ANNUAL AUDIT REPORT ON THE SOUTHEAST ENERGY EXCHANGE MARKET

Prepared by:



Independent Market Auditor

June 2, 2025

POTOMAC ECONOMICS

Contents

I. Overview 2

II. Market Operation Screens 4

III. Market Activity 6

A. Trading and Liquidity 6
B. Market Concentration 11
C. SEEM Prices 13
D. Network Usage 14

IV. Conclusions and Recommendations 18

I. OVERVIEW

This is the 2024 Annual Auditor report on the Southeast Energy Exchange Market (SEEM). This report covers activity in 2024 and also includes some observations on the first quarter of 2025. SEEM is a regional energy market that centrally clears bilateral trades every 15 minutes using a transmission service designed for SEEM called Non-Firm Energy Exchange Transmission Service (NFEETS). SEEM began operating in November 2022 and currently has 24 members.[1]

Trading Highlights:

- Trading volumes increased in 2024 to 1,055,000 from 703,000 MWh in 2023.
- The monthly average volume of cleared trades was 88,000 MWh (compared to 58,000 MWh in 2023).
- November had the highest monthly trade volume at 121,000 MWh, which was an all-time high (recently exceeded in March 2025 at 125,000 MWh.)
- SEEM volumes indicate a distinct upward trend over time.

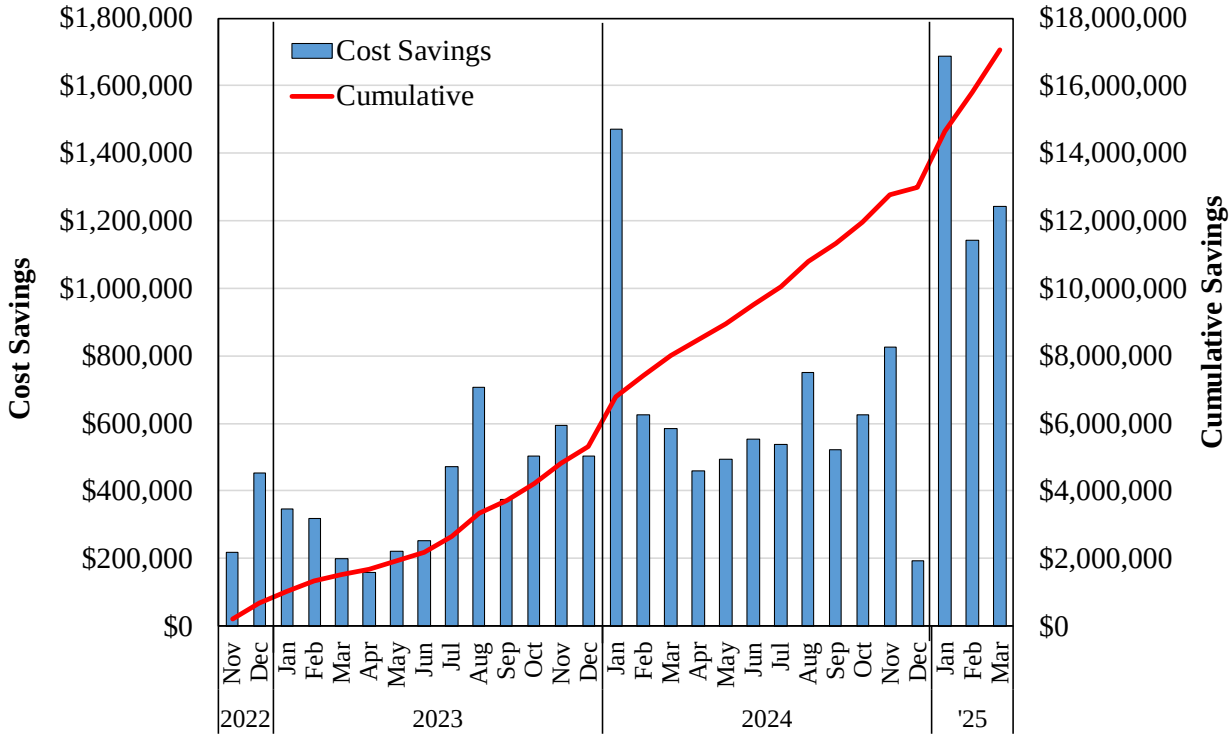
About 15,000 MWh – 20,000 MWh of potential economic exchanges are left uncleared each month. These are likely due mainly to costs of transmission losses and, to a lesser extent, participant-specific constraints, or transmission constraints. Our evaluation of transmission availability supports the conclusion that transmission constraints have not significantly affected SEEM trading. Considering all intervals and segments, less than seven percent of the interval-segments showed zero availability.

Trades clearing in SEEM offer participants the ability to reduce output from higher-cost resources and replace it with lower-cost ones. Cumulative production cost savings since market inception are approximately $17 million, at least.[2] Figure 1 shows the (lower bound of) estimated production cost savings for each month since SEEM inception. The red line shows the cumulative savings.

[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.

[2] 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 slightly lowering bids and raising offers in an attempt to get a split closer to their counterparty's bid or offer.

Figure 1: Monthly Production Cost Savings



According to the Auditing Process under the SEEM Market Rules (Section VI.D) our auditing duties fall into two general areas:

(1) analyzing SEEM inputs, constraints, and matching results; and

(2) responding to certain inquiries and reporting on the SEEM operation and outcomes.

Our annual Report reviews the results of our auditing activity from 2024, including some results from the first quarter of 2025. In section II, we review our findings with regard to auditing inputs, constraints, and transactions. Our screening involves daily data transfer and storage architecture that receives SEEM data to support a range of screens. During 2024, we applied the screens daily and found that in all intervals the screens have indicated that the SEEM requirements have been satisfied.

In section III, we review the SEEM outcomes from an overall market perspective, evaluating both trends in trading and use of transmission service. This is a clear trend of increasing trading volumes since the inception of the market.

In Section IV, we present our conclusions and recommendations. We discuss improvements that we recommend SEEM consider for both the near-term improvement of the current market, as well as potential long-term expansions of the SEEM market.

II. MARKET OPERATION SCREENS

We audit SEEM by calculating screens, metrics, and other analyses on a daily basis using market data and other data to verify bids and offers, evaluate matches, and verify SEEM constraints. These screens are based on specific requirements in the Auditing Process in the SEEM Market Rules. These are in three categories and are as follows:

Daily Screens

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).

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;
- Matches must not violate any participant-specific constraints;
- SEEM benefit calculation must be verified;
- Any maximum offer price declared must bind the transaction; and
- Each match must have a NERC Tag.

