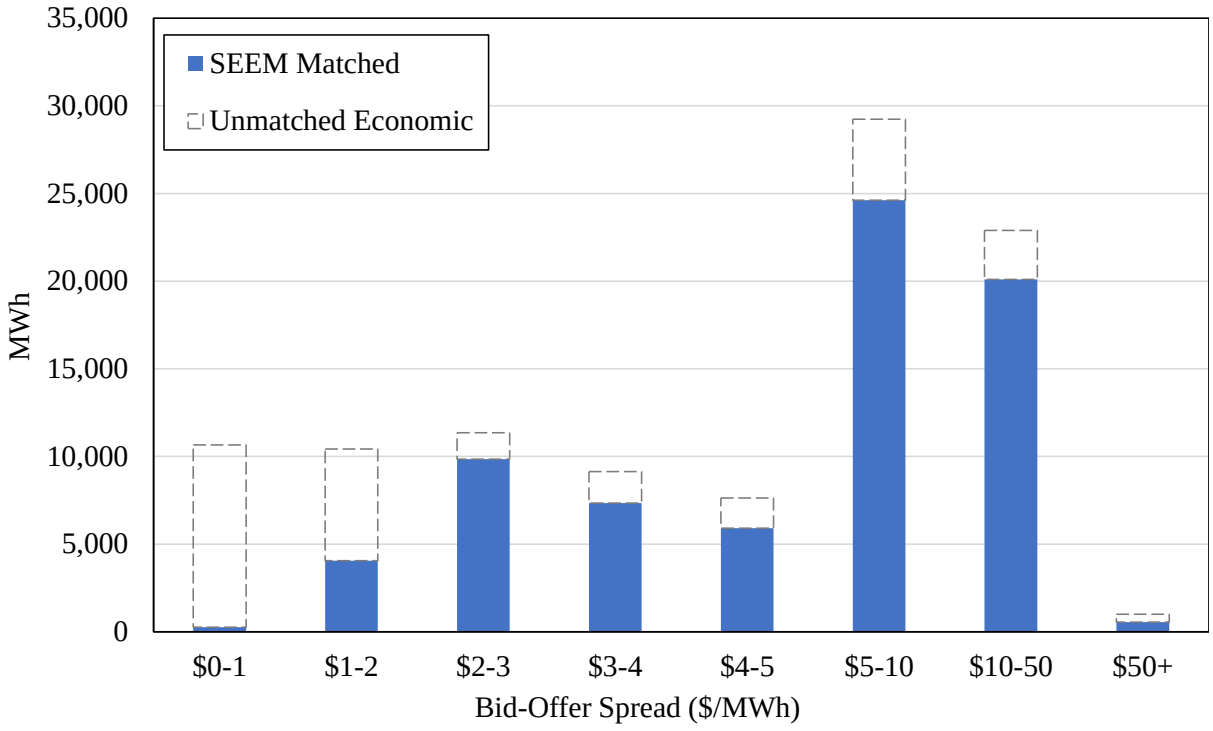
Figure 1: Daily Bids and Offers
November 2023



The average daily bid and offer quantities were slightly lower in November than in October and higher than the MktTD average. Much of the volume increase relative to MktTD is linked to the new participants that started trading at the end of June. The decrease in November over October interrupts the overall trend of increased participation since the SEEM opening in November 2022. As the left-side monthly and MktTD bars show, total liquidity (cleared and uncleared bids and offers) decreased slightly compared to last month but increased modestly over the MKtTD.

Like in previous months, we evaluated the uncleared bids and offers and found a notable volume of uncleared bids and offers with economic overlap in the sense that in an interval there were uncleared bids whose bid price is greater than some uncleared offer prices in the same interval. Of course, most economic uncleared matches have a small bid-offer spread, and likely are not matched due to transmission losses that render the trade uneconomic. However, there are some economic uncleared matches with substantial spreads. Figure 2 shows a summary of the cleared and uncleared matches. Each stacked bar shows the SEEM matches (blue bar) and the economic unmatched (transparent bar) at the given bid-offer spread. For example, the first blue bar shows SEEM matches where bids exceed offers by up to $1 (very few), while the transparent box shows considerable uncleared economic bids and offers that did not clear at spreads up to $1.

Figure 2: Cleared and Uncleared Economic Matches
November 2023



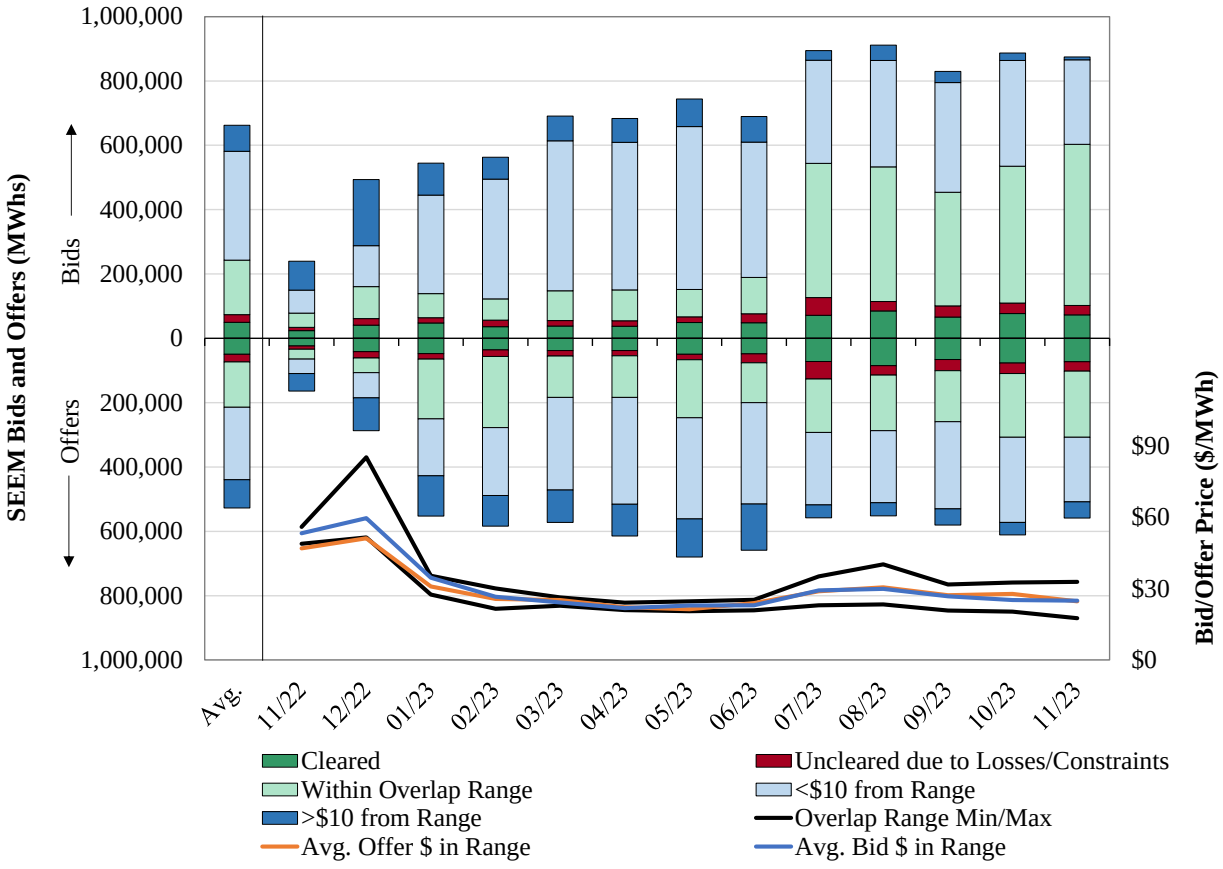
The average cost of losses the SEEM system is about $2/MWh. About 13,000 MWh of uncleared bids/offers could settle at a price that could pay the average $2/MWh losses. In October, the

