

Southeast Energy Exchange Market (SEEM)

Market Principles

A Deeper Dive - Tagging Processes, Settlement, and Publicly Available Information

June 2022

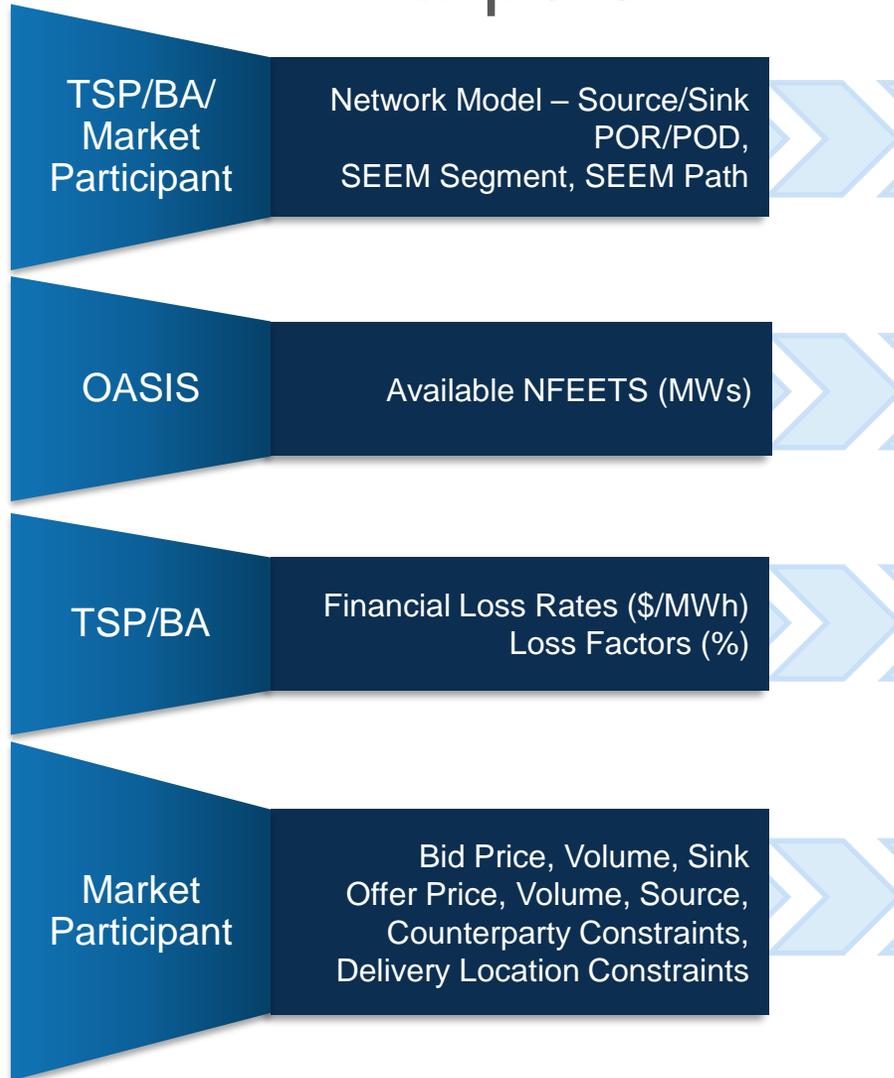


Overview

- Market Timing
 - TSRs
 - eTags
- Settlement
 - Energy Settlement
 - Transmission Loss Settlement
- Publicly Available Information
 - Hourly
 - Daily
 - Monthly
 - Monthly With a Delay

SEEM Data Flow

Inputs



SEEM Platform (Hartigen)

