

October 26, 2018

Ms. Gwen Pinson, Executive Director  
Kentucky Public Service Commission  
P.O. Box 615  
211 Sower Boulevard  
Frankfort, KY 40602

RECEIVED

OCT 26 2018

PUBLIC SERVICE  
COMMISSION

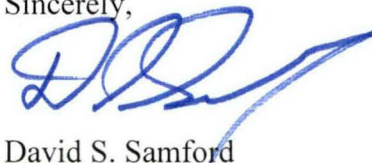
Re: *In the Matter of the Application of East Kentucky Power Cooperative, Inc.  
for a Certificate of Public Convenience and Necessity for the Construction  
of Backup Fuel Facilities at its Bluegrass Generating Station; PSC Case  
No. 2018-00292*

Dear Ms. Pinson:

Please find enclosed for filing with the Commission an original and ten copies of the Responses to Commission Staff's First Request for Information and a Motion for Confidential Treatment, as tendered on behalf of East Kentucky Power Cooperative, Inc. Please return a file-stamped copy of this filing to my office.

Should you have any questions, please feel free to contact me.

Sincerely,



David S. Samford

Enclosure

**COMMONWEALTH OF KENTUCKY**  
**BEFORE THE PUBLIC SERVICE COMMISSION**

**RECEIVED**

OCT 26 2018

PUBLIC SERVICE  
COMMISSION

**IN THE MATTER OF:**

**THE APPLICATION OF EAST KENTUCKY )  
POWER COOPERATIVE, INC. FOR A )  
CERTIFICATE OF PUBLIC CONVENIENCE ) CASE NO. 2018-00292  
AND NECESSITY FOR THE CONSTRUCTION )  
OF BACKUP FUEL FACILITIES AT ITS )  
BLUEGRASS GENERATING STATION )**

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**MOTION FOR CONFIDENTIAL TREATMENT**

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Comes now East Kentucky Power Cooperative, Inc. (“EKPC”), by counsel, pursuant to KRS 61.878, 807 KAR 5:001, Section 13 and other applicable law, and in support of its request that the Commission afford confidential treatment to certain information contained in EKPC’s Responses to Commission Staff’s First Request for Information in the above-captioned proceeding, respectfully states as follows:

1. On August 24, 2018 EKPC filed an Application seeking a Certificate of Public Convenience and Necessity (“CPCN”) for the construction of on-site backup fuel supply resources at its Bluegrass Generating Station (“Bluegrass Station”) located in Oldham County, Kentucky.
2. On October 11, 2018 Commission Staff issued its First Request for Information to EKPC.
3. In response to Commission Staff’s First Request for Information, EKPC is providing certain information for which its requests confidential treatment.
4. The information for which EKPC seeks confidential treatment is contained in its Responses to Requests 2a and 2d, which is referred to herein as the “Confidential Information”

and, broadly speaking, includes detailed information pertaining to the PJM Capacity Performance payments received by EKPC and expected to be received by EKPC as well as sensitive information regarding insurance policies, premiums and coverages.

5. Request No. 2a of Commission Staff's First Request for Information states as follows:

Assuming the Commission approves EKPC's proposal to construct the new back-up ultra-low sulfur diesel distillate fuel oil system (ULSD Fuel System) at the Bluegrass Stations and that it is timely completed, provide a comparison of the current Delivery Year CP payments with those through the 2021/2022 Delivery Year broken down by the CP payments for the Bluegrass Station and other generating stations.

6. In its response to Request 2a, EKPC is providing a chart which includes the CP payments received in the current Delivery Year through the 2021-2022 Delivery Year.

7. Request No. 2d of Commission Staff's First Request for Information states as follows:

Refer to the application, paragraph 21, regarding the strategies examined to minimize risk. Provide the cost for the insurance project to hedge against any potential CP penalties that may be assessed.

8. In its response to Request 2d, EKPC is providing sensitive information regarding the amount of insurance coverage, the annual deductible and the annual cost of coverage.

9. Contemporaneous with the filing of this Motion, EKPC is tendering documentation responsive to Commission Staff's Request Nos. 2a and 2d. The Confidential Information provided is proprietary information that is retained by EKPC on a "need-to-know" basis and that is not publicly available. The Confidential Information is distributed within EKPC only to those employees who must have access for business reasons, and it is generally recognized as confidential and proprietary in the energy industry.

10. The Kentucky Open Records Act and applicable precedent exempts the Confidential Information from disclosure. *See* KRS 61.878(1)(a); KRS 61.878(1)(c)(1); *Zink v. Department of Workers Claims, Labor Cabinet*, 902 S.W.2d 825 (Ky. App. 1994); *Hoy v. Kentucky Industrial Revitalization Authority*, 907 S.W.2d 766, 768 (Ky. 1995). The Confidential Information includes information regarding PJM CP payments to EKPC and sensitive information regarding insurance policies which are highly confidential. Additionally, public disclosure of the Confidential Information would unnecessarily provide interested parties and EKPC's competitors with access to exclusive information regarding EKPC's financial information and such public disclosure could unfairly harm EKPC's competitive position in the marketplace, to the detriment of EKPC. For these reasons, the Confidential Information satisfies both the statutory and common law standards for affording confidential treatment. The Commission has previously granted confidential protection to similar information.<sup>1</sup>

11. EKPC does not object to limited disclosure of the Confidential Information, pursuant to an acceptable confidentiality and nondisclosure agreement, to the Attorney General or any other intervenors with a legitimate interest in reviewing the same for the sole purpose of participating in this case.

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<sup>1</sup>*See, In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of the Acquisition of Existing Combustion Turbine Facilities from Bluegrass Generating Company, LLC at the Bluegrass Generating Station in LaGrange, Oldham County, Kentucky and for Approval of the Assumption of Certain Evidences of Indebtedness*, Order, Case No. 2015-00267 (Ky. P.S.C. Jan. 12, 2016); *In the Matter of the Application of East Kentucky Power Cooperative, Inc. for Approval of the Acquisition of Existing Combustion Turbine Facilities from Bluegrass Generating Company, LLC at the Bluegrass Generating Station in LaGrange, Oldham County, Kentucky and for Approval of the Assumption of Certain Evidences of Indebtedness*, Order, Case No. 2015-00267 (Ky. P.S.C. Nov. 24, 2015); *In the Matter of an Examination of the Application of the Fuel Adjustment Clause of East Kentucky Power Cooperative, Inc. From November 1, 2014 through April 30, 2015*, Order, Case No. 2015-00233 (Ky. P.S.C. July 18, 2016).

12. In accordance with the provisions of 807 KAR 5:001, Section 13(2), EKPC is filing one (1) unredacted copy of the Confidential Information in a separate sealed envelope marked confidential. An original and ten (10) redacted copies of EKPC's responses to Commission Staff's First Request for Information have also been tendered to the Commission.

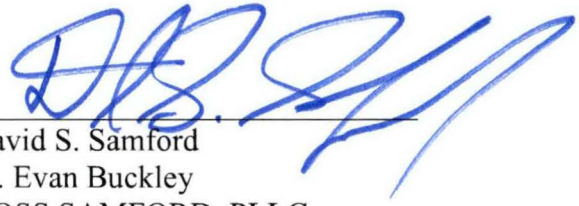
13. Further in accordance with the provisions of 807 KAR 5:001, Section 13(2), EKPC respectfully requests that the Confidential Information be withheld from public disclosure for a period of ten (10) years. This will assure that the Confidential Information – if disclosed after that time – will no longer be commercially sensitive so as to likely impair the interests of EKPC if publicly disclosed.

14. If, and to the extent, the Confidential Information becomes publicly available or otherwise no longer warrants confidential treatment., EKPC will notify the Commission and have its confidential status removed, pursuant to 807 KAR 5:001, Section 13(10).

WHEREFORE, on the basis of the foregoing, EKPC respectfully requests an Order from the Commission granting this Motion and protecting the Confidential Information from public disclosure for a period of ten (10) years.

This 26<sup>th</sup> day of October, 2018.

Respectfully submitted,

A handwritten signature in blue ink, appearing to be 'D.S. Buckley', written over a horizontal line.

David S. Samford  
M. Evan Buckley  
GOSS SAMFORD, PLLC  
2365 Harrodsburg Road, Suite B-325  
Lexington, Kentucky 40504  
david@gosssamfordlaw.com  
ebuckley@gosssamfordlaw.com  
(859) 368-7740

*Counsel for East Kentucky Power  
Cooperative, Inc.*

**RECEIVED**

**OCT 26 2018**

**PUBLIC SERVICE  
COMMISSION**

**COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION**

**IN THE MATTER OF:**

**THE APPLICATION OF EAST KENTUCKY )  
POWER COOPERATIVE, INC. FOR A )  
CERTIFICATE OF PUBLIC CONVENIENCE )  
AND NECESSITY FOR THE CONSTRUCTION )  
OF BACKUP FUEL FACILITIES AT ITS )  
BLUEGRASS GENERATING STATION )**

**CASE NO.  
2018-00292**

**RESPONSES TO COMMISSION STAFF'S FIRST REQUEST FOR  
INFORMATION TO EAST KENTUCKY POWER COOPERATIVE, INC.  
DATED OCTOBER 11, 2018**

**COMMONWEALTH OF KENTUCKY**  
**BEFORE THE PUBLIC SERVICE COMMISSION**

**IN THE MATTER OF:**

**THE APPLICATION OF EAST KENTUCKY      )**  
**POWER COOPERATIVE, INC. FOR A      )**  
**CERTIFICATE OF PUBLIC CONVENIENCE      ) CASE NO. 2018-00292**  
**AND NECESSITY FOR THE CONSTRUCTION      )**  
**OF BACKUP FUEL FACILITIES AT ITS      )**  
**BLUEGRASS GENERATING STATION      )**

**CERTIFICATE**

**STATE OF KENTUCKY    )**  
**)**  
**COUNTY OF CLARK      )**

Michelle K. Carpenter, being duly sworn, states that she has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Public Service Commission Staff's First Request for Information in the above-referenced case dated October 11, 2018, and that the matters and things set forth therein are true and accurate to the best of her knowledge, information and belief, formed after reasonable inquiry.

*Michelle K. Carpenter*

Subscribed and sworn before me on this 26<sup>th</sup> day of October 2018.

*Gwyn M. Willoughby* #590567  
Notary Public  
GWYN M. WILLOUGHBY  
Notary Public  
Kentucky – State at Large  
My Commission Expires Nov 30, 2021



COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF EAST KENTUCKY )  
POWER COOPERATIVE, INC. FOR A )  
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AND NECESSITY FOR THE CONSTRUCTION )  
OF BACKUP FUEL FACILITIES AT ITS )  
BLUEGRASS GENERATING STATION )

CERTIFICATE

STATE OF KENTUCKY )  
 )  
COUNTY OF CLARK )

David Crews, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Public Service Commission Staff's First Request for Information in the above-referenced case dated October 11, 2018, and that the matters and things set forth therein are true and accurate to the best of his knowledge, information and belief, formed after reasonable inquiry.

*David Crews*  
\_\_\_\_\_

Subscribed and sworn before me on this 26<sup>th</sup> day of October 2018.

*Gwyn M. Willoughby* #590567

Notary Public

GWYN M. WILLOUGHBY  
Notary Public  
Kentucky - State at Large  
My Commission Expires Nov 30, 2021

**COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION**

**IN THE MATTER OF:**

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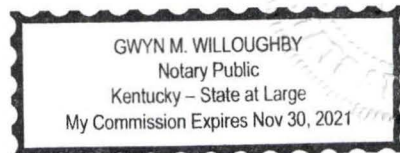
**CERTIFICATE**

**STATE OF KENTUCKY )  
  )  
COUNTY OF CLARK )**

Craig Johnson, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Public Service Commission Staff's First Request for Information in the above-referenced case dated October 11, 2018, and that the matters and things set forth therein are true and accurate to the best of his knowledge, information and belief, formed after reasonable inquiry.



Subscribed and sworn before me on this 26<sup>th</sup> day of October 2018.



**COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION**

**IN THE MATTER OF:**

<b>THE APPLICATION OF EAST KENTUCKY POWER COOPERATIVE, INC. FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE CONSTRUCTION OF BACKUP FUEL FACILITIES AT ITS BLUEGRASS GENERATING STATION</b>	) ) ) ) ) ) )	<b>CASE NO. 2018-00292</b>
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**CERTIFICATE**

**STATE OF VIRGINIA     )**  
**)**  
**COUNTY OF FAIRFAX    )**

Ralph L. Luciani, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Public Service Commission Staff's First Request for Information in the above-referenced case dated October 11, 2018, and that the matters and things set forth therein are true and accurate to the best of his knowledge, information and belief, formed after reasonable inquiry.

Ralph L. Luciani

Subscribed and sworn before me on this 16 day of October 2018.

N. Vahedi  
Notary Public



**COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION**

**IN THE MATTER OF:**

**THE APPLICATION OF EAST KENTUCKY )  
POWER COOPERATIVE, INC. FOR A )  
CERTIFICATE OF PUBLIC CONVENIENCE ) **CASE NO. 2018-00292**  
AND NECESSITY FOR THE CONSTRUCTION )  
OF BACKUP FUEL FACILITIES AT ITS )  
BLUEGRASS GENERATING STATION )**


**CERTIFICATE**

**STATE OF KENTUCKY )  
  )  
COUNTY OF CLARK )**

Don Mosier, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Public Service Commission Staff's First Request for Information in the above-referenced case dated October 11, 2018, and that the matters and things set forth therein are true and accurate to the best of his knowledge, information and belief, formed after reasonable inquiry.

