COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF KENTUCKY UTILITIES COMPANY FOR AN ADJUSTMENT OF ITS ELECTRIC RATES, A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO DEPLOY ADVANCED METERING INFRASTRUCTURE, APPROVAL OF CERTAIN REGULATORY AND ACCOUNTING TREATMENTS, AND ESTABLISHMENT OF A ONE-YEAR SUR-CREDIT	**)))))))))**	**CASE NO. 2020-00349**

RESPONSE OF
KENTUCKY UTILITIES COMPANY
TO
COMMISSION STAFF'S SIXTH REQUEST FOR INFORMATION
DATED APRIL 14, 2021

FILED: APRIL 20, 2021

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Daniel K. Arbough**, being duly sworn, deposes and says that he is Treasurer for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

Daniel K. Arbough

Daniel K. Arbough

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 19th day of April 2021.

Judy Schooler

Notary Public

Notary Public ID No. 603967

My Commission Expires:

July 11, 2022

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Lonnie E. Bellar**, being duly sworn, deposes and says that he is Chief Operating Officer for Louisville Gas and Electric Company and Kentucky Utilities Company and an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

Lonnie Bellar
Lonnie E. Bellar

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 16th day of April 2021.

Judy Schooler
Notary Public

Notary Public ID No. **603967**

My Commission Expires:

July 11, 2022

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Robert M. Conroy**, being duly sworn, deposes and says that he is Vice President, State Regulation and Rates, for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

Robert M. Conroy

Robert M. Conroy

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 19th day of April 2021.

Judy Schooler

Notary Public

Notary Public ID No. 603967

My Commission Expires:

July 11, 2022

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Eileen L. Saunders**, being duly sworn, deposes and says that she is Vice President, Customer Services for Louisville Gas and Electric Company and Kentucky Utilities Company and an employee of LG&E and KU Services Company, and that she has personal knowledge of the matters set forth in the responses for which she is identified as the witness, and the answers contained therein are true and correct to the best of her information, knowledge and belief.

Eileen L. Saunders

Eileen L. Saunders

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 16th day of April 2021.

Judy Schooler

Notary Public

Notary Public ID No. 603967

My Commission Expires:

July 11, 2022

VERIFICATION

STATE OF NORTH CAROLINA)
)
COUNTY OF BUNCOMBE)

The undersigned, **William Steven Seelye**, being duly sworn, deposes and states that he is a Principal of The Prime Group, LLC, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

____
William Steven Seelye

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 19th day of April 2021.

______________________(SEAL)
Notary Public

Notary Public ID No.

Ryan Ridenour
Notary Public
Buncombe County, NC
My Commission Expires: 07/29/23

My Commission Expires:

07-29-23

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **David S. Sinclair**, being duly sworn, deposes and says that he is Vice President, Energy Supply and Analysis for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

David S. Sinclair

David S. Sinclair

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 16th day of April 2021.

Judy Schooler

Notary Public

Notary Public ID No. **603967**

My Commission Expires:

July 11, 2022

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **John K. Wolfe**, being duly sworn, deposes and says that he is Vice President, Electric Distribution for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

John K. Wolfe
John K. Wolfe

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 16th day of April 2021.

Judy Schooler
Notary Public

Notary Public ID No. 603967

My Commission Expires:

July 11, 2022

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 1

Responding Witness: John K. Wolfe

Q-1. Refer to KU's response to Commission Staff's Second Request for Information (Staff's Second Request), Item 88. For the past four calendar years, provide-the number of applications made each year that consisted of more than 30 wireless attachments in a 30-day period.

A-1. Please refer to the chart below. KU did not receive applications for more than 30 wireless attachments in any 30-day period.

Year	Total Wireless Applications Submitted	Applications for 30 or more Wireless Attachments in any 30-day period	Highest number requested within any 30-day period	Average number requested within any 30-day period
2018	4	0	4	4
2019	14	0	12	4
2020	10	0	15	4
2021	0	N/A	N/A	N/A

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 2

Responding Witness: Robert M. Conroy / William Steven Seelye

Q-2. Refer to KU's response to Staff's Second Request, Item 132. Confirm that KU's forfeited discount/late payment charge is not cost supported. If not confirmed, provide cost support for KU's forfeited discount/late payment charge.

A-2. Denied. While the 3% residential late payment charge was the result of the negotiated settlement in Case No. 2012-00221 (see KU's response to PSC 2-132), a slightly higher late payment charge can be supported based on marginal costs. The average late payment charge for KU is $4.14. A marginal cost analysis would support a late payment charge of $4.60, which would correspond to a 3.3% late payment charge. See KU's response to Joint Intervenors 2-2.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 3

Responding Witness: Robert M. Conroy

Q-3. Refer to the Application, Tab 5, P.S.C. No. 19, Original Sheet No. 104, P.S.C. No. 19, Original Sheet No. 104.1, P.S.C. No. 20, Original Sheet No. 104, and P.S.C. No. 20, Original Sheet No. 104.1, KU's current and proposed bill format.

a. Explain why the line item "Current Taxes and Fees" is being removed from the billing summary on Sheet No. 104.

b. Explain why the "Taxes & Fees" section is being removed from Sheet No. 104.1.

c. Explain whether taxes and fees will be shown separately on future customer bills. If so, explain how they will be shown. If not, explain why not.

A-3.

a.-c. The customer utilized to generate the bill presentments for the tariff was tax exempt. See the attached tariff sheets updated to depict a customer responsible for paying taxes. The Company's customer billing program hides the "Taxes & Fees" lines if they do not apply to that specific customer.

Kentucky Utilities Company

P.S.C. No. 20, Original Sheet No. 104

T

Terms and Conditions
Bill Format

Mailed **11/12/20** for Account # **3000-0000-0001**

AMOUNT DUE	DUE DATE
$139.28	**12/9/20**

a PPL company

BILLING SUMMARY

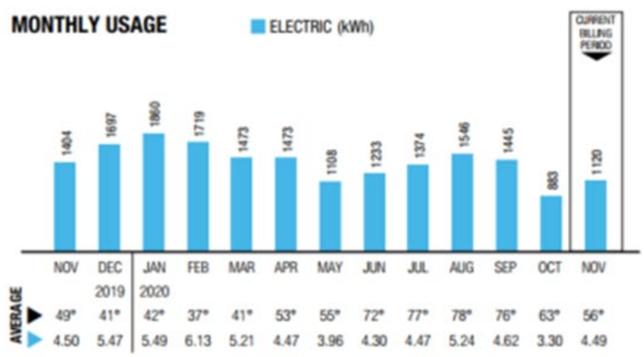
Previous Balance	95.79
Payment(s) Received	-95.79
Balance as of 11/11/20	**$0.00**
Current Electric Charges	130.18
Current Taxes and Fees	9.10
Total Current Charges as of 11/11/20	**$139.28**
Total Amount Due	**$139.28**

Online or phone payments made before 7 pm ET will be posted same day

Account Name:	**JOHN SMITH**
Service Address:	1 Quality Street LEXINGTON KY
Online Payments:	lge-ku.com
Telephone Payments:	(800) 981-0600, press 1-2-3 24 hours a day; $2.00 fee
Customer Service:	(800) 981-0600 M-F, 7am-7pm ET
Walk-in Center:	111 W. Main Street Earlington, KY 42410 M-F, 9am-5pm ET

Next read will occur 12/10/20 - 12/14/20 (Meter Read Portion 09)

MONTHLY USAGE



BILLING PERIOD AT-A-GLANCE

	THIS YEAR	LAST YEAR
Average Temperature	**56°**	**49°**
Number of Days Billed	29	32
Avg. Electric Charges per Day	**$4.49**	**$4.50**
Avg. Electric Usage per Day (kWh)	38.62	43.88

Please return only this portion with your payment. Make checks payable to KU and write your account number on your check.

Amount Due **12/9/20**	**$139.28**
After Due Date, Pay this Amount:	$143.46
WinterCare Donation:	
Total Amount Enclosed:	

Account # **3000-0000-0001**
Service Address: 1 Quality Street

#916090001 7#

JOHN SMITH
1 Quality Street
LEXINGTON, KY 40507-0000

a PPL company
PO Box 25212
Lehigh Valley, PA 18002-5212

DATE OF ISSUE: June XX, 2021

DATE EFFECTIVE: With Service Rendered
On and After July 1, 2021

ISSUED BY: /s/ Robert M. Conroy, Vice President
State Regulation and Rates
Lexington, Kentucky

Issued by Authority of an Order of the Public Service Commission in Case No. 2020-00349 dated XXXX

Kentucky Utilities Company

Terms and Conditions
Bill Format

Page 2 | Account # **3000-0000-0001**

CURRENT USAGE

ELECTRIC

Meter Reading Information	**Meter # 1000001**
Actual (R) kWh Reading on 11/11/20	31067
Actual (R) kWh Reading on 10/13/20	29947
Current kWh Usage	1120
Meter Multiplier	1
Metered kWh Usage	**1120**

CURRENT CHARGES

ELECTRIC — **Rate:** Residential Service

Basic Service Charge ($0.61 x 29 Days)	17.69
Energy Charge ($0.09950 x 1,120 kWh)	111.44
Electric DSM ($0.00069 x 1,120 kWh)	0.77
Fuel Adjustment ($-0.00282 x 1,120 kWh)	-3.16
Environmental Surcharge (3.080% x $126.74)	3.90
Economic Relief Surcredit Adjustment ($-.00068 x 1,120 kWh)	-0.76
Home Energy Assistance Fund Charge	0.30
Total Charges	**$130.18**

Taxes & Fees

Rate Increase For School Tax (3.00% x $129.88)	3.90
Franchise Fee-Lexington-Fayette (4.00% x $129.88)	5.20
Total Taxes and Fees	**$9.10**

BILLING INFORMATION

Late Payment Charge
Late Charge to be Assessed After Due Date $4.18

Rate Schedules
For a copy of your rate schedule, visit lge-ku.com/rates or call our Customer Service Department.

IMPORTANT NOTICE
BILLING NOTIFICATIONS HAVE CHANGED

Enroll in the new My Notifications program to receive timely notifications about your utility bill. Previously enrolled customers must re-enroll via My Account to continue receiving notifications.

lge-ku.com/notifications

OFFICE USE ONLY:
MRU09141009, G000000
P95.79
PF:Y eB:P

DATE OF ISSUE: June XX, 2021

DATE EFFECTIVE: With Service Rendered
On and After July 1, 2021

ISSUED BY: /s/ Robert M. Conroy, Vice President
State Regulation and Rates
Lexington, Kentucky

Issued by Authority of an Order of the Public Service Commission in Case No. 2020-00349 dated XXXX

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 4

Responding Witness: Robert M. Conroy / John K. Wolfe

Q-4. Refer to the Application, Tab 4, P.S.C. No. 20, Original Sheet No. 57, proposed Net Metering Service-1 Tariff (Tariff NMS-1), and P.S.C. No. 20, Original Sheet Nos. 108–108.5, proposed Net Metering Service Interconnection Guidelines.

a. Explain whether Tariff NMS-1 customers will be subject to the new Net Metering Service Interconnection Guidelines.

b. If so, explain why Tariff NMS-1 customers will not be granted legacy status in regards to the Net Metering Service Interconnection Guidelines and whether KU foresees additional costs to Tariff NMS-1 customers to comply with the new Net Metering Service Interconnection Guidelines.

A-4.

a. Customers served under Rider NMS-1 will be subject to the Company's revised Net Metering Service Interconnection Guidelines.

b. As described in the Company's response to PSC 4-1, the Company's proposed revisions to the Net Metering Service Interconnection Guidelines primarily concern adherence to applicable safety and power quality standards. KRS 278.466(7) requires such adherence, and it does not provide an exception from ongoing compliance for legacy customer-generators.[1] The Company respectfully submits that customer-generators who interconnect their generating facilities with the Company's grid should not be exempt from continual adherence to the latest industry standards when the safety and reliability of their own and their neighbors' electric service—as well as the safety of the Company's personnel—is at stake.

   The Company does not foresee current net metering customers' costs increasing due to the revised Net Metering Interconnection Guidelines.

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[1] KRS 278.466(7) states, "Electric generating systems and interconnecting equipment used by eligible customer-generators shall meet all applicable safety and power quality standards established by the National Electrical Code (NEC), Institute of Electrical and Electronics Engineers (IEEE), and accredited testing laboratories such as Underwriters Laboratories."

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 5

Responding Witness: Daniel K. Arbough / William Steven Seelye

Q-5. Refer to the Direct Testimony of William S. Seelye (Seelye Testimony), Exhibit WSS-19, Cost Support for Miscellaneous Charges. For each charge in Exhibit WSS-19 that includes a burden rate, provide the detailed calculation of the burden rate broken down by each individual component.

A-5. See the table below.

	ANNUALIZED PERCENTAGE		
	LGE	KU	Servco
BENEFITS			
Dental Insurance	0.580%	0.647%	0.549%
Group Life Insurance	0.562%	0.603%	0.545%
Medical	13.008%	14.610%	12.943%
Miscellaneous and Adm	1.291%	1.341%	0.734%
Pensions Service	4.234%	10.712%	9.201%
pension non service	-2.021%	-14.121%	0.984%
FASB 106 Service	1.046%	1.716%	1.419%
FASB 106 non Service	3.085%	-0.807%	-1.229%
Thrift (401K)	5.719%	5.926%	4.876%
Retirement Income	3.100%	2.760%	2.435%
Worker's Comp	1.386%	2.012%	0.000%
LT Disability	0.484%	0.628%	0.599%
Post employment	0.070%	-1.665%	-0.260%
Total Benefits	32.543%	24.360%	32.796%
ACCRUED TIA	9.339%	8.259%	12.644%
OFF-DUTY			
Vacation	8.288%	8.970%	8.359%
Holiday	4.889%	5.122%	4.938%
Sick	3.049%	4.787%	2.779%
Other Off-Duty	1.358%	1.604%	1.397%
Total off-duty	17.584%	20.483%	17.473%
Payroll Taxes			
Fica	8.988%	9.185%	9.109%
Unempl state and fed	0.099%	0.099%	0.163%
Total payroll taxes	9.087%	9.284%	9.272%
Total	68.553%	62.386%	72.185%

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 6

Responding Witness: David S. Sinclair

Q-6. Provide a copy of all of the responses, in their entirety, to KU's request for proposals that were submitted on or before March 31, 2021.

A-6. The Companies received some 366 unique responses from 37 respondents to its Request for Proposal ("RFP"). The data in the RFP responses is considered to be in raw form and presently unverified. The verification process involves several steps, including requesting additional information or clarification from the respondents for verification and comparison purposes and finally restating the information on a comparable basis. At this time, the RFP response data is not comparable, reliably useable, and finalized. The Companies are in the first step of the verification process. The evaluation of the data from the RFP responses is ongoing. Disclosure of the RFP responses in their current state, even with confidential protection, can possibly impair the Companies' negotiations with the respondents. The Companies will complete their analysis and present the data and a complete analysis, including supporting documentation, in the forthcoming Integrated Resource Plan filing in October of this year or other cases.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 7

Responding Witness: David S. Sinclair / John K. Wolfe

Q-7. Provide, in detail, KU's plan to utilize distributed energy resources related data and other information and processes to:

a. Improve and lower costs associated with customer distributed energy resource interconnection.

b. Improve distribution system planning.

c. Improve resource procurements at the bulk power level (e.g., IRP).

A-7.

a. Having visibility of DER location and energy production allows the Companies to perform a locational analysis on DER to better plan needed system improvements to accommodate additional DER. This includes but is not limited to service transformer upgrades, changes to protection settings, and having better visibility when optimizing volt/VAR optimization and conservation voltage reduction programs.

b. See the response to part a above. KU plans to utilize DER resource data and other related information and processes to better understand the location, timing, and capacity value of DER connected to its distribution system. Distribution planners and investment proponents will leverage collected data to expand hosting capacity studies capabilities and investigate non-wires alternatives in lieu of traditional asset replacement practices. Additionally, data will be used to identify connected load where behind the meter intermittent generation is masking it.

The Companies are currently participating in an industry research program administered by EPRI which is finalizing development of enhanced modeling tools and processes to perform more robust modeling of DER interconnections and their effects on distribution systems under a variety of system conditions. More than 35 utilities are supporting EPRI's effort, highlighting the significance and importance of enhanced DER modeling capabilities for the industry.

c. The impact of distributed energy resources is reflected in the Companies' load forecast. Distributed solar generation is not evaluated as a supply-side resource in the Companies' generation planning process because of its cost and low capacity factor. According to the 2020 Annual Technology Baseline ("2020 ATB") from National Renewable Energy Laboratory, the cost of distributed solar generation is 25% to 90% higher than utility-scale solar and utility-scale solar has a much higher capacity factor (see table below).

Solar Photovoltaic Capital Costs and Capacity Factors (2020 ATB)[2]

Resource	Overnight Capital Cost ($/kW; 2022 Installation; 2018 Dollars; Moderate)	Net Capacity Factor (2022 Installation; Kansas City – Moderate)
Utility-Scale Solar Photovoltaic	1,224	27.9%
Commercial Solar Photovoltaic	1,563	15.8%
Residential Solar Photovoltaic	2,340	16.6%

[2] The 2020 ATB data spreadsheet is available at the following link: https://atb.nrel.gov/electricity/2020/files/2020-ATB-Data.xlsm.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 8

Responding Witness: Lonnie E. Bellar

Q-8. Refer to KU's response to Commission Staff's Fifth Request for Information (Staff's Fifth Request), Item 6. Provide the resulting annual avoided cost rate per kilowatt-hour from the Mill Creek Unit 2 environmental compliance costs.

A-8. In the analysis summarized in Exhibit LEB-2, the Companies assumed the addition of SCR on Mill Creek Unit 2 (MC2) would enable the unit to operate to its current depreciation retirement year of 2034. The estimated capital cost of SCR is $135 million in 2020 dollars and $158 million in 2028 dollars, when escalated by two percent per year. When the 2028 cost is levelized over MC2's generation from 2028 to 2033, the levelized cost is $0.0151 per kWh. For reference, MC2's fuel and variable costs are approximately $0.023 per kWh over this period.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 9

Responding Witness: John K. Wolfe

Q-9. Refer to KU's response to Staff's Fifth Request, Item 16.

a. Explain how KU considers the impacts of distributed energy resources, including distributed generation, electric vehicles, energy efficiency, and distributed storage, within their distribution planning process.

b. Explain whether KU considers any benefits from distributed energy resources, including distributed generation, electric vehicles, energy efficiency, and distributed storage, within its distribution planning process. If so, explain how these evaluations are conducted and provide examples that include each of the resources mentioned (separately or in combination).

A-9.

a. Substation transformer peak load data used to develop annual forecasts includes the aggregate contribution of all load and distributed energy resources (DER) connected to the transformer at the time of load measurement. The contribution of DER to distribution system planning is negligible at this time. As of April 2021:

   i. Total connected capacity of DER resources on the KU distribution system – 9.68 MVA (0.19% of system peak load)

   ii. Zero connected DER – 61% of KU substation transformers

   iii. Capacity of connected DER greater than 1% of substation transformer capacity – 1.4% of KU substation transformers.

b. The Company continues to evaluate the impact of DER on its electric system.

   - All DER interconnection applications are managed and tracked through the engineering group responsible for pulling together system annual peak loading studies and forecasts.

- All DER connected to the Company's grid is included in peak load measurements of distribution transformers and is not currently excluded from forward looking load forecasts due to the low capacity rating of connected resources relative to the capacity of the upstream substation transformers and other system components. See response to a. above.

- The Company does not currently have the ability to measure the impact of connected DER to the grid in real time, to fully understand its individual and aggregated effect on distribution system components without advanced metering infrastructure (AMI) or a distribution energy management system (DERMS). Even with AMI, it will be difficult to discern the impacts of DER other than when distributed generation is producing energy to the grid; AMI will allow the Company to know with great precision when that energy is being supplied (and entirely supplying the load behind which the distributed generating facility sits). If the Company implements a DERMS, it will have greater visibility into customers' energy storage assets, as well as their distributed generation, and should be able to use those assets to assist in managing the distribution system.

- LG&E and KU continue to evaluate opportunities to enhance system modeling tools which enable evaluation of existing and proposed interconnection requests to understand their real time contribution to the distribution system under multitudes of operating parameters at peak load and generation scenarios. See response to PSC 6-7b.

- Generally, the value of individual DER installations to the distribution system varies based on the location, timing, capacity, dependability, and type of the interconnected resource.

    - Nearly 97% of currently connected resources on the LG&E and KU system are solar and contribute minimally to capacity considerations for system component design and investment decisions. Broadly, solar influences intermittent capacity relief and reduction on system components depending on when the generation is available. Influence on peak loading is currently negligible. See response to a. above.

    - Electric vehicles will likely increase electric demand on distribution system components, and this affects distribution planning in that capacity upgrades may be required to account for the increased load. The contribution of electric vehicles will vary based on customer charging behaviors which may be influenced by tariffs or other incentives.

- Energy storage affects electric demand by both increasing and decreasing demand depending on the time of charging and when it is serving load.
- Energy efficiency measures typically result in permanent load reductions which are reflected in hour-by-hour measurements of transformer load data and system forecasts.

Under the current regulatory construct, connected DER is at the sole operation of the customer, and the Company has limited monitoring capabilities and does not have input into performance (i.e. electrical output), making it difficult for the utility to account for potential impact that these resources can have.

As shown in the Rebuttal Testimony of W. Steven Seelye, net metering customers' usage and production on winter and summer peak days indicates that they place significant demands on the Company's distribution system (as well as the Company's transmission and generation assets) even if the customers' generating assets provided some amount of net energy to the Company's system during other hours of the day.[3]

[3] *See, e.g.*, Seelye Rebuttal at 36 and 39.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 10

Responding Witness: John K. Wolfe

Q-10. Refer to KU's response to Staff's Fifth Request, Item 19. Provide a detailed description and accounting of all costs expended on studying the Distributed Energy Management System (DERMS).

A-10. Associated DERMS costs are labor related and have not been tracked separately from other engineering and management costs which also support delivery of safe, reliable, and resilient electric service to customers. See response to PSC 6-12.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 11

Responding Witness: William Steven Seelye

Q-11. For KU's cost of service and rate design witnesses, provide all exhibits and workpapers relied upon for rebuttal testimony. Provide the responses in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

A-11. Mr. Seelye's cost of service study workpapers were filed with his testimony. Attached are additional workpapers.

The attachments are being provided in separate files in Excel format.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 12

Responding Witness: John K. Wolfe

Q-12. Reference to KU's response to Commission Staff's Fourth Request for Information (Staff's Fourth Request), Item 14, which states the following:

> Regarding the first type of aggregation, KU and LG&E are actively studying applications for optimizing the utilization and management of individual solar and solar-plus-storage installations on their systems. This currently involves studying the possible installation and use of Distributed Energy Resources Management Systems (DERMS). Potential objectives of a DERMS would include voltage support management, optimization of power flows within the grid, possible control of inverters to provide reactive volt-amp (VAR) support for the system, and monitoring the state and operability of distributed generation facilities.

Provide all studies, including drafts and internal memos, and business cases related to KU's activities above.

A-12. See the response to Question No. 10.

LG&E and KU staff have investigated and studied alternatives for managing DER on its distribution system through participation in industry committees, meeting with other utilities with higher DER penetration, evaluating associated regulation changes and outcomes in other states, and reading industry publications. LG&E and KU staff have also attended professional training courses provided by EPRI regarding DER and DERMS use cases in preparation for consideration of DER and DERMS-based solutions in future planning scenarios. This training was designed to train and inform technical and decision-making staff involved in the planning and operations of the programs for DER, procurement and installation of DER, integration of solar, storage, and EV systems, and development of advanced utility-scale grid management systems such as DERMS. Example applications covered included: (a) leveraging grid-facing services across a variety of types, makes, and models of grid-connected DER; (b) optimization of the dispatch of front-of-the-meter and behind-the-meter DERs through advanced distribution grid control systems such as Distributed Energy Resourced

Management Systems (DERMS) and DR Management Systems (DRMS); and (3) enabling information exchange for grid modeling that unlock new benefits from DER management.

The Companies plan to continue monitoring ongoing DERMS pilots and demonstration projects in the industry, and plan to complete a business case and cost benefit analysis before deploying a DERMS solution.

The Companies have not yet completed a business case for a DERMS solution. DERMS implementation is still in the investigative and planning stages, and deployment of a solution is still multiple years out in Distribution's planning horizon, as indicated in Exhibit LEB-4 of Mr. Bellar's testimony. The Companies were not able to conduct the search for the requested documents within the time allowed to respond to this data request.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 13

Responding Witness: Robert M. Conroy

Q-13. Provide average monthly fuel costs for the previous five years for each of KU's generating facilities. Explain how KU calculates the average fuel costs and break out each component with a source each input relied upon. Include in the response, but do not limit it to, contracted coal and natural gas prices for each facility and how these price map to the average costs calculated. Provide each fuel (i.e., coal and natural gas) contract. Provide the responses and all associated workpapers in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

A-13. See attached. Attachments 1 and 2 are source workpapers for the KU and LG&E monthly FAC Form B filings that are filed with the Commission to support the costs recoverable through the Companies' FAC mechanisms. Attachment 1 includes the monthly Excel spreadsheets for the last five calendar years to support the Companies' monthly fuel costs on a generation basis by generating unit[4], the oil and natural gas purchases by generating station[5], and the inventory schedules by generating station[6]. The monthly fuel costs on a generation basis are determined by dividing the total fuel costs for the generating unit by the gross or net generation (kWh) for that unit. The inventory schedules reflect how the pricing of coal, oil, and natural gas purchases map to the average monthly fuel costs per fuel unit (that is, the amount burned or expensed based on consumption by the generating units). Attachment 2 includes the monthly coal purchase reports for the last five calendar years. All fuel contracts for the last five calendar years have previously been filed with the Commission pursuant to 807 KAR 5:056.

When the Companies purchase fuel to be used for electric generation, the purchased cost and volume (as shown in tab "Analysis Fuel Purchases" of

[4] In the KU files, see the tabs labeled "BR", "GH", and "CT's" which represent Page 5 of monthly KU FAC Form B filings. In the LG&E files, see the tabs labeled "MC", "TC", "CT", "NGCC" which represent Page 5 of the monthly LG&E FAC Form B filings.
[5] In both the KU and LG&E files, see the tab labeled "Analysis Fuel Purchases" which represents Page 4 of the monthly KU and LG&E FAC Form B filings.
[6] In both the KU and LG&E files, see the tabs labeled "Coal", "Oil", and "Gas" which represent Page 1 of the monthly KU and LG&E FAC Form B filings.

Attachment 1 for oil and natural gas or in Attachment 2 for coal) is recorded into inventory, which adjusts the weighted average cost per unit of that inventory. When the fuel is consumed by a generating unit, the weighted average cost per unit is multiplied by the volume of fuel consumed to determine the fuel consumption (also referred to as fuel burned). For coal and oil, the Companies have no way of tracking which specific contract's fuel was consumed during the month because newly purchased coal and oil are combined with existing inventory (that is, added to the generating stations' coal pile or the container storing the oil). Also, consumption does not necessarily align with when the fuel was purchased. If a coal unit is offline, there may be little to no consumption during a given month although the Companies' may be obligated to maintain their purchase commitments. For natural gas used for electric generation, the purchases and consumption generally do align because the Companies do not store natural gas used for electric generation.

The coal, oil, and natural gas inventory schedules provided in Attachment 1 reflect the monthly purchased amount, volume, and average per unit cost as well as the monthly consumption amount, volume, and per unit cost.

Because several of the generating units are jointly owned between KU and LG&E, both Companies' supporting Form B workpapers are being provided in response to this question.

The attachment is being provided in a separate file in Excel format.

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	Coal Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	R	U	11	IN	22,258.71	11,421	22.843	46.68	204.35	17.98	78.73	64.66	283.08	1.48	6.36	15.21
Armstrong Coal Sales	P	J16003	R	S	9	KY	11,275.93	11,140	22.280	38.50	172.81	19.31	86.67	57.81	259.48	2.64	9.54	13.00
Bowie Refined Coal LLC	P	K14037	T	S	8	KY	5,385.75	12,329	24.658	62.88	255.00	0.00	0.00	62.88	255.00	2.31	10.19	6.97
Triad Mining LLC	P	J15002	R	S	11	IN	33,251.55	11,510	23.020	43.82	190.35	17.75	77.12	61.57	267.47	3.63	8.32	12.20
		Total Long Term					**72,171.94**	**11,486**	**22.972**	**45.29**	**197.17**	**16.74**	**72.87**	**62.03**	**270.04**	**2.71**	**8.04**	**12.86**
Total E.W. Brown							**72,171.94**	**11,486**	**22.972**	**45.29**	**197.17**	**16.74**	**72.87**	**62.03**	**270.04**	**2.71**	**8.04**	**12.86**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	Coal Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J09002	B	U	11	IN	20,228.44	11,076	22.153	56.54	255.23	4.44	20.04	60.98	275.27	1.63	7.20	16.76
Alliance Coal LLC	P	J09002	B	U	6	WV	8,649.75	12,516	25.032	54.37	217.21	5.41	21.61	59.78	238.82	2.86	9.31	6.52
Armstrong Coal Company	P	J12004	B	S	9	KY	3,214.00	11,214	22.428	47.35	211.14	4.99	22.25	52.34	233.39	3.14	10.86	11.70
Armstrong Coal Sales	P	J16003	B	S	9	KY	28,864.00	11,222	22.443	38.50	171.55	4.78	21.30	43.28	192.85	3.26	11.38	11.06
Armstrong Coal Sales	P	J14010B	B	S	9	KY	3,200.00	11,323	22.647	42.57	187.96	4.78	21.11	47.35	209.07	3.19	10.76	11.11
Armstrong Coal Sales	P	J14004B	B	S	9	KY	53,330.00	11,198	22.396	43.70	195.15	4.91	21.91	48.61	217.06	3.17	11.06	11.42
Armstrong Coal Sales	P	J07032B	B	S	9	KY	84,634.00	11,204	22.408	28.91	129.00	4.90	21.88	33.81	150.88	3.24	10.96	11.45
Armstrong Coal Sales	P	J16017	B	S	9	KY	22,338.00	11,228	22.456	38.34	170.73	4.78	21.28	43.12	192.01	3.22	11.12	11.11
COALSALES LLC	P	J12011	B	S	11	IN	12,778.00	10,911	21.821	40.32	184.78	3.35	15.35	43.67	200.13	3.07	9.18	14.80
COALSALES LLC	P	J16007	B	S	11	IN	36,132.00	10,965	21.930	40.43	184.36	3.21	14.64	43.64	199.00	3.04	8.78	14.98
Eagle River Coal LLC	P	J16005	B	S	10	IL	4,919.61	12,662	25.324	46.02	181.73	4.18	16.51	50.20	198.24	3.80	9.35	5.67
Foresight Coal Sales LLC	P	J12005	B	U	10	IL	14,300.55	11,455	22.910	44.83	195.68	4.09	17.85	48.92	213.53	2.67	8.76	12.30
Rhino Energy LLC	P	J14001	B	U	9	KY	48,207.20	11,221	22.442	46.33	206.43	3.91	17.43	50.24	223.86	2.52	8.36	13.74
		Total Long Term					**340,795.55**	**11,231**	**22.461**	**40.27**	**179.29**	**4.45**	**19.80**	**44.72**	**199.09**	**2.98**	**9.97**	**12.35**
Spot Contract																		
Alliance Coal LLC	P	J16001B	B	U	9	KY	39,457.50	11,474	22.949	46.57	202.92	3.92	17.08	50.49	220.00	2.99	7.98	12.21
Alliance Coal LLC	P	J16004	B	U	9	KY	39,500.70	11,463	22.925	47.62	207.71	3.92	17.10	51.54	224.81	2.98	7.96	12.39
Alliance Coal LLC	P	J16004	B	U	6	WV	1,726.20	12,531	25.062	45.45	181.34	5.19	20.71	50.64	202.05	2.99	9.82	6.12
Arch Coal Sales Company Inc.	P	J15003	B	S/U	8	WV	6,286.60	9,655	19.310	37.56	194.51	3.09	16.01	40.65	210.52	0.86	23.35	9.99
Armstrong Coal Company	P	J14040	B	S	9	KY	20,764.00	11,133	22.266	42.51	190.91	4.99	22.41	47.50	213.32	3.11	10.83	12.05
Foresight Coal Sales LLC	P	J16009	B	U	10	IL	47,885.81	11,773	23.547	42.93	182.33	3.92	16.65	46.85	198.98	2.56	8.36	10.87
River Trading Company	B	J15004	B	S	8	WV	3,138.50	10,558	21.115	36.60	173.35	5.67	26.85	42.27	200.20	0.81	21.30	7.22
The American Coal Company	P	J16002	B	U	10	IL	44,903.55	11,836	23.671	48.68	205.65	3.92	16.56	52.60	222.21	2.50	8.66	10.60
		Total Spot					**203,662.86**	**11,526**	**23.052**	**45.53**	**197.50**	**4.04**	**17.53**	**49.57**	**215.03**	**2.69**	**9.20**	**11.36**
Total Ghent							**544,458.41**	**11,341**	**22.682**	**42.24**	**186.21**	**4.29**	**18.94**	**46.53**	**205.15**	**2.87**	**9.68**	**11.98**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order
or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	Coal Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	19	WY	16,041.00	8,883	17.766	11.54	64.97	27.67	155.73	39.21	220.70	0.30	5.61	26.53
		Total Long Term					**16,041.00**	**8,883**	**17.766**	**11.54**	**64.97**	**27.67**	**155.73**	**39.21**	**220.70**	**0.30**	**5.61**	**26.53**
Total Trimble County / KU							**16,041.00**	**8,883**	**17.766**	**11.54**	**64.97**	**27.67**	**155.73**	**39.21**	**220.70**	**0.30**	**5.61**	**26.53**
Total Kentucky Utilities							**632,671.35**	**11,295**	**22.591**	**41.81**	**185.07**	**6.31**	**27.92**	**48.12**	**212.99**	**2.79**	**9.39**	**12.45**

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(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation3 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
COALSALES LLC	P	J16007	R	S	8	IN	22,066.00	11,135	22.271	35.75	160.51	19.68	88.40	55.43	248.91	3.09	8.34	14.77
Sunrise Coal LLC	P	J15002B	R	U	8	IN	43,309.30	11,444	22.888	38.10	166.46	22.62	98.84	60.72	265.30	3.39	8.26	13.13
		Total Long Term					**65,375.30**	**11,340**	**22.679**	**37.30**	**164.49**	**21.64**	**95.37**	**58.94**	**259.86**	**3.29**	**8.28**	**13.68**
Total E.W. Brown							**65,375.30**	**11,340**	**22.679**	**37.30**	**164.49**	**21.64**	**95.37**	**58.94**	**259.86**	**3.29**	**8.28**	**13.68**

(b) Designated by symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2017

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	MSHA Dist#	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	B	U	10	KY	49,733.70	11,448	22.895	47.46	207.30	3.92	17.12	51.38	224.42	2.94	8.19	12.34
Alliance Coal LLC	P	J17002	B	U	10	KY	49,300.50	11,420	22.840	40.71	178.23	3.94	17.25	44.65	195.48	2.95	8.31	12.41
Armstrong Coal Sales	P	J16003	B	S	10	KY	36,614.00	11,283	22.565	38.09	168.82	4.77	21.11	42.86	189.93	3.01	10.58	11.64
Armstrong Coal Sales	P	J14010B	B	S	10	KY	4,818.00	11,332	22.665	43.34	191.22	4.79	21.15	48.13	212.37	2.91	10.54	11.56
Armstrong Coal Sales	P	J07032B	B	S	10	KY	52,490.00	11,258	22.516	28.23	125.36	4.79	21.28	33.02	146.64	3.12	10.48	11.62
Armstrong Coal Sales	P	J16017	B	S	10	KY	7,952.00	11,343	22.687	38.40	169.25	4.78	21.07	43.18	190.32	2.93	10.67	11.28
COALSALES LLC	P	J16007	B	S	8	IN	22,640.00	11,007	22.014	39.41	179.01	3.23	14.68	42.64	193.69	3.02	8.99	14.56
Eagle River Coal LLC	P	J16005	B	S	8	IL	19,819.84	12,742	25.485	46.65	183.07	4.21	16.48	50.86	199.55	3.12	7.51	7.58
Foresight Coal Sales LLC	P	J16018	B	U	8	IL	10,175.54	11,894	23.789	40.96	172.18	3.94	16.57	44.90	188.75	2.66	7.85	10.68
Rhino Energy LLC	P	J14001	B	U	10	KY	63,574.00	11,302	22.604	48.78	215.80	3.82	16.89	52.60	232.69	2.56	8.20	13.56
The American Coal Company	P	J16006	B	U	3	WV	57,074.00	12,707	25.414	46.23	181.91	4.56	17.94	50.79	199.85	2.92	9.27	6.16
		Total Long Term					**374,191.58**	**11,619**	**23.238**	**42.04**	**180.91**	**4.21**	**18.12**	**46.25**	**199.03**	**2.91**	**9.01**	**11.25**
Spot Contract																		
Alliance Coal LLC	P	J16004	B	U	10	KY	1,619.70	11,454	22.908	47.19	206.01	3.91	17.07	51.10	223.08	3.01	8.36	12.37
Contura Coal Sales LLC	P	J17001	B	U	2	PA	28,402.95	13,018	26.036	38.06	146.17	9.19	35.30	47.25	181.47	2.96	7.90	6.47
Foresight Coal Sales LLC	P	J16009	B	U	3	WV	64,141.00	12,739	25.479	45.76	179.60	4.52	17.74	50.28	197.34	2.95	9.05	6.18
Foresight Coal Sales LLC	P	J16009	B	U	8	IL	5,102.65	11,978	23.957	43.58	181.89	3.94	16.45	47.52	198.34	2.66	7.25	10.57
Kolmar Americas Inc	B	J16019	B	S	12	WV	3,112.50	9,779	19.558	30.19	154.34	2.95	15.09	33.14	169.43	0.71	24.29	9.24
The American Coal Company	P	J16002	B	U	3	WV	29,805.00	12,746	25.492	51.70	202.81	4.52	17.73	56.22	220.54	2.91	9.07	6.16
		Total Spot					**132,183.80**	**12,686**	**25.372**	**45.01**	**177.40**	**5.46**	**21.51**	**50.47**	**198.91**	**2.88**	**9.09**	**6.56**
Total Ghent							**506,375.38**	**11,897**	**23.795**	**42.82**	**179.94**	**4.53**	**19.06**	**47.35**	**199.00**	**2.90**	**9.03**	**10.02**

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Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(b) Designated by symbol
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	29,707.10	8,892	17.783	11.55	64.97	27.76	156.06	39.31	221.03	0.25	5.36	26.86
		Total Long Term					**29,707.10**	**8,892**	**17.783**	**11.55**	**64.97**	**27.76**	**156.06**	**39.31**	**221.03**	**0.25**	**5.36**	**26.86**
Total Trimble County / KU							**29,707.10**	**8,892**	**17.783**	**11.55**	**64.97**	**27.76**	**156.06**	**39.31**	**221.03**	**0.25**	**5.36**	**26.86**
Total Kentucky Utilities							**601,457.78**	**11,688**	**23.377**	**40.67**	**173.99**	**7.54**	**32.26**	**48.21**	**206.25**	**2.81**	**8.77**	**11.25**

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Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	U	IN	94,557.26	11,646	23.293	42.00	180.30	8.12	34.89	50.12	215.19	3.43	7.58	12.72
	Total Long Term					**94,557.26**	**11,646**	**23.293**	**42.00**	**180.30**	**8.12**	**34.89**	**50.12**	**215.19**	**3.43**	**7.58**	**12.72**
Total E.W. Brown						**94,557.26**	**11,646**	**23.293**	**42.00**	**180.30**	**8.12**	**34.89**	**50.12**	**215.19**	**3.43**	**7.58**	**12.72**

Case No. 2020-00349
Attachment 2 to Response to PSC-6 Question No. 13

Conroy

(a) PBDU as Designated by Symbol P, B, D, or U
P= Producer B= Broker D= Distributor U-Utility

(b) POCN = Purchase Order or Contract Number

(c) MT = Mode of Transportation Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J16001B	B	U	WKY	1,718.70	11,525	23.050	48.02	208.35	4.02	17.44	52.04	225.79	2.91	8.13	12.03
Alliance Coal LLC	P	J16008	B	U	WKY	1,612.00	11,333	22.666	48.74	215.05	4.02	17.74	52.76	232.79	2.88	8.05	12.95
Alliance Coal LLC	P	J17002	B	U	WKY	38,499.40	11,507	23.014	42.22	183.47	4.20	18.22	46.42	201.69	2.97	8.02	12.09
Alliance Coal LLC	P	J18003	B	U	WKY	36,259.50	11,485	22.970	37.96	165.27	4.22	18.38	42.18	183.65	2.98	8.03	12.09
Alliance Coal LLC	P	J18009	B	U	WKY	52,574.00	11,466	22.933	34.45	150.21	4.09	17.86	38.54	168.07	2.96	8.04	12.23
Armstrong Coal Sales	P	J16003	B	S	WKY	27,020.00	11,553	23.105	41.62	180.13	4.90	21.21	46.52	201.34	2.84	9.06	11.39
Armstrong Coal Sales	P	J14010B	B	U	WKY	3,216.00	11,561	23.122	45.77	197.94	5.14	22.23	50.91	220.17	2.72	8.64	11.76
Armstrong Coal Sales	P	J14010B	B	S	WKY	4,760.00	11,589	23.177	45.27	195.31	4.90	21.14	50.17	216.45	2.84	9.22	11.01
Armstrong Coal Sales	P	J16017	B	S	WKY	3,184.00	11,522	23.045	43.66	189.46	4.90	21.27	48.56	210.73	2.81	9.40	11.38
Armstrong Coal Sales	P	J18002	B	U	WKY	35,408.00	11,865	23.730	44.89	189.15	5.14	21.66	50.03	210.81	2.60	8.63	10.41
Eagle River Coal LLC	P	J16005	B	S	IL	26,474.84	12,646	25.292	49.27	194.80	4.30	17.02	53.57	211.82	3.14	7.28	8.01
Foresight Coal Sales LLC	P	J16018	B	U	IL	39,967.64	11,702	23.404	41.90	179.02	4.18	17.89	46.08	196.91	2.65	8.26	11.62
Knight Hawk Coal LLC	P	J18005	B	U	IL	12,806.99	11,181	22.362	34.84	155.81	8.09	36.18	42.93	191.99	3.09	8.84	12.70
Rhino Energy LLC	P	J14001	B	U	WKY	44,189.10	11,330	22.660	45.27	199.80	3.94	17.36	49.21	217.16	2.58	8.29	13.30
The American Coal Company	P	J16006	B	U	IL	54,471.14	11,637	23.275	44.30	190.34	4.10	17.62	48.40	207.96	2.60	9.08	11.22
The American Coal Company	P	J17004	B	U	IL	17,435.33	11,679	23.358	33.83	144.84	4.22	18.07	38.05	162.91	2.66	8.82	11.04
The American Coal Company	P	J17004	B	U	WKY	6,384.80	11,528	23.056	32.93	142.83	5.14	22.30	38.07	165.13	2.57	8.24	12.99
Total Long Term						**405,981.44**	**11,624**	**23.248**	**41.45**	**178.31**	**4.44**	**19.08**	**45.89**	**197.39**	**2.79**	**8.39**	**11.59**
Spot Contract																	
Contura Coal Sales LLC	P	J17001	B	U	PA	4,854.70	12,998	25.997	37.83	145.51	9.67	37.22	47.50	182.73	3.22	8.36	6.07
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	1,615.20	11,280	22.560	38.07	168.77	3.29	14.58	41.36	183.35	3.04	9.67	12.72
Total Spot						**6,469.90**	**12,569**	**25.139**	**37.89**	**150.72**	**8.08**	**32.15**	**45.97**	**182.87**	**3.18**	**8.68**	**7.73**
Ghent High Sulfur Coal						**412,451.34**	**11,639**	**23.278**	**41.40**	**177.84**	**4.49**	**19.31**	**45.89**	**197.15**	**2.80**	**8.39**	**11.53**
Ghent Middlings																	
Spot Contract																	
Arch Coal Sales Company Inc.	P	J17003	B	S	WV	6,264.35	10,917	21.834	32.16	147.27	4.29	19.66	36.45	166.93	2.10	19.05	6.52
Total Spot						**6,264.35**	**10,917**	**21.834**	**32.16**	**147.27**	**4.29**	**19.66**	**36.45**	**166.93**	**2.10**	**19.05**	**6.52**
Ghent Middlings						**6,264.35**	**10,917**	**21.834**	**32.16**	**147.27**	**4.29**	**19.66**	**36.45**	**166.93**	**2.10**	**19.05**	**6.52**
Total Ghent						**418,715.69**	**11,628**	**23.256**	**41.26**	**177.41**	**4.49**	**19.31**	**45.75**	**196.72**	**2.79**	**8.55**	**11.45**

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Conroy

(a) PBDU as Designated by Symbol P, B, D, or U
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(d) Mine Type Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J16012	B/R	S	WY	62,107.70	8,938	17.876	12.72	71.19	27.53	153.98	40.25	225.17	0.34	4.90	27.00
	Total Long Term					**62,107.70**	**8,938**	**17.876**	**12.72**	**71.19**	**27.53**	**153.98**	**40.25**	**225.17**	**0.34**	**4.90**	**27.00**
Total Trimble County / KU						**62,107.70**	**8,938**	**17.876**	**12.72**	**71.19**	**27.53**	**153.98**	**40.25**	**225.17**	**0.34**	**4.90**	**27.00**
Total Kentucky Utilities						**575,380.65**	**11,341**	**22.681**	**38.30**	**168.86**	**7.57**	**33.40**	**45.87**	**202.26**	**2.63**	**8.00**	**13.34**

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Conroy

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	U	IN	11,157.73	11,416	22.832	43.21	189.24	6.23	27.30	49.44	216.54	3.18	8.73	13.12
COALSALES LLC	P	J16007	R	S	IN	22,420.00	11,147	22.294	43.21	193.81	6.52	29.24	49.73	223.05	3.04	8.18	14.62
Peabody COALSALES LLC	P	J19003	R	S	IN	10,974.00	10,887	21.774	38.08	174.87	7.99	36.73	46.07	211.60	2.60	9.24	15.59
Peabody COALSALES LLC	P	J19003	R	S	IN	11,210.00	10,980	21.960	38.08	173.39	7.09	32.30	45.17	205.69	3.36	8.49	15.32
		Total Long Term				**55,761.73**	**11,116**	**22.232**	**41.17**	**185.16**	**6.86**	**30.90**	**48.03**	**216.06**	**3.04**	**8.56**	**14.65**
Spot Contract																	
Sunrise Coal LLC	P	J19021	R	U	IN	33,641.48	11,335	22.670	36.88	162.70	9.79	43.18	46.67	205.88	3.45	9.45	12.77
		Total Spot				**33,641.48**	**11,335**	**22.670**	**36.88**	**162.70**	**9.79**	**43.18**	**46.67**	**205.88**	**3.45**	**9.45**	**12.77**
Total E.W. Brown						**89,403.21**	**11,198**	**22.397**	**39.55**	**176.61**	**7.97**	**35.57**	**47.52**	**212.18**	**3.20**	**8.89**	**13.94**

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Attachment 2 to Response to PSC-6 Question No. 13

Conroy

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2019

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	80,576.70	11,439	22.878	43.43	189.84	4.56	19.93	47.99	209.77	2.92	8.33	12.37
Alliance Coal LLC	P	J18003	B	U	WKY	61,500.90	11,407	22.814	39.43	172.85	4.58	20.05	44.01	192.90	2.93	8.29	12.66
Alliance Coal LLC	P	J18009	B	U	WKY	33,444.20	11,439	22.878	35.87	156.80	4.58	20.02	40.45	176.82	2.94	8.40	12.31
COALSALES LLC	P	J16007	B	S	IN	1,640.00	11,151	22.302	46.30	207.59	3.74	16.77	50.04	224.36	3.01	8.51	14.01
Eagle River Coal LLC	P	J16005	B	S	IL	12,885.58	12,633	25.267	53.32	211.02	4.85	19.22	58.17	230.24	3.91	8.93	6.68
Foresight Coal Sales LLC	P	J16018	B	U	WKY	3,216.00	11,820	23.639	43.14	182.48	5.54	23.44	48.68	205.92	2.69	7.87	11.41
Foresight Coal Sales LLC	P	J16018	B	U	IL	38,519.84	11,752	23.503	44.01	187.26	4.55	19.35	48.56	206.61	2.69	8.58	10.91
Knight Hawk Coal LLC	P	J18005	B	U	IL	33,589.38	11,065	22.129	36.09	163.09	8.77	39.63	44.86	202.72	3.06	8.82	13.37
Peabody COALSALES LLC	P	J19003	B	S	IN	12,044.00	11,107	22.214	40.33	181.53	3.74	16.84	44.07	198.37	3.17	8.29	14.42
Rhino Energy LLC	P	J14001	B	U	WKY	25,223.60	11,385	22.769	37.30	163.80	4.42	19.43	41.72	183.23	2.59	8.37	12.88
The American Coal Company	P	J16006	B	U	WV	23,568.70	12,877	25.754	42.26	164.11	5.30	20.57	47.56	184.68	3.45	8.57	5.79
The American Coal Company	P	J16006	B	U	IL	6,742.06	11,672	23.344	39.26	168.19	4.58	19.62	43.84	187.81	2.70	8.35	11.58
The American Coal Company	P	J17004	B	U	IL	68,169.96	11,770	23.540	34.10	144.87	4.57	19.42	38.67	164.29	2.62	8.33	11.05
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	32,380.00	11,748	23.496	43.65	185.78	5.57	23.70	49.22	209.48	2.71	9.07	10.60
		Total Long Term				**433,500.92**	**11,615**	**23.230**	**40.04**	**172.38**	**4.99**	**21.48**	**45.03**	**193.86**	**2.89**	**8.48**	**11.56**
Spot Contract																	
Consolidation Coal Company	P	J18030	B	U	WV	44,889.50	12,833	25.666	47.16	183.75	5.25	20.46	52.41	204.21	3.96	8.34	6.08
Contura Coal Sales LLC	P	J17001	B	U	PA	11,017.55	12,865	25.730	37.70	146.53	10.58	41.12	48.28	187.65	3.07	8.39	6.94
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	3,143.30	11,237	22.475	37.52	166.92	3.74	16.64	41.26	183.56	1.98	7.41	15.17
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	1,576.00	11,275	22.550	38.85	172.30	3.74	16.59	42.59	188.89	1.15	7.62	14.75
		Total Spot				**60,626.35**	**12,716**	**25.431**	**44.73**	**175.87**	**6.10**	**23.99**	**50.83**	**199.86**	**3.63**	**8.28**	**6.93**
Total Ghent						**494,127.27**	**11,750**	**23.500**	**40.62**	**172.85**	**5.12**	**21.80**	**45.74**	**194.65**	**2.98**	**8.45**	**10.99**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	79,181.28	8,946	17.892	12.23	68.36	27.03	151.06	39.26	219.42	0.30	5.25	26.89
		Total Long Term				**79,181.28**	**8,946**	**17.892**	**12.23**	**68.36**	**27.03**	**151.06**	**39.26**	**219.42**	**0.30**	**5.25**	**26.89**
Total Trimble County / KU						**79,181.28**	**8,946**	**17.892**	**12.23**	**68.36**	**27.03**	**151.06**	**39.26**	**219.42**	**0.30**	**5.25**	**26.89**
Total Kentucky Utilities						**662,711.76**	**11,341**	**22.681**	**37.08**	**163.50**	**8.13**	**35.82**	**45.21**	**199.32**	**2.69**	**8.13**	**13.29**