amount was 18,000 MWh. Without a complex simulation, there is not a straightforward way to determine why these bids and offers did not clear. Among the possibilities are transmission constraints and the need to use segments that had higher-than-average cost of losses. Counterparty constraints could also explain unmatched bids and offers.

There are also rare instances when transactions are matched but fail to clear the transmission scheduling process. These instances are attributable to occasional delays in approving transmission service requests (TSRs), so the tag is denied for being late. It may also result from insufficient ATC when the TSR is processed. SEEM downloads ATC values from OASIS twice an hour, so it is possible that real-time changes occur that result in insufficient ATC by the time the TSR is submitted. These failed transactions were less than 1/10 percent of the total bid/offered quantities.

Our next evaluation is shown in Figure 3, which reports a monthly comparison of bids, offers, and prices.

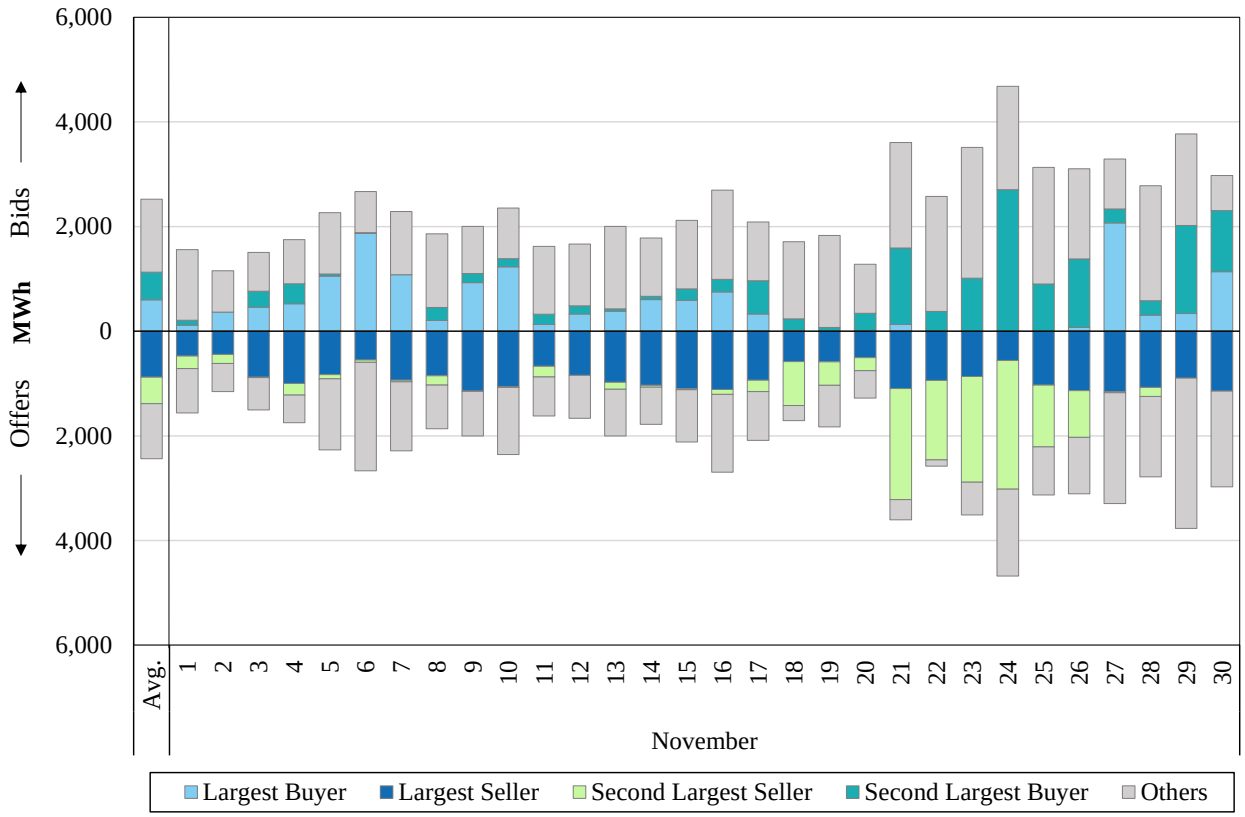
Figure 3: Bid and Offer Evaluation



Each bar is divided to show volume of cleared bids/offers (dark green) and various categories of uncleared MW. The red segment shows uncleared economic bids and offers. These are the uncleared bids and offers discussed in Figure 2. The light green bars show bids and offers that were not cleared but were within the indicated cleared bid-offer spread - bids that are higher than the lowest cleared bid and offers that are lower than the highest cleared offer. In this group, there are no corresponding counterparties that would comprise an economic match in the same interval (unlike the red section of the bar). This is a mismatch of supply and demand within an interval. The light blue bars show bids/offers within $10 of the overlap range ($10 or less outside the cleared bid-offer range). The dark blue bars show bids/offers greater than $10 of the overlap range – participants likely do not expect these to clear. The bid-offer spread is shown in the black lines in the bottom panel of the figure along with lines showing the averages of bid and offers in the cleared range.

Figure 4 shows more detail on the matched bids and offers by showing the matches by market largest participants. Like the prior figure, the bars above the x axis are cleared bids and the bars below are cleared offers. The bars in this figure are divided by the top two participants and then all the rest.

