

July 8, 2016

Board of Directors Kentucky Municipal Energy Agency (KyMEA) c/o Rubin & Hays 450 South Third Street Louisville, KY 40202

Subject: Evaluation of the Peaking Capacity and Energy Proposals Received in Response to the April 2016 RFP

Dear KyMEA Directors and Alternate Directors:

### **Executive Summary**

In September 2015, the Kentucky Municipal Energy Agency (KyMEA) was formed pursuant to Sections 65.210 to 65.300 of the Kentucky Revised Statutes, as amended, known as the "Interlocal Cooperation Act" (the "Act").

In September 2015, KyMEA published an RFP seeking proposals from qualified suppliers of electric capacity and energy, with an Addendum 1 (the "September 2015 RFP" or the "RFP"). This September 2015 RFP requested proposals to supply power produced from resources in several categories to serve KyMEA's base, intermediate, and peaking/reserve capacity and energy requirements. Proposals backed by specific generation assets or systems and energy only market transactions were solicited, received and considered.

At its April 28, 2016 meeting, the KyMEA Board of Directors rejected all proposals to supply peaking capacity and energy submitted in response to the September 2015 RFP. The Board also authorized issuance of a new RFP (the "April 2016 RFP") seeking proposals from qualified suppliers of electric peaking capacity and energy produced from natural gas-fueled combustion turbines and other peaking capacity resources.

KyMEA anticipates using the resources obtained through the RFP process as part of a portfolio of resources to supply all requirements service commencing on May 1, 2019 to the following KyMEA Members ("AR Members"): the Cities of Bardwell, Falmouth, Madisonville, Paris, and Providence, the Benham Power Board, the Frankfort Plant Board, the Barbourville Utility Commission, and the Corbin City Utilities Commission. The 2019 annual demand and energy requirements of these KyMEA AR Members are projected to be approximately 290 MW and 1,380,000 MWhs, respectively. The power supply planning being accomplished at this time has focused on the period from May 2019 through May 2029 with consideration to positioning KyMEA to continue to be successful beyond May 2029.



KyMEA's planning is progressing with a focus on the needs of the AR Members identified above. However, the RFP made proposers aware that the following considerations may impact the portfolio of power supply resources assembled by KyMEA.

- At some future date, KyMEA anticipates supplying certain capacity, energy, and potentially other services to Owensboro Municipal Utilities (OMU), which owns and operates the coal-fired Elmer Smith Station; however, the power supply arrangements between KyMEA and OMU remain under consideration and will be impacted by decisions OMU makes relative to the Elmer Smith Station. OMU's 2019 annual demand and energy requirements are projected to be approximately 200 MW and 900,000 MWhs, respectively. The capacity rating of Unit 2 of the Elmer Smith Station is approximately 250 MWs. OMU had advised that it anticipates retiring Unit 1 of the Elmer Smith Station by early 2019.
- 2. The City of Berea has participated in KyMEA planning activities and has the opportunity to consider membership in KyMEA. Should Berea join KyMEA, KyMEA's all requirements load would increase approximately 8%-10%.
- 3. Certain other municipal electric systems in the Commonwealth have expressed an interest in considering membership in KyMEA in the future. Addition of members may increase KyMEA's capacity and energy requirements or present other power supply arrangement considerations.

Overall, the level of response to KyMEA's April 2016 RFP indicated significant interest on the part of several power suppliers in competing to supply resources to KyMEA. We believe the responses provide a sound basis for KyMEA to determine that the recommended Provider(s) have submitted competitive and attractive proposals for peaking capacity and energy resources to be included in KyMEA's portfolio of resources.

Based on the analyses we have performed and the assumptions and other information on which those analyses are based, we conclude and recommend to the KyMEA Board that Peaking Provider 1 is most advantageous to KyMEA based upon the evaluation factors set forth in the RFP, assuming negotiation of a power purchase agreement ("PPA") having terms and conditions acceptable to KyMEA can be successfully completed and the satisfaction of other contingencies.

The proposal from Peaking Provider 1 was determined by our analyses to have the lowest projected cost among competing, comparable options presented in the other proposals over the period from 2019 through May 2029 and also is most advantageous to KyMEA based on assessment of the evaluation factors set forth in the RFP, which included relevant qualitative considerations. Including a 10 Year contract with Peaking Provider 1 in KyMEA's portfolio would be a significant step toward meeting the objectives established for KyMEA's AR Portfolio. More specifically, a contract with Peaking Provider 1 would be a key component of a portfolio that would achieve one of KyMEA's key objectives – that of remaining competitive with Kentucky Utilities Company ("KU") and other suppliers under a wide range of future conditions.

