MONTHLY AUDIT REPORT ON THE SOUTHEAST ENERGY EXCHANGE MARKET

FOR

November 2024

Prepared by:

POTOMAC ECONOMICS

Independent Market Auditor

December 20, 2024

I. Overview

This is the November 2024 Auditor report on the Southeast Energy Exchange Market (SEEM). SEEM is a system energy market that uses a centralized intra-hour energy exchange to create bilateral trades 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]

As discussed herein, trading volumes in November reached an all-time high of 118,000 MWh, surpassing the previous all-time high of 108,000 in March 2024. The 12-month trailing monthly average is 85,000 MWh. With an average bid-offer spread of $7.68/MWh, the estimated production cost savings from SEEM transactions in November are over $800,000. Trading among SEEM members relies on individual transmission path segments connecting the members and trades 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, 6 percent of the time availability was zero and 92 percent of the time a segment was available while no cleared transaction utilized it. Overall, this indicates widely available transmission. Due to transmission loss costs, transmission constraints, and participant-specific constraints, about 25,000 MWh of potential economic exchanges were left uncleared in November, which is comparable to the level in October. As explained more below, 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.

[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 members joining in June 2023 are: Seminole Electric Cooperative; Tampa Electric Company; Duke Energy Florida; Florida Power Corporation; TEA Gainesville System Utilities; and TEA JEA.

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 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). The purpose of Section II of this report is to fulfil 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 such inquiry in November.

In the remainder of the report (Section II), we provide the results of our analysis of the first main area of responsibility: to analyze 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 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. Apart from 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 so we 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 several changes to participant-specific constraints among participants in November to temporarily exclude trading partners.

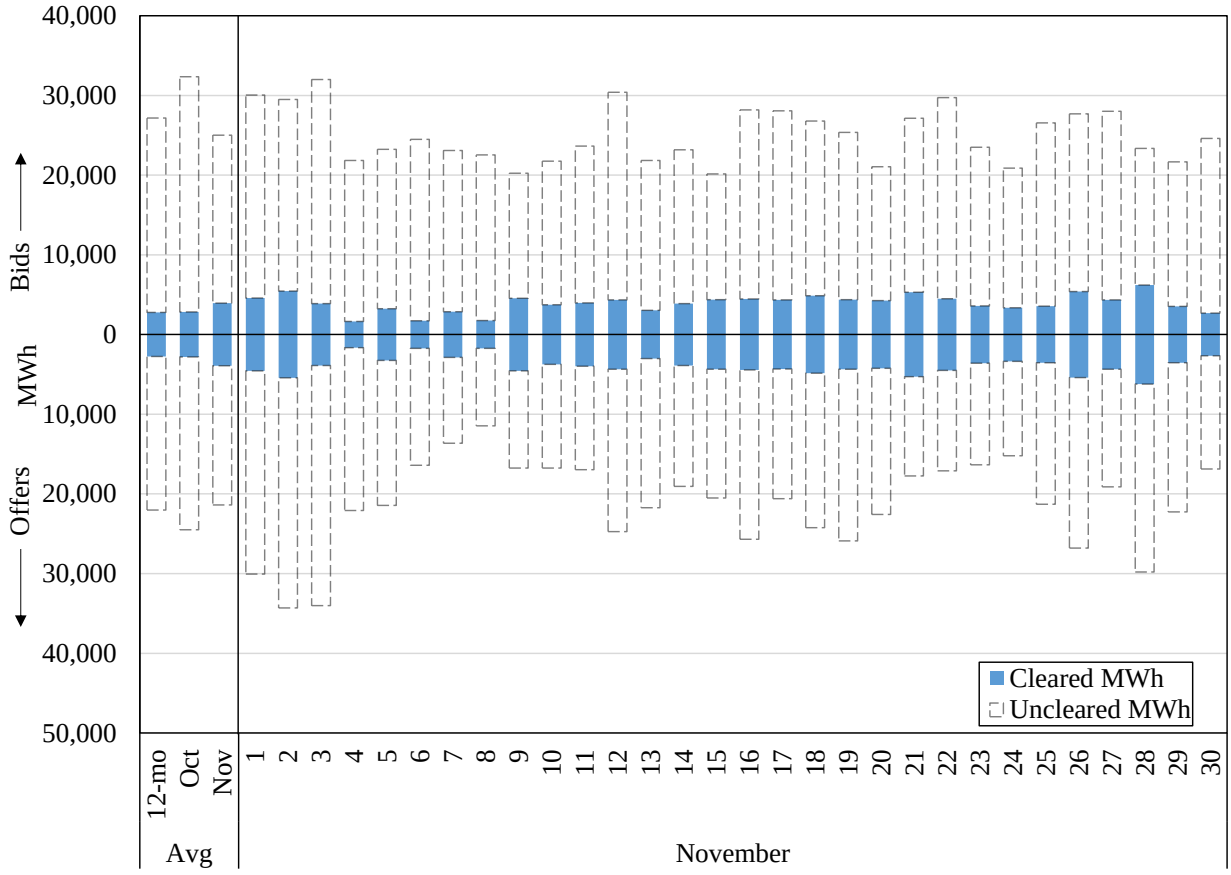
B. Market Activity

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 nearly 118,000 MWh of energy in November, higher than October and higher the trailing 12-month average of 85,000 MWh. 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.

Figure 1: Daily Bids and Offers
November 2024

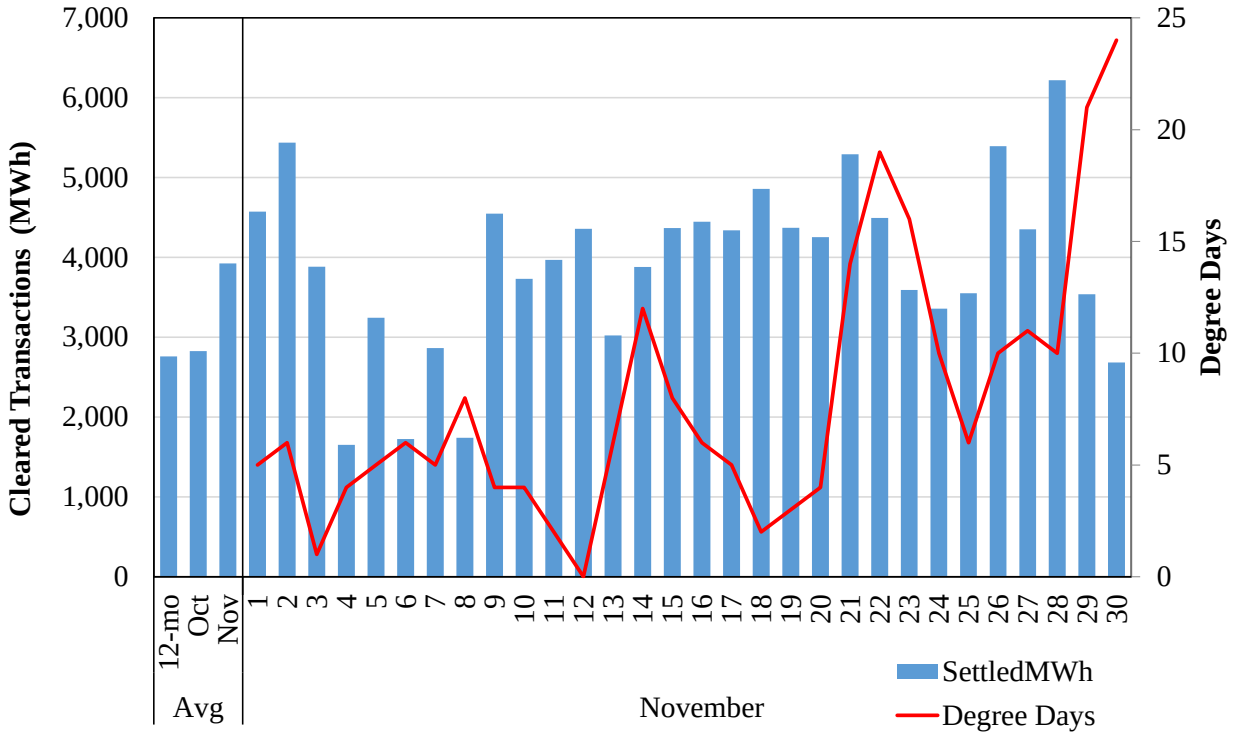


The left side columns show activity relative to the previous month and relative to the 12-month rolling average. As the left-side monthly and the 12-month average bars show, total liquidity

(cleared and uncleared bids and offers) was slightly lower than both the 12-month average and lower than October's level, even though November's cleared volumes were at an all-time high.

The individual days in Figure 1show some variation in offers, bids, and cleared transactions across the month. We evaluated the daily variations in more detail by considering the relationship among key market variables and outcomes. In particular, we evaluated the relationship among trades, offers, bids, system demand, and price. For example, Figure 2 shows cleared transactions and system demand (as measured by Degree Days). Degree Days are common measure of daily temperature levels that measure the demand for cooling and heating.[2] The purpose of showing daily volumes together with Degree Days is to evaluate SEEM activity as system demand fluctuates.

Figure 2: Cleared Transactions and Demand



The chart shows some periods of time when the trading volumes and DD move in opposite direction. To measure the relationship more precisely, we calculated the correlation coefficient[3]

[2] According to the US National Weather Service, "Degree days are the difference between the daily temperature mean, (high temperature plus low temperature divided by two) and 65°F. If the temperature mean is above 65°F, we subtract 65 from the mean and the result is ***Cooling Degree Days***. If the temperature mean is below 65°F, we subtract the mean from 65 and the result is ***Heating Degree Days***." For the Figure, we use Degrees Days from

[3] The correlation coefficient is a statistic that measures the relationship between two variables (in our case the cleared volumes and Degree Days). A positive correlation coefficient indicates the variables tend to move in the same direction while a negative correlation coefficient indicates the variables tend to move in opposite directions. A

between Degree Days and trading volumes and did not find a statistically significant correlation. Even extending the time period to the trailing twelve-month period, we did not find and statistical relationship between DD and trades (see the first row of Table 1). The first row of the table also shows no statistically significant correlation between trade volume and clearing prices.

To provide additional insight, Table 1 also shows a series of correlation coefficients for the trialing 12-months for key market activity and outcomes.

Table 1: Market Correlation Statistics
Trailing 12-months Ending November 2024

		Correlation Coefficients	
		Degree Days	Price
1	Trade Volume	-0.097	-0.097
	p value	0.065	0.065
2	Offer Volume	-0.409	-0.319
	p value	0.000	0.000
3	Bid Volume	0.247	0.189
	p value	0.000	0.000
4	Price	0.434	
	p value	0.000	

Note: Highlighted values are statistically significant.

The Table shows the correlation statistics between market activity (Trades, Offers, and Bids) and DD and Price. Row 2 in the Table shows a statistically significant *negative* correlation between supply offers and DD, which we would not expect based on market fundamentals alone -- with higher system demand, we would expect more supply to respond. However, resource management also requires recourse to reliability considerations. High DD days can create tight operating conditions and a withdrawal of supply to meet reliability objectives, thus reducing capacity available for economy trades in SEEM. Our discussion with participants supported this logic. Row 2 also shows Offer Volume is negatively correlated with price, something that is expected from market fundamentals – as supply responds to market conditions, prices will tend to decrease.