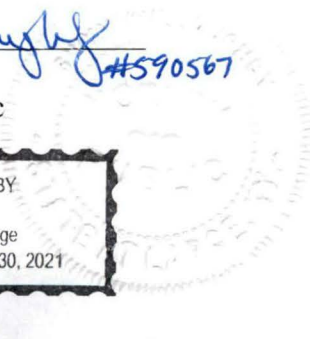
  
\_\_\_\_\_

Subscribed and sworn before me on this 26<sup>th</sup> day of October 2018.

 **#590567**

Notary Public

GWYN M. WILLOUGHBY  
Notary Public  
Kentucky – State at Large  
My Commission Expires Nov 30, 2021



**COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION**


**IN THE MATTER OF:**

**THE APPLICATION OF EAST KENTUCKY )  
POWER COOPERATIVE, INC. FOR A )  
CERTIFICATE OF PUBLIC CONVENIENCE ) **CASE NO. 2018-00292**  
AND NECESSITY FOR THE CONSTRUCTION )  
OF BACKUP FUEL FACILITIES AT ITS )  
BLUEGRASS GENERATING STATION )**

**CERTIFICATE**

**STATE OF KENTUCKY )  
   )  
COUNTY OF CLARK     )**

Jerry B. Purvis, being duly sworn, states that he has supervised the preparation of the responses of East Kentucky Power Cooperative, Inc. to the Public Service Commission Staff's First Request for Information in the above-referenced case dated October 11, 2018, and that the matters and things set forth therein are true and accurate to the best of his knowledge, information and belief, formed after reasonable inquiry.



Subscribed and sworn before me on this 26<sup>th</sup> day of October 2018.



Notary Public

**GWYN M. WILLOUGHBY  
Notary Public  
Kentucky – State at Large  
My Commission Expires Nov 30, 2021**

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18**

**REQUEST 1**

**RESPONSIBLE PARTY: Don Mosier**

**Request 1.** Refer to the application, paragraph 1, regarding the two on-site fuel oil storage tanks that is associated with the proposed backup fuel facilities project, which would provide enough fuel to allow 24 hours of plant operation at the Bluegrass Station during a power system emergency.

**Request 1a.** Explain how EKPC determined that a 24-hour fuel oil supply was necessary in a power system emergency.

**Response 1a.** Combustion turbines are not normally dispatched for long periods of time. Under normal circumstances, combustion turbines are dispatched from a minimum of two hours up to eight hours, covering peak periods of demand. However, under extreme conditions, the number of hours required for combustion turbine operations can be extended. The longest continuous dispatch period for EKPC combustion turbines, based on economics and system reliability, occurred during the extreme cold conditions in 2014 and 2015. The longest EKPC combustion turbine dispatch duration requested by PJM was sixteen hours. EKPC might need to

utilize fuel oil for more than one calendar day, however, the number of hours of dispatch within that day should not exceed the fuel availability. If continuous days of run are required on fuel oil, EKPC will need to replenish the fuel oil supply on an expedited basis.

**Request 1b.** Will EKPC be able to timely procure additional fuel oil if the Bluegrass Station units are required to operate for more than 24 hours in a power system emergency?

**Response 1b.** In most situations, EKPC should be able to timely procure additional fuel oil if the Bluegrass Station units are required to operate for more than 24 hours in a power system emergency, but does not have the expectation that truck deliveries could match the potential max burn. EKPC Fuel and Emissions Department has a Procedure for The Procurement of Fuel Oil in times of normal and emergency situations. A current Fuel Oil Bidders List is maintained listing current oil supply companies and their contact information. EKPC has a transaction metric and delegation of authority in place, through Board Policy, where an emergency spot purchase can be made through an expedited procurement process. Circumstances such as, but not limited to, no fuel oil availability at the rack, no truck or driver availability, or impassible road conditions would be beyond the control of EKPC.

**Request 1c.** Refer to the application, paragraph 10, regarding EKPC's growing load. Provide a comparison of EKPC's summer and winter generation capacity to its actual and

forecasted summer and winter peak load obligations, including its PJM Interconnection, LLC (PJM), reserve margin, for the 2016/2017 Delivery Year through the 2021/2022 Delivery Year.

**Response 1c.**

Year	FORECAST		Target PJM Reserve Requirement (MW)		Total Requirements		Existing Resources		Winter Reserve Margin (%)	Summer Reserve Margin (%)
	Win	Sum	Win	Sum	Win	Sum	Win	Sum		
2016	2,890	2,293	0	87	2,890	2,362	3,572	3,002	19%	21%
2017	2,871	2,311	0	86	2,871	2,380	3,322	3,002	14%	21%
2018	3,437	2,375	0	103	3,437	2,446	3,322	3,002	-3%	19%
2019	3,259	2,391	0	98	3,259	2,463	3,322	3,162	2%	22%
2020	3,288	2,424	0	99	3,288	2,497	3,520	3,167	7%	21%
2021	3,293	2,526	0	99	3,293	2,602	3,520	3,167	6%	18%
2022	3,289	2,548	0	99	3,289	2,624	3,520	3,167	7%	17%



**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18**

**REQUEST 2**

**RESPONSIBLE PARTY: Don Mosier**

**Request 2.** Refer to the application, paragraph 16, regarding the higher PJM Capacity Performance (CP) payments for the most reliable resources and higher non-performance assessments for assets that do not meet performance criteria.

**Request 2a.** Assuming the Commission approves EKPC's proposal to construct the new back-up ultra-low sulfur diesel distillate fuel oil system (ULSD Fuel System) at the Bluegrass Station and that it is timely completed, provide a comparison of the current Delivery Year CP payments with those through the 2021/2022 Delivery Year broken down by the CP payments for Bluegrass Station and other generating stations.

**Response 2a.** The table below provides a comparison of the capacity payments awarded to EKPC for the current delivery year (DY2018-2019) through the most recent cleared delivery year (DY2021-2022). Bluegrass Station was sold as a Base capacity product through the PJM Reliability Pricing Model (RPM) Base product to Capacity Performance product transition period,



**Request 2b.** Assuming the Commission approves EKPC's proposal, identify and explain the basis for any anticipated changes to other revenues (other than jurisdictional sales of electricity) from the Bluegrass Station. Include anticipated revenue changes to black-start capacity (if any), ancillary services, and net off-system sales from the current Delivery Year broken down by the other such revenues for the Bluegrass Station and all other generating stations.

**Response 2b.** There is no anticipated change to revenues due to the addition of dual-fuel capability at Bluegrass Station.

**Request 2c.** Explain how the higher CP payments for the most reliable resources are determined and the estimated impact they will have on revenues generated from Bluegrass Station for the 2020/2021 and 2021/2022 Delivery Years, assuming they are reliable resources.

**Response 2c.** PJM measures each capacity resource in both Installed Capacity (ICAP) and Unforced Capacity (UCAP). ICAP represents the resource's maximum nameplate rating during the summer. UCAP represents the amount of capacity that can be sold into the PJM capacity market. A resource's UCAP is calculated by multiplying its ICAP by its Equivalent Demand Forced Outage Rate (EFORd). EFORd is a measure of the probability that a generating unit will not be available due to forced outages or forced de-ratings when there is a demand on the unit to generate. PJM calculates capacity resources' EFORd each November based on the previous

October through September period. Therefore, the ability of the Bluegrass units to generate in times of demand directly impacts the unit's future capacity payment revenues.

**Request 2d.** Refer to the application, paragraph 21, regarding the strategies examined to minimize risk. Provide the cost for the insurance project to hedge against any potential CP penalties that may be assessed.

**Response 2d.** An insurance policy to hedge up to [REDACTED] of CP penalties, with an annual deductible of [REDACTED], due to lack of fuel availability for the delivery year June 1, 2020 through May 31, 2021 was solicited by EKPC. One company offered to insure the requested position for an annual cost of approximately [REDACTED]. The policy would exclude coverage for lack of fuel due to war, terrorism, cyber, tornado or flood events to the pipeline. The policy would not cover EKPC for business interruption due to non-availability of gas if CP events and or mechanical failures have not occurred. The insurance policy would cover only a very limited position of non-fuel availability so it does not compare directly to having a back-up fuel for the plant. The back-up fuel can be utilized any time an event occurs that prohibits the use of natural gas to fire the facility, whether or not a CP event has been declared. The insurance policy does not help EKPC deliver energy needed for its customers in extreme weather conditions, it only helps hedge the financial exposure created by extreme weather and only when a CP event has been declared.

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18  
REQUEST 3**

**RESPONSIBLE PARTY: Jerry Purvis**

**Request 3.** Refer to the application, paragraph 33, regarding approval of all the necessary permits for the project. Identify the status of any required permits and consider this an on-going request throughout this proceeding.

**Response 3.** The status of required permits is attached on page two of this response.

Item No.	Permit/Clearance	Regulatory Agency	Details	When Required	Applicability	Required	Submitted	Regulatory Position
<b>Federal</b>								
1	Clean Water Act - Section 404 Permit	U.S. Army Corps of Engineers, Louisville District	Nationwide Permit No. 39 for Commercial and Institutional Developments: Less than 0.5 acre/300 linear feet of wetland/stream impacts, Individual Permit: Greater than 0.5 acre/300 linear feet of wetland/stream impacts	Prior to construction	Not Applicable (NA)	No	No	Not required - no jurisdictional water of US impacted
2	Section 7 Threatened and Endangered Species Consultation and Clearance	U.S. Fish & Wildlife Service (FWS), Ecological Services	If the project will potentially impact protected species or their respective habitat, or if a Section 404 permit is required, then the FWS must be contacted. The FWS will determine the level of effort needed for the project to proceed (e.g., habitat assessment, species surveys, avian impact studies, etc.).	Prior to construction	Yes	Yes	Yes	Site-specific field survey completed July 5-6, 2018, no potential endangered species impacts identified. USFWS Section 7 Informal Consultation concurrence pending. Submittal to USFWS 20-Aug-2018, Concurrence received 24 August 2018
3	Migratory Bird Treaty Act / Bald and Golden Eagle Protection Act Compliance	U.S. Fish & Wildlife Service (FWS), Ecological Services	Required when construction or operation of a proposed facility could impact migratory birds, their nests, and especially threatened or endangered species	Prior to construction	No	No	NA	NA
4	Spill Prevention, Control, and Countermeasure (SPCC) Plan Amendment	U.S. Environmental Protection Agency (EPA)	An amendment to the facility's SPCC Plan will be required to address additional onsite fuel storage and secondary containment.	Prior to fuel delivery	Yes	Yes	Not required to submit the SPCC Plan to the EPA for review	Required to be updated to address new fuel oil storage and secondary containment
5	Facility Response Plan (FRP)	U.S. Environmental Protection Agency (EPA)	A FRP is required for facilities that could reasonably be expected to cause "substantial harm" to the environment by discharging oil into or on navigable waters.	Prior to oil delivery	Applicability Determination ongoing	Determination required	in progress	in progress
6	National Environmental Policy Act (NEPA), Environmental Report (ER)	USDA Rural Utility Services (RUS)	Project will require an ER because the project is requesting financing from RUS.  NHPA -Section 106 Addressed through this process	Prior to construction	Yes	Yes	pending approval from USFWS	RUS ER submitted 17 Sept 2018, approved 18 October 2018
<b>State - Kentucky</b>								
7	CPCN	Kentucky Public Service Commission	Required for the construction of electric generating facilities	Prior to construction	Yes	Yes	Yes	in progress
8	Title V - Air Permit, Non-PSD	Kentucky Division of Air Quality	Clean Air Act and title v authorization is for natural gas only. Changes to fuels, monitoring and emissions require air permit modifications	Prior to construction	Yes	Yes	Yes	DAQ issued a draft permit on July 27, 2018. No comments were received. DAQ can issue the proposed anytime. Issuance of the proposed permit authorizes construction of the project.
9	Section 401 Water Quality Certification	Kentucky Division of Water	WQC confirms that discharge materials included in Section 404 permit will meet the States applicable water quality standards	Prior to construction	Not Applicable	NA	NA	No Waters of the Commonwealth anticipated or impacted

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18  
REQUEST 4**

**RESPONSIBLE PARTY: Don Mosier**

**Request 4.** Refer to the Direct Testimony of Don Mosier (Mosier Testimony), page 5, regarding the Bluegrass Station. Explain whether the gas supply to the Bluegrass Station has been interrupted since 2016 either during a EKPC-system peak period or a PJM system peak period.

**Response 4.** Bluegrass Unit Nos. 1 and 2 logged a 21 hour 15 minute forced maintenance outage on December 16, 2016 due to a Texas Gas Transmission, LLC ("Texas Gas") gas restriction on the pipeline. Texas Gas had issued a Cold Weather Alert (Non-Critical Notice) for the day, but there was no official Critical Notice or curtailment posted by the pipeline. There was a valve/compressor issue at Hardinsburg on December 16, 2016 that was credited for the interruption.

