

# **Kentucky Municipal Energy Agency**

## **Presentation to the Frankfort Plant Board**

### **AR Member Portfolio - Resource Plan Update**

**For October 17, 2017 FPB Meeting**

*v4 Prepared 10/11/2017*

# Topics for Discussion

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## 1. Status of RFP Processes

- Renewables – Solar and Wind
- Natural Gas Combined Cycle

## 2. Benefits of Renewable and NGCC Portfolio Components

## 3. Portfolio Overview

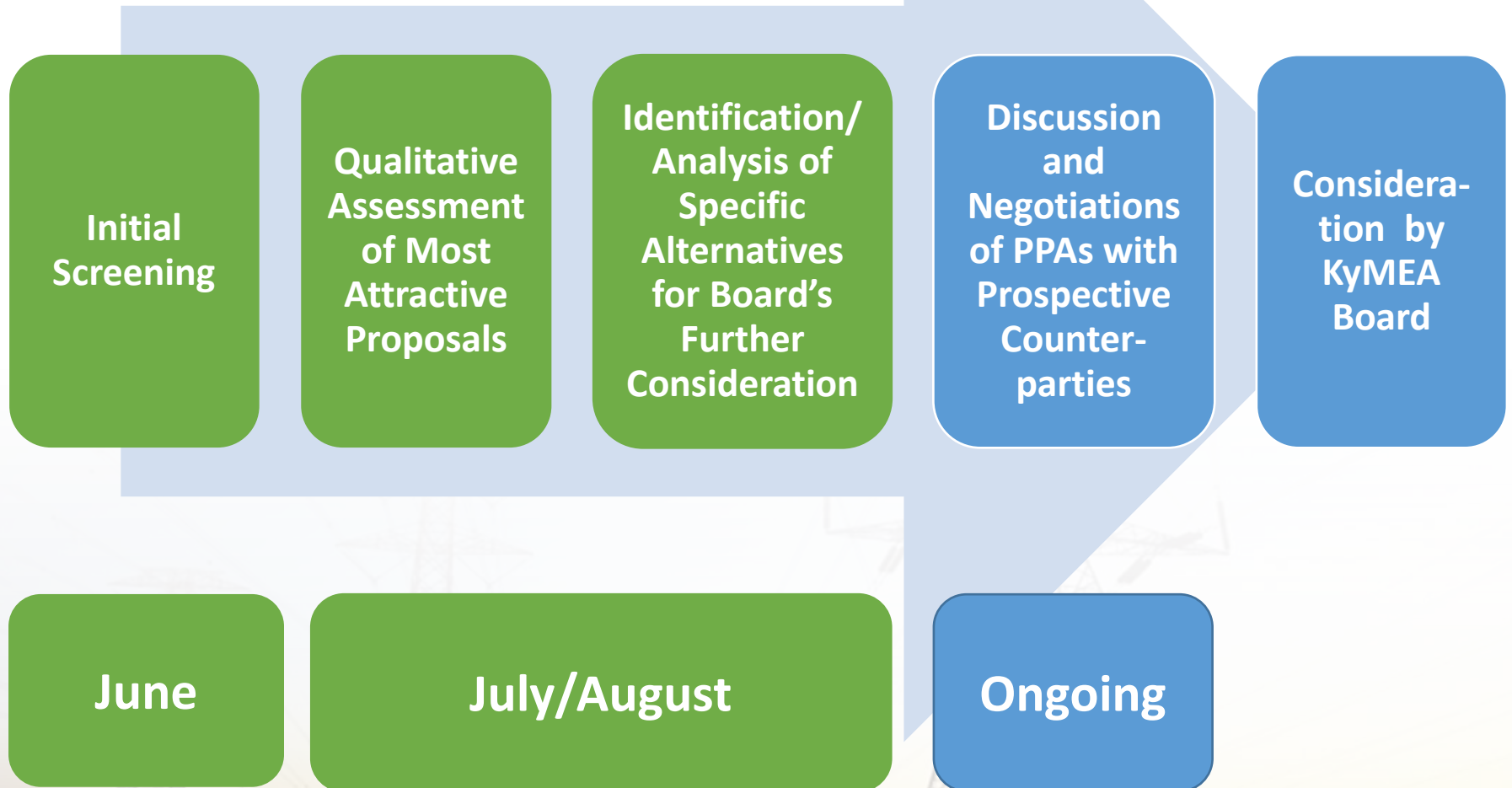
## 4. Scorecard relative to KyMEA Objectives