Figure 4: Volumes of Matched Bids and Offers
November 2023

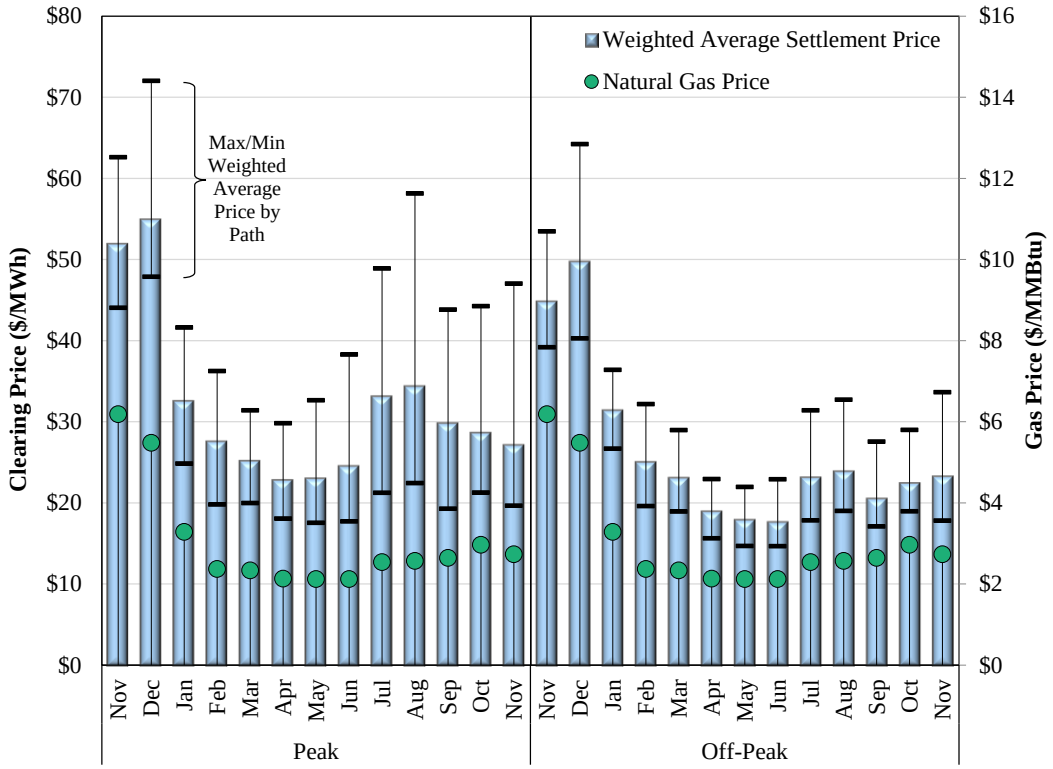


The figure shows certain buyers and sellers comprise significant shares of the transaction activity. Thirty-six percent of the sales were made by a single seller and 21 percent of the purchases were made by a single buyer. With the addition in June of new participants these concentration statistics have fallen.

2. Network Usage

In this subsection, we report on the usage of the SEEM network. Figure 5 shows monthly SEEM clearing prices, natural gas costs, and average daily minimum and maximum prices in peak and off-peak hours during the month. The figure shows that prices are correlated with natural gas costs, which is the marginal fuel in many hours and strongly influences the value of power in many hours. The superimposed lines over the bars show the price spread over each month.

Figure 5: Monthly Clearing Prices and Natural Gas Costs



We evaluate the price spreads in more detail in the following two figures. Figure 4 shows the average daily peak-hour prices for November and the prices on the highest-priced and lowest-priced paths for each day. Figure 7 is the same figure but for off-peak hours. The figures shown in the left column are the November prices compared to the previous month. It shows the average prices are slightly lower than the prices in October and lower than the average prices since market opening.

Figure 6: Average SEEM Clearing Prices: System-Wide and by Path
Peak Hours – November 2023

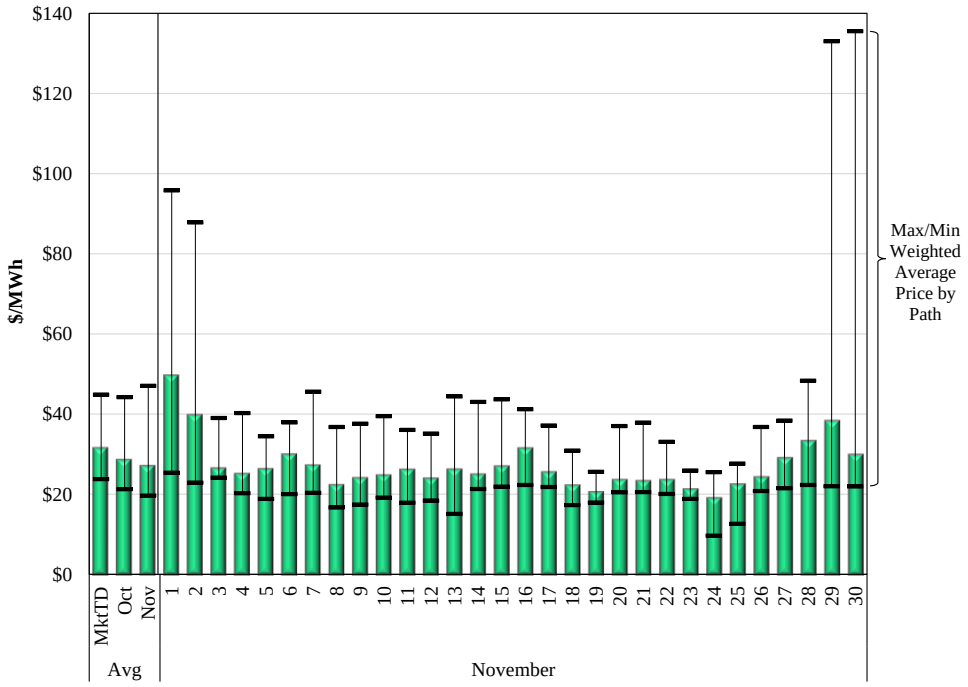
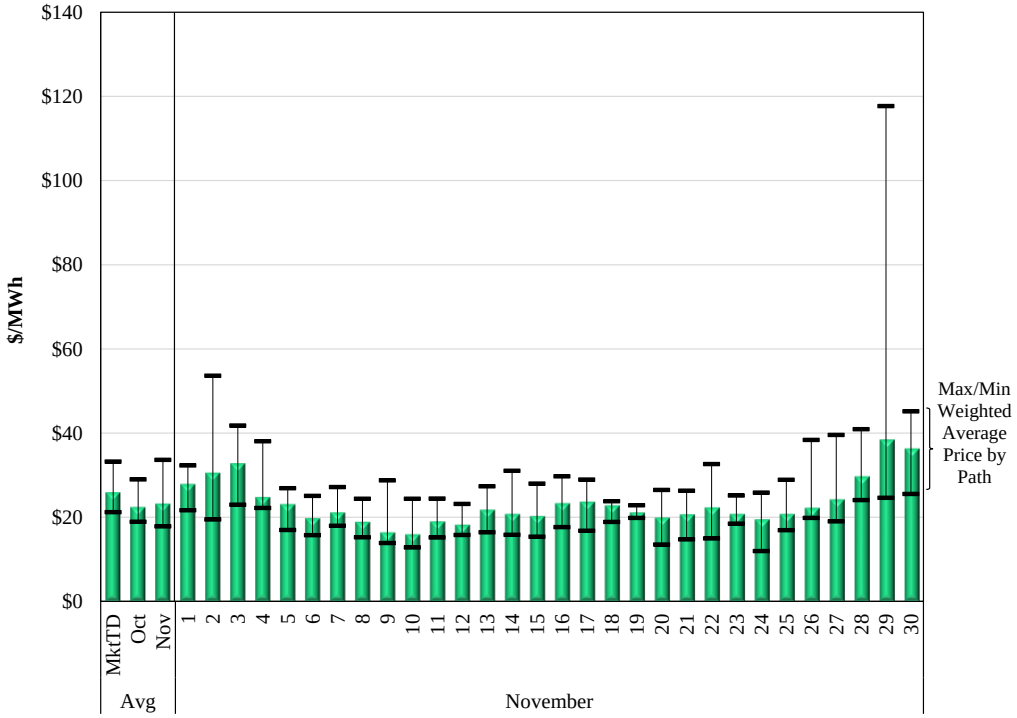