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18  
REQUEST 5**

**RESPONSIBLE PARTY: Don Mosier**

**Request 5.** Refer to the Mosier Testimony, page 6, regarding the operation of the Bluegrass Station.

**Request 5a.** Regarding the 37.45 unplanned outage hours occurring in 2017, identify the date in which those unplanned outages occurred and an explanation of the cause(s) of those outages.

**Response 5a.**

**2017**

- Unit 1 experienced no unplanned outage hours.
- Unit 2 experienced 27.35 hours of unplanned outage hours.
  - 23.5 hours on Apr. 27-28, 2017:
    - The unplanned outage was due to a failed rotor air cooler fan motor.
  - 3.85 hours on Sep. 17, 2017:
    - The unplanned outage was due to the unit having inadequate time on turning gear and caused a high rotor vibration. The unit was shut down by plant operations and successfully restarted after an appropriate amount of time on



turning gear (turning the rotor at slow speed) to correct the rotor's eccentricity.

- Unit 3 experienced 10.10 hours of unplanned outage hours.
  - 10.10 hours in April:
    - 4 hours on Apr. 10, 2017 of unplanned outage due to Texas Gas Transmission (TGT) performing annual pipeline maintenance on short notice that showed as a Maintenance Outage.
    - 6.10 hours on Apr. 26-27, 2017 of unplanned outage was due to a failed rotor air cooler fan motor.

**Request 5b.** For each unit of the Bluegrass Station, provide the unplanned outage hours for calendar year 2016 and for 2018 to date; the date in which those unplanned outages occurred; and an explanation of the cause(s) of those outages.

**Response 5b.**

**2016**

- Unit 1 experienced 26.77 hours of unplanned outage hours.
  - 0.12 hours on Jan. 18, 2016
    - The unplanned outage was due to low ambient conditions, which resulted in low lube oil temperature, which caused a momentary drop in lube oil pressure as the cold oil passed through the lube oil filters, which resulted in a low lube oil pressure trip.
  - 2.87 hours on Mar. 15, 2016
    - 2.87 hours of unplanned outage due to TGT performing annual pipeline maintenance on short notice that showed as a Maintenance Outage.
  - 23.78 hours on Dec. 16-17, 2016

- 2.53 hours due to a distributed control system issue.
  - 21.25 hours due to TGT gas restriction
- Unit 2 experienced 24.75 hours of unplanned outage hours.
  - 0.63 hours on Jan. 18, 2016
    - 0.13 hours due to low ambient conditions, which caused a momentary drop in lube oil pressure as the cold oil passed through the lube oil filters, which resulted in a low lube oil pressure trip.
    - 0.50 hours due to unit flame out during start up due to cold ambient conditions.
  - 2.87 hours on Mar. 15, 2016
    - 2.87 hours of unplanned outage due to TGT performing annual pipeline maintenance on short notice that showed as a Maintenance Outage.
  - 21.25 hours on Dec. 16-17, 2016
    - 21.25 hours due to TGT gas restriction
- Unit 3 experienced 120.25 hours of unplanned outage hours.
  - 4.10 hours on Jan. 18, 2016
    - 0.13 hours due to low ambient conditions, which caused a momentary drop in lube oil pressure as the cold oil passed through the lube oil filters, which resulted in a low lube oil pressure trip.
    - 0.25 hours due to unit flame out during start up due to cold ambient conditions.
    - 0.35 hours due to unit flame out during start up due to cold ambient conditions.
    - 1.50 hours due to dirty pilot nozzle strainers
    - 1.87 hours due to tuning the machine and adjusting Ignition Flow Set-point
  - 2.87 hours on Mar. 15, 2016
    - 2.87 hours of unplanned outage due to TGT performing annual pipeline maintenance on short notice that showed as a Maintenance Outage. All

parties, Bluegrass, MOC and LG&E authorized work when requested due to low opportunity for dispatch.

- 10.13 hours on Jun. 23-24, 2016
  - Due to faulty Fuel Gas Pilot Nozzles. It was diagnosed by EKPC and third party expertise that the Pilot Nozzles installed in the 2015 Combustion Inspection, by the previous owner of Bluegrass Station, were inadequately repaired prior to installation. A properly repaired set of Pilot Nozzles were acquired and installed by EKPC and the issue was corrected.
- 103.15 hours on Jul. 6, 9, 13-17, 2016
  - Due to faulty Fuel Gas Pilot Nozzles. It was diagnosed by EKPC and third party expertise that the Pilot Nozzles installed in the 2015 Combustion Inspection, by the previous owner of Bluegrass Station, were inadequately repaired prior to installation. A properly repaired set of Pilot Nozzles were acquired and installed by EKPC and the issue was corrected.

**2018 Year to Date**

- Unit 1 experienced 38.03 hours of unplanned outage hours.
  - 7.78 hours on Jan. 8, 2018
    - Inspection of oil leak on generator step up transformer. Classified as a Maintenance Outage due to short notification time.
  - 7.65 hours on Mar. 16, 2018
    - Turning gear motor swap out. Classified as a Maintenance Outage due to short notification time.
  - 22.60 hours in June
    - 11.37 hours on Jun. 2, 2018 due to fire protection dump because of a lightning strike.
    - 11.23 hours on Jun. 21-22, 2018 due to printed circuit board failure on an 86 relay feeding the switchyard.
- Unit 2 experienced 11.23 hours of unplanned outage hours.

- 11.23 hours on Jun. 21-22, 2018
  - 11.23 hours due to printed circuit board failure on an 86 relay feeding the switchyard.
- Unit 3 experienced 0.73 hours on May 3, 2018 of unplanned outage hours.
  - 0.73 hours due to flame-out because of failed fuel gas heater.

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18  
REQUEST 6**

**RESPONSIBLE PARTY: Don Mosier**

**Request 6.** Refer to the Mosier Testimony, page 11, regarding the uncertainty with respect to the number and frequency of future PJM-imposed Performance Assessment Intervals (PAI).

**Request 6a.** State the number of time(s) and hour(s) that PJM has issued a PAI since the CP requirement has been implemented by PJM.

**Response 6a.** PJM has issued two Load Shed Directive Actions, which are Performance Assessment Interval (PAI) triggers, since the inception of the Capacity Performance construct. The first PAI event occurred on May 29, 2018 1:22PM – 1:46PM (24 minutes total duration) and was due to a localized transmission line overload issue in the AEP region. The second PAI event occurred on July 18, 2018 11:14AM – 12:37PM (83 minutes total duration) and was due to a localized transmission low voltage issue in the AEP region. Neither PAI event resulted in an assessment for non-performance nor bonus for over-performance for any PJM capacity resource as generation could not have solved the issues leading to the Load Shed Directive Action.

**Request 6b.** If applicable, state whether any of EKPC's generation assets performed during any PJM-imposed PAI and whether EKPC incurred an assessment for non-performance or a bonus for over performance.

**Response 6b.** Neither PAI event resulted in an assessment for non-performance nor bonus for over-performance for any PJM capacity resource as generation could not have solved the issues leading to the Load Shed Directive Action.

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18  
REQUEST 7**

**RESPONSIBLE PARTY: Michelle Carpenter**

**Request 7.** Refer to the Direct Testimony of David Crews (Crews Testimony), page 4, regarding the remaining depreciable lives of the three units at Bluegrass Station as being 18 years.

**Request 7a.** Provide an explanation of any impact that the proposed dual fuel project will have on the useful life of the Bluegrass Station units.

**Response 7a.** EKPC does not expect the dual fuel project alone to impact the useful lives of the Bluegrass Station units. However, future depreciation studies could determine that the units have greater useful lives than currently estimated.

**Request 7b.** Provide the current depreciation rate for the Bluegrass Generation units.

**Response 7b.** The Bluegrass Station units are currently depreciating with an ending life of June 30, 2038, or 35 years, based upon when the units were originally constructed and placed in-service.

**Request 7c.** Provide the useful life and depreciation rate of the proposed dual fuel project.

**Response 7c.** EKPC expects the dual fuel project to depreciate using the same remaining useful life as the existing Bluegrass Station units.



**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18**

**REQUEST 8**

**RESPONSIBLE PARTY:** David Crews

**Request 8.** Refer to the Crews Testimony, page 4, regarding the operations of the Bluegrass Station in 2017. Provide the average annual capacity factor for each of the three Bluegrass Station units since 2016.

**Response 8.** The table below provides the requested annual capacity factors for each of the three Bluegrass Station units since 2016.

<b>Unit</b>	<b>2016 - CF</b>	<b>2017 - CF</b>	<b>2018 YTD - CF</b>
Bluegrass 1	0.86%	1.48%	2.12%
Bluegrass 2	0.63%	1.43%	2.43%
Bluegrass 3	2.28%	2.90%	4.68%

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18  
REQUEST 9**

**RESPONSIBLE PARTY: David Crews**

**Request 9.** Refer to the Crews Testimony, page 8, regarding PJM CP. Explain the phase-in of the CP requirements in further detail.

**Response 9.** PJM has taken a phased approach to implementing Capacity Performance. The number of megawatts cleared in the Reliability Pricing Model (RPM) capacity market as Capacity Performance increased each year beginning with the delivery year 2016-2017 until the delivery year 2020–21 (occurred in May 2017), when all PJM resources were required to meet Capacity Performance requirements. PJM transition auctions provided a “glide path” for capacity resources committed to the higher performance requirements for the 2016–17 and 2017–18 delivery years. During the transition period, a resource could be offered in as either Base or Capacity Performance.

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18**

**REQUEST 10**

**RESPONSIBLE PARTY: Craig A. Johnson**

**Request 10.** Refer to the Crews Testimony, page 15, regarding the disadvantages associated with fuel switching by dual-fuel units and potentially increased forced outage rates.

**Request 10a.** Explain why switching of fuel by dual-fuel units during severe weather events may increase the likelihood of a forced outage if the dual-fuel capability is not regularly tested.

**Response 10a.** The main issue with combusting fuel oil in the turbine is coking of the supply lines when the system sits for an extended period of time. Coking occurs when the No. 2 fuel oil is heated to the point where it becomes a solid resulting in plugging of the supply lines to the combustor. Without periodically testing the system, a coking situation could exist without operator knowledge until fuel oil supply is needed. Regular testing and verification of the proper function of the equipment also allows the plant operators to remain familiar with a system that is infrequently called upon.

**Request 10b.** Explain in detail how EKPC's experience with dual fuel operation at seven of the nine natural gas peaking units at its J.K. Smith Generating Station (Smith Station) mitigates the increased risk of forced outages at the Bluegrass Station.

**Response 10b.** EKPC has demonstrated success with the operation of the seven dual fuel combustion turbines at Smith Station. This operational experience from Smith Station is being shared with Bluegrass operators so that they can set up a successful training, testing and preventative maintenance program. For instance, one of the main issues with a dual fuel system is when coking occurs in the No. 2 fuel oil supply lines close to the combustor. Experience at Smith Station has shown that periodic testing and purging of the fuel oil supply lines will help to reduce the risk of this occurring. It is because of this successful dual fuel operational experience at Smith Station that EKPC is confident that a backup fuel source will mitigate the risk of a forced outage due to a natural gas supply issue.

Smith Station has demonstrated over the years that back-up fuel oil has eliminated potential unplanned outages due to natural gas supply issues. Issues due to falling gas line pressures during high demand periods, such as experienced widespread during the 2013-2014 Polar Vortex in PJM, issuance of Operational Flow Orders on the pipe by the supplier, or under estimating the amount of gas needed in the day ahead market, forcing dual fuel units to either start on or switch to fuel oil has prevented many unplanned outages.

Per Request 5, data was retrieved for 2016, 2017 and 2018 for Smith Station. The data below shows that the dual fuel option has prevented unplanned outages as follows:

JK Smith:

January 2016 through October 2018

Three incidents of low gas pressure transfers that prevented unplanned outages.

Feb. 15, 2016 - Unit 1

July 18, 2017 – Unit 1

July 10, 2018 – Unit 7

Eighteen incidents of either an Operational Flow Order or under nominating enough gas in the day ahead market which caused the units to either start on fuel oil or switch to fuel oil to prevent unplanned outages.

Jan. 1, 2018 – Units 1, 2, 4, 6 and 7

Jan. 5, 2018 – Units 1, 2 and 3

Jan. 18, 2018 – Units 1, 2, 3, 4, 6 and 7

Jan. 19, 2018 – Units 4, 5, 6 and 7

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18**

**REQUEST 11**

**RESPONSIBLE PARTY: David Crews**

**Request 11.** Refer to the Crews Testimony, page 18, regarding EKPC's remaining generation assets being well positioned with respect to CP requirements.

**Request 11a.** Provide the types of fuel that the Smith Station peaking units are capable of using.

**Response 11a.** J.K Smith Station Units 1-7 are capable of using natural gas and fuel oil. Units 9 and 10 are capable of using natural gas only. J.K Smith is uniquely situated near two natural gas transmission pipelines (Tennessee Gas Pipeline and Texas Eastern). All units at the station are capable of running on either natural gas pipeline.

**Request 11b.** State whether the gas supply for two peaking units at the Smith Station that do not have dual fuel capability are interruptible or firm gas service.

**Response 11b.** J.K. Smith Units 9 and 10 are not capable of running on fuel oil. However, these units have access to two independent natural gas transmission pipelines (Tennessee Gas Pipeline and Texas Eastern). Because of the redundancy in natural gas transmission pipelines, Smith Units 9 and 10 operate using interruptible natural gas transmission service in lieu of firm transmission.