(b) Designated by symbol
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(d) MT = Mode of Transportation3
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	56,050.00	11,097	22.195	38.11	171.72	8.49	38.24	46.60	209.96	3.29	8.46	14.47
		Total Long Term				**56,050.00**	**11,097**	**22.195**	**38.11**	**171.72**	**8.49**	**38.24**	**46.60**	**209.96**	**3.29**	**8.46**	**14.47**
Total E.W. Brown						**56,050.00**	**11,097**	**22.195**	**38.11**	**171.72**	**8.49**	**38.24**	**46.60**	**209.96**	**3.29**	**8.46**	**14.47**

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Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
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Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	3,299.10	11,489	22.978	44.51	193.73	4.47	19.45	48.98	213.18	2.96	8.61	12.18
Alliance Coal LLC	P	J18003	B	U	WKY	27,677.60	11,459	22.919	41.16	179.58	4.44	19.36	45.60	198.94	2.93	8.69	12.28
Alliance Coal LLC	P	J18009	B	U	WKY	62,178.60	11,476	22.953	37.12	161.71	4.43	19.34	41.55	181.05	2.92	8.59	12.28
Alliance Coal LLC	P	J14001B	B	U	WKY	19,986.30	11,486	22.973	39.31	171.12	4.42	19.24	43.73	190.36	2.93	8.69	12.11
Contura Coal Sales LLC	P	J20001	B	U	PA	18,712.20	13,020	26.040	40.19	154.34	10.42	40.01	50.61	194.35	2.56	8.13	6.19
Hartshorne Mining Group LLC	P	J18001	B	U	WKY	35,761.00	11,742	23.484	42.47	180.85	4.32	18.38	46.79	199.23	2.81	11.47	8.71
Knight Hawk Coal LLC	P	J18005	B	U	IL	30,516.31	11,163	22.326	37.71	168.90	8.47	37.97	46.18	206.87	3.00	8.51	13.16
The American Coal Company	P	J16006	B	U	WV	42,486.80	12,788	25.576	42.33	165.49	5.11	19.98	47.44	185.47	3.86	8.86	5.90
The American Coal Company	P	J16006	B	U	IL	12,207.84	11,823	23.645	40.47	171.17	4.41	18.65	44.88	189.82	2.69	8.05	10.81
The American Coal Company	P	J17004	B	U	IL	49,839.63	11,856	23.711	36.67	154.65	4.43	18.69	41.10	173.34	2.69	8.06	10.60
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	35,364.00	11,689	23.379	45.80	195.90	5.43	23.22	51.23	219.12	2.52	9.55	10.72
Western Ky Consolidated Resources l	P	J14010C	B	U	WKY	1,588.00	11,666	23.332	44.54	190.91	5.45	23.36	49.99	214.27	2.70	9.38	11.12
White Stallion Energy LLC	P	J19002	B	S	IL	31,997.31	12,612	25.224	42.25	167.51	4.74	18.77	46.99	186.28	3.39	8.49	7.49
		Total Long Term				**371,614.69**	**11,884**	**23.769**	**40.27**	**169.41**	**5.25**	**22.12**	**45.52**	**191.53**	**2.97**	**8.88**	**10.12**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	14,398.30	11,213	22.426	38.63	172.24	3.64	16.24	42.27	188.48	3.00	8.42	14.19
		Total Spot				**14,398.30**	**11,213**	**22.426**	**38.63**	**172.24**	**3.64**	**16.24**	**42.27**	**188.48**	**3.00**	**8.42**	**14.19**
Total Ghent						**386,012.99**	**11,859**	**23.719**	**40.20**	**169.51**	**5.20**	**21.91**	**45.40**	**191.42**	**2.97**	**8.86**	**10.27**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jan - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	5,045.35	8,975	17.949	12.83	71.47	27.62	153.91	40.45	225.38	0.22	4.86	26.89
		Total Long Term				**5,045.35**	**8,975**	**17.949**	**12.83**	**71.47**	**27.62**	**153.91**	**40.45**	**225.38**	**0.22**	**4.86**	**26.89**
Total Trimble County / KU						**5,045.35**	**8,975**	**17.949**	**12.83**	**71.47**	**27.62**	**153.91**	**40.45**	**225.38**	**0.22**	**4.86**	**26.89**
Total Kentucky Utilities						**447,108.34**	**11,731**	**23.463**	**39.63**	**168.92**	**5.87**	**24.99**	**45.50**	**193.91**	**2.98**	**8.77**	**10.99**

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(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation3 Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	Coal Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	R	U	11	IN	22,248.48	11,475	22.951	46.90	204.35	17.63	76.83	64.53	281.18	1.32	6.40	14.83
Bowie Refined Coal LLC	P	K14037	T	S	8	KY	9,653.20	12,274	24.548	62.60	255.00	0.00	0.00	62.60	255.00	2.64	9.83	7.62
Triad Mining LLC	P	J15002	R	S	11	IN	43,982.90	11,573	23.145	44.01	190.16	17.54	75.78	61.55	265.94	3.54	7.51	12.93
		Total Long Term					**75,884.58**	**11,633**	**23.267**	**47.22**	**202.96**	**15.34**	**65.92**	**62.56**	**268.88**	**2.77**	**7.48**	**12.81**
Total E.W. Brown							**75,884.58**	**11,633**	**23.267**	**47.22**	**202.96**	**15.34**	**65.92**	**62.56**	**268.88**	**2.77**	**7.48**	**12.81**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	Coal Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Armstrong Coal Sales	P	J16003	B	S	9	KY	35,354.00	11,237	22.474	38.67	172.05	4.78	21.27	43.45	193.32	3.14	11.13	11.14
Armstrong Coal Sales	P	J14010B	B	S	9	KY	6,432.00	11,212	22.424	42.54	189.72	4.78	21.31	47.32	211.03	3.12	11.00	11.48
Armstrong Coal Sales	P	J14004B	B	S	9	KY	43,382.00	11,233	22.466	43.78	194.89	4.78	21.28	48.56	216.17	3.17	10.79	11.45
Armstrong Coal Sales	P	J07032B	B	S	9	KY	56,018.00	11,300	22.601	28.70	126.99	4.78	21.15	33.48	148.14	3.29	10.65	11.18
Armstrong Coal Sales	P	J16017	B	S	9	KY	27,178.00	11,220	22.440	38.31	170.73	4.78	21.30	43.09	192.03	3.15	11.08	11.30
COALSALES LLC	P	J16007	B	S	11	IN	62,872.00	11,074	22.147	40.83	184.36	3.21	14.50	44.04	198.86	3.07	8.79	14.29
Eagle River Coal LLC	P	J16005	B	S	10	IL	11,642.93	12,591	25.181	45.93	182.38	4.18	16.60	50.11	198.98	3.71	9.24	6.26
Rhino Energy LLC	P	J14001	B	U	9	KY	49,711.60	11,350	22.701	46.62	205.36	3.81	16.78	50.43	222.14	2.54	8.21	13.21
		Total Long Term					**292,590.53**	**11,284**	**22.569**	**39.67**	**175.79**	**4.26**	**18.85**	**43.93**	**194.64**	**3.08**	**9.91**	**12.05**
Spot Contract																		
Alliance Coal LLC	P	J16001B	B	U	9	KY	25,360.50	11,536	23.072	46.73	202.52	3.92	16.99	50.65	219.51	2.98	7.99	12.01
Alliance Coal LLC	P	J16004	B	U	9	KY	36,223.00	11,515	23.030	47.69	207.06	3.92	17.02	51.61	224.08	3.00	8.02	12.09
Arch Coal Sales Company Inc.	P	J15003	B	S/U	8	WV	1,571.20	9,672	19.344	37.56	194.17	3.09	15.97	40.65	210.14	0.96	22.06	11.39
Foresight Coal Sales LLC	P	J16009	B	U	10	IL	49,562.21	11,861	23.722	43.10	181.69	3.92	16.53	47.02	198.22	2.51	8.44	10.23
Kolmar Americas Inc	B	J16019	B	S	8	WV	6,154.95	10,440	20.880	33.26	159.31	2.96	14.17	36.22	173.48	1.07	19.34	8.99
Peabody COALTRADE LLC	B	J16016	B	S	8	WV	1,645.33	10,235	20.470	24.43	119.34	5.43	26.52	29.86	145.86	0.77	23.53	6.53
River Trading Company	B	J15004	B	S	8	WV	1,582.00	11,447	22.894	36.60	159.88	5.67	24.77	42.27	184.65	0.92	17.81	5.82
The American Coal Company	P	J16002	B	U	10	IL	35,215.66	11,761	23.522	48.44	205.93	3.92	16.67	52.36	222.60	2.53	8.97	10.79
		Total Spot					**157,314.85**	**11,608**	**23.216**	**45.24**	**194.85**	**3.90**	**16.83**	**49.14**	**211.68**	**2.60**	**9.20**	**10.95**
Total Ghent							**449,905.38**	**11,398**	**22.795**	**41.62**	**182.58**	**4.13**	**18.13**	**45.75**	**200.71**	**2.91**	**9.66**	**11.67**

Case No. 2020-00349
Attachment 2 to Response to PSC-6 Question No. 13

Conroy

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	Coal Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	19	WY	57,710.25	8,892	17.785	11.56	64.97	27.66	155.56	39.22	220.53	0.28	5.67	26.54
		Total Long Term					**57,710.25**	**8,892**	**17.785**	**11.56**	**64.97**	**27.66**	**155.56**	**39.22**	**220.53**	**0.28**	**5.67**	**26.54**
Total Trimble County / KU							**57,710.25**	**8,892**	**17.785**	**11.56**	**64.97**	**27.66**	**155.56**	**39.22**	**220.53**	**0.28**	**5.67**	**26.54**
Total Kentucky Utilities							**583,500.21**	**11,180**	**22.361**	**39.37**	**176.09**	**7.92**	**35.40**	**47.29**	**211.49**	**2.63**	**8.98**	**13.29**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2017

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	MSHA Dist#	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
COALSALES LLC	P	J16007	R	S	8	IN	10,856.00	11,165	22.330	37.68	168.74	19.62	87.86	57.30	256.60	3.10	8.21	14.42
Sunrise Coal LLC	P	J15002B	R	U	8	IN	31,637.25	11,463	22.927	38.16	166.46	22.38	97.62	60.54	264.08	3.42	7.33	13.66
		Total Long Term					**42,493.25**	**11,387**	**22.774**	**38.04**	**167.03**	**21.68**	**95.17**	**59.72**	**262.20**	**3.34**	**7.56**	**13.86**
Total E.W. Brown							**42,493.25**	**11,387**	**22.774**	**38.04**	**167.03**	**21.68**	**95.17**	**59.72**	**262.20**	**3.34**	**7.56**	**13.86**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2017

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	MSHA Dist#	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	B	U	10	KY	25,809.50	11,487	22.975	48.95	213.04	3.94	17.15	52.89	230.19	2.95	8.28	11.99
Alliance Coal LLC	P	J17002	B	U	10	KY	60,638.30	11,505	23.010	40.96	177.99	3.94	17.13	44.90	195.12	2.96	8.14	11.95
Armstrong Coal Sales	P	J16003	B	S	10	KY	33,672.00	11,325	22.649	39.77	175.57	4.81	21.24	44.58	196.81	3.07	10.79	10.93
Armstrong Coal Sales	P	J14010B	B	S	10	KY	7,928.00	11,394	22.788	44.39	194.80	4.81	21.10	49.20	215.90	3.04	10.72	10.89
Armstrong Coal Sales	P	J07032B	B	S	10	KY	46,196.00	11,366	22.733	28.72	126.34	4.81	21.16	33.53	147.50	3.16	10.50	10.96
COALSALES LLC	P	J16007	B	S	8	IN	36,105.00	11,068	22.136	40.68	183.77	3.23	14.59	43.91	198.36	3.03	9.04	14.19
Eagle River Coal LLC	P	J16005	B	S	8	IL	24,986.98	12,664	25.328	47.13	186.06	4.21	16.62	51.34	202.68	3.28	8.11	7.30
Foresight Coal Sales LLC	P	J16018	B	U	8	IL	40,694.64	11,928	23.856	41.13	172.40	3.94	16.52	45.07	188.92	2.66	7.92	10.46
Rhino Energy LLC	P	J14001	B	U	10	KY	51,156.50	11,350	22.699	50.15	220.94	3.83	16.87	53.98	237.81	2.52	8.25	13.26
The American Coal Company	P	J16006	B	U	8	IL	38,431.80	11,773	23.546	43.52	184.85	3.94	16.73	47.46	201.58	2.66	8.82	11.00
The American Coal Company	P	J16006	B	U	3	WV	22,720.00	12,760	25.521	46.23	181.15	4.56	17.87	50.79	199.02	2.97	9.09	5.99
		Total Long Term					**388,338.72**	**11,627**	**23.255**	**42.16**	**181.31**	**4.11**	**17.67**	**46.27**	**198.98**	**2.90**	**8.91**	**11.21**
Spot Contract																		
Contura Coal Sales LLC	P	J17001	B	U	2	PA	71,970.90	13,028	26.057	38.08	146.14	9.19	35.27	47.27	181.41	3.04	7.89	6.39
		Total Spot					**71,970.90**	**13,028**	**26.057**	**38.08**	**146.14**	**9.19**	**35.27**	**47.27**	**181.41**	**3.04**	**7.89**	**6.39**
	Ghent High Sulfur Coal						**460,309.62**	**11,846**	**23.693**	**41.52**	**175.26**	**4.91**	**20.70**	**46.43**	**195.96**	**2.93**	**8.75**	**10.45**
Ghent Middlings																		
Spot Contract																		
Arch Coal Sales Company Inc.	P	J17003	B	U	3	WV	6,959.26	11,241	22.482	34.55	153.69	2.78	12.36	37.33	166.05	1.71	20.57	5.55
Peabody COALTRADE LLC	B	J16016	B	S	4	WV	6,396.00	9,373	18.746	22.70	121.08	5.45	29.06	28.15	150.14	0.45	29.64	5.92
		Total Spot					**13,355.26**	**10,346**	**20.693**	**28.88**	**139.54**	**4.05**	**19.61**	**32.93**	**159.15**	**1.11**	**24.91**	**5.73**
	Ghent Middlings						**13,355.26**	**10,346**	**20.693**	**28.88**	**139.54**	**4.05**	**19.61**	**32.93**	**159.15**	**1.11**	**24.91**	**5.73**
Total Ghent							**473,664.88**	**11,804**	**23.608**	**41.17**	**174.38**	**4.88**	**20.67**	**46.05**	**195.05**	**2.87**	**9.21**	**10.32**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	77,950.63	8,988	17.977	11.68	64.97	28.17	156.72	39.85	221.69	0.25	4.74	26.71
		Total Long Term					**77,950.63**	**8,988**	**17.977**	**11.68**	**64.97**	**28.17**	**156.72**	**39.85**	**221.69**	**0.25**	**4.74**	**26.71**
Total Trimble County / KU							**77,950.63**	**8,988**	**17.977**	**11.68**	**64.97**	**28.17**	**156.72**	**39.85**	**221.69**	**0.25**	**4.74**	**26.71**
Total Kentucky Utilities							**594,108.76**	**11,405**	**22.810**	**37.07**	**162.54**	**9.14**	**40.06**	**46.21**	**202.60**	**2.56**	**8.50**	**12.72**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	U	IN	21,951.80	11,460	22.920	41.87	182.70	18.60	81.17	60.47	263.87	3.45	8.14	13.24
COALSALES LLC	P	J16007	R	S	IN	11,210.00	11,087	22.174	41.87	188.84	19.72	88.95	61.59	277.79	2.95	8.48	14.81
	Total Long Term					**33,161.80**	**11,334**	**22.668**	**41.87**	**184.73**	**18.98**	**83.74**	**60.85**	**268.47**	**3.28**	**8.26**	**13.77**
Spot Contract																	
Sunrise Coal LLC	P	J18025	R	U	IN	22,052.70	11,446	22.892	35.33	154.35	21.44	93.67	56.77	248.02	3.47	8.41	13.16
	Total Spot					**22,052.70**	**11,446**	**22.892**	**35.33**	**154.35**	**21.44**	**93.67**	**56.77**	**248.02**	**3.47**	**8.41**	**13.16**
Total E.W. Brown						**55,214.50**	**11,379**	**22.757**	**39.26**	**172.52**	**19.97**	**87.73**	**59.23**	**260.25**	**3.36**	**8.32**	**13.53**

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(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	59,441.50	11,507	23.014	42.55	184.90	4.22	18.34	46.77	203.24	2.94	8.08	12.13
Alliance Coal LLC	P	J18003	B	U	WKY	31,710.90	11,497	22.994	38.00	165.27	4.22	18.35	42.22	183.62	2.96	8.23	11.99
Alliance Coal LLC	P	J18009	B	U	WKY	23,275.00	11,499	22.999	34.51	150.04	4.22	18.34	38.73	168.38	2.91	8.17	12.03
Armstrong Coal Sales	P	J14010B	B	U	WKY	3,244.00	11,633	23.267	46.47	199.73	5.14	22.09	51.61	221.82	2.80	8.61	11.08
Armstrong Coal Sales	P	J16017	B	U	WKY	3,148.00	11,555	23.111	43.66	188.90	5.14	22.24	48.80	211.14	2.76	8.70	11.65
Armstrong Coal Sales	P	J18002	B	S	WKY	9,472.00	11,645	23.290	43.73	187.75	5.14	22.07	48.87	209.82	2.81	8.69	10.96
Armstrong Coal Sales	P	J18002	B	U	WKY	59,228.00	11,851	23.701	44.80	189.01	5.14	21.68	49.94	210.69	2.85	8.77	10.29
Eagle River Coal LLC	P	J16005	B	S	IL	18,089.64	12,604	25.208	51.71	205.12	4.49	17.82	56.20	222.94	3.33	7.98	7.56
Foresight Coal Sales LLC	P	J16018	B	U	WKY	8,048.80	11,577	23.155	41.11	177.56	5.14	22.20	46.25	199.76	2.72	8.25	12.67
Foresight Coal Sales LLC	P	J16018	B	U	IL	32,184.20	11,857	23.715	42.16	177.77	4.22	17.80	46.38	195.57	2.64	8.18	10.77
Knight Hawk Coal LLC	P	J18005	B	U	IL	43,308.02	11,177	22.354	34.88	156.04	8.09	36.19	42.97	192.23	2.93	8.48	12.99
Rhino Energy LLC	P	J14001	B	U	WKY	18,943.30	11,357	22.713	37.11	163.37	4.09	18.01	41.20	181.38	2.53	8.14	13.33
The American Coal Company	P	J16006	B	U	WKY	3,289.60	11,650	23.300	38.21	163.98	5.14	22.06	43.35	186.04	2.78	8.74	11.77
The American Coal Company	P	J17004	B	U	WKY	12,550.60	11,733	23.467	32.93	140.33	5.14	21.91	38.07	162.24	2.77	8.25	11.63
Total Long Term						**325,933.56**	**11,628**	**23.257**	**40.71**	**175.05**	**5.02**	**21.59**	**45.73**	**196.64**	**2.87**	**8.33**	**11.51**
Spot Contract																	
Contura Coal Sales LLC	P	J17001	B	U	PA	12,850.90	12,942	25.884	37.89	146.36	9.83	37.98	47.72	184.34	3.42	8.36	6.48
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	4,877.40	11,144	22.288	38.20	171.37	3.45	15.48	41.65	186.85	2.95	9.06	14.23
Total Spot						**17,728.30**	**12,447**	**24.895**	**37.97**	**152.52**	**8.08**	**32.44**	**46.05**	**184.96**	**3.29**	**8.55**	**8.61**
Ghent High Sulfur Coal						**343,661.86**	**11,671**	**23.341**	**40.57**	**173.81**	**5.18**	**22.18**	**45.75**	**195.99**	**2.89**	**8.34**	**11.36**
Ghent Middlings																	
Spot Contract																	
Arch Coal Sales Company Inc.	P	J17003	B	S	WV	6,451.52	11,005	22.010	33.47	152.06	3.18	14.45	36.65	166.51	1.97	19.36	4.77
Total Spot						**6,451.52**	**11,005**	**22.010**	**33.47**	**152.06**	**3.18**	**14.45**	**36.65**	**166.51**	**1.97**	**19.36**	**4.77**
Ghent Middlings						**6,451.52**	**11,005**	**22.010**	**33.47**	**152.06**	**3.18**	**14.45**	**36.65**	**166.51**	**1.97**	**19.36**	**4.77**
Total Ghent						**350,113.38**	**11,658**	**23.317**	**40.44**	**173.43**	**5.14**	**22.05**	**45.58**	**195.48**	**2.87**	**8.55**	**11.24**

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P= Producer B= Broker D= Distributor U-Utility

(b) POCN = Purchase Order or Contract Number

(c) MT = Mode of Transportation Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J16012	B/R	S	WY	37,332.48	9,058	18.117	12.90	71.19	25.41	140.27	38.31	211.46	0.21	4.67	26.45
Total Long Term						**37,332.48**	**9,058**	**18.117**	**12.90**	**71.19**	**25.41**	**140.27**	**38.31**	**211.46**	**0.21**	**4.67**	**26.45**
Total Trimble County / KU						**37,332.48**	**9,058**	**18.117**	**12.90**	**71.19**	**25.41**	**140.27**	**38.31**	**211.46**	**0.21**	**4.67**	**26.45**
Total Kentucky Utilities						**442,660.36**	**11,404**	**22.808**	**37.97**	**166.47**	**7.17**	**31.46**	**45.14**	**197.93**	**2.71**	**8.19**	**12.81**

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(b) POCN = Purchase Order or Contract Number

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	U	IN	10,676.93	11,419	22.838	38.08	166.72	7.00	30.69	45.08	197.41	3.08	9.65	11.95
Peabody COALSALES LLC	P	J19003	R	S	IN	11,210.00	11,135	22.270	38.32	172.09	6.18	27.73	44.50	199.82	3.19	8.53	14.42
		Total Long Term				**21,886.93**	**11,274**	**22.547**	**38.20**	**169.43**	**6.58**	**29.20**	**44.78**	**198.63**	**3.14**	**9.08**	**13.22**
Spot Contract																	
Sunrise Coal LLC	P	J19021	R	U	IN	10,665.00	11,020	22.040	35.70	161.96	9.75	44.26	45.45	206.22	3.31	10.61	13.68
		Total Spot				**10,665.00**	**11,020**	**22.040**	**35.70**	**161.96**	**9.75**	**44.26**	**45.45**	**206.22**	**3.31**	**10.61**	**13.68**
Total E.W. Brown						**32,551.93**	**11,190**	**22.381**	**37.38**	**167.02**	**7.62**	**34.06**	**45.00**	**201.08**	**3.19**	**9.58**	**13.37**

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Attachment 2 to Response to PSC-6 Question No. 13

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(d) MT = Mode of Transportation1 Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2019

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	41,012.30	11,518	23.036	44.47	193.03	4.58	19.88	49.05	212.91	2.98	8.35	11.91
Alliance Coal LLC	P	J18003	B	U	WKY	47,738.40	11,544	23.087	40.08	173.61	4.58	19.84	44.66	193.45	2.97	8.24	11.84
Alliance Coal LLC	P	J18009	B	U	WKY	55,791.60	11,522	23.044	35.94	155.97	4.58	19.88	40.52	175.85	2.94	8.37	11.89
Foresight Coal Sales LLC	P	J16018	B	U	IL	6,998.14	11,703	23.406	44.20	188.86	4.58	19.57	48.78	208.43	2.67	8.36	11.27
Knight Hawk Coal LLC	P	J18005	B	U	IL	8,024.39	11,117	22.234	36.49	164.13	8.79	39.53	45.28	203.66	3.03	8.47	13.42
Peabody COALSALES LLC	P	J19003	B	S	IN	26,258.00	11,115	22.230	40.51	182.24	3.74	16.82	44.25	199.06	3.26	8.52	14.40
Rhino Energy LLC	P	J14001	B	U	WKY	23,640.70	11,429	22.859	37.54	164.22	4.44	19.42	41.98	183.64	2.51	7.99	13.21
The American Coal Company	P	J16006	B	U	WV	29,655.60	12,726	25.452	42.17	165.67	5.30	20.82	47.47	186.49	3.86	8.67	6.67
The American Coal Company	P	J16006	B	U	IL	9,581.80	11,739	23.478	39.81	169.56	4.58	19.50	44.39	189.06	2.68	8.22	11.29
The American Coal Company	P	J17004	B	U	WV	6,614.40	12,685	25.370	33.60	132.43	5.30	20.89	38.90	153.32	3.92	8.69	6.78
The American Coal Company	P	J17004	B	U	IL	42,869.85	11,783	23.565	34.69	147.21	4.58	19.44	39.27	166.65	2.67	8.27	10.99
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	45,240.00	11,688	23.376	44.71	191.29	5.58	23.87	50.29	215.16	2.67	9.22	10.85
White Stallion Energy LLC	P	J19002	B	S	IL	9,827.59	12,658	25.316	42.73	168.78	4.88	19.28	47.61	188.06	3.67	8.60	6.88
		Total Long Term				**353,252.77**	**11,696**	**23.391**	**39.86**	**170.40**	**4.81**	**20.58**	**44.67**	**190.98**	**2.98**	**8.47**	**11.25**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	1,631.60	11,013	22.026	37.20	168.89	3.74	16.98	40.94	185.87	2.21	8.55	15.42
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	3,232.40	10,789	21.578	37.17	172.27	3.74	17.33	40.91	189.60	1.84	10.31	15.10
		Total Spot				**4,864.00**	**10,864**	**21.728**	**37.18**	**171.12**	**3.74**	**17.21**	**40.92**	**188.33**	**1.96**	**9.72**	**15.21**
Total Ghent						**358,116.77**	**11,684**	**23.369**	**39.82**	**170.41**	**4.80**	**20.53**	**44.62**	**190.94**	**2.97**	**8.48**	**11.30**

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(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	46,703.23	8,977	17.955	12.83	71.46	27.29	151.98	40.12	223.44	0.27	5.15	26.54
		Total Long Term				**46,703.23**	**8,977**	**17.955**	**12.83**	**71.46**	**27.29**	**151.98**	**40.12**	**223.44**	**0.27**	**5.15**	**26.54**
Total Trimble County / KU						**46,703.23**	**8,977**	**17.955**	**12.83**	**71.46**	**27.29**	**151.98**	**40.12**	**223.44**	**0.27**	**5.15**	**26.54**
Total Kentucky Utilities						**437,371.93**	**11,358**	**22.717**	**36.76**	**161.81**	**7.41**	**32.62**	**44.17**	**194.43**	**2.70**	**8.21**	**13.09**

(b) Designated by symbol
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(c) POCN = Purchase Order
or Contract Number

(d) MT = Mode of Transportation3
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	22,420.00	11,110	22.220	38.46	173.11	8.67	39.01	47.13	212.12	3.23	8.68	13.97
		Total Long Term				**22,420.00**	**11,110**	**22.220**	**38.46**	**173.11**	**8.67**	**39.01**	**47.13**	**212.12**	**3.23**	**8.68**	**13.97**
Total E.W. Brown						**22,420.00**	**11,110**	**22.220**	**38.46**	**173.11**	**8.67**	**39.01**	**47.13**	**212.12**	**3.23**	**8.68**	**13.97**

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Conroy

(b) Designated by symbol
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1 Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J18003	B	U	WKY	11,635.70	11,480	22.960	41.87	182.36	4.41	19.21	46.28	201.57	2.96	8.79	12.13
Alliance Coal LLC	P	J18009	B	U	WKY	90,491.60	11,504	23.007	37.17	161.56	4.41	19.17	41.58	180.73	2.92	8.60	12.24
Alliance Coal LLC	P	J14001B	B	U	WKY	18,179.30	11,477	22.954	39.42	171.75	4.41	19.21	43.83	190.96	2.94	8.65	12.36
Hartshorne Mining Group LLC	P	J18001	B	U	WKY	12,455.60	11,683	23.366	42.19	180.55	4.28	18.32	46.47	198.87	2.83	11.68	8.99
Knight Hawk Coal LLC	P	J18005	B	U	IL	24,113.51	11,119	22.238	37.91	170.46	8.47	38.09	46.38	208.55	2.90	8.29	13.76
The American Coal Company	P	J16006	B	U	WV	31,698.40	12,770	25.540	41.63	162.98	5.11	20.01	46.74	182.99	4.05	8.70	6.12
The American Coal Company	P	J16006	B	U	IL	8,665.50	11,722	23.443	40.28	171.81	4.41	18.81	44.69	190.62	2.69	8.20	11.38
The American Coal Company	P	J17004	B	U	IL	54,631.74	11,786	23.572	36.67	155.59	4.41	18.71	41.08	174.30	2.68	8.32	10.86
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	27,185.00	11,630	23.261	45.68	196.40	5.38	23.13	51.06	219.53	2.52	8.87	11.47
White Stallion Energy LLC	P	J19002	B	S	IL	13,118.72	12,475	24.951	42.16	168.96	4.70	18.83	46.86	187.79	3.70	9.34	7.26
		Total Long Term				**292,175.07**	**11,729**	**23.458**	**39.27**	**167.41**	**4.92**	**20.97**	**44.19**	**188.38**	**2.99**	**8.72**	**10.99**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	6,484.70	11,332	22.664	38.50	169.88	3.61	15.92	42.11	185.80	2.83	7.73	14.63
		Total Spot				**6,484.70**	**11,332**	**22.664**	**38.50**	**169.88**	**3.61**	**15.92**	**42.11**	**185.80**	**2.83**	**7.73**	**14.63**
Total Ghent						**298,659.77**	**11,720**	**23.441**	**39.25**	**167.46**	**4.89**	**20.87**	**44.14**	**188.33**	**2.98**	**8.70**	**11.07**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Feb - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	59,736.45	8,968	17.937	13.12	73.16	26.66	148.60	39.78	221.76	0.25	4.86	26.85
Arch Coal Sales Company Inc.	P	J20002	B/R	S	WY	7,923.70	8,711	17.422	12.18	69.89	26.60	152.71	38.78	222.60	0.27	5.55	28.33
		Total Long Term				**67,660.15**	**8,938**	**17.876**	**13.01**	**72.79**	**26.65**	**149.07**	**39.66**	**221.86**	**0.25**	**4.94**	**27.03**
Total Trimble County / KU						**67,660.15**	**8,938**	**17.876**	**13.01**	**72.79**	**26.65**	**149.07**	**39.66**	**221.86**	**0.25**	**4.94**	**27.03**
Total Kentucky Utilities						**388,739.92**	**11,201**	**22.402**	**34.64**	**154.64**	**8.90**	**39.71**	**43.54**	**194.35**	**2.52**	**8.04**	**14.01**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order
or Contract Number

(d) MT = Mode of Transportation3
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	Coal Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
Bowie Refined Coal LLC	P	K14037	T	S	8	KY	2,026.01	12,567	25.134	64.09	255.00	0.00	0.00	64.09	255.00	3.74	8.09	6.78
Triad Mining LLC	P	J15002	R	S	11	IN	33,456.30	11,566	23.132	44.09	190.61	17.27	74.66	61.36	265.27	3.60	7.76	12.80
		Total Long Term					**35,482.31**	**11,623**	**23.246**	**45.23**	**194.59**	**16.29**	**70.05**	**61.52**	**264.64**	**3.60**	**7.78**	**12.46**
Total E.W. Brown							**35,482.31**	**11,623**	**23.246**	**45.23**	**194.59**	**16.29**	**70.05**	**61.52**	**264.64**	**3.60**	**7.78**	**12.46**

(b) Designated by symbol
P= Producer D= Distributor
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	Coal Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	B	U	11	IN	9,520.70	11,282	22.564	53.41	236.72	3.92	17.37	57.33	254.09	1.42	6.30	16.36
Armstrong Coal Sales	P	J16003	B	S	9	KY	27,212.00	11,259	22.518	39.01	173.24	4.78	21.22	43.79	194.46	3.21	11.09	10.98
Armstrong Coal Sales	P	J14010B	B	S	9	KY	6,462.00	11,204	22.408	42.78	190.91	4.78	21.33	47.56	212.24	3.16	11.39	10.93
Armstrong Coal Sales	P	J14004B	B	S	9	KY	51,510.30	11,212	22.424	43.86	195.61	4.78	21.31	48.64	216.92	3.26	11.16	11.17
Armstrong Coal Sales	P	J07032B	B	S	9	KY	58,557.00	11,286	22.571	28.71	127.21	4.78	21.18	33.49	148.39	3.36	10.89	11.02
Armstrong Coal Sales	P	J16017	B	S	9	KY	38,558.00	11,157	22.315	38.10	170.73	4.78	21.42	42.88	192.15	3.18	11.20	11.45
COALSALES LLC	P	J16007	B	S	11	IN	71,244.00	10,960	21.920	40.41	184.36	3.21	14.65	43.62	199.01	3.05	8.93	15.13
Eagle River Coal LLC	P	J16005	B	S	10	IL	12,896.64	12,575	25.150	45.56	181.17	4.18	16.62	49.74	197.79	3.59	9.08	6.32
Foresight Coal Sales LLC	P	J12005	B	U	10	IL	3,080.90	11,844	23.689	45.60	192.48	3.92	16.55	49.52	209.03	2.52	8.12	10.56
Rhino Energy LLC	P	J14001	B	U	9	KY	79,174.70	11,325	22.649	48.21	212.84	3.81	16.82	52.02	229.66	2.49	8.17	13.42
		Total Long Term					**358,216.24**	**11,253**	**22.505**	**40.98**	**182.09**	**4.20**	**18.67**	**45.18**	**200.76**	**3.01**	**9.78**	**12.40**
Spot Contract																		
Foresight Coal Sales LLC	P	J16009	B	U	10	IL	67,525.89	11,831	23.662	43.19	182.51	3.92	16.57	47.11	199.08	2.58	8.23	10.46
Kolmar Americas Inc	B	J16019	B	S	8	WV	6,353.70	10,513	21.025	32.53	154.73	2.96	14.08	35.49	168.81	1.04	19.59	8.79
Peabody COALTRADE LLC	B	J16016	B	S	8	WV	4,768.27	9,830	19.661	24.43	124.25	5.43	27.62	29.86	151.87	1.30	27.39	5.45
The American Coal Company	P	J16002	B	U	10	IL	46,638.90	11,759	23.518	48.43	205.94	3.92	16.66	52.35	222.60	2.46	8.70	10.97
		Total Spot					**125,286.76**	**11,661**	**23.323**	**43.89**	**188.17**	**3.92**	**16.84**	**47.81**	**205.01**	**2.40**	**9.71**	**10.37**
Total Ghent							**483,503.00**	**11,359**	**22.717**	**41.73**	**183.71**	**4.13**	**18.18**	**45.86**	**201.89**	**2.85**	**9.77**	**11.88**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	Coal Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	19	WY	70,748.05	9,022	18.043	11.72	64.97	27.59	152.88	39.31	217.85	0.23	5.15	26.29
		Total Long Term					**70,748.05**	**9,022**	**18.043**	**11.72**	**64.97**	**27.59**	**152.88**	**39.31**	**217.85**	**0.23**	**5.15**	**26.29**
Total Trimble County / KU							**70,748.05**	**9,022**	**18.043**	**11.72**	**64.97**	**27.59**	**152.88**	**39.31**	**217.85**	**0.23**	**5.15**	**26.29**
Total Kentucky Utilities							**589,733.36**	**11,094**	**22.188**	**38.34**	**172.81**	**7.68**	**34.60**	**46.02**	**207.41**	**2.58**	**9.09**	**13.64**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order
or Contract Number

(d) MT = Mode of Transportation3
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2017

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	MSHA Dist#	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	B	U	10	KY	19,350.00	11,456	22.911	48.81	213.04	3.94	17.20	52.75	230.24	2.99	8.45	12.06
Alliance Coal LLC	P	J17002	B	U	10	KY	47,234.40	11,486	22.971	40.94	178.23	3.94	17.15	44.88	195.38	3.02	8.41	11.87
Armstrong Coal Sales	P	J16003	B	S	10	KY	35,472.00	11,353	22.707	39.88	175.64	4.81	21.18	44.69	196.82	2.90	10.54	10.94
Armstrong Coal Sales	P	J14010B	B	S	10	KY	4,832.00	11,455	22.910	44.28	193.29	4.81	21.00	49.09	214.29	2.86	9.91	11.03
Armstrong Coal Sales	P	J07032B	B	S	10	KY	12,900.00	11,287	22.575	28.45	126.02	4.81	21.31	33.26	147.33	3.14	10.83	11.02
Armstrong Coal Sales	P	J07032B	B	S	10	KY	35,062.00	11,317	22.634	28.45	125.69	4.81	21.25	33.26	146.94	3.13	10.83	10.80
COALSALES LLC	P	J16007	B	S	8	IN	48,243.00	10,990	21.979	40.35	183.60	3.23	14.69	43.58	198.29	2.94	8.97	14.66
Eagle River Coal LLC	P	J16005	B	S	8	IL	26,359.40	12,615	25.231	46.82	185.58	4.21	16.69	51.03	202.27	3.22	7.85	7.76
Foresight Coal Sales LLC	P	J16018	B	U	8	IL	16,496.76	11,823	23.646	40.84	172.71	3.94	16.66	44.78	189.37	2.62	7.54	11.26
Rhino Energy LLC	P	J14001	B	U	10	KY	24,824.00	11,324	22.648	50.08	221.12	3.83	16.91	53.91	238.03	2.62	8.40	13.24
The American Coal Company	P	J16006	B	U	8	IL	13,732.80	11,849	23.698	43.52	183.66	3.94	16.63	47.46	200.29	2.73	8.98	10.31
The American Coal Company	P	J16006	B	U	3	WV	45,891.00	12,753	25.507	46.31	181.57	4.56	17.88	50.87	199.45	3.34	9.17	5.92
		Total Long Term					**330,397.36**	**11,657**	**23.314**	**41.44**	**177.75**	**4.17**	**17.88**	**45.61**	**195.63**	**3.01**	**9.14**	**10.88**
Spot Contract																		
Contura Coal Sales LLC	P	J17001	B	U	2	PA	49,679.10	13,033	26.066	38.15	146.35	9.19	35.25	47.34	181.60	2.92	7.85	6.37
		Total Spot					**49,679.10**	**13,033**	**26.066**	**38.15**	**146.35**	**9.19**	**35.25**	**47.34**	**181.60**	**2.92**	**7.85**	**6.37**
		Ghent High Sulfur Coal					**380,076.46**	**11,837**	**23.674**	**41.01**	**173.23**	**4.83**	**20.38**	**45.84**	**193.61**	**2.99**	**8.97**	**10.29**
Ghent Middlings																		
Spot Contract																		
Arch Coal Sales Company Inc.	P	J17003	B	U	3	WV	3,249.62	11,292	22.583	34.71	153.69	2.78	12.31	37.49	166.00	1.58	20.06	6.22
Peabody COALTRADE LLC	B	J16016	B	S	4	WV	4,945.31	9,196	18.393	22.71	123.45	5.46	29.68	28.17	153.13	0.81	29.53	7.32
		Total Spot					**8,194.93**	**10,027**	**20.054**	**27.46**	**136.95**	**4.40**	**21.93**	**31.86**	**158.88**	**1.11**	**25.77**	**6.88**
		Ghent Middlings					**8,194.93**	**10,027**	**20.054**	**27.46**	**136.95**	**4.40**	**21.93**	**31.86**	**158.88**	**1.11**	**25.77**	**6.88**
Total Ghent							**388,271.39**	**11,799**	**23.598**	**40.73**	**172.58**	**4.81**	**20.41**	**45.54**	**192.99**	**2.96**	**9.32**	**10.22**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Analysis Of Coal Purchased for Fuel Clause Backup

Mar - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	26,726.08	9,012	18.025	11.71	64.97	28.18	156.33	39.89	221.30	0.25	4.67	26.25
		Total Long Term					**26,726.08**	**9,012**	**18.025**	**11.71**	**64.97**	**28.18**	**156.33**	**39.89**	**221.30**	**0.25**	**4.67**	**26.25**
Total Trimble County / KU							**26,726.08**	**9,012**	**18.025**	**11.71**	**64.97**	**28.18**	**156.33**	**39.89**	**221.30**	**0.25**	**4.67**	**26.25**
Total Kentucky Utilities							**414,997.47**	**11,619**	**23.239**	**38.86**	**167.21**	**6.32**	**27.19**	**45.18**	**194.40**	**2.78**	**9.02**	**11.25**

Case No. 2020-00349

Attachment 2 to Response to PSC-6 Question No. 13

Conroy

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	S	IN	33,137.09	11,050	22.101	40.83	184.73	18.36	83.08	59.19	267.81	2.98	8.67	14.68
	Total Long Term					**33,137.09**	**11,050**	**22.101**	**40.83**	**184.73**	**18.36**	**83.08**	**59.19**	**267.81**	**2.98**	**8.67**	**14.68**
Spot Contract																	
Sunrise Coal LLC	P	J18025	R	U	IN	22,513.43	11,326	22.653	34.96	154.35	21.39	94.38	56.35	248.73	3.35	8.66	13.43
	Total Spot					**22,513.43**	**11,326**	**22.653**	**34.96**	**154.35**	**21.39**	**94.38**	**56.35**	**248.73**	**3.35**	**8.66**	**13.43**
Total E.W. Brown						**55,650.52**	**11,162**	**22.324**	**38.45**	**172.26**	**19.59**	**87.71**	**58.04**	**259.97**	**3.13**	**8.67**	**14.17**

Case No. 2020-00349
Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(a) PBDU as Designated by Symbol P, B, D, or U
P= Producer B= Broker D= Distributor U-Utility

(b) POCN = Purchase Order or Contract Number

(c) MT = Mode of Transportation Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	67,820.30	11,509	23.018	42.57	184.93	4.22	18.34	46.79	203.27	2.95	8.03	12.09
Alliance Coal LLC	P	J18003	B	U	WKY	44,823.00	11,532	23.063	38.05	164.97	4.22	18.29	42.27	183.26	2.95	8.15	11.94
Alliance Coal LLC	P	J18009	B	U	WKY	44,203.40	11,522	23.043	35.70	154.92	4.22	18.32	39.92	173.24	2.96	8.13	12.05
Armstrong Coal Sales	P	J16017	B	U	WKY	7,912.00	11,564	23.127	44.31	191.58	5.14	22.22	49.45	213.80	2.78	8.80	11.43
Armstrong Coal Sales	P	J18002	B	U	WKY	19,084.00	11,828	23.657	44.76	189.20	5.14	21.73	49.90	210.93	2.87	8.78	10.51
Eagle River Coal LLC	P	J16005	B	S	IL	18,324.69	12,608	25.216	51.81	205.47	4.49	17.80	56.30	223.27	3.44	7.99	7.51
Foresight Coal Sales LLC	P	J16018	B	U	WKY	12,764.90	11,749	23.497	41.11	174.97	5.14	21.88	46.25	196.85	2.69	8.19	11.69
Foresight Coal Sales LLC	P	J16018	B	U	IL	40,970.80	11,852	23.705	42.24	178.18	4.22	17.80	46.46	195.98	2.69	8.34	10.50
Knight Hawk Coal LLC	P	J18005	B	U	IL	30,524.26	11,186	22.371	35.02	156.54	8.09	36.17	43.11	192.71	2.98	8.84	12.54
Rhino Energy LLC	P	J14001	B	U	WKY	29,959.10	11,320	22.640	37.04	163.62	4.09	18.06	41.13	181.68	2.47	8.01	13.65
The American Coal Company	P	J16006	B	U	WV	68,636.20	12,824	25.647	41.31	161.06	4.88	19.03	46.19	180.09	4.00	8.62	5.77
The American Coal Company	P	J17004	B	U	WV	53,624.40	12,852	25.704	35.56	138.33	4.88	18.99	40.44	157.32	4.00	8.61	5.63
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	47,824.00	11,725	23.449	42.01	179.14	5.14	21.92	47.15	201.06	2.82	8.78	10.80
Western Ky Consolidated Resources l	P	J16017B	B	U	WKY	4,764.00	11,451	22.901	40.44	176.57	5.14	22.44	45.58	199.01	2.74	8.83	12.17
Western Ky Consolidated Resources l	P	J14010C	B	U	WKY	9,588.00	11,662	23.323	44.41	190.41	5.14	22.04	49.55	212.45	2.71	8.67	11.00
Total Long Term						**500,823.05**	**11,915**	**23.831**	**40.19**	**168.64**	**4.81**	**20.17**	**45.00**	**188.81**	**3.15**	**8.40**	**10.11**
Spot Contract																	
Contura Coal Sales LLC	P	J17001	B	U	PA	9,709.70	13,078	26.157	38.31	146.48	9.83	37.58	48.14	184.06	2.68	7.44	6.54
Total Spot						**9,709.70**	**13,078**	**26.157**	**38.31**	**146.48**	**9.83**	**37.58**	**48.14**	**184.06**	**2.68**	**7.44**	**6.54**
Ghent High Sulfur Coal						**510,532.75**	**11,938**	**23.875**	**40.15**	**168.18**	**4.91**	**20.53**	**45.06**	**188.71**	**3.14**	**8.38**	**10.05**
Ghent Middlings																	
Spot Contract																	
Arch Coal Sales Company Inc.	P	J17003	B	S	WV	1,594.15	10,729	21.458	33.41	155.69	3.18	14.81	36.59	170.50	1.82	16.99	9.41
Total Spot						**1,594.15**	**10,729**	**21.458**	**33.41**	**155.69**	**3.18**	**14.82**	**36.59**	**170.51**	**1.82**	**16.99**	**9.41**
Ghent Middlings						**1,594.15**	**10,729**	**21.458**	**33.41**	**155.69**	**3.18**	**14.82**	**36.59**	**170.51**	**1.82**	**16.99**	**9.41**
Total Ghent						**512,126.90**	**11,934**	**23.868**	**40.13**	**168.15**	**4.90**	**20.51**	**45.03**	**188.66**	**3.13**	**8.41**	**10.04**

(a) PBDU as Designated by Symbol P, B, D, or U
P= Producer B= Broker D= Distributor U-Utility

(b) POCN = Purchase Order or Contract Number

(c) MT = Mode of Transportation Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J16012	B/R	S	WY	17,188.85	9,070	18.140	12.91	71.19	25.28	139.33	38.19	210.52	0.25	4.84	25.99
	Total Long Term					**17,188.85**	**9,070**	**18.140**	**12.91**	**71.19**	**25.28**	**139.33**	**38.19**	**210.52**	**0.25**	**4.84**	**25.99**
Total Trimble County / KU						**17,188.85**	**9,070**	**18.140**	**12.91**	**71.19**	**25.28**	**139.33**	**38.19**	**210.52**	**0.25**	**4.84**	**25.99**
Total Kentucky Utilities						**584,966.27**	**11,776**	**23.553**	**39.17**	**166.32**	**5.74**	**24.37**	**44.91**	**190.69**	**3.05**	**8.33**	**10.91**

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Conroy

(a) PBDU as Designated by Symbol P, B, D, or U
P= Producer B= Broker D= Distributor U-Utility

(b) POCN = Purchase Order or Contract Number

(c) MT = Mode of Transportation Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	U	IN	22,299.58	11,432	22.863	38.71	169.31	6.10	26.68	44.81	195.99	3.23	8.75	12.76
		Total Long Term				**22,299.58**	**11,432**	**22.863**	**38.71**	**169.31**	**6.10**	**26.68**	**44.81**	**195.99**	**3.23**	**8.75**	**12.76**
Spot Contract																	
Sunrise Coal LLC	P	J19021	R	U	IN	22,363.78	11,423	22.846	37.25	163.04	9.20	40.27	46.45	203.31	3.32	8.44	13.12
		Total Spot				**22,363.78**	**11,423**	**22.846**	**37.25**	**163.04**	**9.20**	**40.27**	**46.45**	**203.31**	**3.32**	**8.44**	**13.12**
Total E.W. Brown						**44,663.36**	**11,427**	**22.855**	**37.98**	**166.17**	**7.65**	**33.48**	**45.63**	**199.65**	**3.27**	**8.60**	**12.94**

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Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(b) Designated by symbol
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	75,509.40	11,501	23.003	44.51	193.49	4.58	19.91	49.09	213.40	2.97	8.43	11.95
Alliance Coal LLC	P	J18003	B	U	WKY	60,072.50	11,507	23.014	40.00	173.80	4.58	19.90	44.58	193.70	2.96	8.48	11.87
Alliance Coal LLC	P	J18009	B	U	WKY	76,829.40	11,500	23.000	37.24	161.90	4.58	19.92	41.82	181.82	3.00	8.50	11.89
Foresight Coal Sales LLC	P	J16018	B	U	IL	15,098.71	11,829	23.658	44.25	187.06	4.58	19.36	48.83	206.42	2.68	8.13	10.85
Knight Hawk Coal LLC	P	J18005	B	U	IL	11,310.81	11,118	22.236	36.54	164.34	8.79	39.53	45.33	203.87	2.99	9.11	12.72
Peabody COALSALES LLC	P	J19003	B	S	IN	22,829.00	11,163	22.326	40.85	182.97	3.74	16.75	44.59	199.72	3.37	8.73	13.94
Rhino Energy LLC	P	J14001	B	U	WKY	17,338.20	11,451	22.902	38.47	167.96	4.44	19.39	42.91	187.35	2.57	8.34	12.52
The American Coal Company	P	J16006	B	U	WV	48,248.90	12,792	25.584	42.11	164.59	5.30	20.72	47.41	185.31	3.65	8.72	6.23
The American Coal Company	P	J16006	B	U	WV	6,872.60	12,859	25.718	42.20	164.08	5.30	20.61	47.50	184.69	3.95	8.74	5.42
The American Coal Company	P	J16006	B	U	IL	19,373.43	11,858	23.716	40.05	168.87	4.58	19.31	44.63	188.18	2.70	7.93	10.89
The American Coal Company	P	J17004	B	U	WV	10,147.40	12,802	25.604	35.90	140.20	5.30	20.70	41.20	160.90	3.67	8.83	6.08
The American Coal Company	P	J17004	B	U	IL	62,707.31	11,849	23.698	36.68	154.76	4.58	19.33	41.26	174.09	2.69	8.02	10.91
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	38,640.00	11,701	23.402	44.84	191.61	5.58	23.84	50.42	215.45	2.68	8.47	11.16
White Stallion Energy LLC	P	J19002	B	S	IL	5,091.19	12,574	25.148	43.13	171.49	4.88	19.41	48.01	190.90	3.52	8.02	7.81
		Total Long Term				**470,068.85**	**11,754**	**23.509**	**40.46**	**172.11**	**4.82**	**20.51**	**45.28**	**192.62**	**3.00**	**8.43**	**10.93**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	4,822.80	11,475	22.950	39.10	170.36	3.74	16.30	42.84	186.66	1.93	7.43	13.83
		Total Spot				**4,822.80**	**11,475**	**22.950**	**39.10**	**170.36**	**3.74**	**16.30**	**42.84**	**186.66**	**1.93**	**7.43**	**13.83**
Total Ghent						**474,891.65**	**11,751**	**23.503**	**40.45**	**172.09**	**4.81**	**20.47**	**45.26**	**192.56**	**2.99**	**8.42**	**10.96**

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Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	23,993.00	8,988	17.976	12.85	71.47	27.41	152.49	40.26	223.96	0.21	4.57	26.76
		Total Long Term				**23,993.00**	**8,988**	**17.976**	**12.85**	**71.47**	**27.41**	**152.49**	**40.26**	**223.96**	**0.21**	**4.57**	**26.76**
Total Trimble County / KU						**23,993.00**	**8,988**	**17.976**	**12.85**	**71.47**	**27.41**	**152.49**	**40.26**	**223.96**	**0.21**	**4.57**	**26.76**
Total Kentucky Utilities						**543,548.01**	**11,603**	**23.206**	**39.03**	**168.17**	**6.04**	**26.04**	**45.07**	**194.21**	**2.89**	**8.27**	**11.82**