Figure 7: Average SEEM Clearing Prices: System-Wide and by Path
Off-Peak Hours – November 2023



The two figures show that the value of transactions can vary significantly by path, mainly because transmission constraints can contribute to higher prices between different locations. If a constraint

prevents higher total flows between two (beneficial trading) areas, the average transaction price will be higher than if sufficient transmission capability was available to allow all beneficial trades to clear between the areas.

Accordingly, we evaluate SEEM transactions by path segments. SEEM trades among participants using ATC. We gathered ATC and trading statistics for all SEEM segments available to the model. There are 240 unique segments used in SEEM. We evaluated data including the median, maximum, and minimum ATC values over all intervals for each segment, as well as the total MWh that cleared over each segment. We calculate a "loading factor" based on the scheduled transactions and ATC on the segment during each 15-minute interval. It is the portion of the path used in that interval relative to the maximum amount that could have been used based on the ATC.

In addition to the ATC and schedule volumes, we also calculate how each segment was utilized by interval during the month, *to wit*, the interval was either:

(1) Partially used (MWs cleared were less than ATC);

(2) Fully Used, ATC was used up for the interval;[2]

(3) Unavailable, no ATC;[3] and

(4) Uncleared (no schedules on the segment).

In reporting the usage of each segment, we refer to a "segment-intervals" which is an observation in a single interval on one segment. Table 1 shows an excerpt of our statistics. The table displays the 41 segments that had more than 1,000 MWh of transactions scheduled during the month. The full data for all segments with at least 20 MWh scheduled during the month is provided in Appendix A.

[2] ATC less the MW schedule was less than 4 MW (i.e., no additional SEEM transaction could be cleared).

[3] ATC was less than 4 MW at the start of the interval.

Table 1: Statistics for Most Utilized SEEM Segments
November 2023

Segment	ATC				Loading	Partially Used		Fully Used		Unavailable		Uncleared	
	Min	Median	Max	MWhs	Factor	Intervals	%	Intervals	%	Intervals	%	Intervals	%
F/TEC/TEC-FPC//	367	2,014	3,128	26,247	0.018428	2,335	*81%*	0	*0%*	0	*0%*	549	*19%*
F/FPC/TEC-SOCO//	0	134	355	15,357	0.171481	1,472	*51%*	104	*4%*	678	*24%*	630	*22%*
F/FPC/TEC-FPC//	416	2,071	3,177	10,890	0.007454	1,418	*49%*	0	*0%*	0	*0%*	1466	*51%*
SS/SOCO/FL-SOCO//	-81	472	1,010	10,497	0.028711	781	*27%*	2	*0%*	6	*0%*	2095	*73%*
S/DUK/SOCO-DUK//	0	1,459	2,220	9,779	0.009640	418	*14%*	0	*0%*	60	*2%*	2406	*83%*
F/FPC/FPC-SOCO//	0	134	355	9,545	0.106355	648	*22%*	2	*0%*	674	*23%*	1560	*54%*
S/SC/SOCO-SC//	0	543	2,319	7,816	0.018639	650	*23%*	28	*1%*	297	*10%*	1909	*66%*
SS/SOCO/FL-SC/MULTIPATHALIAS/	-81	243	468	5,902	0.034419	607	*21%*	21	*1%*	11	*0%*	2245	*78%*
SS/SOCO/SOCO-DUK//	0	670	1,305	5,756	0.011891	217	*8%*	25	*1%*	4	*0%*	2638	*91%*
P/LGEE/LGEE-TVA//	711	1,623	1,623	4,636	0.004058	292	*10%*	0	*0%*	0	*0%*	2592	*90%*
SS/SOCO/SOCO-FL//	270	1,261	1,530	3,653	0.005025	350	*12%*	0	*0%*	0	*0%*	2534	*88%*
F/JEA/SOCO-JEA//	0	342	743	3,577	0.018649	457	*16%*	0	*0%*	1,131	*39%*	1296	*45%*
S/CPL/DUK-CPLE//	907	3,192	6,266	3,099	0.001318	383	*13%*	0	*0%*	0	*0%*	2501	*87%*
SS/SOCO/TVA-SOCO//	900	1,228	1,536	2,870	0.003176	125	*4%*	0	*0%*	0	*0%*	2759	*96%*
S/TVA/LGEE-DUK//	0	355	355	2,859	0.011395	219	*8%*	0	*0%*	6	*0%*	2659	*92%*
SS/SOCO/SOCO-SC//	1	252	568	2,789	0.014678	237	*8%*	10	*0%*	5	*0%*	2632	*91%*
S/CPL/CPLE-DUK//	0	5,502	6,688	2,787	0.000740	123	*4%*	0	*0%*	1	*0%*	2760	*96%*
SS/SOCO/FL-DUK/MULTIPATHALIAS/	-81	445	814	2,774	0.008682	366	*13%*	2	*0%*	10	*0%*	2506	*87%*
F/FPC/SOCO-FPC//	0	252	471	2,473	0.014673	181	*6%*	26	*1%*	324	*11%*	2353	*82%*
S/TVA/SOCO-TVA//	0	2,195	2,295	2,366	0.001563	155	*5%*	0	*0%*	6	*0%*	2723	*94%*
F/JEA/JEA-SOCO//	0	450	1,016	2,320	0.007291	472	*16%*	7	*0%*	46	*2%*	2359	*82%*
S/TVA/TVA-SOCO//	0	2,912	2,970	2,237	0.001170	88	*3%*	1	*0%*	105	*4%*	2690	*93%*
S/DUK/CPLE-SOCO//	0	2,098	2,335	2,118	0.001458	111	*4%*	0	*0%*	19	*1%*	2754	*95%*
SS/SOCO/SOCO-SOCO//	40,066	43,556	43,556	2,010	0.000064	115	*4%*	0	*0%*	0	*0%*	2769	*96%*
S/SCEG/DUK-SCEG//	0	325	577	2,000	0.011800	201	*7%*	2	*0%*	542	*19%*	2139	*74%*
S/DUK/TVA-CPLE//	0	692	692	1,999	0.004231	175	*6%*	4	*0%*	76	*3%*	2629	*91%*
S/TVA/LGEE-SOCO//	0	2,828	2,828	1,748	0.000864	123	*4%*	0	*0%*	6	*0%*	2755	*96%*
S/DUK/TVA-DUK//	0	692	692	1,723	0.003670	66	*2%*	0	*0%*	61	*2%*	2757	*96%*
S/SCEG/SC-SCEG//	0	797	6,228	1,604	0.001156	161	*6%*	0	*0%*	4	*0%*	2719	*94%*
S/SC/SOCO-SCEG//	0	1,119	2,269	1,595	0.002436	148	*5%*	11	*0%*	255	*9%*	2470	*86%*
S/TVA/TVA-DUK//	0	355	355	1,501	0.006318	39	*1%*	9	*0%*	109	*4%*	2727	*95%*
SS/GTC/GTC-DUK//	0	412	820	1,423	0.004899	48	*2%*	0	*0%*	12	*0%*	2824	*98%*
SS/SOCO/DUK-SOCO//	259	1,010	1,049	1,350	0.002092	71	*2%*	0	*0%*	0	*0%*	2813	*98%*
SS/SOCO/SOCO-SCEG//	1	137	160	1,342	0.014075	93	*3%*	11	*0%*	92	*3%*	2688	*93%*
S/DUK/SOCO-CPLE//	0	1,619	2,220	1,335	0.001218	256	*9%*	4	*0%*	76	*3%*	2548	*88%*
S/DUK/SOCO-SCEG//	0	262	263	1,325	0.008579	142	*5%*	5	*0%*	135	*5%*	2602	*90%*
S/CPL/SC-CPLE//	0	1,679	3,829	1,313	0.001095	106	*4%*	2	*0%*	37	*1%*	2739	*95%*
S/CPL/SCEG-CPLE//	0	517	632	1,149	0.002915	215	*7%*	0	*0%*	28	*1%*	2641	*92%*
S/SCEG/SOCO-SCEG//	0	0	1,445	1,137	0.017962	89	*3%*	12	*0%*	2,076	*72%*	707	*25%*
S/SC/SOCO-CPLE//	0	2,312	2,857	1,098	0.000683	107	*4%*	0	*0%*	17	*1%*	2760	*96%*
S/MEAG/FPC-MEAG//	0	76	224	1,023	0.014004	89	*3%*	14	*0%*	12	*0%*	2769	*96%*