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.

Most of these screens are evaluated daily on an automated basis. In 2024, these screens successfully evaluated the various data elements and calculations and revealed no issues with the operation of SEEM.

The network map audit screen is evaluated monthly. We used this monthly screen to detect any changes during the month. Except for the addition of Florida participants in July, the map did not change over the course of 2024. This map was created through a lengthy technical process used by SEEM and the SEEM members at the outset of the SEEM deployment and when the Florida participants were added. This has not changed since the addition of Florida participant, and so we conclude the network map is accurate for the current sources and sinks participating in SEEM.

We also evaluate changes to participant-specific constraints. We check for any changes in excluded sellers or buyers, any max price constraints, and identify any constraints that changed during the month. From month to month in 2024, there were minor changes to these participant-specific constraints to manage trading partners.

Overall, our screens and other monitoring of the SEEM market indicate that the SEEM market operated as expected, in compliance with the SEEM rules and tariff provisions.

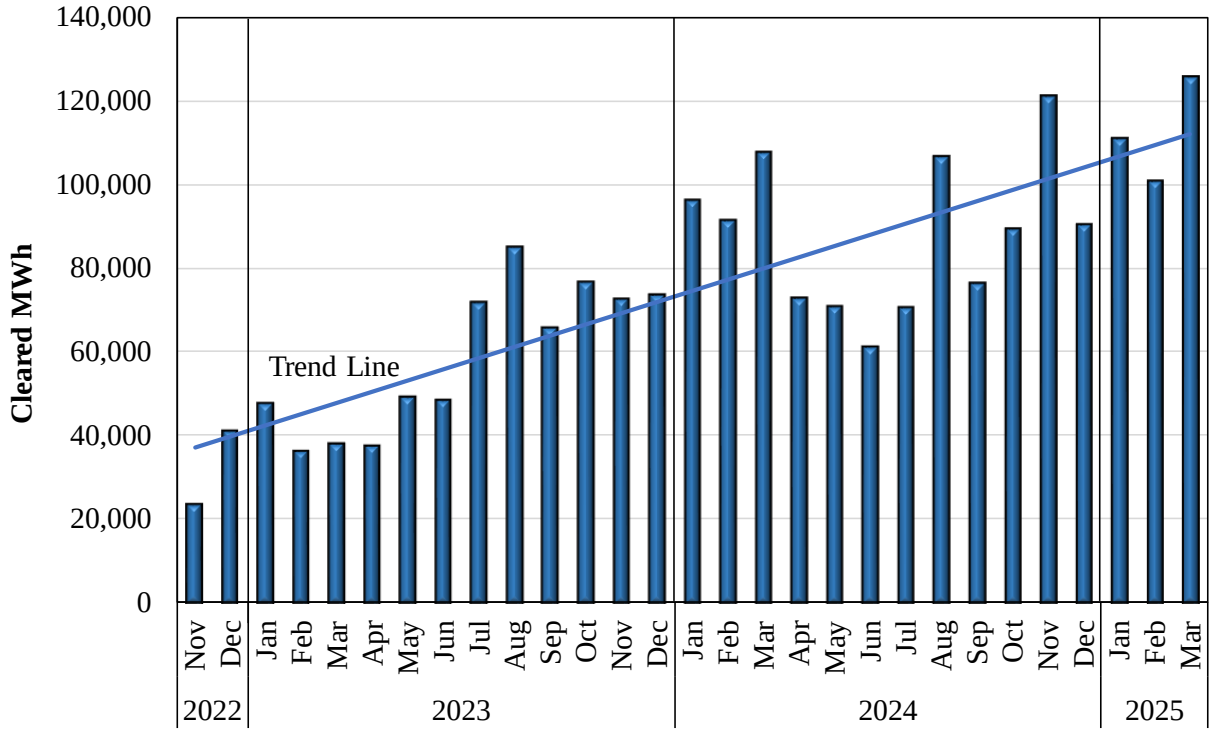
III. MARKET ACTIVITY

In this section, we review SEEM operations and outcomes in 2024 to discuss potential operating or market issues. This includes an overall review of the market trading, including volumes, prices, and characteristics of participation, and an evaluation of network usage, focusing on the key transmission paths and constraints.

A. Trading and Liquidity

SEEM cleared 1,055 GWh of energy in 2024, compared to 704 GWh in 2023. This year-over-year increase is part of an overall upward trend in volumes since the opening in November 2022. Figure 2 shows the monthly volumes of cleared trades from November 2022 to March 2025. We include an estimated linear trend line which shows a clear upward trend. This is a favorable development that indicates increased interest and confidence in the market.

Figure 2: Volume of Cleared Trades
November 2022 – March 2025



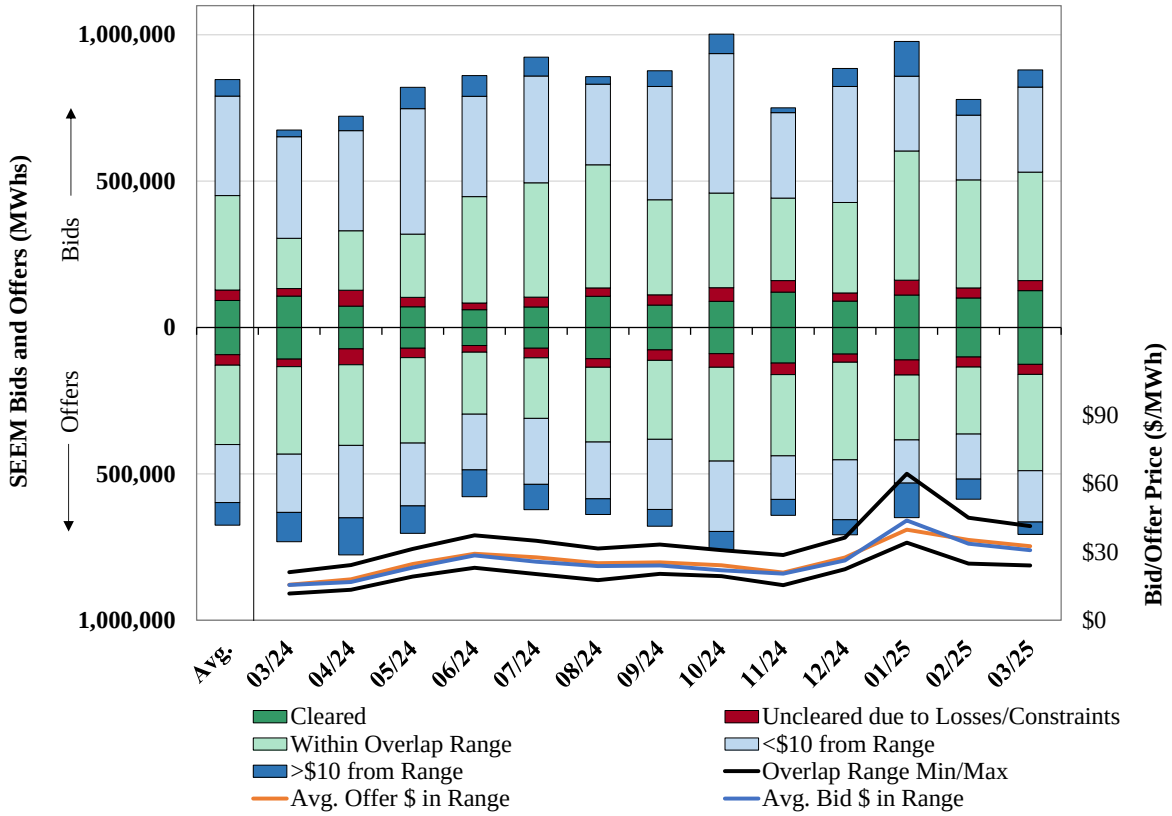
In our next analysis, in Figure 3, we show the monthly total activity in the SEEM market, including both cleared and uncleared bids and offers. The purpose is to summarize the trends in market liquidity. The dark green bars are the cleared bids and offers. The rest of the bar segments are various categories 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.