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or Contract Number

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Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2020

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	44,840.00	11,181	22.362	38.66	172.88	8.65	38.67	47.31	211.55	3.18	8.69	13.71
		Total Long Term				**44,840.00**	**11,181**	**22.362**	**38.66**	**172.88**	**8.65**	**38.67**	**47.31**	**211.55**	**3.18**	**8.69**	**13.71**
Total E.W. Brown						**44,840.00**	**11,181**	**22.362**	**38.66**	**172.88**	**8.65**	**38.67**	**47.31**	**211.55**	**3.18**	**8.69**	**13.71**

Case No. 2020-00349
Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(b) Designated by symbol
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B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J18003	B	U	WKY	13,523.90	11,533	23.067	41.88	181.56	4.41	19.12	46.29	200.68	2.91	8.65	12.09
Alliance Coal LLC	P	J18009	B	U	WKY	153,276.70	11,505	23.010	38.38	166.80	4.41	19.16	42.79	185.96	2.91	8.78	12.16
Alliance Coal LLC	P	J14001B	B	U	WKY	15,092.10	11,502	23.005	39.43	171.38	4.41	19.17	43.84	190.55	2.92	8.76	12.16
Knight Hawk Coal LLC	P	J18005	B	U	IL	17,664.40	11,173	22.347	37.69	168.67	8.47	37.90	46.16	206.57	3.00	8.46	13.14
The American Coal Company	P	J16006	B	U	WV	39,188.00	12,727	25.455	42.12	165.48	5.11	20.07	47.23	185.55	3.97	9.07	6.12
The American Coal Company	P	J16006	B	U	IL	12,179.35	11,793	23.586	40.34	171.05	4.41	18.70	44.75	189.75	2.67	8.22	10.92
The American Coal Company	P	J17004	B	U	IL	59,971.43	11,773	23.545	38.47	163.40	4.41	18.73	42.88	182.13	2.69	8.31	10.93
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	4,864.00	11,689	23.377	46.58	199.26	5.38	23.02	51.96	222.28	2.42	8.78	11.20
White Stallion Energy LLC	P	J19002	B	S	IL	6,570.94	12,502	25.003	42.04	168.15	4.70	18.79	46.74	186.94	3.25	8.81	7.30
		Total Long Term				**322,330.82**	**11,720**	**23.440**	**39.28**	**167.59**	**4.74**	**20.21**	**44.02**	**187.80**	**3.00**	**8.69**	**11.09**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	14,430.70	11,131	22.262	38.19	171.56	3.61	16.22	41.80	187.78	2.68	8.48	14.86
		Total Spot				**14,430.70**	**11,131**	**22.262**	**38.19**	**171.56**	**3.61**	**16.22**	**41.80**	**187.78**	**2.68**	**8.48**	**14.86**
Total Ghent						**336,761.52**	**11,695**	**23.390**	**39.24**	**167.75**	**4.69**	**20.05**	**43.93**	**187.80**	**2.98**	**8.68**	**11.25**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Mar - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J20002	B/R	S	WY	58,863.85	8,993	17.987	12.57	69.89	26.67	148.27	39.24	218.16	0.25	4.84	26.75
		Total Long Term				**58,863.85**	**8,993**	**17.987**	**12.57**	**69.89**	**26.67**	**148.27**	**39.24**	**218.16**	**0.25**	**4.84**	**26.75**
Total Trimble County / KU						**58,863.85**	**8,993**	**17.987**	**12.57**	**69.89**	**26.67**	**148.27**	**39.24**	**218.16**	**0.25**	**4.84**	**26.75**
Total Kentucky Utilities						**440,465.37**	**11,282**	**22.563**	**35.61**	**157.84**	**8.03**	**35.59**	**43.64**	**193.43**	**2.64**	**8.16**	**13.57**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation3 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Apr - 2016

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	Coal Dist#	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	B	U	11	IN	27,083.52	11,585	23.170	54.90	236.96	3.81	16.45	58.71	253.41	1.39	6.22	14.36
Armstrong Coal Sales	P	J16003	B	S	9	KY	25,668.00	11,237	22.473	38.06	169.34	4.63	20.62	42.69	189.96	3.14	11.26	10.99
Armstrong Coal Sales	P	J14010B	B	S	9	KY	6,556.00	11,297	22.593	43.13	190.91	4.49	19.87	47.62	210.78	3.08	11.22	10.81
Armstrong Coal Sales	P	J14004B	B	S	9	KY	27,224.00	11,275	22.550	44.03	195.26	4.56	20.21	48.59	215.47	3.25	11.17	10.75
Armstrong Coal Sales	P	J14004B	B	U	9	KY	15,972.00	11,865	23.730	44.93	189.35	4.78	20.14	49.71	209.49	2.90	8.75	10.20
Armstrong Coal Sales	P	J07032B	B	S	9	KY	53,046.00	11,233	22.467	27.76	123.58	4.63	20.57	32.39	144.15	3.20	11.22	10.95
Armstrong Coal Sales	P	J16017	B	S	9	KY	28,776.00	11,255	22.509	36.90	163.93	4.62	20.52	41.52	184.45	3.19	11.16	10.76
COALSALES LLC	P	J16007	B	S	11	IN	56,889.00	11,064	22.129	39.32	177.69	3.08	13.93	42.40	191.62	3.03	8.81	14.30
Eagle River Coal LLC	P	J16005	B	S	10	IL	13,093.78	12,619	25.239	44.92	177.98	4.06	16.07	48.98	194.05	3.68	9.50	5.73
Rhino Energy LLC	P	J14001	B	U	9	KY	68,326.70	11,352	22.704	48.49	213.58	3.66	16.14	52.15	229.72	2.52	8.23	13.14
		Total Long Term					**322,635.00**	**11,353**	**22.705**	**41.33**	**182.05**	**4.06**	**17.86**	**45.39**	**199.91**	**2.88**	**9.54**	**12.01**
Spot Contract																		
Foresight Coal Sales LLC	P	J16009	B	U	10	IL	52,531.02	11,796	23.592	43.16	182.96	3.75	15.88	46.91	198.84	2.63	8.60	10.33
Kolmar Americas Inc	B	J16019	B	S	8	WV	6,177.15	10,256	20.511	32.61	158.99	2.87	13.99	35.48	172.98	0.94	21.08	8.66
Peabody COALTRADE LLC	B	J16016	B	S	8	WV	4,839.87	9,889	19.778	24.14	122.04	5.43	27.45	29.57	149.49	1.10	27.36	5.46
The American Coal Company	P	J16002	B	U	10	IL	40,116.30	11,808	23.617	48.54	205.54	3.70	15.66	52.24	221.20	2.40	8.98	10.49
		Total Spot					**103,664.34**	**11,620**	**23.240**	**43.73**	**188.16**	**3.75**	**16.15**	**47.48**	**204.31**	**2.37**	**10.37**	**10.07**
Total Ghent							**426,299.34**	**11,418**	**22.835**	**41.92**	**183.56**	**3.98**	**17.44**	**45.90**	**201.00**	**2.75**	**9.74**	**11.54**

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P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Analysis Of Coal Purchased for Fuel Clause Backup

Apr - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	Coal Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	19	WY	41,148.08	8,973	17.945	11.66	64.97	27.35	152.40	39.01	217.37	0.25	5.14	26.61
		Total Long Term					**41,148.08**	**8,973**	**17.945**	**11.66**	**64.97**	**27.35**	**152.40**	**39.01**	**217.37**	**0.25**	**5.14**	**26.61**
Total Trimble County / KU							**41,148.08**	**8,973**	**17.945**	**11.66**	**64.97**	**27.35**	**152.40**	**39.01**	**217.37**	**0.25**	**5.14**	**26.61**
Total Kentucky Utilities							**467,447.42**	**11,202**	**22.405**	**39.25**	**175.20**	**6.04**	**26.96**	**45.29**	**202.16**	**2.53**	**9.34**	**12.86**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Apr - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
Sunrise Coal LLC	P	J15002B	R	U	8	IN	52,612.78	11,431	22.862	38.02	166.30	22.02	96.32	60.04	262.62	3.48	8.06	13.38
		Total Long Term					**52,612.78**	**11,431**	**22.862**	**38.02**	**166.30**	**22.02**	**96.32**	**60.04**	**262.62**	**3.48**	**8.06**	**13.38**
Total E.W. Brown							**52,612.78**	**11,431**	**22.862**	**38.02**	**166.30**	**22.02**	**96.32**	**60.04**	**262.62**	**3.48**	**8.06**	**13.38**

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(b) Designated by symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Apr - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	B	U	10	KY	21,159.00	11,495	22.990	48.98	213.04	4.07	17.69	53.05	230.73	2.98	8.29	11.98
Alliance Coal LLC	P	J17002	B	U	10	KY	60,881.70	11,491	22.982	40.93	178.09	4.07	17.71	45.00	195.80	2.97	8.34	11.99
Armstrong Coal Sales	P	J16003	B	S	10	KY	33,604.00	11,322	22.644	39.68	175.22	4.87	21.51	44.55	196.73	2.91	10.70	11.09
Armstrong Coal Sales	P	J14010B	B	S	10	KY	9,596.00	11,296	22.592	44.01	194.82	4.87	21.55	48.88	216.37	2.90	10.98	10.83
Armstrong Coal Sales	P	J07032B	B	S	10	KY	43,230.00	11,301	22.602	28.47	125.96	4.87	21.55	33.34	147.51	3.13	11.04	10.80
COALSALES LLC	P	J16007	B	S	8	IN	58,158.00	11,019	22.038	41.52	188.39	3.31	15.02	44.83	203.41	3.13	9.18	14.31
Eagle River Coal LLC	P	J16005	B	S	8	IL	30,141.40	12,581	25.161	46.94	186.56	4.26	16.93	51.20	203.49	3.42	7.87	7.94
Foresight Coal Sales LLC	P	J16018	B	U	8	IL	44,161.19	11,844	23.688	40.78	172.17	4.02	16.97	44.80	189.14	2.62	8.12	10.47
Rhino Energy LLC	P	J14001	B	U	10	KY	29,480.40	11,339	22.677	50.08	220.82	3.93	17.34	54.01	238.16	2.65	8.56	12.95
The American Coal Company	P	J16006	B	U	8	IL	30,998.68	11,908	23.815	43.57	182.95	4.09	17.17	47.66	200.12	2.75	8.65	10.35
The American Coal Company	P	J16006	B	U	3	WV	31,176.80	12,690	25.380	46.14	181.78	4.64	18.29	50.78	200.07	3.30	9.22	6.23
The American Coal Company	P	J16006	B	U	10	KY	8,026.80	11,745	23.490	42.67	181.65	4.99	21.25	47.66	202.90	2.97	8.50	11.34
		Total Long Term					**400,613.97**	**11,624**	**23.247**	**41.82**	**179.88**	**4.19**	**18.05**	**46.01**	**197.93**	**2.99**	**9.06**	**11.11**
Spot Contract																		
Contura Coal Sales LLC	P	J17001	B	U	2	PA	65,361.20	13,068	26.136	38.18	146.10	9.24	35.32	47.42	181.42	2.57	7.88	6.12
		Total Spot					**65,361.20**	**13,068**	**26.136**	**38.18**	**146.10**	**9.24**	**35.32**	**47.42**	**181.42**	**2.57**	**7.88**	**6.12**
Ghent High Sulfur Coal							**465,975.17**	**11,826**	**23.652**	**41.31**	**174.65**	**4.90**	**20.72**	**46.21**	**195.37**	**2.93**	**8.90**	**10.41**
Ghent Middlings																		
Spot Contract																		
Arch Coal Sales Company Inc.	P	J17003	B	U	3	WV	8,641.83	10,956	21.912	34.21	156.14	2.82	12.88	37.03	169.02	1.77	21.19	6.45
Peabody COALTRADE LLC	B	J16016	B	S	4	WV	8,210.05	9,314	18.627	22.83	122.54	5.50	29.53	28.33	152.07	0.77	29.53	6.87
		Total Spot					**16,851.88**	**10,156**	**20.312**	**28.67**	**141.13**	**4.12**	**20.31**	**32.79**	**161.44**	**1.28**	**25.25**	**6.65**
Ghent Middlings							**16,851.88**	**10,156**	**20.312**	**28.67**	**141.13**	**4.12**	**20.31**	**32.79**	**161.44**	**1.28**	**25.25**	**6.65**
Total Ghent							**482,827.05**	**11,768**	**23.536**	**40.87**	**173.64**	**4.87**	**20.71**	**45.74**	**194.35**	**2.87**	**9.47**	**10.27**

(b) Designated by symbol
P= Producer D= Distributor
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(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Apr - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	49,504.88	9,088	18.175	12.73	70.04	28.12	154.72	40.85	224.76	0.22	4.26	26.43
		Total Long Term					**49,504.88**	**9,088**	**18.175**	**12.73**	**70.04**	**28.12**	**154.72**	**40.85**	**224.76**	**0.22**	**4.26**	**26.43**
Total Trimble County / KU							**49,504.88**	**9,088**	**18.175**	**12.73**	**70.04**	**28.12**	**154.72**	**40.85**	**224.76**	**0.22**	**4.26**	**26.43**
Total Kentucky Utilities							**584,944.71**	**11,511**	**23.022**	**38.23**	**166.06**	**8.38**	**36.42**	**46.61**	**202.48**	**2.70**	**8.90**	**11.92**

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Conroy

(b) Designated by symbol
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation3 Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Apr - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007		S	IN	4,646.19	11,071	22.143	41.92	189.33	28.48	128.61	70.40	317.93	2.82	8.92	14.48
COALSALES LLC	P	J16007	R	S	IN	67,163.00	11,066	22.133	41.75	188.64	13.12	59.26	54.87	247.90	2.98	8.56	14.71
Total Long Term						**71,809.19**	**11,067**	**22.134**	**41.76**	**188.68**	**14.11**	**63.75**	**55.87**	**252.44**	**2.97**	**8.58**	**14.70**
Spot Contract																	
Fire Star Energy Resources	P	K18027	T	S	EKY	2,388.25	11,368	22.737	62.64	275.49	6.98	30.69	69.62	306.18	1.26	14.86	7.81
Sunrise Coal LLC	P	J18025	R	U	IN	22,523.28	11,437	22.873	35.30	154.35	16.01	70.02	51.32	224.37	3.46	8.79	12.74
Total Spot						**24,911.53**	**11,430**	**22.860**	**37.92**	**165.90**	**15.15**	**66.28**	**53.07**	**232.18**	**3.25**	**9.37**	**12.27**
Total E.W. Brown						**96,720.72**	**11,160**	**22.321**	**40.77**	**182.67**	**14.38**	**64.42**	**55.15**	**247.09**	**3.04**	**8.78**	**14.07**

Case No. 2020-00349
Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(a) PBDU as Designated by Symbol P, B, D, or U
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(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Apr - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	94,557.70	11,498	22.996	42.52	184.91	4.27	18.56	46.79	203.47	2.95	8.10	12.15
Alliance Coal LLC	P	J18003	B	U	WKY	81,137.50	11,480	22.959	37.90	165.08	4.29	18.67	42.19	183.75	2.95	8.02	12.27
Alliance Coal LLC	P	J18009	B	U	WKY	36,102.90	11,514	23.028	36.01	156.37	4.29	18.62	40.30	174.99	2.97	8.18	11.98
Eagle River Coal LLC	P	J16005	B	S	IL	28,626.89	12,657	25.314	52.17	206.10	4.55	17.98	56.72	224.08	3.27	7.92	7.48
Foresight Coal Sales LLC	P	J16018	B	U	IL	98,109.97	11,756	23.511	42.19	179.44	4.26	18.13	46.45	197.57	2.67	8.29	11.18
Knight Hawk Coal LLC	P	J18005	B	U	IL	36,467.90	11,235	22.469	35.11	156.24	8.17	36.36	43.28	192.60	3.06	8.67	12.40
Rhino Energy LLC	P	J14001	B	U	WKY	11,071.30	11,305	22.609	37.12	164.17	4.13	18.28	41.25	182.45	2.48	8.00	13.68
The American Coal Company	P	J16006	B	U	WV	19,509.20	12,876	25.752	41.42	160.84	4.92	19.12	46.34	179.96	3.94	8.57	5.51
The American Coal Company	P	J16006	B	U	WKY	3,166.90	11,484	22.969	37.70	164.14	5.27	22.94	42.97	187.08	2.69	8.81	12.58
The American Coal Company	P	J17004	B	U	WV	61,799.30	12,858	25.716	35.61	138.49	4.96	19.27	40.57	157.76	3.95	8.75	5.47
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	46,552.00	11,683	23.365	42.03	179.87	5.16	22.11	47.19	201.98	2.82	8.61	11.12
Western Ky Consolidated Resources l	P	J14010C	B	U	WKY	8,008.00	11,550	23.101	44.22	191.41	5.27	22.81	49.49	214.22	2.71	8.54	11.66
	Total Long Term					**525,109.56**	**11,814**	**23.627**	**40.29**	**170.54**	**4.77**	**20.15**	**45.06**	**190.69**	**3.05**	**8.31**	**10.64**
Spot Contract																	
Contura Coal Sales LLC	P	J17001	B	U	PA	4,840.25	13,180	26.360	38.40	145.68	9.83	37.29	48.23	182.97	2.40	7.52	5.81
	Total Spot					**4,840.25**	**13,180**	**26.360**	**38.40**	**145.68**	**9.83**	**37.29**	**48.23**	**182.97**	**2.40**	**7.52**	**5.81**
Total Ghent						**529,949.81**	**11,826**	**23.652**	**40.28**	**170.29**	**4.80**	**20.33**	**45.08**	**190.62**	**3.05**	**8.30**	**10.60**
Total Kentucky Utilities						**626,670.53**	**11,723**	**23.447**	**40.35**	**172.11**	**5.21**	**22.21**	**45.56**	**194.32**	**3.05**	**8.37**	**11.13**

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(d) Mine Type Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Apr - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	U	IN	22,196.70	11,601	23.202	39.81	171.59	6.12	26.36	45.93	197.95	3.33	8.72	11.90
		Total Long Term				**22,196.70**	**11,601**	**23.202**	**39.81**	**171.59**	**6.12**	**26.36**	**45.93**	**197.95**	**3.33**	**8.72**	**11.90**
Spot Contract																	
Sunrise Coal LLC	P	J19021	R	U	IN	11,252.93	11,261	22.522	36.50	162.06	9.01	40.03	45.51	202.09	3.49	8.59	14.11
		Total Spot				**11,252.93**	**11,261**	**22.522**	**36.50**	**162.06**	**9.01**	**40.03**	**45.51**	**202.09**	**3.49**	**8.59**	**14.11**
Total E.W. Brown						**33,449.63**	**11,486**	**22.973**	**38.70**	**168.45**	**7.09**	**30.87**	**45.79**	**199.32**	**3.39**	**8.68**	**12.65**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Apr - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	43,115.50	11,514	23.028	44.54	193.42	4.43	19.23	48.97	212.65	3.02	8.25	11.91
Alliance Coal LLC	P	J18003	B	U	WKY	45,199.80	11,499	22.998	40.01	173.96	4.41	19.19	44.42	193.15	3.02	8.42	11.91
Alliance Coal LLC	P	J18009	B	U	WKY	56,466.20	11,520	23.041	37.26	161.73	4.39	19.05	41.65	180.78	3.02	8.42	11.82
Foresight Coal Sales LLC	P	J16018	B	U	IL	29,928.04	11,844	23.689	44.36	187.26	4.35	18.35	48.71	205.61	2.66	8.39	10.40
Knight Hawk Coal LLC	P	J18005	B	U	IL	22,636.14	11,180	22.361	36.57	163.55	8.72	39.00	45.29	202.55	3.06	8.97	12.51
Peabody COALSALES LLC	P	J19003	B	S	IN	9,723.00	11,175	22.350	40.96	183.26	3.74	16.74	44.70	200.00	3.22	8.73	13.84
Rhino Energy LLC	P	J14001	B	U	WKY	9,453.50	11,364	22.727	38.23	168.22	4.20	18.48	42.43	186.70	2.59	8.40	13.16
The American Coal Company	P	J16006	B	U	WV	16,607.50	12,704	25.409	41.65	163.92	5.01	19.71	46.66	183.63	4.12	9.15	6.11
The American Coal Company	P	J16006	B	U	WV	95,468.80	12,845	25.690	41.73	162.45	5.06	19.67	46.79	182.12	3.87	8.68	5.49
The American Coal Company	P	J16006	B	U	IL	14,214.65	11,877	23.754	40.02	168.48	4.40	18.50	44.42	186.98	2.67	8.24	10.40
The American Coal Company	P	J17004	B	U	IL	35,460.41	11,788	23.576	36.60	155.23	4.44	18.84	41.04	174.07	2.70	8.37	10.82
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	28,688.00	11,750	23.500	44.79	190.61	5.47	23.25	50.26	213.86	2.81	9.28	10.33
White Stallion Energy LLC	P	J19002	B	S	IL	11,743.91	12,764	25.528	43.00	168.44	4.73	18.52	47.73	186.96	3.71	8.45	6.36
		Total Long Term				**418,705.45**	**11,945**	**23.890**	**40.79**	**170.76**	**4.87**	**20.39**	**45.66**	**191.15**	**3.19**	**8.57**	**9.79**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	6,476.40	11,506	23.012	39.43	171.35	3.64	15.82	43.07	187.17	2.40	7.81	13.05
		Total Spot				**6,476.40**	**11,506**	**23.012**	**39.43**	**171.35**	**3.64**	**15.82**	**43.07**	**187.17**	**2.40**	**7.81**	**13.05**
Total Ghent						**425,181.85**	**11,938**	**23.877**	**40.77**	**170.76**	**4.86**	**20.33**	**45.63**	**191.09**	**3.18**	**8.56**	**9.84**

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or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Apr - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	26,742.80	9,083	18.165	12.98	71.47	26.38	145.23	39.36	216.70	0.22	4.38	26.42
		Total Long Term				**26,742.80**	**9,083**	**18.165**	**12.98**	**71.47**	**26.38**	**145.23**	**39.36**	**216.70**	**0.22**	**4.38**	**26.42**
Total Trimble County / KU						**26,742.80**	**9,083**	**18.165**	**12.98**	**71.47**	**26.38**	**145.23**	**39.36**	**216.70**	**0.22**	**4.38**	**26.42**
Total Kentucky Utilities						**485,374.28**	**11,750**	**23.500**	**39.10**	**166.38**	**6.19**	**26.35**	**45.29**	**192.73**	**3.03**	**8.34**	**10.95**

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Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Apr - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	22,184.00	10,847	21.695	37.92	174.80	8.34	38.43	46.26	213.23	3.01	8.48	16.14
		Total Long Term				**22,184.00**	**10,847**	**21.695**	**37.92**	**174.80**	**8.34**	**38.43**	**46.26**	**213.23**	**3.01**	**8.48**	**16.14**
Total E.W. Brown						**22,184.00**	**10,847**	**21.695**	**37.92**	**174.80**	**8.34**	**38.43**	**46.26**	**213.23**	**3.01**	**8.48**	**16.14**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Apr - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J18003	B	U	WKY	18,348.30	11,441	22.883	42.51	185.75	4.38	19.15	46.89	204.90	2.97	8.75	12.47
Alliance Coal LLC	P	J18009	B	U	WKY	35,561.50	11,471	22.942	39.00	170.00	4.41	19.22	43.41	189.22	2.95	8.51	12.55
Alliance Coal LLC	P	J18009	B	U	WV	25,401.50	12,619	25.238	41.28	163.58	5.80	22.95	47.08	186.53	3.40	8.27	7.01
Alliance Coal LLC	P	J14001B	B	U	WKY	13,214.70	11,456	22.913	40.08	174.93	4.38	19.12	44.46	194.05	2.97	8.78	12.31
Contura Coal Sales LLC	P	J20001	B	U	PA	22,145.40	12,897	25.794	40.28	156.15	10.25	39.74	50.53	195.89	2.98	8.53	6.59
Knight Hawk Coal LLC	P	J18005	B	U	IL	19,376.54	11,198	22.395	37.70	168.33	8.40	37.52	46.10	205.85	3.13	8.96	12.48
The American Coal Company	P	J16006	B	U	WV	52,858.40	12,693	25.387	42.14	165.99	5.07	19.98	47.21	185.97	3.82	9.14	6.33
The American Coal Company	P	J16006	B	U	IL	15,699.98	11,847	23.693	40.46	170.78	4.40	18.54	44.86	189.32	2.72	8.32	10.39
The American Coal Company	P	J17004	B	U	IL	66,258.49	11,905	23.810	38.86	163.23	4.40	18.43	43.26	181.66	2.72	8.43	9.91
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	3,204.00	11,596	23.191	46.65	201.15	5.38	23.20	52.03	224.35	2.63	7.70	12.47
White Stallion Energy LLC	P	J19002	B	S	IL	26,449.72	12,596	25.193	42.94	170.45	4.67	18.51	47.61	188.96	3.30	8.71	6.89
		Total Long Term				**298,518.53**	**12,088**	**24.176**	**40.50**	**167.53**	**5.36**	**22.18**	**45.86**	**189.71**	**3.12**	**8.64**	**9.31**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	6,517.40	11,364	22.729	38.58	169.74	3.59	15.79	42.17	185.53	3.08	7.70	13.92
		Total Spot				**6,517.40**	**11,364**	**22.729**	**38.58**	**169.74**	**3.59**	**15.79**	**42.17**	**185.53**	**3.08**	**7.70**	**13.92**
Total Ghent						**305,035.93**	**12,072**	**24.145**	**40.46**	**167.58**	**5.33**	**22.05**	**45.79**	**189.63**	**3.12**	**8.62**	**9.41**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Apr - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J20002	B/R	S	WY	75,720.05	8,924	17.847	12.47	69.89	26.53	148.61	39.00	218.50	0.26	5.07	27.25
		Total Long Term				**75,720.05**	**8,924**	**17.847**	**12.47**	**69.89**	**26.53**	**148.61**	**39.00**	**218.50**	**0.26**	**5.07**	**27.25**
Total Trimble County / KU						**75,720.05**	**8,924**	**17.847**	**12.47**	**69.89**	**26.53**	**148.61**	**39.00**	**218.50**	**0.26**	**5.07**	**27.25**
Total Kentucky Utilities						**402,939.98**	**11,413**	**22.826**	**35.06**	**153.60**	**9.48**	**41.51**	**44.54**	**195.11**	**2.58**	**7.95**	**13.13**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
Bowie Refined Coal LLC	P	K14037	T	S	6	KY	8,631.80	12,332	24.664	62.89	255.00	0.00	0.00	62.89	255.00	2.48	9.82	7.00
COALSALES LLC	P	J16007	R	S	8	IN	11,210.00	11,407	22.814	35.67	156.37	18.87	82.71	54.54	239.08	3.38	7.54	13.80
Triad Mining LLC	P	J15002	R	S	8	IN	56,467.60	11,505	23.010	42.73	185.71	17.27	75.05	60.00	260.76	3.53	8.07	12.73
		Total Long Term					**76,309.40**	**11,584**	**23.168**	**43.97**	**189.81**	**15.56**	**67.12**	**59.53**	**256.93**	**3.39**	**8.19**	**12.24**
Total E.W. Brown							**76,309.40**	**11,584**	**23.168**	**43.97**	**189.81**	**15.56**	**67.12**	**59.53**	**256.93**	**3.39**	**8.19**	**12.24**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	B	U	8	IN	20,580.43	11,543	23.086	54.70	236.96	3.69	15.98	58.39	252.94	1.33	5.96	14.96
Armstrong Coal Sales	P	J16003	B	S	10	KY	33,738.00	11,201	22.401	36.38	162.41	4.49	20.04	40.87	182.45	3.22	10.87	11.40
Armstrong Coal Sales	P	J14010B	B	S	10	KY	9,684.00	11,216	22.433	42.83	190.91	4.49	20.01	47.32	210.92	3.27	10.98	11.18
Armstrong Coal Sales	P	J14004B	B	S	10	KY	21,100.00	11,207	22.415	42.77	190.83	4.49	20.03	47.26	210.86	3.27	11.10	11.05
Armstrong Coal Sales	P	J14004B	B	U	10	KY	30,170.00	11,915	23.829	42.77	179.50	4.49	18.84	47.26	198.34	2.82	8.90	9.68
Armstrong Coal Sales	P	J07032B	B	S	10	KY	59,034.00	11,273	22.546	27.11	120.25	4.49	19.91	31.60	140.16	3.38	10.97	10.99
Armstrong Coal Sales	P	J16017	B	S	10	KY	32,122.00	11,236	22.473	35.62	158.50	4.49	19.98	40.11	178.48	3.31	10.52	11.45
COALSALES LLC	P	J16007	B	S	8	IN	53,897.00	11,061	22.123	38.67	174.82	3.01	13.61	41.68	188.43	3.01	8.70	14.28
Eagle River Coal LLC	P	J16005	B	S	8	IL	24,435.49	12,595	25.190	44.47	176.55	3.93	15.60	48.40	192.15	3.88	9.90	5.70
Rhino Energy LLC	P	J14001	B	U	10	KY	59,035.30	11,338	22.677	48.55	214.09	3.58	15.79	52.13	229.88	2.57	8.30	13.21
		Total Long Term					**343,796.22**	**11,401**	**22.803**	**39.97**	**175.30**	**4.02**	**17.61**	**43.99**	**192.91**	**3.01**	**9.55**	**11.73**
Spot Contract																		
Alliance Coal LLC	P	J16001B	B	U	10	KY	3,173.80	11,420	22.840	46.07	201.69	3.69	16.16	49.76	217.85	2.81	8.12	12.77
Foresight Coal Sales LLC	P	J16009	B	U	8	IL	55,665.70	11,866	23.731	43.14	181.77	3.69	15.55	46.83	197.32	2.67	8.23	10.33
Kolmar Americas Inc	B	J16019	B	S	12	WV	6,280.77	9,749	19.498	32.39	166.13	2.78	14.26	35.17	180.39	0.79	23.02	9.45
Peabody COALTRADE LLC	B	J16016	B	S	4	WV	6,565.77	10,275	20.550	25.32	123.20	5.10	24.82	30.42	148.02	1.10	26.20	4.59
The American Coal Company	P	J16002	B	U	8	IL	35,119.50	11,706	23.412	48.30	206.30	3.69	15.76	51.99	222.06	2.38	8.82	11.34
		Total Spot					**106,805.54**	**11,578**	**23.155**	**43.19**	**186.54**	**3.73**	**16.08**	**46.92**	**202.62**	**2.37**	**10.39**	**10.33**
Total Ghent							**450,601.76**	**11,443**	**22.886**	**40.74**	**178.00**	**3.94**	**17.24**	**44.68**	**195.24**	**2.86**	**9.75**	**11.40**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2016

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	MSHA Dist#	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	64,592.23	8,946	17.892	11.62	64.97	27.26	152.33	38.88	217.30	0.22	5.11	26.49
		Total Long Term					**64,592.23**	**8,946**	**17.892**	**11.62**	**64.97**	**27.26**	**152.33**	**38.88**	**217.30**	**0.22**	**5.11**	**26.49**
Total Trimble County / KU							**64,592.23**	**8,946**	**17.892**	**11.62**	**64.97**	**27.26**	**152.33**	**38.88**	**217.30**	**0.22**	**5.11**	**26.49**
Total Kentucky Utilities							**591,503.39**	**11,189**	**22.377**	**37.98**	**169.71**	**7.98**	**35.69**	**45.96**	**205.40**	**2.64**	**9.04**	**13.15**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
Sunrise Coal LLC	P	J15002B	R	U	8	IN	55,417.46	11,347	22.694	37.79	166.51	22.02	97.03	59.81	263.54	3.47	8.23	13.85
		Total Long Term					**55,417.46**	**11,347**	**22.694**	**37.79**	**166.51**	**22.02**	**97.03**	**59.81**	**263.54**	**3.47**	**8.23**	**13.85**
Total E.W. Brown							**55,417.46**	**11,347**	**22.694**	**37.79**	**166.51**	**22.02**	**97.03**	**59.81**	**263.54**	**3.47**	**8.23**	**13.85**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	B	U	10	KY	19,859.50	11,473	22.946	48.89	213.04	4.09	17.83	52.98	230.87	3.00	8.42	12.12
Alliance Coal LLC	P	J17002	B	U	10	KY	86,874.30	11,524	23.047	40.89	177.42	4.09	17.74	44.98	195.16	2.99	8.31	11.77
Armstrong Coal Sales	P	J16003	B	S	10	KY	51,484.00	11,355	22.711	39.66	174.63	4.99	21.98	44.65	196.61	2.94	10.85	10.82
Armstrong Coal Sales	P	J14010B	B	S	10	KY	6,364.00	11,362	22.725	44.42	195.45	4.99	21.96	49.41	217.41	2.88	10.82	10.82
Armstrong Coal Sales	P	J07032B	B	S	10	KY	46,396.00	11,163	22.326	28.36	127.02	4.99	22.35	33.35	149.37	3.23	11.25	11.43
COALSALES LLC	P	J16007	B	S	8	IN	39,041.00	11,071	22.143	42.22	190.65	3.35	15.13	45.57	205.78	3.10	8.83	14.29
Eagle River Coal LLC	P	J16005	B	S	8	IL	28,141.58	12,724	25.448	47.40	186.26	4.36	17.13	51.76	203.39	3.35	7.99	6.89
Foresight Coal Sales LLC	P	J16018	B	U	8	IL	19,007.10	11,761	23.521	40.72	173.12	4.09	17.39	44.81	190.51	2.61	8.05	11.39
Rhino Energy LLC	P	J14001	B	U	10	KY	28,009.10	11,293	22.586	50.08	221.72	3.97	17.57	54.05	239.29	2.64	8.56	13.37
The American Coal Company	P	J16006	B	U	8	IL	40,261.37	11,843	23.686	43.63	184.18	4.09	17.27	47.72	201.45	2.66	8.49	10.69
The American Coal Company	P	J16006	B	U	3	WV	23,215.00	12,718	25.437	46.22	181.69	4.73	18.59	50.95	200.28	3.52	9.24	5.96
The American Coal Company	P	J16006	B	U	10	KY	11,473.00	11,746	23.491	42.67	181.64	4.99	21.24	47.66	202.88	2.91	8.50	11.38
		Total Long Term					**400,125.95**	**11,598**	**23.197**	**41.59**	**179.29**	**4.32**	**18.65**	**45.91**	**197.94**	**3.00**	**9.13**	**11.15**
Spot Contract																		
Contura Coal Sales LLC	P	J17001	B	U	2	PA	61,709.34	13,018	26.036	38.03	146.07	9.53	36.60	47.56	182.67	2.98	7.98	6.34
		Total Spot					**61,709.34**	**13,018**	**26.036**	**38.03**	**146.07**	**9.53**	**36.60**	**47.56**	**182.67**	**2.98**	**7.98**	**6.34**
Ghent High Sulfur Coal							**461,835.29**	**11,788**	**23.576**	**41.11**	**174.39**	**5.02**	**21.29**	**46.13**	**195.68**	**3.00**	**8.98**	**10.51**
Ghent Middlings																		
Spot Contract																		
Arch Coal Sales Company Inc.	P	J17003	B	U	3	WV	4,792.87	11,058	22.116	33.88	153.18	2.88	13.02	36.76	166.20	2.06	21.21	5.85
Peabody COALTRADE LLC	B	J16016	B	S	4	WV	4,848.00	9,345	18.691	22.72	121.58	5.60	29.92	28.32	151.50	1.05	29.90	6.07
		Total Spot					**9,640.87**	**10,197**	**20.394**	**28.27**	**138.61**	**4.24**	**20.82**	**32.51**	**159.43**	**1.55**	**25.58**	**5.96**
Ghent Middlings							**9,640.87**	**10,197**	**20.394**	**28.27**	**138.61**	**4.24**	**20.82**	**32.51**	**159.43**	**1.55**	**25.58**	**5.96**
Total Ghent							**471,476.16**	**11,755**	**23.511**	**40.85**	**173.75**	**5.01**	**21.29**	**45.86**	**195.04**	**2.97**	**9.32**	**10.41**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2017

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	MSHA Dist#	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	65,414.26	8,937	17.873	12.72	71.16	28.16	157.58	40.88	228.74	0.25	5.40	26.37
		Total Long Term					**65,414.26**	**8,937**	**17.873**	**12.72**	**71.16**	**28.16**	**157.58**	**40.88**	**228.74**	**0.25**	**5.40**	**26.37**
Total Trimble County / KU							**65,414.26**	**8,937**	**17.873**	**12.72**	**71.16**	**28.16**	**157.58**	**40.88**	**228.74**	**0.25**	**5.40**	**26.37**
Total Kentucky Utilities							**592,307.88**	**11,406**	**22.812**	**37.46**	**164.20**	**9.15**	**40.13**	**46.61**	**204.33**	**2.72**	**8.78**	**12.50**

(b) Designated by symbol
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(d) MT = Mode of Transportation3
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007		S	IN	5,701.94	11,041	22.083	42.14	190.81	23.80	107.78	65.94	298.59	2.89	9.16	14.24
COALSALES LLC	P	J16007	R	S	IN	76,108.25	11,129	22.258	42.14	189.30	12.96	58.21	55.09	247.51	3.10	8.73	13.94
Total Long Term						**81,810.19**	**11,123**	**22.246**	**42.14**	**189.41**	**13.71**	**61.63**	**55.85**	**251.05**	**3.08**	**8.76**	**13.96**
Spot Contract																	
Fire Star Energy Resources	P	K18027	T	S	EKY	3,781.35	11,885	23.769	65.68	276.32	0.00	0.00	65.68	276.32	1.35	13.29	6.24
Sunrise Coal LLC	P	J18025	R	U	IN	22,516.01	11,560	23.121	35.69	154.35	15.84	68.49	51.52	222.84	3.54	8.27	12.68
Total Spot						**26,297.36**	**11,607**	**23.214**	**40.00**	**172.31**	**13.56**	**58.40**	**53.56**	**230.71**	**3.22**	**8.99**	**11.75**
Total E.W. Brown						**108,107.55**	**11,241**	**22.482**	**41.62**	**185.11**	**13.68**	**60.82**	**55.29**	**245.94**	**3.12**	**8.82**	**13.42**

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S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	111,953.60	11,503	23.006	42.56	185.00	4.31	18.75	46.87	203.75	2.92	8.07	12.23
Alliance Coal LLC	P	J18003	B	U	WKY	53,022.60	11,540	23.080	38.12	165.16	4.31	18.69	42.43	183.85	2.90	8.07	11.85
Alliance Coal LLC	P	J18009	B	U	WKY	28,176.20	11,565	23.130	36.12	156.17	4.32	18.67	40.44	174.84	2.91	8.04	11.88
Eagle River Coal LLC	P	J16005	B	S	IL	27,833.00	12,686	25.371	52.43	206.66	4.61	18.17	57.04	224.83	3.13	7.69	7.35
Foresight Coal Sales LLC	P	J16018	B	U	WKY	1,588.00	11,941	23.882	40.61	170.04	5.27	22.07	45.88	192.11	2.73	8.20	10.13
Foresight Coal Sales LLC	P	J16018	B	U	IL	82,065.25	11,702	23.405	41.78	178.50	4.32	18.46	46.10	196.96	2.70	8.36	11.26
Knight Hawk Coal LLC	P	J18005	B	U	IL	51,494.49	11,207	22.413	35.16	156.89	8.29	36.99	43.45	193.88	3.11	9.21	12.05
Rhino Energy LLC	P	J14001	B	U	WKY	20,434.40	11,367	22.734	37.20	163.65	4.19	18.43	41.39	182.08	2.50	8.07	13.27
The American Coal Company	P	J16006	B	U	WV	32,893.30	12,843	25.685	41.53	161.70	5.00	19.47	46.53	181.17	3.91	8.69	5.55
The American Coal Company	P	J16006	B	U	WKY	8,060.00	11,713	23.427	38.52	164.45	5.27	22.49	43.79	186.94	2.77	8.50	11.11
The American Coal Company	P	J16006	B	U	IL	29,122.55	11,811	23.623	39.64	167.79	4.32	18.29	43.96	186.08	2.66	8.39	10.65
The American Coal Company	P	J17004	B	U	WV	56,066.90	12,857	25.714	35.17	136.79	5.00	19.44	40.17	156.23	3.92	8.65	5.51
The American Coal Company	P	J17004	B	U	IL	41,186.46	11,859	23.718	34.68	146.23	4.32	18.22	39.00	164.45	2.64	8.24	10.49
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	38,524.00	11,846	23.693	42.38	178.88	5.27	22.25	47.65	201.13	2.89	8.79	9.97
Western Ky Consolidated Resources I	P	J16017B	B	U	WKY	4,812.00	11,754	23.508	41.05	174.64	5.27	22.42	46.32	197.06	2.83	8.74	10.37
Western Ky Consolidated Resources I	P	J14010C	B	U	WKY	4,864.00	11,827	23.654	45.16	190.91	5.27	22.28	50.43	213.19	2.88	8.66	10.11
Total Long Term						**592,096.75**	**11,836**	**23.671**	**39.87**	**168.44**	**4.87**	**20.57**	**44.74**	**189.01**	**3.01**	**8.37**	**10.43**
Spot Contract																	
Contura Coal Sales LLC	P	J17001	B	U	PA	11,415.20	13,085	26.171	38.16	145.80	10.07	38.48	48.23	184.28	2.27	7.63	6.28
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	14,383.20	11,356	22.713	38.50	169.50	3.53	15.55	42.03	185.05	2.91	9.32	12.32
Total Spot						**25,798.40**	**12,121**	**24.243**	**38.35**	**158.18**	**6.42**	**26.50**	**44.77**	**184.68**	**2.63**	**8.57**	**9.65**
Ghent High Sulfur Coal						**617,895.15**	**11,848**	**23.695**	**39.81**	**168.01**	**4.93**	**20.81**	**44.74**	**188.82**	**2.99**	**8.38**	**10.40**
Ghent Middlings																	
Spot Contract																	
Arch Coal Sales Company Inc.	P	J17003	B	S	WV	12,604.88	10,867	21.734	33.04	152.00	3.56	16.40	36.60	168.40	2.01	17.19	8.68
Total Spot						**12,604.88**	**10,867**	**21.734**	**33.04**	**152.00**	**3.56**	**16.40**	**36.60**	**168.40**	**2.01**	**17.19**	**8.68**
Ghent Middlings						**12,604.88**	**10,867**	**21.734**	**33.04**	**152.00**	**3.56**	**16.40**	**36.60**	**168.40**	**2.01**	**17.19**	**8.68**
Total Ghent						**630,500.03**	**11,828**	**23.656**	**39.67**	**167.71**	**4.91**	**20.74**	**44.58**	**188.45**	**2.98**	**8.56**	**10.36**

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(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J16012	B/R	S	WY	15,071.98	8,971	17.943	12.77	71.19	28.56	159.16	41.33	230.35	0.26	5.02	26.46
Total Long Term						**15,071.98**	**8,971**	**17.943**	**12.77**	**71.19**	**28.56**	**159.16**	**41.33**	**230.35**	**0.26**	**5.02**	**26.46**
Total Trimble County / KU						**15,071.98**	**8,971**	**17.943**	**12.77**	**71.19**	**28.56**	**159.16**	**41.33**	**230.35**	**0.26**	**5.02**	**26.46**
Total Kentucky Utilities						**753,679.56**	**11,687**	**23.373**	**39.41**	**168.63**	**5.74**	**24.56**	**45.15**	**193.19**	**2.94**	**8.52**	**11.12**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	U	IN	22,318.83	11,464	22.927	38.70	168.82	6.73	29.33	45.43	198.15	3.21	8.63	12.75
Peabody COALSALES LLC	P	J19003	R	S	IN	22,420.00	11,094	22.187	38.70	174.45	7.29	32.82	45.99	207.27	3.14	8.73	14.47
		Total Long Term				**44,738.83**	**11,278**	**22.556**	**38.70**	**171.59**	**7.01**	**31.06**	**45.71**	**202.65**	**3.17**	**8.68**	**13.61**
Spot Contract																	
Sunrise Coal LLC	P	J19021	R	U	IN	22,502.46	11,282	22.564	36.76	162.94	10.14	44.93	46.90	207.87	3.37	8.61	13.63
		Total Spot				**22,502.46**	**11,282**	**22.564**	**36.76**	**162.94**	**10.14**	**44.93**	**46.90**	**207.87**	**3.37**	**8.61**	**13.63**
Total E.W. Brown						**67,241.29**	**11,279**	**22.559**	**38.06**	**168.69**	**8.05**	**35.70**	**46.11**	**204.39**	**3.24**	**8.65**	**13.62**

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(b) Designated by symbol
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(c) POCN = Purchase Order
or Contract Number

(d) MT = Mode of Transportation1
Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	76,042.80	11,513	23.027	44.53	193.39	4.33	18.81	48.86	212.20	2.99	8.39	11.83
Alliance Coal LLC	P	J18003	B	U	WKY	51,349.30	11,514	23.028	40.08	174.05	4.33	18.81	44.41	192.86	2.97	8.48	11.71
Alliance Coal LLC	P	J18009	B	U	WKY	106,295.60	11,488	22.975	37.24	162.10	4.33	18.85	41.57	180.95	2.98	8.51	11.86
Foresight Coal Sales LLC	P	J16018	B	U	IL	33,746.62	11,913	23.826	44.66	187.45	4.33	18.17	48.99	205.62	2.70	8.10	10.33
Knight Hawk Coal LLC	P	J18005	B	U	IL	28,950.41	11,129	22.259	36.63	164.58	8.31	37.34	44.94	201.92	3.07	8.98	12.82
Rhino Energy LLC	P	J14001	B	U	WKY	37,769.20	11,390	22.780	38.32	168.20	4.20	18.43	42.52	186.63	2.59	8.39	12.87
The American Coal Company	P	J16006	B	U	WV	44,217.90	12,801	25.601	41.51	162.16	5.01	19.57	46.52	181.73	4.04	8.67	5.79
The American Coal Company	P	J16006	B	U	IL	13,575.93	11,843	23.686	40.15	169.50	4.33	18.28	44.48	187.78	2.72	8.22	10.66
The American Coal Company	P	J17004	B	U	IL	38,579.20	11,900	23.799	36.87	154.94	4.33	18.19	41.20	173.13	2.73	8.05	10.42
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	49,333.00	11,716	23.433	45.12	192.53	5.28	22.53	50.40	215.06	2.73	9.31	10.55
White Stallion Energy LLC	P	J19002	B	S	IL	19,458.65	12,674	25.349	42.84	169.01	4.61	18.18	47.45	187.19	3.52	8.59	6.90
		Total Long Term				**499,318.61**	**11,721**	**23.443**	**40.62**	**173.26**	**4.71**	**20.11**	**45.33**	**193.37**	**3.00**	**8.53**	**10.87**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	6,453.50	11,321	22.641	38.91	171.88	3.54	15.63	42.45	187.51	2.13	8.11	13.95
		Total Spot				**6,453.50**	**11,321**	**22.641**	**38.91**	**171.88**	**3.54**	**15.63**	**42.45**	**187.51**	**2.13**	**8.11**	**13.95**
Total Ghent						**505,772.11**	**11,716**	**23.433**	**40.59**	**173.24**	**4.71**	**20.06**	**45.30**	**193.30**	**2.99**	**8.53**	**10.91**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	44,208.57	9,033	18.067	12.91	71.47	25.98	143.80	38.89	215.27	0.23	4.81	26.52
		Total Long Term				**44,208.57**	**9,033**	**18.067**	**12.91**	**71.47**	**25.98**	**143.80**	**38.89**	**215.27**	**0.23**	**4.81**	**26.52**
Total Trimble County / KU						**44,208.57**	**9,033**	**18.067**	**12.91**	**71.47**	**25.98**	**143.80**	**38.89**	**215.27**	**0.23**	**4.81**	**26.52**
Total Kentucky Utilities						**617,221.97**	**11,477**	**22.953**	**38.34**	**167.02**	**6.59**	**28.71**	**44.93**	**195.73**	**2.82**	**8.27**	**12.32**

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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation3 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	33,630.00	11,124	22.247	38.97	175.15	8.28	37.22	47.25	212.37	3.13	8.95	13.96
		Total Long Term				**33,630.00**	**11,124**	**22.247**	**38.97**	**175.15**	**8.28**	**37.22**	**47.25**	**212.37**	**3.13**	**8.95**	**13.96**
Total E.W. Brown						**33,630.00**	**11,124**	**22.247**	**38.97**	**175.15**	**8.28**	**37.22**	**47.25**	**212.37**	**3.13**	**8.95**	**13.96**

(b) Designated by symbol
P= Producer D= Distributor
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Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2020

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J18003	B	U	WKY	3,406.20	11,474	22.949	42.21	183.95	4.37	19.04	46.58	202.99	2.91	8.78	12.38
Alliance Coal LLC	P	J18009	B	U	WV	49,565.50	12,677	25.355	41.34	163.03	5.78	22.80	47.12	185.83	3.13	8.18	6.73
Alliance Coal LLC	P	J14001B	B	U	WKY	16,655.30	11,493	22.985	40.10	174.48	4.37	19.01	44.47	193.49	2.89	8.71	12.24
Contura Coal Sales LLC	P	J20001	B	U	PA	3,226.30	12,969	25.938	40.51	156.17	10.18	39.24	50.69	195.41	2.57	8.10	6.67
Hartshorne Mining Group LLC	P	J18001	B	U	WKY	4,976.20	11,356	22.712	41.04	180.69	4.24	18.67	45.28	199.36	2.88	12.56	9.96
Knight Hawk Coal LLC	P	J18005	B	U	IL	45,324.32	11,209	22.418	37.46	167.09	8.39	37.42	45.85	204.51	3.09	8.73	12.56
The American Coal Company	P	J16006	B	U	WV	16,715.50	12,708	25.417	41.50	163.27	5.05	19.87	46.55	183.14	3.99	9.04	6.23
The American Coal Company	P	J16006	B	U	IL	12,333.75	11,808	23.615	40.45	171.27	4.37	18.51	44.82	189.78	2.76	8.55	10.39
The American Coal Company	P	J17004	B	U	IL	46,927.69	11,853	23.706	38.98	164.44	4.37	18.43	43.35	182.87	2.68	8.51	10.24
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	7,948.00	11,791	23.583	46.55	197.38	5.32	22.56	51.87	219.94	2.44	9.27	10.35
White Stallion Energy LLC	P	J19002	B	S	IL	23,548.68	12,390	24.780	42.94	173.29	4.66	18.80	47.60	192.09	3.43	8.98	7.40
		Total Long Term				**230,627.44**	**11,989**	**23.978**	**40.31**	**168.10**	**5.65**	**23.58**	**45.96**	**191.68**	**3.05**	**8.70**	**9.49**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	4,822.00	11,132	22.265	38.27	171.88	3.57	16.04	41.84	187.92	3.03	8.58	14.40
		Total Spot				**4,822.00**	**11,132**	**22.265**	**38.27**	**171.88**	**3.57**	**16.04**	**41.84**	**187.92**	**3.03**	**8.58**	**14.40**
Total Ghent						**235,449.44**	**11,972**	**23.943**	**40.27**	**168.17**	**5.61**	**23.44**	**45.88**	**191.61**	**3.05**	**8.70**	**9.59**