These statistics indicate that among these most utilized segments, ATC remains available for SEEM trades. For example, many of the top paths have over 90 percent of their intervals uncleared. There are, however, numerous instances when segments are constrained. A constrained segment is one where either ATC is insufficient (less than 4 MW) prior to SEEM matching, or the segment is completely used by SEEM in at least one interval during the hour.

Table 2 show the summary usage for all segments. During the month, total segment intervals is the product of all 240 segments and the number of intervals during the month. In November, there were 692,160 segment intervals.[4] The two circumstances (Cases (2) and (3)) when a segment is

[4] The maximum number of segment intervals in a month is (240 segments x 4 intervals x 24 hours x #days in the month). This is the maximum because occasionally the system requires shutting down for short periods to perform upgrades and other patches. In November, SEEM operated in all intervals, including an extra hour for reversion to standard time.

constrained occurred in over 68,000 segment-intervals and almost always because the ATC was insufficient to schedule (i.e., ATC < 4 MW) rather than because it is fully used by a SEEM match. The most common case in the data was "Uncleared" (Case 4), where ATC was available, but the segment was not used because no beneficial transactions were cleared by the SEEM model over in that interval. These cases represent over 607,000 segment intervals or over 87 percent of all segment-intervals. The second most common case was case "Unavailable" (Case 3), where ATC was not sufficient to clear any SEEM transactions 68,048 or about 10 percent of the time). The third most common case was "Partially Used" (Case 1), where the segment was partially used (16,554 or 2 percent of the time). Finally, in a small number of intervals, the Segment ATC was "Fully Used" (Case 2), where the segment was completely scheduled in the interval (372).

Table 2: Summary of All Segments
November 2023

Segment	Case 1 Partially Used		Case 2 Fully Used		Case 3 Unavailable		Case 4 Uncleared	
	Intervals	%	Intervals	%	Intervals	%	Intervals	%
All Segments	16,554	2.4%	372	0.1%	68,048	9.8%	607,186	87.7%

Measuring transmission capacity by adding Case 2 and 3, the percentage of constrained segment intervals was relatively steady – (11 percent in October versus 10 percent in November).

Further insight on constrained segments can be gained from Table 3. It shows the segments most often unavailable to SEEM (i.e., unavailable at least 20 percent of the intervals). There are a large number of paths when ATC is 0 in many intervals during the month, and so there is no activity occurring. For the other paths shown, like in previous months, these frequently-unavailable paths are generally unused when they are available (as indicated by the "Uncleared" column).