- 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.

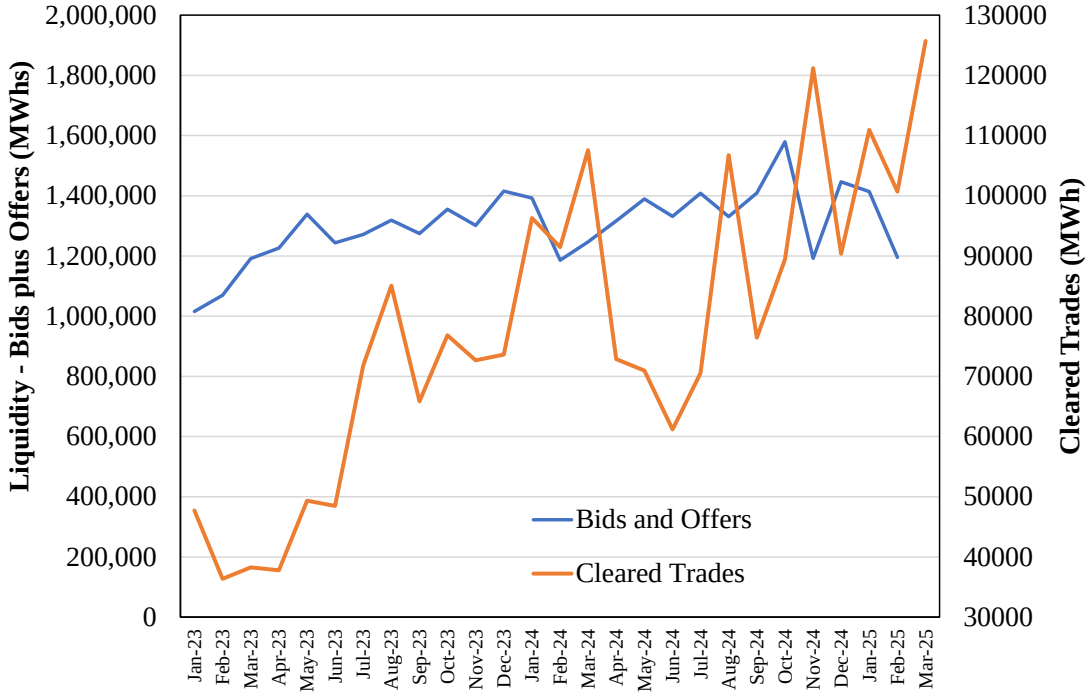
Because the uncleared bids and offers in the blue bars are unlikely to clear, a movement of these quantities closer to the expected clearing range signals an improvement in market liquidity.

Figure 3: Bid and Offer Evaluation



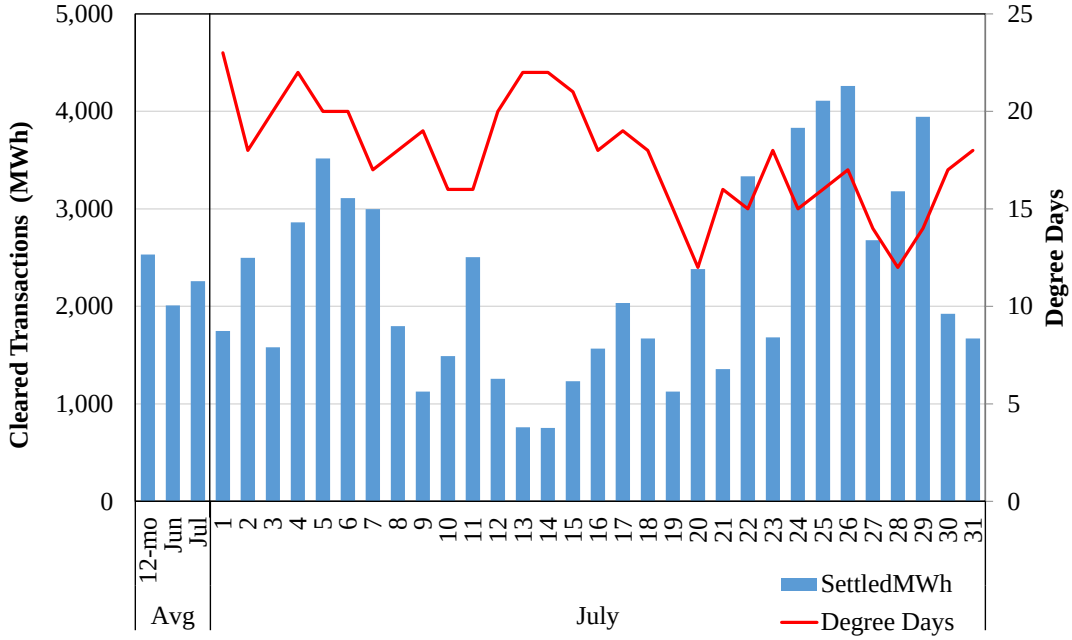
The bars in Figure 3 can be converted to total magnitude in order to create a rough measure of liquidity (bids plus offers). We then can compare this to cleared trades to assess market development. This is shown in Figure 4. The figure shows liquidity (bids and offers) is relatively steady, while cleared trades show a definite uptrend. This suggests offers and bids are converging to levels more likely to clear, which is positive for market performance.