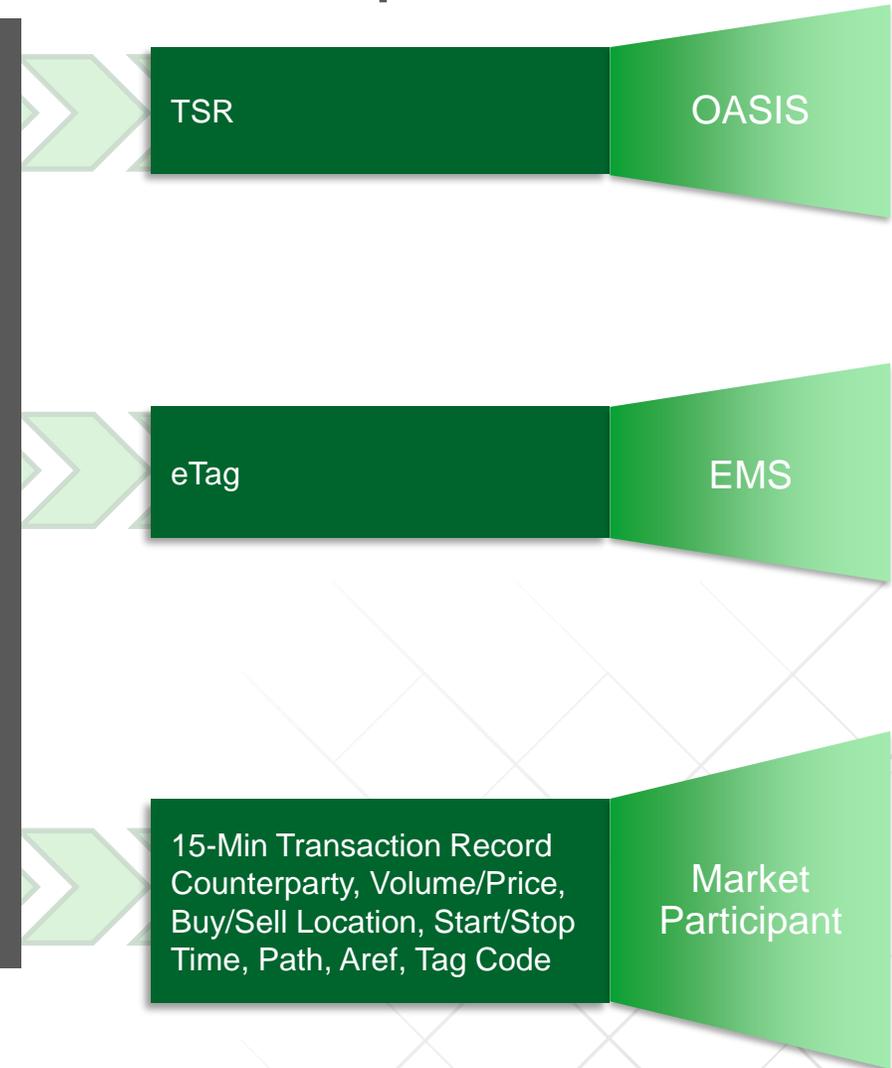
User Interface/API:

- Enter/Modify input data
- View results/run reports

Market Engine

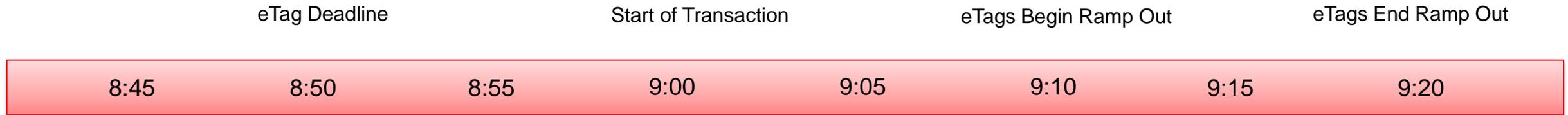
- Runs every 15 minutes
- Matches buyers/sellers
- Reserves transmission
- Creates eTags
- Produces data used for settlement

Outputs



Market Timing Example

Match Interval 9:00 – 9:15



- Market Engine Inputs Due
Market Engine Kicks Off and Solves
- TSRs Submitted and Approved
 - eTags Submitted and Approved
 - Match Results Available

eTags Begin Ramp In

eTags End Ramp In

End of Transaction

The Same Process Takes Place Every 15 Minutes

- 00:00
- 00:15
- 00:30
- 00:45



Transmission Service Requests (TSRs)