# Types of Resources

		Total	Wind	Solar	Solar	Solar/ Storage	Solar/ Wind	Hydro
			PPA	PPA	Owner- ship	PPA	PPA	PPA
Proposers		38	7	33	7	2	1	1
Proposals		210	17	170	16	4	1	2

**Note: Certain proposers submitted in multiple categories. As a result, the number of proposers shown for the categories does not add to the total.**

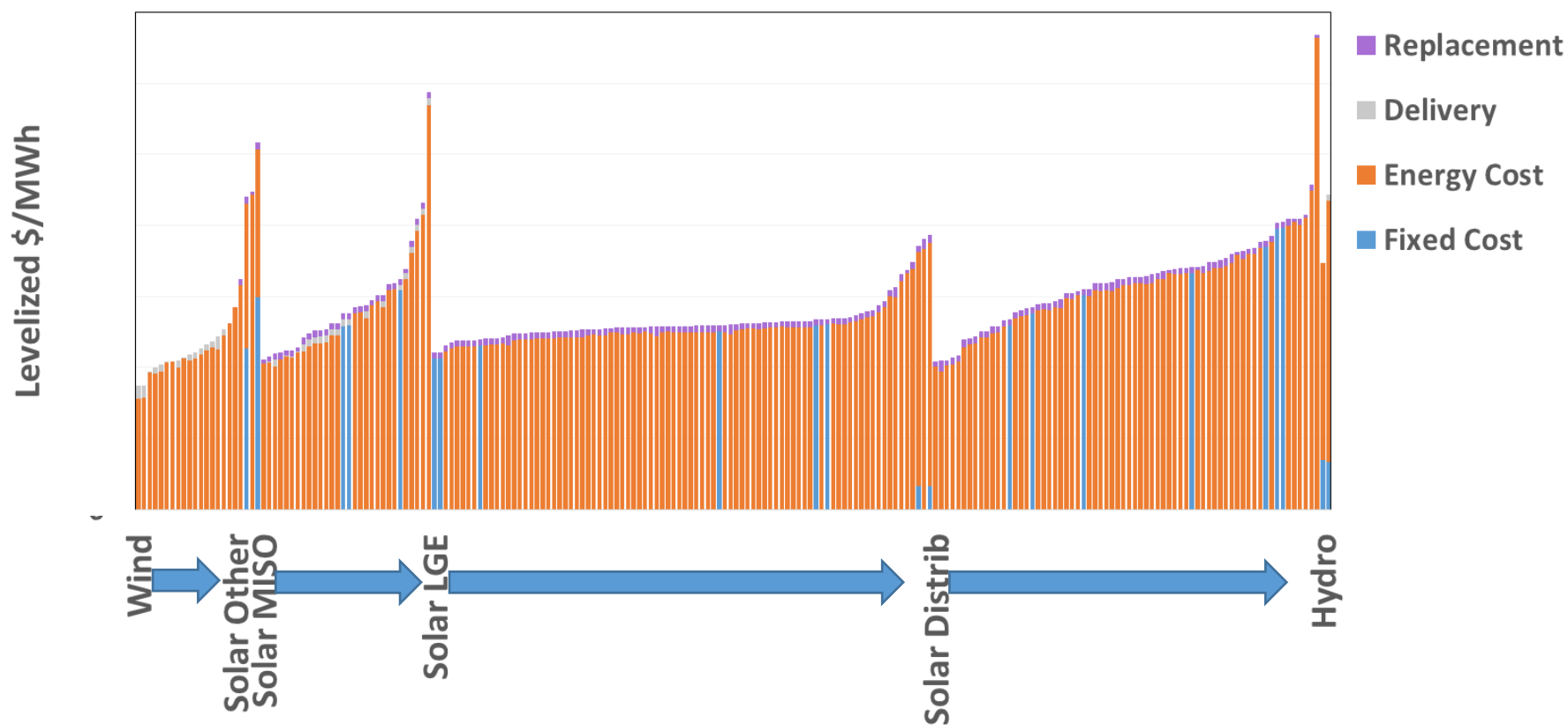
# Renewables -- Status of RFP Process



# Initial Renewable Economic Screening – Total Costs of Resource

*Economic ranking was based on Total Costs shown, net of the projected market value of output -- which is not shown. Also, note that multiple proposals in the Solar LGE and Solar Distribution categories were evaluated to have very similar total costs.*