(b) Designated by symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
May - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J20002	B/R	S	WY	63,837.50	8,906	17.813	12.45	69.89	26.04	146.16	38.49	216.05	0.29	5.33	26.82
		Total Long Term				**63,837.50**	**8,906**	**17.813**	**12.45**	**69.89**	**26.04**	**146.16**	**38.49**	**216.05**	**0.29**	**5.33**	**26.82**
Total Trimble County / KU						**63,837.50**	**8,906**	**17.813**	**12.45**	**69.89**	**26.04**	**146.16**	**38.49**	**216.05**	**0.29**	**5.33**	**26.82**
Total Kentucky Utilities						**332,916.94**	**11,298**	**22.596**	**34.80**	**154.01**	**9.80**	**43.36**	**44.60**	**197.37**	**2.53**	**8.08**	**13.34**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
COALSALES LLC	P	J16007	R	S	8	IN	11,210.00	11,327	22.654	35.83	158.18	18.87	83.29	54.70	241.47	3.41	7.78	13.86
COALSALES LLC	P	J16007	R	S	8	IN	22,401.00	11,151	22.302	35.83	160.67	19.02	85.29	54.85	245.96	3.01	9.03	13.77
Triad Mining LLC	P	J15002	R	S	8	IN	44,322.85	11,592	23.184	43.10	185.91	17.27	74.49	60.37	260.40	3.45	7.89	12.36
		Total Long Term					**77,933.85**	**11,427**	**22.854**	**39.97**	**174.88**	**18.00**	**78.77**	**57.97**	**253.65**	**3.32**	**8.20**	**12.98**
Total E.W. Brown							**77,933.85**	**11,427**	**22.854**	**39.97**	**174.88**	**18.00**	**78.77**	**57.97**	**253.65**	**3.32**	**8.20**	**12.98**

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Conroy

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	B	U	8	IN	9,538.50	11,666	23.332	55.29	236.96	3.69	15.81	58.98	252.77	1.36	6.00	14.11
Armstrong Coal Sales	P	J16003	B	S	10	KY	72,234.00	11,219	22.437	36.74	163.76	4.49	20.01	41.23	183.77	3.12	11.13	11.11
Armstrong Coal Sales	P	J14010B	B	S	10	KY	9,644.00	11,172	22.345	42.66	190.91	4.49	20.09	47.15	211.00	3.09	11.53	11.26
Armstrong Coal Sales	P	J14004B	B	S	10	KY	49,924.00	11,272	22.545	42.19	187.14	4.49	19.92	46.68	207.06	3.12	11.03	10.99
Armstrong Coal Sales	P	J14004B	B	U	10	KY	1,590.00	11,944	23.888	42.19	176.62	4.49	18.80	46.68	195.42	2.67	8.57	10.11
Armstrong Coal Sales	P	J07032B	B	S	10	KY	70,124.00	11,341	22.683	27.35	120.58	4.49	19.79	31.84	140.37	3.27	10.86	10.75
Armstrong Coal Sales	P	J16017	B	S	10	KY	32,282.00	11,197	22.393	35.49	158.50	4.49	20.05	39.98	178.55	3.14	11.38	11.15
COALSALES LLC	P	J16007	B	S	8	IN	37,441.00	11,137	22.273	38.83	174.35	3.01	13.51	41.84	187.86	3.12	8.79	13.75
Eagle River Coal LLC	P	J16005	B	S	8	IL	13,156.78	12,683	25.365	44.74	176.38	3.93	15.49	48.67	191.87	3.89	9.76	5.22
Rhino Energy LLC	P	J14001	B	U	10	KY	96,265.70	11,396	22.792	48.62	213.34	3.58	15.71	52.20	229.05	2.62	8.37	12.83
		Total Long Term					**392,199.98**	**11,343**	**22.686**	**39.66**	**174.81**	**4.08**	**18.01**	**43.74**	**192.82**	**3.01**	**10.02**	**11.58**
Spot Contract																		
Alliance Coal LLC	P	J16001B	B	U	10	KY	6,409.30	11,533	23.066	46.55	201.79	3.69	16.00	50.24	217.79	2.96	8.23	11.72
Alliance Coal LLC	P	J16004	B	U	10	KY	9,554.50	11,530	23.061	47.67	206.70	3.69	16.00	51.36	222.70	2.96	8.41	11.63
Foresight Coal Sales LLC	P	J16009	B	U	8	IL	54,087.39	11,841	23.682	43.29	182.78	3.69	15.58	46.98	198.36	2.72	8.69	9.96
Kolmar Americas Inc	B	J16019	B	S	12	WV	4,628.45	10,348	20.697	32.43	156.69	2.78	13.43	35.21	170.12	0.89	20.58	8.76
Peabody COALTRADE LLC	B	J16016	B	S	4	WV	8,095.44	9,763	19.526	24.30	124.42	5.10	26.12	29.40	150.54	1.20	27.99	5.19
The American Coal Company	P	J16002	B	U	8	IL	49,349.30	11,742	23.484	48.30	205.68	3.69	15.71	51.99	221.39	2.41	8.71	11.22
		Total Spot					**132,124.38**	**11,587**	**23.174**	**44.09**	**190.26**	**3.74**	**16.15**	**47.83**	**206.41**	**2.47**	**10.26**	**10.30**
Total Ghent							**524,324.36**	**11,405**	**22.809**	**40.77**	**178.76**	**4.00**	**17.54**	**44.77**	**196.30**	**2.87**	**10.08**	**11.26**

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Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(b) Designated by symbol
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(d) MT = Mode of Transportation2 Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	12,097.85	8,978	17.956	11.67	64.97	27.25	151.79	38.92	216.76	0.27	4.90	26.72
		Total Long Term					**12,097.85**	**8,978**	**17.956**	**11.67**	**64.97**	**27.25**	**151.79**	**38.92**	**216.76**	**0.27**	**4.90**	**26.72**
Total Trimble County / KU							**12,097.85**	**8,978**	**17.956**	**11.67**	**64.97**	**27.25**	**151.79**	**38.92**	**216.76**	**0.27**	**4.90**	**26.72**
Total Kentucky Utilities							**614,356.06**	**11,360**	**22.719**	**40.10**	**176.49**	**6.23**	**27.45**	**46.33**	**203.94**	**2.88**	**9.74**	**11.78**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
COALSALES LLC	P	J16007	R	S	8	IN	11,210.00	11,245	22.490	39.54	175.81	19.62	87.24	59.16	263.05	3.48	8.72	13.23
Sunrise Coal LLC	P	J15002B	R	U	8	IN	33,416.05	11,637	23.273	38.74	166.48	22.02	94.62	60.76	261.10	3.51	7.74	12.34
		Total Long Term					**44,626.05**	**11,538**	**23.076**	**38.94**	**168.76**	**21.42**	**92.81**	**60.36**	**261.57**	**3.50**	**7.98**	**12.56**
Total E.W. Brown							**44,626.05**	**11,538**	**23.076**	**38.94**	**168.76**	**21.42**	**92.81**	**60.36**	**261.57**	**3.50**	**7.98**	**12.56**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	B	U	10	KY	29,914.50	11,510	23.019	49.04	213.04	4.09	17.77	53.13	230.81	3.00	8.16	11.90
Alliance Coal LLC	P	J17002	B	U	10	KY	87,646.40	11,572	23.143	41.21	178.05	4.09	17.67	45.30	195.72	3.01	8.17	11.54
Armstrong Coal Sales	P	J16003	B	S	10	KY	38,284.00	11,357	22.715	40.16	176.82	4.99	21.96	45.15	198.78	2.97	11.00	10.61
Armstrong Coal Sales	P	J14010B	B	S	10	KY	6,342.00	11,454	22.908	44.59	194.64	4.99	21.78	49.58	216.42	3.05	10.78	10.24
Armstrong Coal Sales	P	J07032B	B	S	10	KY	38,278.00	11,322	22.643	28.64	126.50	4.99	22.04	33.63	148.54	3.21	10.72	10.94
COALSALES LLC	P	J16007	B	S	8	IN	27,780.00	11,132	22.264	42.54	191.07	3.35	15.05	45.89	206.12	3.10	8.84	13.73
Eagle River Coal LLC	P	J16005	B	S	8	IL	53,578.65	12,682	25.363	47.22	186.17	4.36	17.19	51.58	203.36	3.38	8.07	7.14
Foresight Coal Sales LLC	P	J16018	B	U	8	IL	40,877.49	11,911	23.822	40.99	172.06	4.09	17.17	45.08	189.23	2.62	8.89	9.56
Rhino Energy LLC	P	J14001	B	U	10	KY	34,506.70	11,308	22.615	50.02	221.19	3.97	17.56	53.99	238.75	2.56	8.33	13.51
The American Coal Company	P	J16006	B	U	8	IL	60,223.91	11,836	23.672	43.86	185.27	4.09	17.28	47.95	202.55	2.64	8.78	10.37
The American Coal Company	P	J16006	B	U	3	WV	16,405.00	12,705	25.409	46.12	181.50	4.73	18.62	50.85	200.12	3.68	9.15	6.14
		Total Long Term					**433,836.65**	**11,724**	**23.448**	**42.66**	**181.92**	**4.26**	**18.18**	**46.92**	**200.10**	**2.98**	**8.92**	**10.61**
Spot Contract																		
Contura Coal Sales LLC	P	J17001	B	U	2	PA	4,712.35	13,029	26.057	38.08	146.15	9.53	36.58	47.61	182.73	2.94	7.61	6.55
		Total Spot					**4,712.35**	**13,029**	**26.057**	**38.08**	**146.15**	**9.53**	**36.58**	**47.61**	**182.73**	**2.94**	**7.61**	**6.55**
Ghent High Sulfur Coal							**438,549.00**	**11,738**	**23.476**	**42.61**	**181.50**	**4.32**	**18.40**	**46.93**	**199.90**	**2.98**	**8.90**	**10.57**
Ghent Middlings																		
Spot Contract																		
Arch Coal Sales Company Inc.	P	J17003	B	U	3	WV	3,374.13	11,062	22.124	33.73	152.46	2.88	13.02	36.61	165.48	1.65	21.23	5.78
Peabody COALTRADE LLC	B	J16016	B	S	4	WV	3,262.60	9,254	18.507	22.65	122.39	5.66	30.58	28.31	152.97	0.58	29.88	5.64
		Total Spot					**6,636.73**	**10,173**	**20.346**	**28.28**	**139.01**	**4.25**	**20.88**	**32.53**	**159.89**	**1.13**	**25.48**	**5.71**
Ghent Middlings							**6,636.73**	**10,173**	**20.346**	**28.28**	**139.01**	**4.25**	**20.88**	**32.53**	**159.89**	**1.13**	**25.48**	**5.71**
Total Ghent							**445,185.73**	**11,715**	**23.430**	**42.40**	**180.95**	**4.31**	**18.43**	**46.71**	**199.38**	**2.95**	**9.15**	**10.49**

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(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2017

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	MSHA Dist#	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	50,202.75	9,031	18.062	12.86	71.19	28.16	155.93	41.02	227.12	0.20	4.38	26.70
		Total Long Term					**50,202.75**	**9,031**	**18.062**	**12.86**	**71.19**	**28.16**	**155.93**	**41.02**	**227.12**	**0.20**	**4.38**	**26.70**
Total Trimble County / KU							**50,202.75**	**9,031**	**18.062**	**12.86**	**71.19**	**28.16**	**155.93**	**41.02**	**227.12**	**0.20**	**4.38**	**26.70**
Total Kentucky Utilities							**540,014.53**	**11,451**	**22.901**	**39.36**	**171.89**	**7.95**	**34.70**	**47.31**	**206.59**	**2.74**	**8.61**	**12.17**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order
or Contract Number

(d) MT = Mode of Transportation3
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	T	S	IN	988.94	11,133	22.266	41.97	188.52	23.80	106.89	65.77	295.41	2.82	8.71	14.03
COALSALES LLC	P	J16007	R	S	IN	44,840.00	11,079	22.159	41.97	189.43	14.75	66.57	56.73	255.99	3.07	8.70	14.40
Total Long Term						**45,828.94**	**11,080**	**22.161**	**41.97**	**189.41**	**14.95**	**67.43**	**56.92**	**256.85**	**3.07**	**8.70**	**14.39**
Spot Contract																	
Fire Star Energy Resources	P	K18027	T	S	EKY	5,940.47	11,726	23.453	64.80	276.32	0.00	0.00	64.80	276.32	1.82	13.84	6.62
Sunrise Coal LLC	P	J18025	R	U	IN	33,599.85	11,464	22.928	39.38	171.74	14.77	64.40	54.15	236.14	3.29	7.96	13.55
Total Spot						**39,540.32**	**11,504**	**23.007**	**43.20**	**187.75**	**12.55**	**54.54**	**55.75**	**242.30**	**3.07**	**8.85**	**12.51**
Total E.W. Brown						**85,369.26**	**11,276**	**22.553**	**42.54**	**188.63**	**13.84**	**61.34**	**56.38**	**249.97**	**3.07**	**8.77**	**13.52**

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(a) PBDU as Designated by Symbol P, B, D, or U
P= Producer B= Broker D= Distributor U-Utility

(b) POCN = Purchase Order or Contract Number

(c) MT = Mode of Transportation Designated by Symbol
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(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	99,848.10	11,532	23.064	42.65	184.91	4.32	18.73	46.97	203.64	2.97	8.20	11.87
Alliance Coal LLC	P	J18003	B	U	WKY	53,064.00	11,550	23.100	38.17	165.25	4.32	18.70	42.49	183.95	2.93	8.14	11.77
Alliance Coal LLC	P	J18009	B	U	WKY	16,471.80	11,553	23.106	36.12	156.31	4.32	18.70	40.44	175.01	2.97	8.11	11.77
Eagle River Coal LLC	P	J16005	B	S	IL	11,629.87	12,682	25.363	52.39	206.55	4.61	18.18	57.00	224.73	3.45	8.32	6.56
Foresight Coal Sales LLC	P	J16018	B	U	WKY	6,452.00	11,809	23.618	40.61	171.94	5.27	22.32	45.88	194.26	2.83	8.10	11.12
Foresight Coal Sales LLC	P	J16018	B	U	IL	44,777.25	11,714	23.428	41.97	179.12	4.32	18.44	46.29	197.56	2.85	8.43	10.81
Knight Hawk Coal LLC	P	J18005	B	U	IL	17,780.31	11,198	22.396	35.41	158.10	8.29	37.02	43.70	195.12	3.20	9.11	12.07
Rhino Energy LLC	P	J14001	B	U	WKY	17,364.70	11,371	22.743	37.18	163.47	4.19	18.42	41.37	181.89	2.60	7.86	13.39
The American Coal Company	P	J16006	B	U	WV	26,817.40	12,877	25.754	41.56	161.37	5.00	19.41	46.56	180.78	3.99	8.85	5.03
The American Coal Company	P	J16006	B	U	WKY	3,220.00	11,941	23.883	38.91	162.90	5.27	22.07	44.18	184.97	2.76	8.39	9.88
The American Coal Company	P	J16006	B	U	IL	13,465.31	11,947	23.894	39.97	167.30	4.32	18.08	44.29	185.38	2.74	8.52	9.58
The American Coal Company	P	J17004	B	U	WV	24,322.70	12,781	25.562	33.95	132.80	5.00	19.56	38.95	152.36	3.96	8.83	5.76
The American Coal Company	P	J17004	B	U	WKY	1,596.00	11,902	23.804	34.65	145.55	5.27	22.14	39.92	167.69	2.77	8.78	9.74
The American Coal Company	P	J17004	B	U	IL	62,196.20	11,946	23.892	35.36	147.99	4.32	18.09	39.68	166.08	2.77	8.49	9.73
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	32,556.00	11,932	23.863	42.37	177.54	5.27	22.08	47.64	199.62	2.90	8.80	9.55
Western Ky Consolidated Resources l	P	J14010C	B	U	WKY	6,468.00	11,776	23.552	44.58	189.28	5.27	22.38	49.85	211.66	2.85	9.13	10.14
Total Long Term						**438,029.64**	**11,829**	**23.658**	**39.79**	**168.20**	**4.67**	**19.74**	**44.46**	**187.94**	**3.03**	**8.43**	**10.31**
Spot Contract																	
Contura Coal Sales LLC	P	J17001	B	U	PA	9,676.20	12,778	25.557	37.33	146.06	10.07	39.40	47.40	185.46	2.76	9.44	6.53
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	6,330.90	11,383	22.766	38.42	168.75	3.53	15.50	41.95	184.25	2.98	9.49	12.04
Total Spot						**16,007.10**	**12,226**	**24.453**	**37.76**	**154.41**	**7.48**	**30.61**	**45.24**	**185.02**	**2.85**	**9.46**	**8.71**
Ghent High Sulfur Coal						**454,036.74**	**11,843**	**23.686**	**39.72**	**167.69**	**4.77**	**20.15**	**44.49**	**187.84**	**3.02**	**8.46**	**10.25**
Ghent Middlings																	
Spot Contract																	
Arch Coal Sales Company Inc.	P	J17003	B	S	WV	9,478.08	10,921	21.841	33.29	152.44	3.26	14.93	36.55	167.37	2.03	17.09	8.11
Total Spot						**9,478.08**	**10,921**	**21.841**	**33.29**	**152.44**	**3.26**	**14.93**	**36.55**	**167.37**	**2.03**	**17.09**	**8.11**
Ghent Middlings						**9,478.08**	**10,921**	**21.841**	**33.29**	**152.44**	**3.26**	**14.93**	**36.55**	**167.37**	**2.03**	**17.09**	**8.11**
Total Ghent						**463,514.82**	**11,824**	**23.649**	**39.59**	**167.41**	**4.74**	**20.04**	**44.33**	**187.45**	**3.00**	**8.64**	**10.21**

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(a) PBDU as Designated by Symbol P, B, D, or U
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(d) Mine Type Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	79,802.45	8,974	17.948	12.17	67.80	25.88	144.20	38.05	212.00	0.28	4.90	26.46
	Total Long Term					**79,802.45**	**8,974**	**17.948**	**12.17**	**67.80**	**25.88**	**144.20**	**38.05**	**212.00**	**0.28**	**4.90**	**26.46**
Total Trimble County / KU						**79,802.45**	**8,974**	**17.948**	**12.17**	**67.80**	**25.88**	**144.20**	**38.05**	**212.00**	**0.28**	**4.90**	**26.46**
Total Kentucky Utilities						**628,686.53**	**11,388**	**22.776**	**36.51**	**160.30**	**7.58**	**33.30**	**44.09**	**193.60**	**2.67**	**8.18**	**12.72**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	U	IN	11,160.63	11,274	22.548	38.41	170.36	7.32	32.45	45.73	202.81	3.33	8.61	13.90
		Total Long Term				**11,160.63**	**11,274**	**22.548**	**38.41**	**170.36**	**7.32**	**32.45**	**45.73**	**202.81**	**3.33**	**8.61**	**13.90**
Total E.W. Brown						**11,160.63**	**11,274**	**22.548**	**38.41**	**170.36**	**7.32**	**32.45**	**45.73**	**202.81**	**3.33**	**8.61**	**13.90**

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(d) MT = Mode of Transportation1
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	113,385.90	11,509	23.017	44.53	193.47	4.33	18.81	48.86	212.28	2.97	8.62	11.82
Alliance Coal LLC	P	J18003	B	U	WKY	36,546.80	11,507	23.014	40.02	173.88	4.33	18.81	44.35	192.69	3.00	8.73	11.74
Alliance Coal LLC	P	J18009	B	U	WKY	71,505.00	11,499	22.998	37.24	161.92	4.33	18.82	41.57	180.74	3.00	8.72	11.91
Foresight Coal Sales LLC	P	J16018	B	U	IL	43,315.65	11,993	23.985	44.90	187.19	4.33	18.05	49.23	205.24	2.70	8.05	9.84
Hartshorne Mining Group LLC	P	J18001	B	U	WKY	6,210.87	11,907	23.814	42.90	180.13	4.20	17.64	47.10	197.77	2.91	10.82	8.28
Rhino Energy LLC	P	J14001	B	U	WKY	36,227.30	11,445	22.891	38.42	167.85	4.20	18.35	42.62	186.20	2.67	8.39	12.56
The American Coal Company	P	J16006	B	U	WV	15,813.30	12,884	25.769	41.61	161.47	5.01	19.45	46.62	180.92	4.04	8.26	5.60
The American Coal Company	P	J16006	B	U	IL	10,541.78	11,975	23.950	40.44	168.83	4.33	18.08	44.77	186.91	2.75	8.11	9.93
The American Coal Company	P	J17004	B	U	IL	72,225.09	11,994	23.987	37.05	154.45	4.33	18.05	41.38	172.50	2.71	8.06	9.84
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	33,388.00	11,786	23.572	44.76	189.88	5.28	22.40	50.04	212.28	2.70	9.46	9.97
White Stallion Energy LLC	P	J19002	B	S	IL	13,048.04	12,610	25.221	42.87	169.97	4.61	18.28	47.48	188.25	4.00	9.33	6.60
		Total Long Term				**452,207.73**	**11,742**	**23.485**	**41.11**	**175.06**	**4.42**	**18.82**	**45.53**	**193.88**	**2.93**	**8.57**	**10.78**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	3,240.20	11,228	22.457	38.63	172.01	3.54	15.76	42.17	187.77	1.76	8.52	14.02
		Total Spot				**3,240.20**	**11,228**	**22.457**	**38.63**	**172.01**	**3.54**	**15.76**	**42.17**	**187.77**	**1.76**	**8.52**	**14.02**
Total Ghent						**455,447.93**	**11,739**	**23.478**	**41.09**	**175.04**	**4.42**	**18.80**	**45.51**	**193.84**	**2.92**	**8.57**	**10.81**

(b) Designated by symbol
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	15,950.10	8,971	17.942	12.82	71.47	27.09	150.98	39.91	222.45	0.24	4.58	27.09
		Total Long Term				**15,950.10**	**8,971**	**17.942**	**12.82**	**71.47**	**27.09**	**150.98**	**39.91**	**222.45**	**0.24**	**4.58**	**27.09**
Total Trimble County / KU						**15,950.10**	**8,971**	**17.942**	**12.82**	**71.47**	**27.09**	**150.98**	**39.91**	**222.45**	**0.24**	**4.58**	**27.09**
Total Kentucky Utilities						**482,558.66**	**11,637**	**23.273**	**40.10**	**172.29**	**5.23**	**22.48**	**45.33**	**194.77**	**2.84**	**8.44**	**11.42**

(b) Designated by symbol
P= Producer D= Distributor
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R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	33,630.00	11,287	22.575	39.77	176.16	8.66	38.36	48.43	214.52	3.21	8.64	13.11
		Total Long Term				**33,630.00**	**11,287**	**22.575**	**39.77**	**176.16**	**8.66**	**38.36**	**48.43**	**214.52**	**3.21**	**8.64**	**13.11**
Total E.W. Brown						**33,630.00**	**11,287**	**22.575**	**39.77**	**176.16**	**8.66**	**38.36**	**48.43**	**214.52**	**3.21**	**8.64**	**13.11**

(b) Designated by symbol
P= Producer D= Distributor
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(d) MT = Mode of Transportation1 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jun - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J18003	B	U	WKY	3,417.70	11,477	22.953	42.59	185.57	4.37	19.04	46.96	204.61	3.01	8.87	12.28
Alliance Coal LLC	P	J18009	B	U	WKY	55,317.20	11,512	23.024	39.07	169.68	4.37	18.98	43.44	188.66	2.95	8.93	11.89
Alliance Coal LLC	P	J18009	B	U	WV	41,584.30	12,664	25.327	41.37	163.34	5.78	22.82	47.15	186.16	3.01	8.54	6.48
Alliance Coal LLC	P	J14001B	B	U	WKY	36,999.00	11,527	23.054	40.06	173.76	4.37	18.96	44.43	192.72	2.99	8.93	11.89
Hartshorne Mining Group LLC	P	J18001	B	U	WKY	32,265.60	11,591	23.183	41.63	179.56	4.24	18.29	45.87	197.85	2.84	11.85	9.00
Knight Hawk Coal LLC	P	J18005	B	U	IL	22,570.06	11,119	22.238	37.22	167.38	8.39	37.73	45.61	205.11	3.02	8.77	13.07
The American Coal Company	P	J16006	B	U	WV	32,192.50	12,715	25.430	41.76	164.22	5.05	19.86	46.81	184.08	4.01	9.13	6.24
The American Coal Company	P	J16006	B	U	IL	13,787.45	11,890	23.780	40.78	171.51	4.37	18.37	45.15	189.88	2.71	8.35	10.04
The American Coal Company	P	J17004	B	U	IL	66,732.74	11,973	23.947	39.21	163.74	4.37	18.25	43.58	181.99	2.72	8.43	9.43
Western Kentucky Minerals Inc.	P	J20006	B	S	WKY	6,476.70	10,997	21.993	37.78	171.77	3.57	16.23	41.35	188.00	2.89	10.54	13.12
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	22,452.00	11,747	23.494	46.74	198.96	5.32	22.65	52.06	221.61	2.37	9.42	10.36
White Stallion Energy LLC	P	J19002	B	S	IL	9,884.21	12,577	25.154	42.66	169.60	4.66	18.52	47.32	188.12	3.95	9.65	6.08
		Total Long Term				**343,679.46**	**11,888**	**23.776**	**40.54**	**170.49**	**4.91**	**20.66**	**45.45**	**191.15**	**2.99**	**9.13**	**9.72**
Total Ghent						**343,679.46**	**11,888**	**23.776**	**40.54**	**170.49**	**4.91**	**20.66**	**45.45**	**191.15**	**2.99**	**9.13**	**9.72**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J20002	B/R	S	WY	74,380.48	9,008	18.017	12.59	69.89	25.58	141.98	38.17	211.87	0.31	4.91	26.52
		Total Long Term				**74,380.48**	**9,008**	**18.017**	**12.59**	**69.89**	**25.58**	**141.98**	**38.17**	**211.87**	**0.31**	**4.91**	**26.52**
Total Trimble County / KU						**74,380.48**	**9,008**	**18.017**	**12.59**	**69.89**	**25.58**	**141.98**	**38.17**	**211.87**	**0.31**	**4.91**	**26.52**
Total Kentucky Utilities						**451,689.94**	**11,369**	**22.738**	**35.88**	**157.78**	**8.59**	**37.80**	**44.47**	**195.58**	**2.57**	**8.40**	**12.74**

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(b) Designated by symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
Bowie Refined Coal LLC	P	K14037	T	S	6	KY	1,913.05	11,704	23.408	59.37	253.64	0.00	0.00	59.37	253.64	1.60	12.89	7.58
COALSALES LLC	P	J16007	R	S	8	IN	33,533.00	11,303	22.606	35.86	158.62	18.87	83.47	54.73	242.09	3.25	7.53	14.44
COALSALES LLC	P	J16007	R	S	8	IN	11,206.00	10,979	21.958	35.86	163.30	19.02	86.62	54.88	249.92	3.04	8.85	14.92
Triad Mining LLC	P	J15002	R	S	8	IN	66,563.25	11,570	23.140	43.09	186.21	17.27	74.63	60.36	260.84	3.48	8.15	12.27
		Total Long Term					**113,215.30**	**11,435**	**22.869**	**40.51**	**177.12**	**17.62**	**77.07**	**58.13**	**254.19**	**3.34**	**8.11**	**13.09**
Total E.W. Brown							**113,215.30**	**11,435**	**22.869**	**40.51**	**177.12**	**17.62**	**77.07**	**58.13**	**254.19**	**3.34**	**8.11**	**13.09**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J12007	B	U	10	KY	68,990.37	11,446	22.892	46.31	202.32	3.70	16.16	50.01	218.48	2.95	8.18	12.26
Alliance Coal LLC	P	J16008	B	U	8	IN	15,806.98	11,548	23.096	54.73	236.96	3.69	16.00	58.42	252.96	1.37	5.94	14.76
Armstrong Coal Sales	P	J16003	B	S	10	KY	30,252.00	11,282	22.564	37.63	166.79	4.50	19.94	42.13	186.73	3.17	10.82	10.99
Armstrong Coal Sales	P	J14010B	B	S	10	KY	3,138.00	11,148	22.297	42.57	190.91	4.51	20.23	47.08	211.14	3.44	10.98	11.85
Armstrong Coal Sales	P	J14004B	B	S	10	KY	23,884.00	11,271	22.543	42.62	189.07	4.49	19.92	47.11	208.99	3.15	10.96	10.95
Armstrong Coal Sales	P	J07032B	B	S	10	KY	28,436.00	11,320	22.640	27.26	120.41	4.50	19.87	31.76	140.28	3.29	10.79	10.78
Armstrong Coal Sales	P	J16017	B	S	10	KY	19,078.00	11,126	22.252	35.50	159.54	4.50	20.20	40.00	179.74	3.21	11.44	11.34
COALSALES LLC	P	J16007	B	S	8	IN	16,144.00	11,189	22.378	38.90	173.82	3.01	13.47	41.91	187.29	3.22	8.22	13.73
Eagle River Coal LLC	P	J16005	B	S	8	IL	5,063.40	12,816	25.631	45.51	177.55	3.93	15.34	49.44	192.89	3.84	9.35	4.69
Rhino Energy LLC	P	J14001	B	U	10	KY	52,789.40	11,398	22.796	48.65	213.42	3.59	15.72	52.24	229.14	2.63	8.36	12.81
		Total Long Term					**263,582.15**	**11,378**	**22.756**	**42.60**	**187.22**	**3.96**	**17.38**	**46.56**	**204.60**	**2.93**	**9.21**	**11.97**
Spot Contract																		
Alliance Coal LLC	P	J16001B	B	U	10	KY	28,500.85	11,512	23.024	46.21	200.69	3.69	16.06	49.90	216.75	2.96	8.18	11.84
Alliance Coal LLC	P	J16004	B	U	10	KY	14,225.70	11,554	23.108	47.56	205.80	3.69	15.97	51.25	221.77	2.94	8.11	11.65
Foresight Coal Sales LLC	P	J16009	B	U	8	IL	76,087.20	11,660	23.321	42.47	182.13	3.70	15.86	46.17	197.99	2.82	8.71	10.99
Kolmar Americas Inc	B	J16019	B	S	12	WV	7,777.35	10,511	21.022	32.98	156.90	2.79	13.24	35.77	170.14	0.96	18.96	9.13
Peabody COALTRADE LLC	B	J16016	B	S	4	WV	3,140.20	9,803	19.607	25.32	129.16	5.10	26.01	30.42	155.17	1.65	28.56	4.47
The American Coal Company	P	J16002	B	U	8	IL	71,556.60	11,704	23.408	48.13	205.63	3.70	15.79	51.83	221.42	2.48	8.91	11.24
		Total Spot					**201,287.90**	**11,574**	**23.148**	**44.74**	**193.28**	**3.68**	**15.91**	**48.42**	**209.19**	**2.64**	**9.37**	**11.07**
Total Ghent							**464,870.05**	**11,463**	**22.926**	**43.53**	**189.87**	**3.84**	**16.74**	**47.37**	**206.61**	**2.80**	**9.28**	**11.58**
Total Kentucky Utilities							**578,085.35**	**11,457**	**22.915**	**42.94**	**187.38**	**6.53**	**28.53**	**49.47**	**215.91**	**2.91**	**9.05**	**11.88**

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(b) Designated by symbol
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(d) MT = Mode of Transportation2
Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
COALSALES LLC	P	J16007	R	S	8	IN	11,210.00	11,106	22.212	38.26	172.23	19.78	89.05	58.04	261.28	3.06	8.52	14.12
Sunrise Coal LLC	P	J15002B	R	U	8	IN	44,560.93	11,642	23.284	38.70	166.23	22.02	94.57	60.72	260.80	3.56	7.58	12.21
		Total Long Term					**55,770.93**	**11,534**	**23.069**	**38.61**	**167.39**	**21.57**	**93.50**	**60.18**	**260.89**	**3.46**	**7.77**	**12.60**
Total E.W. Brown							**55,770.93**	**11,534**	**23.069**	**38.61**	**167.39**	**21.57**	**93.50**	**60.18**	**260.89**	**3.46**	**7.77**	**12.60**

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Conroy

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	B	U	10	KY	39,480.30	11,497	22.995	48.99	213.04	4.06	17.67	53.05	230.71	3.03	8.17	11.94
Alliance Coal LLC	P	J17002	B	U	10	KY	102,658.40	11,461	22.921	40.88	178.36	4.07	17.75	44.95	196.11	3.02	8.24	12.15
Armstrong Coal Sales	P	J16003	B	S	10	KY	35,238.00	11,188	22.376	39.53	176.68	4.97	22.21	44.50	198.89	2.95	10.57	11.86
Armstrong Coal Sales	P	J14010B	B	S	10	KY	7,964.00	11,320	22.639	44.25	195.45	4.94	21.83	49.19	217.28	2.96	10.74	10.95
Armstrong Coal Sales	P	J07032B	B	S	10	KY	39,996.00	11,208	22.415	28.42	126.80	4.97	22.16	33.39	148.96	3.10	10.79	11.57
COALSALES LLC	P	J16007	B	S	8	IN	27,794.00	11,082	22.163	41.43	186.95	3.32	14.97	44.75	201.92	3.07	8.80	14.27
Eagle River Coal LLC	P	J16005	B	S	8	IL	23,012.17	12,688	25.377	47.32	186.46	4.34	17.11	51.66	203.57	3.19	7.93	7.47
Foresight Coal Sales LLC	P	J16018	B	U	8	IL	55,308.93	11,947	23.894	41.16	172.26	4.06	17.01	45.22	189.27	2.70	8.47	9.75
Rhino Energy LLC	P	J14001	B	U	10	KY	44,202.40	11,336	22.673	48.76	215.06	3.95	17.43	52.71	232.49	2.67	8.50	13.08
The American Coal Company	P	J16006	B	U	8	IL	16,478.65	11,799	23.597	44.06	186.71	4.09	17.34	48.15	204.05	2.60	9.10	10.42
The American Coal Company	P	J16006	B	U		IL	28,254.69	11,786	23.571	43.71	185.43	4.05	17.18	47.76	202.61	2.59	9.12	10.46
		Total Long Term					**420,387.54**	**11,543**	**23.085**	**41.98**	**181.83**	**4.19**	**18.19**	**46.17**	**200.02**	**2.91**	**8.89**	**11.51**
Spot Contract																		
Contura Coal Sales LLC	P	J17001	B	U	2	PA	26,280.95	13,196	26.393	38.53	145.97	9.43	35.73	47.96	181.70	2.57	7.64	5.54
		Total Spot					**26,280.95**	**13,196**	**26.393**	**38.53**	**145.97**	**9.43**	**35.73**	**47.96**	**181.70**	**2.57**	**7.64**	**5.54**
	Ghent High Sulfur Coal						**446,668.49**	**11,640**	**23.280**	**41.77**	**179.44**	**4.51**	**19.36**	**46.28**	**198.80**	**2.89**	**8.82**	**11.16**
Ghent Middlings																		
Spot Contract																		
Arch Coal Sales Company Inc.	P	J17003	B	U	3	WV	6,814.65	10,920	21.840	33.87	155.08	2.87	13.15	36.74	168.23	1.78	21.48	6.19
		Total Spot					**6,814.65**	**10,920**	**21.840**	**33.87**	**155.08**	**2.87**	**13.15**	**36.74**	**168.23**	**1.78**	**21.48**	**6.19**
	Ghent Middlings						**6,814.65**	**10,920**	**21.840**	**33.87**	**155.08**	**2.87**	**13.15**	**36.74**	**168.23**	**1.78**	**21.48**	**6.19**
Total Ghent							**453,483.14**	**11,629**	**23.258**	**41.65**	**179.10**	**4.49**	**19.27**	**46.14**	**198.37**	**2.87**	**9.01**	**11.09**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	48,817.80	8,875	17.751	12.64	71.19	28.13	158.49	40.77	229.68	0.20	4.76	27.03
		Total Long Term					**48,817.80**	**8,875**	**17.751**	**12.64**	**71.19**	**28.13**	**158.49**	**40.77**	**229.68**	**0.20**	**4.76**	**27.03**
Total Trimble County / KU							**48,817.80**	**8,875**	**17.751**	**12.64**	**71.19**	**28.13**	**158.49**	**40.77**	**229.68**	**0.20**	**4.76**	**27.03**
Total Kentucky Utilities							**558,071.87**	**11,379**	**22.758**	**38.81**	**170.55**	**8.26**	**36.29**	**47.07**	**206.84**	**2.70**	**8.51**	**12.63**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	S	IN	56,132.00	11,107	22.213	41.37	186.24	13.72	61.80	55.09	248.04	3.06	8.94	13.89
Total Long Term						**56,132.00**	**11,107**	**22.213**	**41.37**	**186.24**	**13.72**	**61.80**	**55.09**	**248.04**	**3.06**	**8.94**	**13.89**
Spot Contract																	
Fire Star Energy Resources	P	K18027	T	S	EKY	6,262.55	11,499	22.997	63.39	275.66	0.00	0.00	63.39	275.66	1.57	14.83	6.53
Sunrise Coal LLC	P	J18025	R	U	IN	33,716.84	11,599	23.197	39.84	171.74	13.74	59.26	53.58	230.99	3.31	8.22	12.19
Total Spot						**39,979.39**	**11,583**	**23.166**	**43.53**	**187.90**	**11.59**	**50.04**	**55.12**	**237.94**	**3.04**	**9.26**	**11.30**
Total E.W. Brown						**96,111.39**	**11,305**	**22.609**	**42.27**	**186.95**	**12.84**	**56.78**	**55.10**	**243.73**	**3.05**	**9.07**	**12.82**

(a) PBDU as Designated by Symbol P, B, D, or U
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(d) Mine Type Designated by Symbol
S = Surface U = Underground

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Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	66,537.50	11,490	22.980	42.58	185.30	4.35	18.92	46.93	204.22	2.91	8.19	12.21
Alliance Coal LLC	P	J18003	B	U	WKY	57,017.10	11,472	22.944	38.00	165.62	4.34	18.91	42.34	184.53	2.92	8.25	12.29
Alliance Coal LLC	P	J18009	B	U	WKY	11,813.60	11,462	22.923	36.14	157.66	4.36	19.00	40.50	176.66	2.90	8.21	12.29
Eagle River Coal LLC	P	J16005	B	S	IL	33,499.29	12,653	25.306	52.64	208.00	4.64	18.35	57.28	226.35	3.45	8.65	6.50
Foresight Coal Sales LLC	P	J16018	B	U	WKY	6,508.00	11,902	23.804	41.49	174.29	5.33	22.39	46.82	196.68	2.83	8.48	9.95
Foresight Coal Sales LLC	P	J16018	B	U	IL	51,119.23	11,861	23.722	42.41	178.78	4.33	18.25	46.74	197.03	2.68	8.43	10.28
Knight Hawk Coal LLC	P	J18005	B	U	IL	40,193.81	11,275	22.550	35.56	157.69	8.35	37.04	43.91	194.73	3.07	8.54	12.15
Rhino Energy LLC	P	J14001	B	U	WKY	28,318.70	11,325	22.651	37.18	164.12	4.21	18.61	41.39	182.73	2.54	8.18	13.22
The American Coal Company	P	J16006	B	U	WV	159,227.00	12,867	25.733	41.69	162.01	5.05	19.64	46.74	181.65	3.88	8.61	5.44
The American Coal Company	P	J16006	B	U	WKY	6,512.00	11,840	23.679	39.07	165.02	5.27	22.25	44.34	187.27	2.74	8.12	10.87
The American Coal Company	P	J16006	B	U	IL	8,409.10	11,922	23.843	40.00	167.77	4.37	18.33	44.37	186.10	2.71	8.49	9.74
The American Coal Company	P	J17004	B	U	WV	14,523.80	12,919	25.838	33.95	131.38	5.00	19.35	38.95	150.73	3.97	8.47	5.30
The American Coal Company	P	J17004	B	U	WKY	6,508.00	11,837	23.675	34.41	145.34	5.28	22.33	39.69	167.67	2.77	8.30	10.73
The American Coal Company	P	J17004	B	U	IL	24,996.32	11,965	23.930	35.05	146.45	4.34	18.17	39.39	164.62	2.70	8.42	9.61
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	42,028.00	11,842	23.684	42.51	179.50	5.29	22.32	47.80	201.82	2.82	8.60	10.15
Total Long Term						**557,211.45**	**12,066**	**24.131**	**40.77**	**168.96**	**4.97**	**20.59**	**45.74**	**189.55**	**3.20**	**8.45**	**9.26**
Spot Contract																	
Contura Coal Sales LLC	P	J17001	B	U	PA	4,671.40	12,712	25.424	36.74	144.50	10.07	39.61	46.81	184.11	2.40	9.69	6.63
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	12,955.50	11,242	22.485	38.35	170.57	3.57	15.87	41.92	186.44	2.88	9.05	13.11
Total Spot						**17,626.90**	**11,632**	**23.263**	**37.92**	**163.02**	**5.30**	**22.74**	**43.22**	**185.76**	**2.75**	**9.22**	**11.39**
Ghent High Sulfur Coal						**574,838.35**	**12,052**	**24.105**	**40.68**	**168.79**	**4.98**	**20.65**	**45.66**	**189.44**	**3.18**	**8.47**	**9.33**
Ghent Middlings																	
Spot Contract																	
Arch Coal Sales Company Inc.	P	J17003	B	S	WV	1,550.05	11,029	22.058	32.93	149.30	3.26	14.78	36.19	164.08	2.64	17.68	7.33
Total Spot						**1,550.05**	**11,029**	**22.058**	**32.93**	**149.30**	**3.26**	**14.78**	**36.19**	**164.08**	**2.64**	**17.68**	**7.33**
Ghent Middlings						**1,550.05**	**11,029**	**22.058**	**32.93**	**149.30**	**3.26**	**14.78**	**36.19**	**164.08**	**2.64**	**17.68**	**7.33**
Total Ghent						**576,388.40**	**12,050**	**24.099**	**40.66**	**168.74**	**4.98**	**20.64**	**45.64**	**189.38**	**3.18**	**8.50**	**9.32**

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Conroy

(a) PBDU as Designated by Symbol P, B, D, or U
P= Producer B= Broker D= Distributor U-Utility

(b) POCN = Purchase Order or Contract Number

(c) MT = Mode of Transportation Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	47,752.47	8,861	17.723	12.02	67.80	26.93	151.99	38.95	219.79	0.35	5.56	26.68
Total Long Term						**47,752.47**	**8,861**	**17.723**	**12.02**	**67.80**	**26.93**	**151.99**	**38.95**	**219.79**	**0.35**	**5.56**	**26.68**
Total Trimble County / KU						**47,752.47**	**8,861**	**17.723**	**12.02**	**67.80**	**26.93**	**151.99**	**38.95**	**219.79**	**0.35**	**5.56**	**26.68**
Total Kentucky Utilities						**720,252.26**	**11,739**	**23.478**	**38.98**	**166.03**	**6.54**	**27.86**	**45.52**	**193.89**	**2.98**	**8.38**	**10.94**

(a) PBDU as Designated by Symbol P, B, D, or U
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	U	IN	55,805.26	11,507	23.014	39.24	170.49	7.33	31.86	46.57	202.35	3.46	9.20	11.81
Peabody COALSALES LLC	P	J19003	R	S	IN	11,210.00	11,112	22.224	38.41	172.84	8.43	37.91	46.84	210.75	3.17	8.84	13.96
		Total Long Term				**67,015.26**	**11,441**	**22.882**	**39.10**	**170.87**	**7.51**	**32.85**	**46.61**	**203.72**	**3.41**	**9.14**	**12.17**
Total E.W. Brown						**67,015.26**	**11,441**	**22.882**	**39.10**	**170.87**	**7.51**	**32.85**	**46.61**	**203.72**	**3.41**	**9.14**	**12.17**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	82,127.80	11,494	22.988	44.39	193.09	4.40	19.15	48.79	212.24	2.99	8.74	11.94
Alliance Coal LLC	P	J18003	B	U	WKY	42,167.10	11,520	23.040	40.01	173.66	4.39	19.04	44.40	192.70	3.01	8.75	11.72
Alliance Coal LLC	P	J18009	B	U	WKY	52,969.10	11,529	23.059	37.26	161.57	4.35	18.89	41.61	180.46	3.02	8.69	11.73
Foresight Coal Sales LLC	P	J16018	B	U	IL	12,151.98	12,030	24.061	44.98	186.96	4.38	18.18	49.36	205.14	2.77	7.95	9.59
Hartshorne Mining Group LLC	P	J18001	B	U	WKY	3,102.50	11,978	23.956	43.07	179.80	4.25	17.74	47.32	197.54	3.16	10.24	8.17
Knight Hawk Coal LLC	P	J18005	B	U	IL	25,899.03	11,218	22.437	36.98	164.81	8.51	37.93	45.49	202.74	3.08	8.75	12.33
Peabody COALSALES LLC	P	J19003	B	S	IN	8,240.00	11,102	22.204	41.49	186.84	3.63	16.35	45.12	203.19	3.21	8.89	14.08
Rhino Energy LLC	P	J14001	B	U	WKY	28,371.20	11,393	22.786	38.23	167.80	4.26	18.68	42.49	186.48	2.67	8.41	12.72
The American Coal Company	P	J16006	B	U	WV	65,016.50	12,844	25.689	41.57	161.81	5.05	19.68	46.62	181.49	4.03	8.30	5.89
The American Coal Company	P	J16006	B	U	IL	13,835.74	12,009	24.018	40.62	169.12	4.41	18.34	45.03	187.46	2.73	8.05	9.62
The American Coal Company	P	J17004	B	U	IL	23,805.02	12,000	23.999	37.15	154.80	4.39	18.28	41.54	173.08	2.73	7.93	9.83
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	31,948.00	11,723	23.445	45.00	191.94	5.37	22.91	50.37	214.85	2.76	9.77	9.96
White Stallion Energy LLC	P	J19002	B	S	IL	29,678.20	12,744	25.488	43.46	170.51	4.67	18.32	48.13	188.83	3.63	8.54	6.40
		Total Long Term				**419,312.17**	**11,850**	**23.699**	**41.13**	**173.56**	**4.82**	**20.31**	**45.95**	**193.87**	**3.15**	**8.63**	**10.24**
Total Ghent						**419,312.17**	**11,850**	**23.699**	**41.13**	**173.56**	**4.82**	**20.31**	**45.95**	**193.87**	**3.15**	**8.63**	**10.24**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	38,305.35	8,838	17.676	12.63	71.47	26.28	148.65	38.91	220.12	0.29	5.70	26.78
		Total Long Term				**38,305.35**	**8,838**	**17.676**	**12.63**	**71.47**	**26.28**	**148.65**	**38.91**	**220.12**	**0.29**	**5.70**	**26.78**
Total Trimble County / KU						**38,305.35**	**8,838**	**17.676**	**12.63**	**71.47**	**26.28**	**148.65**	**38.91**	**220.12**	**0.29**	**5.70**	**26.78**
Total Kentucky Utilities						**524,632.78**	**11,578**	**23.155**	**38.79**	**167.53**	**6.73**	**29.05**	**45.52**	**196.58**	**2.97**	**8.48**	**11.69**

Case No. 2020-00349
Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation3
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	56,050.00	11,268	22.536	39.77	176.49	8.66	38.43	48.43	214.92	3.27	8.40	13.49
		Total Long Term				**56,050.00**	**11,268**	**22.536**	**39.77**	**176.49**	**8.66**	**38.43**	**48.43**	**214.92**	**3.27**	**8.40**	**13.49**
Total E.W. Brown						**56,050.00**	**11,268**	**22.536**	**39.77**	**176.49**	**8.66**	**38.43**	**48.43**	**214.92**	**3.27**	**8.40**	**13.49**

Case No. 2020-00349
Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2020

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J18003	B	U	WKY	4,759.32	11,525	23.050	42.62	184.90	3.95	17.13	46.57	202.03	2.66	8.81	11.81
Alliance Coal LLC	P	J18009	B	U	WKY	98,783.99	11,522	23.045	39.14	169.85	4.04	17.53	43.18	187.38	2.93	8.89	11.84
Alliance Coal LLC	P	J18009	B	U	WV	64,411.70	12,732	25.464	41.46	162.82	5.32	20.90	46.78	183.72	2.91	8.41	6.14
Alliance Coal LLC	P	J14001B	B	U	WKY	19,050.36	11,474	22.948	40.14	174.90	4.16	18.13	44.30	193.03	2.95	9.00	11.99
Contura Coal Sales LLC	P	J20001	B	U	PA	9,444.75	13,097	26.195	40.47	154.48	9.21	35.16	49.68	189.64	2.67	8.24	5.55
Hartshorne Mining Group LLC	P	J18001	B	U	WKY	30,442.50	11,538	23.076	41.71	180.75	4.13	17.92	45.84	198.67	2.79	12.06	9.34
Knight Hawk Coal LLC	P	J18005	B	U	IL	16,127.20	11,173	22.346	37.28	166.82	7.74	34.64	45.02	201.46	3.02	8.67	12.80
The American Coal Company	P	J16006	B	U	WV	71,682.90	12,807	25.614	41.94	163.76	4.71	18.37	46.65	182.13	4.03	8.77	5.95
The American Coal Company	P	J16006	B	U	IL	16,649.05	11,987	23.974	41.10	171.43	4.13	17.21	45.23	188.64	2.72	8.43	9.37
The American Coal Company	P	J17004	B	U	IL	49,859.88	11,967	23.935	39.35	164.39	4.11	17.19	43.46	181.58	2.69	8.49	9.45
Western Kentucky Minerals Inc.	P	J20006	B	S	WKY	17,540.30	11,025	22.050	34.61	156.96	3.29	14.93	37.90	171.89	2.72	9.50	14.13
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	33,256.00	11,823	23.646	44.40	187.79	4.99	21.08	49.39	208.87	2.51	9.01	10.32
White Stallion Energy LLC	P	J19002	B	S	IL	12,555.82	12,553	25.106	40.66	161.96	4.33	17.22	44.99	179.18	3.75	9.65	6.27
		Total Long Term				**444,563.77**	**12,024**	**24.048**	**40.50**	**168.42**	**4.65**	**19.32**	**45.15**	**187.74**	**3.04**	**8.99**	**9.26**
Total Ghent						**444,563.77**	**12,024**	**24.048**	**40.50**	**168.42**	**4.65**	**19.32**	**45.15**	**187.74**	**3.04**	**8.99**	**9.26**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order
or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Jul - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J20002	B/R	S	WY	68,942.27	8,849	17.699	12.37	69.89	25.05	141.53	37.42	211.42	0.28	5.20	27.51
		Total Long Term				**68,942.27**	**8,849**	**17.699**	**12.37**	**69.89**	**25.05**	**141.53**	**37.42**	**211.42**	**0.28**	**5.20**	**27.51**
Total Trimble County / KU						**68,942.27**	**8,849**	**17.699**	**12.37**	**69.89**	**25.05**	**141.53**	**37.42**	**211.42**	**0.28**	**5.20**	**27.51**
Total Kentucky Utilities						**569,556.04**	**11,565**	**23.130**	**37.02**	**160.06**	**7.52**	**32.48**	**44.54**	**192.54**	**2.73**	**8.48**	**11.88**