**Request 11c.** Confirm that all of the Smith Station peaking units are well positioned to comply with the CP requirements.

**Response 11c.** J.K. Smith Station Units 1-7 are capable of using natural gas and fuel oil. Units 9 and 10 are capable of using natural gas only. J.K. Smith is uniquely situated near two natural gas transmission pipelines (Tennessee Gas Pipeline and Texas Eastern). All units at the station are capable of running on either natural gas pipeline. The natural gas source redundancy, coupled with fuel-oil backup on J.K. Smith Units 1-7, positions the J.K. Smith Plant well in regard to Performance Assessment Interval (PAI) event compliance in the Capacity Performance (CP) market.

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18  
REQUEST 12**

**RESPONSIBLE PARTY:            Craig A. Johnson**

**Request 12.**            Refer to the Direct Testimony of Craig Johnson (Johnson Testimony), page 3, regarding the Bluegrass Station 2017 Annual Operating Report. Provide a copy of that report for the record in this matter.

**Response 12.**            The Bluegrass Station 2017 Annual Operating Report is provided on pages 2 through 10 of this response.



**Goss  
Samford**

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March 30, 2018

Ms. Gwen Pinson  
Executive Director  
Kentucky Public Service Commission  
P.O. Box 615  
211 Sower Boulevard  
Frankfort, KY 40602

Re: PSC Case Nos. 2015-00267 – Bluegrass Station Annual Report

Dear Ms. Pinson:

Pursuant to the Commission's December 1, 2015 Order in Case No. 2015-00267, in which the Commission approved East Kentucky Power Cooperative, Inc.'s ("EKPC") requests to acquire the Bluegrass Station and to assume the evidences of indebtedness associated with the acquisition, enclosed please find a copy of EKCP's 2018 Bluegrass Station Annual Operating Report. Please file this in the post-case correspondence file and return a file-stamped copy to my office.

Very truly yours,

A handwritten signature in blue ink that reads "David S. Samford (By Ryan R. Lewis)". The signature is written in a cursive style.

David S. Samford

Enclosure

## Bluegrass Station 2017 Annual Operating Report

Bluegrass Station successfully operated 565.98 hours in 2017 generating 80,791 gross megawatts and 80,151 net megawatts. The plant experienced 37.45 unplanned outage hours during 2017. The station also performed to an average net heat rate of 11,377.59 (BTU/KWH). Bluegrass Station budgeted \$4,724,904 for capital expenditures in 2017, but spent only \$3,449,252 of this allocation for capital equipment. This reduction was due to a renegotiated pricing of capital components and services, and the ability to re-use the Row 1 vanes during the Combustion Inspection on Unit 2 in the fall of 2017. Bluegrass Station has budgeted \$599,570 for capital expenditures in 2018. The Station had budgeted \$11,285,511 in 2017 for O&M expenses and had expenditures of \$5,207,663. Bluegrass has budgeted \$4,594,668 for O&M expenses in 2018.

Bluegrass Unit 1 successfully operated 161.37 hours in 2017 generating 19,880 gross megawatts and 19,715 net megawatts. The unit experienced no unplanned outage hours during 2017. Bluegrass Unit 1 also performed to an average net heat rate of 11,387.56 (BTU/KWH). Unit 1 successfully started 33 times in 2017 with no failures. Unit 1 experienced no forced outages in 2017.

Bluegrass Unit 2 successfully operated 142.40 hours in 2017 generating 19,195 gross megawatts and 19,042 net megawatts. The unit experienced 27.35 hours of unplanned outage hours during 2017. Bluegrass Unit 2 also performed to an average net heat rate of 11,343.07 (BTU/KWH). Unit 2 successfully started 30 times in 2017 with 1 failed start. The failed start was due to inadequate time on turning gear and caused a high rotor vibration. The unit was shut down by plant operations and successfully restarted after an appropriate amount of time on turning gear (turning the rotor at slow speed) to correct the rotor's eccentricity. The Unit did experience one unit trip during the Distributed Control System (DCS) upgrade and initial re-tuning of the machine during testing in October. Bluegrass 2 experienced two forced outages in 2017. The first forced outage was due to scavenging the RAC (rotor air cooler) fan motor from Unit 2 to replace a failed motor on Unit 3 to minimize Unit 3's forced outage time. The second forced outage was attributed to the above-mentioned failed start in October during commissioning of the DCS upgrade. The unit was placed

on turning gear for approximately four hours to work out any eccentricity in the turbine shaft, and returned to service.

Bluegrass Unit 3 successfully operated 265.22 hours in 2017 generating 41,716 gross megawatts and 41,394 net megawatts. The unit experienced 10.10 hours of unplanned outage hours during 2017. Bluegrass Unit 3 also performed to an average net heat rate of 11,062.90 (BTU/KWH). Unit 3 successfully started 41 times in 2017 with no failed starts. Bluegrass 3 experienced one forced outage in 2017. The forced outage was due to a failed RAC (rotor air cooler) fan motor. The unit also experience one unplanned outage, which was due to Texas Gas Transmission's need to perform an annual inspection on the gas yard piping and instrumentation. Unit 3, which is listed as a Designated Network Resource for LG&E/KU under the existing executed tolling agreement agreed to the unplanned four-hour outage.

Extensive tuning was performed on the units' combustion systems in October due to the installation of the new Distributed Control System installed on all three units. The new DCS was installed to increase the starting and operational reliability of the units. The new control system will limit the required tuning of the units for seasonal conditions. The units will be tuned on an as needed basis.

### **Environmental Update**

EKPC is closely monitoring and evaluating the impact of the following regulatory developments on its electric power generation assets, including Bluegrass Station.

### **CSAPR**

On July 6, 2011, EPA finalized a rule known as the Cross-State Air Pollution Rule (CSAPR) that requires states to reduce power plant emissions that contribute to ozone and/or fine particle pollution in other states as provided under the CAA, Section 110(a)(2)(D)(i)(I), often referred to as the "good neighbor" provision. CSAPR required a total of 28 states to reduce annual sulfur dioxide (SO<sub>2</sub>) emissions, annual nitrogen oxide (NO<sub>x</sub>) emissions, and/or ozone season (OS) NO<sub>x</sub>

emissions to assist in attaining the 1997 ozone and fine particle and 2006 fine particle National Ambient Air Quality Standards (NAAQS).

The timing of CSAPR's implementation has been affected by several court actions. On December 30, 2011, CSAPR was stayed prior to implementation. On April 29, 2014, the U.S. Supreme Court issued an opinion reversing an August 21, 2012, United States Federal District Court for the District of Columbia (D.C. Circuit) decision that had vacated CSAPR. Following the remand of the case to the DC Circuit, the Environmental Protection Agency (EPA) requested the court lift the CSAPR stay and toll the CSAPR compliance deadlines by three years. On October 23, 2014, the DC Circuit granted EPA's request. Accordingly, CSAPR Phase 1 implementation began in 2015, and Phase 2 was scheduled to begin in 2017.

In November 2016, EPA proposed the CSAPR Update Rule (CSAPR II), addressing earlier court concerns and interstate transport of air pollution under the 2008 ozone NAAQS. The updated rule was effective on December 27, 2016. The updated rule does not affect the SO<sub>2</sub> allocations or the NO<sub>x</sub> allocations for 2015 and 2016. CSAPR NO<sub>x</sub> emissions allowances will likely be reduced further in the next couple of years to achieve compliance with the new 2015 ozone NAAQS (70 ppb).

### Ozone Transport Challenge

On December 9, 2013, Connecticut, Delaware, Maryland, Massachusetts, New Hampshire, New York, Pennsylvania, Rhode Island, and Vermont (the NE States), filed a petition to the EPA Administrator pursuant to Clean Air Act Section 176A requesting that EPA add several states, including Kentucky, to the Ozone Transport Region (OTR). Ohio, Kentucky, Indiana, West Virginia and Michigan sent a letter to EPA on May 16, 2016, finding that the technical analysis of the Section 176A petition was outdated, technically flawed and failed to support the petition. Ultimately, EPA denied the NE States' petition under Section 176A to add Kentucky and other states based on EPA's assertion "...that the statute provides other, more effective means of addressing the impact of interstate ozone transport on states within the OTR with respect to the 2008 ozone NAAQS." 82 Fed. Reg. 6509, 6520 (Jan. 19, 2017). On February 21, 2017, the Kentucky Energy and Environment Cabinet (EEC) filed a letter supporting EPA's denial of the

petition, stating that there are several other existing national mobile source rules designed to achieve the emission reductions from on-road vehicles through 2025 and beyond that are better suited to address air quality in the NE States.

### Clean Power Plan

On August 3, 2015, EPA announced the final rule on the emission guidelines, the Clean Power Plan (CPP), for states to follow in developing plans to reduce greenhouse gas emissions from existing fossil fuel-fired electric generating units. The final version of the rule became effective on December 22, 2015. Under the CPP, by 2030, carbon emissions in the power industry are to be reduced by approximately 32 percent from 2005 levels. The CPP allows states to develop their own compliance plans to meet certain CO<sub>2</sub> emissions requirements, but the states would also still need to comply with existing federal and state emissions regulations. States were required, at a minimum, to submit an initial plan by September 6, 2016 and finalize plans by September 6, 2018. On February 9, 2016, the Supreme Court stayed implementation of the CPP pending judicial review. Oral argument was held before eight judges of the D.C. Circuit on September 27, 2016. The court has not yet issued a decision.

On January 17, 2017, EPA denied all pending administrative petitions for reconsideration of the CPP (including an administrative petition for reconsideration filed by EKPC, Hoosier Energy Rural Electric Cooperative, Inc. and Minnkota Power Cooperative, Inc.). On March 6, 2017, 13 petitions for review of EPA's denial were filed, including one from EKPC, Hoosier Energy and Minnkota Power. On March 6, 2017, the court consolidated the petitions into a single case and ordered docketing statements and statements of issues due April 5, 2017.

On March 28, 2017, President Trump signed an Executive Order (EO), EO 17833, entitled "*Promoting Energy Independence and Economic Growth*," directing EPA to review and, if appropriate, suspend, revise, or rescind the Clean Power Plan (CPP). EPA announced its intent to review and, if appropriate, suspend, revise or rescind the CPP on April 4, 2017. Subsequently, EPA proposed a rule repealing the CPP (October 16, 2017). Comments on the proposed repeal rule are due April 26, 2018. Following this announcement, the Department of Justice on behalf

of EPA filed a motion to the D.C. Circuit seeking that the Court hold the CPP appeal in abeyance while EPA reconsiders the rule. The D.C. Circuit granted the motion and continues to extend it.

EPA also issued an Advanced Notice of Proposed Rulemaking (ANPR) on December 28, 2017, seeking comments on a potential CPP Replacement rule. Comments on the ANPR were submitted on February 26, 2018. Next, EPA will issue a proposed a CPP Replacement rule. The timeframe for the issuance or content of the proposed rule is uncertain. EPA is taking public comments until April 26, 2018.

### ELG

On September 30, 2015, EPA finalized the Effluent Limitations Guidelines (ELG) that govern the quality of the wastewater that can be discharged from power plants. The final rule was published in the Federal Register on November 3, 2015. The final rule phases in more stringent effluent limits for arsenic, mercury, selenium, and nitrogen discharged from wet scrubber systems, and zero discharge of pollutants in ash transport water. Power plants must comply between 2018 and 2023, depending upon when new Clean Water Act permits are required for each respective plant.

On February 24, 2017, the President issued EO 13777 that required agencies to review regulations that create undue burden on regulated entities. As part of this process, EPA is reviewing the ELG rule and reconsidering a number of issues. The result of this reconsideration will be addressed in a future rule. At this time, future revisions to the ELG rule cannot be determined.

### NAAQS

On October 1, 2015, EPA issued a rule that reset the ozone National Ambient Air Quality Standard (NAAQS) for ground level ozone emissions from 75 ppb to 70 ppb. State designations were due October 1, 2016 and were to be finalized by EPA by October 1, 2017. However, the rule is being challenged before the D.C. Circuit. Oral argument is currently scheduled for April 19, 2017. On November 2, 2016, EPA proposed nonattainment classification thresholds and

implementation requirements for the 2015 ozone NAAQS. The extended comment period closed on February 13, 2017. The new Administration may or may not finalize the 2015 ozone standard in a proposed rule. The Administration was open to receiving comments on the 2015 ozone standard after EPA made designations. EKPC submitted comments to EPA on February 5, 2018.

On December 20, 2017, EPA provided notice to Governor Bevin of Kentucky concerning the air quality designations for the revised 2015 National Ambient Air Quality Standard (NAAQS) for ozone (2015 NAAQS Ozone Standards) throughout Kentucky. The 2015 Ozone NAAQS Ozone Standard lowered the 8-hour ozone standard from 0.075 parts per million (ppm) to 0.070 ppm.

On January 5, 2018, EPA published a notification of availability and public comment period concerning the state designation recommendations for the 2015 NAAQS Ozone Standard. The Notification identified EPA's responses sent to the states, including the letter sent to Governor Bevin (Kentucky Nonattainment Designation Letter), technical support information for designations, and opened the comment period for the 2015 NAAQS Ozone Standard designations. The Kentucky Nonattainment Designation Letter identified certain counties in Kentucky that EPA determined violate the 2015 NAAQS Ozone Standard and nearby areas that contribute to the violating areas.