Table 3: Most Constrained SEEM Segments
November 2023

Segment	ATC			MWhs	Loading Factor	Partially Used		Fully Used		Unavailable		Uncleared	
	Min	Median	Max			Intervals	%	Intervals	%	Intervals	%	Intervals	%
F/JEA/SEC-JEA/SSN-JEA/	0	0	0	0	N/A	0	0%	0	0%	2,884	100%	0	0%
S/CPL/CPLW-TVA//	0	0	276	0	0.000000	0	0%	0	0%	2,831	98%	53	2%
S/CPL/TVA-CPLW//	0	0	276	0	0.000000	0	0%	0	0%	2,831	98%	53	2%
S/CPL/DUK-TVA//	0	0	276	0	0.000000	0	0%	0	0%	2,831	98%	53	2%
S/CPL/TVA-DUK//	0	0	276	0	0.000000	0	0%	0	0%	2,831	98%	53	2%
S/TVA/AECI-CPLW//	0	0	9	0	0.000000	0	0%	0	0%	2,765	96%	119	4%
S/TVA/DUK-CPLW//	0	0	276	0	0.000000	0	0%	0	0%	2,757	96%	127	4%
S/TVA/CPLW-DUK//	0	0	276	0	0.000000	0	0%	0	0%	2,757	96%	127	4%
S/TVA/CPLW-AECI//	0	0	276	0	0.000000	0	0%	0	0%	2,757	96%	127	4%
S/TVA/CPLW-LGEE//	0	0	276	0	0.000000	0	0%	0	0%	2,757	96%	127	4%
S/TVA/CPLW-SOCO//	0	0	276	0	0.000000	0	0%	0	0%	2,757	96%	127	4%
S/TVA/CPLW-TVA//	0	0	276	0	0.000000	0	0%	0	0%	2,757	96%	127	4%
S/TVA/LGEE-CPLW//	0	0	276	0	0.000000	0	0%	0	0%	2,757	96%	127	4%
S/TVA/SOCO-CPLW//	0	0	276	0	0.000000	0	0%	0	0%	2,757	96%	127	4%
S/TVA/TVA-CPLW//	0	0	276	0	0.000000	0	0%	0	0%	2,757	96%	127	4%
S/SCEG/SOCO-SCEG//	0	0	1,445	1,137	0.017962	89	3%	12	0%	2,076	72%	707	25%
S/AECI/AECI-TVA//	0	0	511	61	0.000930	15	1%	0	0%	1,693	59%	1176	41%
S/DUK/SC-CPLW//	0	93	554	0	0.000000	0	0%	0	0%	1,162	40%	1722	60%
F/JEA/SOCO-JEA//	0	342	743	3,577	0.018649	457	16%	0	0%	1,131	39%	1296	45%
F/JEA/SOCO-SEC/SOCO-SSN/	0	363	524	0	0.000000	0	0%	0	0%	1,131	39%	1753	61%
S/DUK/SCEG-CPLW//	0	101	554	0	0.000000	0	0%	0	0%	1,123	39%	1761	61%
S/MEAG/MEAG-SC//	0	11	63	31	0.002447	3	0%	12	0%	888	31%	1981	69%
S/AECI/TVA-AECI//	0	522	817	90	0.000286	8	0%	0	0%	696	24%	2180	76%
F/FPC/TEC-SOCO//	0	134	355	15,357	0.171481	1,472	51%	104	4%	678	24%	630	22%
F/FPC/FPC-SOCO//	0	134	355	9,545	0.106355	648	22%	2	0%	674	23%	1560	54%
F/FPC/SEC-SOCO/SSO-SOCO/	0	124	337	0	0.000000	0	0%	0	0%	674	23%	2210	77%
F/FPC/GVL-SOCO//	0	134	355	0	0.000000	0	0%	0	0%	674	23%	2210	77%
F/FPC/SEC-SOCO/SSN-SOCO/	0	124	329	0	0.000000	0	0%	0	0%	674	23%	2210	77%

III. CONCLUSION

We reviewed the operation of SEEM for November 2023. We have developed operational procedures to validate the market rules and constraints of SEEM. All our screens have been validated and we conclude the SEEM operated within the rules and constraints. We also have evaluated the SEEM outcomes and have not identified significant operating issues.