Figure 4: Liquidity and Trades



In 2024, we began reporting on the tendency of cleared trade volumes to decline during extreme temperature events. For example, Figure 5 shows an evaluation for July comparing cleared trades with Degree Days (DD), which are correlated with the demand for heating and cooling.[3]

Figure 5: Cleared Transactions and Demand



3 Degree days are the difference between the daily temperature mean 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***.

Figure 5 shows that the above average temperatures in mid-July and the elevated DDs were coincident with declining trade volumes, as we have observed at other times in the past. We measured the correlation coefficient and found a negative and statistically significant relationship[4] between Degree Days and traded volumes. In the other few months when extreme conditions arose, we had found mixed results -- a negative correlation, but not always a statistically significant relationship between trades and DD.

In conjunction with examining trade volumes and DD, we began reporting on multi-month time series and included other potential market relationships. These results provide insight into the performance of the SEEM market. Table 1 shows the results for the period January 2024 to March 2025. As shown in the table, extending the time period over months without extreme events, there is not a statistical significance between DD and trades, although the correlation value is negative. (see row 1 of the table). Other entries in Table 1 provide useful insight.

Table 1: Market Correlation Statistics
January 2024 – March 2025

		Correlation Coefficients		
		Degree Days	Price	
1	Trade Volume	0.023	0.108	*
	p value	0.656	0.035	
2	Offer Volume	-0.392	-0.160	
	p value	0.000	0.002	
3	Bid Volume	0.265	0.074	
	p value	0.000	0.150	
4	Price	0.262		
	p value	0.000		

Note: Highlighted values are statistically significant at 99% level, except *, which dentoes significant at 95% level.

The Table shows the correlation statistics between market activity (Trades, Offers, and Bids) and DD and Price. Over the five quarters of data evaluated, trade volumes and DD were not statistically correlated. As discussed above, in some months when extreme events occurred, there was a negative correlation, but this correlation is not sustained over all time periods. The second entry in Row 1 shows Trade Volume is positively correlated with clearing prices. This clearing

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

price is an equilibrium price, determined by supply (offers) and demand (bids). A higher clearing price together with a higher cleared trade volume, as the correlation indicates, means the demand curve has shifted and participation by buyers is increasing.

Row 2 in the Table shows a statistically significant negative correlation between supply offers and DD. There are two competing forces likely at work here -- with higher system demand (DD), one might expect more supply to respond. However, high demand can reduce supply as the utilization of resources increases -- high DD days can create tight operating conditions and a reduction in unutilized supply, thus reducing capacity available for economy trades in SEEM. 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 tend to decrease.

Row 3 shows a positive correlation between Bid Volume and DD price, as expected from economic theory because higher system demand will result in more participants seeking power supplies. The second entry shows a positive correlation between Bid Volume and price is consistent with market economics – c*eteris paribus*, an increase in demand should in theory raise prices. However, the data is not statistically significant over the time period.

The correlation matrix in the table also reports a positive correlation between price and DD, something that is also expected from economics: higher overall demand tends to result in higher prices. Overall, the statistics suggest generally the market is performing as expected according to economics.

Next, we present data to provide additional insight into the extent to which losses and constraints have prevented economic transactions from clearing. Figure 6 shows the disposition of all economic bids and offers (i.e., those for which an economic counterparty was available). The blue bars show the economic bids and offers that were matched and cleared, while the transparent bars show those that did not clear because of the costs of losses, transmission constraints or other constraints. The figure shows bid-offer pairs in tranches by the price spread. This is important because it allows us to infer why transactions likely did not clear as the output of the clearing software provides no information on the reasons why transactions did not clear.

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 and some less. Therefore, in the inset table, we divide totals between bid-offer spreads above and below $3 per MWh. Those below $3 are very likely to have not cleared because of the costs of losses, while most of those that did not clear at spreads above $3 likely did not clear because of transmission constraints or participant constraints.

