



# Hedge Plan/Trading Matrix & Hedge Approval

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# Enterprise Risk Management Policy

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# Energy Risks

## *Trading Authority Matrix/Hedge Plan*

- **Trading Authority Matrix**
  - **Matrix to lay-out trading limits consistent with the limits approved by the Board (used by ACES for risk oversight)**
- **Hedge Plan**
  - **Two-year plan to assess strategy and risk exposure (energy, fuel, transmission)**
  - **Longer term plan incorporated in IRP**

# Trading Authority Matrix

## Approved Products

Product Name and description	Authorized Locations
<p><b>Hourly Power (physical):</b> Purchase and sale of physical power in the real-time/hourly markets supporting hedging transactions entered into by KYMEA or optimization of hedging transactions.</p>	<ul style="list-style-type: none"> <li>Any location with the ability to deliver to KYMEA's loads</li> </ul>
<p><b>Hourly Power (financial):</b> Purchase and sale of financial power in the real-time/hourly markets supporting hedging transactions entered into by KYMEA and any hedge optimization trades. This product includes fixed for float swaps and futures contracts.</p>	<ul style="list-style-type: none"> <li>LGEE interface with PJM</li> <li>LGEE interface with MISO</li> <li>MISO Hub</li> <li>PJM Hub</li> <li>Other delivery points as reviewed by the IRC and authorized by the CEO on a transaction specific basis</li> </ul>
<p><b>Day-Ahead Power (physical):</b> Purchase and sale of physical power in the day-ahead markets supporting hedging transactions entered into by KYMEA or optimization of hedging transactions.</p>	<ul style="list-style-type: none"> <li>Any location with the ability to deliver to KYMEA's loads</li> </ul>
<p><b>Day-Ahead Power (financial):</b> Purchase and sale of financial power in the day-ahead markets supporting hedging transactions entered into by KYMEA and any hedge optimization trades. This product includes fixed for float swaps and futures contracts.</p>	<ul style="list-style-type: none"> <li>LGEE interface with PJM</li> <li>LGEE interface with MISO</li> <li>MISO Hub</li> <li>PJM Hub</li> <li>Other delivery points as reviewed by the IRC and authorized by the CEO on a transaction specific basis</li> </ul>
<p><b>Weekly and Balance of Week Power (physical):</b> Purchase and sale of physical power in the weekly and balance of week markets supporting hedging transactions entered into by KYMEA or optimization of hedging transactions.</p>	<ul style="list-style-type: none"> <li>Any location with the ability to deliver to KYMEA's loads</li> </ul>



# Trading Authority Matrix

## Approved Products (continued)

Product Name and Description	Authorized Locations
<p><b>Weekly and Balance of Week Power (financial):</b> Purchase and sale of financial power in the weekly and balance of week markets supporting hedging transactions entered into by KYMEA or optimization of hedging transactions. This product includes fixed for float swaps and futures contracts.</p>	<ul style="list-style-type: none"> <li>• LGEE interface with PJM</li> <li>• LGEE interface with MISO</li> <li>• MISO Hub</li> <li>• PJM Hub</li> <li>• Other delivery points as reviewed by the IRC and authorized by the CEO on a transaction specific basis</li> </ul>
<p><b>Monthly and Balance of Month Power (physical):</b> Purchase and sale of physical power in the monthly and balance of month markets supporting hedging transactions entered into by KYMEA or optimization of hedging transactions.</p>	<ul style="list-style-type: none"> <li>• Any location with the ability to deliver to KYMEA's loads as reviewed by the IRC and authorized by the CEO on a transaction specific basis</li> </ul>
<p><b>Monthly and Balance of Month Power (financial):</b> Purchase and sale of financial power in the monthly and balance of month markets supporting hedging transactions entered into by KYMEA or optimization of hedging transactions. This product includes fixed for float swaps and futures contracts.</p>	<ul style="list-style-type: none"> <li>• LGEE interface with PJM</li> <li>• LGEE interface with MISO</li> <li>• MISO Hub</li> <li>• PJM Hub</li> <li>• Other delivery points as reviewed by the IRC and authorized by the CEO on a transaction specific basis</li> </ul>
<p><b>Annual physical Power (physical):</b> Purchase and sale of physical power in the annual markets supporting hedging transactions entered into by KYMEA or optimization of hedging transactions.</p>	<ul style="list-style-type: none"> <li>• Any location with the ability to deliver to KYMEA's loads as reviewed by the IRC and authorized by the CEO, BROCC, and Board of Directors on a transaction specific basis</li> </ul>
<p><b>Annual financial Power (financial):</b> Purchase and sale of financial power in the annual markets supporting hedging transactions entered into by KYMEA or optimization of hedging transactions. This product includes fixed for float swaps and futures contracts.</p>	<ul style="list-style-type: none"> <li>• LGEE interface with PJM</li> <li>• LGEE interface with MISO</li> <li>• MISO Hub</li> <li>• PJM Hub</li> <li>• Other delivery points as reviewed by the IRC and authorized by the CEO on a transaction specific basis</li> </ul>
<p><b>Non-firm Transmission:</b> The purchase of, and resale of excess non-firm transmission necessary to move energy from the Point of Delivery to the Point of Receipt associated with a tag for such energy or any contract between KYMEA and a qualified counterparty.</p>	<ul style="list-style-type: none"> <li>• LGEE</li> <li>• PJM</li> <li>• MISO</li> <li>• TVA</li> </ul>