Following KyMEA's determination that Peaking Provider 1 was reasonably susceptible of being selected for award, and working with KyMEA's legal counsel, Spiegel & McDiarmid LLP under the guidance and direction of the KyMEA Board and AR Members, we have negotiated provisions of a PPA with Peaking Provider 1 to implement the proposed transaction. During those negotiations, Peaking Provider 1



honored its proposal and has agreed to include provisions in the PPA that enhance the attractiveness of the transaction to KyMEA. Those negotiations are expected to be substantially completed by July 13.

Since receipt of the responses to the RFP, the proposals, evaluations, and progress of negotiations, as applicable, have been discussed monthly with the KyMEA Board and the AR Members. The discussions have mostly been in closed session due to the confidential nature of the information contained in the proposals and to comply with in the Kentucky Model Procurement Code, specifically Kentucky Revised Statutes 45A.370 titled Competitive Negotiation.

The remainder of this report provides additional information and explanations, all of which are important to a full understanding of the basis for our recommendations.

### The April 2016 RFP

The April 2016 RFP provided that the solicitation was to be conducted under the guidelines of the Kentucky Model Procurement Code, specifically Kentucky Revised Statutes 45A.370 titled Competitive Negotiation. In the RFP, KyMEA reserved the right to negotiate with all, some, or none of the Proposer(s) based on qualification and evaluation criteria determined by KyMEA, at its sole discretion. Proposers were advised that KyMEA reserved the right to initiate negotiations with the highest ranked Proposer(s) in order to achieve the best and final offer, terms, and price. If no agreement is reached with the highest ranked Proposer(s), KyMEA reserved the right to negotiate with successive Proposers in the ranking until an acceptable agreement is reached or all Proposers have been rejected.

The RFP was structured to request proposals for natural gas fueled combustion turbines and other peaking capacity and energy resources.

The RFP indicated that KyMEA intends to purchase power from various suppliers commencing no earlier than May 1, 2019 for terms of 3 to 10 years. This range of terms was specified in the RFP to allow KyMEA to consider and compare both short and long term transactions and to provide the opportunity for KyMEA to construct its portfolio with contracts that would have staggered terms.

The RFP also provided that resources must: (i) be deliverable on a firm, non-interruptible basis to the LGE/KU transmission system, (ii) not be committed for sale to third parties, and (iii) qualify for designation as network resources under the LGE/KU Open Access Transmission Tariff ("OATT") to serve the loads of KyMEA's Member municipal electric systems.

### **Responses to the RFP**

Proposals were received from 4 Proposers for a range of terms as follows:

- Short term 3 years
- Medium term 5 Years
- Long term 10 years, plus rights to extend

Three Providers proposed to begin the transaction on June 1, 2019 and the 4<sup>th</sup> on May 1, 2019. One Proposer submitted four options that were distinct and, therefore, were analyzed as separate proposals.



Figure 1 below provides an overview of the proposals received in response to the RFP.

Overall, the level of response indicated significant interest on the part of several power suppliers in competing to supply resources to KyMEA.

# **RFP** – Overview of Proposals Received

Proposal Number	Resource	Capacity MW	Term	Optionality	Delivery Point
1	CT - Aero	90 or 75, with 0.15 higher capacity rate	10	1. Can nominate 30Mw to 90MW Year 4 2. Fuel by Buyer or Seller, Buyer can use Sellers firm transportation at incremental cost 3. Extendable beyond 10 yrs. "at neg. price"	LGE
2A	CT Frame 68	66 in 33 MW	3	NA	LGE
2B	Coal plus LD Energy - Variable	150	3	NA	LGE
2C	Coal plus LD Energy - Fixed Strike Price	150	3	NA	LGE
2D	CT Frame 7B	150 in 54MW incr.	3	NA	LGE
3	ст	50	5	Negotiable extension to 10 years	MISO
4	HR Call Option - LD Energy - No Capacity	100 MWh perhour (5x16)	5	NA	MISO or PJM
COMBULTING		百月		at a hard and a	11

Figure 1- Overview of Proposals Received

In alphabetical order, the following entities submitted proposals in response to KyMEA's April 2016 RFP:

- Big Rivers Electric Corporation
- BP Energy Company
- > Illinois Power Marketing Company, a subsidiary of Dynegy
- Paducah Power System

A fifth company submitted, but later withdrew, a proposal. A cursory review indicated that the proposal submitted was higher in cost than other proposals, but the withdrawn proposal was not fully evaluated.