Figure 6: Cleared and Uncleared Economic Bids and Offers
2024

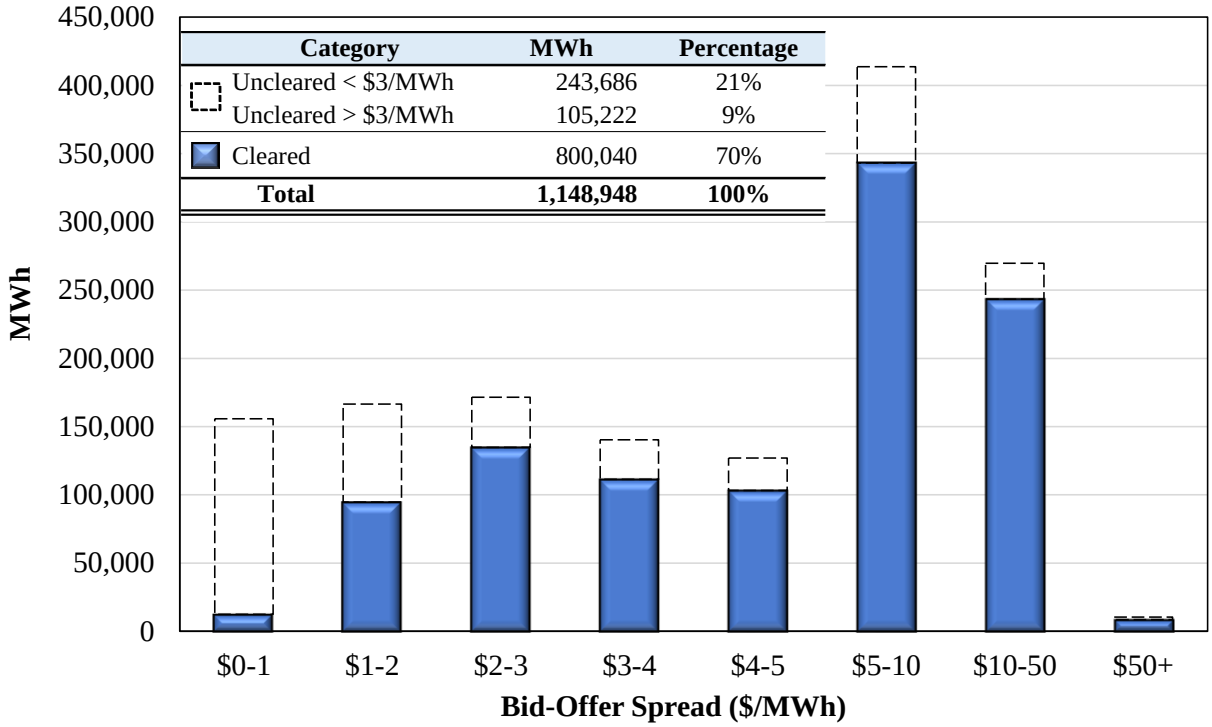


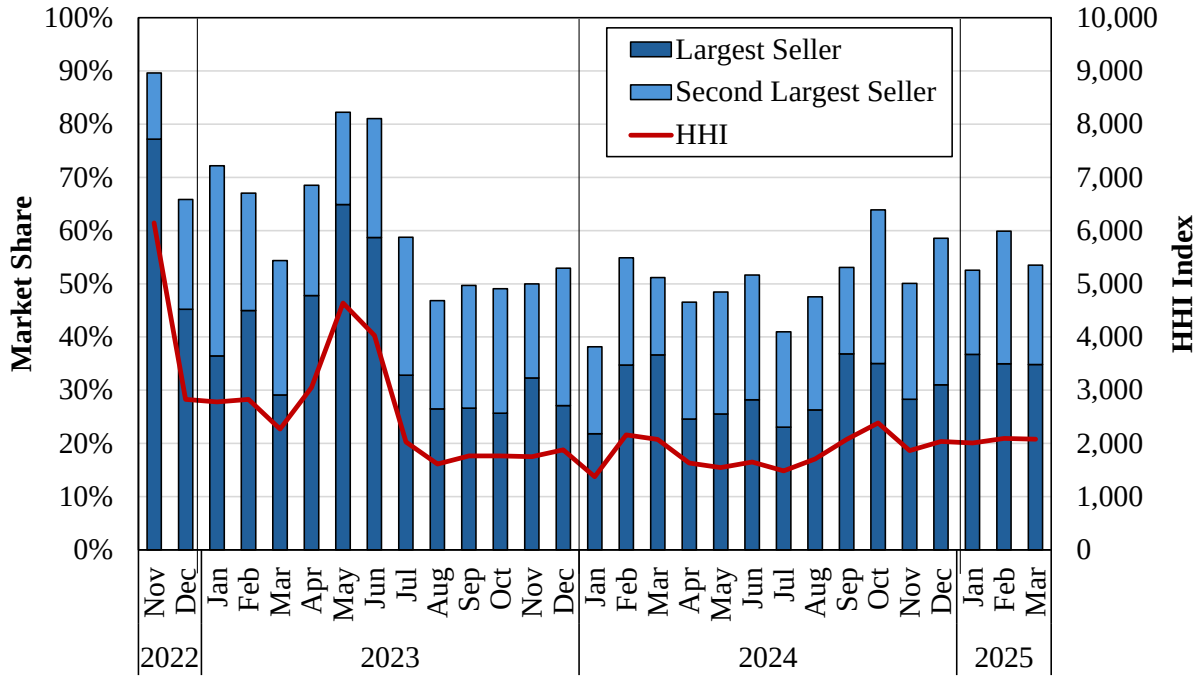
Figure 6 shows that over the entire period roughly 70 percent of the economic transactions cleared. It also shows that the costs of transmission losses were likely the most significant factor that prevented transactions from clearing, because most of the uncleared economic transactions were those with spreads less than $3 per MWh.

B. Market 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 7 shows the monthly share of matched transactions 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 7 shows that 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. Hence, expanding the participation in SEEM has increased liquidity and decreased

Figure 7: Seller Market Share Statistics
November 2022 – March 2025

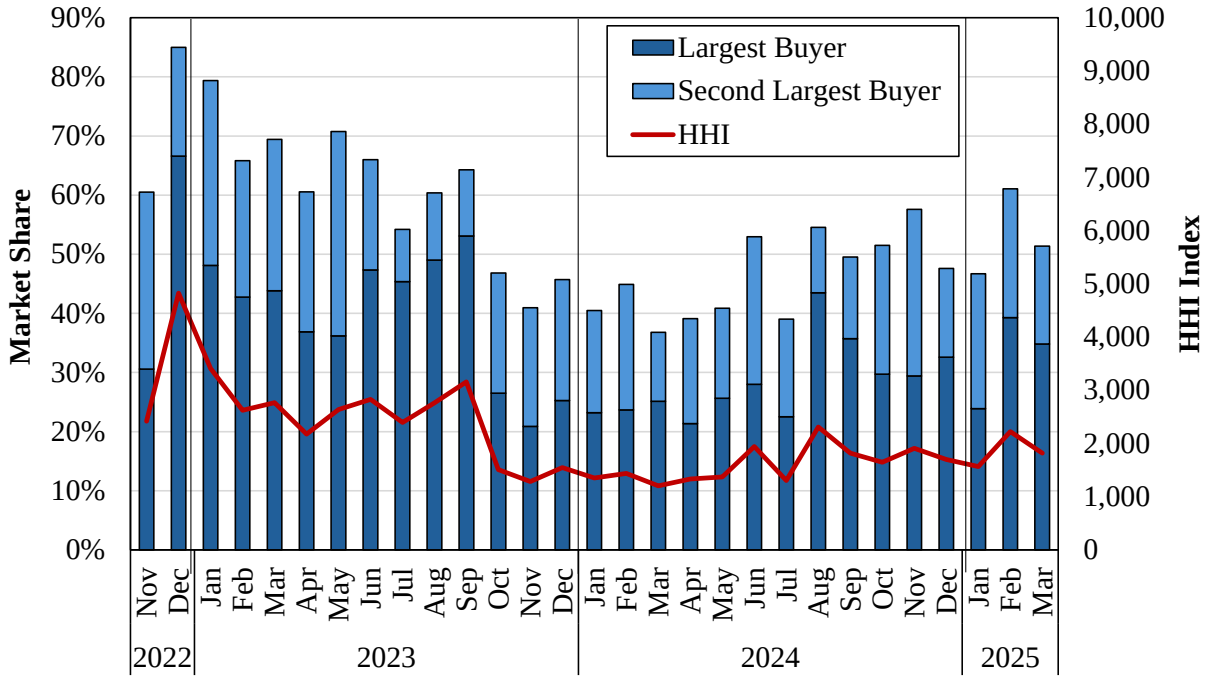


The figure also shows that the HHI has declined. The HHI is a measure of market concentration and is used to determine market competitiveness, often on a relative basis over time or as a result of structural changes like a merger or divestiture. It is calculated by squaring the market share of each firm 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 0. 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 July 2023 and has remained close to 2000. Although this is in the highly concentrated range, it has been falling and the correlation of prices with fuel prices indicates that the market has performed competitively. Figure 8 shows the buyer concentration.