Product Name and Description	Authorized Locations
<p><b>Firm Transmission:</b> The purchase of, and resale of excess firm transmission necessary to move energy from the Point of Delivery to the Point of Receipt associated with a tag for such energy or any contract between KYMEA and a qualified counterparty.</p>	<ul style="list-style-type: none"> <li>• LGEE</li> <li>• PJM</li> <li>• MISO</li> <li>• TVA</li> </ul>
<p><b>Financial Transmission Rights (FTRs):</b> The purchase of the right to financially settle the congestion charge from one LMP node to another LMP node. FTR purchases must be associated with an existing or anticipated forward financial energy sale within the limits specified in the current Hedge Plan. Exceptions are during outage events and during summer peak periods, but FTR positions shall never exceed hedge plan recommended monthly hedge volumes during any given month.</p>	<ul style="list-style-type: none"> <li>• All MISO and PJM LMP nodes between which KYMEA has financial exposure</li> </ul>
<p><b>Ancillary Services:</b> Those services required by an RTO or ISO to serve load or provide generation into the market. Ancillary services include but are not limited to Black Start, Regulation, Spinning Reserves, Non-spinning Reserves, RSGs, Operating Reserves, Synchronized Condensing, Balancing, etc.</p>	<ul style="list-style-type: none"> <li>• LGEE</li> <li>• PJM</li> <li>• MISO</li> <li>• TVA</li> </ul>
<p><b>Capacity:</b> The reliability product associated with physical generation.</p>	<ul style="list-style-type: none"> <li>• LGEE</li> <li>• PJM</li> <li>• MISO</li> <li>• TVA</li> </ul>
<p><b>Power Monthly Put Options:</b> The ability to financially or physically sell power at a fixed price to counterparty for a specific period of time.</p>	<ul style="list-style-type: none"> <li>• At authorized locations for hourly power-financial</li> </ul>

# Trading Authority Matrix

## *Approved Products (continued)*

Product Name and Description	Authorized Locations
<p><b>Power Monthly Call Options:</b> The ability to financially or physically purchase power at fixed price from a counterparty for a specified period of time.</p>	<ul style="list-style-type: none"> <li>At authorized locations for hourly power-financials</li> </ul>
<p><b>Financial Natural Gas:</b> Purchase and sale of natural gas futures contracts</p>	<ul style="list-style-type: none"> <li>Henry Hub (NYMEX look alike)</li> </ul>
<p><b>Financial Natural Gas Options:</b> The option to buy and sell call options and put options on financial futures contracts</p>	<ul style="list-style-type: none"> <li>Henry Hub (NYMEX look alike)</li> </ul>
<p><b>Financial Natural Gas - Locational and Temporal Basis Swaps:</b> Basis swaps are used to hedge exposure to basis risks, such as locational risk or time exposure risk. For example, a natural gas basis swap could be used to hedge a locational price risk: the seller receives from the buyer a Nymex settlement value (usually the average of the last three days closing prices) plus a negotiated fixed basis, and pays the buyer the published index value of gas sold at a specified location</p>	<ul style="list-style-type: none"> <li>Any delivery point on the Texas Gas or ANR system</li> </ul>