Appendix A

SEEM Path Usage -- November 2023

Segment	ATC			MWhs	Loading Factor	Partially Used		Fully Used		Unavailable		Uncleared	
	Min	Median	Max			Intervals	%	Intervals	%	Intervals	%	Intervals	%
F/TEC/TEC-FPC//	367	2,014	3,128	26,247	0.018428	2,335	*81%*	0	*0%*	0	*0%*	549	*19%*
F/FPC/TEC-SOCO//	0	134	355	15,357	0.171481	1,472	*51%*	104	*4%*	678	*24%*	630	*22%*
F/FPC/TEC-FPC//	416	2,071	3,177	10,890	0.007454	1,418	*49%*	0	*0%*	0	*0%*	1466	*51%*
SS/SOCO/FL-SOCO//	-81	472	1,010	10,497	0.028711	781	*27%*	2	*0%*	6	*0%*	2095	*73%*
S/DUK/SOCO-DUK//	0	1,459	2,220	9,779	0.009640	418	*14%*	0	*0%*	60	*2%*	2406	*83%*
F/FPC/FPC-SOCO//	0	134	355	9,545	0.106355	648	*22%*	2	*0%*	674	*23%*	1560	*54%*
S/SC/SOCO-SC//	0	543	2,319	7,816	0.018639	650	*23%*	28	*1%*	297	*10%*	1909	*66%*
SS/SOCO/FL-SC/MULTIPATHALIAS/	-81	243	468	5,902	0.034419	607	*21%*	21	*1%*	11	*0%*	2245	*78%*
SS/SOCO/SOCO-DUK//	0	670	1,305	5,756	0.011891	217	*8%*	25	*1%*	4	*0%*	2638	*91%*
P/LGEE/LGEE-TVA//	711	1,623	1,623	4,636	0.004058	292	*10%*	0	*0%*	0	*0%*	2592	*90%*
SS/SOCO/SOCO-FL//	270	1,261	1,530	3,653	0.005025	350	*12%*	0	*0%*	0	*0%*	2534	*88%*
F/JEA/SOCO-JEA//	0	342	743	3,577	0.018649	457	*16%*	0	*0%*	1,131	*39%*	1296	*45%*
S/CPL/DUK-CPLE//	907	3,192	6,266	3,099	0.001318	383	*13%*	0	*0%*	0	*0%*	2501	*87%*
SS/SOCO/TVA-SOCO//	900	1,228	1,536	2,870	0.003176	125	*4%*	0	*0%*	0	*0%*	2759	*96%*
S/TVA/LGEE-DUK//	0	355	355	2,859	0.011395	219	*8%*	0	*0%*	6	*0%*	2659	*92%*
SS/SOCO/SOCO-SC//	1	252	568	2,789	0.014678	237	*8%*	10	*0%*	5	*0%*	2632	*91%*
S/CPL/CPLE-DUK//	0	5,502	6,688	2,787	0.000740	123	*4%*	0	*0%*	1	*0%*	2760	*96%*
SS/SOCO/FL-DUK/MULTIPATHALIAS/	-81	445	814	2,774	0.008682	366	*13%*	2	*0%*	10	*0%*	2506	*87%*
F/FPC/SOCO-FPC//	0	252	471	2,473	0.014673	181	*6%*	26	*1%*	324	*11%*	2353	*82%*
S/TVA/SOCO-TVA//	0	2,195	2,295	2,366	0.001563	155	*5%*	0	*0%*	6	*0%*	2723	*94%*
F/JEA/JEA-SOCO//	0	450	1,016	2,320	0.007291	472	*16%*	7	*0%*	46	*2%*	2359	*82%*
S/TVA/TVA-SOCO//	0	2,912	2,970	2,237	0.001170	88	*3%*	1	*0%*	105	*4%*	2690	*93%*
S/DUK/CPLE-SOCO//	0	2,098	2,335	2,118	0.001458	111	*4%*	0	*0%*	19	*1%*	2754	*95%*
SS/SOCO/SOCO-SOCO//	40,066	43,556	43,556	2,010	0.000064	115	*4%*	0	*0%*	0	*0%*	2769	*96%*
S/SCEG/DUK-SCEG//	0	325	577	2,000	0.011800	201	*7%*	2	*0%*	542	*19%*	2139	*74%*
S/DUK/TVA-CPLE//	0	692	692	1,999	0.004231	175	*6%*	4	*0%*	76	*3%*	2629	*91%*
S/TVA/LGEE-SOCO//	0	2,828	2,828	1,748	0.000864	123	*4%*	0	*0%*	6	*0%*	2755	*96%*
S/DUK/TVA-DUK//	0	692	692	1,723	0.003670	66	*2%*	0	*0%*	61	*2%*	2757	*96%*
S/SCEG/SC-SCEG//	0	797	6,228	1,604	0.001156	161	*6%*	0	*0%*	4	*0%*	2719	*94%*
S/SC/SOCO-SCEG//	0	1,119	2,269	1,595	0.002436	148	*5%*	11	*0%*	255	*9%*	2470	*86%*
S/TVA/TVA-DUK//	0	355	355	1,501	0.006318	39	*1%*	9	*0%*	109	*4%*	2727	*95%*
SS/GTC/GTC-DUK//	0	412	820	1,423	0.004899	48	*2%*	0	*0%*	12	*0%*	2824	*98%*
SS/SOCO/DUK-SOCO//	259	1,010	1,049	1,350	0.002092	71	*2%*	0	*0%*	0	*0%*	2813	*98%*
SS/SOCO/SOCO-SCEG//	1	137	160	1,342	0.014075	93	*3%*	11	*0%*	92	*3%*	2688	*93%*
S/DUK/SOCO-CPLE//	0	1,619	2,220	1,335	0.001218	256	*9%*	4	*0%*	76	*3%*	2548	*88%*
S/DUK/SOCO-SCEG//	0	262	263	1,325	0.008579	142	*5%*	5	*0%*	135	*5%*	2602	*90%*
S/CPL/SC-CPLE//	0	1,679	3,829	1,313	0.001095	106	*4%*	2	*0%*	37	*1%*	2739	*95%*
S/CPL/SCEG-CPLE//	0	517	632	1,149	0.002915	215	*7%*	0	*0%*	28	*1%*	2641	*92%*
S/SCEG/SOCO-SCEG//	0	0	1,445	1,137	0.017962	89	*3%*	12	*0%*	2,076	*72%*	707	*25%*
S/SC/SOCO-CPLE//	0	2,312	2,857	1,098	0.000683	107	*4%*	0	*0%*	17	*1%*	2760	*96%*
S/MEAG/FPC-MEAG//	0	76	224	1,023	0.014004	89	*3%*	14	*0%*	12	*0%*	2769	*96%*
S/SCEG/SCEG-SOCO//	47	2,662	4,562	974	0.000508	100	*3%*	0	*0%*	0	*0%*	2784	*97%*
SS/SOCO/FL-TVA/MULTIPATHALIAS/	-81	472	1,010	947	0.002590	88	*3%*	0	*0%*	6	*0%*	2790	*97%*
S/SC/DUK-SC//	51	2,268	2,975	920	0.000600	140	*5%*	0	*0%*	0	*0%*	2744	*95%*
SS/GTC/DUK-GTC//	0	593	660	838	0.002062	40	*1%*	0	*0%*	8	*0%*	2836	*98%*
S/CPL/CPLE-SC//	0	2,328	4,319	749	0.000437	60	*2%*	0	*0%*	5	*0%*	2819	*98%*
S/SC/CPLE-SC//	0	1,109	3,148	702	0.000819	55	*2%*	0	*0%*	58	*2%*	2771	*96%*
S/TVA/DUK-TVA//	0	355	355	688	0.003243	20	*1%*	4	*0%*	398	*14%*	2462	*85%*
S/DUK/CPLE-TVA//	92	692	692	665	0.001336	15	*1%*	2	*0%*	0	*0%*	2867	*99%*
SS/GTC/GTC-SOCO//	20,000	20,000	20,000	625	0.000043	29	*1%*	0	*0%*	0	*0%*	2855	*99%*
S/DUK/TVA-SCEG//	0	262	263	615	0.004002	49	*2%*	10	*0%*	135	*5%*	2690	*93%*
S/DUK/DUK-SOCO//	0	1,501	2,311	614	0.000602	103	*4%*	0	*0%*	62	*2%*	2719	*94%*
S/SCEG/SCEG-CPLE//	46	672	966	598	0.001232	124	*4%*	0	*0%*	0	*0%*	2760	*96%*
S/DUK/SOCO-SC//	0	1,250	2,220	598	0.000709	67	*2%*	1	*0%*	76	*3%*	2740	*95%*
SS/SOCO/SOCO-TVA//	1,018	2,260	2,876	595	0.000367	23	*1%*	0	*0%*	0	*0%*	2861	*99%*
S/SCEG/CPLE-SCEG//	0	475	798	585	0.002065	81	*3%*	1	*0%*	92	*3%*	2710	*94%*
SS/GTC/FPC-GTC//	0	239	631	567	0.003156	38	*1%*	0	*0%*	64	*2%*	2782	*96%*
S/SCEG/SOCO-CPLE//	349	672	966	555	0.001137	95	*3%*	0	*0%*	0	*0%*	2789	*97%*
S/SC/SCEG-SC//	778	1,537	2,195	527	0.000484	55	*2%*	0	*0%*	0	*0%*	2829	*98%*
S/MEAG/MEAG-SOCO//	2,208	2,661	2,940	524	0.000274	39	*1%*	0	*0%*	0	*0%*	2845	*99%*
S/MEAG/SOCO-MEAG//	2,776	3,075	3,388	434	0.000195	27	*1%*	0	*0%*	0	*0%*	2857	*99%*

Appendix A (continued)