The 2015 NAAQS Ozone Standard designations affect Bluegrass Station, owned and operated by EKPC, which is located in a county designated nonattainment as an area contributing to a 2015 NAAQS Ozone Standard violation. The impact of this designation cannot be determined at this time.

#### Clean Air Act Risk Management Program

On December 21, 2016, EPA finalized revisions to its Risk Management Program (RMP) regulations under the Clean Air Act. The RMP regulations require facilities with over a threshold quantity of a regulated substance to undertake accident prevention steps and to submit a risk management plan to various local, state, and federal planning entities. Congress has introduced two pieces of legislation aimed at revoking this rule, but these bills do not seem likely to pass.

### Clean Water Act

On June 29, 2015, EPA and the U.S. Department of the Army published a final rule changing the definition of “Waters of the United States” (WOTUS) (80 Fed. Reg. 37054 (June 29, 2015) (2015 Clean Water Act (CWA) Rule)). The final rule redefines the scope of waters protected under the CWA as “traditional navigable waters, interstate waters, territorial seas, and impoundments of jurisdictional waters in the definition of ‘waters of the United States,’” (Id. at 37058).

The rule was promulgated to ensure protection for the nation’s public health and aquatic resources by clarifying which waters constitute “waters of the United States” protected under the Act and are subject to programs established by the CWA. Such CWA programs include: Section 402 National Pollution Discharge Elimination System (NPDES) permit program, Section 404 permit program for discharge of dredged or fill material, and Section 311 oil spill prevention and response programs. Essentially, with some exceptions, the rule added non-navigable streams (intermittent and ephemeral streams) to navigable streams, which have been traditionally regulated under the CWA. Thirty-one states, businesses, farmers and agricultural groups are arguing before the D.C. Circuit that EPA did not have the authority to promulgate this revision of the CWA. On February 28, 2017, President Trump issued an Executive Order calling on EPA and the Assistant Secretary of the Army for Public Works to review the 2015 CWA Rule and to “publish for notice and comment a proposed rule rescinding or revising the rule, as appropriate and consistent with law.” EPA published a Notice in the Federal Register on March 6, 2017 indicating the Agencies’ intent to review the 2015 CWA and to consider the interpretation of the CWA term “navigable waters,” ( 82 Fed. Reg. 12532 (Mar. 6, 2017)).

On January 22, 2018, the Supreme Court ruled that any challenges to the WOTUS rule must be filed in Federal District courts and not the D.C. Circuit. Federal District court challenges are ongoing.



National Pollution Discharge Elimination System (NPDES)

EKPC submitted an application to the Kentucky Division of Water (KDOW). The Division issued a renewal NPDES / Kentucky Pollution Discharge Elimination System (KPDES) permit for the facility on August 7, 2017.

EKPC will continue to monitor the developments to EPA regulations as they apply to its facilities.

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18  
REQUEST 13**

**RESPONSIBLE PARTY: Craig A. Johnson**

**Request 13.** Refer to the Johnson Testimony, page 11, regarding the contracting approach to the proposed dual fuel project as involving the use of multiple equipment and material contracts and multiple construction contracts.

**Request 13a.** Explain whether EKPC has utilized this type of contracting approach in the past for other large capital expenditure projects. If so, provide a summary of how the process went and whether the projects were completed under schedule and within budget.

**Response 13a.** Yes, EKPC has historically used this approach for large capital projects. EKPC sponsored the fully integrated schedule for each of these projects, thereby managing float and coordination of handoffs between the various equipment and construction contracts. Because a single critical path for the entire project could be staturated, verified, and gauged by EKPC according to our specified scheduling standards, we could monitor progress and project the plan weeks ahead to identify potential problems and work with contractors to mitigate them in advance. By managing the project with multiple contracts, EKPC eliminates the layered profit associated

with Engineer/Procure/Construct (EPC) or Single Prime Construction contracts. When scope, schedule, material, or other changes or critical decisions are necessary, EKPC makes a determination based on value or advantage to the Cooperative. In those situations, a Single Prime Contractor or EPC Contractor makes a determination heavily influenced by profit motive. Using a multi prime approach, particular risks can also be assigned to the contracts that are most closely associated with the relevant work, so the high costs of compounded risk coverage are avoided. Because every contract is written directly with EKPC, the project team bids, evaluates, and administers them and has incorporated pricing structure and terms into the contracts that are favorable to the Owner. This also facilitates reliable tracking and management of project cost throughout the course of the project. By establishing the contractual relationship with specific equipment vendors, EKPC has direct influence and involvement on quality and service which are valuable for the installation, check out, and start-up of equipment and systems and potentially for future maintenance. Additionally, the EKPC project team on site to manage the project via multiple contracts is involved in activities on a daily basis that provides an excellent system for quality control, and critical training to support long-term ownership of the assets.

EKPC has a mature and balanced technical staff that has demonstrated their ability to successfully manage large capital projects in this manner. Recently, this multiple contract approach was used for the Cooper Station Retrofit Project and the Cooper 1 Duct Reroute Project and resulted in both projects being completed on time and within their respective budgeted estimates. The installed systems and equipment have operated per EKPC's expectations, and in accordance with contractual requirements and guarantees. Currently, EKPC is also utilizing this same multiple

contract approach for the implementation of the recently approved Environmental Compliance Plan for the CCR / ELG Project at Spurlock Generating Station.

**Request 13b.** Regarding the estimated completion date of the end of 2020, explain whether this construction schedule will permit sufficient flexibility to have the Bluegrass Station be capable of dual fuel use before the cold winter months of January and February 2021.

**Response 13b.** Assuming the Project approval by May 1, 2019 from the Commission, along with approvals currently being sought associated with the modifications to existing permits or new permits from the following agencies: U.S. Fish and Wildlife Service; U.S. Environmental Protection Agency; United States Department of Agriculture's Rural Utilities Service; and Kentucky Division of Air Quality. EKPC is currently projecting a commercial operation date of December 2, 2020 that would make Bluegrass Station capable of dual fuel use prior to January and February 2021.

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18  
REQUEST 14**

**RESPONSIBLE PARTY: Ralph Luciani**

**Request 14.** Refer to the Direct Testimony Ralph Luciani (Luciani Testimony), page 4, regarding capacity penalties that could be as high as \$79 million. Identify and explain how the \$79 million in penalties was determined.

**Response 14.** The maximum yearly PJM non-performance capacity performance charge is calculated as  $1.5 * \text{Applicable LDA Net CONE} * 365 \text{ days} * \text{CP UCAP MW}$ . See PJM RPM 301 Performance in Reliability Pricing Model, page 131 at <https://www.pjm.com/-/media/training/nerc-certifications/markets-exam-materials/rpm/rpm-301-performance-in-reliability-pricing-model.ashx?la=en>

For Bluegrass, the maximum annual penalty is calculated as  $1.5 * 303.0 \text{ \$/MW-day Net CONE (2018\$)} * 365 \text{ days} * 159 \text{ MW UCAP per unit} * 3 \text{ units}$ , or \$79 million (2018\$). Refer to Attachment RL-2, Section 2.2 and Appendix A, part 2.c. for further details.

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18  
REQUEST 15**

**RESPONSIBLE PARTY:           Ralph Luciani**

**Request 15.**           Refer to the Luciani Testimony, Attachment RL-2, the Bluegrass Capacity Penalty Risk Analysis (Risk Analysis). Provide any and all supporting workpapers associated with the development of the Risk Analysis for the Bluegrass Station.

**Response 15.**           The supporting workpapers associated with the development of the Risk Analysis for the Bluegrass Station are on pages 2 through 15 of this response.

Table 5, 6 & 8 Calculations

Station ICAP and UCAP

	ICAP	UCAP	UCAP*BR	ICAP - UCAP*BR	EFOR	
U1	198	159	124.8	73.185	Balancing Ratio	3.6%
U2	198	159	124.8	73.185	Net CONE (2018 \$/MW-day)	78.5%
U3	198	159	124.8	73.185	Penalty Cap (\$/UCAP-MW-yr)	\$303.0
Total	594	477	374.4	219.555		165,905
Penalty Cap (M\$)		79.14				

Table 6: Annualized Fixed Cost; Table 8: Additional Available PAHs Needed to Breakeven for Fuel Alternatives

	2020 ISD Capital (Nom\$)	20-Year Levelized Capital (18\$)	Fixed O&M (18\$)	Total Levelized	Total Levelized (M\$)	Table 8 EFOR Adjusted		
						Available Net Gain (M\$)	Annual Breakeven PAHs	20-Year Breakeven PAHs
SFT Dec-Feb	0		\$7,008,823	\$7,008,823	7.0	2.33	3.0	60
EFT Dec-Feb	0		\$5,481,622	\$5,481,622	5.5	2.33	2.4	47
SFT Nov-Mar	0		\$11,681,371	\$11,681,371	11.7	2.33	5.0	100
EFT Nov-Mar	0		\$9,136,037	\$9,136,037	9.1	2.33	3.9	79
LNG	81,000,000	\$5,540,400	\$467,160	\$6,007,560	6.0	2.33	2.6	51
Fuel Oil	62,800,000	\$4,295,520	\$467,160	\$4,762,680	4.8	2.29	2.1	42

Real 20-year levelization of 2020 ISD Nom\$ in 2018\$ 6.84% <-- Capital & Contract Cost Summary Sheet

Table 7 Backup See Next Sheet for Summary

Applicable MW -->	UCAP*BR	ICAP-(UCAP*BR)	ICAP	Station Cost per PAH if		EFOR Adjusted	
				Unavailable	Available	Available Net Gain	Available Net Gain
	Penalty (\$/MWh)	Bonus (\$/MWh)	Energy Margin (\$/MWh)	(M\$)	(M\$)	(M\$)	(M\$)
Gas	(\$3,687)	\$2,949	\$649.74	-1.38	\$1.03	\$2.414	\$2.327
LNG	(\$3,687)	\$2,949	\$662.29	-1.38	\$1.04	\$2.421	\$2.334
Fuel Oil	(\$3,687)	\$2,949	\$578.49	-1.38	\$0.99	\$2.372	\$2.286

Table 5

Share of Capacity Payment that Could be Lost			Potential Annual Non-Perform PAHs	Potential Penalty as % of Annual Cap Revenue
\$/MW-day	Days	Capacity Rev	Penalty (M\$)	
			10	57%
			20	113%
140	365	24,374,700	30	170%
			57.32	325%

2021/22 Base Residual Auction CP  
Max One-Year Penalty at 100% Gas Interruption Cap 79

Table 7: Net Benefit of Bluegrass Being Available During a Winter PAHS (\$2017)

		----- Benefit / (Cost) -----		
		\$/MWh	Applicable MW	Total M\$
<b>If Unavailable:</b>	<b>Non-Performance</b>	(\$3,687)	374 <i>UCAP*BR</i>	(\$1.38)
<b>If Available:</b>	<b>Bonus Payment</b>	\$2,949	220 <i>ICAP-(UCAP*BR)</i>	\$0.65
	<b>Energy Margin</b>	\$600	594 <i>ICAP</i>	\$0.36
				\$1.00
<b>Net Incremental Benefit of Being Available</b>				\$2.38
<i>ICAP = 594 MW, UCAP = 477 MW, Balancing Ratio (BR) = 0.785</i>				



Figure 1, Tables 12, 13 and 14 Calculations

Present Value Benefits/(Cost) of Each Fuel Alternative (M\$, 2019 Present Value)

Table 12. Low PAH Case (1 Polar Vortex in 20 years)

	Gas Interrupt %	SFT (Dec-Feb)	EFT (Dec-Feb)	SFT-Winter	EFT-Winter	LNG	Fuel Oil
L32	0%	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)
	5%	(\$91)	(\$71)	(\$154)	(\$120)	(\$78)	(\$62)
	20%	(\$87)	(\$66)	(\$149)	(\$115)	(\$73)	(\$57)
	33%	(\$82)	(\$62)	(\$145)	(\$111)	(\$69)	(\$53)
L35	100%	(\$61)	(\$41)	(\$123)	(\$89)	(\$47)	(\$32)

Table 13. Mid PAH Case (1 Polar Vortex every 10 years)

	Gas Interrupt %	SFT (Dec-Feb)	EFT (Dec-Feb)	SFT-Winter	EFT-Winter	LNG	Fuel Oil
L38	0%	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)
	5%	(\$90)	(\$70)	(\$152)	(\$118)	(\$76)	(\$60)
	20%	(\$80)	(\$60)	(\$142)	(\$108)	(\$67)	(\$50)
	33%	(\$71)	(\$51)	(\$133)	(\$100)	(\$58)	(\$42)
L41	100%	(\$27)	(\$7)	(\$89)	(\$56)	(\$14)	\$1