- An online request made to a TSPs (Transmission Service Providers) OASIS (Open Access Same Time Information System) to allocate physical capacity in the form of transmission service rights for the transmission of electric power.
- TSRs include details about the transmission request. These details include but are not limited to:
 - Transmission Service Provider
 - Transmission Customer
 - Point of Receipt or POR (where the power is coming from or Source)
 - Point of Delivery or POD (where the power is going to or Sink)
 - Start Time\Stop Time
 - MWs
 - Type (“NFEETS”)

Transmission Service Requests (TSRs)

- Automatically created by the SEEM Platform
- Non-Firm Energy Exchange Transmission Service (NFEETS)
- Priority 0, non-firm service
- \$0/MWh transmission service rate and Schedule 1 and 2 ancillary services
- Reservations are entered in the name of the PSE that is responsible for the service and associated Financial Losses.
 - Buyer pays Financial Losses to TSP associated with Sink (load)
 - Seller pays Financial Losses to all other TSPs associated with delivery of the energy
- Each Participant will be required to setup and maintain a new OATI OASIS ID and certificate and provide that information to the SEEM Admin
- Automatically validated and approved by the TSPs

eTags

- eTags are an electronic record that contains the details of a transaction to transfer energy from a source point to a sink point where the energy is scheduled across one or more balancing authority area boundaries. eTags are turned into schedules that flow into each of the impacted EMS system.
- eTags include details about the transaction. These details include but are not limited to:
 - Tag Information – General information about the eTag
 - » Creator, Tag Code (ID)
 - Market Path – Path defining the financially responsible parties of a transaction
 - » Generator PSE (Purchasing Selling Entity), Sink PSE, and any intermediate PSEs
 - Physical Path – The source to sink route between generation and load
 - » Source, sink, as well as all PORs, PODs, PSE along the path
 - Energy and Transmission Profiles – Datetime level definition of MW flow and transmission usage
 - » Start\stop time and MWs
 - Transmission Allocation – Breakdown of transmission owner by PSE
 - » TSP, Owner\PSE, Product, Aref (reservation ID)
 - Loss Allocation – How line losses are accounted
 - » TSP, start\stop time, and type (always “FIN” for SEEM tags)

eTags

- Automatically created by the SEEM Platform
- eTag Differences
 - Tag Information - CPSE (Create PSE) = “SEEM01”
 - Market Path – No differences
 - Physical Path – No differences
 - Energy and Transmission Profiles – No differences
 - Transmission Allocation Product = “0-NX”
 - Loss Accounting Type = “FIN”
- eTags are due 10 minutes before the flow (instead of the normal 20 minutes)
- Automatically validated and approved by the TSPs

Energy Settlement

- The SEEM Platform will NOT perform energy settlement functions but will provide data necessary for all Participants to utilize in performing their own settlement functions, consistent with how the bi-lateral market currently works today.
 - 15 Minute vs Integrated
- A match is only considered finalized when an associated eTag is approved.
- If a TSR or eTag is rejected or curtailed the settlement data in the SEEM Platform and APIs will be updated accordingly.

Energy Settlement

- The SEEM Platform and APIs will provide transactional level details to the buyer and seller associated with each match. These details include but are not limited to:
 - Date\Time\Interval
 - Counterparty
 - Trader Volume (MWs)
 - Trade Volume (MWhs)
 - Trade Price (\$/MWh)
 - Source
 - Sink
 - Path
 - TSR Aref
 - Tag ID
- Participants will only see data for matches where they are either the buyer or seller.