# Energy Risks

## Power Trading Authority Matrix

### 1. ELECTRIC POWER, TRANSMISSION (INCLUDES FTR) AND CAPACITY TRADING AUTHORITY

The following outlines transaction limits, definitions, and procedural requirements for power transmission and capacity transactions.

**Table 2. Kentucky Municipal Energy Agency – Power Trading Authorization Table**

		Per Transaction Limits (up to)				Net Per Trading Day Limits (Net Forward Positions) (up to)		Aggregate Limits of Net Forward (up to)		
Title	Product	Term	Lead Time	MW Size	\$/MWh		Total Volume MWh	Total \$	Total Volume MWh	Total \$
					Pur.	Sales				
Board of Directors	Electric Power Physical and Financial Swaps, Futures & Options and Transmission	No Limit	No Limit	No Limit	No Limit		No Limit	No Limit	No Limit	No Limit
	Capacity	No Limit	No Limit	No Limit	No Limit		N/A	No Limit	No Limit	No Limit
CEO	Electric Power Physical and Financial Swaps, Futures & Options and Transmission	< 1 Year	≤ 36 Months	300*	No Limit		900,000	\$50 Million	900,000	\$50 Million
	Capacity	≤ 1 Year	≤ 4 Years	350	No Limit		N/A	No Limit	350 MW annually	No Limit
VP of Market Analytics	Electric Power Physical and Financial Swaps, Futures & Options and Transmission	> 1 Week < 12 Months	≤ 24 Months	150*	\$150	No Limit	450,000	\$25 Million	450,000	\$25 Million
		> 1 Day ≤ 1 Week		300	\$500	No Limit				
		≤ 1 Day		300	No Limit					
APM	Electric Power Physical and Financial Swaps, Futures & Options and Transmission	> 1 Week ≤ Bal of Month	Current and Prompt Month	100	\$100	No Limit	80,000	\$10 Million	160,000	\$15 Million
		> 1 Day ≤ 1 Week		300	\$250	No Limit				
		≤ 1 Day		300	No Limit	No Limit				

\* Transaction quantities not to exceed the Position Report.

# Energy Risks

## Natural Gas Trading Authority Matrix

### 2. Financial Natural Gas Trading Authority

The following outlines transaction limits, definitions, and procedural requirements for financial natural gas transactions.

**Table 3. Kentucky Municipal Energy Agency – Natural Gas Trading Authorization Table**

		Per Transaction Limits (up to)					Net Per Trading Day Limits of Net Forward Positions (up to)		Aggregate Limits of Net Forward (up to)	
Title	Product	Term	Lead Time	MMBTU/ HR.	\$/MMBtu		Total Volume MMBtu	Total \$	Total Volume MMBtu	Total \$
					Pur.	Sales				
Board of Directors	Natural Gas Physical and Financial Swaps, Futures & Options and Transmission	No Limit	No Limit	No Limit	No Limit		No Limit	No Limit	No Limit	No Limit
CEO	Natural Gas Physical and Financial Swaps, Futures & Options and Transmission	< 1 Year	≤ 36 Months	1,050*	No Limit		3,000,000	\$25 Million	3,000,000	\$25 Million
VP of Market Analytics	Natural Gas Physical and Financial Swaps, Futures & Options and Transmission	> 1 Week < 12 Months	≤ 24 Months	1,050*	\$12.75	NA	1,000,000	\$12.75 Million	1,000,000	\$12.75 Million
		> 1 Day ≤ 1 Week		1,050	\$50.00	NA				
		≤ 1 Day		1,050	No Limit	NA				
APM	Natural Gas Physical and Financial Swaps, Futures & Options and Transmission	> 1 Week ≤ Bal of Month	Current and Prompt Month	1,050	\$8.50	NA	168,000	\$1.5 Million	168,000	\$1.5 Million
		> 1 Day ≤ 1 Week		1,050	\$25.00	NA				
		≤ 1 Day		1,050	No Limit	NA				

\* Transaction quantities not to exceed the Position Report.