Figure 8: Buyer Market Share Statistics
November 2022 – March 2024



The statistics show a trend similar to the seller market shares. 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.

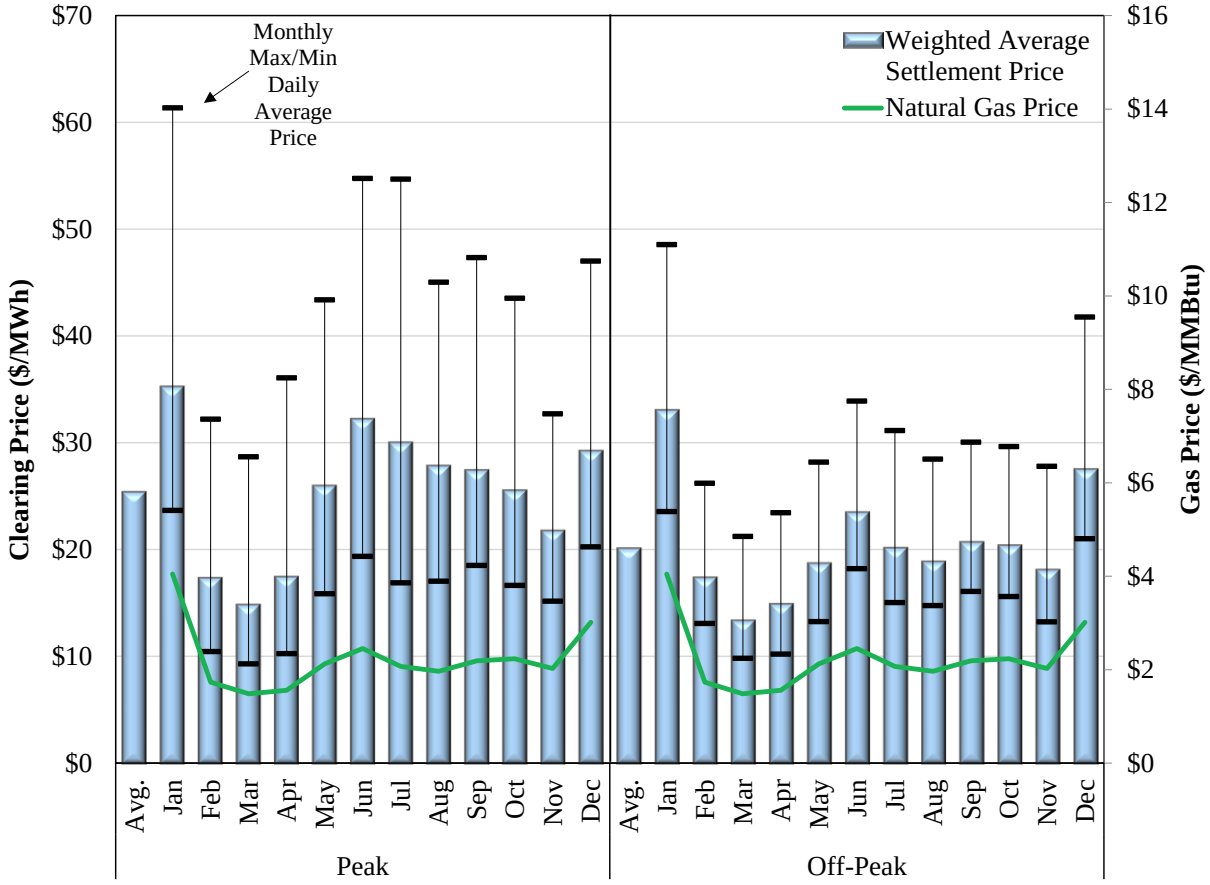
C. SEEM Prices

In this subsection, we report on pricing in the SEEM market. Figure 9 shows 2024 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 most hours. This supports the conclusion that the SEEM market has generally performed competitively since generators in a competitive market will face incentives to offer power at their marginal costs of producing it.

The superimposed "whisker lines" over the bars show the range of daily average prices in each month. The top of the lines is the highest daily average price during the month. The variation in prices throughout SEEM, which influences the variation in daily prices, is strongly influenced by the locational value of available resources.

Figure 9: Monthly Clearing Prices and Natural Gas Costs



Indeed, we calculated the weighted average price on all segments used in SEEM and we found a wide variance in the prices for transactions clearing over different segments. Ignoring segments that had no trades, the average price was about $23/MWh for all segments. However, the average prices by segment ranged from $9/MWh and $61/MWh. This shows that the value of transactions can vary significantly by path, mainly because transmission constraints can contribute to higher prices at different locations. If a constraint prevents higher total flows (economic trades) between two areas, the average price will be higher than if sufficient transmission capability was available to allow all economic trades to clear between the areas.

D. Network Usage

In this subsection, we report on the usage of the SEEM transmission network. We evaluate SEEM transactions by segment to illuminate the system usage and availability. Segments are used by themselves or combined with connecting segments to form larger paths for trading. Most segments have an Available Transmission Capability ("ATC") value that determines how much power can be transferred over the segment. We gathered ATC and trading statistics for all SEEM segments available to the model. There are 270 unique segments used in SEEM that have ATC

values. There are 81 segments used in 2024 that did not have ATC values, meaning they were available on an unlimited basis.[5] There were 8 segments that were not used at all.