SEEM Match Results

Interval 17:15 : Submission Deadline 10:37

Participant ↑	Date ↑	Interval Start ↑	Interval End ↑	Hour End	Month ↑	Buyer/Seller	Path ↑	Counterparty ↑	Source ↑	Sink ↑	Trade Volume (MW)	Trade Volume (MWh)	Trade Price (\$/MWh)	Trade Amount	TSR Aref	Tag Status	Tag ID	Time Zone	Modified Date
SWE	05/24/2022	08:45	09:00	9	2022-05	Seller	SOCO-TVA	TVAM	MILLER	TVA	40	10	\$66.52	\$665.20	284828, 283928	IMPLEMENTED	SM2312340	EPT	05/24/2022 07:30:13
SWE	05/24/2022	08:45	09:00	9	2022-05	Seller	SOCO-TVA	TVAM	MILLER	TVA	8	2	\$66.82	\$133.64	284827, 283926	IMPLEMENTED	SM2312341	EPT	05/24/2022 07:30:13
SWE	05/24/2022	08:45	09:00	9	2022-05	Seller	SOCO-DUK-CPL (CPL)	DUKEBP	MILLER	CPL	32	8	\$65.28	\$522.24	284829, 283925, 232567	IMPLEMENTED	SM2312342	EPT	05/24/2022 07:30:13
SWE	05/24/2022	08:45	09:00	9	2022-05	Seller	SOCO-TVA	TVAM	MILLER	TVA	40	10	\$66.24	\$662.40	284808, 283924	IMPLEMENTED	SM2312343	EPT	05/24/2022 07:30:13
SWE	05/24/2022	10:00	10:15	11	2022-05	Buyer	DUK-SOCO	NCEMC	NCEMCGEN	SOCOLOAD	40	10	\$43.06	\$430.60	284809, 283921	IMPLEMENTED	SM2312344	EPT	05/24/2022 08:45:16
SWE	05/24/2022	10:00	10:15	11	2022-05	Buyer	DUK-SOCO	NCEMC	NCEMCGEN	SOCOLOAD	16	4	\$42.74	\$170.96	284813, 283978	IMPLEMENTED	SM2312345	EPT	05/24/2022 08:45:16
SWE	05/24/2022	10:00	10:15	11	2022-05	Buyer	MEAG-SOCO	TEA MEAG	MEAGScherer	SOCOLOAD	24	6	\$45.48	\$272.88	284814, 283977	IMPLEMENTED	SM2312346	EPT	05/24/2022 08:45:16
SWE	05/24/2022	10:15	10:30	11	2022-05	Buyer	DUK-SOCO	NCEMC	NCEMCGEN	SOCOLOAD	32	8	\$42.85	\$342.80	2848217, 283973	IMPLEMENTED	SM2312347	EPT	05/24/2022 09:00:20
SWE	05/24/2022	10:15	10:30	11	2022-05	Buyer	DUK-SOCO	NCEMC	NCEMCGEN	SOCOLOAD	28	7	\$43.56	\$304.92	284819, 283982	IMPLEMENTED	SM2312348	EPT	05/24/2022 09:00:20
SWE	05/24/2022	10:15	10:30	11	2022-05	Buyer	SCEG-SOCO	DESC	SCEGSYSPOWER	SOCOLOAD	12	3	\$38.57	\$115.71	284864, 283992	IMPLEMENTED	SM2312349	EPT	05/24/2022 09:00:20
SWE	05/24/2022	10:15	10:30	11	2022-05	Buyer	MEAG-SOCO	TEA MEAG	MEAGScherer	SOCOLOAD	40	10	\$46.48	\$464.80	284865, 283990	IMPLEMENTED	SM2312350	EPT	05/24/2022 09:00:20
SWE	05/24/2022	10:15	10:30	11	2022-05	Buyer	MEAG-SOCO	TEA MEAG	MEAGScherer	SOCOLOAD	8	2	\$46.08	\$92.16	284866, 283933	IMPLEMENTED	SM2312351	EPT	05/24/2022 09:00:20

TSP Financial Loss Settlement

- The SEEM Platform will NOT perform financial loss settlement functions but will provide data necessary for TSPs to utilize in performing their own settlement functions.
- The SEEM Platform and APIs will provide transactional level details to the TSPs. These details include but are not limited to:
 - Date\Time\Interval
 - Participant\Transmission Customer
 - Trade Volume (MW)
 - Trade Volume (MWh)
 - Loss Factor (%)
 - Loss Rate (\$/MWh)
 - Source
 - Sink
 - Path
 - TSR Aref
 - Tag ID