The positive correlation between Bid Volume and DD price is expected from economic theory because higher system demand will result in more participants seeking power supplies. Likewise, the positive correlation between Bid Volume and price is consistent with market economics -- c*eteris paribus*, an increase in participant demand should in theory result in higher prices.

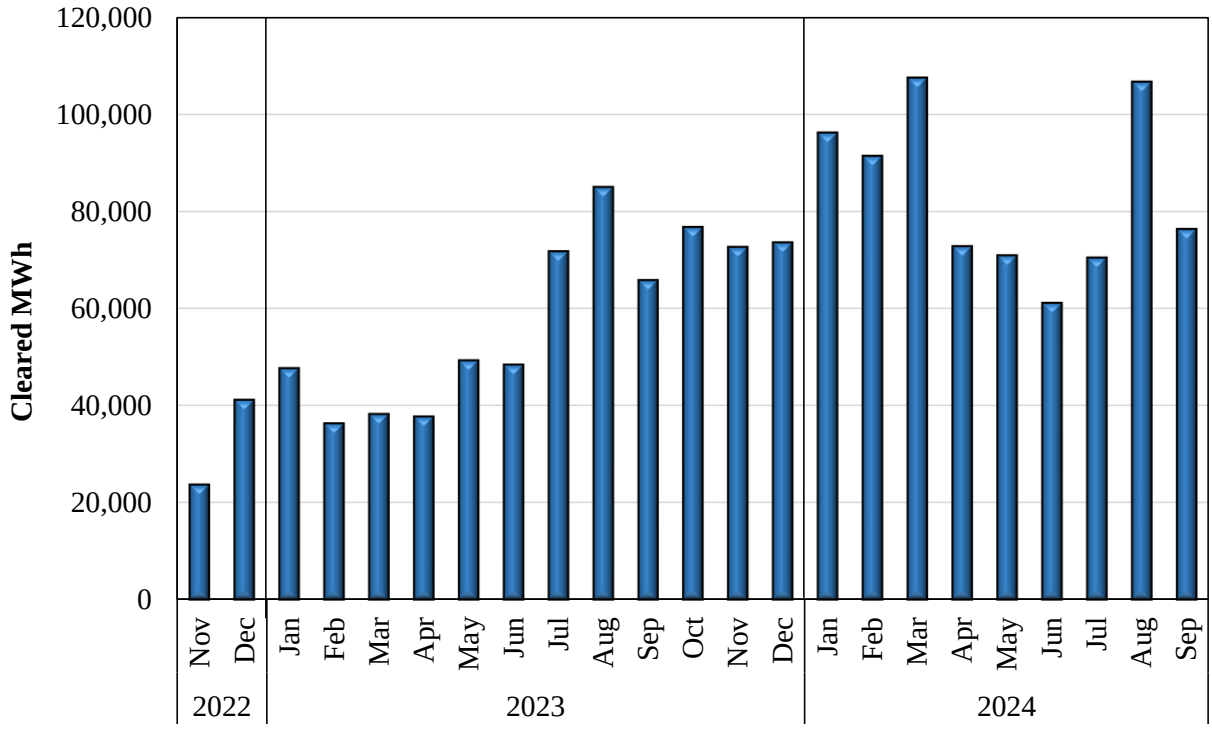
correlation coefficient at or close to zero means there is no linear relationship.

The correlation matrix in the table also reports a positive correlation between price and DD, something that is also expected from economics: high overall demand tends to result in higher prices.

Overall, the absence of a statistical relationship between cleared trades and DD is likely the result of Offer Volume not responding to higher system demand, likely due to reliability constraints, which is not sufficiently offset by higher participant demand.

Figure 3 shows the cleared trades on an historical monthly basis. It shows a variable volume of cleared trades with a notable increase in July 2023 with the addition of Florida participants. The highest volume was October 2024.

Figure 3: Monthly Volume of Cleared Trades
November 2022 - November 2024



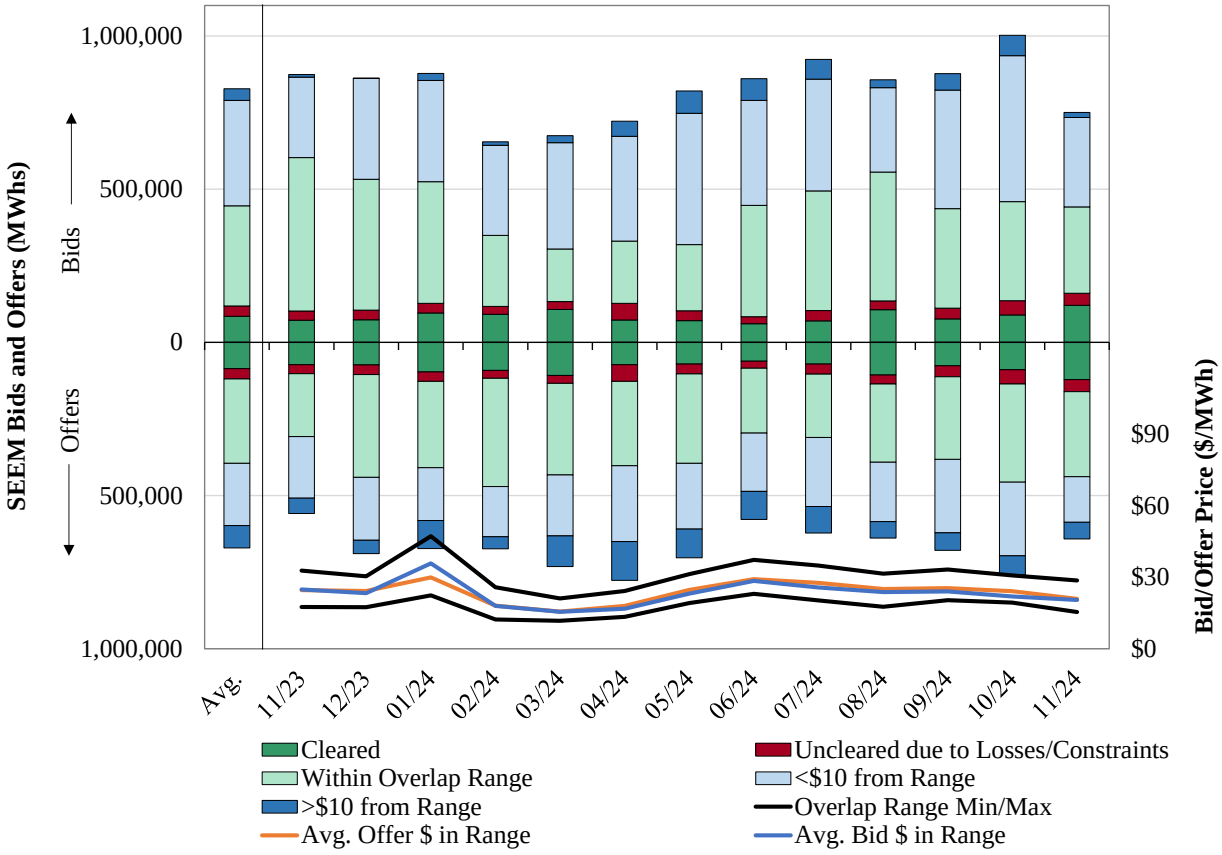
We noted above that liquidity (measured as the total bids and offers, whether cleared or not) was relatively low in November despite the high cleared volumes. Figure 4 shows the trend in market liquidity. The dark green bars are the cleared bids and offers. The rest of the bar segments are various categories of uncleared bids and offers:

- The red segment shows uncleared economic bids and offers. These transactions appear to be profitable, but do not clear because of the cost of losses or a constraint (explained more below).
- The light green bars show bids and offers that were not cleared but were within the indicated cleared bid-offer spread – i.e., from the lowest cleared offer to the highest

cleared bid. Bids and offers in this group do not clear because there are not sufficient counterparties to clear all of them – i.e., the counterparty bids/offers that could be economic have already been matched to another bid/offer with greater savings.

- 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 – i.e., offers to sell that are >$10 higher than this highest bid or offers to buy energy <$10 less than the lowest supply offer. Participants likely do not expect these to clear.

Figure 4: Bid and Offer Evaluation

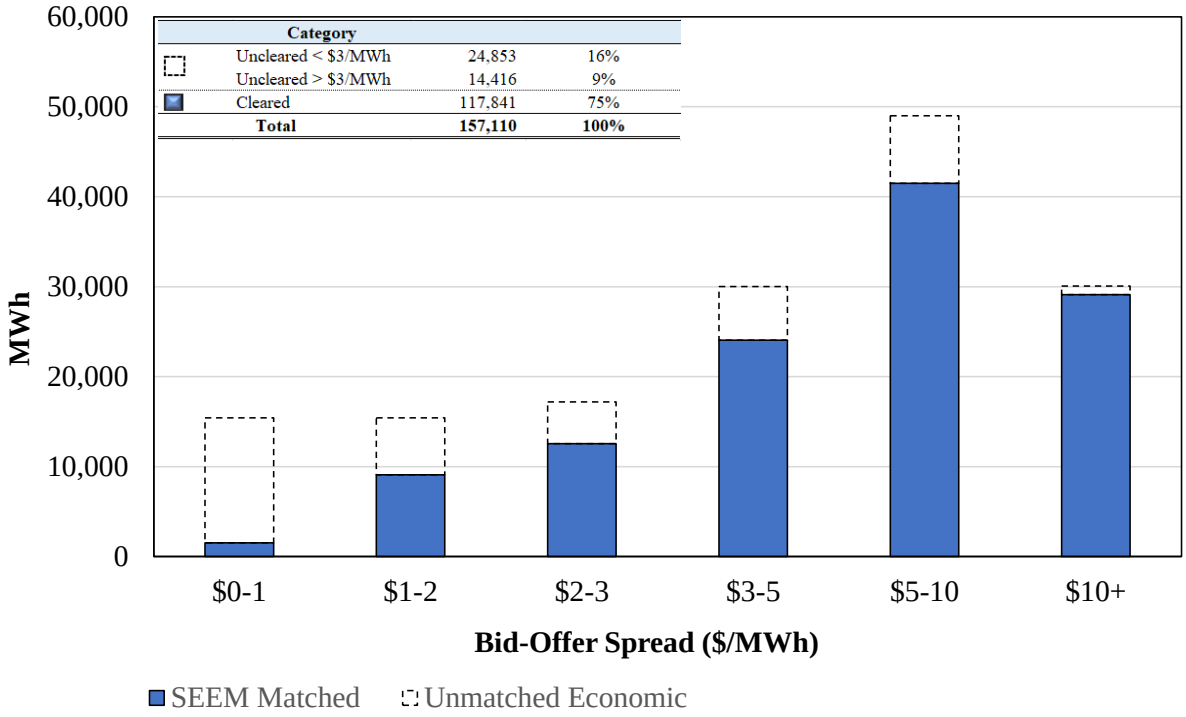


In Figure 4, the total size of the stacked bars (both bids and offers) are an indication of market liquidity. In general, there tends to be more bids (varying about 75,000 MWh) than offers (around 600,00 MWh). If one measures liquidity as the sum of all the bar segments (counting the offer segments below the bar in absolute values), the liquidity is not statistically correlated with cleared trades over the 13-month period.

Like in previous months, our evaluation of uncleared bids and offers 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 was 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 5 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 – there are very few because that spread would not pay most transmission loss cost. The transparent box shows considerable uncleared economic bids and offers that did not clear at spreads up to $1.