Renewable Resource Analysis  
Average Levelized Cost (Life-cycle)



# Renewables - Qualitative Factors Considered

(More weight given to Factors Shaded in Green)

1	PPA/Ownership
2	Price Ranking Group
3	Term
4	Point of Pricing
5	Location (City/County)
6	Proposer Experience
7	Credit Support
8	Equipment Selection Status
9	Contingency on Other Off-takers (i.e., Whether Project is Contingent on Subscription by Others Parties)
10	Land Acquisition Status
11	Permitting Status
12	PPA Start Date
13	COD Flexibility
14	Availability Guarantee

# Assessment Results – Solar Finalists

Ordered by Proposal Number within each Interconnection Group

Interconnection	LGE/KU			Distribution	
Proposal #	22.7_S_P	25.7_S_P	36.3_S_P	8.3_S_P	29.1_S_P
Ranking within Category	Top Tier	Top Tier	Top Tier	Top Tier	Top Tier
PPA/Ownership	PPA	PPA	PPA	PPA	PPA
Capacity (MW)	30	35	50	50	25
Term (Years)	20	20	20	20	25
Point of Pricing	LGE/KU Transmission	LGE/KU Transmission	LGE/KU Transmission	Distribution	Distribution
Proposer Experience	High	High	Medium	High	Medium
PPA Start Date	May-20	May-22	Dec-20	Oct-19	Jul-19