TSP Financial Loss Settlement Report

Sorted By Timezone Show Summary Pivot

Date	Interval Start	Interval End	Hour E...	Month	TSP	Participant	Buyer/Sel...	Path	Counterparty	Source	Sink	Trade Volume (MW)	Trade Volume (MWh)	Loss Factor	Loss Rate (\$/MWh)	Loss Amount	TSR Aref	Tag ID	Modified Date
04/16/2022	08:00	08:15	9	2022-04	SOCO	TEA MEAG	Seller	MEAG-SOCO-SC	TEA SC	MEAGScherer	SC	100	25	2.2	\$25.00	\$13.75	38483821	SM123431	05/16/2022 10:23:38
04/16/2022	08:15	08:30	9	2022-04	SOCO	TEA MEAG	Seller	MEAG-SOCO-SC	TEA SC	MEAGScherer	SC	24	6	2.2	\$25.00	\$3.30	38483822	SM123432	05/16/2022 10:35:15
04/16/2022	08:30	08:45	9	2022-04	SOCO	SWE	Seller	SOCO-SC	TEA SC	MILLER	SC	100	25	2.2	\$25.00	\$13.75	38483823	SM123433	05/16/2022 10:40:44
04/16/2022	08:45	09:00	9	2022-04	SOCO	SWE	Seller	SOCO-SC	TEA SC	MILLER	SC	24	6	2.2	\$25.00	\$3.30	38483824	SM123434	05/16/2022 10:46:04
04/16/2022	08:45	09:00	9	2022-04	SOCO	TEA MEAG	Seller	MEAG-SOCO-SC	TEA SC	MEAGScherer	SC	24	6	2.2	\$25.00	\$3.30	38483825	SM123435	05/16/2022 10:46:04
04/16/2022	09:00	09:15	10	2022-04	SOCO	SWE	Seller	SOCO-SC	TEA SC	MILLER	SC	24	6	2.2	\$25.00	\$3.30	38483826	SM123436	05/16/2022 10:52:46
04/16/2022	09:00	09:15	10	2022-04	SOCO	TEA MEAG	Seller	MEAG-SOCO-SC	TEA SC	MEAGScherer	SC	24	6	2.2	\$25.00	\$3.30	38483828	SM123437	05/16/2022 10:52:46

Participant Financial Losses

- Financial Loss Rates are a major input into determining Financial Losses and each TSP will decide how often and when to update those values.
- Financial Loss Rates are used to recover the cost of generation dispatching up to cover any line losses associated with a SEEM transaction, so these costs are usually tied to incremental system costs.
- Due to competitive sensitivities associated with incremental system costs and the potential need to update these values frequently, the SEEM will not make transactional level Financial Loss data available to Participants.

Participant Financial Losses

- The SEEM Platform and APIs will provide the Participants monthly level details that are further subdivided by TSP, Type (Purchase\Sale), and Counterparty. So, at a monthly level Participants will see the following details.
 - Month\Year
 - TSP
 - Type (Purchase\Sale)
 - Counterparty
 - Trade Volume (MW)
 - Loss Amount
- Participants will only see data for Financial Losses where they are responsible for paying for the losses.
- This data will only be available after the month ends.