Figure 5: Cleared and Uncleared Economic Matches
November 2024



To understand why economic bids and offers may not have cleared, it is useful to examine the bid-offer spread. Average loss charges are roughly $2 per MWh, although some potential economic matches would incur higher loss costs. Therefore, in the inset table, we divide totals between bid-offer spreads above and below $3 per MWh. Those below $3 are likely to have not cleared because of the costs of losses, well most of those that did not clear at spreads above $3 likely did not clear because of transmission constraints or participant constraints. The inset table also shows that over the entire period, 75 percent of the economic transactions cleared. The costs of transmission losses were likely the most significant factor that prevented transactions from clearing. This is because in each of the periods most of the uncleared economic transactions were those with spreads of less than $3 per MWh.

Trades clearing in SEEM offer participants the ability to reduce output from a higher-cost resources and replace it with a lower-cost ones. In November, the bid-offer spread averaged $7.68/MWh. With 118,000 MWh cleared, there is approximately $810,000 in production cost savings at least.[4] Figure 6 shows (the lower bound of) estimated production cost savings for each month since SEEM inception. The red line shows the cumulative savings. Cumulative savins is almost $13 million.

Figure 6: Estimated Production Cost Savings

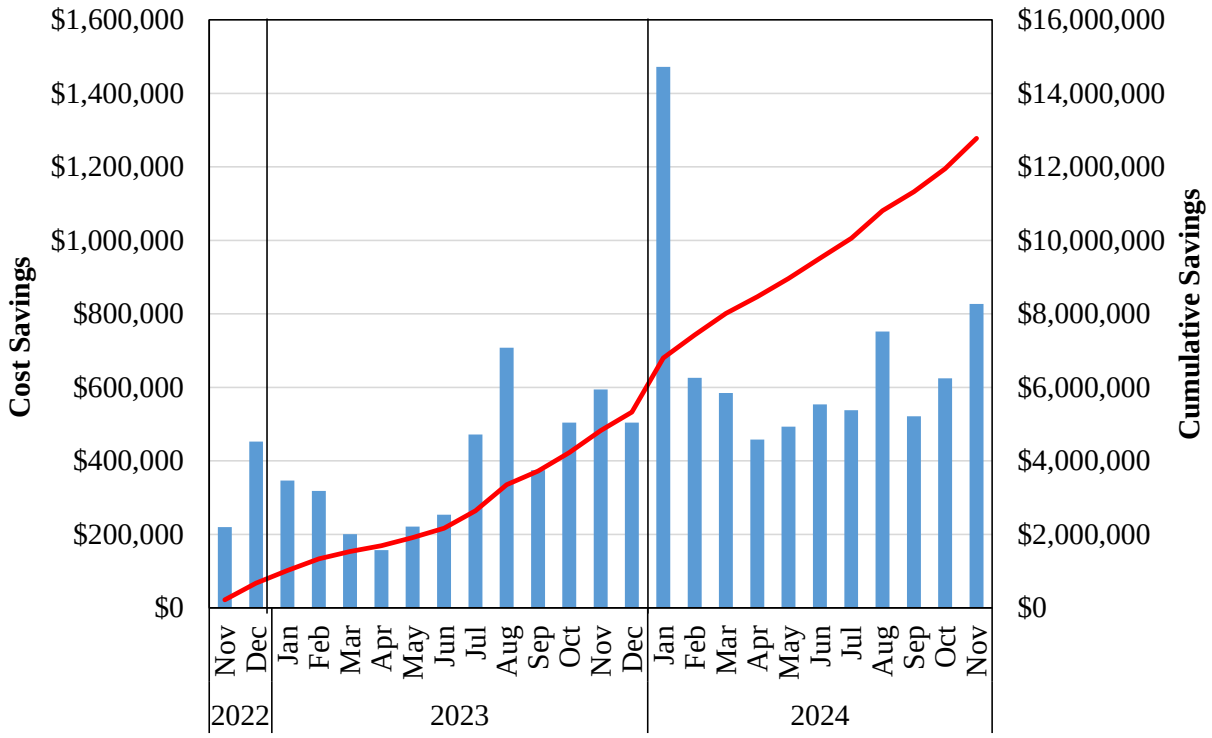
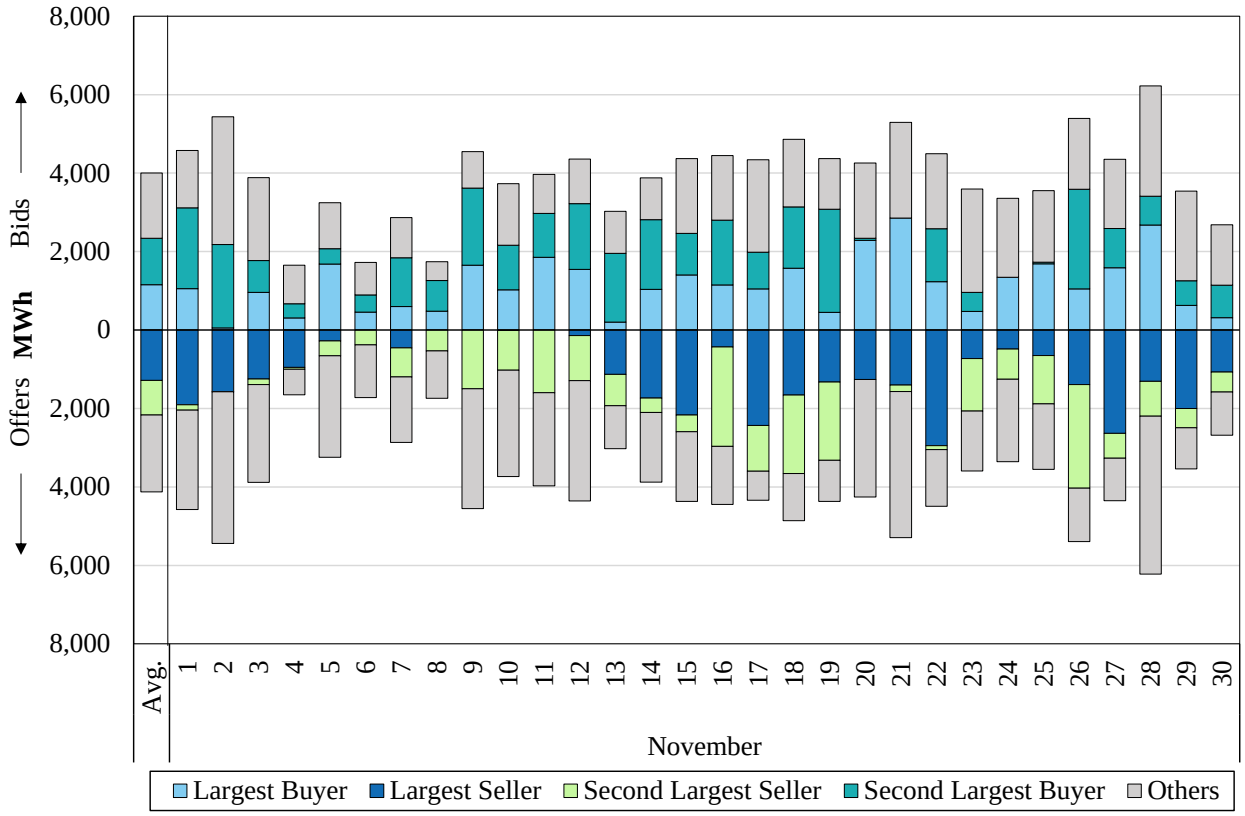


Figure 7 shows more detail on the matched bids and offers by showing the matches by the largest market participants. Like the prior figures, the bars above the *x* axis are cleared bids and the bars below are cleared offers. The bars in this figure are divided by the top two participants and then all the rest.

[4] There is likely more production cost saving than the data shown because the bids (offers) are likely to by slightly lower than the true cost of buyers (higher than the true cost to sellers) due to the split-the-savings nature of SEEM. In a split-the-savings auction like SEEM, participants will improve their payoff by lowering bids and raising offers in an attempt to get a split closer to their counterparty's bid or offer.

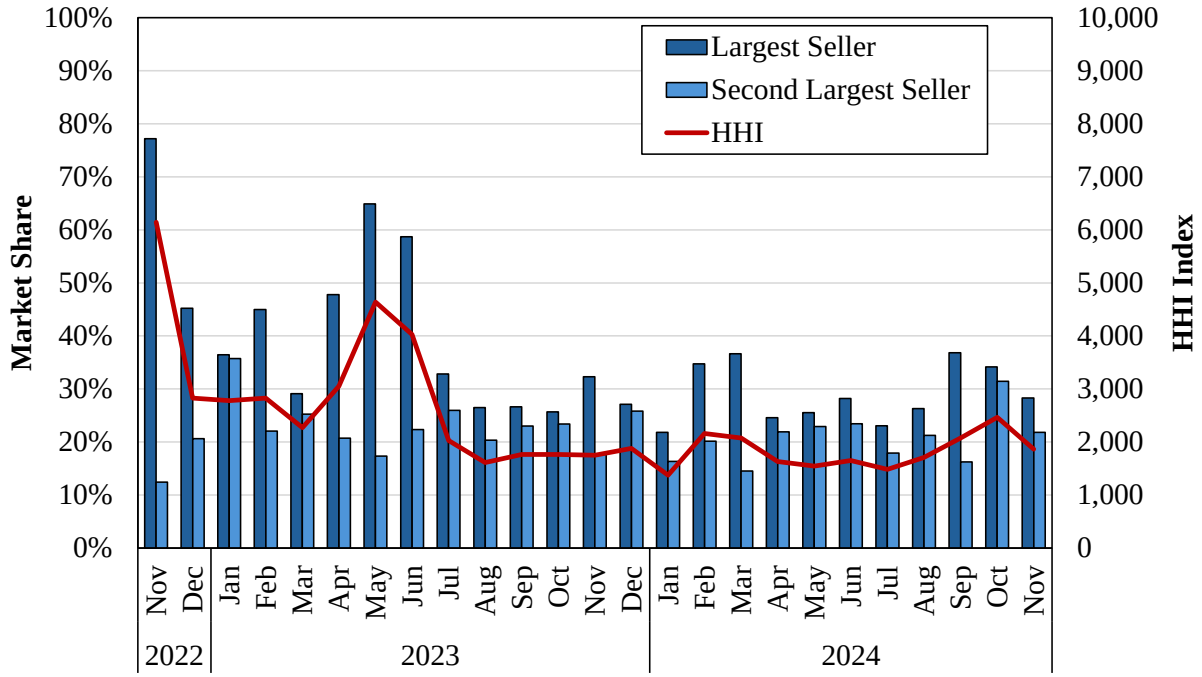
Figure 7: Volumes of Matched Bids and Offers
November 2024



The figure shows certain buyers and sellers comprise significant shares of the transaction activity. For the month, 35 percent of the sales were made by a single seller and 30 percent of the purchases were made by a single buyer.

In the next figures, we present a time series of market shares and concentration. Economists measure market shares to get a general view of the competitiveness of a market. It is not determinative of the existence of market power, but it is useful for an overall view. Figure 8 shows the monthly share of matched transaction of the largest two sellers along with the Herfindahl Hirschmann Index (HHI), defined below. The bars in this figure stack the two top sellers during the month.