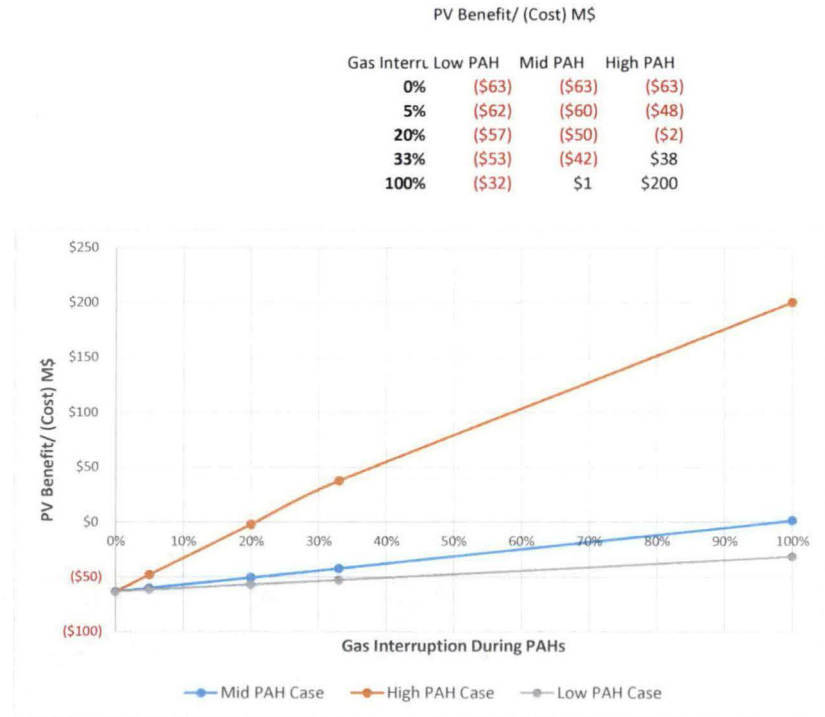
Table 14. High PAH Case (1 Polar Vortex every 5 years, w/Quadruple Severity every 10 years)

	Gas Interrupt %	SFT (Dec-Feb)	EFT (Dec-Feb)	SFT-Winter	EFT-Winter	LNG	Fuel Oil
L50	0%	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)
L51	5%	(\$78)	(\$57)	(\$140)	(\$106)	(\$64)	(\$48)
L52	20%	(\$31)	(\$11)	(\$93)	(\$59)	(\$17)	(\$2)
L53	33%	\$10	\$30	(\$52)	(\$19)	\$23	\$38
L54	100%	\$176	\$196	\$114	\$147	\$190	\$200

Source: Navigant

From 0% and 100% from Breakeven Calcs; High PAH Case 100% from Breakeven Calcs w/ Stop Loss Penalty Cap in Place, Interpolation uses w/o Stop Loss  
Benefit Cost Summary has 100% Case with Stop Loss in Place  
Breakeven Calc has 100% Case w/o Stop Loss in Place

Figure 1: PV Benefit/(Cost) of Fuel Oil Alternative as a Function of PAHs and Gas Interruption



**Table 3 & 11 Calculations**

**Maximum Single Year Penalty (With Base EFOR)**

Use 2023-2024 Penalty

Polar Vortex: 0% is Base PAH, No Interruption, Base EFOR

Quad Polar Vortex: 0% is High PAH, No Interruption, Base EFOR

Polar Vortex: 100% is Base PAH, Full Interruption, Base EFOR

Quad Polar Vortex: 100% is High PAH, Full Interruption, Base EFOR

Interpolate to estimate 5%, 20%, 33% Results

Annual PAHs Gas Interruption in PAHs:	L13 Polar Vortex (20 PAHs)					L19 Quadruple Polar Vortex (80 PAHs)					L25
	0%	5%	20%	33%	100%	0%	5%	20%	33%	100%	UnCapped 80 PAH 100%
Status Quo	1.0	2.4	7.8	16.7	28.1	3.9	9.2	30.4	65.2	78.9	109.6
SFT Gas Dec-Feb.	1.0	1.0	1.0	1.0	1.0	3.9	3.9	3.9	3.9	3.9	3.9
EFT Gas Dec.-Feb.	1.0	1.0	1.0	1.0	1.0	3.9	3.9	3.9	3.9	3.9	3.9
SFT Gas Winter	1.0	1.0	1.0	1.0	1.0	3.9	3.9	3.9	3.9	3.9	3.9
EFT Gas Winter	1.0	1.0	1.0	1.0	1.0	3.9	3.9	3.9	3.9	3.9	3.9
LNG	1.0	1.0	1.0	1.0	1.0	3.9	3.9	3.9	3.9	3.9	3.9
Fuel Oil	1.0	1.0	1.0	1.0	1.0	3.9	3.9	3.9	3.9	3.9	3.9

Ignore small impact of summer EFOR on 7 summer PAHs

0% and 100% from Matrix C of Benefit Cost Summary, Uncapped from Penalty NPV Loss No Stop Loss (below Matrix C)

**Table 3 & 11: Maximum Single-Year Penalty in Scenarios Examined (M\$2017)**

Annual PAHs -->	Polar Vortex (20 PAHs)					Quadruple Polar Vortex (80 PAHs)				
Gas Interruption in PAHs-->	0%	5%	20%	33%	100%	0%	5%	20%	33%	100%
Status Quo	1.0	2.4	7.8	16.7	28.1	3.9	9.2	30.4	65.2	78.9
All Fuel Alternatives	1.0	1.0	1.0	1.0	1.0	3.9	3.9	3.9	3.9	3.9

**Table 13 Calculations**  
**Forced Outage Table, Fuel Oil**  
 0% and 100% from Breakeven Calculations

BE	BCS	BE	PAH	Gas	EFOR	Uncapped					\$	\$	
						0%	5%	20%	33%	100%			100%
L31	L34	L34	Low	No/Full	Low	-63	-62	-57	-52	-30	-30	\$0	\$0
L37	L40	L40	Base	No/Full	Low	-63	-60	-50	-41	\$4	\$4	\$0	\$0
L43	L46	L46	High	No/Full	Low	-63	-47	0	41	211	254	\$0	\$0
L32	L35	L35	Low	No/Full	Base	-63	-62	-57	-53	-32	-32	\$0	\$0
L38	L41	L41	Base	No/Full	Base	-63	-60	-50	-42	1	1	\$0	\$0
L44	L47	L47	High	No/Full	Base	-63	-48	-2	38	200	242	\$0	\$0
L33	L36	L36	Low	No/Full	High	-63	-62	-58	-54	-36	-36	\$0	\$0
L39	L42	L42	Base	No/Full	High	-63	-61	-52	-45	-9	-9	\$0	\$0
L45	L48	L48	High	No/Full	High	-63	-50	-11	22	153	196	\$0	\$0

Check Matches Table 12 for Fuel Oil, Base EFOR

**Table 13: PV Benefit (Cost) of Fuel Oil Alternative as Bluegrass EFOR Varies**

Annual PAHs --> Gas Interruption in PAHs-->	Low PAH Case			Mid PAH Case			High PAH Case		
	5%	20%	33%	5%	20%	33%	5%	20%	33%
0% EFOR	(62)	(57)	(52)	(60)	(50)	(41)	(47)	0	41
3.6% EFOR (Base Case)	(62)	(57)	(53)	(60)	(50)	(42)	(48)	(2)	38
18.3% EFOR	(62)	(58)	(54)	(61)	(52)	(45)	(50)	(11)	22

Reservation Rates	Current Rates as of 4/1/2015	2018\$ Conversion Factor	Long-Term Rates 2018\$
FT	\$9.56	1.061208	\$10.14
STF-Winter	\$14.30	1.061208	\$15.17
STF-Summer	\$6.21	1.061208	\$6.59
EFT (Additional)	\$2.48	1.061208	\$2.63

Bluegrass Gas Demand (Dth/hr) 6,415

Month	Season	Hedged MMBtu						Hedge Cost					
		24-hr Firm	16-hr EFT	24-hr STF (Dec-Feb)	16-hr STF (Dec-Feb)	24-hr STF (Winter)	16-hr EFT STF (Winter)	24-hr Firm	16-hr EFT	24-hr STF (Dec-Feb)	16-hr STF (Dec-Feb)	24-hr STF (Winter)	16-hr EFT STF (Winter)
1	Winter	153,965	102,643	153,965	102,643	153,965	102,643	\$1,561,492	\$1,310,686	\$2,336,274	\$1,827,207	\$2,336,274	\$1,827,207
2	Winter	153,965	102,643	153,965	102,643	153,965	102,643	\$1,561,492	\$1,310,686	\$2,336,274	\$1,827,207	\$2,336,274	\$1,827,207
3	Winter	153,965	102,643	0	0	153,965	102,643	\$1,561,492	\$1,310,686	\$0	\$0	\$2,336,274	\$1,827,207
4	Summer	153,965	102,643	0	0	0	0	\$1,561,492	\$1,310,686	\$0	\$0	\$0	\$0
5	Summer	153,965	102,643	0	0	0	0	\$1,561,492	\$1,310,686	\$0	\$0	\$0	\$0
6	Summer	153,965	102,643	0	0	0	0	\$1,561,492	\$1,310,686	\$0	\$0	\$0	\$0
7	Summer	153,965	102,643	0	0	0	0	\$1,561,492	\$1,310,686	\$0	\$0	\$0	\$0
8	Summer	153,965	102,643	0	0	0	0	\$1,561,492	\$1,310,686	\$0	\$0	\$0	\$0
9	Summer	153,965	102,643	0	0	0	0	\$1,561,492	\$1,310,686	\$0	\$0	\$0	\$0
10	Summer	153,965	102,643	0	0	0	0	\$1,561,492	\$1,310,686	\$0	\$0	\$0	\$0
11	Winter	153,965	102,643	0	0	153,965	102,643	\$1,561,492	\$1,310,686	\$0	\$0	\$2,336,274	\$1,827,207
12	Winter	153,965	102,643	153,965	102,643	153,965	102,643	\$1,561,492	\$1,310,686	\$2,336,274	\$1,827,207	\$2,336,274	\$1,827,207
<b>Total</b>								\$18,737,904	\$15,728,230	\$7,008,823	\$5,481,622	\$11,681,371	\$9,136,037

**Texas Gas Firm Transmission Rates  
Zone SL to Zone 4**

Average Days per Month	30.417
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	FT	SFT-Winter	EFT (addtl)	FT w/EFT	SFT-Winter w/EFT
Minimum Term per Year (months)	12	<12			
Maximum Hourly Quantity (share of daily)	1/24	1/24	1/16	1/16	1/16
Daily Demand Charge(\$/mmBTU contracted)	0.3142	0.4701	0.0814	0.3956	0.5515
Monthly Reservation Charge (\$/mmBtu contracted)	9.557	14.299	2.476	12.033	16.775

**Key Assumptions**

Project Life	20
Discount Rate (Nominal)	5.91%
Inflation Rate	2.00%
Discount Rate (Real)	3.83%
Average PAH EKPC LMP (2018\$/MWh)	\$718.45
Bluegrass Winter Capacity (MW)	198
Bluegrass UCAP (MW)	159.06
Bluegrass Heat Rate (MMBtu/MWh)	10.80
Bluegrass VOM (2018\$/MWh)	\$3.15
- Increase when operating with Fuel Oil	\$0.98
Bluegrass Unit Non-Fuel Start Cost (2018\$/Unit Start)	\$9,517
- Start Cost when operating with Fuel Oil	\$12,372
Bluegrass Unit Start Fuel (MMBtu)	350
Bluegrass EFOR (%)	3.60%
Net CONE (Deflated to 2018\$)	\$303.02
Balancing Ratio	78.5%
Dilution Factor	80%
Summer PAH Count	7

Capacity Performance Benefits (Cost), excluding Fixed Costs, By Scenario  
2018 Present Value (millions)

			A: Total Benefit/(Cost) excluding Fixed Costs										
Key	PAH Case	Gas Interruption Case	EFOR Case	Status Quo	24-hr		24-hr STF	16-hr STF	24-hr STF	16-hr EFT		LNG	Diesel
					Firm	16-hr EFT	(Dec-Feb)	(Dec-Feb)	(Winter)	(Winter)	STF		
1	Low	No Interruption	Low	\$14	\$14	\$14	\$14	\$14	\$14	\$14	\$14	\$14	\$14
2	Low	No Interruption	Base	\$13	\$13	\$13	\$13	\$13	\$13	\$13	\$13	\$13	\$13
3	Low	No Interruption	High	\$8	\$8	\$8	\$8	\$8	\$8	\$8	\$8	\$8	\$8
4	Low	Full Interruption	Low	(\$19)	\$14	\$14	\$14	\$14	\$14	\$14	\$14	\$14	\$14
5	Low	Full Interruption	Base	(\$19)	\$13	\$13	\$13	\$13	\$13	\$13	\$13	\$13	\$13
6	Low	Full Interruption	High	(\$19)	\$8	\$8	\$8	\$8	\$8	\$8	\$8	\$8	\$8
7	Base	No Interruption	Low	\$29	\$29	\$29	\$29	\$29	\$29	\$29	\$29	\$29	\$29
8	Base	No Interruption	Base	\$27	\$27	\$27	\$27	\$27	\$27	\$27	\$27	\$27	\$27
9	Base	No Interruption	High	\$17	\$17	\$17	\$17	\$17	\$17	\$17	\$17	\$17	\$17
10	Base	Full Interruption	Low	(\$39)	\$29	\$29	\$29	\$29	\$29	\$29	\$29	\$29	\$28
11	Base	Full Interruption	Base	(\$39)	\$27	\$27	\$27	\$27	\$27	\$27	\$27	\$27	\$25
12	Base	Full Interruption	High	(\$39)	\$17	\$17	\$17	\$17	\$17	\$17	\$17	\$17	\$16
13	High	No Interruption	Low	\$138	\$138	\$138	\$138	\$138	\$138	\$138	\$138	\$138	\$138
14	High	No Interruption	Base	\$126	\$126	\$126	\$126	\$126	\$126	\$126	\$126	\$126	\$126
15	High	No Interruption	High	\$79	\$79	\$79	\$79	\$79	\$79	\$79	\$79	\$79	\$79
16	High	Full Interruption	Low	(\$185)	\$138	\$138	\$138	\$138	\$138	\$138	\$138	\$139	\$132
17	High	Full Interruption	Base	(\$185)	\$126	\$126	\$126	\$126	\$126	\$126	\$126	\$127	\$120
18	High	Full Interruption	High	(\$185)	\$79	\$79	\$79	\$79	\$79	\$79	\$79	\$80	\$74