(b) Designated by symbol
P= Producer D= Distributor
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(d) MT = Mode of Transportation3
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
Bowie Refined Coal LLC	P	K14037	T	S	6	KY	3,880.83	11,739	23.478	59.69	254.23	0.00	0.00	59.69	254.23	1.28	12.08	7.75
COALSALES LLC	P	J16007	R	S	8	IN	44,657.00	11,291	22.582	34.99	154.96	18.87	83.56	53.86	238.52	3.23	7.76	14.13
Triad Mining LLC	P	J15002	R	S	8	IN	55,804.95	11,607	23.213	43.25	186.31	17.27	74.40	60.52	260.71	3.47	7.85	12.34
		Total Long Term					**104,342.78**	**11,477**	**22.953**	**40.33**	**175.69**	**17.31**	**75.43**	**57.64**	**251.12**	**3.29**	**7.97**	**12.93**
Total E.W. Brown							**104,342.78**	**11,477**	**22.953**	**40.33**	**175.69**	**17.31**	**75.43**	**57.64**	**251.12**	**3.29**	**7.97**	**12.93**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J12007	B	U	10	KY	73,188.48	11,438	22.876	46.36	202.63	3.70	16.18	50.06	218.81	2.96	8.30	12.27
Alliance Coal LLC	P	J16008	B	U	8	IN	26,809.70	11,519	23.038	54.59	236.96	3.70	16.06	58.29	253.02	1.37	5.94	14.91
Armstrong Coal Sales	P	J16003	B	S	10	KY	71,289.00	11,295	22.590	37.36	165.36	4.51	19.97	41.87	185.33	3.22	11.16	10.69
Armstrong Coal Sales	P	J14010B	B	S	10	KY	12,592.00	11,238	22.477	42.91	190.91	4.51	20.06	47.42	210.97	3.11	11.48	10.75
Armstrong Coal Sales	P	J07032B	B	S	10	KY	82,344.00	11,274	22.548	27.44	121.71	4.51	20.00	31.95	141.71	3.36	10.79	11.09
Armstrong Coal Sales	P	J16017	B	S	10	KY	23,880.00	11,263	22.526	36.10	160.23	4.51	20.02	40.61	180.25	3.34	10.95	10.97
COALSALES LLC	P	J16007	B	S	8	IN	44,570.00	11,097	22.193	38.79	174.76	3.02	13.61	41.81	188.37	3.10	8.57	14.15
Eagle River Coal LLC	P	J16005	B	S	8	IL	20,922.43	12,674	25.348	45.13	178.06	3.94	15.54	49.07	193.60	3.89	9.74	5.44
Rhino Energy LLC	P	J14001	B	U	10	KY	88,399.40	11,377	22.754	48.54	213.33	3.59	15.77	52.13	229.10	2.63	8.44	12.83
		Total Long Term					**443,995.01**	**11,386**	**22.773**	**40.87**	**179.46**	**3.97**	**17.43**	**44.84**	**196.89**	**3.00**	**9.43**	**11.82**
Spot Contract																		
Alliance Coal LLC	P	J16001B	B	U	10	KY	7,946.90	11,469	22.937	46.09	200.93	3.70	16.13	49.79	217.06	2.98	8.32	12.05
Foresight Coal Sales LLC	P	J16009	B	U	8	IL	77,282.76	11,635	23.269	42.51	182.70	3.70	15.90	46.21	198.60	2.80	8.69	11.00
Kolmar Americas Inc	B	J16019	B	S	12	WV	6,206.97	10,541	21.083	33.52	158.99	2.79	13.23	36.31	172.22	0.83	19.38	8.59
Peabody COALTRADE LLC	B	J16016	B	S	4	WV	8,083.65	10,785	21.571	25.49	118.17	5.11	23.69	30.60	141.86	1.17	22.16	5.07
The American Coal Company	P	J16002	B	U	8	IL	44,486.44	11,778	23.557	48.19	204.59	3.70	15.71	51.89	220.30	2.55	8.80	10.74
		Total Spot					**144,006.72**	**11,575**	**23.150**	**43.12**	**186.27**	**3.74**	**16.16**	**46.86**	**202.43**	**2.56**	**9.92**	**10.54**
Total Ghent							**588,001.73**	**11,433**	**22.865**	**41.42**	**181.15**	**3.91**	**17.11**	**45.33**	**198.26**	**2.89**	**9.55**	**11.51**
Total Kentucky Utilities							**692,344.51**	**11,439**	**22.878**	**41.26**	**180.33**	**5.93**	**25.92**	**47.19**	**206.25**	**2.95**	**9.31**	**11.72**

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Conroy

(b) Designated by symbol
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(d) MT = Mode of Transportation2
Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
COALSALES LLC	P	J16007	R	U		IN	11,162.65	11,552	23.104	38.48	166.56	17.96	77.73	56.44	244.29	3.51	8.53	12.48
Sunrise Coal LLC	P	J15002B	R	U		IN	55,824.28	11,601	23.202	38.60	166.38	22.02	94.91	60.62	261.29	3.57	7.65	12.60
		Total Long Term					**66,986.93**	**11,593**	**23.185**	**38.58**	**166.41**	**21.35**	**92.06**	**59.93**	**258.47**	**3.56**	**7.80**	**12.58**
Total E.W. Brown							**66,986.93**	**11,593**	**23.185**	**38.58**	**166.41**	**21.35**	**92.06**	**59.93**	**258.47**	**3.56**	**7.80**	**12.58**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J16008	B	U	WKY	KY	23,039.60	11,509	23.018	49.04	213.04	4.05	17.60	53.09	230.64	3.02	8.12	11.85
Alliance Coal LLC	P	J17002	B	U	WKY	KY	85,594.40	11,529	23.059	41.11	178.28	4.05	17.56	45.16	195.84	3.02	8.21	11.72
Armstrong Coal Sales	P	J16003	B	S	WKY	KY	34,996.00	11,452	22.903	40.37	176.25	4.93	21.53	45.30	197.78	2.83	10.79	10.26
Armstrong Coal Sales	P	J14010B	B	S	WKY	KY	7,934.00	11,444	22.889	44.74	195.45	4.93	21.54	49.67	216.99	2.89	10.48	10.48
Armstrong Coal Sales	P	J07032B	B	S	WKY	KY	44,562.00	11,367	22.734	28.69	126.18	4.93	21.69	33.62	147.87	3.16	10.86	10.63
COALSALES LLC	P	J16007	B	S		IN	50,336.00	11,077	22.154	41.48	187.24	3.31	14.94	44.79	202.18	3.12	8.73	14.26
Eagle River Coal LLC	P	J16005	B	S		IL	40,632.76	12,707	25.415	47.43	186.64	4.31	16.96	51.74	203.60	3.44	8.01	6.93
Foresight Coal Sales LLC	P	J16018	B	U		IL	49,624.07	11,925	23.851	40.94	171.64	4.05	16.98	44.99	188.62	2.71	7.91	10.38
Rhino Energy LLC	P	J14001	B	U	WKY	KY	28,039.40	11,267	22.534	46.98	208.51	3.93	17.44	50.91	225.95	2.62	8.30	13.71
The American Coal Company	P	J16006	B	U		IL	54,831.11	11,682	23.363	43.62	186.72	4.05	17.34	47.67	204.06	2.56	8.85	11.32
		Total Long Term					**419,589.34**	**11,612**	**23.224**	**41.59**	**179.08**	**4.16**	**17.92**	**45.75**	**197.00**	**2.94**	**8.84**	**11.23**
Spot Contract																		
Contura Coal Sales LLC	P	J17001	B	U		PA	34,304.45	13,144	26.288	38.46	146.29	9.43	35.88	47.89	182.17	2.49	7.48	6.03
		Total Spot					**34,304.45**	**13,144**	**26.288**	**38.46**	**146.29**	**9.43**	**35.88**	**47.89**	**182.17**	**2.49**	**7.48**	**6.03**
Total Ghent							**453,893.79**	**11,728**	**23.455**	**41.35**	**176.31**	**4.56**	**19.44**	**45.91**	**195.75**	**2.91**	**8.74**	**10.84**

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(d) MT = Mode of Transportation2
Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S		WY	66,739.33	8,974	17.948	12.78	71.19	28.11	156.64	40.89	227.83	0.26	4.99	26.47
		Total Long Term					**66,739.33**	**8,974**	**17.948**	**12.78**	**71.19**	**28.11**	**156.64**	**40.89**	**227.83**	**0.26**	**4.99**	**26.47**
Total Trimble County / KU							**66,739.33**	**8,974**	**17.948**	**12.78**	**71.19**	**28.11**	**156.64**	**40.89**	**227.83**	**0.26**	**4.99**	**26.47**
Total Kentucky Utilities							**587,620.05**	**11,400**	**22.799**	**37.79**	**165.76**	**9.15**	**40.13**	**46.94**	**205.89**	**2.68**	**8.21**	**12.81**

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Conroy

(b) Designated by symbol
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation3 Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	S	IN	44,712.00	11,100	22.201	41.17	185.45	14.83	66.82	56. 01	252.28	3.10	8.74	14.27
Total Long Term						**44,712.00**	**11,100**	**22.201**	**41.17**	**185.45**	**14.83**	**66.82**	**56.01**	**252.28**	**3.10**	**8.74**	**14.27**
Spot Contract																	
Fire Star Energy Resources	P	K18027	T	S	EKY	7,246.27	11,667	23.335	64.48	276.32	0.00	0.00	64.48	276.32	1.10	13.64	6.82
Sunrise Coal LLC	P	J18025	R	U	IN	33,725.38	11,671	23.343	39.94	171.12	14.84	63.57	54.79	234.69	3.33	7.96	12.07
Total Spot						**40,971.65**	**11,671**	**23.341**	**44.28**	**189.72**	**12.22**	**52.33**	**56.50**	**242.05**	**2.93**	**8.96**	**11.14**
Total E.W. Brown						**85,683.65**	**11,373**	**22.746**	**42.66**	**187.55**	**13.58**	**59.70**	**56.24**	**247.25**	**3.02**	**8.85**	**12.78**

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(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	92,681.60	11,572	23.143	42.81	184.97	4.37	18.89	47.18	203.86	2.99	8.21	11.49
Alliance Coal LLC	P	J18003	B	U	WKY	64,329.60	11,554	23.108	38.20	165.29	4.37	18.92	42.57	184.21	2.97	8.30	11.55
Alliance Coal LLC	P	J18009	B	U	WKY	11,596.70	11,557	23.115	36.18	156.54	4.37	18.91	40.55	175.45	3.00	8.30	11.51
Eagle River Coal LLC	P	J16005	B	S	IL	32,904.38	12,624	25.248	52.53	208.04	4.66	18.46	57.19	226.50	3.79	9.09	6.38
Foresight Coal Sales LLC	P	J16018	B	U	WKY	17,548.00	11,894	23.787	41.63	175.03	5.33	22.40	46.96	197.43	2.68	7.97	10.66
Foresight Coal Sales LLC	P	J16018	B	U	IL	50,648.82	11,948	23.895	42.71	178.75	4.37	18.28	47.08	197.03	2.79	7.92	10.13
Knight Hawk Coal LLC	P	J18005	B	U	IL	43,631.14	11,222	22.444	35.40	157.72	8.39	37.38	43.79	195.10	3.13	9.12	11.85
Rhino Energy LLC	P	J14001	B	U	WKY	14,184.10	11,422	22.844	37.25	163.07	4.24	18.56	41.49	181.63	2.58	7.98	12.86
The American Coal Company	P	J16006	B	U	WV	112,040.00	12,871	25.743	42.01	163.19	5.06	19.65	47.07	182.84	3.91	8.47	5.61
The American Coal Company	P	J16006	B	U	IL	24,690.76	11,942	23.884	40.19	168.27	4.37	18.30	44.56	186.57	2.75	7.92	10.16
The American Coal Company	P	J17004	B	U	WV	22,916.00	12,799	25.599	34.68	135.47	5.06	19.76	39.74	155.23	4.01	8.91	5.63
The American Coal Company	P	J17004	B	U	WKY	3,228.00	11,767	23.534	33.70	143.20	5.33	22.65	39.03	165.85	2.74	8.41	10.94
The American Coal Company	P	J17004	B	U	IL	65,200.78	11,927	23.855	35.42	148.50	4.37	18.32	39.79	166.82	2.75	8.05	10.17
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	35,432.00	11,796	23.591	42.36	179.56	5.33	22.59	47.69	202.15	2.73	9.32	10.08
		Total Long Term				**591,031.88**	**12,004**	**24.007**	**40.53**	**168.81**	**4.93**	**20.53**	**45.46**	**189.34**	**3.17**	**8.42**	**9.50**
Spot Contract																	
Contura Coal Sales LLC	P	J17001	B	U	PA	4,685.15	12,875	25.750	37.63	146.15	10.19	39.58	47.82	185.73	2.65	9.17	6.15
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	1,614.00	11,268	22.536	38.20	169.50	3.58	15.89	41.78	185.39	3.24	8.04	14.41
		Total Spot				**6,299.15**	**12,463**	**24.927**	**37.78**	**151.56**	**8.50**	**34.09**	**46.28**	**185.65**	**2.80**	**8.88**	**8.27**
Total Ghent						**597,331.03**	**12,008**	**24.017**	**40.50**	**168.62**	**4.96**	**20.68**	**45.46**	**189.30**	**3.16**	**8.42**	**9.49**

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(d) Mine Type Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2018

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	52,945.08	8,830	17.661	11.97	67.80	26.73	151.33	38.70	219.13	0.31	5.09	27.19
Total Long Term						**52,945.08**	**8,830**	**17.661**	**11.97**	**67.80**	**26.73**	**151.33**	**38.70**	**219.13**	**0.31**	**5.09**	**27.19**
Total Trimble County / KU						**52,945.08**	**8,830**	**17.661**	**11.97**	**67.80**	**26.73**	**151.33**	**38.70**	**219.13**	**0.31**	**5.09**	**27.19**
Total Kentucky Utilities						**735,959.76**	**11,706**	**23.412**	**38.70**	**165.29**	**6.61**	**28.27**	**45.31**	**193.56**	**2.94**	**8.23**	**11.14**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	11,210.00	10,832	21.664	37.68	173.92	8.41	38.81	46.09	212.73	2.97	8.33	16.29
		Total Long Term				**11,210.00**	**10,832**	**21.664**	**37.68**	**173.92**	**8.41**	**38.81**	**46.09**	**212.73**	**2.97**	**8.33**	**16.29**
Total E.W. Brown						**11,210.00**	**10,832**	**21.664**	**37.68**	**173.92**	**8.41**	**38.81**	**46.09**	**212.73**	**2.97**	**8.33**	**16.29**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1 Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	55,197.20	11,533	23.067	44.61	193.39	4.43	19.20	49.04	212.59	2.98	8.72	11.69
Alliance Coal LLC	P	J18003	B	U	WKY	45,344.40	11,527	23.054	40.11	173.98	4.43	19.20	44.54	193.18	3.02	8.76	11.64
Alliance Coal LLC	P	J18009	B	U	WKY	44,604.70	11,523	23.046	37.30	161.87	4.43	19.22	41.73	181.09	3.00	8.78	11.73
Hartshorne Mining Group LLC	P	J18001	B	U	WKY	23,284.70	11,678	23.355	42.29	181.07	4.30	18.41	46.59	199.48	2.88	12.11	8.19
Knight Hawk Coal LLC	P	J18005	B	U	IL	33,907.66	11,232	22.464	36.85	164.05	8.51	37.88	45.36	201.93	3.08	8.90	12.08
Peabody COALSALES LLC	P	J19003	B	S	IN	3,401.00	11,067	22.134	41.49	187.43	3.63	16.40	45.12	203.83	3.16	8.84	14.33
Rhino Energy LLC	P	J14001	B	U	WKY	29,960.00	11,388	22.777	38.29	168.13	4.30	18.88	42.59	187.01	2.60	8.43	12.89
The American Coal Company	P	J16006	B	U	WV	85,568.75	12,875	25.750	41.56	161.40	5.13	19.92	46.69	181.32	4.06	8.62	5.48
The American Coal Company	P	J16006	B	U	IL	11,868.73	12,073	24.146	40.73	168.68	4.43	18.35	45.16	187.03	2.72	7.96	9.50
The American Coal Company	P	J17004	B	U	IL	36,863.19	12,068	24.135	37.32	154.65	4.43	18.35	41.75	173.00	2.73	7.72	9.68
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	43,028.00	11,743	23.486	45.17	192.35	5.40	22.99	50.57	215.34	2.71	10.05	9.71
White Stallion Energy LLC	P	J19002	B	S	IL	8,011.16	12,817	25.633	43.93	171.37	4.73	18.45	48.66	189.82	3.52	8.29	6.25
		Total Long Term				**421,039.49**	**11,882**	**23.763**	**40.80**	**171.70**	**4.98**	**20.96**	**45.78**	**192.66**	**3.14**	**8.91**	**9.83**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	1,663.80	11,208	22.416	38.47	171.61	3.63	16.20	42.10	187.81	1.02	8.88	13.88
		Total Spot				**1,663.80**	**11,208**	**22.416**	**38.47**	**171.61**	**3.63**	**16.20**	**42.10**	**187.81**	**1.02**	**8.88**	**13.88**
Total Ghent						**422,703.29**	**11,879**	**23.758**	**40.79**	**171.70**	**4.98**	**20.95**	**45.77**	**192.65**	**3.13**	**8.91**	**9.84**

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(b) Designated by symbol
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2019

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	87,005.35	8,878	17.757	12.69	71.47	26.45	148.98	39.14	220.45	0.26	5.08	26.93
		Total Long Term				**87,005.35**	**8,878**	**17.757**	**12.69**	**71.47**	**26.45**	**148.98**	**39.14**	**220.45**	**0.26**	**5.08**	**26.93**
Total Trimble County / KU						**87,005.35**	**8,878**	**17.757**	**12.69**	**71.47**	**26.45**	**148.98**	**39.14**	**220.45**	**0.26**	**5.08**	**26.93**
Total Kentucky Utilities						**520,918.64**	**11,355**	**22.711**	**36.03**	**158.65**	**8.64**	**38.04**	**44.67**	**196.69**	**2.65**	**8.26**	**12.84**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	44,722.00	11,231	22.461	39.59	176.26	8.66	38.56	48.25	214.82	3.17	8.50	13.71
		Total Long Term				**44,722.00**	**11,231**	**22.461**	**39.59**	**176.26**	**8.66**	**38.56**	**48.25**	**214.82**	**3.17**	**8.50**	**13.71**
Total E.W. Brown						**44,722.00**	**11,231**	**22.461**	**39.59**	**176.26**	**8.66**	**38.56**	**48.25**	**214.82**	**3.17**	**8.50**	**13.71**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J18003	B	U	WKY	63,984.14	11,543	23.087	42.66	184.80	3.95	17.11	46.61	201.91	2.93	8.99	11.79
Alliance Coal LLC	P	J18009	B	U	WKY	47,955.10	11,569	23.138	39.16	169.25	3.95	17.07	43.11	186.32	2.93	8.92	11.66
Alliance Coal LLC	P	J18009	B	U	WV	139,587.10	12,551	25.103	41.09	163.69	5.22	20.79	46.31	184.48	2.78	8.99	6.79
Alliance Coal LLC	P	J14001B	B	U	WKY	28,751.69	11,559	23.118	40.18	173.83	3.95	17.08	44.13	190.91	2.91	8.98	11.59
Contura Coal Sales LLC	P	J20001	B	U	PA	24,231.75	12,902	25.805	40.47	156.82	9.21	35.69	49.68	192.51	2.82	8.89	6.22
Knight Hawk Coal LLC	P	J18005	B	U	IL	17,852.13	11,223	22.446	37.38	166.52	7.58	33.77	44.96	200.29	3.07	8.55	12.66
The American Coal Company	P	J16006	B	U	WV	23,694.70	12,806	25.612	41.90	163.60	4.57	17.84	46.47	181.44	4.07	8.89	5.76
The American Coal Company	P	J16006	B	U	IL	14,463.37	11,972	23.943	41.01	171.26	3.95	16.50	44.96	187.76	2.68	8.68	9.27
The American Coal Company	P	J17004	B	U	IL	65,136.64	11,970	23.940	39.30	164.16	3.95	16.50	43.25	180.66	2.72	8.74	9.21
Western Kentucky Minerals Inc.	P	J20006	B	S	WKY	23,933.20	11,100	22.200	34.73	156.44	3.23	14.55	37.96	170.99	3.04	9.55	13.48
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	17,652.00	11,837	23.673	42.83	180.93	4.82	20.36	47.65	201.29	2.47	8.83	10.43
White Stallion Energy LLC	P	J19002	B	S	IL	7,871.10	12,427	24.855	39.96	160.79	4.21	16.94	44.17	177.73	3.93	9.79	6.67
		Total Long Term				**475,112.92**	**12,038**	**24.076**	**40.40**	**167.80**	**4.76**	**19.76**	**45.16**	**187.56**	**2.91**	**8.95**	**9.26**
Total Ghent						**475,112.92**	**12,038**	**24.076**	**40.40**	**167.80**	**4.76**	**19.76**	**45.16**	**187.56**	**2.91**	**8.95**	**9.26**

(b) Designated by symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Aug - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J20002	B/R	S	WY	63,562.40	8,923	17.847	12.47	69.89	24.78	138.84	37.25	208.73	0.33	5.12	26.87
		Total Long Term				**63,562.40**	**8,923**	**17.847**	**12.47**	**69.89**	**24.78**	**138.84**	**37.25**	**208.73**	**0.33**	**5.12**	**26.87**
Total Trimble County / KU						**63,562.40**	**8,923**	**17.847**	**12.47**	**69.89**	**24.78**	**138.84**	**37.25**	**208.73**	**0.33**	**5.12**	**26.87**
Total Kentucky Utilities						**583,397.32**	**11,637**	**23.274**	**37.29**	**160.24**	**7.24**	**31.11**	**44.53**	**191.35**	**2.65**	**8.50**	**11.52**

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Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(b) Designated by symbol
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(d) MT = Mode of Transportation3
Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Sep - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
Bowie Refined Coal LLC	P	K14037	T	S	6	KY	5,324.74	11,837	23.673	60.05	253.67	0.00	0.00	60.05	253.67	1.45	12.94	6.61
COALSALES LLC	P	J16007	R	S	8	IN	22,420.00	11,345	22.689	34.13	150.42	18.87	83.17	53.00	233.59	3.40	8.15	13.52
Triad Mining LLC	P	J15002	R	S	8	IN	54,146.20	11,715	23.430	43.68	186.45	17.27	73.71	60.95	260.16	3.49	8.04	11.44
		Total Long Term					**81,890.94**	**11,621**	**23.243**	**42.13**	**181.27**	**16.59**	**71.36**	**58.72**	**252.63**	**3.33**	**8.38**	**11.69**
Total E.W. Brown							**81,890.94**	**11,621**	**23.243**	**42.13**	**181.27**	**16.59**	**71.36**	**58.72**	**252.63**	**3.33**	**8.38**	**11.69**

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Conroy

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Sep - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J12007	B	U	10	KY	102,316.60	11,524	23.048	45.85	198.92	3.70	16.05	49.55	214.97	2.99	8.26	11.65
Alliance Coal LLC	P	J16008	B	U	8	IN	32,957.48	11,662	23.325	55.27	236.96	3.70	15.86	58.97	252.82	1.33	5.90	14.12
Armstrong Coal Sales	P	J16003	B	S	10	KY	68,503.00	11,241	22.483	37.17	165.33	4.51	20.06	41.68	185.39	3.23	11.24	10.90
Armstrong Coal Sales	P	J14010B	B	S	10	KY	4,784.00	11,339	22.678	43.29	190.91	4.51	19.89	47.80	210.80	3.12	11.67	10.25
Armstrong Coal Sales	P	J07032B	B	S	10	KY	62,258.00	11,271	22.542	27.47	121.84	4.51	20.01	31.98	141.85	3.35	10.84	11.13
Armstrong Coal Sales	P	J16017	B	S	10	KY	9,565.00	11,306	22.611	36.65	162.10	4.51	19.94	41.16	182.04	3.30	10.63	11.12
COALSALES LLC	P	J16007	B	S	8	IN	38,336.00	11,072	22.144	37.47	169.21	3.02	13.63	40.49	182.84	3.19	8.98	13.84
Eagle River Coal LLC	P	J16005	B	S	8	IL	22,005.58	12,705	25.410	45.17	177.77	3.94	15.51	49.11	193.28	3.90	9.45	5.43
Rhino Energy LLC	P	J14001	B	U	10	KY	77,546.30	11,384	22.767	48.60	213.47	3.59	15.77	52.19	229.24	2.60	8.45	12.72
		Total Long Term					**418,271.96**	**11,438**	**22.877**	**41.90**	**183.15**	**3.91**	**17.10**	**45.81**	**200.25**	**2.95**	**9.20**	**11.69**
Spot Contract																		
Alliance Coal LLC	P	J16001B	B	U	10	KY	3,209.50	11,509	23.018	46.54	202.21	3.70	16.07	50.24	218.28	3.00	8.51	11.45
Alliance Coal LLC	P	J16004	B	U	10	KY	7,958.60	11,532	23.064	47.69	206.76	3.70	16.04	51.39	222.80	3.00	8.18	11.65
Foresight Coal Sales LLC	P	J16009	B	U	8	IL	83,811.25	11,867	23.733	43.12	181.68	3.70	15.59	46.82	197.27	2.77	8.17	10.12
Kolmar Americas Inc	B	J16019	B	S	12	WV	4,541.35	10,629	21.258	32.67	153.67	2.79	13.13	35.46	166.80	0.75	18.92	8.35
Peabody COALTRADE LLC	B	J16016	B	S	4	WV	7,924.23	9,901	19.801	24.68	124.64	5.12	25.85	29.80	150.49	0.99	28.46	5.36
The American Coal Company	P	J16002	B	U	8	IL	47,937.38	11,812	23.623	48.47	205.17	3.70	15.66	52.17	220.83	2.51	8.63	10.71
		Total Spot					**155,382.31**	**11,689**	**23.377**	**43.83**	**187.48**	**3.74**	**16.02**	**47.57**	**203.50**	**2.56**	**9.66**	**10.12**
Total Ghent							**573,654.27**	**11,506**	**23.012**	**42.42**	**184.34**	**3.87**	**16.80**	**46.29**	**201.14**	**2.85**	**9.33**	**11.26**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Sep - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	48,070.30	8,980	17.959	11.67	64.97	27.25	151.76	38.92	216.73	0.26	4.89	26.66
		Total Long Term					**48,070.30**	**8,980**	**17.959**	**11.67**	**64.97**	**27.25**	**151.76**	**38.92**	**216.73**	**0.26**	**4.89**	**26.66**
Total Trimble County / KU							**48,070.30**	**8,980**	**17.959**	**11.67**	**64.97**	**27.25**	**151.76**	**38.92**	**216.73**	**0.26**	**4.89**	**26.66**
Total Kentucky Utilities							**703,615.51**	**11,347**	**22.694**	**40.29**	**177.52**	**6.94**	**30.60**	**47.23**	**208.12**	**2.73**	**8.92**	**12.36**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Sep - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	U	IN	22,243.10	11,582	23.164	38.86	167.75	17.96	77.53	56.82	245.28	3.42	8.42	12.16
COALSALES LLC	P	J16007	R	S	IN	11,210.00	11,402	22.804	38.86	170.39	19.62	86.04	58.48	256.43	3.81	8.32	12.85
Sunrise Coal LLC	P	J15002B	R	U	IN	44,927.36	11,564	23.128	38.51	166.50	22.02	95.20	60.53	261.70	3.40	8.28	12.47
		Total Long Term				**78,380.46**	**11,546**	**23.092**	**38.66**	**167.40**	**20.52**	**88.88**	**59.18**	**256.28**	**3.46**	**8.33**	**12.44**
Total E.W. Brown						**78,380.46**	**11,546**	**23.092**	**38.66**	**167.40**	**20.52**	**88.88**	**59.18**	**256.28**	**3.46**	**8.33**	**12.44**

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(b) Designated by symbol
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1 Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Sep - 2017

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J16001B	B	U	WKY	6,647.80	11,471	22.941	48.13	209.79	4.05	17.65	52.18	227.44	2.99	8.21	12.21
Alliance Coal LLC	P	J16008	B	U	WKY	5,128.10	11,534	23.068	49.16	213.12	4.05	17.56	53.21	230.68	3.04	8.15	11.77
Alliance Coal LLC	P	J17002	B	U	WKY	31,803.70	11,542	23.085	41.07	177.91	4.05	17.55	45.12	195.46	3.02	8.17	11.71
Armstrong Coal Sales	P	J16003	B	S	WKY	25,552.00	11,417	22.834	40.31	176.55	4.93	21.59	45.24	198.14	3.20	10.89	10.41
Armstrong Coal Sales	P	J14010B	B	S	WKY	1,618.00	11,611	23.222	45.39	195.45	4.93	21.24	50.32	216.69	2.70	8.67	11.34
Armstrong Coal Sales	P	J07032B	B	S	WKY	15,929.00	11,383	22.765	28.81	126.56	4.93	21.66	33.74	148.22	3.27	11.32	10.11
COALSALES LLC	P	J16007	B	S	IN	4,899.00	11,057	22.113	41.86	189.28	3.31	14.97	45.17	204.25	3.06	8.87	14.40
Eagle River Coal LLC	P	J16005	B	S	IL	21,520.52	12,645	25.289	47.40	187.45	4.31	17.04	51.71	204.49	3.59	8.48	6.94
Foresight Coal Sales LLC	P	J16018	B	U	IL	6,846.17	11,508	23.016	40.78	177.16	4.05	17.60	44.83	194.76	2.77	9.33	11.56
Rhino Energy LLC	P	J14001	B	U	WKY	23,290.50	11,265	22.530	46.83	207.88	3.93	17.44	50.76	225.32	2.56	8.41	13.52
The American Coal Company	P	J16006	B	U	IL	22,006.34	11,595	23.191	43.55	187.77	4.05	17.47	47.60	205.24	2.53	9.26	11.30
Total Long Term						**165,241.13**	**11,601**	**23.202**	**42.33**	**182.43**	**4.27**	**18.43**	**46.60**	**200.86**	**3.00**	**9.19**	**11.03**
Ghent High Sulfur Coal						**165,241.13**	**11,601**	**23.202**	**42.33**	**182.43**	**4.27**	**18.43**	**46.60**	**200.86**	**3.00**	**9.19**	**11.03**
Ghent Middlings																	
Spot Contract																	
Arch Coal Sales Company Inc.	P	J17003	B	U	WV	6,427.51	11,197	22.394	34.16	152.53	2.85	12.72	37.01	165.25	1.48	18.93	7.18
Total Spot						**6,427.51**	**11,197**	**22.394**	**34.16**	**152.53**	**2.85**	**12.72**	**37.01**	**165.25**	**1.48**	**18.93**	**7.18**
Ghent Middlings						**6,427.51**	**11,197**	**22.394**	**34.16**	**152.53**	**2.85**	**12.72**	**37.01**	**165.25**	**1.48**	**18.93**	**7.18**
Total Ghent						**171,668.64**	**11,586**	**23.171**	**42.02**	**181.35**	**4.22**	**18.22**	**46.24**	**199.57**	**2.95**	**9.56**	**10.88**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Sep - 2017

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J16012	B/R	S	WY	32,073.67	8,973	17.946	12.78	71.19	28.11	156.66	40.89	227.85	0.30	4.65	26.98
		Total Long Term				**32,073.67**	**8,973**	**17.946**	**12.78**	**71.19**	**28.11**	**156.66**	**40.89**	**227.85**	**0.30**	**4.65**	**26.98**
Total Trimble County / KU						**32,073.67**	**8,973**	**17.946**	**12.78**	**71.19**	**28.11**	**156.66**	**40.89**	**227.85**	**0.30**	**4.65**	**26.98**
Total Kentucky Utilities						**282,122.77**	**11,278**	**22.555**	**37.76**	**167.42**	**11.47**	**50.84**	**49.23**	**218.26**	**2.79**	**8.66**	**13.14**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
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Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	U	IN	22,314.55	11,305	22.611	41.53	183.66	13.76	60.88	55.29	244.54	3.07	9.46	12.99
COALSALES LLC	P	J16007	R	S	IN	11,210.00	11,017	22.034	41.53	188.47	13.78	62.52	55.31	250.99	3.23	9.07	14.67
		Total Long Term				**33,524.55**	**11,209**	**22.418**	**41.53**	**185.24**	**13.77**	**61.42**	**55.29**	**246.65**	**3.12**	**9.33**	**13.55**
Spot Contract																	
Fire Star Energy Resources	P	K18027	T	S	EKY	7,357.18	11,730	23.460	64.82	276.32	0.00	0.00	64.82	276.32	1.00	13.66	6.82
Sunrise Coal LLC	P	J18025	R	U	IN	55,911.16	11,480	22.960	37.11	161.65	15.53	67.65	52.65	229.30	3.30	8.38	12.73
		Total Spot				**63,268.34**	**11,509**	**23.018**	**40.34**	**175.24**	**13.73**	**59.64**	**54.06**	**234.87**	**3.03**	**8.99**	**12.05**
Total E.W. Brown						**96,792.89**	**11,405**	**22.810**	**40.75**	**178.64**	**13.74**	**60.24**	**54.49**	**238.89**	**3.06**	**9.11**	**12.57**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Sep - 2018

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	1,673.50	11,572	23.144	42.71	184.53	4.37	18.88	47.08	203.41	2.95	8.08	11.68
Alliance Coal LLC	P	J18003	B	U	WKY	13,007.30	11,531	23.062	38.18	165.56	4.37	18.95	42.55	184.51	2.98	8.29	11.68
Eagle River Coal LLC	P	J16005	B	S	IL	9,844.51	12,599	25.198	52.39	207.90	4.66	18.50	57.05	226.40	3.77	9.05	6.80
Foresight Coal Sales LLC	P	J16018	B	U	IL	1,763.70	11,959	23.918	42.92	179.47	4.37	18.27	47.29	197.74	2.79	7.48	10.47
Knight Hawk Coal LLC	P	J18005	B	U	IL	12,883.14	11,212	22.424	35.29	157.39	8.39	37.41	43.68	194.80	3.12	9.03	12.07
Rhino Energy LLC	P	J14001	B	U	WKY	6,308.70	11,297	22.594	37.24	164.81	4.24	18.77	41.48	183.58	2.56	8.32	13.42
The American Coal Company	P	J17004	B	U	WV	38,340.20	12,767	25.535	34.68	135.81	5.06	19.81	39.74	155.62	3.94	9.08	5.69
The American Coal Company	P	J17004	B	U	IL	20,296.12	12,059	24.118	35.68	147.93	4.37	18.12	40.05	166.05	2.70	7.49	9.94
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	6,448.00	11,876	23.752	41.92	176.50	5.33	22.44	47.25	198.94	2.69	9.07	9.83
		Total Long Term				**110,565.17**	**12,129**	**24.258**	**37.74**	**155.59**	**5.16**	**21.24**	**42.90**	**176.83**	**3.31**	**8.60**	**8.87**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	6,356.20	11,300	22.599	38.43	170.06	3.58	15.84	42.01	185.90	2.77	8.31	13.76
		Total Spot				**6,356.20**	**11,300**	**22.599**	**38.43**	**170.06**	**3.58**	**15.84**	**42.01**	**185.90**	**2.77**	**8.31**	**13.76**
Total Ghent						**116,921.37**	**12,084**	**24.167**	**37.78**	**156.33**	**5.07**	**20.96**	**42.85**	**177.29**	**3.28**	**8.59**	**9.13**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
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Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	41,433.15	8,934	17.869	12.11	67.80	26.03	145.64	38.14	213.44	0.34	5.34	26.40
		Total Long Term				**41,433.15**	**8,934**	**17.869**	**12.11**	**67.80**	**26.03**	**145.64**	**38.14**	**213.44**	**0.34**	**5.34**	**26.40**
Total Trimble County / KU						**41,433.15**	**8,934**	**17.869**	**12.11**	**67.80**	**26.03**	**145.64**	**38.14**	**213.44**	**0.34**	**5.34**	**26.40**
Total Kentucky Utilities						**255,147.41**	**11,315**	**22.630**	**34.74**	**153.51**	**9.11**	**40.28**	**43.85**	**193.79**	**2.72**	**8.26**	**13.24**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
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Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	55,932.00	11,135	22.270	38.11	171.14	8.40	37.69	46.51	208.83	3.19	8.76	14.04
		Total Long Term				**55,932.00**	**11,135**	**22.270**	**38.11**	**171.14**	**8.40**	**37.69**	**46.51**	**208.83**	**3.19**	**8.76**	**14.04**
Total E.W. Brown						**55,932.00**	**11,135**	**22.270**	**38.11**	**171.14**	**8.40**	**37.69**	**46.51**	**208.83**	**3.19**	**8.76**	**14.04**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Sep - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	26,189.30	11,640	23.281	44.78	192.34	4.43	19.03	49.21	211.37	2.94	8.37	11.38
Alliance Coal LLC	P	J18003	B	U	WKY	9,891.30	11,503	23.005	40.25	174.97	4.43	19.26	44.68	194.23	2.93	8.55	11.81
Alliance Coal LLC	P	J18009	B	U	WKY	21,378.70	11,551	23.101	37.33	161.59	4.43	19.17	41.76	180.76	2.93	8.56	11.68
Alliance Coal LLC	P	J14001B	B	U	WKY	8,090.60	11,690	23.380	39.10	167.24	4.43	18.95	43.53	186.19	2.90	8.21	11.24
Hartshorne Mining Group LLC	P	J18001	B	U	WKY	18,656.28	11,619	23.237	42.20	181.60	4.30	18.50	46.50	200.10	2.85	12.51	8.24
Rhino Energy LLC	P	J14001	B	U	WKY	9,333.00	11,403	22.806	38.37	168.25	4.30	18.85	42.67	187.10	2.63	8.32	12.95
The American Coal Company	P	J16006	B	U	WV	14,060.19	12,842	25.683	41.58	161.90	5.13	19.97	46.71	181.87	4.03	8.68	5.72
The American Coal Company	P	J16006	B	U	IL	1,646.60	12,076	24.152	40.78	168.86	4.43	18.34	45.21	187.20	2.76	7.63	9.66
The American Coal Company	P	J17004	B	U	IL	20,650.21	12,064	24.128	37.27	154.48	4.43	18.36	41.70	172.84	2.76	7.65	9.76
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	15,908.00	11,741	23.482	45.10	192.05	5.40	23.00	50.50	215.05	2.75	9.68	10.13
White Stallion Energy LLC	P	J19002	B	S	IL	9,768.51	12,715	25.430	43.61	171.48	4.73	18.60	48.34	190.08	3.42	8.32	6.55
		Total Long Term				**155,572.69**	**11,852**	**23.704**	**41.11**	**173.42**	**4.59**	**19.36**	**45.70**	**192.78**	**2.99**	**8.95**	**9.98**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	3,198.60	11,354	22.709	39.33	173.19	3.63	15.99	42.96	189.18	2.10	7.28	14.60
		Total Spot				**3,198.60**	**11,354**	**22.709**	**39.33**	**173.19**	**3.63**	**15.99**	**42.96**	**189.18**	**2.10**	**7.28**	**14.60**
Total Ghent						**158,771.29**	**11,842**	**23.684**	**41.07**	**173.42**	**4.57**	**19.29**	**45.64**	**192.71**	**2.97**	**8.91**	**10.08**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Sep - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	79,961.13	8,928	17.857	12.76	71.47	26.29	147.20	39.05	218.67	0.32	5.07	26.79
		Total Long Term				**79,961.13**	**8,928**	**17.857**	**12.76**	**71.47**	**26.29**	**147.20**	**39.05**	**218.67**	**0.32**	**5.07**	**26.79**
Total Trimble County / KU						**79,961.13**	**8,928**	**17.857**	**12.76**	**71.47**	**26.29**	**147.20**	**39.05**	**218.67**	**0.32**	**5.07**	**26.79**
Total Kentucky Utilities						**294,664.42**	**10,917**	**21.835**	**32.83**	**150.35**	**11.19**	**51.24**	**44.02**	**201.59**	**2.30**	**7.84**	**15.36**

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(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation3
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Sep - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	U	IN	11,161.28	11,877	23.754	40.02	168.49	7.51	31.61	47.53	200.10	3.58	9.23	9.25
Peabody COALSALES LLC	P	J19003	R	S	IN	67,260.00	11,234	22.468	39.95	177.81	8.66	38.55	48.61	216.36	3.23	8.62	13.42
		Total Long Term				**78,421.28**	**11,326**	**22.651**	**39.96**	**176.42**	**8.50**	**37.51**	**48.46**	**213.93**	**3.28**	**8.70**	**12.83**
Total E.W. Brown						**78,421.28**	**11,326**	**22.651**	**39.96**	**176.42**	**8.50**	**37.51**	**48.46**	**213.93**	**3.28**	**8.70**	**12.83**

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(b) Designated by symbol
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R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Sep - 2020

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
ACNR Coal Sales Inc	P	J18002C	B	U	WKY	3,212.00	11,845	23.689	42.94	181.26	4.82	20.35	47.76	201.61	2.45	9.23	10.06
ACNR Coal Sales Inc	P	J16006B	B	U	IL	3,233.70	11,984	23.968	41.22	171.96	3.95	16.48	45.17	188.44	2.70	8.69	9.15
ACNR Coal Sales Inc	P	J17004B	B	U	IL	11,433.45	11,976	23.952	39.46	164.76	3.95	16.49	43.41	181.25	2.76	8.77	9.14
Alliance Coal LLC	P	J18003	B	U	WKY	56,375.47	11,560	23.120	42.69	184.65	3.95	17.08	46.64	201.73	2.90	9.06	11.56
Alliance Coal LLC	P	J18009	B	U	WKY	57,958.38	11,524	23.049	39.08	169.55	3.95	17.14	43.03	186.69	2.92	9.19	11.64
Alliance Coal LLC	P	J18009	B	U	WV	43,514.70	12,603	25.206	41.06	162.88	5.22	20.71	46.28	183.59	3.00	8.53	6.87
Alliance Coal LLC	P	J14001B	B	U	WKY	22,485.63	11,539	23.077	40.14	173.92	3.95	17.12	44.09	191.04	2.92	9.16	11.57
Knight Hawk Coal LLC	P	J18005	B	U	IL	9,725.06	11,260	22.519	37.44	166.25	7.58	33.66	45.02	199.91	3.12	8.62	12.32
The American Coal Company	P	J16006	B	U	IL	6,406.45	12,049	24.097	40.98	170.05	3.95	16.39	44.93	186.44	2.72	8.64	8.73
The American Coal Company	P	J17004	B	U	IL	22,704.02	12,025	24.049	39.41	163.89	3.95	16.42	43.36	180.31	2.72	8.69	8.75
Western Kentucky Minerals Inc.	P	J20006	B	S	WKY	9,599.80	11,114	22.229	36.04	162.14	3.23	14.53	39.27	176.67	3.20	9.67	13.36
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	12,652.00	11,762	23.524	42.65	181.32	4.82	20.49	47.47	201.81	2.54	9.09	10.52
White Stallion Energy LLC	P	J19002	B	S	IL	1,579.10	12,362	24.724	39.93	161.48	4.21	17.03	44.14	178.51	3.38	8.76	8.00
		Total Long Term				**260,879.76**	**11,791**	**23.581**	**40.45**	**171.54**	**4.33**	**18.35**	**44.78**	**189.89**	**2.89**	**8.96**	**10.35**
Total Ghent						**260,879.76**	**11,791**	**23.581**	**40.45**	**171.54**	**4.33**	**18.35**	**44.78**	**189.89**	**2.89**	**8.96**	**10.35**

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(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Sep - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J20002	B/R	S	WY	63,834.60	8,897	17.794	12.44	69.89	24.77	139.24	37.21	209.13	0.33	5.06	27.17
		Total Long Term				**63,834.60**	**8,897**	**17.794**	**12.44**	**69.89**	**24.77**	**139.24**	**37.21**	**209.13**	**0.33**	**5.06**	**27.17**
Total Trimble County / KU						**63,834.60**	**8,897**	**17.794**	**12.44**	**69.89**	**24.77**	**139.24**	**37.21**	**209.13**	**0.33**	**5.06**	**27.17**
Total Kentucky Utilities						**403,135.64**	**11,242**	**22.484**	**35.92**	**159.76**	**8.38**	**37.25**	**44.30**	**197.01**	**2.56**	**8.29**	**13.49**

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Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Oct - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
Bowie Refined Coal LLC	P	K14037	T	S	6	KY	2,817.81	11,534	23.068	58.77	254.78	0.00	0.00	58.77	254.78	1.65	15.36	6.16
COALSALES LLC	P	J16007	R	S	8	IN	22,538.00	11,213	22.425	36.07	160.85	18.87	84.15	54.94	245.00	3.04	8.02	14.39
Triad Mining LLC	P	J15002	R	S	8	IN	43,524.95	11,733	23.465	44.29	188.76	17.27	73.60	61.56	262.36	3.50	8.12	11.27
		Total Long Term					**68,880.76**	**11,554**	**23.109**	**42.20**	**182.60**	**17.08**	**73.94**	**59.28**	**256.54**	**3.27**	**8.38**	**12.08**
Total E.W. Brown							**68,880.76**	**11,554**	**23.109**	**42.20**	**182.60**	**17.08**	**73.94**	**59.28**	**256.54**	**3.27**	**8.38**	**12.08**

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Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Oct - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J12007	B	U	10	KY	12,751.80	11,526	23.052	45.93	199.25	3.81	16.52	49.74	215.77	2.97	8.19	11.69
Alliance Coal LLC	P	J16008	B	U	8	IN	1,560.99	11,574	23.148	54.85	236.96	3.91	16.89	58.76	253.85	1.34	6.48	14.20
Armstrong Coal Sales	P	J14010B	B	S	10	KY	1,578.00	11,075	22.150	43.11	194.62	4.76	21.49	47.87	216.11	3.36	11.76	11.48
Armstrong Coal Sales	P	J07032B	B	S	10	KY	4,780.00	11,056	22.111	28.16	127.37	4.76	21.52	32.92	148.89	3.32	11.56	11.51
Armstrong Coal Sales	P	J16017	B	S	10	KY	3,198.00	11,107	22.213	37.20	167.49	4.76	21.43	41.96	188.92	3.31	11.58	11.20
Rhino Energy LLC	P	J14001	B	U	10	KY	23,216.20	11,381	22.762	48.64	213.71	3.79	16.65	52.43	230.36	2.64	8.47	12.79
		Total Long Term					**47,084.99**	**11,365**	**22.729**	**45.07**	**198.31**	**4.00**	**17.57**	**49.07**	**215.88**	**2.83**	**8.96**	**12.25**
Spot Contract																		
The American Coal Company	P	J16002	B	U	8	IL	1,587.95	11,816	23.632	48.61	205.70	3.70	15.65	52.31	221.35	2.67	9.09	10.20
		Total Spot					**1,587.95**	**11,816**	**23.632**	**48.61**	**205.70**	**3.70**	**15.65**	**52.31**	**221.35**	**2.67**	**9.09**	**10.20**
Total Ghent							**48,672.94**	**11,379**	**22.759**	**45.19**	**198.56**	**3.98**	**17.51**	**49.17**	**216.07**	**2.82**	**8.97**	**12.19**

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Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Oct - 2016

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	MSHA Dist#	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	32,842.70	8,786	17.571	11.42	64.97	27.36	155.71	38.78	220.68	0.32	4.88	28.11
		Total Long Term					**32,842.70**	**8,786**	**17.571**	**11.42**	**64.97**	**27.36**	**155.71**	**38.78**	**220.68**	**0.32**	**4.88**	**28.11**
Total Trimble County / KU							**32,842.70**	**8,786**	**17.571**	**11.42**	**64.97**	**27.36**	**155.71**	**38.78**	**220.68**	**0.32**	**4.88**	**28.11**
Total Kentucky Utilities							**150,396.40**	**10,893**	**21.786**	**36.44**	**167.28**	**15.09**	**69.26**	**51.53**	**236.54**	**2.48**	**7.81**	**15.62**

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(d) MT = Mode of Transportation3 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities

Analysis Of Coal Purchased for Fuel Clause Backup

Oct - 2017

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	U	IN	5,753.58	11,582	23.164	39.18	169.13	17.96	77.54	57.14	246.67	3.27	8.63	12.28
Sunrise Coal LLC	P	J15002B	R	U	IN	41,383.53	11,488	22.976	38.25	166.49	22.02	95.84	60.27	262.33	3.50	8.23	12.74
Total Long Term						**47,137.11**	**11,499**	**22.999**	**38.37**	**166.82**	**21.52**	**93.59**	**59.89**	**260.41**	**3.47**	**8.28**	**12.68**
Total E.W. Brown						**47,137.11**	**11,499**	**22.999**	**38.37**	**166.82**	**21.52**	**93.59**	**59.89**	**260.41**	**3.47**	**8.28**	**12.68**

(a) PBDU as Designated by Symbol P, B, D, or U

P= Producer B= Broker D= Distributor U-Utility

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(d) Mine Type Designated by Symbol

S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Oct - 2017

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J16001B	B	U	WKY	33,999.00	11,559	23.118	48.44	209.53	4.03	17.41	52.47	226.94	2.98	8.15	11.63
Alliance Coal LLC	P	J16008	B	U	WKY	11,370.90	11,552	23.105	49.22	213.04	4.02	17.40	53.24	230.44	2.96	8.16	11.74
Alliance Coal LLC	P	J17002	B	U	WKY	74,006.30	11,554	23.108	41.15	178.09	4.03	17.43	45.18	195.52	3.01	8.13	11.71
Alliance Coal LLC	P	J18009	B	U	WKY	19,616.60	11,554	23.108	34.61	149.79	4.02	17.40	38.63	167.19	2.96	8.10	11.60
Armstrong Coal Sales	P	J16003	B	S	WKY	42,906.00	11,415	22.829	40.71	178.31	4.91	21.51	45.62	199.82	3.10	10.38	10.86
Armstrong Coal Sales	P	J14010B	B	S	WKY	1,608.00	11,463	22.926	44.81	195.45	4.90	21.38	49.71	216.83	3.22	10.70	10.10
Armstrong Coal Sales	P	J07032B	B	S	WKY	36,516.00	11,394	22.788	28.85	126.58	4.92	21.60	33.77	148.18	3.23	11.09	10.32
COALSALES LLC	P	J16007	B	S	IN	9,553.00	11,067	22.133	41.90	189.31	3.30	14.90	45.20	204.21	3.06	8.82	14.22
Eagle River Coal LLC	P	J16005	B	S	IL	41,834.67	12,694	25.387	47.83	188.38	4.29	16.91	52.12	205.29	3.39	8.04	7.06
Foresight Coal Sales LLC	P	J16018	B	U	IL	15,254.56	11,731	23.462	40.41	172.23	4.04	17.22	44.45	189.45	2.93	7.72	11.40
Rhino Energy LLC	P	J14001	B	U	WKY	29,467.60	11,356	22.712	47.00	206.94	3.92	17.25	50.92	224.19	2.60	8.38	12.93
The American Coal Company	P	J16006	B	U	IL	50,587.34	11,669	23.338	43.19	185.05	4.03	17.26	47.22	202.31	2.65	9.30	10.85
Total Long Term						**366,719.97**	**11,647**	**23.293**	**41.97**	**180.17**	**4.22**	**18.15**	**46.19**	**198.32**	**3.00**	**8.87**	**10.95**
Spot Contract																	
Contura Coal Sales LLC	P	J17001	B	U	PA	3,197.90	13,046	26.093	38.02	145.70	9.36	35.87	47.38	181.57	2.35	8.21	5.94
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	8,012.60	11,341	22.683	38.48	169.64	3.29	14.51	41.77	184.15	2.69	8.73	13.06
Total Spot						**11,210.50**	**11,828**	**23.655**	**38.35**	**162.11**	**5.02**	**21.23**	**43.37**	**183.34**	**2.59**	**8.58**	**11.03**
Total Ghent						**377,930.47**	**11,652**	**23.304**	**41.86**	**179.63**	**4.25**	**18.24**	**46.11**	**197.87**	**2.99**	**8.86**	**10.96**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Oct - 2017