Table 2 shows the top 25 segments scheduled during 2024, including, if applicable, the median, maximum, and minimum ATC values over all intervals, as well as the total MWh that cleared over each segment. Segments without ATC include only cleared MWh. For segments with ATC, 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. We also calculate how each segment was utilized by interval during the period, *to wit*, the interval was either:[6]

(1) Partially used (MWs cleared were less than ATC or there was no ATC);

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

(3) Unavailable, no ATC; and

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

Table 2: Statistics for the Most Utilized SEEM Segments
2024

	Segment	ATC			MWhs	Loading Factor	Partially Used		Fully Used		Unavailable		Uncleared	
		Min	Median	Max			Intervals	%	Intervals	%	Intervals	%	Intervals	%
1	F/FPC/FPC-SOCO//	0	172	370	270,616	20.05%	9,249	*26%*	2,165	*6%*	8,778	*25%*	14944	*43%*
2	F/TEC/TEC-FPC//	0	2,377	3,510	168,809	0.87%	12,642	*36%*	0	*0%*	92	*0%*	22402	*64%*
3	SS/SOCO/FL-SOCO//	-5	656	1,684	144,779	2.35%	9,904	*28%*	5	*0%*	298	*1%*	24929	*71%*
4	F/FPC/TEC-SOCO//	0	172	370	116,515	8.64%	8,723	*25%*	621	*2%*	8,774	*25%*	17018	*48%*
5	S/SC/SOCO-SC//	0	757	2,491	107,025	1.48%	6,649	*19%*	171	*0%*	6,393	*18%*	21923	*62%*
6	F/JEA/SOCO-JEA//	0	600	959	99,410	1.99%	13,792	*39%*	52	*0%*	520	*1%*	20772	*59%*
7	SS/SOCO/TVA-SOCO//	0	1,087	1,673	85,206	0.85%	2,653	*8%*	0	*0%*	175	*0%*	32308	*92%*
8	S/TVA/SOCO-TVA//	0	3,322	4,940	80,030	0.30%	2,926	*8%*	1	*0%*	812	*2%*	31397	*89%*
9	S/TVA/TVA-SOCO//	0	3,873	5,000	79,983	0.24%	2,387	*7%*	0	*0%*	348	*1%*	32401	*92%*
10	SS/SOCO/FL-TVA/MULTIPATHALIAS/	-45	647	1,684	63,820	1.05%	3,026	*9%*	1	*0%*	351	*1%*	31758	*90%*
11	SS/SOCO/SOCO-SOCO//	0	44,230	44,230	58,633	0.02%	3,420	*10%*	0	*0%*	175	*0%*	31541	*90%*
12	S/CPL/CPLE-DUK//	0	5,374	8,047	56,864	0.13%	2,765	*8%*	0	*0%*	111	*0%*	32260	*92%*
13	S/TVA/TVA-DUK//	0	357	440	54,596	1.71%	1,479	*4%*	58	*0%*	783	*2%*	32816	*93%*
14	F/FPC/TEC-FPC//	0	2,442	3,559	52,294	0.26%	7,195	*20%*	0	*0%*	64	*0%*	27877	*79%*
15	P/LGEE/TVA-LGEE//	0	1,408	1,424	51,986	0.47%	1,918	*5%*	12	*0%*	972	*3%*	32234	*92%*
16	SS/SOCO/FL-SC/MULTIPATHALIAS/	-200	177	768	48,989	3.32%	3,644	*10%*	590	*2%*	2,382	*7%*	28520	*81%*
17	S/DUK/TVA-DUK//	0	692	692	47,360	0.86%	1,323	*4%*	93	*0%*	1,611	*5%*	32109	*91%*
18	SS/SOCO/SOCO-FL//	-101	1,222	2,322	46,665	0.44%	5,429	*15%*	1	*0%*	288	*1%*	29418	*84%*
19	S/CPL/DUK-CPLE//	0	3,471	8,047	41,295	0.13%	3,469	*10%*	2	*0%*	315	*1%*	31350	*89%*
20	S/DUK/CPLE-SOCO//	0	2,070	2,335	37,314	0.24%	2,248	*6%*	21	*0%*	2,504	*7%*	30363	*86%*
21	SS/SOCO/SOCO-SC//	-200	178	876	33,917	2.24%	1,982	*6%*	424	*1%*	2,368	*7%*	30362	*86%*
22	S/CPL/CPLE-SC//	0	2,595	4,854	32,998	0.14%	1,964	*6%*	0	*0%*	823	*2%*	32349	*92%*
23	S/MEAG/SOCO-JEA//	None	None	0	31,400	0.00%	5,020	*14%*	0	*0%*	0	*0%*	30116	*86%*
24	S/TVA/SOCO-LGEE//	0	720	3,000	30,471	0.28%	1,272	*4%*	53	*0%*	8,344	*24%*	25467	*72%*
25	SS/SOCO/SOCO-DUK//	-183	467	1,153	30,402	0.71%	2,400	*7%*	99	*0%*	546	*2%*	32091	*91%*

Most notable in the table is that 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

5 It is not unusual for transmission paths to have no ATC value posted, and not just for the SEEM transmission service (NFEETS).

6 We use a threshold of < 4 MW to identify segments fully used or unavailable for the values below.

uncleared. Nonetheless, there are many 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).

In order to facilitate overall conclusions on transmission availability from segment-level information, we summarize the usage for all segments in Table 3. During the period, total segment intervals is the product of all 351 segments and the number of intervals, which yields over 9 million segment intervals.

Table 3: Summary of All Segments
2024

Segment	Case 1 Partially Used		Case 2 Fully Used		Case 3 Unavailable		Case 4 Uncleared	
	Intervals	%	Intervals	%	Intervals	%	Intervals	%
All Segments	208,600	2.0%	7,842	0.1%	514,786	5.0%	9,613,716	92.9%

The results in Table 3 show:

- The two circumstances when a segment is constrained (Cases (2) and (3)) occurred in roughly 522,000 segment-intervals, or about 5 percent of all segment intervals.
- The constraint segments were almost always because the ATC was insufficient to schedule (i.e., ATC < 4 MW) rather than because it was fully used by SEEM matches.
- The most common outcome (93 percent of all segment intervals) was that they were "Uncleared" (Case 4), where ATC was available, but the segment was not used because no economic transactions were cleared by the SEEM model over that segment.
- The third most common outcome were segments that were "Partially Used" (Case 1), where the segment was partially used by the SEEM market.

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 a larger 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 most often unavailable to SEEM. Even though these are the most unavailable segments, they are still available most of the time. Overall, the evaluation of individual segments indicates the system is largely unconstrainted for SEEM activity.