Capacity Performance Benefits (Cost), including Fixed Costs, By Scenario  
2018 Present Value (millions)

Fixed Cost of Alternative	\$0	\$249	\$209	\$93	\$73	\$155	\$121	\$80	\$63
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			D: Total Benefit/(Cost) including Fixed Costs										E: Increase in Benefit Relative to Status Quo						F: Percent of PAH Hours for Alternative to Break							
Key	PAH Case	Gas Interruption Case	EFOR Case	Status Quo	24-hr		24-hr STF	16-hr STF	24-hr STF	16-hr EFT		LNG	Diesel	24-hr Firm		16-hr EFT	24-hr STF	16-hr STF	24-hr STF	16-hr EFT	LNG	Diesel	24-hr Firm	16-hr EFT	24-hr STF (Dec-Feb)	
					Firm	16-hr EFT	(Dec-Feb)	(Dec-Feb)	(Winter)	(Winter)	(Winter)			(Winter)	(Winter)	(Winter)	(Winter)	(Winter)	(Winter)	(Winter)						(Winter)
1	Low	No Interruption	Low	\$14	(\$235)	(\$195)	(\$79)	(\$59)	(\$141)	(\$107)	(\$66)	(\$49)	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)	NA	NA	NA	NA	NA	NA
2	Low	No Interruption	Base	\$13	(\$236)	(\$196)	(\$80)	(\$60)	(\$142)	(\$108)	(\$67)	(\$50)	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)	NA	NA	NA	NA	NA	NA
3	Low	No Interruption	High	\$8	(\$241)	(\$201)	(\$85)	(\$65)	(\$147)	(\$113)	(\$72)	(\$55)	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)	NA	NA	NA	NA	NA	NA
4	Low	Full Interruption	Low	(\$19)	(\$235)	(\$195)	(\$79)	(\$59)	(\$141)	(\$107)	(\$65)	(\$50)	(\$215)	(\$175)	(\$60)	(\$39)	(\$122)	(\$88)	(\$46)	(\$30)	NA	NA	NA	NA	NA	NA
5	Low	Full Interruption	Base	(\$19)	(\$236)	(\$196)	(\$80)	(\$60)	(\$142)	(\$108)	(\$67)	(\$51)	(\$217)	(\$177)	(\$61)	(\$41)	(\$123)	(\$89)	(\$47)	(\$32)	NA	NA	NA	NA	NA	NA
6	Low	Full Interruption	High	(\$19)	(\$241)	(\$201)	(\$85)	(\$65)	(\$147)	(\$113)	(\$72)	(\$56)	(\$222)	(\$182)	(\$66)	(\$45)	(\$128)	(\$94)	(\$52)	(\$36)	NA	NA	NA	NA	NA	NA
7	Base	No Interruption	Low	\$29	(\$220)	(\$180)	(\$64)	(\$44)	(\$126)	(\$92)	(\$51)	(\$34)	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)	NA	NA	NA	NA	NA	NA
8	Base	No Interruption	Base	\$27	(\$222)	(\$182)	(\$66)	(\$46)	(\$129)	(\$95)	(\$53)	(\$37)	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)	NA	NA	NA	NA	NA	NA
9	Base	No Interruption	High	\$17	(\$232)	(\$192)	(\$77)	(\$56)	(\$139)	(\$105)	(\$63)	(\$47)	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)	NA	NA	NA	NA	NA	NA
10	Base	Full Interruption	Low	(\$39)	(\$220)	(\$180)	(\$64)	(\$44)	(\$126)	(\$92)	(\$50)	(\$35)	(\$181)	(\$141)	(\$25)	(\$5)	(\$87)	(\$53)	(\$11)	(\$4)	NA	NA	NA	NA	NA	NA
11	Base	Full Interruption	Base	(\$39)	(\$222)	(\$182)	(\$66)	(\$46)	(\$129)	(\$95)	(\$53)	(\$38)	(\$183)	(\$143)	(\$27)	(\$7)	(\$89)	(\$56)	(\$14)	(\$1)	NA	NA	NA	NA	NA	NA
12	Base	Full Interruption	High	(\$39)	(\$232)	(\$192)	(\$77)	(\$56)	(\$139)	(\$105)	(\$63)	(\$48)	(\$193)	(\$153)	(\$37)	(\$17)	(\$99)	(\$66)	(\$24)	(\$9)	NA	NA	NA	NA	NA	NA
13	High	No Interruption	Low	\$138	(\$111)	(\$71)	\$45	\$65	(\$17)	\$16	\$58	\$75	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)	90%	78%	42%	94%	81%	44%
14	High	No Interruption	Base	\$126	(\$123)	(\$83)	\$33	\$53	(\$29)	\$5	\$46	\$63	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)	94%	81%	44%	94%	81%	44%
15	High	No Interruption	High	\$79	(\$170)	(\$130)	(\$14)	\$6	(\$77)	(\$43)	(\$1)	\$15	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)	NA	95%	51%	94%	81%	44%
16	High	Full Interruption	Low	(\$185)	(\$111)	(\$71)	\$45	\$65	(\$17)	\$16	\$59	\$69	\$74	\$114	\$230	\$250	\$168	\$202	\$244	\$254	NA	95%	51%	94%	81%	44%
17	High	Full Interruption	Base	(\$185)	(\$123)	(\$83)	\$33	\$53	(\$29)	\$5	\$47	\$57	\$63	\$103	\$218	\$239	\$156	\$190	\$233	\$242	NA	95%	51%	94%	81%	44%
18	High	Full Interruption	High	(\$185)	(\$170)	(\$130)	(\$14)	\$6	(\$77)	(\$43)	(\$0)	\$10	\$15	\$55	\$171	\$191	\$109	\$143	\$185	\$196	NA	95%	51%	94%	81%	44%

Base EFOR	0%	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)
High Case Intermediates	5%	(\$78)	(\$57)	(\$140)	(\$106)	(\$64)	(\$48)
	20%	(\$31)	(\$11)	(\$93)	(\$59)	(\$17)	(\$2)
	33%	\$10	\$30	(\$52)	(\$19)	\$23	\$38
	100%	\$176	\$196	\$114	\$147	\$190	\$200

<i>n</i> /Gas Interrupted even (i.e., \$0 PV)					
16-hr STF (Dec Feb)	24-hr STF (Winter)	16-hr EFT STF (Winter)	LNG	Diesel	
<b>Low PAH</b>					
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
<b>Base PAH</b>					
NA	NA	NA	NA	NA	94%
NA	NA	NA	NA	NA	98%
NA	NA	NA	NA	NA	NA
<b>High PAH</b>					
36%	61%	51%	38%	33%	
37%	64%	53%	39%	35%	
44%	75%	62%	46%	41%	



Capacity Performance Benefits (Cost), excluding Fixed Costs, By Scenario  
2018 Present Value (millions)

Key				A: Total Benefit/(Cost) excluding Fixed Costs								B: Increase in Benefit Relative to Status Quo								Status Quo		
	PAH Case	Gas Interruption Case	EFOR Case	Status Quo	24-hr Firm	16-hr EFT	24-hr STF (Dec-Feb)	16-hr STF (Dec-Feb)	24-hr STF (Winter)	16-hr STF (Winter)	LNG	Diesel	24-hr Firm	16-hr EFT	24-hr STF (Dec-Feb)	16-hr STF (Dec-Feb)	24-hr STF (Winter)	16-hr STF (Winter)	LNG		Diesel	
1	Low	No Interruption	Low	\$14	\$14	\$14	\$14	\$14	\$14	\$14	\$14	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0.0
2	Low	No Interruption	Base	\$13	\$13	\$13	\$13	\$13	\$13	\$13	\$13	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1.0
3	Low	No Interruption	High	\$8	\$8	\$8	\$8	\$8	\$8	\$8	\$8	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5.1
4	Low	Full Interruption	Low	(\$19)	\$14	\$14	\$14	\$14	\$14	\$14	\$14	\$33	\$33	\$33	\$33	\$33	\$33	\$34	\$33	\$32	\$32	\$28.0
5	Low	Full Interruption	Base	(\$19)	\$13	\$13	\$13	\$13	\$13	\$13	\$13	\$32	\$32	\$32	\$32	\$32	\$32	\$32	\$32	\$32	\$32	\$28.0
6	Low	Full Interruption	High	(\$19)	\$8	\$8	\$8	\$8	\$8	\$8	\$8	\$27	\$27	\$27	\$27	\$27	\$27	\$27	\$27	\$27	\$27	\$28.0
7	Base	No Interruption	Low	\$29	\$29	\$29	\$29	\$29	\$29	\$29	\$29	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0.0
8	Base	No Interruption	Base	\$27	\$27	\$27	\$27	\$27	\$27	\$27	\$27	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1.0
9	Base	No Interruption	High	\$17	\$17	\$17	\$17	\$17	\$17	\$17	\$17	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5.1
10	Base	Full Interruption	Low	(\$39)	\$29	\$29	\$29	\$29	\$29	\$29	\$29	\$68	\$68	\$68	\$68	\$68	\$68	\$68	\$68	\$67	\$67	\$28.1
11	Base	Full Interruption	Base	(\$39)	\$27	\$27	\$27	\$27	\$27	\$27	\$27	\$66	\$66	\$66	\$66	\$66	\$66	\$66	\$66	\$65	\$65	\$28.1
12	Base	Full Interruption	High	(\$39)	\$17	\$17	\$17	\$17	\$17	\$17	\$17	\$56	\$56	\$56	\$56	\$56	\$56	\$56	\$56	\$55	\$55	\$28.1
13	High	No Interruption	Low	\$138	\$138	\$138	\$138	\$138	\$138	\$138	\$138	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0.0
14	High	No Interruption	Base	\$126	\$126	\$126	\$126	\$126	\$126	\$126	\$126	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3.9
15	High	No Interruption	High	\$79	\$79	\$79	\$79	\$79	\$79	\$79	\$79	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20.1
16	High	Full Interruption	Low	(\$143)	\$138	\$138	\$138	\$138	\$138	\$138	\$139	\$280	\$280	\$280	\$280	\$280	\$280	\$281	\$274	\$274	\$274	\$78.9
17	High	Full Interruption	Base	(\$143)	\$126	\$126	\$126	\$126	\$126	\$126	\$127	\$269	\$269	\$269	\$269	\$269	\$269	\$270	\$263	\$263	\$263	\$78.9
18	High	Full Interruption	High	(\$143)	\$79	\$79	\$79	\$79	\$79	\$79	\$80	\$221	\$221	\$221	\$221	\$221	\$221	\$222	\$216	\$216	\$216	\$78.9

Capacity Performance Benefits (Cost), including Fixed Costs, By Scenario  
2018 Present Value (millions)