# Overview of Proposals – For Natural Gas Resources (NGCC)

**3 Proposers**

**Combined Cycle  
HRSG w/Frame Class CTs**

**1 Proposer**

**Combined Cycle  
HRSG w/ Aero-derivative  
CTs**

**1 Proposer**

**Internal Combustion  
Engines (ICE)**

**1 Proposer**

**Simple Cycle  
Aero-derivative CTs**

**1 Proposer**

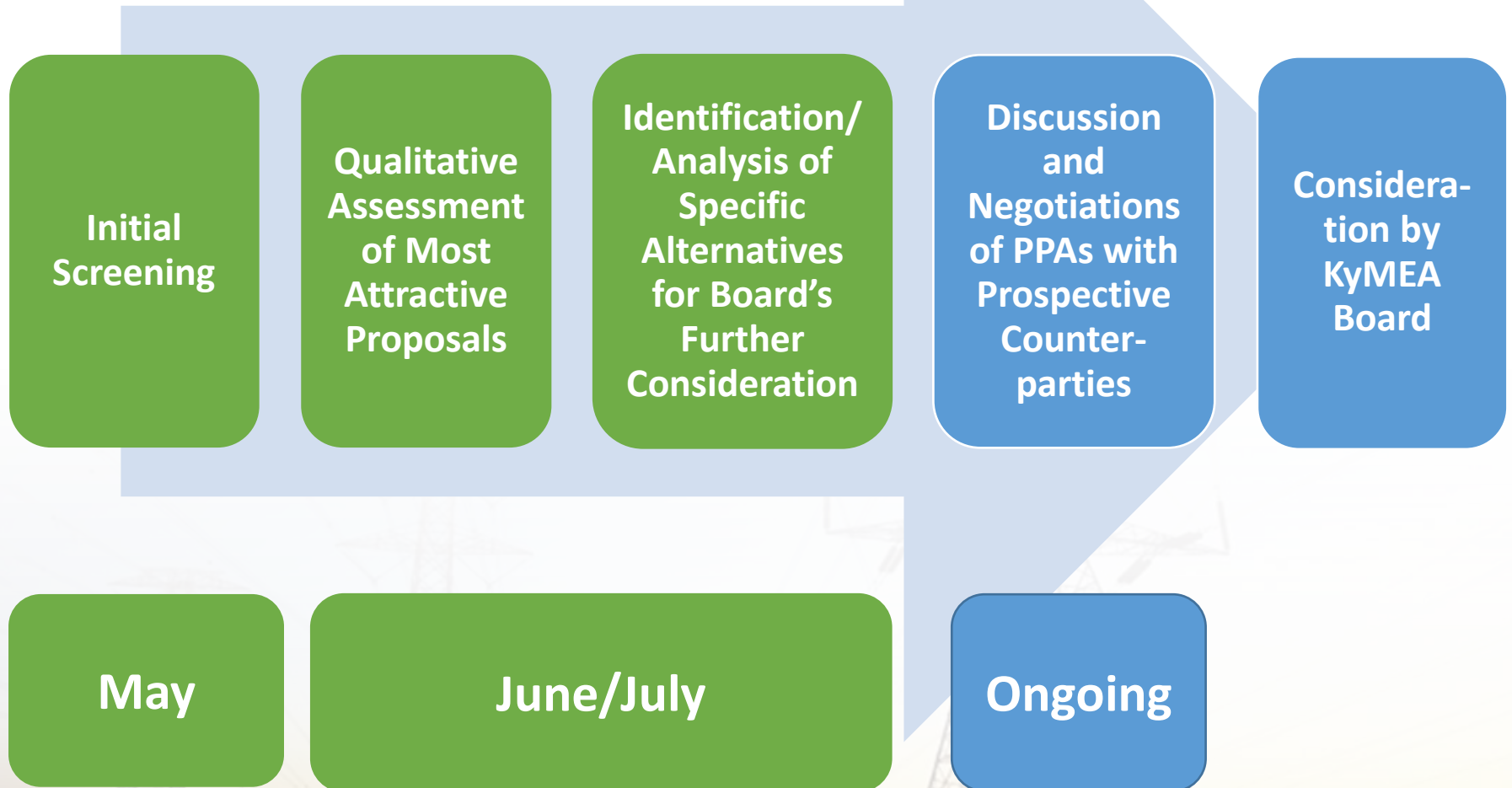
**Firm LD  
Dispatchable Day-Ahead  
Heat Rate Call Option**