Table 4: Most Constrained SEEM Segments

January 2024 – March 2025

Segment	ATC				Loading	Partially Used		Fully Used		Unavailable		Uncleared	
	Min	Median	Max	MWhs	Factor	Intervals	%	Intervals	%	Intervals	%	Intervals	%
F/FPC/FPC-SOCO//	0	172	370	270,616	20.05%	9,249	*26%*	2,165	*6%*	8,778	*25%*	14944	*43%*
F/FPC/TEC-SOCO//	0	172	370	116,515	8.64%	8,723	*25%*	621	*2%*	8,774	*25%*	17018	*48%*
SS/SOCO/FL-SC/MULTIPATHALIAS/	-200	177	768	48,989	3.32%	3,644	*10%*	590	*2%*	2,382	*7%*	28520	*81%*
SS/SOCO/FL-SCEG/MULTIPATHALIAS/	-5	69	167	16,436	2.55%	1,536	*4%*	549	*2%*	3,228	*9%*	29823	*85%*
SS/SOCO/SOCO-SC//	-200	178	876	33,917	2.24%	1,982	*6%*	424	*1%*	2,368	*7%*	30362	*86%*
S/MEAG/FPC-MEAG//	0	79	248	10,942	1.51%	886	*3%*	316	*1%*	1,174	*3%*	32760	*93%*
SS/SOCO/SOCO-SCEG//	0	69	167	5,593	0.87%	572	*2%*	201	*1%*	3,214	*9%*	31149	*89%*
F/FPC/SOCO-FPC//	0	298	527	28,265	1.15%	2,812	*8%*	196	*1%*	3,057	*9%*	29071	*83%*
S/SC/SOCO-SC//	0	757	2,491	107,025	1.48%	6,649	*19%*	171	*0%*	6,393	*18%*	21923	*62%*
S/AECI/AECI-TVA//	0	101	854	10,211	0.62%	898	*3%*	147	*0%*	6,411	*18%*	27680	*79%*
S/TVA/AECI-SOCO//	0	45	512	7,275	0.77%	666	*2%*	129	*0%*	13,087	*37%*	21254	*60%*
S/MEAG/SCEG-MEAG//	0	19	31	712	0.42%	53	*0%*	110	*0%*	54	*0%*	34919	*99%*
S/SCEG/DUK-SCEG//	0	121	536	9,112	0.85%	1,103	*3%*	110	*0%*	5,176	*15%*	28747	*82%*
SS/GTC/SCEG-GTC//	0	90	146	5,128	0.64%	317	*1%*	108	*0%*	148	*0%*	34563	*98%*
SS/SOCO/SOCO-DUK//	-183	467	1,153	30,402	0.71%	2,400	*7%*	99	*0%*	546	*2%*	32091	*91%*
S/DUK/TVA-DUK//	0	692	692	47,360	0.86%	1,323	*4%*	93	*0%*	1,611	*5%*	32109	*91%*
F/JEA/JEA-SOCO//	0	535	1,058	12,069	0.25%	2,659	*8%*	91	*0%*	190	*1%*	32196	*92%*
S/AECI/TVA-AECI//	0	682	1,023	13,875	0.28%	730	*2%*	83	*0%*	6,438	*18%*	27885	*79%*
S/MEAG/MEAG-SC//	0	45	82	1,445	0.49%	104	*0%*	81	*0%*	8,931	*25%*	26020	*74%*
SS/SOCO/FL-DUK/MULTIPATHALIAS/	-183	421	1,118	24,460	0.65%	2,435	*7%*	79	*0%*	559	*2%*	32063	*91%*

IV. Conclusions and Recommendations

Our evaluation of SEEM operations for 2024 has shown implementation and operation of the SEEM platform continues to be successful. In the course of our auditing, we have had occasion to be contacted by or we contacted traders to address various issues that arise. We have received generally positive reviews of their experiences with SEEM. They reported the system is creating value for their operations and they expressed optimism that the system will continue to expand opportunities.

Near-Term Improvement

Recommendation 1: Publish interval average prices in real time

In evaluating the performance of the SEEM market over the past year, we consider the effectiveness of the price discovery provided by the market. SEEM publishes the daily average price for transactions after the day. This limits real-time price discovery. In order to improve real-time price discovery, we re-iterate our recommendation in last year's annual report that SEEM publish interval average prices in real time.

Improving price transparency by adopting this recommendation will facilitate better price discovery in the SEEM market. Timely price discovery is a cornerstone for efficient, competitive markets and will produce benefits by facilitating more competitive and efficient bids and offers:

- Price discovery provides information to buyers and sellers that helps to assess the underlying value of electricity in the region and inform buyers' bid prices and quantities and sellers' offer prices and quantities.
- The SEEM market provides an incentive for participants to accept some risk and submit bids and offers at prices approaching the integrated prices they expect to prevail. When price discovery is poor, expectations about prices are less accurate, which will generally result in a larger distribution of bid prices and offer prices. This can cause traders to "miss" each other, leaving mutually beneficial trades unconsummated.
- Good price discovery will narrow the expected range of prices and facilitate participant offers and bids that are more likely to clear.

Improved price discovery also may inform real-time commitment decisions by participants. For example, a seller may commit a fast-start peaking unit that otherwise would remain idle if it sees that prevailing prices exceed the all-in cost of starting the unit. Likewise, a potential buyer may decommit a relatively high-cost unit if it sees that prices are well below the dispatch costs of its resource.

We have discussed this proposal with SEEM market operator Hartigen. Hartigen agrees this is a feasible practice and an hourly average could be posted in a matter of minutes at the end of the hour.

FERC Order

FERC issued an order in March addressing matters going back to the initial approval of SEEM. The Order affirmed the approval of SEEM and clarified certain unresolved issues around claims that SEEM unfairly limited market access. FERC affirmed that participation requirements are reasonable. However, FERC directed SEEM to modify the rules to allow entities outside the SEEM footprint to participate via "pseudo-ties."

Long-Term Improvements

Given the solid performance of the SEEM platform system, it holds promise to expand the system to include longer timeframes. The current SEEM market facilitates very short, near-term exchanges of economic energy. Additional benefits and efficiency could be achieved by transacting further ahead and for longer periods. In our 2023 report, we discussed options to expand SEEM. However, action on this recommendation has been delayed due to FERC's reconsideration of certain issues with the design of SEEM. Now that FERC has issued an order, we encourage consideration of the following recommendation:

Recommendation 2: Expand the SEEM market to include:

- *Hourly or multi-hour real-time transactions facilitated during the operating day.*
- *A day-ahead clearing of bids and offers to facilitate hourly trades for the following day.*

In either case, the main difference between these timeframes and the current market is that holders of transmission reservations would have to release the transmission. The current SEEM market uses unscheduled available transmission capability after the hourly schedules are processed. Hence, the transmission is released and made available at no cost. This would not be possible for longer lead-time transactions because the transmission reservations could potentially still have significant value in these timeframes. Therefore, implementing hourly real-time or day-ahead transactions would require:

- Offers by the holders of transmission reservations to make them available at a submitted cost (does not exist in the current market); and
- Bids by buyers and offers by sellers that are comparable to the current market.

Both of these recommended expansions would facilitate fuller utilization of the transmission system. However, an hourly day-ahead market would likely be the most beneficial because it could lead to changes in resource commitments that would lower the costs of service load in the region.