Figure 8: Seller Market Share and Concentration Statistics
November 2022 – November 2024

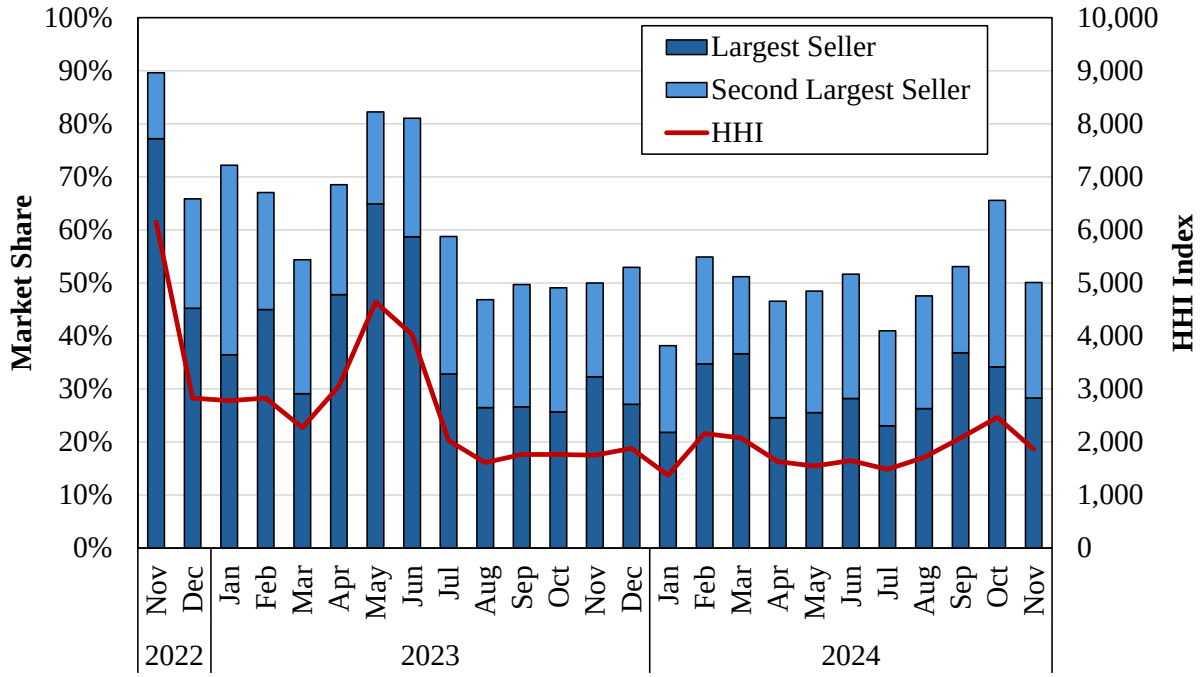


Not surprisingly, the share of the top seller, as well as the share of the top two, declined once the Florida participants fully joined in July 2023. The chart also shows that the HHI has declined. The HHI is a measure of market concentration and is used to determine market competitiveness, often on a relative basis over time or as a result of structural changes like a merger or divestiture. It is calculated by squaring the market share of each firm competing in a market and then summing the resulting numbers. It can range from close to 0 to 10,000, with lower values indicating a less concentrated market. A single-seller monopoly market would have an HHI of 10,000 = 100 x 100. A perfectly competitive market where no firm has an appreciable market share, the HHI is close to zero. The US antitrust agencies (FTC and DOJ) consider markets with:

- HHI greater than 1800 to be highly concentrated;
- one with an HHI between 1000 and 1800 to be moderately concentrated; and
- one with an HHI less than 1000 to be unconcentrated.

The HHI indicates that the SEEM market has been highly concentrated in most months. However, the HHI has come down since November and has remained close to 1800. Although this is close to the highly concentrated range, it has been falling. Figure 9 shows the buyer concentration.

Figure 9: Buyer Market Share and Concentration Statistics
November 2022 – November 2024

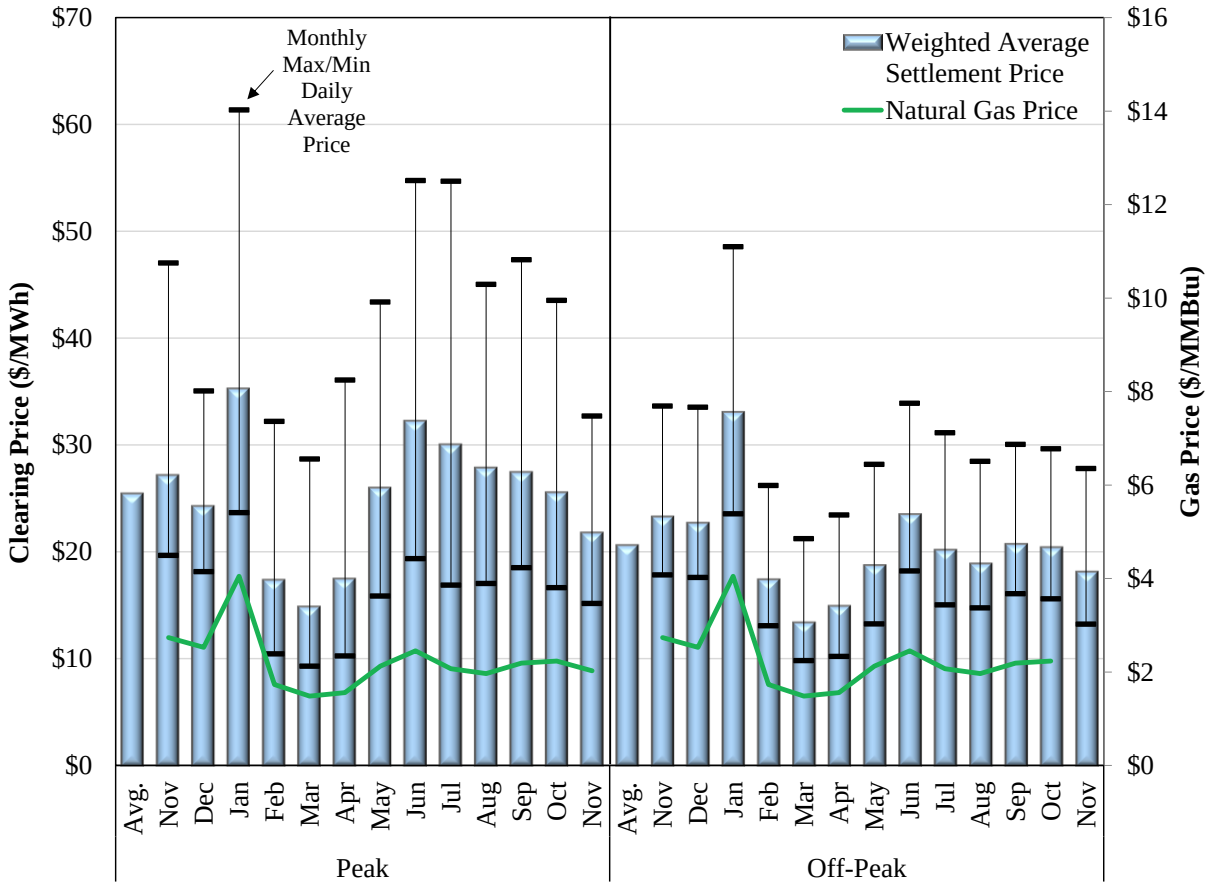


The entry of Florida participants coincided with a decline in buyer concentration. These declines, together with the uptrend in matched trades, are indicative of a market evolving to greater liquidity and competitiveness.

2. Network Usage

In this subsection, we report on the usage of the SEEM network. Figure 10 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. The superimposed lines over the bars show the price spread over each month.

Figure 10: Monthly Clearing Prices and Natural Gas Costs



The figure shows that both peak and off-peak prices declined slightly in November relative to October and were lower than the 12-month average. The whisker bars for each month show that the value of transactions can vary significantly, 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. In November, there were 250 segments used in SEEM for which an ATC value was posted, and another 34 segments used for which no ATC is posted (these are segments that were available on an unlimited basis.[5]) There were 67 segments in SEEM not used. We calculate total segment (MWh) usage for the 284 segments that were used during the month. For segments with

[5] It is not unusual for transmission paths to have no ATC value posted, and not just for the SEEM transmission service (NFEETS), but also longer-term service.

ATC values, we report the median, maximum, and minimum ATC values over all intervals for each segment. For these "ATC segments," we are also able to 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 schedule volumes and the ATC statistics, 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 or total MWs cleared on a segment without ATC);

(2) Fully Used, ATC was used up for the interval;[6]

(3) Unavailable, no ATC;[7] and

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

In reporting the usage of each segment, we refer to a "segment-interval" which is an observation in a single interval on one segment. Table 2 shows an excerpt of our statistics. The table displays the segments that had at least 2,000 MWh of transactions scheduled during the month. The full data for all segments is provided in Appendix A. When ATC is listed as "None" this means there was no ATC posted.