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J16012	B/R	S	WY	50,335.15	9,051	18.101	12.89	71.19	28.10	155.26	40.99	226.45	0.26	4.71	26.33
	Total Long Term					**50,335.15**	**9,051**	**18.101**	**12.89**	**71.19**	**28.10**	**155.26**	**40.99**	**226.45**	**0.26**	**4.71**	**26.33**
Total Trimble County / KU						**50,335.15**	**9,051**	**18.101**	**12.89**	**71.19**	**28.10**	**155.26**	**40.99**	**226.45**	**0.26**	**4.71**	**26.33**
Total Kentucky Utilities						**475,402.73**	**11,361**	**22.723**	**38.45**	**169.20**	**8.48**	**37.35**	**46.93**	**206.55**	**2.74**	**8.37**	**12.76**

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Conroy

(a) PBDU as Designated by Symbol P, B, D, or U
P= Producer B= Broker D= Distributor U-Utility

(b) POCN = Purchase Order or Contract Number

(c) MT = Mode of Transportation Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Oct - 2018

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	U	IN	20,798.56	11,282	22.565	43.00	190.55	18.64	82.59	61.64	273.14	2.74	9.41	13.30
COALSALES LLC	P	J16007	R	S	IN	11,210.00	11,219	22.438	43.00	191.63	18.65	83.10	61.65	274.73	3.40	9.02	13.47
		Total Long Term				**32,008.56**	**11,260**	**22.521**	**43.00**	**190.93**	**18.64**	**82.76**	**61.64**	**273.70**	**2.97**	**9.27**	**13.36**
Spot Contract																	
Sunrise Coal LLC	P	J18025	R	U	IN	22,268.58	11,460	22.919	35.38	154.35	21.57	94.11	56.95	248.46	3.43	8.89	12.43
		Total Spot				**22,268.58**	**11,460**	**22.919**	**35.38**	**154.35**	**21.57**	**94.11**	**56.95**	**248.46**	**3.43**	**8.89**	**12.43**
Total E.W. Brown						**54,277.14**	**11,342**	**22.684**	**39.87**	**175.76**	**19.84**	**87.47**	**59.71**	**263.24**	**3.16**	**9.12**	**12.98**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Oct - 2018

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	39,846.10	8,946	17.892	12.13	67.80	26.28	146.87	38.41	214.67	0.39	5.83	26.20
		Total Long Term				**39,846.10**	**8,946**	**17.892**	**12.13**	**67.80**	**26.28**	**146.87**	**38.41**	**214.67**	**0.39**	**5.83**	**26.20**
Total Trimble County / KU						**39,846.10**	**8,946**	**17.892**	**12.13**	**67.80**	**26.28**	**146.87**	**38.41**	**214.67**	**0.39**	**5.83**	**26.20**
Total Kentucky Utilities						**94,123.24**	**10,328**	**20.655**	**28.13**	**136.17**	**15.39**	**74.53**	**43.52**	**210.70**	**1.99**	**7.73**	**18.58**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Oct - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	11,328.00	11,075	22.150	38.09	171.97	8.38	37.80	46.47	209.77	3.30	8.98	13.88
		Total Long Term				**11,328.00**	**11,075**	**22.150**	**38.09**	**171.97**	**8.38**	**37.80**	**46.47**	**209.77**	**3.30**	**8.98**	**13.88**
Total E.W. Brown						**11,328.00**	**11,075**	**22.150**	**38.09**	**171.97**	**8.38**	**37.80**	**46.47**	**209.77**	**3.30**	**8.98**	**13.88**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Oct - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	24,687.60	11,591	23.183	44.77	193.13	4.44	19.14	49.21	212.27	2.95	8.49	11.56
Alliance Coal LLC	P	J18003	B	U	WKY	49,483.90	11,553	23.105	40.23	174.11	4.44	19.24	44.67	193.35	2.93	8.56	11.71
Alliance Coal LLC	P	J18009	B	U	WKY	48,344.80	11,539	23.079	37.31	161.68	4.45	19.28	41.76	180.96	2.95	8.59	11.84
Alliance Coal LLC	P	J14001B	B	U	WKY	14,759.20	11,673	23.345	39.10	167.49	4.43	18.98	43.53	186.47	2.77	7.99	11.70
Hartshorne Mining Group LLC	P	J18001	B	U	WKY	26,389.89	11,705	23.410	42.31	180.73	4.32	18.45	46.63	199.18	2.81	12.19	7.99
Knight Hawk Coal LLC	P	J18005	B	U	IL	77,312.31	11,231	22.462	36.89	164.25	8.57	38.13	45.46	202.38	3.09	8.83	12.10
Peabody COALSALES LLC	P	J19003	B	S	IN	6,589.00	11,298	22.595	40.34	178.54	3.66	16.20	44.00	194.74	3.15	8.67	13.02
The American Coal Company	P	J16006	B	U	WV	28,186.10	12,894	25.788	41.78	162.02	5.14	19.93	46.92	181.95	4.00	8.43	5.54
The American Coal Company	P	J16006	B	U	IL	20,295.99	11,995	23.989	40.45	168.60	4.43	18.50	44.88	187.10	2.71	8.04	9.74
The American Coal Company	P	J17004	B	U	IL	41,098.01	12,032	24.064	37.08	154.10	4.45	18.50	41.53	172.60	2.74	8.02	9.49
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	44,786.00	11,742	23.484	45.11	192.10	5.43	23.12	50.54	215.22	2.74	9.83	10.00
White Stallion Energy LLC	P	J19002	B	S	IL	18,288.04	12,628	25.256	42.43	168.01	4.76	18.84	47.19	186.85	3.82	9.27	6.25
		Total Long Term				**400,220.84**	**11,738**	**23.476**	**40.05**	**170.62**	**5.40**	**22.97**	**45.45**	**193.59**	**3.02**	**8.92**	**10.36**
Total Ghent						**400,220.84**	**11,738**	**23.476**	**40.05**	**170.62**	**5.40**	**22.97**	**45.45**	**193.59**	**3.02**	**8.92**	**10.36**

Case No. 2020-00349
Attachment 2 to Response to PSC-6 Question No. 13

Conroy

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Oct - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	47,206.80	8,926	17.852	12.76	71.47	26.45	148.16	39.21	219.63	0.28	4.82	26.95
		Total Long Term				**47,206.80**	**8,926**	**17.852**	**12.76**	**71.47**	**26.45**	**148.16**	**39.21**	**219.63**	**0.28**	**4.82**	**26.95**
Total Trimble County / KU						**47,206.80**	**8,926**	**17.852**	**12.76**	**71.47**	**26.45**	**148.16**	**39.21**	**219.63**	**0.28**	**4.82**	**26.95**
Total Kentucky Utilities						**458,755.64**	**11,432**	**22.864**	**37.20**	**162.69**	**7.63**	**33.38**	**44.83**	**196.07**	**2.74**	**8.50**	**12.16**

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Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation3 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Oct - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	11,210.00	11,125	22.250	39.31	176.69	8.66	38.92	47.97	215.61	3.28	8.60	14.19
		Total Long Term				**11,210.00**	**11,125**	**22.250**	**39.31**	**176.69**	**8.66**	**38.92**	**47.97**	**215.61**	**3.28**	**8.60**	**14.19**
Total E.W. Brown						**11,210.00**	**11,125**	**22.250**	**39.31**	**176.69**	**8.66**	**38.92**	**47.97**	**215.61**	**3.28**	**8.60**	**14.19**

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Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Oct - 2020

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
ACNR Coal Sales Inc	P	J18002C	B	U	WKY	28,860.00	11,870	23.740	44.10	185.78	4.75	19.98	48.85	205.76	2.57	9.16	9.82
ACNR Coal Sales Inc	P	J16006B	B	U	WV	74,359.80	12,865	25.731	41.91	162.86	4.41	17.14	46.32	180.00	4.07	8.61	5.54
ACNR Coal Sales Inc	P	J16006B	B	U	IL	13,021.50	11,980	23.961	43.03	179.60	3.85	16.05	46.88	195.65	2.78	8.57	9.13
ACNR Coal Sales Inc	P	J17004B	B	U	IL	68,572.93	12,007	24.014	41.41	172.42	3.89	16.20	45.30	188.62	2.77	8.58	9.03
Alliance Coal LLC	P	J18003	B	U	WKY	51,514.85	11,527	23.055	42.56	184.60	3.84	16.67	46.40	201.27	2.89	9.07	11.72
Alliance Coal LLC	P	J18009	B	U	WKY	32,354.84	11,506	23.011	39.04	169.65	3.95	17.17	42.99	186.82	2.95	9.24	11.61
Alliance Coal LLC	P	J18009	B	U	WV	104,304.85	12,657	25.314	41.34	163.32	5.07	20.03	46.41	183.35	3.40	8.33	6.70
Alliance Coal LLC	P	J14001B	B	U	WKY	6,458.92	11,484	22.969	40.06	174.41	3.88	16.89	43.94	191.30	2.98	9.28	11.90
Knight Hawk Coal LLC	P	J18005	B	U	IL	43,773.23	11,266	22.533	37.50	166.44	7.50	33.25	45.00	199.69	2.95	8.23	12.70
Western Kentucky Minerals Inc.	P	J20006	B	S	WKY	8,029.20	11,076	22.153	36.86	166.41	3.23	14.58	40.09	180.99	3.23	10.33	12.93
White Stallion Energy LLC	P	J19002	B	S	IL	6,393.67	12,371	24.741	39.75	160.65	4.21	17.02	43.96	177.67	3.48	8.94	7.38
		Total Long Term				**437,643.79**	**12,111**	**24.222**	**41.14**	**169.87**	**4.67**	**19.26**	**45.81**	**189.13**	**3.20**	**8.68**	**8.90**
Total Ghent						**437,643.79**	**12,111**	**24.222**	**41.14**	**169.87**	**4.67**	**19.26**	**45.81**	**189.13**	**3.20**	**8.68**	**8.90**
Total Kentucky Utilities						**448,853.79**	**12,086**	**24.173**	**41.10**	**170.02**	**4.77**	**19.72**	**45.87**	**189.74**	**3.20**	**8.68**	**9.03**

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Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
COALSALES LLC	P	J16007	R	S	8	IN	22,237.00	11,291	22.583	36.19	160.25	18.87	83.56	55.06	243.81	3.11	7.84	14.12
COALSALES LLC	P	J16007	R	S	8	IN	11,203.00	11,094	22.188	36.19	163.10	19.02	85.72	55.21	248.82	3.07	8.78	14.34
Triad Mining LLC	P	J15002	R	S	8	IN	11,097.30	11,775	23.550	43.76	185.83	17.27	73.33	61.03	259.16	3.96	8.24	9.22
		Total Long Term					**44,537.30**	**11,362**	**22.725**	**38.08**	**167.55**	**18.50**	**81.45**	**56.58**	**249.00**	**3.31**	**8.18**	**12.95**
Spot Contract																		
Sunrise Coal LLC	P	K16035	R	U	8	IN	22,511.83	11,699	23.398	37.59	160.66	21.17	90.48	58.76	251.14	3.31	6.81	12.68
		Total Spot					**22,511.83**	**11,699**	**23.398**	**37.59**	**160.66**	**21.17**	**90.48**	**58.76**	**251.14**	**3.31**	**6.81**	**12.68**
Total E.W. Brown							**67,049.13**	**11,475**	**22.951**	**37.91**	**165.20**	**19.41**	**84.54**	**57.32**	**249.74**	**3.31**	**7.72**	**12.86**

(b) Designated by symbol
P= Producer D= Distributor
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J12007	B	U	10	KY	101,606.20	11,506	23.011	45.77	198.90	3.91	16.99	49.68	215.89	2.98	8.31	11.83
Alliance Coal LLC	P	J16001B	B	U	10	KY	16,086.80	11,547	23.095	46.68	202.11	3.91	16.93	50.59	219.04	2.93	8.38	11.56
Alliance Coal LLC	P	J16008	B	U	8	IN	15,642.13	11,549	23.099	54.73	236.96	3.91	16.92	58.64	253.88	1.33	7.10	13.70
Armstrong Coal Sales	P	J16003	B	S	10	KY	49,506.00	11,230	22.461	37.92	168.83	4.76	21.20	42.68	190.03	3.29	10.79	11.27
Armstrong Coal Sales	P	J14010B	B	S	10	KY	8,022.00	11,287	22.574	43.10	190.91	4.76	21.09	47.86	212.00	3.24	10.59	11.09
Armstrong Coal Sales	P	J07032B	B	S	10	KY	59,378.00	11,259	22.519	28.15	125.01	4.76	21.14	32.91	146.15	3.23	10.67	11.18
Armstrong Coal Sales	P	J16017	B	S	10	KY	6,442.00	11,298	22.597	37.71	166.88	4.76	21.07	42.47	187.95	3.27	10.66	10.85
COALSALES LLC	P	J16007	B	S	8	IN	3,263.00	11,108	22.217	39.19	176.39	3.19	14.36	42.38	190.75	3.02	8.79	13.93
Eagle River Coal LLC	P	J16005	B	S	8	IL	15,123.12	12,733	25.465	46.17	181.32	4.16	16.33	50.33	197.65	3.30	7.96	7.16
Rhino Energy LLC	P	J14001	B	U	10	KY	82,160.30	11,396	22.792	48.60	213.22	3.79	16.62	52.39	229.84	2.62	8.33	12.79
		Total Long Term					**357,229.55**	**11,445**	**22.889**	**42.59**	**186.06**	**4.18**	**18.26**	**46.77**	**204.32**	**2.93**	**9.08**	**11.72**
Spot Contract																		
Alliance Coal LLC	P	J16004	B	U	10	KY	9,671.80	11,541	23.082	47.79	207.04	3.91	16.94	51.70	223.98	2.96	8.43	11.53
Foresight Coal Sales LLC	P	J16009	B	U	3	WV	36,832.00	12,746	25.492	45.79	179.64	4.52	17.73	50.31	197.37	3.60	9.00	5.99
Foresight Coal Sales LLC	P	J16009	B	U	8	IL	16,182.86	11,922	23.844	43.56	182.67	3.91	16.39	47.47	199.06	2.69	8.14	10.15
Kolmar Americas Inc	B	J16019	B	S	12	WV	4,572.22	9,746	19.492	31.35	160.83	2.95	15.14	34.30	175.97	0.79	23.37	9.39
Peabody COALTRADE LLC	B	J16016	B	S	4	WV	1,571.00	9,016	18.032	22.07	122.42	5.41	30.00	27.48	152.42	0.42	29.94	5.78
The American Coal Company	P	J16002	B	U	3	WV	79,845.00	12,625	25.249	51.42	203.66	4.52	17.90	55.94	221.56	3.74	9.60	6.08
		Total Spot					**148,674.88**	**12,381**	**24.762**	**48.01**	**193.87**	**4.37**	**17.67**	**52.38**	**211.54**	**3.42**	**9.85**	**6.95**
Total Ghent							**505,904.43**	**11,720**	**23.440**	**44.18**	**188.49**	**4.24**	**18.07**	**48.42**	**206.56**	**3.08**	**9.31**	**10.32**

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(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	66,818.90	8,807	17.615	11.44	64.97	27.48	155.97	38.92	220.94	0.32	5.26	27.49
		Total Long Term					**66,818.90**	**8,807**	**17.615**	**11.44**	**64.97**	**27.48**	**155.97**	**38.92**	**220.94**	**0.32**	**5.26**	**27.49**
Total Trimble County / KU							**66,818.90**	**8,807**	**17.615**	**11.44**	**64.97**	**27.48**	**155.97**	**38.92**	**220.94**	**0.32**	**5.26**	**27.49**
Total Kentucky Utilities							**639,772.46**	**11,390**	**22.780**	**40.10**	**176.05**	**8.26**	**36.23**	**48.36**	**212.28**	**2.81**	**8.72**	**12.38**

(b) Designated by symbol
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(d) MT = Mode of Transportation3
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2017

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	U	IN	40,837.41	11,565	23.130	39.91	172.56	17.96	77.64	57.87	250.20	3.39	8.06	12.55
Sunrise Coal LLC	P	J15002B	R	U	IN	43,962.91	11,447	22.893	38.16	166.68	22.02	96.19	60.18	262.87	3.43	8.66	12.66
Total Long Term						**84,800.32**	**11,504**	**23.007**	**39.00**	**169.53**	**20.07**	**87.21**	**59.07**	**256.74**	**3.41**	**8.37**	**12.61**
Total E.W. Brown						**84,800.32**	**11,504**	**23.007**	**39.00**	**169.53**	**20.07**	**87.21**	**59.07**	**256.74**	**3.41**	**8.37**	**12.61**

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(a) PBDU as Designated by Symbol P, B, D, or U
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(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2017

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J16001B	B	U	WKY	23,340.00	11,543	23.086	48.26	209.04	4.02	17.41	52.28	226.45	2.95	8.09	11.86
Alliance Coal LLC	P	J16008	B	U	WKY	20,051.10	11,510	23.020	49.04	213.04	4.02	17.47	53.06	230.51	2.97	8.13	11.82
Alliance Coal LLC	P	J17002	B	U	WKY	50,241.60	11,513	23.027	41.04	178.21	4.02	17.45	45.06	195.66	2.96	8.11	12.03
Alliance Coal LLC	P	J18009	B	U	WKY	37,908.20	11,524	23.049	34.56	149.93	4.02	17.44	38.58	167.37	2.97	8.15	11.81
Armstrong Coal Sales	P	J16003	B	S	WKY	60,540.00	11,486	22.971	41.36	180.07	4.90	21.33	46.26	201.40	3.08	9.78	11.10
Armstrong Coal Sales	P	J14010B	B	S	WKY	7,960.00	11,502	23.004	44.96	195.45	4.90	21.31	49.86	216.76	2.97	9.41	11.37
Armstrong Coal Sales	P	J07032B	B	S	WKY	12,730.00	11,287	22.575	29.35	130.03	4.90	21.70	34.25	151.73	3.08	10.83	11.22
COALSALES LLC	P	J16007	B	S	IN	6,683.00	11,075	22.149	42.91	193.74	3.29	14.86	46.20	208.60	3.05	8.40	14.42
Eagle River Coal LLC	P	J16005	B	S	IL	30,579.84	12,675	25.350	48.06	189.60	4.28	16.89	52.34	206.49	3.15	7.40	7.80
Rhino Energy LLC	P	J14001	B	U	WKY	34,212.40	11,258	22.516	47.00	208.75	3.90	17.32	50.90	226.07	2.58	8.36	13.58
The American Coal Company	P	J16006	B	U	IL	62,543.84	11,618	23.235	43.39	186.72	4.02	17.31	47.41	204.03	2.64	9.24	11.20
Total Long Term						**346,789.98**	**11,591**	**23.181**	**42.66**	**184.04**	**4.23**	**18.22**	**46.89**	**202.26**	**2.91**	**8.71**	**11.45**
Spot Contract																	
Contura Coal Sales LLC	P	J17001	B	U	PA	19,570.50	12,990	25.980	38.02	146.33	9.36	36.03	47.38	182.36	2.56	7.87	6.73
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	7,980.40	11,402	22.804	38.68	169.64	3.29	14.43	41.97	184.07	2.85	8.20	13.34
Total Spot						**27,550.90**	**12,530**	**25.060**	**38.21**	**152.48**	**7.60**	**30.33**	**45.81**	**182.81**	**2.64**	**7.96**	**8.64**
Ghent High Sulfur Coal						**374,340.88**	**11,660**	**23.319**	**42.34**	**181.55**	**4.47**	**19.17**	**46.81**	**200.72**	**2.89**	**8.65**	**11.24**
Ghent Middlings																	
Spot Contract																	
Arch Coal Sales Company Inc.	P	J17003	B	S	WV	3,242.94	10,679	21.358	30.14	141.11	5.56	26.03	35.70	167.14	1.62	22.68	5.33
Total Spot						**3,242.94**	**10,679**	**21.358**	**30.14**	**141.11**	**5.56**	**26.03**	**35.70**	**167.14**	**1.62**	**22.68**	**5.33**
Ghent Middlings						**3,242.94**	**10,679**	**21.358**	**30.14**	**141.11**	**5.56**	**26.03**	**35.70**	**167.14**	**1.62**	**22.68**	**5.33**
Total Ghent						**377,583.82**	**11,651**	**23.302**	**42.23**	**181.23**	**4.48**	**19.23**	**46.71**	**200.46**	**2.88**	**8.77**	**11.19**

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(d) Mine Type Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2017

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J16012	B/R	S	WY	59,400.88	8,951	17.902	12.74	71.19	28.11	157.01	40.85	228.20	0.20	4.48	27.04
		Total Long Term				**59,400.88**	**8,951**	**17.902**	**12.74**	**71.19**	**28.11**	**157.01**	**40.85**	**228.20**	**0.20**	**4.48**	**27.04**
Total Trimble County / KU						**59,400.88**	**8,951**	**17.902**	**12.74**	**71.19**	**28.11**	**157.01**	**40.85**	**228.20**	**0.20**	**4.48**	**27.04**
Total Kentucky Utilities						**521,785.02**	**11,320**	**22.640**	**38.35**	**169.39**	**9.70**	**42.86**	**48.05**	**212.25**	**2.66**	**8.22**	**13.23**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2018

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	U	IN	44,172.73	11,389	22.778	43.50	190.95	15.19	66.73	58.69	257.68	3.10	8.71	13.35
COALSALES LLC	P	J16007	R	S	IN	11,185.00	11,209	22.418	43.50	194.02	14.94	66.69	58.44	260.71	3.05	8.51	14.08
		Total Long Term				**55,357.73**	**11,353**	**22.705**	**43.50**	**191.57**	**15.14**	**66.72**	**58.64**	**258.26**	**3.09**	**8.67**	**13.49**
Spot Contract																	
Sunrise Coal LLC	P	J18025	R	U	IN	22,044.55	11,574	23.149	39.76	171.74	15.29	66.05	55.04	237.79	3.27	7.89	13.10
		Total Spot				**22,044.55**	**11,574**	**23.149**	**39.76**	**171.74**	**15.29**	**66.05**	**55.04**	**237.79**	**3.27**	**7.89**	**13.10**
Total E.W. Brown						**77,402.28**	**11,416**	**22.832**	**42.43**	**185.84**	**15.18**	**66.53**	**57.62**	**252.37**	**3.14**	**8.44**	**13.38**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2018

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	33,122.70	11,524	23.048	42.59	184.79	4.54	19.70	47.13	204.49	2.99	8.38	11.73
Alliance Coal LLC	P	J18003	B	U	WKY	19,498.10	11,520	23.040	38.09	165.34	4.54	19.70	42.63	185.04	3.00	8.46	11.80
Alliance Coal LLC	P	J18009	B	U	WKY	21,305.80	11,533	23.067	36.07	156.39	4.54	19.69	40.61	176.08	2.99	8.21	11.85
COALSALES LLC	P	J16007	B	S	IN	14,802.00	11,120	22.240	46.58	209.42	3.71	16.68	50.29	226.10	3.34	8.87	13.77
Eagle River Coal LLC	P	J16005	B	S	IL	6,509.94	12,651	25.302	53.22	210.34	4.84	19.13	58.06	229.47	3.64	8.63	6.87
Foresight Coal Sales LLC	P	J16018	B	U	WKY	6,476.00	11,809	23.619	43.05	182.29	5.54	23.45	48.59	205.74	2.73	7.87	11.61
Foresight Coal Sales LLC	P	J16018	B	U	IL	79,340.39	11,658	23.317	44.03	188.82	4.54	19.47	48.57	208.29	2.63	7.71	12.44
Knight Hawk Coal LLC	P	J18005	B	U	IL	33,763.16	11,160	22.319	35.41	158.64	8.72	39.07	44.13	197.71	3.05	8.59	12.96
Rhino Energy LLC	P	J14001	B	U	WKY	11,045.10	11,410	22.821	37.29	163.42	4.41	19.33	41.70	182.75	2.57	8.28	12.96
The American Coal Company	P	J17004	B	U	WV	24,734.80	12,777	25.554	33.30	130.33	5.25	20.54	38.55	150.87	4.02	8.67	6.10
The American Coal Company	P	J17004	B	U	IL	21,956.93	11,839	23.677	34.91	147.45	4.54	19.17	39.45	166.62	2.72	8.02	10.98
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	11,200.00	11,766	23.532	41.54	176.52	5.54	23.54	47.08	200.06	2.67	8.38	10.83
		Total Long Term				**283,754.92**	**11,669**	**23.337**	**40.15**	**172.04**	**5.12**	**21.94**	**45.27**	**193.98**	**2.96**	**8.22**	**11.54**
Spot Contract																	
Consolidation Coal Company	P	J18030	B	U	WV	51,464.80	12,864	25.729	47.33	183.94	5.25	20.41	52.58	204.35	4.00	8.43	5.81
Contura Coal Sales LLC	P	J17001	B	U	PA	9,486.60	12,877	25.753	37.69	146.34	10.58	41.08	48.27	187.42	2.35	7.85	7.40
		Total Spot				**60,951.40**	**12,866**	**25.733**	**45.83**	**178.08**	**6.08**	**23.63**	**51.91**	**201.71**	**3.75**	**8.34**	**6.06**
Total Ghent						**344,706.32**	**11,880**	**23.761**	**41.15**	**173.20**	**5.29**	**22.26**	**46.44**	**195.46**	**3.10**	**8.24**	**10.57**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2018

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	70,068.55	8,898	17.796	12.07	67.80	26.55	149.23	38.62	217.03	0.35	5.68	26.71
		Total Long Term				**70,068.55**	**8,898**	**17.796**	**12.07**	**67.80**	**26.55**	**149.23**	**38.62**	**217.03**	**0.35**	**5.68**	**26.71**
Total Trimble County / KU						**70,068.55**	**8,898**	**17.796**	**12.07**	**67.80**	**26.55**	**149.23**	**38.62**	**217.03**	**0.35**	**5.68**	**26.71**
Total Kentucky Utilities						**492,177.15**	**11,383**	**22.766**	**37.21**	**163.46**	**8.51**	**37.35**	**45.72**	**200.81**	**2.72**	**7.91**	**13.31**

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Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	56,050.00	11,177	22.354	38.42	171.89	8.57	38.31	46.99	210.20	3.38	8.66	13.97
		Total Long Term				**56,050.00**	**11,177**	**22.354**	**38.42**	**171.89**	**8.57**	**38.31**	**46.99**	**210.20**	**3.38**	**8.66**	**13.97**
Total E.W. Brown						**56,050.00**	**11,177**	**22.354**	**38.42**	**171.89**	**8.57**	**38.31**	**46.99**	**210.20**	**3.38**	**8.66**	**13.97**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	54,476.40	11,489	22.977	44.35	193.03	4.47	19.46	48.82	212.49	2.94	8.72	12.11
Alliance Coal LLC	P	J18003	B	U	WKY	58,129.90	11,473	22.946	39.82	173.54	4.47	19.48	44.29	193.02	2.92	8.73	12.25
Alliance Coal LLC	P	J18009	B	U	WKY	56,459.80	11,487	22.973	37.17	161.78	4.47	19.46	41.64	181.24	2.92	8.71	12.12
Alliance Coal LLC	P	J14001B	B	U	WKY	23,158.90	11,489	22.978	38.47	167.44	4.47	19.46	42.94	186.90	2.95	8.81	12.07
Hartshorne Mining Group LLC	P	J18001	B	U	WKY	31,109.22	11,534	23.067	41.54	180.07	4.34	18.82	45.88	198.89	2.90	12.91	8.46
Knight Hawk Coal LLC	P	J18005	B	U	IL	56,536.49	11,187	22.375	36.75	164.26	8.59	38.39	45.34	202.65	3.06	8.81	12.57
The American Coal Company	P	J16006	B	U	WV	7,003.80	12,637	25.275	40.82	161.50	5.17	20.46	45.99	181.96	4.05	8.95	6.63
The American Coal Company	P	J16006	B	U	IL	1,796.23	11,800	23.600	40.24	170.49	4.47	18.94	44.71	189.43	2.66	7.57	11.51
The American Coal Company	P	J17004	B	U	IL	8,757.45	11,879	23.758	36.95	155.53	4.47	18.81	41.42	174.34	2.70	8.04	10.40
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	36,251.00	11,706	23.412	44.82	191.45	5.45	23.28	50.27	214.73	2.77	10.02	10.07
White Stallion Energy LLC	P	J19002	B	S	IL	14,869.95	12,571	25.141	42.28	168.18	4.77	18.97	47.05	187.15	3.25	8.68	7.36
		Total Long Term				**348,549.14**	**11,544**	**23.088**	**40.24**	**174.29**	**5.26**	**22.76**	**45.50**	**197.05**	**2.96**	**9.23**	**11.31**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	3,226.60	11,345	22.691	39.00	171.89	3.66	16.13	42.66	188.02	3.03	7.56	14.19
		Total Spot				**3,226.60**	**11,345**	**22.691**	**39.00**	**171.89**	**3.66**	**16.13**	**42.66**	**188.02**	**3.03**	**7.56**	**14.19**
Total Ghent						**351,775.74**	**11,542**	**23.085**	**40.23**	**174.27**	**5.24**	**22.70**	**45.47**	**196.97**	**2.96**	**9.21**	**11.34**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	47,934.40	8,877	17.753	12.69	71.47	26.58	149.71	39.27	221.18	0.31	5.23	27.34
		Total Long Term				**47,934.40**	**8,877**	**17.753**	**12.69**	**71.47**	**26.58**	**149.71**	**39.27**	**221.18**	**0.31**	**5.23**	**27.34**
Total Trimble County / KU						**47,934.40**	**8,877**	**17.753**	**12.69**	**71.47**	**26.58**	**149.71**	**39.27**	**221.18**	**0.31**	**5.23**	**27.34**
Total Kentucky Utilities						**455,760.14**	**11,217**	**22.434**	**37.11**	**165.42**	**7.89**	**35.19**	**45.00**	**200.61**	**2.73**	**8.73**	**13.34**

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(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation3
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2020

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	U	IN	11,159.90	11,684	23.368	39.94	170.94	7.51	32.14	47.45	203.08	3.51	8.92	10.87
Peabody COALSALES LLC	P	J19003	R	S	IN	67,260.00	11,239	22.477	39.84	177.25	8.66	38.52	48.50	215.77	3.21	8.50	13.71
		Total Long Term				**78,419.90**	**11,302**	**22.604**	**39.85**	**176.32**	**8.50**	**37.59**	**48.35**	**213.91**	**3.25**	**8.56**	**13.30**
Total E.W. Brown						**78,419.90**	**11,302**	**22.604**	**39.85**	**176.32**	**8.50**	**37.59**	**48.35**	**213.91**	**3.25**	**8.56**	**13.30**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Nov - 2020

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
ACNR Coal Sales Inc	P	J18002C	B	U	WKY	32,160.00	11,828	23.657	45.60	192.74	4.65	19.66	50.25	212.40	2.66	9.11	10.24
ACNR Coal Sales Inc	P	J16006B	B	U	WV	25,630.30	12,799	25.598	42.76	167.03	4.41	17.22	47.17	184.25	3.46	8.66	6.22
ACNR Coal Sales Inc	P	J16006B	B	U	WV	56,389.90	12,897	25.794	42.30	163.99	4.41	17.10	46.71	181.09	3.92	8.36	5.72
ACNR Coal Sales Inc	P	J16006B	B	U	IL	3,259.20	11,692	23.383	43.62	186.53	3.81	16.30	47.43	202.83	2.64	8.15	11.57
ACNR Coal Sales Inc	P	J17004B	B	U	IL	38,662.32	11,741	23.482	41.10	175.03	3.81	16.23	44.91	191.26	2.65	8.17	11.21
Alliance Coal LLC	P	J18003	B	U	WKY	35,186.81	11,542	23.083	42.63	184.69	3.81	16.50	46.44	201.19	2.87	8.94	11.76
Alliance Coal LLC	P	J18009	B	U	WV	134,282.95	12,697	25.395	41.44	163.19	5.04	19.85	46.48	183.04	3.20	8.14	6.60
Knight Hawk Coal LLC	P	J18005	B	U	IL	24,345.25	11,226	22.452	37.40	166.56	7.32	32.60	44.72	199.16	2.96	8.26	12.86
		Total Long Term				**349,916.73**	**12,324**	**24.647**	**41.88**	**169.92**	**4.74**	**19.24**	**46.62**	**189.16**	**3.17**	**8.40**	**8.27**
Spot Contract																	
Alliance Coal LLC	P	J20023	B	U	WV	45,435.40	12,707	25.414	39.27	154.52	5.04	19.84	44.31	174.36	3.07	8.04	6.63
Coal Network LLC	B	J20024	B	U	WV	4,838.10	11,140	22.280	24.39	109.46	3.12	14.01	27.51	123.47	2.63	8.96	13.36
		Total Spot				**50,273.50**	**12,556**	**25.112**	**37.84**	**150.68**	**4.85**	**19.33**	**42.69**	**170.01**	**3.03**	**8.13**	**7.28**
Total Ghent						**400,190.23**	**12,353**	**24.706**	**41.37**	**167.46**	**4.76**	**19.26**	**46.13**	**186.72**	**3.15**	**8.36**	**8.15**
Total Kentucky Utilities						**478,610.13**	**12,181**	**24.361**	**41.12**	**168.81**	**5.37**	**22.04**	**46.49**	**190.85**	**3.17**	**8.40**	**8.99**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																		
E.W. Brown High Sulfur Coal																		
Long Term Contract																		
COALSALES LLC	P	J16007	R	S	8	IN	44,840.00	11,210	22.420	36.05	160.78	19.01	84.80	55.06	245.58	3.05	8.05	14.73
Sunrise Coal LLC	P	J15002B	R	U	8	IN	33,764.73	11,502	23.004	36.96	160.66	21.34	92.79	58.30	253.45	3.39	7.49	13.58
		Total Long Term					**78,604.73**	**11,335**	**22.671**	**36.44**	**160.73**	**20.01**	**88.28**	**56.45**	**249.01**	**3.19**	**7.81**	**14.24**
Total E.W. Brown							**78,604.73**	**11,335**	**22.671**	**36.44**	**160.73**	**20.01**	**88.28**	**56.45**	**249.01**	**3.19**	**7.81**	**14.24**

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(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Analysis Of Coal Purchased for Fuel Clause Backup

Dec - 2016

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	MSHA Dist#	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																		
Ghent High Sulfur Coal																		
Long Term Contract																		
Alliance Coal LLC	P	J12007	B	U	10	KY	65,879.50	11,461	22.922	45.66	199.18	3.91	17.06	49.57	216.24	2.94	8.28	12.23
Alliance Coal LLC	P	J16008	B	U	10	KY	6,298.80	11,473	22.946	46.89	204.35	3.91	17.04	50.80	221.39	2.94	8.22	12.22
Armstrong Coal Sales	P	J16003	B	S	10	KY	47,880.00	11,198	22.397	37.69	168.29	4.76	21.26	42.45	189.55	3.11	11.07	11.46
Armstrong Coal Sales	P	J14010B	B	S	10	KY	6,400.00	11,265	22.530	43.01	190.91	4.76	21.13	47.77	212.04	3.13	11.01	11.05
Armstrong Coal Sales	P	J07032B	B	S	10	KY	49,366.00	11,124	22.247	27.85	125.19	4.76	21.40	32.61	146.59	3.20	11.06	11.81
Armstrong Coal Sales	P	J16017	B	S	10	KY	9,546.00	11,153	22.307	37.69	168.95	4.76	21.34	42.45	190.29	3.20	10.87	11.80
COALSALES LLC	P	J16007	B	S	8	IN	11,832.00	11,018	22.036	39.05	177.20	3.19	14.48	42.24	191.68	3.01	8.81	14.70
Eagle River Coal LLC	P	J16005	B	S	8	IL	16,550.93	12,770	25.540	46.21	180.95	4.16	16.28	50.37	197.23	3.33	7.95	6.88
Rhino Energy LLC	P	J14001	B	U	10	KY	97,686.30	11,334	22.668	48.41	213.57	3.79	16.72	52.20	230.29	2.63	8.46	13.11
		Total Long Term					**311,439.53**	**11,367**	**22.734**	**41.98**	**184.66**	**4.17**	**18.33**	**46.15**	**202.99**	**2.95**	**9.34**	**12.09**
Spot Contract																		
Alliance Coal LLC	P	J16004	B	U	10	KY	4,858.00	11,422	22.843	47.30	207.06	3.91	17.11	51.21	224.17	2.92	8.34	12.53
Foresight Coal Sales LLC	P	J16009	B	U	3	WV	88,771.00	12,759	25.518	45.77	179.37	4.52	17.71	50.29	197.08	3.04	8.77	6.29
Kolmar Americas Inc	B	J16019	B	S	12	WV	3,101.30	9,551	19.101	30.49	159.64	2.95	15.45	33.44	175.09	0.73	25.91	8.98
Peabody COALTRADE LLC	B	J16016	B	S	4	WV	3,192.90	9,986	19.972	23.47	117.52	5.41	27.08	28.88	144.60	0.46	26.51	5.66
The American Coal Company	P	J16002	B	U	3	WV	111,881.00	12,744	25.487	51.59	202.43	4.52	17.73	56.11	220.16	3.10	8.90	6.26
		Total Spot					**211,804.20**	**12,631**	**25.263**	**48.32**	**191.28**	**4.50**	**17.79**	**52.82**	**209.07**	**2.99**	**9.35**	**6.45**
Total Ghent							**523,243.73**	**11,879**	**23.758**	**44.55**	**187.51**	**4.30**	**18.10**	**48.85**	**205.61**	**2.97**	**9.34**	**9.81**

Case No. 2020-00349
Attachment 2 to Response to PSC-6 Question No. 13

Conroy

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2016

Station & Supplier	PBDU	POCN	MT	Mine Type	MSHA Dist#	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)				(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																		
Trimble County / KU PRB Coal																		
Long Term Contract																		
Arch Coal Sales Company Inc.	P	J16012	B/R	S	9	WY	46,111.10	8,970	17.941	11.66	64.97	27.57	153.71	39.23	218.68	0.30	4.55	27.20
		Total Long Term					**46,111.10**	**8,970**	**17.941**	**11.66**	**64.97**	**27.57**	**153.71**	**39.23**	**218.68**	**0.30**	**4.55**	**27.20**
Total Trimble County / KU							**46,111.10**	**8,970**	**17.941**	**11.66**	**64.97**	**27.57**	**153.71**	**39.23**	**218.68**	**0.30**	**4.55**	**27.20**
Total Kentucky Utilities							**647,959.56**	**11,606**	**23.212**	**41.22**	**177.59**	**7.87**	**33.88**	**49.09**	**211.47**	**2.80**	**8.82**	**11.58**

(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation3 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2017

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	U	IN	31,980.86	11,611	23.223	40.67	175.14	18.55	79.86	59.22	255.00	3.42	7.71	12.78
Sunrise Coal LLC	P	J15002B	R	U	IN	52,955.67	11,454	22.908	38.14	166.49	22.30	97.33	60.44	263.82	3.43	8.82	12.60
Total Long Term						**84,936.53**	**11,513**	**23.027**	**39.09**	**169.77**	**20.89**	**90.70**	**59.98**	**260.47**	**3.42**	**8.40**	**12.66**
Total E.W. Brown						**84,936.53**	**11,513**	**23.027**	**39.09**	**169.77**	**20.89**	**90.70**	**59.98**	**260.47**	**3.42**	**8.40**	**12.66**

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(a) PBDU as Designated by Symbol P, B, D, or U
P= Producer B= Broker D= Distributor U-Utility

(b) POCN = Purchase Order or Contract Number

(c) MT = Mode of Transportation Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2017

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J16001B	B	U	WKY	9,961.80	11,525	23.051	48.31	209.57	4.02	17.44	52.33	227.01	2.93	8.09	11.99
Alliance Coal LLC	P	J16008	B	U	WKY	3,356.80	11,478	22.956	49.07	213.74	4.01	17.51	53.08	231.25	2.88	8.12	12.61
Alliance Coal LLC	P	J17002	B	U	WKY	59,086.50	11,517	23.034	41.05	178.21	4.02	17.45	45.07	195.66	2.91	8.11	12.00
Alliance Coal LLC	P	J18009	B	U	WKY	35,312.20	11,510	23.019	34.46	149.69	4.02	17.47	38.48	167.16	2.91	8.09	12.03
Armstrong Coal Sales	P	J16003	B	S	WKY	52,680.00	11,499	22.998	41.42	180.09	4.90	21.31	46.32	201.40	3.08	9.72	11.05
Eagle River Coal LLC	P	J16005	B	S	IL	34,451.52	12,690	25.379	48.07	189.41	4.28	16.87	52.35	206.28	3.18	7.41	7.80
Foresight Coal Sales LLC	P	J16018	B	U	IL	10,793.66	11,679	23.358	40.46	173.22	4.02	17.21	44.48	190.43	2.76	8.17	11.42
Rhino Energy LLC	P	J14001	B	U	WKY	31,305.20	11,278	22.555	47.04	208.57	3.90	17.29	50.94	225.86	2.59	8.32	13.65
The American Coal Company	P	J16006	B	U	IL	62,816.73	11,610	23.219	43.86	188.90	4.02	17.32	47.88	206.22	2.65	9.58	10.93
Total Long Term						**299,764.41**	**11,648**	**23.296**	**42.67**	**183.17**	**4.19**	**17.99**	**46.86**	**201.16**	**2.88**	**8.64**	**11.29**
Spot Contract																	
Contura Coal Sales LLC	P	J17001	B	U	PA	27,773.15	13,005	26.009	37.99	146.07	9.36	35.98	47.35	182.05	3.23	8.24	6.15
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	6,459.20	11,266	22.533	38.23	169.64	3.29	14.60	41.52	184.24	2.84	8.87	13.55
Total Spot						**34,232.35**	**12,677**	**25.353**	**38.03**	**150.02**	**8.22**	**32.40**	**46.25**	**182.42**	**3.15**	**8.36**	**7.55**
Ghent High Sulfur Coal						**333,996.76**	**11,753**	**23.507**	**42.19**	**179.50**	**4.61**	**19.59**	**46.80**	**199.09**	**2.91**	**8.61**	**10.90**
Ghent Middlings																	
Spot Contract																	
Arch Coal Sales Company Inc.	P	J17003	B	S	WV	3,162.11	11,035	22.069	33.56	152.08	3.03	13.73	36.59	165.81	1.92	17.69	8.47
Total Spot						**3,162.11**	**11,035**	**22.069**	**33.56**	**152.08**	**3.03**	**13.73**	**36.59**	**165.81**	**1.92**	**17.69**	**8.47**
Ghent Middlings						**3,162.11**	**11,035**	**22.069**	**33.56**	**152.08**	**3.03**	**13.73**	**36.59**	**165.81**	**1.92**	**17.69**	**8.47**
Total Ghent						**337,158.87**	**11,747**	**23.493**	**42.11**	**179.26**	**4.59**	**19.54**	**46.70**	**198.80**	**2.90**	**8.70**	**10.88**

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(a) PBDU as Designated by Symbol P, B, D, or U
P= Producer B= Broker D= Distributor U-Utility

(b) POCN = Purchase Order or Contract Number

(c) MT = Mode of Transportation Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2017

Station & Supplier	PBDU (a)	POCN (b)	MT (c)	Mine Type (d)	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J16012	B/R	S	WY	51,303.80	9,035	18.069	12.86	71.19	28.25	156.30	41.11	227.49	0.29	4.60	26.44
		Total Long Term				**51,303.80**	**9,035**	**18.069**	**12.86**	**71.19**	**28.25**	**156.30**	**41.11**	**227.49**	**0.29**	**4.60**	**26.44**
Total Trimble County / KU						**51,303.80**	**9,035**	**18.069**	**12.86**	**71.19**	**28.25**	**156.30**	**41.11**	**227.49**	**0.29**	**4.60**	**26.44**
Total Kentucky Utilities						**473,399.20**	**11,411**	**22.822**	**38.40**	**168.27**	**10.08**	**44.15**	**48.48**	**212.42**	**2.71**	**8.20**	**12.89**

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(d) Mine Type Designated by Symbol
S = Surface U = Underground

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2018

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
COALSALES LLC	P	J16007	R	U	IN	66,838.33	11,329	22.659	43.30	191.11	12.56	55.45	55.87	246.57	3.21	9.12	13.26
COALSALES LLC	P	J16007	R	S	IN	33,630.00	11,125	22.249	43.30	194.63	12.68	57.01	55.99	251.64	3.22	8.54	14.52
		Total Long Term				**100,468.33**	**11,261**	**22.522**	**43.30**	**192.28**	**12.60**	**55.96**	**55.91**	**248.24**	**3.21**	**8.93**	**13.68**
Spot Contract																	
Sunrise Coal LLC	P	J18025	R	U	IN	11,143.75	11,570	23.140	39.74	171.74	12.34	53.30	52.08	225.03	3.28	7.60	13.17
		Total Spot				**11,143.75**	**11,570**	**23.140**	**39.74**	**171.74**	**12.34**	**53.30**	**52.08**	**225.03**	**3.28**	**7.60**	**13.17**
Total E.W. Brown						**111,612.08**	**11,292**	**22.583**	**42.95**	**190.18**	**12.58**	**55.69**	**55.53**	**245.87**	**3.22**	**8.79**	**13.63**

(b) Designated by symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2018

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	126,390.80	11,491	22.981	42.47	184.81	4.54	19.75	47.01	204.56	2.94	8.38	12.09
Alliance Coal LLC	P	J18003	B	U	WKY	77,487.40	11,507	23.015	38.01	165.15	4.54	19.73	42.55	184.88	2.95	8.31	11.97
Alliance Coal LLC	P	J18009	B	U	WKY	34,749.60	11,446	22.892	35.82	156.49	4.54	19.83	40.36	176.32	2.89	8.31	12.42
COALSALES LLC	P	J16007	B	S	IN	1,550.00	11,087	22.174	46.38	209.18	3.71	16.74	50.09	225.92	2.94	8.34	14.76
Eagle River Coal LLC	P	J16005	B	S	IL	25,850.56	12,646	25.292	53.29	210.68	4.84	19.14	58.13	229.82	3.88	8.97	6.87
Foresight Coal Sales LLC	P	J16018	B	U	WKY	11,364.00	11,812	23.624	43.11	182.50	5.54	23.45	48.65	205.95	2.75	8.13	11.13
Foresight Coal Sales LLC	P	J16018	B	U	IL	86,330.37	11,769	23.537	44.02	187.00	4.54	19.29	48.56	206.29	2.72	8.65	10.73
Knight Hawk Coal LLC	P	J18005	B	U	IL	37,127.16	11,129	22.259	35.20	158.12	8.72	39.18	43.92	197.30	3.13	9.22	12.55
Rhino Energy LLC	P	J14001	B	U	WKY	25,250.90	11,383	22.766	37.30	163.82	4.41	19.38	41.71	183.20	2.59	8.35	13.06
The American Coal Company	P	J17004	B	U	WV	17,979.20	12,798	25.597	32.95	128.74	5.25	20.52	38.20	149.26	4.05	8.54	6.11
The American Coal Company	P	J17004	B	U	WKY	6,484.00	11,774	23.548	33.76	143.38	5.54	23.52	39.30	166.90	2.78	8.07	11.48
The American Coal Company	P	J17004	B	U	IL	34,965.62	11,822	23.645	34.45	145.71	4.54	19.20	38.99	164.91	2.75	8.58	10.53
Western Ky Consolidated Resources I	P	J18002B	B	U	WKY	27,296.00	11,764	23.528	41.77	177.52	5.54	23.54	47.31	201.06	2.68	8.32	11.07
		Total Long Term				**512,825.61**	**11,656**	**23.313**	**40.37**	**173.16**	**4.96**	**21.29**	**45.33**	**194.45**	**2.95**	**8.51**	**11.29**
Spot Contract																	
Consolidation Coal Company	P	J18030	B	U	WV	107,300.90	12,818	25.635	47.20	184.13	5.25	20.48	52.45	204.61	4.05	8.44	6.11
Contura Coal Sales LLC	P	J17001	B	U	PA	23,849.75	12,917	25.835	37.69	145.91	10.58	40.95	48.27	186.86	2.80	8.04	6.95
Western Kentucky Minerals Inc.	P	J18004	B	S	WKY	4,800.40	11,138	22.275	37.32	167.52	3.71	16.65	41.03	184.17	2.64	9.06	14.07
		Total Spot				**135,951.05**	**12,776**	**25.552**	**45.19**	**176.84**	**6.13**	**23.99**	**51.32**	**200.83**	**3.78**	**8.39**	**6.53**
Total Ghent						**648,776.66**	**11,891**	**23.782**	**41.38**	**173.99**	**5.20**	**21.89**	**46.58**	**195.88**	**3.12**	**8.48**	**10.29**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2018

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	51,013.25	9,021	18.042	12.23	67.80	26.86	148.87	39.09	216.67	0.26	4.92	26.47
		Total Long Term				**51,013.25**	**9,021**	**18.042**	**12.23**	**67.80**	**26.86**	**148.87**	**39.09**	**216.67**	**0.26**	**4.92**	**26.47**
Total Trimble County / KU						**51,013.25**	**9,021**	**18.042**	**12.23**	**67.80**	**26.86**	**148.87**	**39.09**	**216.67**	**0.26**	**4.92**	**26.47**
Total Kentucky Utilities						**811,401.99**	**11,628**	**23.256**	**39.76**	**170.97**	**6.75**	**29.03**	**46.51**	**200.00**	**2.96**	**8.30**	**11.77**

Case No. 2020-00349
Attachment 2 to Response to PSC-6 Question No. 13

Conroy

(b) Designated by symbol
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(d) MT = Mode of Transportation3 Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	11,210.00	11,159	22.318	38.15	170.95	8.39	37.60	46.54	208.55	3.16	8.39	14.24
		Total Long Term				**11,210.00**	**11,159**	**22.318**	**38.15**	**170.95**	**8.39**	**37.60**	**46.54**	**208.55**	**3.16**	**8.39**	**14.24**
Total E.W. Brown						**11,210.00**	**11,159**	**22.318**	**38.15**	**170.95**	**8.39**	**37.60**	**46.54**	**208.55**	**3.16**	**8.39**	**14.24**

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Attachment 2 to Response to PSC-6 Question No. 13
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Conroy

(b) Designated by symbol
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation1 Designated by Symbol
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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
Alliance Coal LLC	P	J17002	B	U	WKY	60,466.00	11,477	22.954	44.30	192.99	4.47	19.47	48.77	212.46	2.93	8.74	12.14
Alliance Coal LLC	P	J18003	B	U	WKY	30,123.10	11,477	22.953	39.91	173.87	4.47	19.47	44.38	193.34	2.89	8.57	12.32
Alliance Coal LLC	P	J18009	B	U	WKY	29,625.30	11,510	23.021	37.11	161.19	4.47	19.42	41.58	180.61	2.90	8.67	12.02
Alliance Coal LLC	P	J14001B	B	U	WKY	26,734.50	11,503	23.007	38.57	167.67	4.47	19.43	43.04	187.10	2.92	8.70	12.08
Contura Coal Sales LLC	P	J20001	B	U	PA	23,588.05	13,094	26.188	40.19	153.46	10.42	39.79	50.61	193.25	2.38	8.04	5.82
Hartshorne Mining Group LLC	P	J18001	B	U	WKY	23,332.55	11,707	23.413	42.31	180.72	4.34	18.54	46.65	199.26	2.88	11.74	8.77
Knight Hawk Coal LLC	P	J18005	B	U	IL	38,663.69	11,145	22.290	36.70	164.63	8.59	38.53	45.29	203.16	2.99	8.66	12.99
The American Coal Company	P	J17004	B	U	IL	28,030.73	11,897	23.794	36.86	154.93	4.47	18.79	41.33	173.72	2.69	8.09	10.20
Western Ky Consolidated Resources l	P	J18002B	B	U	WKY	31,956.00	11,719	23.439	45.15	192.64	5.45	23.25	50.60	215.89	2.69	9.75	10.31
Western Ky Consolidated Resources l	P	J14010C	B	U	WKY	3,172.00	11,757	23.515	44.89	190.91	5.45	23.18	50.34	214.09	2.70	9.81	10.06
White Stallion Energy LLC	P	J19002	B	S	IL	20,899.59	12,562	25.124	42.29	168.31	4.77	18.99	47.06	187.30	3.31	8.42	7.89
		Total Long Term				**316,591.51**	**11,715**	**23.431**	**40.64**	**173.47**	**5.54**	**23.62**	**46.18**	**197.09**	**2.86**	**8.91**	**10.87**
Spot Contract																	
Western Kentucky Minerals Inc.	P	J19004	B	S	WKY	6,471.50	11,186	22.373	38.45	171.87	3.66	16.36	42.11	188.23	2.57	7.89	14.99
		Total Spot				**6,471.50**	**11,186**	**22.373**	**38.45**	**171.87**	**3.66**	**16.36**	**42.11**	**188.23**	**2.57**	**7.89**	**14.99**
Total Ghent						**323,063.01**	**11,705**	**23.409**	**40.60**	**173.44**	**5.50**	**23.48**	**46.10**	**196.92**	**2.86**	**8.89**	**10.95**