# Hedge Plan

## *Position Report*

### **Position Report: Comprehensive Energy Hedging**

- The Position Report employs a comprehensive energy hedging methodology whereby the MWh equivalent of all energy hedges are compared to the expected native load of KYMEA.
- The report also considers location (basis) and deliverability to KYMEA's native load. Total energy hedged is the MWh equivalent of the sum of fuel purchases and electricity purchases.
- To apply as an energy hedge, fuel purchases must be combined with physical generation ownership or contracted capacity. The MWh equivalent hedge from fuel purchases will be the volume of MMBtu's of fuel procured for the unit or contract divided by the expected average heat rate of the generation unit or contract divided by 1,000.

# Hedge Plan

## *Congestion Hedging*

### Congestion Hedging and Financial Transmission Rights

It is likely that KYMEA's physical capacity and energy hedges may not be procured at delivery points that are at the location of its native load.

- **Congestion risk** is the possibility of adverse price differentials between the location of the energy sources and the location of native load.
- **Congestion Hedges:** Annual Auction Revenue Rights (ARR) and the Financial Transmission Rights (FTR) markets, purchasing delivered energy, or executing basis swaps with a bilateral counterparty.
- FTRs provide a financial hedge against potential adverse financial impacts of congestion risk in the day-ahead energy market. It is important to note that FTR's do not hedge the transmission loss component of the Locational Marginal Price.

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# Trading Authority Procedures

*KYMEA Board Approved on April 24, 2019*

## Present Criteria

**Greater than one month and less than a year**

**Equal to or greater than a year duration**

## Recommended Change

**Greater than one month and less than or equal to a year**

**Greater than a year duration**

### Sales Transactions

The CEO shall have the authority to execute sales trades that meet the following criteria;

- a. For transactions equal to or with less than a month duration:
- b. A contractual relationship exists to allow the transaction to occur
- c. The characteristics and quantity sold represents excess resources as determined by the position report

For transactions with greater than one month and less than a year duration:

- a. A contractual relationship exists to allow the transaction to occur
- b. The characteristics and quantity sold represents excess resources as determined by the position report
- c. The transaction is submitted to and approved by the IRC and by BROCC

For transactions equal to or greater than a year duration:

- a. A contractual relationship exists to allow the transaction to occur
- b. Excess resources as determined by the position report
- c. The transaction is submitted to and approved by the IRC and BROCC
- d. The transaction is submitted to and approved by the Board

### Purchase Transactions

The CEO shall have the authority to execute trades to procure capacity and energy as necessary to replace existing resources that have become unavailable or shortfalls in the portfolio that meet the following criteria:

For transactions equal to or with less than a month duration:

- a. A contractual relationship exists to allow the transaction to occur
- b. The characteristics and quantity sold represents excess resources as determined by the position report

For transactions with greater than one month and less than a year duration:

- a. A contractual relationship exists to allow the transaction to occur
- b. The characteristics and quantity sold represents excess resources as determined by the position report
- c. The transaction is submitted to and approved by the IRC and BROCC

For transactions equal to or greater than a year duration:

- a. A contractual relationship exists to allow the transaction to occur
- b. Excess resources as determined by the position report
- c. The transaction is submitted to and approved by the IRC and BROCC
- d. The transaction is submitted to and approved by the Board

# Joppa Coal Price Hedge

## Jun 2020 – May 2021

- **KYMEA has two options for Joppa Energy Price**
- **Monthly or Annual**
- **The Monthly Price is known after-the-fact (following month) making it somewhat difficult to dispatch the unit when you don't know the precise price.**
- **The Annual Price is fixed and known for each of the following 12 months.**

**The price is confidential and was disclosed to each Board member last week.**

**Based on historical prices and volatility, staff recommends the Board approve the annual Facility Firm Energy Price.**