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

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

Table 2: Statistics for Most Utilized SEEM Segments
November 2024

Segment	ATC				Loading	Partially Used		Fully Used		Unavailable		Uncleared	
	Min	Median	Max	MWhs	Factor	Intervals	%	Intervals	%	Intervals	%	Intervals	%
F/FPC/FPC-SOCO//	0	164	285	32,925	31.96%	727	25%	361	13%	768	27%	1028	36%
S/SC/SOCO-SC//	0	907	2,102	19,828	3.00%	887	31%	36	1%	202	7%	1759	61%
SS/SOCO/FL-SOCO//	108	660	1,052	15,802	3.40%	773	27%	0	0%	0	0%	2111	73%
F/TEC/TEC-FPC//	991	2,389	3,213	11,688	0.68%	737	26%	0	0%	0	0%	2147	74%
S/CPL/CPLE-DUK//	1,180	4,561	7,049	11,367	0.35%	477	17%	0	0%	0	0%	2407	83%
F/FPC/TEC-SOCO//	0	164	285	10,608	10.30%	676	23%	0	0%	768	27%	1440	50%
S/CPL/CPLE-SC//	0	2,901	4,269	9,645	0.48%	465	16%	0	0%	5	0%	2414	84%
S/SC/CPLE-SC//	0	1,745	2,713	9,457	0.80%	447	15%	7	0%	12	0%	2418	84%
S/TVA/SOCO-TVA//	0	3,930	4,710	9,388	0.36%	370	13%	1	0%	91	3%	2422	84%
SS/SOCO/SOCO-SC//	0	244	486	8,524	5.41%	394	14%	94	3%	34	1%	2362	82%
S/TVA/TVA-SOCO//	4,404	4,925	4,935	8,409	0.24%	269	9%	0	0%	0	0%	2615	91%
SS/SOCO/TVA-SOCO//	805	1,192	1,617	8,409	0.95%	269	9%	0	0%	0	0%	2615	91%
S/DUK/CPLE-SOCO//	1,165	2,211	2,335	8,012	0.51%	411	14%	0	0%	0	0%	2473	86%
SS/SOCO/SOCO-SOCO//	39,278	44,230	44,230	7,941	0.02%	450	16%	0	0%	0	0%	2434	84%
P/LGEE/TVA-LGEE//	0	438	1,424	7,453	2.02%	302	10%	11	0%	778	27%	1793	62%
SS/SOCO/DUK-SOCO//	224	702	1,001	7,164	1.38%	283	10%	0	0%	0	0%	2601	90%
SS/SOCO/FL-SC/MULTIPATHALIAS/	0	244	486	6,912	4.39%	393	14%	60	2%	34	1%	2397	83%
SS/SOCO/FL-TVA/MULTIPATHALIAS/	108	643	1,052	6,864	1.50%	364	13%	0	0%	0	0%	2520	87%
F/JEA/SOCO-JEA//	0	551	769	6,496	1.74%	846	29%	22	1%	44	2%	1972	68%
S/MEAG/FPC-TVA//	None	None	None	4,478	0.00%	277	10%	0	0%	0	0%	2607	90%
S/SC/DUK-SC//	0	1,894	2,855	4,465	0.37%	427	15%	11	0%	12	0%	2434	84%
SS/SOCO/SOCO-FL//	617	1,326	2,090	3,815	0.40%	391	14%	0	0%	0	0%	2493	86%
SS/SOCO/SOCO-DUK//	213	584	813	3,762	0.90%	326	11%	0	0%	0	0%	2558	89%
S/TVA/SOCO-LGEE//	0	2,825	2,828	3,720	0.20%	178	6%	0	0%	36	1%	2670	93%
S/MEAG/SOCO-MEAG//	2,900	3,135	3,335	3,670	0.16%	233	8%	0	0%	0	0%	2651	92%
S/SCEG/DUK-SCEG//	0	132	332	3,308	4.13%	279	10%	47	2%	656	23%	1902	66%
S/MEAG/FPC-SC//	None	None	None	3,141	0.00%	352	12%	0	0%	0	0%	2532	88%
S/DUK/CPLE-TVA//	92	692	692	3,016	0.61%	127	4%	2	0%	0	0%	2755	96%
S/SCEG/SOCO-SCEG//	0	0	2,011	2,812	1.21%	301	10%	8	0%	1,594	55%	981	34%
S/SCEG/CPLE-SCEG//	0	377	459	2,551	1.07%	225	8%	0	0%	142	5%	2517	87%
SS/GTC/GTC-SOCO//	20,000	20,000	20,000	2,437	0.02%	84	3%	0	0%	0	0%	2800	97%
F/FPC/SOCO-FPC//	0	325	482	2,415	1.13%	252	9%	6	0%	160	6%	2466	86%
SS/SOCO/SOCO-TVA//	501	1,411	2,098	2,392	0.25%	118	4%	0	0%	0	0%	2766	96%
S/DUK/SOCO-SCEG//	0	142	168	2,358	2.35%	214	7%	21	1%	1	0%	2648	92%
S/TVA/DUK-TVA//	0	366	366	2,348	0.91%	110	4%	1	0%	43	1%	2730	95%
S/DUK/SOCO-SC//	0	1,516	2,220	2,323	0.23%	158	5%	0	0%	5	0%	2721	94%
F/TEC/FPC-TEC//	0	1,588	2,597	2,300	0.21%	208	7%	0	0%	16	1%	2660	92%
S/TVA/TVA-LGEE//	0	2,823	2,828	2,279	0.13%	89	3%	0	0%	24	1%	2771	96%
S/DUK/DUK-SC//	0	1,431	2,788	2,224	0.21%	308	11%	0	0%	13	0%	2563	89%
SS/SOCO/FL-DUK/MULTIPATHALIAS/	108	536	809	2,154	0.58%	200	7%	1	0%	0	0%	2683	93%
S/CPL/CPLE-SCEG//	75	367	367	2,137	0.84%	194	7%	0	0%	0	0%	2690	93%
F/FPC/FPC-TEC//	12	1,844	2,758	2,130	0.16%	193	7%	0	0%	0	0%	2691	93%

The "Uncleared" category indicates that among these most utilized segments, many of them have over 90 percent of their intervals uncleared. There are, however, numerous instances when segments are constrained. A constrained segment is one where either (1) the segment is completely used by SEEM ("Fully Used" column in the table) or (2) ATC is insufficient (less than 4 MW) prior to SEEM matching (the "Unavailable" column in the table).

Table 3 show the summary usage for all segments. During the month, total segment intervals is the product of all 351 segments and the number of intervals during the month. In November, there were ,012,016 segment intervals.[8] The two circumstances (Cases (2) and (3)) when a segment is

[8] The maximum number of segment intervals in a month is (351 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.

constrained occurred in more than 56,000 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 or there was no ATC posted, but the segment was not used because no beneficial transactions were cleared by the SEEM model over that segment. These cases represent over 92 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 (5.6 percent of the time). The third most common case was "Partially Used" (Case 1), where the segment was partially used (2.0 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 (787).

Table 3: Summary of All Segments
November 2024

Segment	Case 1 Partially Used		Case 2 Fully Used		Case 3 Unavailable		Case 4 Uncleared	
	Intervals	%	Intervals	%	Intervals	%	Intervals	%
All Segments	19,962	2.0%	787	0.1%	56,112	5.6%	926,515	92.3%

Measuring transmission capacity congestion by adding Case 2 and 3, the percentage of constrained segment intervals was 5.7 percent in November (versus 3.3 percent in October). Overall, these results indicate that transmission was generally available to facilitate economic transactions in the SEEM region. As we discussed above, transmission loss costs were likely the main factor in preventing economic trades from being consummated than transmission constraints.

Further insight into constrained segments can be gained from Table 4. It shows the 20 segments least often available to SEEM. All segments shown reported ATC of 0 in one or more intervals during the month (ATC Min=0). In some intervals there were at least some cleared trades. Like in previous months, these frequently unavailable paths are in many intervals unused when they are available (as indicated by the "Uncleared" column). Overall, the evaluation of individual segments indicates the system is largely unconstrainted for SEEM activity.

Table 4: Most Constrained SEEM Segments

November 2024

Segment	ATC			MWhs	Loading Factor	Partially Used		Fully Used		Unavailable		Uncleared	
	Min	Median	Max			Intervals	%	Intervals	%	Intervals	%	Intervals	%
S/TVA/AECI-CPLW//	0	1	276	0	0.00%	0	*0%*	0	*0%*	2,485	*86%*	399	*14%*
S/TVA/AECI-DUK//	0	1	380	0	0.00%	0	*0%*	0	*0%*	2,485	*86%*	399	*14%*
S/TVA/AECI-TVA//	0	1	409	0	0.00%	0	*0%*	0	*0%*	2,485	*86%*	399	*14%*
S/TVA/AECI-LGEE//	0	1	409	0	0.00%	0	*0%*	0	*0%*	2,485	*86%*	399	*14%*
S/TVA/AECI-SOCO//	0	1	409	15	0.09%	1	*0%*	0	*0%*	2,485	*86%*	398	*14%*
S/AECI/AECI-TVA//	0	0	476	15	0.02%	1	*0%*	0	*0%*	1,826	*63%*	1057	*37%*
S/TVA/CPLW-AECI//	0	1	276	0	0.00%	0	*0%*	0	*0%*	1,768	*61%*	1116	*39%*
S/TVA/SOCO-AECI//	0	1	622	717	0.44%	45	*2%*	0	*0%*	1,764	*61%*	1075	*37%*
S/TVA/LGEE-AECI//	0	1	622	0	0.00%	0	*0%*	0	*0%*	1,764	*61%*	1120	*39%*
S/TVA/DUK-AECI//	0	1	366	10	0.01%	1	*0%*	0	*0%*	1,764	*61%*	1119	*39%*
S/TVA/TVA-AECI//	0	1	622	0	0.00%	0	*0%*	0	*0%*	1,756	*61%*	1128	*39%*
S/TVA/LGEE-CPLW//	0	1	276	0	0.00%	0	*0%*	0	*0%*	1,664	*58%*	1220	*42%*
S/TVA/CPLW-LGEE//	0	1	276	39	0.05%	3	*0%*	0	*0%*	1,664	*58%*	1217	*42%*
S/TVA/CPLW-DUK//	0	1	276	0	0.00%	0	*0%*	0	*0%*	1,652	*57%*	1232	*43%*
S/TVA/CPLW-SOCO//	0	1	276	0	0.00%	0	*0%*	0	*0%*	1,652	*57%*	1232	*43%*
S/TVA/CPLW-TVA//	0	1	276	300	0.35%	12	*0%*	0	*0%*	1,652	*57%*	1220	*42%*
S/TVA/TVA-CPLW//	0	1	276	11	0.01%	4	*0%*	0	*0%*	1,652	*57%*	1228	*43%*
S/TVA/SOCO-CPLW//	0	1	276	0	0.00%	0	*0%*	0	*0%*	1,652	*57%*	1232	*43%*
S/TVA/DUK-CPLW//	0	1	276	0	0.00%	0	*0%*	0	*0%*	1,652	*57%*	1232	*43%*
S/CPL/CPLW-TVA//	0	0	276	0	0.00%	0	*0%*	0	*0%*	1,631	*57%*	1253	*43%*
S/CPL/TVA-CPLW//	0	0	276	0	0.00%	0	*0%*	0	*0%*	1,628	*56%*	1256	*44%*
S/CPL/DUK-TVA//	0	0	276	339	0.39%	13	*0%*	0	*0%*	1,628	*56%*	1243	*43%*
S/CPL/TVA-DUK//	0	0	276	11	0.01%	4	*0%*	0	*0%*	1,628	*56%*	1252	*43%*
S/SCEG/SOCO-SCEG//	0	0	2,011	2,812	1.21%	301	*10%*	8	*0%*	1,594	*55%*	981	*34%*

III. CONCLUSION

We reviewed the operation of SEEM for November 2024. 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 2024