(b) Designated by symbol
P= Producer D= Distributor
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(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2019

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J18008	B/R	S	WY	61,710.00	9,005	18.011	12.87	71.47	26.74	148.44	39.61	219.91	0.20	4.56	26.82
		Total Long Term				**61,710.00**	**9,005**	**18.011**	**12.87**	**71.47**	**26.74**	**148.44**	**39.61**	**219.91**	**0.20**	**4.56**	**26.82**
Total Trimble County / KU						**61,710.00**	**9,005**	**18.011**	**12.87**	**71.47**	**26.74**	**148.44**	**39.61**	**219.91**	**0.20**	**4.56**	**26.82**
Total Kentucky Utilities						**395,983.01**	**11,269**	**22.537**	**36.21**	**160.67**	**8.89**	**39.44**	**45.10**	**200.11**	**2.45**	**8.20**	**13.52**

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(d) MT = Mode of Transportation3
Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Analysis Of Coal Purchased for Fuel Clause Backup

Dec - 2020

Station & Supplier	PBDU	POCN	MT	Mine Type	State code	Tons Purchased	BTU Per Lb.	No. MMBTU Per Ton	F.O.B. Mine $ Per Ton	F.O.B. Mine ¢ Per MMBTU	Transportation Cost $ Per Ton	Transportation Cost ¢ Per MMBTU	Delivered Cost $ Per Ton	Delivered Cost ¢ Per MMBTU	% Sulfur	% Ash	% H2O
(a)	(b)	(c)	(d)			(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
E.W. Brown																	
E.W. Brown High Sulfur Coal																	
Long Term Contract																	
Peabody COALSALES LLC	P	J19003	R	S	IN	11,210.00	11,181	22.362	39.48	176.53	9.15	40.96	48.63	217.49	3.34	8.46	13.75
		Total Long Term				**11,210.00**	**11,181**	**22.362**	**39.48**	**176.53**	**9.15**	**40.96**	**48.63**	**217.49**	**3.34**	**8.46**	**13.75**
Total E.W. Brown						**11,210.00**	**11,181**	**22.362**	**39.48**	**176.53**	**9.15**	**40.96**	**48.63**	**217.49**	**3.34**	**8.46**	**13.75**

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Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2020

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Ghent																	
Ghent High Sulfur Coal																	
Long Term Contract																	
ACNR Coal Sales Inc	P	J18002C	B	U	WKY	30,524.00	11,773	23.546	45.38	192.73	4.65	19.74	50.03	212.47	2.65	9.36	10.34
ACNR Coal Sales Inc	P	J16006B	B	U	WV	15,048.50	12,811	25.622	41.75	162.94	4.41	17.21	46.16	180.15	3.22	8.37	6.42
ACNR Coal Sales Inc	P	J16006B	B	U	IL	11,345.80	11,844	23.689	41.48	175.11	3.81	16.08	45.29	191.19	2.68	8.19	10.43
ACNR Coal Sales Inc	P	J17004B	B	U	IL	74,026.15	11,836	23.672	41.00	173.21	3.81	16.09	44.81	189.30	2.68	8.12	10.57
Alliance Coal LLC	P	J18003	B	U	WKY	62,374.90	11,554	23.109	42.72	184.84	3.81	16.49	46.53	201.33	2.89	9.07	11.64
Alliance Coal LLC	P	J18009	B	U	WKY	20,555.67	11,539	23.078	39.13	169.58	3.81	16.51	42.94	186.09	2.93	9.16	11.69
Alliance Coal LLC	P	J18009	B	U	WV	101,802.20	12,680	25.361	41.44	163.39	5.04	19.87	46.48	183.26	3.19	8.29	6.58
Alliance Coal LLC	P	J14001B	B	U	WKY	14,311.22	11,550	23.100	40.24	174.21	3.81	16.49	44.05	190.70	2.93	9.06	11.75
Knight Hawk Coal LLC	P	J18005	B	U	IL	22,620.26	11,269	22.538	37.46	166.22	7.32	32.47	44.78	198.69	2.97	8.19	12.79
Western Kentucky Minerals Inc.	P	J20006	B	S	WKY	6,422.40	10,943	21.886	36.57	167.08	3.12	14.26	39.69	181.34	3.21	9.73	14.28
		Total Long Term				**359,031.10**	**11,982**	**23.964**	**41.40**	**172.76**	**4.47**	**18.63**	**45.87**	**191.39**	**2.93**	**8.58**	**9.74**
Spot Contract																	
Alliance Coal LLC	P	J20023	B	U	WV	78,723.20	12,670	25.341	39.10	154.29	5.04	19.89	44.14	174.18	3.14	8.15	6.78
Coal Network LLC	B	J20024	B	U	WV	6,432.90	11,166	22.331	23.90	107.03	3.12	13.97	27.02	121.00	2.51	9.10	13.68
Foresight Coal Sales LLC	P	J20022	B	U	IL	22,627.94	11,884	23.768	30.33	127.59	3.81	16.03	34.14	143.62	2.69	8.07	10.32
		Total Spot				**107,784.04**	**12,416**	**24.831**	**36.35**	**146.39**	**4.67**	**18.80**	**41.02**	**165.19**	**3.01**	**8.19**	**7.94**
Total Ghent						**466,815.14**	**12,082**	**24.165**	**40.24**	**166.51**	**4.51**	**18.66**	**44.75**	**185.17**	**2.95**	**8.49**	**9.33**

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(b) Designated by symbol
P= Producer D= Distributor
B= Broker U-Utility

(c) POCN = Purchase Order or Contract Number

(d) MT = Mode of Transportation2 Designated by Symbol
R = Rail T = Truck B = Barge P = Pipeline

Kentucky Utilities
Analysis Of Coal Purchased for Fuel Clause Backup
Dec - 2020

Station & Supplier (a)	PBDU (b)	POCN (c)	MT (d)	Mine Type	State code	Tons Purchased (e)	BTU Per Lb. (f)	No. MMBTU Per Ton (g)	F.O.B. Mine $ Per Ton (h)	F.O.B. Mine ¢ Per MMBTU (i)	Transportation Cost $ Per Ton (j)	Transportation Cost ¢ Per MMBTU (k)	Delivered Cost $ Per Ton (l)	Delivered Cost ¢ Per MMBTU (m)	% Sulfur (n)	% Ash (o)	% H2O (p)
Trimble County / KU																	
Trimble County / KU PRB Coal																	
Long Term Contract																	
Arch Coal Sales Company Inc.	P	J20002	B/R	S	WY	63,600.07	9,055	18.110	12.66	69.89	24.74	136.65	37.40	206.54	0.21	4.57	26.70
		Total Long Term				**63,600.07**	**9,055**	**18.110**	**12.66**	**69.89**	**24.74**	**136.65**	**37.40**	**206.54**	**0.21**	**4.57**	**26.70**
Total Trimble County / KU						**63,600.07**	**9,055**	**18.110**	**12.66**	**69.89**	**24.74**	**136.65**	**37.40**	**206.54**	**0.21**	**4.57**	**26.70**
Total Kentucky Utilities						**541,625.21**	**11,708**	**23.416**	**36.98**	**157.93**	**6.98**	**29.82**	**43.96**	**187.75**	**2.64**	**8.03**	**11.46**

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(b) Designated by symbol
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R = Rail T = Truck B = Barge P = Pipeline

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 14

Responding Witness: David S. Sinclair

Q-14. Refer to KU's response the Attorney General and Kentucky Industrial Customers, Inc. First Request for Information (AG-KIUC's First Request), Item 172, Attachment 1, and the Excel spreadsheet.

a. For purposes of PROSYM modeling, state whether KU allows imports and exports. If yes, provide the resulting imports and exports. If not, provide support for the company's assumption.

b. Provide the how the availability of each generator was coded in PROSYM. Include in this answer, but do not limit it to, an explanation of whether facilities were designated as "MUST RUN" and the impact this designation has on the marginal cost estimate.

c. Explain, in detail, how fuel prices are forecasted. Provide any workpapers relied upon in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

d. Explain, in detail, how variable O&M costs are forecasted. Provide any workpapers relied upon in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

A-14.

a. To focus the analysis on native load energy requirements, imports were allowed but exports were not allowed. The table below shows monthly volumes of imports over the period for which current SQF rates are applicable.

Year	Month	Imports (GWh)
2020	7	1.7
2020	8	2.7
2020	9	0
2020	10	0.8
2020	11	0.1
2020	12	0
2021	1	0
2021	2	0
2021	3	0
2021	4	0
2021	5	0
2021	6	3.3
2021	7	0
2021	8	0.7
2021	9	0.1
2021	10	2.1
2021	11	0
2021	12	0
2022	1	0
2022	2	0
2022	3	0.5
2022	4	0
2022	5	0
2022	6	0

b. With the exception of a 50 MW portion of OVEC that is "must-run", all units were dispatched in PROSYM economically. In general, a "must-run" constraint would increase marginal costs. However, because the "must-run" portion of OVEC comprises less than 1% of total generation capacity, the impact of this constraint on marginal costs is negligible.

c. See pages 7-8 in Section 16(7)(c) – Item G, at Tab 16 of the Filing Requirements. See attachments being provided in Excel format. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

d. Variable O&M includes reactant and reagent costs. Variable O&M is forecasted by adjusting base-year costs on a dollar per megawatt-hour basis per expected changes in the per-unit costs of the reactants and reagents. See attachment being provided in Excel format. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

The entire attachments for 14(c) and 14(d) are Confidential and provided separately under seal in Excel format.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 15

Responding Witness: David S. Sinclair

Q-15. Refer to KU's response AG-KIUC First Request, Item 172, Attachment 1, page 2.

a. Provide KU's definition of each input (i.e., 3–11).

b. KU's response on page 2, states that the "most relevant input data" is provided. Describe each of the inputs that was omitted from the response, include a detailed definition of how each input, and how each omitted input was forecasted and calculated.

A-15.

a. Incremental Heat Rates (items 3-5): See footnote 3 on page 1 of the referenced Attachment 1. The unit for incremental heat rates is mmBtu per MWh.

Fuel Prices (item 6): Delivered cost of coal and natural gas (dollars per mmBtu).

Variable O&M (item 7): Operating and maintenance costs that vary with the generating unit's energy output level (dollars per megawatt hour).

Load (item 8): LG&E and KU's combined system energy requirements (megawatt hours) and peak demand (megawatts) by month.

Market Electricity Price (item 9): The average monthly price for market electricity (dollars per megawatt hour), exclusive of transmission and other costs applicable to market transactions. See footnote 6 on page 2 of the referenced Attachment 1.

Capacity Ratings (item 10): Minimum and maximum net output (megawatts).

Outage Rates (item 11): Annual average Equivalent Unplanned Outage Rate. See footnote 7 on page 2 of the referenced Attachment 1.

b. The following PROSYM inputs are not discussed in the referenced Attachment 1: emission rates, operating limits, company allocation, CCR adjustment, emission allowance prices, hourly off-system sales and purchase volume limits, off-system sales and purchase price thresholds, resource expansion plan inputs, system constraints. See Section 16(7)(c) – Item G, at Tab 16 of the Filing Requirements for a discussion of these inputs.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 16

Responding Witness: David S. Sinclair / William Steven Seelye

Q-16. Refer KU's response AG-KIUC First Request, Item 172, Attachment 1, footnote 4.

a. State whether it is KU's position that gas-fired units do not have variable O&M costs. Provide the company's justification for this assumption.

b. Provide any orders from any state utility regulatory commissions that explicitly approved omitting variable O&M costs from natural gas facilities within either avoided costs rates or integrated resource planning dockets.

c. State whether KU includes variable O&M for natural gas facilities and other generating facilities in its cost of service study. If so, identify where in the cost of service study variable O&M for generating facilities are located and provide a quantification of the amount of variable O&M for natural gas plants that is included in the cost of service study for the requested test year. Provide any workpapers relied upon in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

A-16.

a. The Companies' gas-fired units incur turbine overhaul costs as a function of the number of unit starts, equivalent operating hours, or both. However, no costs for gas-fired units besides the cost of fuel are incurred as a function of the unit's output level or energy produced. Because of their small size, SQFs (100 kW or less) have no impact on unit commitment decisions, the number of unit starts, or the number of hours a unit operates.

b. See the response to part a. The Companies' avoided cost calculation methodology for SQFs considers all variable O&M that is avoided as a result of SQFs.

c. No. In the Companies' cost of service studies, the FERC Predominance Methodology is utilized to classify costs as fixed or variable. For gas-fired generation all non-fuel operation and maintenance costs are classified as fixed costs. For KU, the classification of non-fuel operation and maintenance expenses for gas-fired generation (Other Power Generation) as fixed is shown on Exhibit WSS-29, at page 9. The workpapers for the cost of service study exhibit were provided as an attachment in response to PSC 1-56.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 17

Responding Witness: Lonnie E. Bellar

Q-17. Provide the average monthly variable O&M costs for the previous five years for each of KU's generating facilities. Explain how KU calculates the average O&M costs and break out each component with a source each input relied upon. Provide the responses and all associated workpapers in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

A-17. See attachment being provided in Excel format.

The attachment is being provided in a separate file in Excel format.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 18

Responding Witness: David S. Sinclair

Q-18. Refer to KU's response AG-KIUC's First Request, Item 172, Attachment 3. Provide the analysis and justification for KU's seasonality, on-peak periods, and off-peak periods. Provide any analysis and workpapers relied upon in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

A-18. The seasons and peak periods in the SQF tariff have remained the same since the Commission originally approved them in Case No. 8566.[7] The Company has not been able to locate the analysis and justification of the seasonality, on-peak periods, and off-peak periods established in that proceeding within the time provided to respond to this data request.

[7] *Setting Rates and Terms and Conditions of Purchase of Electric Power from Small Power Producers and Cogenerators by Regulated Electric Utilities*, Case No. 8566, Order (Ky. PSC June 28, 1984).

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 19

Responding Witness: David S. Sinclair / William Steven Seelye

Q-19. Refer to KU's response to Commission Staff's Fourth Request, Item 21. Explain whether KU has data to support its "expectation that most charging of electric vehicles will be done at home during off-peak hours." If yes, provide the data. If no, explain what is meant by "most charging . . . will be done . . . off-peak" and explain how KU supports its expectation.

A-19. The Companies do not have end-use load data for electric vehicle home charging. The statement is based on charging patterns observed in other states, particularly in California, which is the state with the highest concentration of electric vehicles. See the attached Staff Report from the California Energy Commission, particularly at page 10. Also, studies performed by the National Renewable Energy Laboratory (NREL) have found the same pattern for home charging. See https://www.nrel.gov/news/program/2020/how-might-electric-vehicles-affect-electric-loads.html. Finally, according to the U.S. Department of Energy, most plug-in electric vehicle drivers do more than 80% of their charging at home (see https://www.energy.gov/eere/electricvehicles/charging-home).

California Energy Commission

STAFF REPORT

California Plug-In Electric Vehicle Infrastructure Projections: 2017-2025

Future Infrastructure Needs for Reaching the State's Zero-Emission-Vehicle Deployment Goals

California Energy Commission

Edmund G. Brown Jr., Governor

March 2018 | CEC-600-2018-001

California Energy Commission

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ABSTRACT

This report analyzes plug-in electric vehicle (PEV) infrastructure needs in California from 2017 to 2025 in a scenario where the state's zero-emission vehicle (ZEV) deployment goals are achieved by light-duty vehicles, primarily in residential use. The statewide infrastructure needs are evaluated by using the Electric Vehicle Infrastructure Projection tool, which incorporates representative statewide travel data from the *2010-2012 California Household Travel Survey*. The infrastructure solution presented in this assessment addresses two primary objectives: (1) enabling travel for battery-electric vehicles and (2) maximizing the electric vehicle-miles traveled for plug-in hybrid-electric vehicles. The analysis is performed at the county level for each year between 2017 and 2025 while considering potential technology improvements. The results from this study present an infrastructure solution that can promote market growth for PEVs to reach the state's ZEV goals by 2025. The results show a need for 99,000 to 133,000 destination chargers, including at workplaces and public locations, and 9,000 to 25,000 fast chargers. The results also show a need for home charging solutions at multifamily dwellings, which are expected to host about 121,000 PEVs by 2025. Therefore, the total number of chargers needed to support PEVs in California ranges from 229,000 to 279,000. This range does not account for chargers at single-family homes. An improvement to the scientific literature, this analysis evaluates the significance of infrastructure reliability and accessibility on the quantification of charger demand.

Keywords: Plug-in electric vehicles, zero-emission vehicles, charging infrastructure, charger projections, demand assessment

Please use the following citation for this report:

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EXECUTIVE SUMMARY

Transforming California's transportation system to consist primarily of zero-emission vehicles (ZEVs) that use low-carbon and renewable fuels is critical to reducing the impacts of climate change and meeting federal requirements to improve air quality. The transportation sector represents the largest source of air pollution in California, accounting for nearly 80 percent of the nitrogen oxide emissions and 90 percent of diesel particulate matter emissions. As of 2015, transportation, including indirect emissions from fossil fuel production and refining, accounted for nearly half of the greenhouse gas emissions in California. Specifically, direct fuel combustion emissions from light-duty vehicles accounted for more than one-quarter (26 percent) of the state's carbon footprint.

Numerous California energy policies and vehicle regulations have prioritized the drastic reduction of vehicle emissions to reduce harm to human health and the risk of climate change. Governor Edmund G. Brown Jr.'s Executive Order B-16-2012 punctuated statewide efforts to electrify the transportation sector, calling on the California Energy Commission and other state agencies to support benchmarks to achieve, principally among other goals, 1.5 million ZEVs on California's roads and to ensure that Californians have easy access to ZEV infrastructure by 2025. In California, as of the end of 2017, nearly 14,000 public chargers, including 1,500 direct current fast chargers (DCFC), served 350,000 plug-in electric vehicles. This report quantifies the current and future charging infrastructure necessary to attain California's near-term transportation electrification goals as identified in Executive Order B-48-18 "*to spur the construction and installation of 250,000 electric vehicle chargers, including 10,000 direct current fast chargers*." California's government agencies and the private sector will need to exceed these targets in order *"to put at least 5 million zero-emission vehicles on California roads by 2030."*

Electric Vehicle Infrastructure Projections Method Overview

Energy Commission staff worked with the National Renewable Energy Laboratory (NREL) to develop the Electric Vehicle Infrastructure Projection (EVI-Pro) computer simulation tool. The EVI-Pro quantifies the types of charging infrastructure needed to ensure that plug-in electric vehicle (PEV) drivers can meet their transportation needs. This study applies EVI-Pro in the context of the continuously evolving California market, chiefly in succession of the 2014 *California Statewide Plug-In Electric Vehicle Infrastructure Assessment*. This 2018 study fundamentally improves upon the 2014 Assessment, which used travel and charging data from early PEV adopters to predict the quantities of chargers needed in California. The new study builds upon recent methods that model the behaviors of PEV drivers to predict chargers needed. The principal specialization of EVI-Pro in quantifying charging needed is the ability to account for sources of variation and uncertainty in vehicle and charger technologies, user demographics and market adoption conditions, the shared-use of chargers, and travel and charging preferences while using an electric vehicle. The following is a high-level summary of the method and analysis of California's need, focusing on light-duty vehicles primarily on residential use.

A fundamental element in the EVI-Pro is the simulation of travel behavior of households that are representative of mainstream drivers, as opposed to that of early PEV adopters. A survey of real-world behaviors was used to derive origins, destinations, and schedules of mainstream drivers across

California's 58 counties. The use of a statewide representative sample is essential to quantify the charging necessary to promote the widespread replacement of conventional fuel vehicles with electric vehicles.

An individual's charging requirements are subject to the driver's preferences for convenience and to reduce cost. To reflect mass-market convenience, the model assumes that drivers will have a low tolerance for modifying their driving schedules. In other words, drivers are not assumed to remain at a particular location longer than they would have otherwise to recharge their vehicles. Second, EVI-Pro simulates drivers as economically rational and with an ability to choose among multiple potential charging locations, including at home, based on the price of electricity. If drivers that have economical home charging are price-responsive and motivated to reduce their transportation costs, the total quantity of work and public charging required to serve a county can be reduced. For example, pricing nonresidential chargers can avoid a substitution effect where drivers charge for free at work who would otherwise charge at home at a low cost. This substitution among charger locations may block other users without home charging and increase the number and associated costs of work and public charging. Conservatively, EVI-Pro assumes that drivers will require their vehicle to maintain a predefined level of travel range, as a proxy to reduce "range anxiety," or the concern that driving with a battery of a certain range would be insufficient to complete a given trip. The aggregation, or collection, of driving simulations determines the number of vehicles that require chargers of varying power levels, among three types of locations: at home, at work, or at public locations.

Input Assumptions

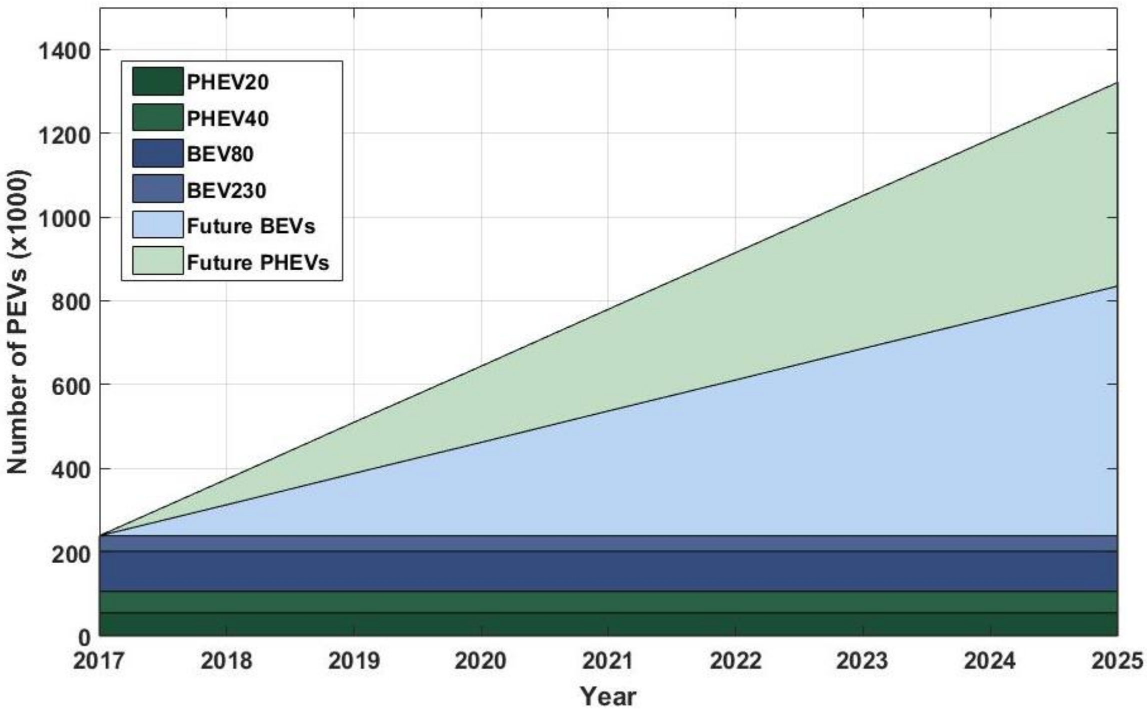
Four major categories of inputs are needed to complete the driving and charging simulations. These categories include vehicle attributes, charger attributes, county-level household travel data, and the composition of the vehicle fleet (or PEV sales). This approach was used by the U.S. Department of Energy and NREL in their *National Plug-In Electric Vehicle Infrastructure Analysis* released in 2017. The analysis calculated charger-per-1,000 PEV ratios with various technology and market scenarios, many of which differ from assumptions summarized below. Stakeholders are encouraged to refer to this report as the primary reference for California-specific infrastructure planning.

The principal vehicle technology assumption is the electric range of battery-electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs), which increase each year consistent with the California Air Resource Board's (CARB) technical review of vehicle battery technologies under the Advanced Clean Cars Program. The principal charger technology assumption is average dispenser power capacity, which varies by charger type and the capability of a vehicle to receive the power into the battery. For simplicity, all BEVs and no PHEVs are assumed capable of DC fast charging. Charge power increases each year linearly between ranges assessed by the Energy Commission. As noted earlier, location-based driver preferences to charge their vehicles are input into the model; price signals are set relative to one another in the order of residential, workplace, and public charging to reflect the cost of infrastructure.

The *2010-2012 California Household Travel Survey* features 24-hour daily travel profiles representative of mainstream driving behaviors at the county level. In EVI-Pro, the availability for a simulated driver to charge at home is based on information on the driver's type of residence. Without detailed information about the availability of parking, all vehicles associated with single-family homes and multiunit dwellings with more than five units were assumed to have access to a residential charger.

Assumptions of the composition of the PEV fleet are derived from an interpolation between the actual shares of BEVs and PHEVs adopted as of 2017 and CARB's assumptions of the plug-in share of ZEV adoption defined in the Clean Technologies and Fuels Scenario by 2025. The ratio of the two PEV types adopted was held constant for the planning period under a linear growth assumption for the overall fleet (as seen on Figure ES.1). Vehicles were geographically distributed among the 58 counties in California with the assumption that the adoption rates of electric vehicles by county would converge toward the purchase rates of all new vehicles, as identified by 2012-2016 vehicle registration data from IHS Markit. As a result, by 2025 about 90 percent of the PEVs were distributed to the counties identified within the four largest metropolitan planning regions of California (Southern California, the San Francisco Bay Area, San Diego County, and the larger Sacramento area).

Figure ES.1: Shares of PEVs Input for the Default Scenario, 2017-2025



Source: California Energy Commission and NREL

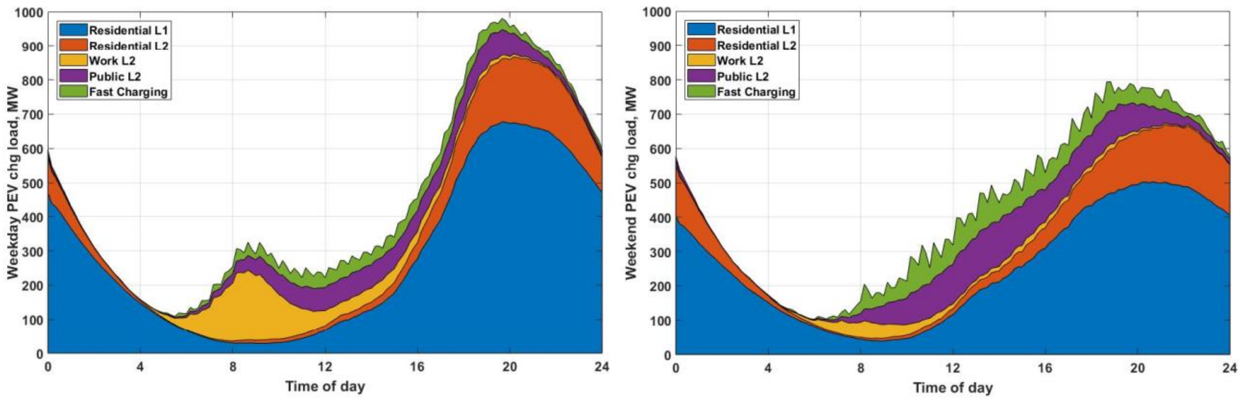
Analysis and Results

The number of chargers needed in a given county is based on the location and time when a charger is necessary to satisfy a driver's travel schedule. Therefore, EVI-Pro outputs electricity demand and the quantity of sessions at homes, workplaces, and in public. Both outputs are resolved hourly for each county and then aggregated for the entire state.

Weekday charging demand creates a more dynamic electricity demand profile compared to weekend charging demand. As seen on Figure ES.2, two peaks for the weekday load coincide with vehicles arriving at work in the morning and returning home during the evening. By 2025, workplace chargers demand more than 200 megawatts (MW) at the peak time of around 9 a.m., and residential chargers demand almost 900 MW at 8 p.m. In contrast, peak demands above 120 MW associated with both public Level 2 and fast chargers occur on the weekends.[1] Fast chargers peak before 11 a.m., and public Level 2 chargers peak after 1 p.m. By 2025, during weekdays, the aggregate demand from all charging types represents an increase of roughly 500 MW between 4 p.m. and 7 p.m., with a maximum demand of nearly 1,000 MW before 8 p.m. The subhourly electricity load shape for DC fast chargers is more volatile than other charging types, as indicated by statewide fast charging load more than doubling to peak demand within one

hour. All types of charging loads will need to be integrated efficiently with the grid to prevent additional ramping generators and stress on distribution infrastructure.

Figure ES.2: PEV Charging Load Profiles in 2025



Source: California Energy Commission and NREL

To quantify the number of chargers, EVI-Pro calculates two outputs for each type of nonresidential location and charging power level. The first output is the total number of vehicle charging events over a 24-hour period. This charging session quantity is the basis for the "high estimate" of charging needed. The quantity of total sessions is divided by two to reflect the likelihood that a public charger is shared with at least one other vehicle, and a charging station operator's economic incentive to best use a public asset. In contrast with Level 2 chargers, this 2:1 sharing ratio in the high estimate is a very conservative proxy for the use of a fast charger. Higher sharing ratios for fast chargers were not used because of the limited sharing potential in some rural counties and the desire for consistent application of the method statewide.

The second output is the maximum number of vehicles that need to charge at any time over a given day. This peak vehicle quantity is the basis for the "low estimate" of charging needed insofar as it represents the minimum quantity of chargers that must be available to meet drivers' simultaneous need to charge. This minimum quantity is scaled to account for the total quantity of charging sessions over a day, in case that sessions needed at times other than during the peak time are sufficiently far away from each other and inhibit drivers' ability to share chargers.

By 2025, to support about 1.3 million PEVs, California needs between 99,000 and 133,000 destination chargers at or near workplaces and in public locations, between 9,000 and 25,000 public DC fast chargers, and 121,000 chargers at multiunit dwellings (MUDs). The total number of chargers needed to support

1 The term "charger" refers to a connector that can serve a vehicle at the full rated power capacity without any operational limitations. The rated power capacity is grouped into alternating current Level 1 (1.4 kW), Level 2 (3.6kW – 11.4 kW), and direct current (DC) fast chargers (50 – 105 kW).

PEVs in California ranges from 229,000 to 279,000. This range does not account for chargers at single-family homes. EVI-Pro results can be compared with actual or planned charger deployments. The quantity of fast chargers available in California in 2017 was less than the number of chargers calculated by EVI-Pro necessary to expand the market for battery electric vehicles (that is, the 1,500 existing fast chargers are at least 25 percent less than the 2,005-5,877 fast chargers listed “as of 2017” in Table ES. 1).

The ranges (as seen on Table ES.1 and Figure ES.3) associated with each charger location are principally affected by the shape of the hourly electricity demand. Charging locations that experience a sharp increase in demand within a brief time frame, like workplaces, will have a smaller range in between the high and low estimates of chargers demanded. The finding regarding the difference in the high and low estimates, similarly with respect to locations of chargers, also applies geographically. For example, if a county’s travel is predominantly associated with commutes to and from work, the peak demand associated with those charging behaviors will manifest themselves in a relatively small variation in total chargers needed. As seen on Table ES.1, this study considered only Level 2 chargers at workplace and public locations, as Level 2 chargers represent about 95 percent of existing installations accounted by the U.S. Department of Energy’s Alternative Fuels Data Center. On the other hand, staff acknowledges that Level 1 chargers may be feasible for some use cases with long dwell times.

Given the total relative quantities of charger types, more than 80 percent of workplace and public Level 2 charging sessions were demanded by PHEV drivers. This result is primarily affected by the electric range limitation of the plug-in hybrids and the drivers’ objective to minimize their fueling costs by recharging with electricity instead of using their conventional engines. Since PHEV drivers’ actual motivations and charging behaviors will differ from modeled assumptions, this optional use aspect of public charging contrasts with that of BEV drivers, whose demand for fast charging is essential for completing their travel. On the other hand, chargers for PHEVs should be seen as essential for reaching the state’s petroleum use reduction goals.

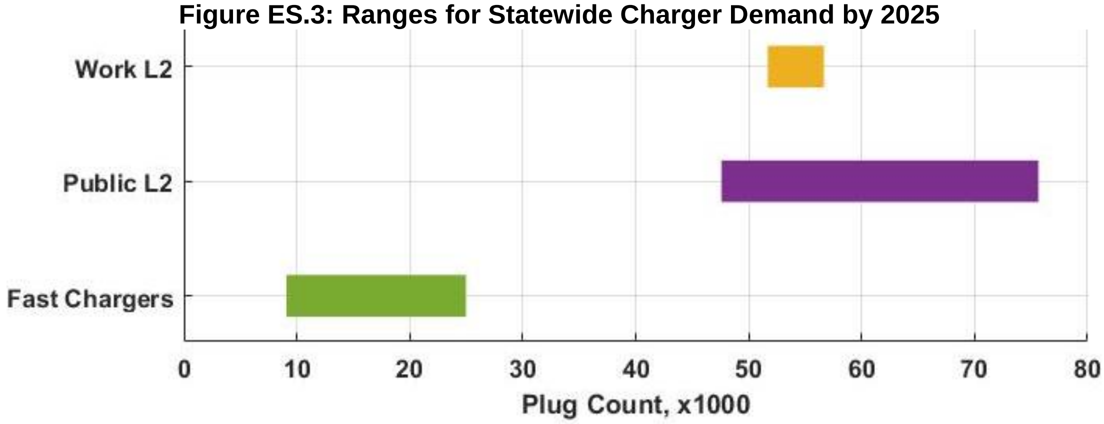
Table ES.1: Projections for Statewide PEV Charger Demand

Demand for L2 Destination (Workplace and Public) Chargers (The Default Scenario)			
	Total PEVs	**Lower Estimate (Chargers)**	**Higher Estimate (Chargers)**
As of 2017	239,328	21,502	28,701
By 2020	645,093	53,173	70,368
By 2025	1,321,371	99,333	133,270
Demand for DC Fast Chargers (The Default Scenario)			
	Total BEVs	**Lower Estimate (Chargers)**	**Higher Estimate (Chargers)**
As of 2017	133,386	2,005	5,877
By 2020	356,814	4,881	13,752
By 2025	729,094	9,061	24,967

Source: California Energy Commission and NREL

In the default scenario, charging at home is the foundation for the majority of PEV travel, with more than 90 percent of simulated drivers engaging with either Level 1 or Level 2 charging, while the rest did not use residential charging under the given parking assumptions. However, given the simulations described, there are two cautions in interpreting the findings herein. First, due to the wide variation in parking configurations and the lack of local information about parking availability, the study made simplifying assumptions about the potential charging at residence types and did not investigate the potential for sharing at residences. Given this, 10 percent of all residential charging, which corresponds to more than 121,000 vehicles, was completed at multiunit dwellings. Second, the EVI-Pro cost-minimization algorithm provided a driver with a Level 2 charger only if a Level 1 charger was not technically able to deliver the driver's energy requirement during their dwelling times. Further, the study did not incorporate drivers' value of time, their potential for unexpected trips, or range anxiety. Based on this assessment, staff found that a minimum of 65,584 PEVs from single-family homes and 6,874 PEVs from multifamily dwellings could not complete their travel with Level 1 charging at home. This group corresponds to nearly 6 percent of the overall PEV sample statewide.

Figure ES.3: Ranges for Statewide Charger Demand by 2025



Source: California Energy Commission and NREL

Finally, a sensitivity analysis of where drivers preferred public Level 2 over public DC fast charging resulted in a substitution in needed fast chargers in favor of destination chargers. However, the sensitivity revealed that compared to actual levels of fast charger deployment, this price preference does not reflect the focus of the charging industry's investments.

Toward 2030 and Beyond

This report quantifies the amount of charging infrastructure needed to stimulate the growth of the light-duty plug-in electric vehicle adoptions for mainstream personal travel patterns in California between 2017 and 2025. In addition to existing charging infrastructure demand modeling approaches, this model specializes in the ability to characterize spatiotemporal effects of demand on the shared use of chargers. An important conclusion is the assurance to drivers that charging will be visible, accessible, and reliably maintained—partly through real-time networking technologies. Networked technologies will be critical to improving the efficiency of charger installations by enabling the shared use of chargers. This has the potential to increase use and reduce the size of the network necessary to support the growing PEV fleet. Leveraging smart-charging technologies in combination with greater diversity in charging power and location- or time-variant prices can enable charging load to be shifted, thereby reducing any new electricity system costs associated with the charging scenario presented.

While the analysis identifies several sources of variance and uncertainty, policy makers and industry should develop consistent policies statewide and locally that ensure the immediate and steady growth in the deployment of chargers to close the gaps necessary for enabling widespread adoption, as envisioned by the 2012 executive order. Consistent with this recommendation, in 2018, CARB updated the *Climate Change Scoping Plan*, which calls for 4.2 million ZEVs on the road by 2030 and to "*comprehensively [facilitate] the market-wide transition to electric drive that we need to see materialize as soon as possible.*" In the 2018 State of the State Address and in the subsequent Executive Order B-48-18, Governor Brown set a target with even greater ambition: to deploy 5 million ZEVs in California by 2030. Thus, the quantities of chargers identified for installation by 2025 in this projection should be followed with additional analyses of various infrastructure networks that can serve more than triple the number of PEVs within just five additional years. Simultaneous to the public and private deployments from 2018 to 2025, staff will complete subsequent iterations of EVI-Pro analyses to incorporate both actual and refined anticipated changes to the vehicle and charging technology markets, built environment characteristics, personal and fleet travel behavior, evolving mobility preferences, and interactions with other policies that affect transportation electrification.

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CHAPTER 1: Introduction

This report analyzes plug-in electric vehicle (PEV) infrastructure needs in California from 2017 to 2025 in a scenario where the state's zero-emission vehicle (ZEV) deployment goals are achieved by light-duty vehicles, primarily in residential use. The statewide infrastructure needs are evaluated by using the Electric Vehicle Infrastructure Projection (EVI-Pro) computer simulation tool. This modeling tool was developed by collaboration between the Energy Commission and NREL.[2] In this report, staff attempted to address the following question: "*How many chargers, by type and location, are needed in California to ensure that both battery-electric vehicle (BEV) and plug-in hybrid electric vehicle (PHEV) drivers can travel primarily with electricity by 2025?"* The answer to this question may guide large-scale investments and policy making toward sustainable transportation.

The State of California has initiated several policy actions to support PEV infrastructure planning and deployment. Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007) and Assembly Bill 109 (Núñez, Chapter 351, Statutes of 2008) directed the Energy Commission to accelerate the development and deployment of technologies to transform California's transportation system. The Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) began in 2009 with $46 million annual funding to invest in electric drive technology. In 2010, the Commission initiated PEV regional readiness efforts to support electric vehicle infrastructure planning at the local level.

In 2012, Governor Edmund G. Brown Jr.'s Executive Order B-16-2012[3] targeted a deployment of 1.5 million ZEVs by 2025. Under this executive order, several state agencies were directed to ensure that infrastructure will be ready to support 1 million ZEVs by 2020. With the existing ARFVTP, the Energy Commission has been leading PEV infrastructure assessment and planning for the State. The Commission released its first statewide PEV infrastructure assessment in 2014 conducted by NREL.[4] Based on 2010-2013 PEV market data, the first assessment provided estimates for Level 1, Level 2, and fast chargers corresponding to a scenario of 1 million PEVs in California by 2020. In the following years, Governor Brown and the state Legislature have announced several other major policy actions such as Senate Bill 350: Clean Energy and Pollution Reduction Act (De León, Chapter 547, Statutes of 2015), Senate Bill 32 (Pavley, Chapter 249, Statues of 2016), and, most recently, Executive Order B-48-18,[5] which further supported statewide efforts to spur the construction and installation of ZEV infrastructure. These efforts have been instrumental in the installation of nearly 14,000 public chargers, including 1,500 direct current fast chargers, and the use of 350,000 plug-in electric vehicles in California by the end of 2017.

2 Agreement 600-15-001.
3 Office of Governor Edmund G. Brown Jr., Executive Order B-16-2012, March 23, 2012, https://www.gov.ca.gov/news.php?id=17472.
4 Melaina, Marc, and Michael Helwig. (National Renewable Energy Laboratory). 2014. *California Statewide Plug-in Electric Vehicle Infrastructure Assessment*. California Energy Commission. Publication Number: CEC-600-2014-003.
5 Office of Governor Edmund G. Brown Jr., Executive Order B-48-18, January 26, 2018, https://www.gov.ca.gov/2018/01/26/governor-brown-takes-action-to-increase-zero-emission-vehicles-fund-new-climate-investments/.

The assessment of PEV infrastructure demand, based on electric vehicle driving and charging behavior, began on a large scale with the rollout of the Nissan Leaf and the Chevy Volt in 2010. The initial PEV infrastructure demonstrations, including the EV Project,[6] deployed an unprecedented number of vehicles and chargers. Concurrently and subsequently, various studies have been conducted to provide different approaches for quantifying infrastructure needs. These approaches illustrate need at a location of interest, with a focus on a specific infrastructure type such as residential, workplace, or public charging. (See Chapter 2.) Besides the infrastructure type and location, the scientific studies also differ in considerations for PEV fleet and modeling consumer behavior. Some studies present a more simplistic approach using “top-down” models. These models attempt to make inferences based on a survey or other big data applications without modeling specific vehicles or drivers. For instance, the 2014 Statewide Assessment used a top-down approach, where the EV Project data from early adopters were used to predict consumer preference for charging infrastructure. In contrast, the studies with a “bottom-up” approach model PEVs individually, then aggregate energy consumption from these vehicles to show high-level infrastructure needs. The bottom-up approach aims to characterize behavioral differences among individuals in more detail. It is especially useful for planning infrastructure for locations where obtaining demand data is difficult.

In this report, several terms are used heavily in describing electric vehicle and charger technologies. Most importantly, the term “charger” refers to a connector that can serve a vehicle at the full rated power capacity without any operational limitations. The rated power capacity is grouped into alternating current Level 1 (L1), Level 2 (L2), and direct current (DC) fast chargers. The assumptions for these power levels are described in Chapter 4. In addition, the infrastructure quantification approach applies to chargers only without accounting any other supply equipment such as pedestals or electrical service and grid-related hardware. The term “PEV” applies to both BEVs and PHEVs. On the other hand, the term ZEV is more comprehensive – it applies to both PEVs and fuel cell vehicles. Finally, the nonresidential charging demand for work-related and nonwork-related trips (workplace and public charging) are grouped into a category called “destination” charging. The designation of parking spaces at workplaces and public locations often overlaps such that the spaces have hybrid use cases (for example, parking garages serving multiple commercial locations).

The term “shared use of chargers” refers to the case where a charger serves more than one vehicle per day. The real-world implication of this concept can be seen in locations with shared parking such as workplaces, multifamily dwellings, and other public locations. The sharing potential for a charger may be increased if the use of the charger is well-managed, where usage-based pricing can prevent the case where a driver remains at a charger while not actively charging, thereby inhibiting another driver’s use. The reliability of equipment and accessibility of chargers are other important factors in sharing potential. For example, ensuring that chargers are maintained, enforcing parking ordinances to prevent idling of vehicles, and choosing locations with high visibility and accessibility can improve sharing potential.

This study evaluates infrastructure needs for vehicles from a residential usage perspective only, and it quantifies charging infrastructure necessary for stimulating the growth of the electric vehicle market. Regardless of household demographics and travel behaviors, the infrastructure solution presented in this

6 Idaho National Laboratory. 2015. *Plug-in Electric Vehicle and Infrastructure Analysis.*

study addresses two primary objectives: (1) enabling travel for BEVs and (2) maximizing the electric vehicle-miles traveled (eVMT) for PHEVs. In doing so, staff considered household travel data representative of the mainstream market of drivers, instead of restricting travel data to only early PEV adopters. Staff also considered drivers' ability to reduce the cost of infrastructure wherein the driver adopts economic charging behavior. The model incorporates a cost-minimization algorithm where individual PEV drivers minimize their fuel cost by responding to price signals set for each charger type and location type, without changing their travel behavior.

CHAPTER 2: Literature Review: Understanding the Uncertainty and Variance in PEV Infrastructure

The light-duty PEV market is in the early stage, with PEV shares among the entire vehicle stock accounting for around 1 percent in the leading California metro areas.[7] While anticipating PEV charging demand is crucial interest to robust infrastructure planning, it is imperative to acknowledge the variance between the technology and use of PEVs. Thus, modeling and planning are subject to large uncertainties. In this chapter, staff analyzes the scientific literature concerning how these studies dealt with variance and uncertainty in modeling "PEV-driver-charger" systems and quantified future charger demand. In addition, staff evaluates various dynamics that vary greatly among different geographies and individuals, even when applying consistent market growth assumptions.

Variance is a metric to measure the spread of a dataset or variable for any given time. On the other hand, *uncertainty* refers to the current and limited state of knowledge about future conditions. For instance, while the PEV market is growing at a fast pace, political, economic, and technological uncertainties will shape the evolution of the market in the coming years. Infrastructure assessment models, on the other hand, typically do not forecast market size. The number of PEVs is usually input to the models. The major sources of variance and uncertainty regarding PEV infrastructure are summarized in Table 1 below. These categories include PEV technology, PEV market trends, and, finally, consumers' travel and refueling behavior.

Table 1: Sources of Variance and Uncertainty on PEV Charging Demand

Area	Sources of Variance and Uncertainty
PEV technology	- Battery range - Powertrain efficiency - Charging power level
PEV market trends	- PEV buyer demographics (i.e., type of residence) - PEV fleet mix of BEVs and PHEVs - Vehicle ownership and innovative mobility trends
Travel and charging behavior	- Range anxiety (or state-of-charge [SOC] tolerance) - PHEVs' willingness to plug-in - Pricing and the shared-use of chargers (accessibility and reliability)

Source: California Energy Commission and NREL

Besides the battery chemistry, the "real-world" range of PEVs is affected by a multitude of factors, including ambient temperature conditions, driver behaviors, and road or traffic attributes. Also, consumer perceptions such as range anxiety and value of time further affect the "effective" electric range of their

7 U.S. Department of Energy (DOE). September, 2017. *National Plug-in Electric Vehicle Infrastructure Analysis.* https://www.nrel.gov/docs/fy17osti/69031.pdf. Accessed January, 12, 2018.

vehicles and, in turn, could increase the need for charging infrastructure. On the other hand, technology development in the realm of charging power level, battery capacity, and vehicle efficiency could lower charging requirements.

In addition to the number of PEVs on the road, buyer demographics may greatly affect infrastructure requirements. For instance, most residents of MUDs typically do not have reliable access to specified off-street parking at their homes. PEV drivers residing at MUDs will thus rely more heavily on public and workplace charging infrastructure.

Another important dynamic is the PHEV drivers' willingness to plug in their vehicles. PHEVs are equipped with an internal combustion engine that allows them to drive on gasoline by choice or once their battery is empty. PHEV drivers' willingness to recharge their vehicles outside their home also has a drastic effect on requirements for nonresidential charging. Consumers' willingness and ability to share available chargers, especially at their workplace, could potentially halve the number of chargers required to satisfy workplace charging needs.

Finally, on the electricity supply side, policies and incentives will have a geographically heterogeneous impact on infrastructure requirements. Utilities will have a central role in shaping load profiles from charging through designing time-of-use rate structures. In California, the widespread adoption of solar energy has led to a major dip in grid load around midday. This so-called "duck-curve" effect may encourage the deployment of workplace charging, which could absorb this excess energy. Advantageous pricing or even free charging at certain times or locations will likely affect consumers' charging decisions. This study focuses on the charging demand side only and does not deal with variance and uncertainties on the electricity supply side that could influence charging behavior. Staff summarizes a selected number of scientific studies regarding PEV infrastructure in Table 2.

From the nine studies reviewed, two approaches to infrastructure planning emerge: (1) quantifying the need for chargers for predetermined driver travel behavior and (2) quantifying the electric miles achieved for a given number of chargers supplied. From the PEV users' perspective, PEV powertrain models, coupled with real-world or synthetic travel data and electricity price signals, are used by Wang et al. (2017), Ji et al. (2015), Saxena et al. (2015), and Zhang et al. (2013 and 2015). In contrast, from an infrastructure supplier's perspective, Ahn and Yeo (2015), Dong et al. (2014), and Xi et al. (2013) developed optimization algorithms to minimize installation and operational costs while maximizing electrified VMT. This literature review did not include micrositing infrastructure models, similar to a recent study from the Luskin Center (2017),[8] which have significantly different inputs and outputs. The micrositing models focus on the street-level traffic and other constraints, such as local grid capacity.

This literature review shows that several dynamics, which may be a significant source of variance and uncertainty, have been neglected in projecting future PEV charger demand. These dynamics include parking availability, shared use of chargers, and new mobility paradigms affecting travel and vehicle ownership patterns). Accounting for these dynamics will be crucial in designing a future-proofed charging infrastructure network. While not all questions are answered in this report, the focus of the EVI-Pro

8 Luskin Center. 2017. *Siting Analysis for Plug-in Electric Vehicle Charging Stations in the City of Santa Monica.* http://innovation.luskin.ucla.edu/content/siting-analysis-plug-electric-vehicle-charging-stations-city-santa-monica. Accessed January 12, 2018.

modeling framework – the assessment of the shared use of chargers – could be used to provide insight into these issues. (See Chapter 5 for a detailed discussion on EVI-Pro's contributions to the literature.)

Table 2: Summary and Comparison of the Scientific Literature

Author(s)	Infrastructure Focus	Geography	Fleet Scenario(s) (Range/Battery)	Sources of Variance and Uncertainty Explored
Xi et al. (2013)	Destination (workplace and public) L1&L2	Columbus Region, Ohio	Various BEV fleet (BEV73)	• Charger type & availability by location
Zhang et al. (2013)	Destination (workplace and public) L1&L2	California	Various PEV fleet (PHEV35, BEV60)	• Charger type &availability by location • Electricity pricing
Dong et al. (2014)	Destination (public L1, L2 & DCFC)	Seattle, WA region	Various BEV fleet (BEV100)	• Range anxiety • Daily travel (in miles)
Zhang et al. (2015)	Corridor DCFC planning	California	Various BEV fleet (BEV60, BEV100, BEV200)	• Electricity pricing • Battery range
Ahn and Yeo (2015)	Destination DCFC planning for taxis	Daejeon, South Korea	Various BEV fleet (22 kWh)	• Battery range • Charging power level
Saxena et al. (2015)	Travel demand satisfied by L1 charging	United States	Various BEV fleet (24 kWh)	• Powertrain efficiency • Daily travel (in miles)
Ji et al. (2015)	Corridor DCFC planning	California	250k BEV80, 125k BEV150, 125k BEV300	• Battery range • PEV fleet mix • Charger type & availability by location
Metcalf et al. (2016)	Destination DCFC siting	California, Pacific Gas & Electric service area	Various PEV fleet (PHEV40, BEV 100, BEV200)	• PEV market size
Wang et al. (2017)	Charging demand forecasting	Synthetic U.S. travel data	Various BEV fleet (18kWh, 24kWh, 28kWh, 32kWh)	• Battery range • Electricity pricing • Daily travel (in miles)

Source: California Energy Commission and NREL

Xi et al. (2013) used a linear-integer program to simulate the number of L1 (1.4 kilowatts [kW]) and L2 (4 kW) charging stations required at work and public locations, optimizing either to maximize the number of EVs charged or maximize the energy throughput from the chargers, both under a budget constraint. EV adoption and travel patterns in the region were predicted using a linear regression model with sociodemographic and macroeconomic variables in conjunction with 2010 Mid-Ohio Regional Planning Commission survey data. The available budget is varied under both optimization goals to yield different bounds for the optimal charging station and plug counts.