**1 Proposer**

**Combined Cycle  
Cogeneration facility**



# NGCC -- Status of RFP Process



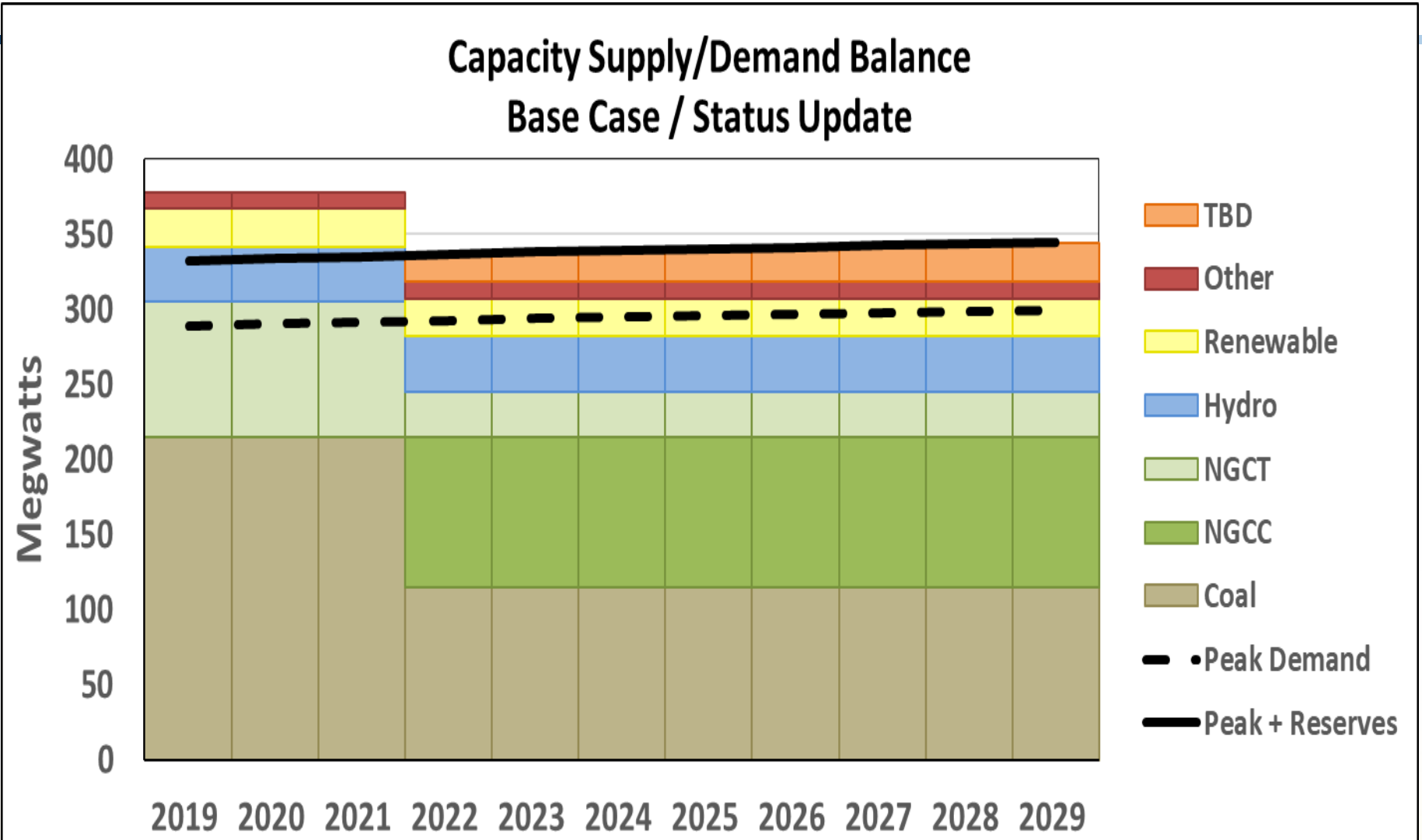
# Anticipated Benefits – NGCC and Renewable Resources

Resource	Beneficial Role in the Portfolio
Solar	<ul style="list-style-type: none"><li>➤ Projected favorable portfolio cost impact under current projections of market capacity and energy prices</li><li>➤ Hedge against higher natural gas prices and carbon policy costs – value to the Members would be higher under higher natural gas price and carbon policy scenarios</li><li>➤ Contributes to lower carbon footprint relative to KU</li></ul>
NGCC	<ul style="list-style-type: none"><li>➤ Projected to provide the lowest cost energy under current projections of market capacity and energy prices and fuel commodity costs</li><li>➤ Natural gas commodity risk balanced with coal commodity price risk in the portfolio</li><li>➤ Dispatchable and very high availability/reliability all hours, most days</li><li>➤ Offsets solar non-dispatchable, must-take provisions and limited hours of energy availability</li><li>➤ Contributes to lower carbon footprint relative to KU</li><li>➤ Clean technology</li></ul>