Segment	ATC			MWhs	Loading Factor	Partially Used		Fully Used		Unavailable		Uncleared	
	Min	Median	Max			Intervals	%	Intervals	%	Intervals	%	Intervals	%
F/FPC/FPC-SOCO//	0	164	285	32,925	31.96%	727	25%	361	13%	768	27%	1028	36%
S/SC/SOCO-SC//	0	907	2,102	19,828	3.00%	887	31%	36	1%	202	7%	1759	61%
SS/SOCO/FL-SOCO//	108	660	1,052	15,802	3.40%	773	27%	0	0%	0	0%	2111	73%
F/TEC/TEC-FPC//	991	2,389	3,213	11,688	0.68%	737	26%	0	0%	0	0%	2147	74%
S/CPL/CPLE-DUK//	1,180	4,561	7,049	11,367	0.35%	477	17%	0	0%	0	0%	2407	83%
F/FPC/TEC-SOCO//	0	164	285	10,608	10.30%	676	23%	0	0%	768	27%	1440	50%
S/CPL/CPLE-SC//	0	2,901	4,269	9,645	0.48%	465	16%	0	0%	5	0%	2414	84%
S/SC/CPLE-SC//	0	1,745	2,713	9,457	0.80%	447	15%	7	0%	12	0%	2418	84%
S/TVA/SOCO-TVA//	0	3,930	4,710	9,388	0.36%	370	13%	1	0%	91	3%	2422	84%
SS/SOCO/SOCO-SC//	0	244	486	8,524	5.41%	394	14%	94	3%	34	1%	2362	82%
S/TVA/TVA-SOCO//	4,404	4,925	4,935	8,409	0.24%	269	9%	0	0%	0	0%	2615	91%
SS/SOCO/TVA-SOCO//	805	1,192	1,617	8,409	0.95%	269	9%	0	0%	0	0%	2615	91%
S/DUK/CPLE-SOCO//	1,165	2,211	2,335	8,012	0.51%	411	14%	0	0%	0	0%	2473	86%
SS/SOCO/SOCO-SOCO//	39,278	44,230	44,230	7,941	0.02%	450	16%	0	0%	0	0%	2434	84%
P/LGEE/TVA-LGEE//	0	438	1,424	7,453	2.02%	302	10%	11	0%	778	27%	1793	62%
SS/SOCO/DUK-SOCO//	224	702	1,001	7,164	1.38%	283	10%	0	0%	0	0%	2601	90%
SS/SOCO/FL-SC/MULTIPATHALIAS/	0	244	486	6,912	4.39%	393	14%	60	2%	34	1%	2397	83%
SS/SOCO/FL-TVA/MULTIPATHALIAS/	108	643	1,052	6,864	1.50%	364	13%	0	0%	0	0%	2520	87%
F/JEA/SOCO-JEA//	0	551	769	6,496	1.74%	846	29%	22	1%	44	2%	1972	68%
S/MEAG/FPC-TVA//	None	None	None	4,478	0.00%	277	10%	0	0%	0	0%	2607	90%
S/SC/DUK-SC//	0	1,894	2,855	4,465	0.37%	427	15%	11	0%	12	0%	2434	84%
SS/SOCO/SOCO-FL//	617	1,326	2,090	3,815	0.40%	391	14%	0	0%	0	0%	2493	86%
SS/SOCO/SOCO-DUK//	213	584	813	3,762	0.90%	326	11%	0	0%	0	0%	2558	89%
S/TVA/SOCO-LGEE//	0	2,825	2,828	3,720	0.20%	178	6%	0	0%	36	1%	2670	93%
S/MEAG/SOCO-MEAG//	2,900	3,135	3,335	3,670	0.16%	233	8%	0	0%	0	0%	2651	92%
S/SCEG/DUK-SCEG//	0	132	332	3,308	4.13%	279	10%	47	2%	656	23%	1902	66%
S/MEAG/FPC-SC//	None	None	None	3,141	0.00%	352	12%	0	0%	0	0%	2532	88%
S/DUK/CPLE-TVA//	92	692	692	3,016	0.61%	127	4%	2	0%	0	0%	2755	96%
S/SCEG/SOCO-SCEG//	0	0	2,011	2,812	1.21%	301	10%	8	0%	1,594	55%	981	34%
S/SCEG/CPLE-SCEG//	0	377	459	2,551	1.07%	225	8%	0	0%	142	5%	2517	87%
SS/GTC/GTC-SOCO//	20,000	20,000	20,000	2,437	0.02%	84	3%	0	0%	0	0%	2800	97%
F/FPC/SOCO-FPC//	0	325	482	2,415	1.13%	252	9%	6	0%	160	6%	2466	86%
SS/SOCO/SOCO-TVA//	501	1,411	2,098	2,392	0.25%	118	4%	0	0%	0	0%	2766	96%
S/DUK/SOCO-SCEG//	0	142	168	2,358	2.35%	214	7%	21	1%	1	0%	2648	92%
S/TVA/DUK-TVA//	0	366	366	2,348	0.91%	110	4%	1	0%	43	1%	2730	95%
S/DUK/SOCO-SC//	0	1,516	2,220	2,323	0.23%	158	5%	0	0%	5	0%	2721	94%
F/TEC/FPC-TEC//	0	1,588	2,597	2,300	0.21%	208	7%	0	0%	16	1%	2660	92%
S/TVA/TVA-LGEE//	0	2,823	2,828	2,279	0.13%	89	3%	0	0%	24	1%	2771	96%
S/DUK/DUK-SC//	0	1,431	2,788	2,224	0.21%	308	11%	0	0%	13	0%	2563	89%
SS/SOCO/FL-DUK/MULTIPATHALIAS/	108	536	809	2,154	0.58%	200	7%	1	0%	0	0%	2683	93%
S/CPL/CPLE-SCEG//	75	367	367	2,137	0.84%	194	7%	0	0%	0	0%	2690	93%
F/FPC/FPC-TEC//	12	1,844	2,758	2,130	0.16%	193	7%	0	0%	0	0%	2691	93%
S/DUK/DUK-SOCO//	0	2,120	2,335	1,932	0.13%	305	11%	0	0%	8	0%	2571	89%
S/SC/SCEG-SC//	2,813	3,064	3,199	1,916	0.09%	182	6%	0	0%	0	0%	2702	94%
S/DUK/SOCO-CPLE//	0	1,874	2,220	1,655	0.13%	258	9%	0	0%	41	1%	2585	90%
S/SCEG/SCEG-SC//	623	1,423	3,750	1,646	0.15%	169	6%	0	0%	0	0%	2715	94%
S/MEAG/SOCO-JEA//	None	None	None	1,596	0.00%	270	9%	0	0%	0	0%	2614	91%
SS/SOCO/FL-SCEG/MULTIPATHALIAS/	0	89	149	1,569	2.29%	186	6%	23	1%	202	7%	2473	86%
SS/SOCO/DUK-FL/MULTIPATHALIAS/	224	702	1,001	1,546	0.30%	233	8%	0	0%	0	0%	2651	92%
S/SCEG/SCEG-SOCO//	773	2,588	4,673	1,439	0.08%	175	6%	0	0%	0	0%	2709	94%
S/TVA/DUK-LGEE//	0	366	366	1,415	0.54%	91	3%	0	0%	12	0%	2781	96%
F/JEA/JEA-SOCO//	125	548	894	1,408	0.37%	322	11%	0	0%	0	0%	2562	89%
S/MEAG/FPC-DUK//	None	None	None	1,200	0.00%	133	5%	0	0%	0	0%	2751	95%
S/DUK/TVA-DUK//	0	692	692	1,101	0.22%	30	1%	3	0%	17	1%	2834	98%
S/TVA/TVA-DUK//	0	380	380	1,101	0.41%	31	1%	2	0%	20	1%	2831	98%
S/CPL/DUK-CPLE//	66	3,164	6,664	1,092	0.05%	219	8%	0	0%	0	0%	2665	92%
F/FPC/TEC-FPC//	1,040	2,439	3,262	1,080	0.06%	199	7%	0	0%	0	0%	2685	93%
S/SCEG/SC-SCEG//	0	2,900	6,229	1,049	0.05%	105	4%	0	0%	84	3%	2695	93%
S/DUK/DUK-SCEG//	0	142	168	998	1.00%	116	4%	6	0%	9	0%	2753	95%
S/SC/SOCO-SCEG//	0	1,546	2,610	985	0.09%	103	4%	0	0%	42	1%	2739	95%

Appendix A (continued)

Segment	ATC				Loading	Partially Used		Fully Used		Unavailable		Uncleared	
	Min	Median	Max	MWhs	Factor	Intervals	%	Intervals	%	Intervals	%	Intervals	%
S/DUK/SOCO-DUK//	0	1,911	2,220	831	0.06%	83	3%	0	0%	22	1%	2779	96%
S/AECI/TVA-AECI//	0	611	817	727	0.16%	45	2%	0	0%	14	0%	2825	98%
S/TVA/SOCO-AECI//	0	1	622	717	0.44%	45	2%	0	0%	1,764	61%	1075	37%
S/MEAG/DUK-JEA//	None	None	None	705	0.00%	116	4%	0	0%	0	0%	2768	96%
SS/GTC/GTC-SC//	0	263	278	691	0.41%	33	1%	8	0%	52	2%	2791	97%
SS/SOCO/SCEG-SOCO//	6	131	208	691	0.75%	74	3%	4	0%	0	0%	2806	97%
SS/GTC/FPC-SC//	None	None	None	680	0.00%	63	2%	0	0%	0	0%	2821	98%
S/MEAG/MEAG-SOCO//	2,401	2,601	2,825	674	0.04%	45	2%	0	0%	0	0%	2839	98%
SS/GTC/SOCO-GTC//	12,589	13,184	14,151	633	0.01%	38	1%	0	0%	0	0%	2846	99%
S/CPL/DUK-SCEG//	75	367	367	605	0.24%	52	2%	0	0%	0	0%	2832	98%
S/MEAG/FPC-SCEG//	None	None	None	558	0.00%	172	6%	0	0%	0	0%	2712	94%
SS/SOCO/SCEG-FL/MULTIPATHALIAS/	6	131	208	547	0.59%	90	3%	4	0%	0	0%	2790	97%
S/MEAG/SOCO-SC//	None	None	None	531	0.00%	63	2%	0	0%	0	0%	2821	98%
SS/SOCO/SOCO-SCEG//	0	89	149	522	0.76%	52	2%	3	0%	202	7%	2627	91%
SS/GTC/GTC-DUK//	0	382	511	505	0.20%	41	1%	0	0%	16	1%	2827	98%
S/DUK/SOCO-TVA//	92	692	692	499	0.10%	19	1%	2	0%	0	0%	2863	99%
SS/GTC/DUK-GTC//	38	432	630	499	0.17%	35	1%	0	0%	0	0%	2849	99%
SS/GTC/FPC-GTC//	0	366	662	397	0.15%	21	1%	0	0%	10	0%	2853	99%
SS/GTC/GTC-JEA//	369	927	1,324	355	0.05%	49	2%	0	0%	0	0%	2835	98%
S/CPL/DUK-TVA//	0	0	276	339	0.39%	13	0%	0	0%	1,628	56%	1243	43%
S/DUK/CPLE-CPLW//	4	454	454	339	0.11%	13	0%	0	0%	0	0%	2871	100%
S/TVA/CPLW-TVA//	0	1	276	300	0.35%	12	0%	0	0%	1,652	57%	1220	42%
SS/GTC/FPC-SCEG//	None	None	None	276	0.00%	32	1%	0	0%	0	0%	2852	99%
S/SC/CPLE-SOCO//	0	3,400	3,885	274	0.01%	22	1%	0	0%	2	0%	2860	99%
S/CPL/SCEG-CPLE//	0	622	622	261	0.06%	51	2%	0	0%	29	1%	2804	97%
S/MEAG/FPC-SOCO//	None	None	None	250	0.00%	49	2%	0	0%	0	0%	2835	98%
SS/GTC/GTC-MEAG//	9,493	9,924	9,999	230	0.00%	19	1%	0	0%	0	0%	2865	99%
S/MEAG/GTC-MEAG//	1,528	1,995	2,212	229	0.02%	18	1%	0	0%	0	0%	2866	99%
S/MEAG/JEA-MEAG//	0	86	141	220	0.36%	55	2%	1	0%	12	0%	2816	98%
S/DUK/DUK-TVA//	0	692	692	218	0.04%	67	2%	0	0%	8	0%	2809	97%
SS/GTC/SCEG-GTC//	21	72	114	208	0.41%	11	0%	13	0%	0	0%	2860	99%
S/MEAG/MEAG-SC//	0	56	59	206	0.52%	13	0%	12	0%	16	1%	2843	99%
S/MEAG/MEAG-JEA//	13	204	282	203	0.14%	36	1%	0	0%	0	0%	2848	99%
S/SCEG/SCEG-CPLE//	550	632	860	190	0.04%	38	1%	0	0%	0	0%	2846	99%
S/CPL/SC-CPLE//	0	1,506	2,791	189	0.02%	46	2%	0	0%	33	1%	2805	97%
S/MEAG/JEA-SC//	None	None	None	184	0.00%	40	1%	0	0%	0	0%	2844	99%
F/FPC/SOCO-TEC//	0	325	482	170	0.08%	17	1%	1	0%	168	6%	2698	94%
S/SC/SOCO-CPLE//	0	1,707	2,616	158	0.01%	37	1%	1	0%	164	6%	2682	93%
SS/GTC/SC-GTC//	65	119	179	154	0.18%	4	0%	3	0%	0	0%	2877	100%
S/DUK/DUK-CPLE//	0	3,227	4,455	133	0.01%	18	1%	0	0%	19	1%	2847	99%
S/SCEG/CPLE-SC//	149	377	459	129	0.05%	7	0%	0	0%	0	0%	2877	100%
SS/GTC/GTC-FPC//	369	927	1,324	119	0.02%	14	0%	0	0%	0	0%	2870	100%
S/SCEG/SOCO-SC//	0	1,178	4,209	93	0.01%	5	0%	0	0%	751	26%	2128	74%
S/CPL/DUK-SC//	0	2,222	3,966	91	0.01%	11	0%	0	0%	5	0%	2868	99%
S/MEAG/FPC-MEAG//	0	86	141	79	0.13%	20	1%	0	0%	12	0%	2852	99%
S/SCEG/CPLE-SOCO//	149	377	459	74	0.03%	13	0%	0	0%	0	0%	2871	100%
SS/SOCO/SC-FL/MULTIPATHALIAS/	171	314	469	73	0.03%	13	0%	0	0%	0	0%	2871	100%
S/SCEG/SOCO-CPLE//	0	632	860	71	0.02%	13	0%	0	0%	145	5%	2726	95%
SS/GTC/GTC-SCEG//	0	49	103	65	0.16%	6	0%	2	0%	222	8%	2654	92%
SS/GTC/JEA-GTC//	0	366	662	65	0.02%	24	1%	0	0%	10	0%	2850	99%
SS/GTC/GTC-TVA//	62	394	570	61	0.02%	6	0%	0	0%	0	0%	2878	100%
S/SC/DUK-SCEG//	800	3,681	3,887	59	0.00%	8	0%	0	0%	0	0%	2876	100%
SS/SOCO/SC-SOCO//	171	314	469	49	0.02%	3	0%	0	0%	0	0%	2881	100%
S/SCEG/DUK-SC//	0	140	332	48	0.05%	3	0%	3	0%	46	2%	2832	98%
SS/GTC/SOCO-SC//	None	None	None	46	0.00%	2	0%	0	0%	0	0%	2882	100%
S/SC/SC-SOCO//	0	3,230	3,885	43	0.00%	7	0%	0	0%	2	0%	2875	100%
SS/GTC/JEA-SC//	None	None	None	41	0.00%	10	0%	0	0%	0	0%	2874	100%
S/TVA/CPLW-LGEE//	0	1	276	39	0.05%	3	0%	0	0%	1,664	58%	1217	42%
S/MEAG/SC-MEAG//	5	24	38	37	0.22%	0	0%	7	0%	0	0%	2877	100%
S/DUK/SCEG-TVA//	92	650	650	36	0.01%	4	0%	0	0%	0	0%	2880	100%