### Key Power Supply Objectives Established by KyMEA

KyMEA established certain key objectives in the power supply area to guide the process of developing its power supply program. Generally, KyMEA's objectives can be summarized as follows.

- 1. **Competitiveness** The Portfolio should allow KyMEA to maintain competitiveness with KU and other power suppliers under a wide range of future conditions.
- 2. **Flexibility and Diversity** The Portfolio should have diversity in fuels, resources, transmission paths, locations, and contract terms to allow KyMEA to:
  - a. Reduce risks that changes in various factors will unduly impact KyMEA;
  - b. Adapt its resource portfolio and mix as conditions change; and
  - c. Effectively use renewable resources, as desired by the KyMEA Board and AR Members, and as resource opportunities are identified..
- 3. **Reliable power supply** The Portfolio should provide adequate resources and transmission arrangements to provide a reliable power supply to meet the KyMEA AR Members' requirements.
- 4. Achieve Economies of Scale Benefits The Portfolio should include resources that are competitive in costs with resources available to larger power supply systems i.e., resources that have the advantages of economies of scale.

### **Balancing Renewables and Conventional Resources**

Renewable energy resources are becoming increasingly cost effective, and the KyMEA Board has approved a study to identify potentially attractive renewable resources for inclusion in the power supply portfolio. However, at this time, the costs that must be recovered through electric rates and charges of meeting peak demand and energy requirements from renewables are higher than the costs of conventional resources. Also, key renewable technologies – solar photovoltaic and wind turbines – produce energy only on an "as available basis" that does not correspond with customer energy usage patterns. Cost-effective, proven energy storage options are not yet available. Accordingly, the use of these key renewable technologies must be supplemented and backed-up by conventional resources to provide a power supply program that can reliably and economically serve residential, commercial, industrial and municipal peak demand and energy requirements.

Accordingly, KyMEA is planning its initial resource portfolio to be based primarily on the use of conventional, cost-effective resources, but building in the flexibility to incorporate renewable resources, as KyMEA and its AR Members identify attractive opportunities.

Figure 2 below illustrates this strategy.



## Key Objective 2 Balancing Renewables and Conventional Resources



Figure 2- Balancing Renewable and Conventional Resources

### **Evaluation Criteria**

The April 2016 RFP provided that the "the evaluation of proposals ... will consider the impact of a proposal on the KyMEA Members' total net cost of power on a present value basis over the potential term of the transaction."

Further, the RFP provided that the analysis of the responses was to consider projected impacts on KyMEA's costs, risks, flexibility, optionality, and uncertainties.

- "KyMEA's consideration of a proposal also will qualitatively and/or quantitatively consider: (i) risks that actual costs may be higher than projected; (ii) uncertainties that may impact the ability of the respondent to perform as proposed; (iii) flexibility and optionality that may be provided to KyMEA; and (iv) the potential volatility in the projected costs of the proposal."
- "The factors to be considered in the evaluation, in declining order of relative importance, are the following:
  - 1. Projected net cost of power on a present value basis over the potential term of the transaction;
  - 2. Flexibility and optionality afforded to KyMEA under the proposal;
  - 3. Uncertainties concerning performance and availability;
  - 4. Uncertainties concerning transmission arrangements;



- 5. Uncertainties concerning commencement of the transaction by May 1, 2019;
- 6. Creditworthiness; and
- 7. Location of the Proposer's resources."
- "KyMEA reserves the unilateral right to make all decisions and judgments as to the assessment of all proposals, the appropriate assumptions to be used in the analyses, and the weight to be given to each factor."
- "Written or oral discussions will be conducted with the responsible Proposers whose proposals are determined in writing by KyMEA or its consultants to be reasonably susceptible of being selected for award based on qualifications and the evaluation factors provided in the RFP."

### **Evaluation Process and Approach**

The projected impact on KyMEA cost of power of the proposals was evaluated for three study periods as follows.

### **Evaluation Process**



Figure 3- Study Periods for Comparisons



The quantitative analyses were based on a comparison of the \$/MWh costs on annual and levelized present worth bases, taking into account the following costs and considerations.

### Quantitative Analytical Methods

Structured to allow apples-to-apples comparison of resources of: different capacity amounts, and availability expectations.

- 1. Group and compare for similar proposed length of the transaction.
  - Compare \$/MWh costs on annual and levelized present worth bases
  - Also compare capacity cost levels (\$/kW-yr.)