# Current Portfolio Plan – Diversity of Resources – Capacity

*Assumes FPB's 15 MW of SEPA is Used in the Portfolio*

*Subject to Finalization of PPAs in Process for NGCC and Solar*

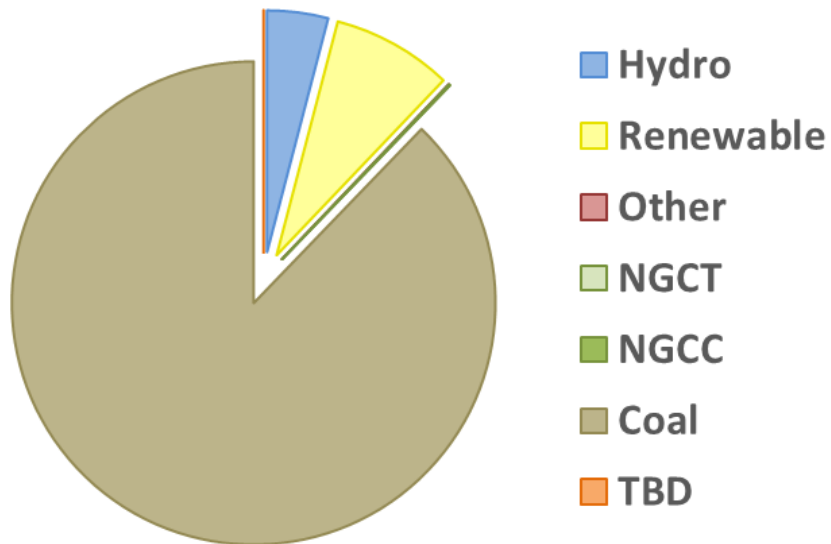


# Current Portfolio Plan – Diversity of Resources – Energy

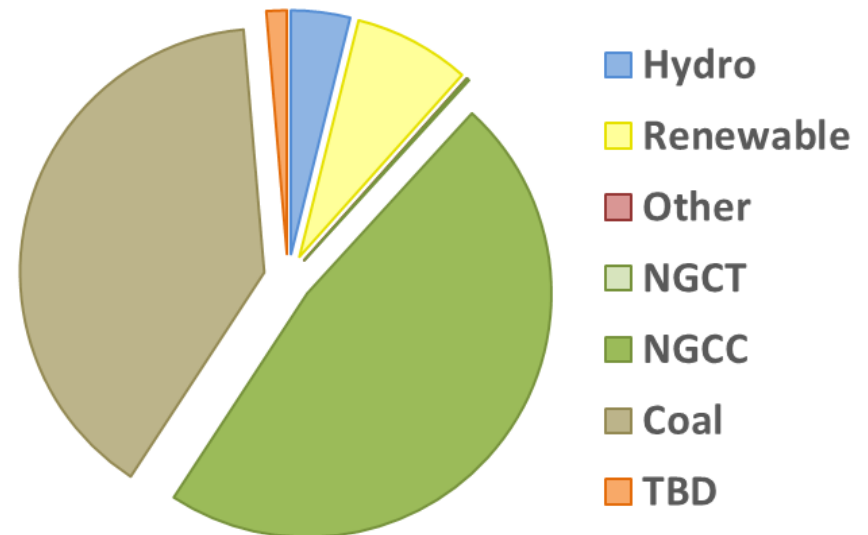
*Assumes FPB's 15 MW of SEPA is Used in the Portfolio*

*Subject to Finalization of PPAs in Process for NGCC and Solar*

Energy Balance 2020  
Base Case / Status Update



Energy Balance 2028  
Base Case / Status Update



# Portfolio Scorecard - Aligned with Objectives Specified by KyMEA's Board

Objective	Scorecard	Key Portfolio Features
<b>1. Competitive and More Affordable Future Cost of Electric Service</b>	Significant projected benefits of lower power supply costs – 2019 thru 2029	Each resource in portfolio was determined to be most attractive resource of its type thru RFP processes
<b>2. Achieve Objective 1 under a Very Wide Range of Future Scenarios</b>	<p>Substantial benefits are projected under very wide ranges of commodity fuel and market price scenarios</p> <p>Benefits are not likely to be diminished if carbon legislation is enacted – may increase</p>	<p>Diversity of resources; balance of coal and natural gas commodity exposure thru May 2029; lack of market price exposure</p> <p>Option, but no commitment, to purchase coal commencing June 2029</p>
<b>3. Assure Reliable, Competitive Cost Power Supply is Available Beginning May 1, 2019</b>	Portfolio will provide and reliably deliver adequate resources beginning May 1, 2019 thru May 2029 – with only a minimal market risk of open position after 6/2022	PPA availability guarantees; Portfolio meets all accepted standards for capacity adequacy; Obtained firm MISO and LGE/KU transmission
<b>4. Accomplish the Above in an Environmentally Responsible</b>	Portfolio will dramatically reduce carbon footprint of Members' electric power supply by June 2022	<p>Hydroelectric, renewable, and natural gas resources reduce footprint</p> <p>All resources comply with environmental regulations</p>