Appendix A (continued)

Segment	ATC				Loading	Partially Used		Fully Used		Unavailable		Uncleared	
	Min	Median	Max	MWhs	Factor	Intervals	%	Intervals	%	Intervals	%	Intervals	%
S/MEAG/DUK-FPC//	None	None	None	31	0.00%	11	0%	0	0%	0	0%	2873	100%
S/SCEG/SCEG-DUK//	522	714	854	31	0.01%	7	0%	0	0%	0	0%	2877	100%
S/MEAG/SCEG-JEA//	None	None	None	30	0.00%	10	0%	0	0%	0	0%	2874	100%
S/MEAG/SOCO-FPC//	None	None	None	29	0.00%	9	0%	0	0%	0	0%	2875	100%
S/MEAG/SCEG-FPC//	None	None	None	24	0.00%	9	0%	0	0%	0	0%	2875	100%
S/SC/DUK-CPLE//	3,128	3,722	3,887	23	0.00%	5	0%	0	0%	0	0%	2879	100%
S/SCEG/SOCO-DUK//	0	713	854	22	0.00%	1	0%	0	0%	24	1%	2859	99%
S/MEAG/JEA-SOCO//	None	None	None	21	0.00%	6	0%	0	0%	0	0%	2878	100%
S/MEAG/JEA-DUK//	None	None	None	20	0.00%	9	0%	0	0%	0	0%	2875	100%
S/SC/SC-CPLE//	801	2,530	3,676	20	0.00%	4	0%	0	0%	0	0%	2880	100%
S/DUK/SCEG-SOCO//	450	650	650	17	0.00%	4	0%	0	0%	0	0%	2880	100%
S/MEAG/MEAG-DUK//	0	94	140	16	0.03%	4	0%	0	0%	35	1%	2845	99%
S/AECI/AECI-TVA//	0	0	476	15	0.02%	1	0%	0	0%	1,826	63%	1057	37%
S/TVA/AECI-SOCO//	0	1	409	15	0.09%	1	0%	0	0%	2,485	86%	398	14%
SS/GTC/TVA-GTC//	42	282	383	15	0.01%	1	0%	0	0%	0	0%	2883	100%
S/DUK/SC-SOCO//	677	2,100	2,335	14	0.00%	2	0%	0	0%	0	0%	2882	100%
S/MEAG/DUK-MEAG//	0	99	163	14	0.02%	2	0%	0	0%	16	1%	2866	99%
S/SC/SC-DUK//	41	2,707	3,813	14	0.00%	2	0%	0	0%	0	0%	2882	100%
S/CPL/SC-SCEG//	75	367	367	12	0.00%	1	0%	0	0%	0	0%	2883	100%
S/CPL/TVA-DUK//	0	0	276	11	0.01%	4	0%	0	0%	1,628	56%	1252	43%
S/DUK/CPLW-DUK//	0	885	1,243	11	0.00%	4	0%	0	0%	17	1%	2863	99%
S/TVA/TVA-CPLW//	0	1	276	11	0.01%	4	0%	0	0%	1,652	57%	1228	43%
S/MEAG/JEA-TVA//	None	None	None	10	0.00%	3	0%	0	0%	0	0%	2881	100%
S/MEAG/MEAG-GTC//	2,459	2,676	2,915	10	0.00%	1	0%	0	0%	0	0%	2883	100%
S/TVA/DUK-AECI//	0	1	366	10	0.01%	1	0%	0	0%	1,764	61%	1119	39%
SS/GTC/MEAG-SC//	None	None	None	10	0.00%	1	0%	0	0%	0	0%	2883	100%
SS/SOCO/DUK-TVA/MULTIPATHALIAS/	224	702	1,001	8	0.00%	2	0%	0	0%	0	0%	2882	100%
S/MEAG/SCEG-TVA//	None	None	None	7	0.00%	4	0%	0	0%	0	0%	2880	100%
SS/GTC/FPC-DUK//	None	None	None	7	0.00%	1	0%	0	0%	0	0%	2883	100%
S/MEAG/DUK-SC//	None	None	None	6	0.00%	1	0%	0	0%	0	0%	2883	100%
S/SC/CPLE-SCEG//	468	1,755	3,566	5	0.00%	2	0%	0	0%	0	0%	2882	100%
SS/GTC/FPC-TVA//	None	None	None	5	0.00%	2	0%	0	0%	0	0%	2882	100%
S/DUK/SC-TVA//	92	692	692	4	0.00%	1	0%	0	0%	0	0%	2883	100%
S/MEAG/JEA-SCEG//	None	None	None	4	0.00%	3	0%	0	0%	0	0%	2881	100%
S/MEAG/SC-JEA//	None	None	None	4	0.00%	1	0%	0	0%	0	0%	2883	100%
S/SC/SOCO-DUK//	0	2,209	2,636	4	0.00%	1	0%	0	0%	131	5%	2752	95%
SS/GTC/JEA-SCEG//	None	None	None	4	0.00%	1	0%	0	0%	0	0%	2883	100%
S/MEAG/SCEG-SOCO//	None	None	None	2	0.00%	1	0%	0	0%	0	0%	2883	100%
S/MEAG/SOCO-DUK//	None	None	None	2	0.00%	1	0%	0	0%	0	0%	2883	100%
SS/GTC/DUK-SC//	None	None	None	2	0.00%	1	0%	0	0%	0	0%	2883	100%
SS/GTC/SCEG-FPC//	None	None	None	2	0.00%	1	0%	0	0%	0	0%	2883	100%
SS/GTC/SCEG-JEA//	None	None	None	2	0.00%	1	0%	0	0%	0	0%	2883	100%
S/MEAG/GTC-SC//	None	None	None	1	0.00%	1	0%	0	0%	0	0%	2883	100%
F/FPC/FPC-FPC/FPC-FPCS/	2,689	3,426	3,876	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/FPC/FPC-GVL//	123	184	277	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/FPC/FPC-SEC/FPC-SSN/	500	843	1,128	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/FPC/GVL-FPC//	0	365	422	0	0.00%	0	0%	0	0%	8	0%	2876	100%
F/FPC/GVL-FPC/GVL-FPCS/	0	365	422	0	0.00%	0	0%	0	0%	8	0%	2876	100%
F/FPC/GVL-SEC/GVL-SSN/	227	368	418	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/FPC/GVL-SOCO//	0	164	285	0	0.00%	0	0%	0	0%	768	27%	2116	73%
F/FPC/GVL-TEC//	0	369	418	0	0.00%	0	0%	0	0%	8	0%	2876	100%
F/FPC/SEC-FPC/SSN-FPC/	0	356	1,211	0	0.00%	0	0%	0	0%	40	1%	2844	99%
F/FPC/SEC-FPC/SSN-FPCS/	0	356	1,211	0	0.00%	0	0%	0	0%	40	1%	2844	99%
F/FPC/SEC-FPC/SSO-FPC/	219	557	922	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/FPC/SEC-FPC/SSO-FPCS/	219	557	922	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/FPC/SEC-GVL/SSN-GVL/	0	159	269	0	0.00%	0	0%	0	0%	20	1%	2864	99%
F/FPC/SEC-GVL/SSO-GVL/	123	183	278	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/FPC/SEC-SEC/SSO-SSN/	386	699	895	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/FPC/SEC-SOCO/SSN-SOCO/	0	130	285	0	0.00%	0	0%	0	0%	788	27%	2096	73%
F/FPC/SEC-SOCO/SSO-SOCO/	0	164	285	0	0.00%	0	0%	0	0%	768	27%	2116	73%

Appendix A (continued)