### 2. Project total cost of each resource

Including to the extent applicable, the following proposed charges and estimated costs:

- Capacity and Fixed O&M
- > Fuel
- Variable O&M
- Variable Environmental
- Congestion and marginal losses
- "Replacement" Energy
  - The amount of energy needed to adjust all resources to the same capacity factor
    - 5% capacity factor for peaking resources
  - Priced at projected market prices for the applicable period
- 3. Test Key Assumptions to Determine if Variance would Impact Conclusions



Figure 4- Quantitative Analysis - Components of Costs Considered

The most advantageous alternatives based on the quantitative analyses of the projected cost of power were then compared on a qualitative basis considering the following aspects of the RFP evaluation criteria.

- 1. Uncertainties regarding the cost of resource projected in the quantitative analyses
  - Price certainty
    - □ extent to which proposer was willing to fix the price of capacity
    - extent to which the proposed capacity price was based on the Proposer's costs
    - □ rights reserved by the Proposer to change the price prior to entering a PPA
    - extent to which factors that would impact the energy price align with factors that would impact KU's energy costs
    - impact of the proposal on KyMEA's competitiveness versus KU, the market, and other suppliers
  - Uncertainties regarding exposure to CO2 and other environmental legislation, in absolute terms and relative to KU
  - Exposure and uncertainties as to the cost of congestion and losses



- 2. Flexibility and optionality afforded to KyMEA under the proposal
  - Day ahead and intraday energy scheduling flexibility
  - Flexibility as to amounts of capacity to be purchased
  - Rights to extend the term at KyMEA's option
  - Fuel supply options
- 3. Uncertainties concerning performance and availability
  - Historical performance of assets
  - Resource availability guarantees
- 4. Uncertainties concerning transmission arrangements
- 5. Uncertainties concerning commencement of the transaction by May 1, 2019
- 6. Creditworthiness
- 7. Location of the Proposer's resources.

### Key Assumptions regarding Fuel and Market Prices

### Projected Market Prices for Power and Fuel

We have relied on the forecasts and projections of power market energy prices and fuel prices provided to us in late 2015 under a subscription with an internationally recognized provider of data and forecasts to the electric power and other industries. Then, we further compared the price projections used to more recent releases and determined that the subsequent changes to the market and fuel price projections would not impact the conclusions and recommendations set forth herein. We have used a market capacity price projection prepared in first quarter 2016.

We compared the market prices for energy used to fixed market energy prices proposed in response to KyMEA's September 2015 RFP and determined that the coal and natural prices we have used relate reasonably to those proposed market based prices for energy.

### Analyses of Proposals

As noted above under "Evaluation Process and Approach," the evaluation process was progressively performed for three time periods due to the diverse nature of the transaction terms proposed.

As shown on the table below in Figure 5, over the 10-year term, Peaking Provider 1's proposal was determined to have the lowest projected cost to KyMEA as compared to all other Proposals. Over the 5-year term, Peaking Provider 1's proposal was also determined to have the lowest projected cost to KyMEA as compared to the Proposal form Providers 3 and 4.

### **Intentionally Blank**



Cost Ranking Based on of Levelized Evaluated Costs							
Ranking Group	10-Year	5-Year	3-Year				
Group 1: Lowest Cost	Provider 1	Provider 1	Provider 2A/D				
Group 2: Higher Cost	<ul><li>Provider 2A/D</li><li>Provider 3</li></ul>	Provider 3	Provider 1				
Group 3: Highest cost	> Provider 4	Provider 4	Provider 2 B/C				

Figure 5 - Cost Ranking of Proposals

As indicated above, over the year 3 period, Proposals A and D from Provider 2 were projected to be marginally lower in cost than the Proposal from Provider 1. The difference in costs over than first 3 years between the Proposals from Providers 1 and 2 is projected to be approximately \$3 million – with Provider 2's Proposal projected to have the lower cost over that initial 3-year period, but the higher cost over the 10-year period. More specifically, if future market prices increase toward levels now projected for Years 4 through 10, the Purchase from Provider 1 will be lower in cost over the 10 year period from 2019 through 2029. Based on current projections of market capacity prices, the \$3 million higher cost incurred in Years 1 through 3 would be more than offset by the favorable costs of the Provider 1 Proposal in Years 4 through 10.

Intentionally Blank



In addition to being more cost effective over the period from 2019 through 2029, the proposal from Provider 1 was determined to be more advantageous to KyMEA than the Proposals from Provider 2 based on the qualitative considerations summarized below in Figure 6.