Segment	ATC				Loading	Partially Used		Fully Used		Unavailable		Uncleared	
	Min	Median	Max	MWhs	Factor	Intervals	%	Intervals	%	Intervals	%	Intervals	%
S/MEAG/MEAG-DUK//	0	95	160	415	0.007467	32	1%	6	0%	476	17%	2370	82%
SS/SOCO/SCEG-SOCO//	96	208	208	399	0.002892	37	1%	0	0%	0	0%	2847	99%
SS/GTC/GTC-SC//	0	270	317	395	0.002171	27	1%	0	0%	8	0%	2849	99%
SS/GTC/SOCO-GTC//	12,782	13,264	13,895	382	0.000040	24	1%	0	0%	0	0%	2860	99%
SS/SOCO/TVA-SC/MULTIPATHALIAS/	1	252	568	380	0.002000	34	1%	4	0%	5	0%	2841	99%
S/SCEG/SCEG-SC//	0	2,160	5,861	350	0.000200	39	1%	0	0%	1	0%	2844	99%
SS/SOCO/SCEG-FL/MULTIPATHALIAS/	96	208	208	344	0.002494	47	2%	0	0%	0	0%	2837	98%
S/CPL/CPLE-SCEG//	0	297	412	310	0.001313	34	1%	1	0%	5	0%	2844	99%
SS/SOCO/FL-SCEG/MULTIPATHALIAS/	-81	137	160	302	0.003198	50	2%	0	0%	96	3%	2738	95%
S/DUK/SC-DUK//	0	1,371	2,920	297	0.000319	15	1%	0	0%	403	14%	2466	86%
S/CPL/DUK-SCEG//	3	297	412	279	0.001179	52	2%	0	0%	1	0%	2831	98%
S/SCEG/SOCO-DUK//	0	684	944	271	0.000551	19	1%	0	0%	20	1%	2845	99%
S/SC/SOCO-DUK//	1,864	2,320	2,857	262	0.000155	11	0%	0	0%	0	0%	2873	100%
S/MEAG/DUK-MEAG//	80	142	270	261	0.002073	17	1%	0	0%	0	0%	2867	99%
S/DUK/DUK-SC//	0	787	2,439	255	0.000415	72	3%	0	0%	68	2%	2744	95%
S/DUK/SCEG-DUK//	0	663	664	251	0.000577	19	1%	0	0%	61	2%	2804	97%
S/SC/SC-CPLE//	0	3,044	3,561	251	0.000120	22	1%	0	0%	17	1%	2845	99%
SS/GTC/JEA-GTC//	0	239	631	203	0.001130	40	1%	0	0%	64	2%	2780	96%
SS/GTC/GTC-JEA//	178	825	966	174	0.000346	18	1%	0	0%	0	0%	2866	99%
S/SCEG/SOCO-SC//	0	1,261	6,290	167	0.000088	14	0%	1	0%	66	2%	2803	97%
S/MEAG/TVA-MEAG//	37	64	228	152	0.002698	9	0%	5	0%	0	0%	2870	100%
SS/SOCO/DUK-FL/MULTIPATHALIAS/	259	730	1,049	140	0.000272	36	1%	0	0%	0	0%	2848	99%
SS/GTC/SCEG-GTC//	68	114	114	137	0.001807	15	1%	0	0%	0	0%	2869	99%
SS/SOCO/TVA-SCEG/MULTIPATHALIAS/	1	137	160	108	0.001133	13	0%	1	0%	92	3%	2778	96%
SS/GTC/GTC-FPC//	178	825	966	106	0.000211	14	0%	0	0%	0	0%	2870	100%
SS/GTC/GTC-SCEG//	0	75	88	103	0.001957	8	0%	1	0%	6	0%	2869	99%
SS/GTC/GTC-TVA//	311	724	835	103	0.000198	7	0%	0	0%	0	0%	2877	100%
S/MEAG/MEAG-FPC//	0	110	206	96	0.001188	9	0%	0	0%	258	9%	2617	91%
S/AECI/TVA-AECI//	0	522	817	90	0.000286	8	0%	0	0%	696	24%	2180	76%
S/TVA/SOCO-AECI//	0	622	622	87	0.000201	8	0%	0	0%	32	1%	2844	99%
S/MEAG/MEAG-JEA//	0	110	206	84	0.001040	14	0%	0	0%	258	9%	2612	91%
S/DUK/SCEG-SC//	90	663	664	67	0.000147	6	0%	0	0%	0	0%	2878	100%
S/DUK/TVA-SOCO//	136	692	692	65	0.000133	5	0%	0	0%	0	0%	2879	100%
S/AECI/AECI-TVA//	0	0	511	61	0.000930	15	1%	0	0%	1,693	59%	1176	41%
S/DUK/DUK-SCEG//	0	261	263	61	0.000405	23	1%	0	0%	136	5%	2725	94%
SS/SOCO/TVA-FL/MULTIPATHALIAS/	270	1,146	1,424	58	0.000083	14	0%	0	0%	0	0%	2870	100%
SS/SOCO/TVA-DUK/MULTIPATHALIAS/	0	670	1,198	56	0.000116	7	0%	0	0%	4	0%	2873	100%
S/MEAG/MEAG-TVA//	0	154	178	49	0.000490	4	0%	0	0%	164	6%	2716	94%
S/SC/CPLE-SOCO//	0	3,248	3,872	48	0.000022	6	0%	0	0%	7	0%	2871	100%
S/SCEG/SCEG-DUK//	0	684	944	47	0.000097	6	0%	0	0%	20	1%	2858	99%
S/DUK/DUK-CPLE//	0	2,505	4,971	45	0.000026	17	1%	0	0%	60	2%	2807	97%
S/MEAG/GTC-MEAG//	1,747	2,091	2,370	43	0.000028	4	0%	0	0%	0	0%	2880	100%
SS/GTC/GTC-MEAG//	9,696	9,999	9,999	43	0.000006	4	0%	0	0%	0	0%	2880	100%
S/TVA/AECI-DUK//	0	8	355	42	0.000768	6	0%	1	0%	349	12%	2528	88%
S/MEAG/JEA-MEAG//	0	76	254	42	0.000568	10	0%	0	0%	12	0%	2862	99%
S/SC/SC-DUK//	1,005	2,575	3,659	40	0.000023	4	0%	0	0%	0	0%	2880	100%
SS/SOCO/SCEG-TVA/MULTIPATHALIAS/	96	208	208	36	0.000261	4	0%	0	0%	0	0%	2880	100%
S/MEAG/MEAG-SCEG//	12	16	19	34	0.002910	2	0%	9	0%	0	0%	2873	100%
S/MEAG/MEAG-SC//	0	11	63	31	0.002447	3	0%	12	0%	888	31%	1981	69%
S/TVA/LGEE-TVA//	0	2,828	2,828	29	0.000014	2	0%	0	0%	6	0%	2876	100%
S/SCEG/CPLE-SOCO//	0	475	798	27	0.000081	3	0%	0	0%	20	1%	2861	99%
S/MEAG/SC-MEAG//	30	100	119	26	0.000403	1	0%	1	0%	0	0%	2882	100%
S/DUK/DUK-TVA//	0	692	692	26	0.000055	15	1%	0	0%	63	2%	2806	97%
S/CPL/SC-SCEG//	0	297	412	23	0.000097	6	0%	0	0%	4	0%	2874	100%
SS/GTC/SC-GTC//	129	242	255	21	0.000128	3	0%	0	0%	0	0%	2881	100%