Participant Monthly Losses Settlement Report



Admin ▾

Transmission ▾

Trading ▾

Results ▾

Reports ▾

Upgrade Notice: June 21st at 10pm EPT



ETAG

SEEM Participant Monthly Loss Settlement Report

SEEM Participant Monthly Loss Settlement Report ▾

Sorted By ▾

Month ↑	Participant ↑	TSP ↑	Type	Counterparty ↑	Trade Volume (MW)	Loss Amount
April-2022	SWE	CPLW	Sale	LGEUP	100	\$8.25
April-2022	SWE	CPLW	Sale	LGEUP	100	\$8.25
April-2022	SWE	DUK	Sale	DUKEBP	200	\$29.25
April-2022	SWE	DUK	Sale	LGEUP	100	\$12.19
April-2022	SWE	GTC	Purchase	DESC	16	\$2.12
April-2022	SWE	GTC	Sale	DESC	4	\$0.53
April-2022	SWE	GTC	Sale	LGEUP	100	\$11.06
April-2022	SWE	MEAG	Sale	LGEUP	100	\$23.75
April-2022	SWE	MEAG	Sale	OPC	100	\$23.75
April-2022	SWE	SC	Sale	LGEUP	100	\$14.64
April-2022	SWE	SCEG	Sale	LGEUP	100	\$12.50
April-2022	SWE	SOCO	Purchase	APM	100	\$13.75
April-2022	SWE	SOCO	Purchase	DESC	16	\$2.64
April-2022	SWE	SOCO	Sale	DESC	16	\$2.64
April-2022	SWE	SOCO	Sale	DUKEBP	200	\$33.00
April-2022	SWE	SOCO	Sale	LGEUP	100	\$13.75
April-2022	SWE	SOCO	Sale	NCMPA1	76	\$12.54
April-2022	SWE	SOCO	Sale	OPC	724	\$108.46
April-2022	SWE	SOCO	Sale	TEA SC	148	\$20.35
April-2022	SWE	SOCO	Sale	TVAM	100	\$16.50

Publicly Available Information - Hourly

The following data will be made available on the SEEM website 15 minutes after the end of the previous hour.

- Total number of Bids and Offers during that clock hour
- Amount of Non-Firm Energy offered and sold as well as bid and purchased during that clock hour
- Number of Energy Exchanges executed for that clock hour
- Total number of Participants who submitted Bids during that clock hour
- Total number of Participants who submitted Offers during that clock hour

Publicly Available Information - Daily

The following data will be made available on the SEEM website by 6:00 AM CPT and shall include the following aggregated information from the prior day.

- Total number of Bids and Offers during each clock hour of the prior day
- Amount of Non-Firm Energy offered and sold as well as bid and purchased during each clock hour of the prior day
- Number of Energy Exchanges executed for each clock hour of the prior day
- Total number of Participants who submitted Bids for each clock hour of the prior day
- Total number of Participants who submitted Offers for each clock hour of the prior day
- Weighted average match price per clock hour

Publicly Available Information – Monthly

The following data will be made available on the SEEM website on or before midnight of the fifth business day of the following month.

- Any changes made to the Network Map
- Minimum, maximum, and average match prices
- Amount of Non-Firm Energy offered and sold as well as bid and purchased over all delivery intervals
- Amount of Non-Firm Energy that flowed once matched as an Energy Exchange
- Total number of Energy Exchanges
- Total benefit calculated
- Minimum, maximum, and average MW Energy Exchange amount
- Energy Exchanges made but not executed
- ATC made available by each Participating Transmission Provider for each delivery interval, as well as the amount of unused ATC

Publicly Available Information – Monthly With a Delay

- The following data will be made available on the SEEM website on or before midnight of the fifth business day on a four-month delay.
 - Bid/Offer Price, quantity, and All or Nothing information for each Bid and Offer in each delivery interval, subject to appropriate masking to remove Participant identities and Source and Sink information
 - Matched Bids and Offers with their associated Energy Exchange Price, subject to appropriate masking to remove Participant identities and Source and Sink information
 - The total number of possible counterparties not subject to a Participant Specific Constraint for each Seller in each Delivery Interval, subject to appropriate masking to remove Participant identities and Source and Sink information
 - The total number of possible counterparties not subject to a Participant Specific Constraint for each Buyer in each Delivery Interval, subject to appropriate masking to remove Participant identities and Source and Sink information

Questions

Electric Service Territory Map

- Southern Company
- Georgia Transmission*
- Oglethorpe Power Corp.*
- Dalton Utilities
- MEAG Power
- TVA
- Associated Electric Cooperative, Inc.
- LG&E and KU Energy LLC
- PowerSouth - Alabama
- PowerSouth - Florida
- North Carolina Municipal Power Agency No. 1
- Dominion Energy
- Duke Energy
- Santee Cooper
- Served by Dominion or South Carolina's electric cooperatives
- Served by Duke or South Carolina's electric cooperatives
- North Carolina EMCs

**Oglethorpe Power is a Georgia Transmission member and power supplier that serves the 38 member systems*