### Qualitative Considerations Regarding Most Cost Effective Peaking Proposals - Areas shaded in green are advantages to KyMEA

	Provider 1	Provider 2
Transmission Delivery Location	LGE/KU	LGE/KU
Scheduling Flexibility	Any amount day ahead, plus willing to develop inter-day scheduling process	Min 30MW day ahead, plus no inter-day flexibility proposed
Hedge Against Higher Market Capacity Costs after June 2022	Significant Attractive Hedge capping Peaking Costs at Early Year Levels plus CPI Escalation	None
Extension beyond 10 Years	Expressed willingness to negotiate terms	No extension proposed beyond even 3 years
Fuel Supply Option	KyMEA can provide or elect to have Seller provide	Seller will provide fuel
Availability of Firm Fuel Transportation	KyMEA can use Seller's firm transportation at incremental costs , which reduces exposure to lack of fuel availability during peak periods	Not proposed, nor expected.
Credit Rating	Investment grade	Below investment grade
FRONT	THE AT A THE REAL	tool: II

### Figure 6- Qualitative Considerations Favor Peaking Provider 1

### Option to Adjust the Amount of Capacity Purchased in Years 4 through 10 under Provider 1's Proposal

As noted above, the Proposal from Provider 1 provides significant and important long term benefits of lower projected costs and flexibility to KyMEA that sets it apart from the Proposals from Provider 2.

Provider 1's Proposal also includes the option for KyMEA to make an election to purchase any amount from 90 MW down to 30 MW in years 4 through 10. This provides flexibility that would be very valuable to KyMEA under several circumstances. For instance, this flexibility would allow adjustment of KyMEA's peaking capacity resources as more becomes known about renewable opportunities, the amount of combined cycle capacity to be purchased by KyMEA, the load of KyMEA's existing AR Members, and the potential impact of participation by Berea and others on KyMEA's capacity and energy requirements in the 2020s.

### **Conclusions and Recommendations**

We have concluded that Peaking Provider 1 submitted the most advantageous peaking resource Proposal in response to KyMEA's April 2016 RFP, based upon the evaluation factors set forth in the RFP, and



therefore is susceptible of award. Our analysis assumes that firm transmission arrangements can be made on a timely basis, which we believe to be a reasonable assumption,

Following KyMEA's determination that Peaking Provider 1 was reasonably susceptible of being selected for award, and working with KyMEA's legal counsel, Spiegel & McDiarmid LLP under the guidance and direction of the KyMEA Board and AR Members, we have negotiated provisions of a PPA with Peaking Provider 1 to implement the proposed transaction. During those negotiations, Peaking Provider 1 honored its proposal and has agreed to include provisions in the PPA that enhance the attractiveness of the transaction to KyMEA. Those negotiations are expected to be substantially completed by July 13.

- The proposed purchase from Peaking Provider 1 is projected to be lower in cost than the proposals submitted by Peaking Providers 3 and 4 both over the 5 year terms of those proposed transactions and the 10 year term proposed by Peaking Provider 1. The Peaking Provider 1 Proposal also is more attractive than the Proposals from Peaking Providers 3 and 4 when qualitative considerations are taken into account.
- 2. The cost of the purchase from Peaking Provider 1 over the 10 years from June 2019 through May 2029 is projected to be lower than the cost of purchasing from Peaking Provider 2 for 3 years and then entering into another transaction for years 4 through 10.
- 3. The Peaking Provider 1 Proposal provides significant additional value as compared to the Proposals from Peaking Provider 2 by providing:
  - a. An attractive hedge against future increases in market prices for peaking capacity in years 4 through 10, which increases in market prices are projected to occur, and
  - b. An option to nominate capacity from 90 MW to as low as 30 MW beginning in year 4 of the transaction.

Including a 10 Year contract with Peaking Provider 1 in KyMEA's portfolio would be a significant step toward meeting the objectives established for KyMEA's AR Portfolio. The proposed 10 Year PPA with Peaking Provider 1 would be a key element in establishing a portfolio that would be competitive with KU because it would contribute significantly to KyMEA's average cost of capacity being lower than the average cost of capacity on KU's system. In addition, the 10 year contract with Peaking Provider 1 may have an option to extend the contract beyond the initial 10 year period depending on the outcome of negotiations with Peaking Provider 1.

Peaking Provider 1 is Paducah Power System in Paducah, Kentucky ("PPS"). We anticipate that the proposed transaction will also be beneficial for PPS.

Respectfully Submitted,

nFront Consulting LLC