High/Full/Base No Stop Loss \$109.6

Fixed Cost of Alternative	\$0	\$249	\$209	\$93	\$73	\$155	\$121	\$80	\$63
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Key				D: Total Benefit/(Cost) including Fixed Costs								E: Increase in Benefit Relative to Status Quo								24-hr Firm		
	PAH Case	Gas Interruption Case	EFOR Case	Status Quo	24-hr Firm	16-hr EFT	24-hr STF (Dec-Feb)	16-hr STF (Dec-Feb)	24-hr STF (Winter)	16-hr STF (Winter)	LNG	Diesel	24-hr Firm	16-hr EFT	24-hr STF (Dec-Feb)	16-hr STF (Dec-Feb)	24-hr STF (Winter)	16-hr STF (Winter)	LNG		Diesel	
1	Low	No Interruption	Low	\$14	(\$235)	(\$195)	(\$79)	(\$59)	(\$141)	(\$107)	(\$66)	(\$49)	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)		
2	Low	No Interruption	Base	\$13	(\$236)	(\$196)	(\$80)	(\$60)	(\$142)	(\$108)	(\$67)	(\$50)	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)		
3	Low	No Interruption	High	\$8	(\$241)	(\$201)	(\$85)	(\$65)	(\$147)	(\$113)	(\$72)	(\$55)	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)		
4	Low	Full Interruption	Low	(\$19)	(\$235)	(\$195)	(\$79)	(\$59)	(\$141)	(\$107)	(\$65)	(\$50)	(\$215)	(\$175)	(\$60)	(\$39)	(\$122)	(\$88)	(\$46)	(\$30)	NA	
5	Low	Full Interruption	Base	(\$19)	(\$236)	(\$196)	(\$80)	(\$60)	(\$142)	(\$108)	(\$67)	(\$51)	(\$217)	(\$177)	(\$61)	(\$41)	(\$123)	(\$89)	(\$47)	(\$32)	NA	
6	Low	Full Interruption	High	(\$19)	(\$241)	(\$201)	(\$85)	(\$65)	(\$147)	(\$113)	(\$72)	(\$56)	(\$222)	(\$182)	(\$66)	(\$45)	(\$128)	(\$94)	(\$52)	(\$36)	NA	
7	Base	No Interruption	Low	\$29	(\$220)	(\$180)	(\$64)	(\$44)	(\$126)	(\$92)	(\$51)	(\$34)	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)		
8	Base	No Interruption	Base	\$27	(\$222)	(\$182)	(\$66)	(\$46)	(\$129)	(\$95)	(\$53)	(\$37)	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)		
9	Base	No Interruption	High	\$17	(\$232)	(\$192)	(\$77)	(\$56)	(\$139)	(\$105)	(\$63)	(\$47)	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)		
10	Base	Full Interruption	Low	(\$39)	(\$220)	(\$180)	(\$64)	(\$44)	(\$126)	(\$92)	(\$50)	(\$35)	(\$181)	(\$141)	(\$25)	(\$5)	(\$87)	(\$53)	(\$11)	(\$4)	NA	
11	Base	Full Interruption	Base	(\$39)	(\$222)	(\$182)	(\$66)	(\$46)	(\$129)	(\$95)	(\$53)	(\$38)	(\$183)	(\$143)	(\$27)	(\$7)	(\$89)	(\$56)	(\$14)	(\$1)	NA	
12	Base	Full Interruption	High	(\$39)	(\$232)	(\$192)	(\$77)	(\$56)	(\$139)	(\$105)	(\$63)	(\$48)	(\$193)	(\$153)	(\$37)	(\$17)	(\$99)	(\$66)	(\$24)	(\$9)	NA	
13	High	No Interruption	Low	\$138	(\$111)	(\$71)	\$45	\$65	(\$17)	\$16	\$58	\$75	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)		
14	High	No Interruption	Base	\$126	(\$123)	(\$83)	\$33	\$53	(\$29)	\$5	\$46	\$63	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)		
15	High	No Interruption	High	\$79	(\$170)	(\$130)	(\$14)	\$6	(\$77)	(\$43)	(\$1)	\$15	(\$249)	(\$209)	(\$93)	(\$73)	(\$155)	(\$121)	(\$80)	(\$63)		
16	High	Full Interruption	Low	(\$143)	(\$111)	(\$71)	\$45	\$65	(\$17)	\$16	\$59	\$69	\$31	\$71	\$187	\$208	\$125	\$159	\$202	\$211	90%	
17	High	Full Interruption	Base	(\$143)	(\$123)	(\$83)	\$33	\$53	(\$29)	\$5	\$47	\$57	\$20	\$60	\$176	\$196	\$114	\$147	\$190	\$200	94%	
18	High	Full Interruption	High	(\$143)	(\$170)	(\$130)	(\$14)	\$6	(\$77)	(\$43)	(\$0)	\$10	(\$28)	\$12	\$128	\$148	\$66	\$100	\$142	\$153	NA	

C: Maximum Penalty in Any Single Year (M 2017\$)							
24-hr Firm	16-hr EFT	24-hr STF (Dec-Feb)	16-hr STF (Dec-Feb)	24-hr STF (Winter)	16-hr EFT STF (Winter)	LNG	Diesel
\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0
\$5.1	\$5.1	\$5.1	\$5.1	\$5.1	\$5.1	\$5.1	\$5.1
\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0
\$5.1	\$5.1	\$5.1	\$5.1	\$5.1	\$5.1	\$5.1	\$5.1
\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0
\$5.1	\$5.1	\$5.1	\$5.1	\$5.1	\$5.1	\$5.1	\$5.1
\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0
\$5.1	\$5.1	\$5.1	\$5.1	\$5.1	\$5.1	\$5.1	\$5.1
\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
\$3.9	\$3.9	\$3.9	\$3.9	\$3.9	\$3.9	\$3.9	\$3.9
\$20.1	\$20.1	\$20.1	\$20.1	\$20.1	\$20.1	\$20.1	\$20.1
\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
\$3.9	\$3.9	\$3.9	\$3.9	\$3.9	\$3.9	\$3.9	\$3.9
\$20.1	\$20.1	\$20.1	\$20.1	\$20.1	\$20.1	\$20.1	\$20.1
\$3.9	\$3.9	\$3.9	\$3.9	\$3.9	\$3.9	\$3.9	\$3.9
\$20.1	\$20.1	\$20.1	\$20.1	\$20.1	\$20.1	\$20.1	\$20.1
\$3.9	\$3.9	\$3.9	\$3.9	\$3.9	\$3.9	\$3.9	\$3.9

F: Percent of PAH Hours w/Gas Interrupted for Alternative to Breakeven (i.e., \$0 PV)							
16-hr EFT	24-hr STF (Dec-Feb)	16-hr STF (Dec-Feb)	24-hr STF (Winter)	16-hr EFT STF (Winter)	LNG	Diesel	
<i>Low PAH</i>							
NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA
<i>Base PAH</i>							
NA	NA	NA	NA	NA	NA	NA	94%
NA	NA	NA	NA	NA	NA	NA	98%
NA	NA	NA	NA	NA	NA	NA	NA
<i>High PAH</i>							
78%	42%	36%	61%	51%	38%	33%	
81%	44%	37%	64%	53%	39%	35%	
95%	51%	44%	75%	62%	46%	41%	

Project Life 20  
 Discount Rate (Nominal)\$ 5.91%  
 Inflation Rate 2.00%  
 Real Discount Rate 3.83%

Strategy	2018 NPV	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028
Status Quo	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24-hr Firm	\$248,912,480	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904
16-hr EFT	\$208,932,266	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230
24-hr STF (Dec-Feb)	\$93,104,517	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823
16-hr STF (Dec-Feb)	\$72,817,331	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622
24-hr STF (Winter)	\$155,174,195	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371
16-hr EFT STF (Winter)	\$121,362,219	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037
LNG	\$73,583,337	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286
Diesel	\$57,049,797	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657
LNG Capital Cost (Nominal \$, 2020 ISD)		\$81,000,000							
Diesel Capital Cost (Nominal \$, 2020 ISD)		\$62,800,000							

Fixed Charge Rate (excl. O&M)

Year	PV (ISD)	1	2	3	4	5	6	7	8
With End of Year (EOY) Flows									
\$1 Level Nominal, EOY	\$11.55420	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
\$1 Level Inflated, EOY	\$13.79312	1.0200	1.0404	1.0612	1.0824	1.1041	1.1262	1.1487	1.1717
Begin of Year Net Book		1.000	0.950	0.900	0.850	0.800	0.750	0.700	0.650
Annual Depreciation	\$0.57771	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Return on Net Book EOY	\$0.42229	0.0591	0.056145	0.05319	0.050235	0.04728	0.044325	0.04137	0.038415
Total Capital Rev Req EOY	\$1.00000	0.1091	0.106145	0.10319	0.100235	0.09728	0.094325	0.09137	0.088415
Level Nominal Cap RR EOY	\$1.00000	0.0865	0.0865	0.0865	0.0865	0.0865	0.0865	0.0865	0.0865
Level Inflated Cap RR EOY	\$1.00000	0.0739	0.0754	0.0769	0.0785	0.0800	0.0816	0.0833	0.0849
Level Real ISD \$ (Real EOY \$)	\$1.00000	0.0725	0.0725	0.0725	0.0725	0.0725	0.0725	0.0725	0.0725
With Mid-Year Flows									
Level Real ISD \$ (Real mid-year\$)	\$1.00000	0.0711	0.0711	0.0711	0.0711	0.0711	0.0711	0.0711	0.0711
Real FCR (Real ISD\$, mid-year)	7.11%								
Escalation 2018 to 2020	\$1.04040								
Real FCR 2018\$, mid-year flows)	6.84% <-- 2018\$ for project ISD in 2020								

Annual Capital and Contract Cost (Real \$18)											
2028/2029	2029/2030	2030/2031	2031/2032	2032/2033	2033/2034	2034/2035	2035/2036	2036/2037	2037/2038	2038/2039	2039/2040
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904	\$18,737,904
\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230	\$15,728,230
\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823	\$7,008,823
\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622	\$5,481,622
\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371	\$11,681,371
\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037	\$9,136,037
\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286	\$5,539,286
\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657	\$4,294,657

9	10	11	12	13	14	15	16	17	18	19	20
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.1951	1.2190	1.2434	1.2682	1.2936	1.3195	1.3459	1.3728	1.4002	1.4282	1.4568	1.4859
0.600	0.550	0.500	0.450	0.400	0.350	0.300	0.250	0.200	0.150	0.100	0.05
0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.05
0.03546	0.032505	0.02955	0.026595	0.02364	0.020685	0.01773	0.014775	0.01182	0.008865	0.00591	0.002955
0.08546	0.082505	0.07955	0.076595	0.07364	0.070685	0.06773	0.064775	0.06182	0.058865	0.05591	0.052955
0.0865	0.0865	0.0865	0.0865	0.0865	0.0865	0.0865	0.0865	0.0865	0.0865	0.0865	0.0865
0.0866	0.0884	0.0901	0.0919	0.0938	0.0957	0.0976	0.0995	0.1015	0.1035	0.1056	0.1077
0.0725	0.0725	0.0725	0.0725	0.0725	0.0725	0.0725	0.0725	0.0725	0.0725	0.0725	0.0725
0.0711	0.0711	0.0711	0.0711	0.0711	0.0711	0.0711	0.0711	0.0711	0.0711	0.0711	0.0711

**EAST KENTUCKY POWER COOPERATIVE, INC.**

**PSC CASE NO. 2018-00292**

**RESPONSE TO INFORMATION REQUEST**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION DATED 10/11/18**

**REQUEST 16**

**RESPONSIBLE PARTY: Jerry Purvis**

**Request 16.** Refer to the Direct Testimony of Sam Yoder, Attachment SY-2, page 17 of 62, regarding the Ultra-Low NOx Combustor (ULN). Explain whether EKPC intends to install ULN upgrades as part of its proposed project

**Response 16.** EKPC does not plan on installing ULN upgrades as part of the proposed project. On June 5, 2018, EKPC applied to the Kentucky Division for Air Quality (“Division”) for a significant revision to the existing permit V-16-018R1 based upon the Burns and McDonnell Scoping Report. EKPC requested to add No.2 fuel oil as a secondary fuel in case of a natural gas curtailment. EKPC also requested the addition of two fuel oil storage tanks and ancillary fuel unloading equipment in the application. Lastly, EKPC requested an applicability determination for the following regulations: 40 CFR 60 Subpart KKKK, 40 CFR 60 Subpart TTTT, 40 CFR 60 Subpart Kb, and 40 CFR 63 Subpart YYYYY.

The Division reviewed the application and determined that these regulations were not applicable under this permit action. Had the Division determined that 40 CFR 60 Subpart KKKK was applicable, EKPC would be required to seek further NOx reductions for the units at Bluegrass

Station. The Division determined that 40 CFR Subpart GG applied and that the units were designed and purchased by original owners, Dynegy, to burn dual fuels; namely natural gas and No.2 fuel oil.

Under Section 111 of the Clean Air Act, 42 U.S.C. 7411, the Environmental Protection Agency (“EPA”) promulgated standards of performance for stationary gas turbines (40 CFR part 60, subpart GG). The standards were promulgated on September 10, 1979 (44 FR 52798). Since that time, there have been many advances in the design of turbines in regards to NO<sub>x</sub> emissions, environmental controls used in gas turbines and EPA test Methods to test and measure emissions from gas turbines. As a result of these advances, EPA suffered several case-by-case reviews and approvals of alternative measurements and testing for units regulated under the original 40 CFR Part 60 Subpart GG.

EPA promulgated and codified the monitoring alternatives that have been routinely approved in the 2004 amendments. On April 14, 2003, EPA published a direct and final rule (68 FR 17990) to harmonize and amend 40 CFR part 60 subpart GG with the monitoring requirements in 40 CFR Part 75. Subpart GG of 40 CFR Part 60, as originally promulgated, did not include NO<sub>x</sub> monitoring requirements for gas turbines that did not use water injection to control NO<sub>x</sub>.

The amendments finalized July 8, 2004 were intended to codify several alternative testing and monitoring procedures for NO<sub>x</sub> emissions used by newer turbines those of which were placed into service after Subpart GG was promulgated. With this direct and final rule, EPA spelled out options for turbines that used and did not use water injection for NO<sub>x</sub> control and the monitoring options. Subpart GG was promulgated and issued to the federal register on February 24, 2006 and became

effective March 27, 2006. EPA took direct and final action to revise the standards to clarify that EPA was not imposing new standards or requirements for turbines but described a number of acceptable compliance monitoring options that owner and operators may elect to use and made amendments to the rule.

While EPA codified several approved acceptable monitoring options, EPA did not change the NO<sub>x</sub> emission standard for natural gas fired units as stationary sources under the most recent amendments to 40 CFR Part 60 Subpart GG. Under Subpart GG, the existing numeric NO<sub>x</sub> limitations enumerated in the existing Title V did not change. Therefore, additional NO<sub>x</sub> control equipment was not required or specified in the new draft Title V when the Division made its applicability determination. The public commentary period has closed and no public comments were received. EPA discussed the permit with the Division but did not provide any comments. The proposed permit is expected anytime from the Division. A proposed permit in Kentucky authorizes construction of the project.