Segment	ATC				Loading	Partially Used		Fully Used		Unavailable		Uncleared	
	Min	Median	Max	MWhs	Factor	Intervals	%	Intervals	%	Intervals	%	Intervals	%
F/FPC/SEC-TEC/SSN-TEC/	0	401	1,501	0	0.00%	0	0%	0	0%	24	1%	2860	99%
F/FPC/SEC-TEC/SSO-TEC/	268	699	895	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/FPC/SOCO-FPC/SOCO-FPCS/	0	325	482	0	0.00%	0	0%	0	0%	168	6%	2716	94%
F/FPC/SOCO-GVL//	0	168	259	0	0.00%	0	0%	0	0%	160	6%	2724	94%
F/FPC/SOCO-SEC/SOCO-SSN/	0	325	482	0	0.00%	0	0%	0	0%	160	6%	2724	94%
F/FPC/TEC-FPC/TEC-FPCS/	1,040	2,439	3,216	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/FPC/TEC-GVL//	123	184	278	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/FPC/TEC-SEC/TEC-SSN/	500	843	1,135	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/JEA/JEA-SEC/JEA-SSN/	7	518	518	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/JEA/SEC-JEA/SSN-JEA/	0	251	487	0	0.00%	0	0%	0	0%	794	28%	2090	72%
F/JEA/SEC-SOCO/SSN-SOCO/	0	356	637	0	0.00%	0	0%	0	0%	20	1%	2864	99%
F/JEA/SOCO-SEC/SOCO-SSN/	0	502	502	0	0.00%	0	0%	0	0%	12	0%	2872	100%
F/SEC/FPC-JEA//	0	401	637	0	0.00%	0	0%	0	0%	28	1%	2856	99%
F/SEC/FPC-SEC/FPC-SSN/	500	843	1,128	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/SEC/JEA-FPC//	0	637	637	0	0.00%	0	0%	0	0%	16	1%	2868	99%
F/SEC/JEA-SEC/JEA-SSN/	0	637	637	0	0.00%	0	0%	0	0%	4	0%	2880	100%
F/SEC/SEC-FPC/SSN-FPC/	0	356	1,211	0	0.00%	0	0%	0	0%	40	1%	2844	99%
F/SEC/SEC-FPC/SSO-FPC/	219	557	922	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/SEC/SEC-JEA/SSN-JEA/	0	401	637	0	0.00%	0	0%	0	0%	28	1%	2856	99%
F/SEC/SEC-TEC/SSO-TEC/	208	696	729	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/SEC/TEC-FPC//	289	585	729	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/SEC/TEC-SEC/TEC-SSO/	330	525	729	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/TEC/SEC-FPC/SSO-FPC/	208	650	729	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/TEC/SEC-TEC/SSO-TEC/	208	650	729	0	0.00%	0	0%	0	0%	0	0%	2884	100%
F/TEC/TEC-SEC/TEC-SSO/	330	525	729	0	0.00%	0	0%	0	0%	0	0%	2884	100%
P/LGEE/LGEE-TVA//	0	1,623	1,623	0	0.00%	0	0%	0	0%	73	3%	2811	97%
S/CPL/CPLW-DUK//	11	798	1,257	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/CPL/CPLW-TVA//	0	0	276	0	0.00%	0	0%	0	0%	1,631	57%	1253	43%
S/CPL/DUK-CPLW//	0	469	469	0	0.00%	0	0%	0	0%	24	1%	2860	99%
S/CPL/SC-DUK//	148	2,146	4,097	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/CPL/SCEG-DUK//	62	622	622	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/CPL/SCEG-SC//	510	622	622	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/CPL/TVA-CPLW//	0	0	276	0	0.00%	0	0%	0	0%	1,628	56%	1256	44%
S/DUK/CPLE-DUK//	0	3,050	5,747	0	0.00%	0	0%	0	0%	17	1%	2867	99%
S/DUK/CPLE-SC//	0	1,811	2,811	0	0.00%	0	0%	0	0%	5	0%	2879	100%
S/DUK/CPLE-SCEG//	0	142	168	0	0.00%	0	0%	0	0%	1	0%	2883	100%
S/DUK/CPLW-CPLE//	0	904	1,243	0	0.00%	0	0%	0	0%	36	1%	2848	99%
S/DUK/CPLW-SC//	0	901	1,243	0	0.00%	0	0%	0	0%	5	0%	2879	100%
S/DUK/CPLW-SCEG//	0	142	168	0	0.00%	0	0%	0	0%	1	0%	2883	100%
S/DUK/CPLW-SOCO//	351	940	1,243	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/DUK/CPLW-TVA//	0	692	692	0	0.00%	0	0%	0	0%	3	0%	2881	100%
S/DUK/DUK-CPLW//	0	454	454	0	0.00%	0	0%	0	0%	3	0%	2881	100%
S/DUK/SC-CPLE//	0	2,331	2,901	0	0.00%	0	0%	0	0%	33	1%	2851	99%
S/DUK/SC-CPLW//	4	454	454	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/DUK/SC-DUK//	0	1,841	2,901	0	0.00%	0	0%	0	0%	17	1%	2867	99%
S/DUK/SCEG-CPLE//	0	650	650	0	0.00%	0	0%	0	0%	25	1%	2859	99%
S/DUK/SCEG-CPLW//	4	454	454	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/DUK/SCEG-DUK//	0	650	650	0	0.00%	0	0%	0	0%	17	1%	2867	99%
S/DUK/SCEG-SC//	450	650	650	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/DUK/SC-SCEG//	0	142	168	0	0.00%	0	0%	0	0%	1	0%	2883	100%
S/DUK/SOCO-CPLW//	0	454	454	0	0.00%	0	0%	0	0%	5	0%	2879	100%
S/DUK/TVA-CPLE//	0	692	692	0	0.00%	0	0%	0	0%	27	1%	2857	99%
S/DUK/TVA-CPLW//	4	454	454	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/DUK/TVA-SC//	0	692	692	0	0.00%	0	0%	0	0%	5	0%	2879	100%
S/DUK/TVA-SCEG//	0	142	168	0	0.00%	0	0%	0	0%	1	0%	2883	100%
S/DUK/TVA-SOCO//	132	692	692	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/MEAG/MEAG-FPC//	13	204	282	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/MEAG/MEAG-SCEG//	0	10	22	0	0.00%	0	0%	0	0%	192	7%	2692	93%
S/MEAG/MEAG-TVA//	55	105	121	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/MEAG/SCEG-MEAG//	5	15	29	0	0.00%	0	0%	0	0%	0	0%	2884	100%

Appendix A (continued)

Segment	ATC				Loading	Partially Used		Fully Used		Unavailable		Uncleared	
	Min	Median	Max	MWhs	Factor	Intervals	%	Intervals	%	Intervals	%	Intervals	%
S/MEAG/TVA-MEAG//	21	60	101	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/SC/CPLE-DUK//	3,483	3,648	4,242	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/SC/DUK-SOCO//	1,443	3,400	3,766	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/SC/SCEG-CPLE//	664	1,897	3,070	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/SC/SCEG-DUK//	52	3,054	3,180	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/SC/SCEG-SOCO//	0	2,567	3,139	0	0.00%	0	0%	0	0%	2	0%	2882	100%
S/SC/SC-SCEG//	2,346	3,884	9,283	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/SCEG/CPLE-DUK//	149	377	459	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/SCEG/DUK-CPLE//	0	140	332	0	0.00%	0	0%	0	0%	14	0%	2870	100%
S/SCEG/DUK-SOCO//	0	140	332	0	0.00%	0	0%	0	0%	14	0%	2870	100%
S/SCEG/SC-CPLE//	550	632	860	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/SCEG/SC-DUK//	522	714	854	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/SCEG/SC-SOCO//	1,148	4,914	6,320	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/TVA/AECI-CPLW//	0	1	276	0	0.00%	0	0%	0	0%	2,485	86%	399	14%
S/TVA/AECI-DUK//	0	1	380	0	0.00%	0	0%	0	0%	2,485	86%	399	14%
S/TVA/AECI-LGEE//	0	1	409	0	0.00%	0	0%	0	0%	2,485	86%	399	14%
S/TVA/AECI-TVA//	0	1	409	0	0.00%	0	0%	0	0%	2,485	86%	399	14%
S/TVA/CPLW-AECI//	0	1	276	0	0.00%	0	0%	0	0%	1,768	61%	1116	39%
S/TVA/CPLW-DUK//	0	1	276	0	0.00%	0	0%	0	0%	1,652	57%	1232	43%
S/TVA/CPLW-SOCO//	0	1	276	0	0.00%	0	0%	0	0%	1,652	57%	1232	43%
S/TVA/DUK-CPLW//	0	1	276	0	0.00%	0	0%	0	0%	1,652	57%	1232	43%
S/TVA/DUK-SOCO//	36	366	366	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/TVA/LGEE-AECI//	0	1	622	0	0.00%	0	0%	0	0%	1,764	61%	1120	39%
S/TVA/LGEE-CPLW//	0	1	276	0	0.00%	0	0%	0	0%	1,664	58%	1220	42%
S/TVA/LGEE-DUK//	0	380	380	0	0.00%	0	0%	0	0%	8	0%	2876	100%
S/TVA/LGEE-SOCO//	0	2,828	2,828	0	0.00%	0	0%	0	0%	12	0%	2872	100%
S/TVA/LGEE-TVA//	0	2,828	2,828	0	0.00%	0	0%	0	0%	83	3%	2801	97%
S/TVA/SOCO-CPLW//	0	1	276	0	0.00%	0	0%	0	0%	1,652	57%	1232	43%
S/TVA/SOCO-DUK//	180	380	380	0	0.00%	0	0%	0	0%	0	0%	2884	100%
S/TVA/TVA-AECI//	0	1	622	0	0.00%	0	0%	0	0%	1,756	61%	1128	39%
SS/GTC/GTC-GTC//	25,135	25,435	25,835	0	0.00%	0	0%	0	0%	0	0%	2884	100%
SS/GTC/MEAG-GTC//	8,499	8,574	9,005	0	0.00%	0	0%	0	0%	0	0%	2884	100%
SS/SOCO/DUK-SC/MULTIPATHALIAS/	0	244	486	0	0.00%	0	0%	0	0%	34	1%	2850	99%
SS/SOCO/DUK-SCEG/MULTIPATHALIAS/	0	89	149	0	0.00%	0	0%	0	0%	202	7%	2682	93%
SS/SOCO/SC-DUK/MULTIPATHALIAS/	171	314	469	0	0.00%	0	0%	0	0%	0	0%	2884	100%
SS/SOCO/SCEG-DUK/MULTIPATHALIAS/	6	131	208	0	0.00%	0	0%	0	0%	0	0%	2884	100%
SS/SOCO/SCEG-SC/MULTIPATHALIAS/	0	122	208	0	0.00%	0	0%	0	0%	34	1%	2850	99%
SS/SOCO/SCEG-TVA/MULTIPATHALIAS/	6	131	208	0	0.00%	0	0%	0	0%	0	0%	2884	100%
SS/SOCO/SC-SCEG/MULTIPATHALIAS/	0	89	149	0	0.00%	0	0%	0	0%	202	7%	2682	93%
SS/SOCO/SC-TVA/MULTIPATHALIAS/	171	314	469	0	0.00%	0	0%	0	0%	0	0%	2884	100%
SS/SOCO/TVA-DUK/MULTIPATHALIAS/	213	584	813	0	0.00%	0	0%	0	0%	0	0%	2884	100%
SS/SOCO/TVA-FL/MULTIPATHALIAS/	617	1,138	1,545	0	0.00%	0	0%	0	0%	0	0%	2884	100%
SS/SOCO/TVA-SC/MULTIPATHALIAS/	0	244	486	0	0.00%	0	0%	0	0%	34	1%	2850	99%
SS/SOCO/TVA-SCEG/MULTIPATHALIAS/	0	89	149	0	0.00%	0	0%	0	0%	202	7%	2682	93%