In contrast, Zhang et al. (2013) modeled different L1 and L2 charging scenarios for PHEVs and BEVs, assuming that a PEV driver's charging behavior aims to minimize his or her cost. They evaluated various time-of-use (TOU) charging strategies and charger needs at home, work, and public locations. The authors used *2009 National Household Travel Survey* (NHTS) travel data and existing electricity rates from Pacific Gas and Electric Company. Smart-charging strategies, responding to TOU rates, were shown to yield significant savings for PHEV drivers. Sensitivities to battery range, electricity rate structure, and infrastructure availability at home, work, or public locations are presented.

Dong et al. (2014) optimized the locations for a given number of chargers using genetic programming (an algorithm that mimics natural selection) under budget constraints. An activity-based assessment for driving and charging behavior aimed to quantify the effect of public charging infrastructure on range anxiety. Considering a case study of the Seattle region, the authors illustrated the effects of different levels of investment on infrastructure deployment and the corresponding reduction in range-constrained trips.

Zhang et al. (2015) estimated the demand for interregional corridor DC fast charging stations through a set-cover problem and analyzed the use of these stations for various charging strategies. The candidate sites for DCFC were selected from a pool of 3,000 freeway exits and highway intersections in California. Different charging scenarios were investigated: random and late-charging increase the grid demand in the afternoon, while early reserve strategies with dynamic pricing evenly distribute charging throughout the day. Sensitivity to battery range is also evaluated.

Ahn and Yeo (2015) derived optimal public DCFC density by minimizing a cost function (the sum of additional trip cost, cost of delay time, installation, and operating cost of charging stations) for a given unit area. Real-world taxi trajectory data from Daejeon in South Korea was used to generate an optimal map of charging station density to serve 90-mile range electric taxis in that city. The authors investigated the following variances for different sizes of a BEV fleet: charging station density, numbers of plugs per station, peak-time charging demand, charging power levels, and electric range.

Saxena et al. (2015) built an EV powertrain model to estimate the fraction of typical U.S. driving days – from NHTS data – that can be accommodated with L1 charging at home only or at home and workplaces. They ran sensitivity analyses for the following sources of variance: unexpected trips beyond normal daily driving, ancillary loads such as air conditioners, battery degradation over time, and effects of road grade and elevation. While the distinction between weekday and weekend travel patterns is made in this analysis, charging availability at MUDs wasn't studied, and only one PEV type was simulated, with a sub-100-mile range (24 kilowatt-hour [kWh] battery).

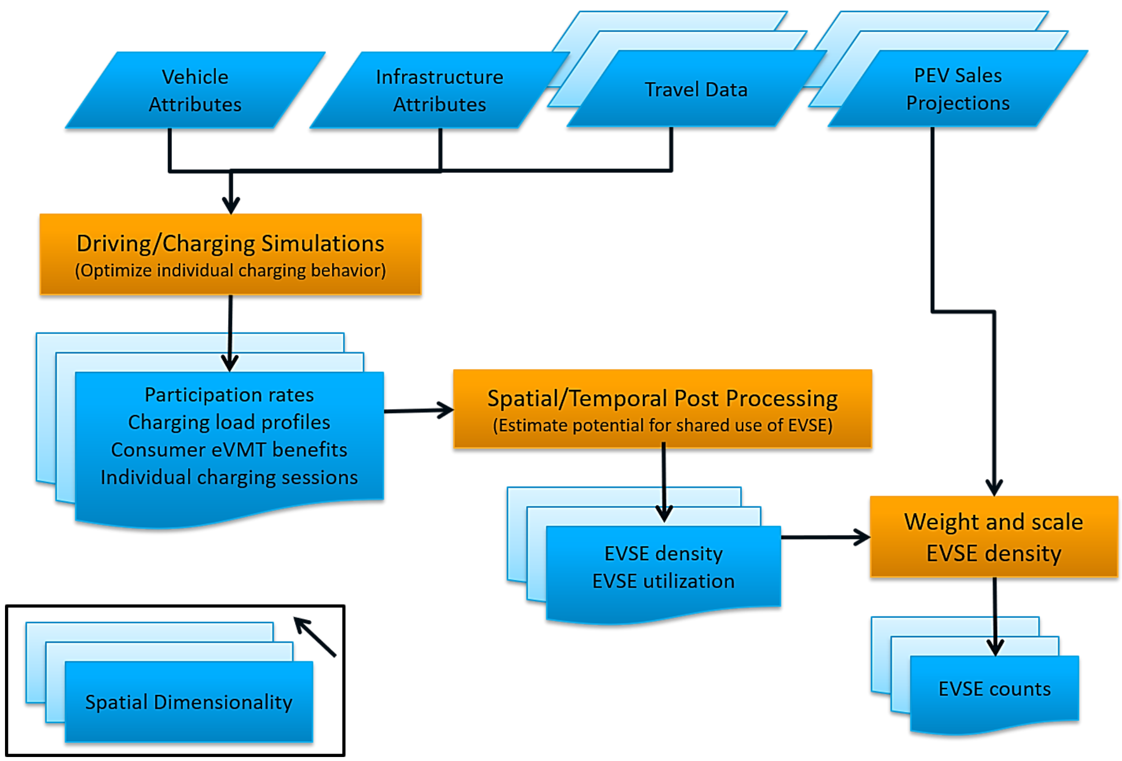
Ji et al. (2015) projected fast charging demand for connecting major California metropolitan areas by aggregating charge windows derived from long-distance travel data from the *2012 California Household Travel Survey*. Charger utility was assessed for two fleet scenarios. The present-day scenario corresponded to the PEV adoption rate from the Clean Vehicle Rebate Project (CVRP) data and DCFC availability from the Alternative Fuels Data Center (AFDC), while the future scenario projected 500,000 BEVs in California. The authors evaluated the effects of different battery range and availability of workplace charging on DCFC corridor charging demand.

In another study, Metcalf et al. (2016) provided the prioritized DCFC site locations for PG&E's service territory based on highest unmet PEV charging need. Their macrositing model used data including household travel and existing charging networks. The model considered two PEV adoption scenarios by 2025. As a significant improvement to the siting models, the authors considered the available transformer capacity for the sited locations to reduce installation costs and improve site host acceptance. The transformer capacity, which is a very important factor, was often neglected in other infrastructure siting models.

CHAPTER 3: Method: The Electric Vehicle Infrastructure Projections (EVI-Pro)

EVI-Pro used a "bottom-up" approach to estimate PEV charging requirements with the conceptual flow of information visualized below in Figure 3.1. The primary processing steps in EVI-Pro included 1) conducting individual PEV driving/charging simulations over real-world 24-hour driving days, 2) spatiotemporal post processing of individual charging events to derive charger-to-PEV ratios, and 3) scaling charger to PEV ratios per a PEV stock goal or projection. This approach was recently used by U.S. Department of Energy (DOE)/NREL in their *National Plug-In Electric Vehicle Infrastructure Analysis*[7] for calculating *charger-per-1000 PEV* ratios with various technology and market scenarios, many of which differ from assumptions employed in this report. Thus, the DOE/NREL report is not interchangeable with this analysis. Stakeholders are encouraged to refer to this report as the primary reference for California-specific infrastructure planning.

Figure 3.1: Inputs/outputs and data flow in EVI-Pro



Source: California Energy Commission and NREL Staff

The fundamental element of EVI-Pro simulations is 24-hour daily driving schedules from real-world vehicles. While these driving schedules are typically sourced from gasoline vehicles, EVI-Pro simulated each driving day as if it were attempted in a PEV. By applying real-world travel data from gasoline vehicles to simulated PEVs, EVI-Pro attempted to estimate charging solutions that enable future PEVs to serve as a direct replacement for the gasoline vehicles that represent the present-day majority of the light-duty vehicle fleet.

Charging solutions to complete days of driving were estimated by identifying charging opportunities that were consumer-oriented for both convenience and cost. Convenience is achieved by simulating charging events as occurring only during dwell times present in the original travel data. The EVI-Pro method implies that the mainstream PEV drivers will have a low tolerance for altering travel behavior regularly to accommodate charging their vehicle. When the price of charging is equivalent for two or more locations, EVI-Pro assumes that consumers prefer to charge at locations with long dwell times. This approach implied a greater energy transfer per charging event and helped minimize the number of charging events per day. Simulated consumers in EVI-Pro were modeled as being economically efficient, preferring to charge their vehicles at locations that help minimize charging costs. Simulated consumers were provided with charging cost ($/kWh) information and the energy needed to complete their next trip, so each simulated PEV driver could decide whether a charging event was needed at their location. Once feasible charging solutions were identified, the model iterated through driving/charging events until the battery SOC at the start and end of the simulated day were consistent.

In addition to the objective of minimizing cost, simulated consumers were also subject to constraints on battery SOC. For each simulated driving day in EVI-Pro, BEVs were required to maintain battery state of charge above a predefined level, defined by users as a reasonable proxy for minimizing range anxiety. This minimum state-of-charge level may decrease gradually as the electric range of BEVs increases. Since PHEVs can operate with a depleted battery in charge sustaining mode, EVI-Pro did not place a constraint on the minimum allowable state of charge for PHEVs but instead attempted to maximize eVMT and minimize gasoline consumption. The authors performed the EVI-Pro driving/charging simulations only for vehicles that had participated in the California Household Travel Survey (CHTS) that is completed every 10 years.[9] The number of PEVs input by EVI-Pro users may be different than the number of CHTS vehicle-days simulated. In this case, EVI-Pro scaled charger-to-PEV ratios (derived from simulation of CHTS vehicle-days) concerning the number and type of PEVs defined by users. The charger-to-PEV ratios tended to vary by location type (home, work, public) and by region (county) and were sensitive to model inputs.

While the driving and charging simulations determined the number of vehicles that used each charger type, the amount of infrastructure required to satisfy charging demand depended on the spatial/temporal coincidence of charging. For example, consider a fixed number of charging events at public L2 chargers. If these charging events happened at the same location and were uniformly distributed throughout the day, a minimal amount of infrastructure could meet the demand (corresponding to the high utilization of a small number of chargers). Conversely, if the same number of charging events occurred in isolated locations at the same time, a much larger amount of infrastructure was required (corresponding to the low use of a large number of chargers).

EVI-Pro provided two important outputs used in quantifying charger demand. First was the sum of all charging events for a 24-hour period from all simulated vehicles with distinguishing each location type

9 California Department of Transportation (Caltrans). 2013. *2010-2012 California Household Travel Survey Final Report Appendix*. http://www.dot.ca.gov/hq/tpp/offices/omsp/statewide_travel_analysis/files/CHTS_Final_Report_June_2013.pdf. Accessed January 12, 2018.

(residential, work, public). Each charging event was associated with a unique vehicle to prevent double counting in identifying the potential charger needs. The second important output was the sum of charging events occurring during peak-demand time (weekday or weekend) for each location type. The participants in CHTS were asked to provide one day-long trip information assigned randomly for a weekday or a weekend. All outputs described above were calculated separately for typical driver behaviors on weekdays and weekends. The charger estimates in results were not based on the average of weekday and weekend simulations. The results were based on weekday *or* weekend trips, depending on which day has the higher charging demand for a particular location type.

The Energy Commission staff used a 2:1 PEV-to-charger ratio to derive the high estimate for nonresidential charger counts. In this case, the total daily charging events for each location type were divided by two. This 2:1 sharing ratio used in the high estimates should be seen as a conservative proxy for the use of a fast charger, particularly when compared to a Level 2 charger, but higher ratios were not used due to two factors: 1) the convergence with the minimum quantity of chargers needed (mostly in rural areas) and 2) the geospatial uncertainty as to whether drivers were in practice willing to travel to use fast chargers, if they were not sufficiently distributed.

The low estimate is equal to the 10th percentile between the peak-time total charging events and the high estimate. Therefore, the low estimates are obtained by scaling the peak charging demand up using the daily total number of charging sessions. The Energy Commission's approach for low estimates intends to account for the case when the charging events during nonpeak times occur at geographically distant locations, inhibiting shared use. Thus, additional chargers beyond those required to meet peak demand may be needed. The mathematical model for the higher estimate (H.E.) and lower estimate (L.E.) of charger counts are provided below:

$$H.E._{i,j} = \frac{\sum_{k=1}^{144} C.E._{i,j,k}}{2}$$

$$L.E._{i,j} = C.E._{i'j}^{p} + \frac{\left(H.E._{i,j} - C.E._{i'j}^{p}\right)}{10}$$

i = location type (residential, work or public)

j= type of day (weekday or weekend)

C.E. = Total Charging Events occurring within any 10-minute time interval

k= time interval (up to 24x6 for a 24 hour period [by increments of 10-minutes])

$C.E.^{p}$ = Total Charging Events occurred during the 10-minute time interval associated with peak demand

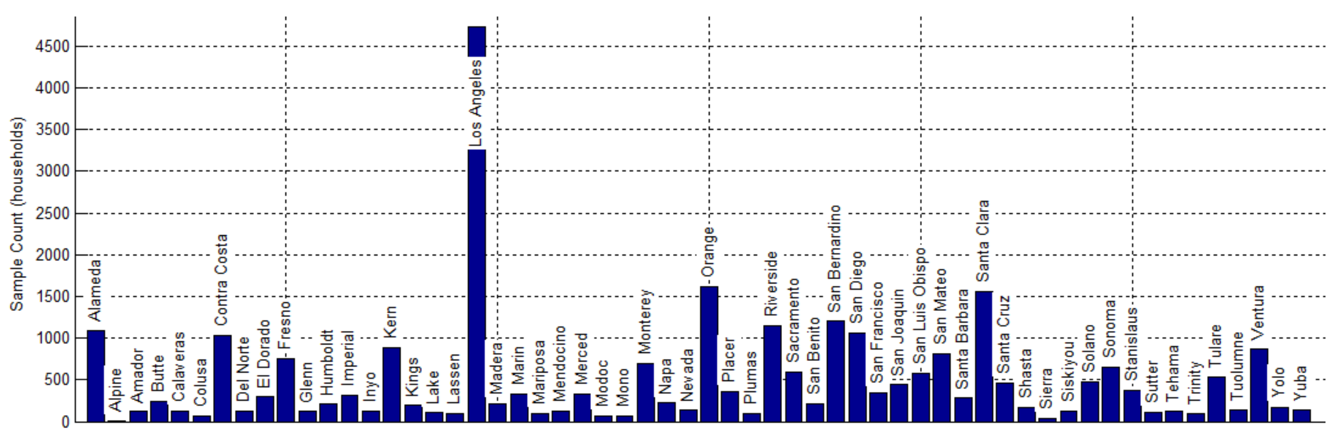
The Input Selections. The four groups of input data necessary for an EVI-Pro simulation included t (1) PEV attributes, (2) infrastructure attributes, (3) travel data, and (4) PEV fleet projections.

Input 1: PEV attributes. The vehicle attributes that can be specified in EVI-Pro included the electric range (in miles), vehicle drive efficiency (watt-hours per mile), minimum range tolerance (in miles), onboard charger efficiency, and maximum AC charging power. In this assessment, some of these inputs were assumed constant, while others were assumed to change over time (annually). The assumptions on PEV attributes are provided in Chapter 4.

Input 2: Infrastructure attributes. The authors segmented charging infrastructure by location type as home (single-unit or multiunit dwelling), workplace, and public (any destination not classified as either a home or work destination). For each location type, up to three charging power levels may be available depending on the scenario provided by users. For all simulated charging opportunities, a minimum dwell time for the driver to consider plugging in (at all location types, including home) can also be specified by users, though simulated consumers may not plug in at every opportunity, depending on their daily charging needs. The inputs for fuel pricing were also included under the infrastructure attributes. Staff developed scenarios where attributes of new chargers evolve annually and described in Chapter 4. While charger technologies improve annually, during this eight-year planning horizon for simplicity, staff did not consider decay rates to characterize the actual useful lifetime of equipment (for example, warranty, durability, malfunction, theft).

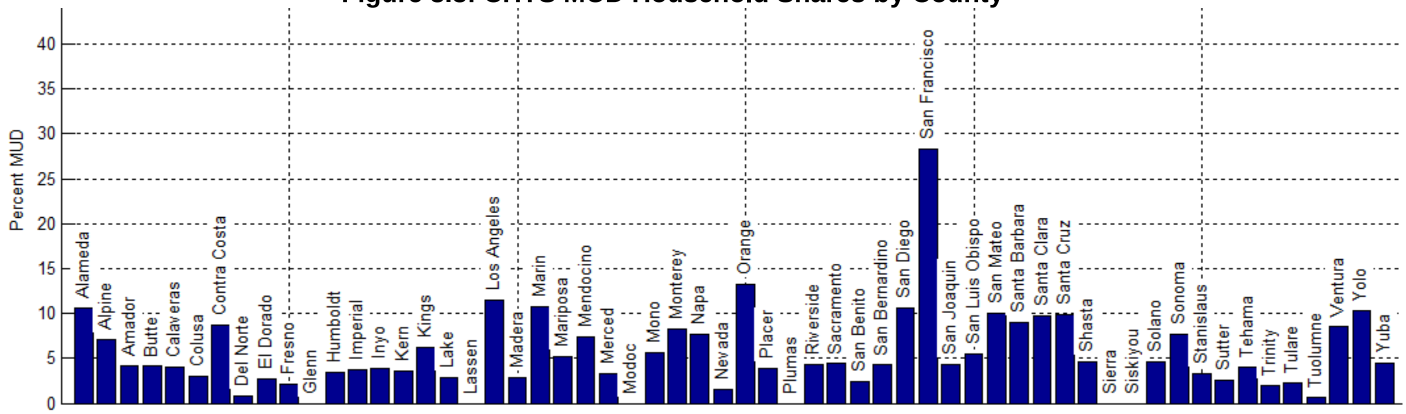
Input 3: Travel data. Driving and charging simulations were conducted in EVI-Pro using 24-hour travel profiles from the 2012 CHTS.[6] The CHTS contains 24-hour travel logs from 47,559 vehicles across 32,300 households in California. With coverage across all 58 California counties, the CHTS data contained 184,476 driving trips. County distributions of CHTS household counts and MUD shares are shown in Figures 3.2 and 3.3.

Figure 3.2: CHTS Household Counts by County



Source: California Energy Commission and NREL

Figure 3.3: CHTS MUD Household Shares by County



Source: California Energy Commission and NREL

Input 4: PEV fleet projections. The authors used county-level sales projections for BEVs and PHEVs to scale the charger-to-PEV ratios calculated by EVI-Pro. PEV fleet projections used in this study are discussed in Chapter 4. In addition to the number and type of PEVs by county, an assumption had to be made regarding the availability of home charging. This assumption is central to modeling the charging behavior as most residential vehicles are parked at home during overnight hours. This long-duration parking can be a significant opportunity for PEV charging, which is lost on individuals without residential parking or access to an outlet nearby. To this end, residence type information for CHTS households was used as a proxy for the potential for a driver to use home charging. Table 3.1 shows the statewide shares of CHTS vehicles by residence type, the classification of residences as a MUD, and the assumption of the availability of home charging used in this study. EVI-Pro simulated CHTS vehicles that did not have access to home charging as relying solely on workplace and public charging infrastructure, which represented about 5 percent of the sample (per the assumed relationship between residence type and potential for home charging).

Table 3.1: CHTS Statewide Sampling by Residence Type and Assumed Home Charging Potential

Residency Type/Code	Description	Vehicle Count	Percent of Sample	EVI-Pro MUD	EVI-Pro Home Charging Option
1	Single-family house not attached to any other house	39,018	82.0%	no	yes
2	Single-family house attached (each unit separated by a ground-to-roof wall)	2,887	6.1%	no	yes
3	Mobile home	1,055	2.2%	yes	no
4	Building with 2–4 apartments/condos/studios/rooms	1,234	2.6%	yes	no
5	Building with 5–19 apartments/condos/studios/rooms	1,701	3.6%	yes	yes
6	Building with 20 or more apartments/condos/studios/rooms	1,612	3.4%	yes	yes
7	Boat, RV, van, etc.	12	0.0%	yes	no
97,98,99	Other; Don't know; Refused	30	0.0%	yes	no

Source: California Energy Commission and NREL

CHAPTER 4: Analysis and Results

The Default Scenario Formulation

Step 1: Fleet input: Total PEVs and annual growth rate. Fleet assumptions followed the state's ZEV deployment goals for 2025. This study did not forecast future levels of ZEV adoption. The Energy Commission's report *Transportation Energy Demand Forecast, 2018-2030* includes statewide forecast of ZEV and conventional vehicle population to 2030.[10] Rather, the study took a policy perspective to achieve the 1.5 million ZEV target in Executive Order B-16-2012. As discussed in Chapter 3, vehicle quantities were exogenous inputs for EVI-Pro. Following the 1.5 million ZEV target, staff used the relative shares of Fuel Cell Vehicles and PEVs projected in CARB's "Clean Technologies and Fuels (CTF)" scenario following the 2016 *Mobile Source Strategy.*[11] This scenario (also called "Natural Turnover Scenario" or "Scenario-2") assumed 200,779 FCEVs among 1,686,000 ZEVs by 2025. This amount corresponded to a market share of 11.9 percent for FCEVs. This analysis considered the same 11.9 percent FCEV adoption rate to apply over 1.5 million ZEVs, which resulted in a statewide population of 1,321,371 PEVs by 2025 used in EVI-Pro simulations.

The analysis was performed at the county level and by year. The PEV fleet defined as of January 1, 2017, was gathered from the CVRP online database,[12] accounting for rebate participation rates at the county level. Staff assumed that upon this initial fleet of 239,215 PEVs at the start 2017, 135,269 PEVs were added annually through the end of 2024 to reach 1.3 million PEVs by 2025. The annual increase was assumed linear, as presented in Figure 4.1. The authors chose linear adoption over exponential adoption for simplicity. Furthermore, because EVI-Pro quantified charging in proportion to PEV quantity, when comparing linearly and exponentially increasing functions between equivalent fleets in 2017 and 2025, a modeling assumption of linear growth may have caused infrastructure to "lead" real-world PEV adoption. Otherwise stated, a linear annual increase in modeled PEV adoption promoted readiness for actual PEV adoption, because infrastructure demanded by linearly-modeled adoption consistently results in more chargers required in a given year compared to an exponential adoption curve.

Step 2: Distribution of PEVs by county. The fleet distribution followed the current distribution of PEVs for the first set of simulations for 2017. The first set of simulations for 2017 included four types of PEVs, which were identified as a proxy to the existing market. (See Appendix D for details.) The annual PEV

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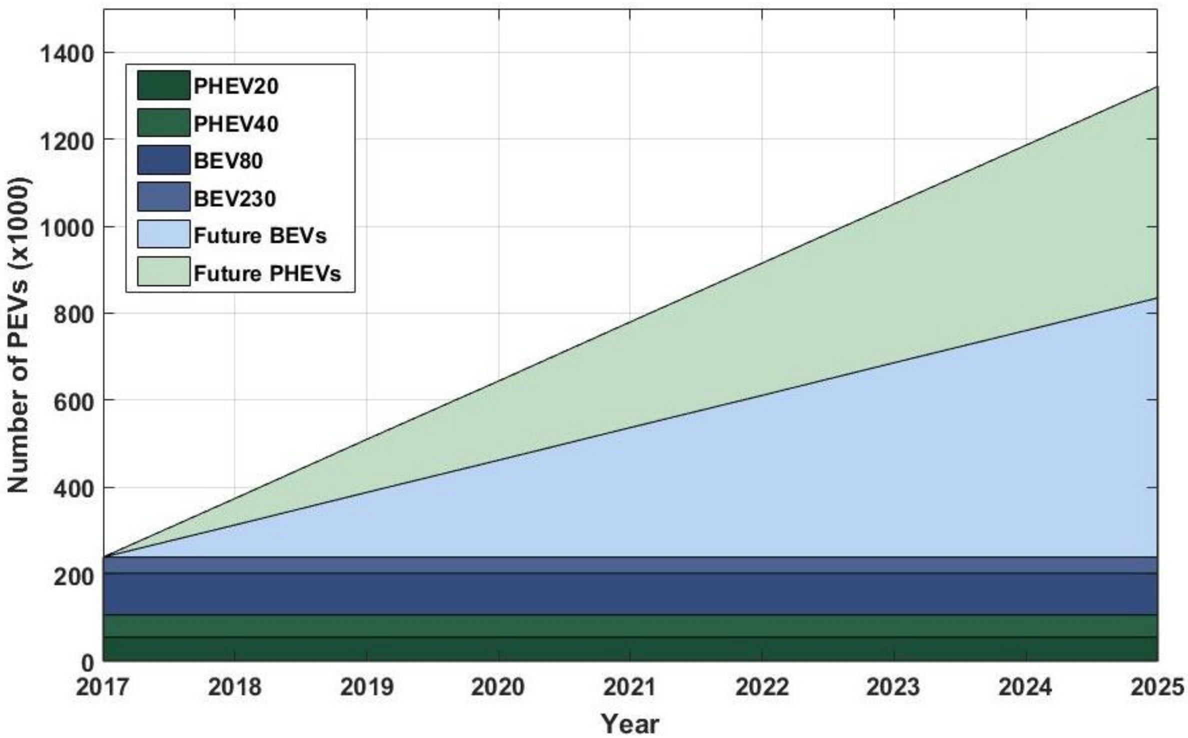
10 The Energy Commission's *Transportation Energy Demand Forecast* includes forecast of electricity demand associated with ZEV population forecast, in different incentive and clean vehicle technology scenarios and the current regulatory environment. The "Low Demand" case achieves about 1.6 million ZEVs by 2025, of which about 1.5 million vehicles are PEVs. For details see California Energy Commission. November, 2017. *Transportation Energy Demand Forecast, 2018-2030.* http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-05/TN221893_20171204T085928_Transportation_Energy_Demand_Forecast_20182030.pdf. Accessed February 13, 2018.

11 California Air Resources Board. May, 2016. *Mobile Source Strategy.* https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf. Accessed January 12, 2018.

12 Clean Vehicle Rebate Program Website. https://cleanvehiclerebate.org. Accessed January 12, 2018.

shares by county were assumed to converge to the new vehicle adoption distribution (including non-PEVs), as derived from 2016 vehicle registration data provided by IHS Markit.[13] The new vehicle adoption for a given year was defined as the average of new vehicle sales during the last five-year period. The assumption of convergence toward the new vehicle adoption distribution intended to model the outcome where PEVs become a mainstream market product by 2025. For details on existing and new vehicle distributions by county, refer to Appendix A and Appendix B, respectively.

Figure 4.1: Shares of PEVs Input for the Default Scenario, 2017-2025



Source: California Energy Commission and NREL

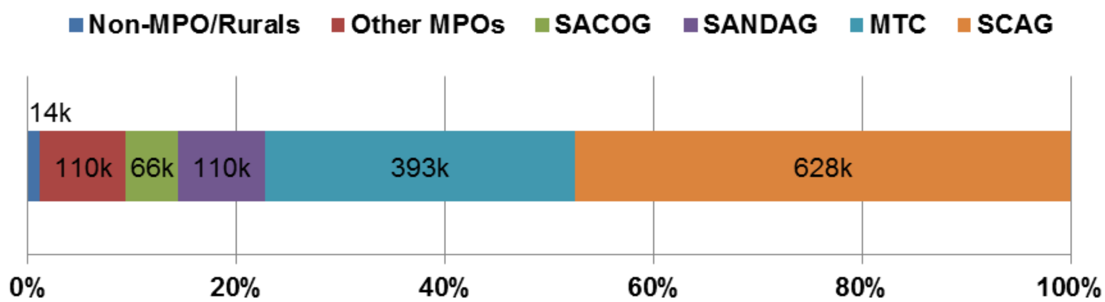
Step 3: Shares of BEV and PHEV at the county level. The PEV fleet included BEVs and PHEVs. Given the wide range of automotive manufacturer announcements and anticipated PEV releases during the modeled time frame and county-level variability in available PEV models for sale, staff did not assume substantive changes in the relative rate of adoption of BEVs and PHEVs. Therefore, the BEV-PHEV split was assumed consistent through 2025. This assumption resulted in a statewide PEV fleet composed of 45 percent PHEVs and 55 percent BEVs. The authors applied the existing BEV and PHEV proportions for each county on the annual PEV fleet

distributed for each county described. Because some counties had very high BEV or PHEV rates, the authors applied a filter for BEV-PHEV splits. This filter limited PHEV adoption to between 35-55 percent for a given county. Therefore, some counties with very low or high adoption rates for BEVs or PHEVs were assumed closer to the statewide average of BEV and PHEV split for adoptions for 2018 through 2025.

13 IHS Markit. 2017. "Market Insight: Registrations and Vehicles-in-Operation." https://www.ihs.com/products/automotive-market-data-analysis.html. Accessed June 2017.

In Figure 4.2, the total PEV fleet was grouped by metropolitan planning organization (MPO) regions: the Southern California Association of Governments (SCAG), the Metropolitan Transportation Commission (MTC) of the Bay Area, the San Diego Association of Governments (SANDAG), the Sacramento Council of Governments (SACOG), and other smaller MPO regions. The rural counties without a desginated MPO were listed under "Non-MPO" areas.[14] The intent of applying these distributions was for the model to consider a distribution of the PEV fleet that converges from an early adopter market toward the mainstream new vehicle buyer's market, where overall Southern California and the Bay Area regions comprise more than three-quarters of all PEVs adopted in California. Finally, about three-quarters of all PEVs adopted in Other MPOs are located within the Central Valley[15], while the rest of the fleet is located within the Central Coast[16]. A complete list of counties and their regional classification is included within Appendix F.

Figure 4.2: Regional Distribution of the 2025 PEV Fleet



Source: California Energy Commission and NREL

Step 4: PEV and charger technology projections through 2025. Technological improvements were applied for PEV electric range (in miles) and charging power levels (in kilowatts). The device-level assumptions, such as vehicle and charger efficiencies, were assumed constant through 2025. (See Appendix C.) The assumptions for improvements in electric miles were based on the CARB Advanced Clean Cars Midterm Review.[17] The CARB midrange scenario projected that the average electric range will increase to 210 miles for BEVs, 30 for short-range PHEVs, and 55 miles for long-range PHEVs. The authors assumed the improvements in electric range and power levels to follow a linear increase and applied them to the vehicles and chargers for a given year. Table 4.1 presents technological improvement assumptions for newly deployed vehicles and chargers for 2017 and 2025. (See Appendix D for annual values.) For example, by 2025, new PHEVs were assumed to have an average electric range of 40 miles and be capable of accepting L2 AC power from residential chargers at a rate of 5 kW. Accounting for the onboard charger

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14 California Department of Transportation (Caltrans). 2009. "California Metropolitan Planning Organizations (MPOs) and Regional Transportation Planning Agencies (RTPAs)." http://www.dot.ca.gov/hq/tpp/offices/orip/index_files/Updated%20Files/MPO-RTPA_1-10.pdf. Accessed February 13, 2018.

15 The Central Valley counties within Other MPOs include Butte, Fresno, Kern, Madera, Merced, San Joaquin, Shasta, Stanislaus, and Tulare.

16 The Central Coast counties within Other MPOs include Monterey, San Luis Obispo, and Santa Barbara.

17 California Air Resourced Board. 2017. *California's Advanced Clean Cars Midterm Review.* https://www.arb.ca.gov/msprog/acc/mtr/acc_mtr_finalreport_full.pdf. Accessed January 12, 2018.

efficiency resulted in a 10 percent reduction in power delivered from L1 and L2 chargers. Although BEV fast charging (controlled through an off-board charger) was not subject to the onboard charger efficiency of the vehicle, BEVs usually cannot accept full power during a fast charging event. The charging power level usually decreases as the state of charge increases for a BEV battery.[18] Therefore, the authors also applied a 10 percent power reduction to rated charge power levels to characterize this technical limitation for DC fast charging.

Table 4.1: Annually Applied Technology Projections for Newly Deployed PEVs and Chargers

Electric Range and Charger Power Level Projections			
PHEVs	**(As-of-2017)**		**(By 2025)**
Electric Range (miles):	29.6	→	40.0
Residential L2 (kW):	3.6	→	4.9
Destination L2 (kW):	3.6	→	4.9
BEVs	**(As-of-2017)**		**(By 2025)**
Electric Range (miles)	121.8	→	210.0
Residential L2 (kW)	6.6	→	11.4
Destination L2 (kW)	6.6	→	6.6
Fast Charging (kW)	50.0	→	105.0

Source: California Energy Commission and NREL

Step 5: Fuel pricing. The fuel pricing was another important input for scenario formulation, which had a major effect on consumer preferences. The electricity pricing was relative and varied by location. Prices were assumed to follow the relative capital costs for infrastructure installation, where residential charging is cheaper than workplace charging, and workplace charging is cheaper than public charging.[19] While DC fast charging has higher capital costs than Level 2 charging, BEV drivers were assumed to prefer public fast charging over public L2 charging. This is input in the scenario as $Price_{Public\ DCFC} < Price_{Public\ Level\ 2}$. This assumption was

made due to consumers' generally higher expectations for equipment reliability and accessibility for a fast charger compared to an L2. This assumption was evaluated by a sensitivity analysis in the section "Locational Fuel Price Sensitivity Analysis." In the default scenario, the electric fuel pricing (cent/kWh) provided to the PEV drivers was as follows:

$$Price_{Residential} < Price_{Workplace} < Price_{Public}$$

The assumption that chargers are consistently priced may not accurately reflect the existing infrastructure market. Only 59 percent of destination L2 chargers in California are priced for use in some manner[20] (for example, per use of space, energy delivered, time spent).

18 Idaho National Laboratory (INL). 2016. 2013 Nissan Leaf BEV – VINs 0545, 0646, 7885 & 9270: Advanced Vehicle Testing –DC Fast Charging at Temperature Test Results. Idaho Falls: INL. https://avt.inl.gov/sites/default/files/pdf/fsev/2013LeafDCFCAtTempBOT.pdf. Accessed January 12, 2018.
19 For instance, see Table-9 within National Renewable Energy Laboratory (NREL). 2016. *National Economic Value Assessment of Plug-in Electric Vehicles*. https://www.nrel.gov/docs/fy17osti/66980.pdf. Accessed February 14, 2018.
20 Jenks, Ray (PlugShare), email of January 4, 2018, to the Fuels and Transportation Division staff.

Results

Total Charging Load for Weekdays and Weekends

EVI-Pro produced two outputs that were used in a spatial/temporal postprocessing assessment of the shared use of chargers. These outputs were hourly electricity demand and hourly total charging sessions created at each location type (residential, workplace, and public). Figure 4.3 presents the total electricity load from each location type for weekdays. The load profiles for each location type were initially calculated for each county, and the results were aggregated up to the state level.

Peak electricity demand at each charging location and the time the peak occurred varied according to the day of the week, as tabulated in Table 4.2. Residential charging was the largest load segment, from 669 MW to 867 MW, and the peak demand fluctuated according to when people arrived home during the evening (about 8:00 or 9:00 p.m.). Nonresidential locations had the largest variation in charging demand and the time at which drivers' needs to charge occur. Workplace demand peaked between 8:00 a.m. and 9:00 a.m., regardless of the day of the week, but weekday demand for this segment was more than 300 percent greater than weekend demand. Fast charging demand peaked between 10:00 a.m. and 11:00 a.m. on weekends. Fast charging infrastructure was used about twice as much on weekends as weekdays. Furthermore, the fast charger fleet had wide intrahourly variation in load, depending on the day. For example, during the hour starting at 10:00 a.m.[21] on weekends, fast charging load had an increase of 71 MW compared to 27 MW on weekdays.

Peak demand for Public L2 charging varied the least among the nonresidential charging locations, but it was needed more often in the afternoon on weekends compared to the evening on weekdays. Overall, the maximum charging load (from the total of all segments) of 981 MW occurred at 7:40 p.m. weekdays. Peak load occurred at 6:50 p.m. on weekends, albeit at a lower level due to decreased residential charging needs. These load profiles do not reflect consumer incentives or energy resources to manage charging load (such as time-variant pricing, solar generation, or energy storage).

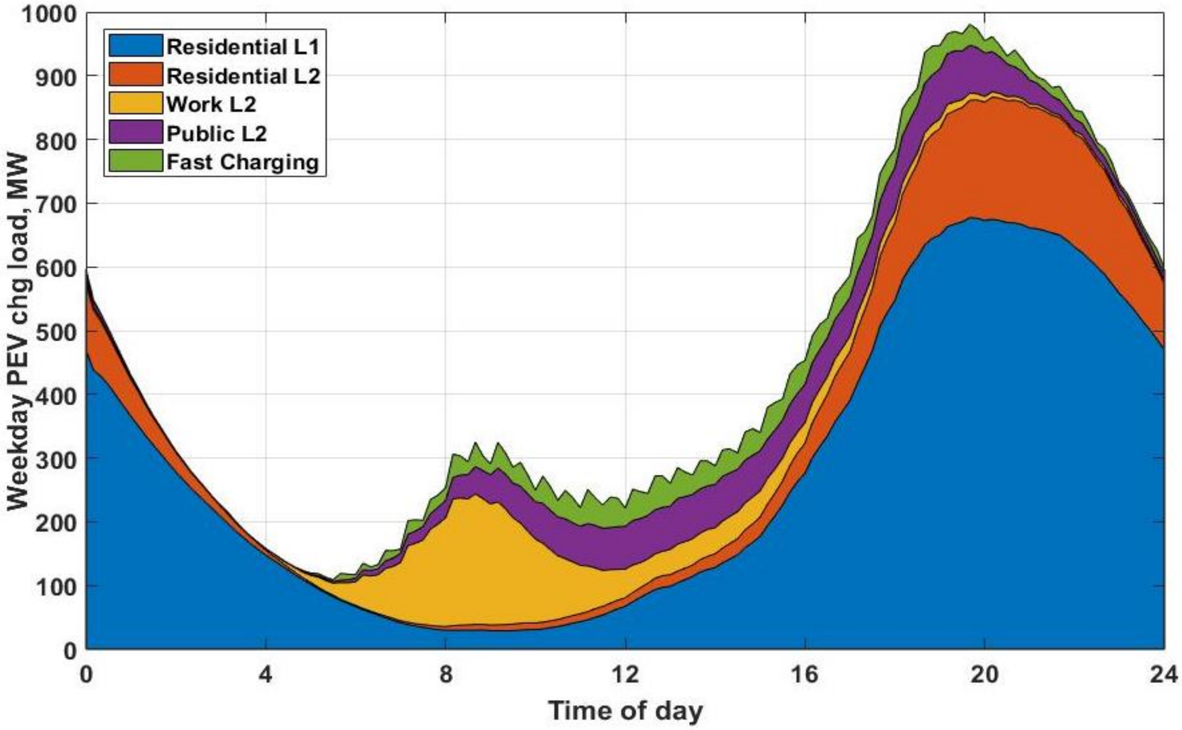
Table 4.2: Peak Charging Load and Time Occurring in 2025

Location	Weekday		Weekend	
	Demand (MW)	Time	Demand (MW)	Time
Residential Total (L1&L2)	867	8:10 p.m.	669	9:10 p.m.
Work L2	205	8:40 a.m.	50	8:10 a.m.
Public L2	80	7:20 p.m.	134	1:20 p.m.
Fast Charging	55	5:10 p.m.	120	10:40 a.m.
Total PEV Charging Load	981	7:40 p.m.	794	6:50 p.m.

Source: California Energy Commission and NREL

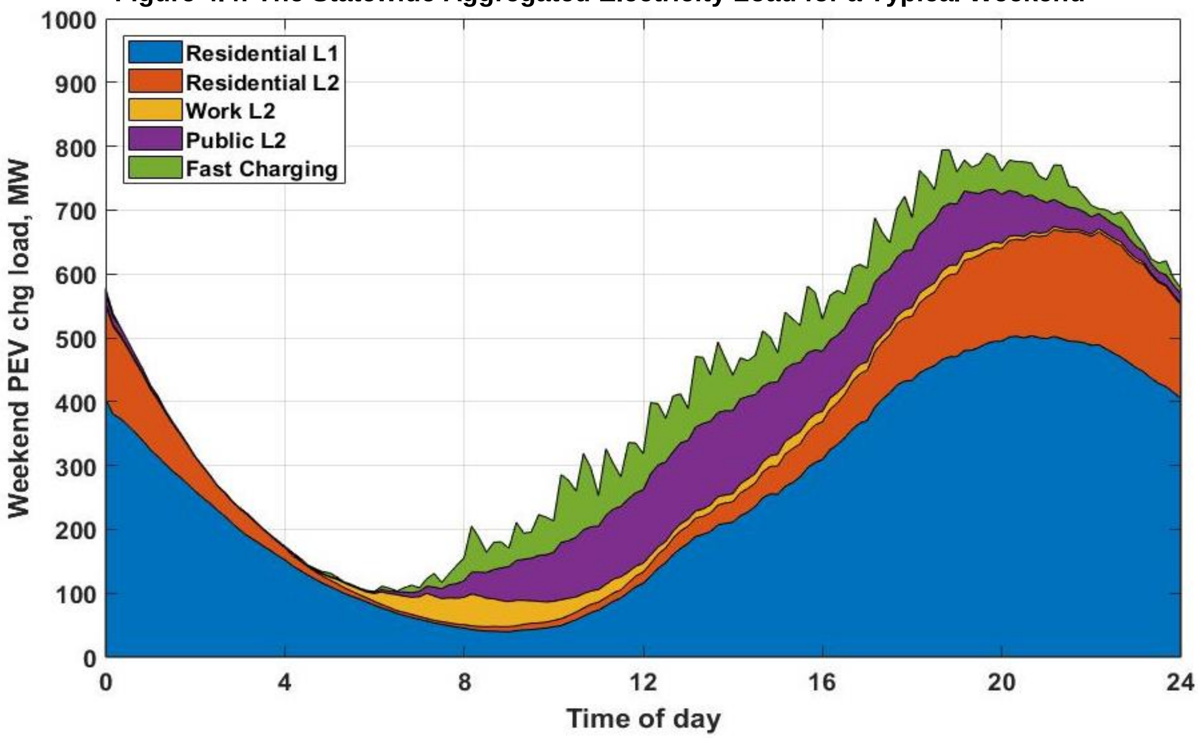
21 The change in absolute load between and 10:00 a.m. to 10:40 a.m. was the greatest for the representative 24-hour demand profiles, regardless of day of the week.

Figure 4.3: The Statewide Aggregated Electricity Load for a Typical Weekday



Source: California Energy Commission and NREL

Figure 4.4: The Statewide Aggregated Electricity Load for a Typical Weekend



Source: California Energy Commission and NREL

Lower Estimates for Chargers Demanded

The total number of charging events demand that occur during the peak time was the first output used in the assessment of shared-use chargers. The authors calculated peak-time charging events for each location type and for each county as the lower estimates for the required infrastructure. The authors assumed that, for each location type, the infrastructure deployed in a county should be higher than the number of chargers being used during the peak time. As noted above, the peak time may occur during a weekday or weekend, depending on the location type.

Higher Estimates for Chargers Demanded

After quantifying the weekday and weekend hourly electricity load, EVI-Pro calculated the total number of charging sessions demanded over 24 hours from PEVs for each location type (home, work, and public). Total charging events over 24 hours were used for the high estimate of shared chargers. Staff assumed that the deployed infrastructure for nonresidential charging should serve at least two vehicles, on average over 24 hours, reasoning that driver demands to use a particular charger within a given county would be sufficiently temporally differentiated to allow multiple vehicles to share the charger. In other words, more than one driver will be able to use the same charger during different times of the day. Therefore, the infrastructure solution identified for a given location type presented in this study did not exceed half of the total charging sessions demanded during the weekdays or weekends, whichever was higher. As described earlier, this 2:1 ratio for high estimates can be seen as a very conservative estimate for the use of a fast charger and should be interpreted separately from the high estimate results for Level 2 chargers.

Estimates to Account for Load Shape

The difference between a lower estimate (representing peak-time charging events) and a higher estimate (representing total charging sessions demanded over 24 hours) was affected by the shape of the load profile. A charging load profile with steep peak demand, as is the case for workplace charging (Figure 4.3), had a relatively smaller difference between the estimates and contrasted with a load profile where the demand was distributed evenly during the day, as was the case for public L2 charging. As described earlier, the authors assumed that the lower estimate for an infrastructure solution should be higher than the charging demand during peak time, and the increase should be proportional to the total daily use.

The ratio of lower estimates to the total charging demand during peak time provided the expected peak usage rates for the infrastructure by location type. The 10th percentile assumption for calculating the lower estimates results in peak-time usage rates of chargers of between 87 percent and 100 percent for destination chargers and between 70 percent and 98 percent for fast chargers, depending on the county.

Table 4.3: Projections for Statewide PEV Charger Demand

Demand for L2 Destination (Workplace and Public) Chargers (The Default Scenario)			
	Total PEVs	Lower Estimate (Chargers)	Higher Estimate (Chargers)
As of 2017	239,328	21,502	28,701
By 2020	645,135	53,173	70,368
By 2025	1,321,371	99,333	133,270
Demand for DC Fast Chargers (The Default Scenario)			
	Total BEVs	Lower Estimate (Chargers)	Higher Estimate (Chargers)
As of 2017	133,446	2,005	5,877
By 2020	356,814	4,881	13,752
By 2025	729,150	9,064	24,967

Source: California Energy Commission and NREL

Residential Charging

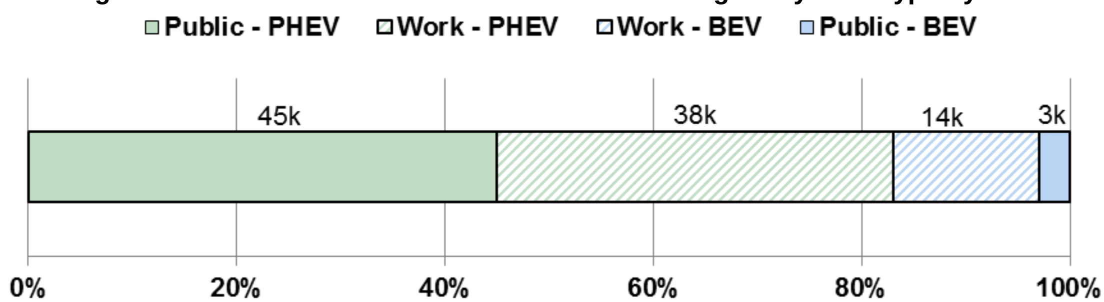
The EVI-Pro simulations also provided demand for residential charging. About 92 percent of the PEVs engaged in residential charging. The ability of a PEV to charge at home is very sensitive to the parking assumptions discussed in Chapter 3 and detailed in Table 3.1. Among the residential PEV group, about 10 percent of the charging was done at multifamily dwellings. Therefore, 120,800 PEVs required residential charging at or near multifamily dwellings. This quantity of PEVs associated with MUDs could be interpreted as a proxy estimate for the chargers needed in this segment (in other words, 1 charger: 1 PEV). At the time of running simulations, no data representative of county-level parking availability were accessible for use. In addition, the wide spectrum of parking configurations at multifamily dwellings and single-family homes limited an assessment of sharing potential. Therefore, this analysis did not assess the potential for shared use in any residential charging.

In the cost-minimization algorithm, PEV drivers were provided with a Level 2 charger only if Level 1 chargers were not adequate due energy requirements associated with long-distance travel, short dwelling time, or both. Based on this assessment, staff found that a minimum of 65,584 PEVs from single-family homes and 6,874 PEVs from multifamily dwellings could not complete their travel with Level 1 charging. Please refer to the last column in Appendix E. This analysis did not estimate the demand for residential Level 2 chargers because it did not incorporate the value of time for PEV consumers that desired higher power level chargers due to their unpredictable travel patterns or range anxiety. Furthermore, the demand for Level 2 chargers from single-unit dwellings and multifamily dwellings should be expected to be higher due to differences in parking configurations that may increase the need to share chargers.

Destination Charging and PHEV Participation

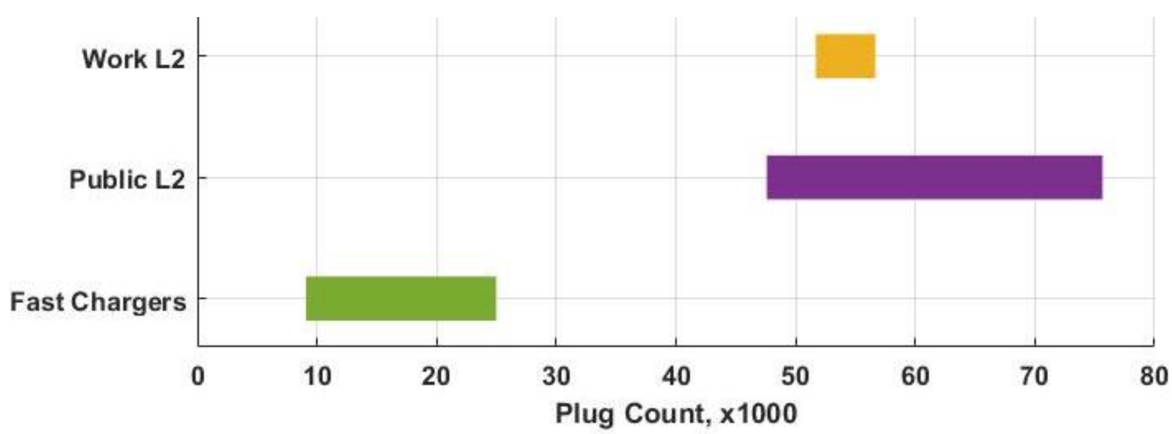
The analysis shows that the majority (83 percent) of the destination charging sessions will be associated with serving the needs of PHEVs, as shown in Figure 4.5. The fleet of PHEVs is responsible for a large portion of sessions because these vehicles typically have a lower electric range (30 to 40 miles) and are assumed incapable of using fast charging. On the other hand, this analysis assumes that PHEVs, if parked in a workplace or public location more than 30 minutes, will prefer to plug in their vehicle to minimize fuel cost. However, the actual charging behavior of PHEV drivers may be much more complicated. PHEV drivers may plug in their cars based on their perception of the utility received from nonresidential charging. Therefore, the results should be interpreted that the majority of destination chargers will be used in supporting the electric travel of the PHEVs; however, it is not a required fuel supply for those PHEV drivers. The optional use aspect of Level 2 destination charging for PHEVs makes it very different in comparison to the use of fast chargers, which are essential to enable BEV travel. The statewide ranges for workplace, public, and fast chargers are presented in Figure 4.6.

Figure 4.5: Statewide Demand for Destination Chargers by PEV Type by 2025



Source: California Energy Commission and NREL

Figure 4.6: Ranges for Statewide Charger Demand by 2025



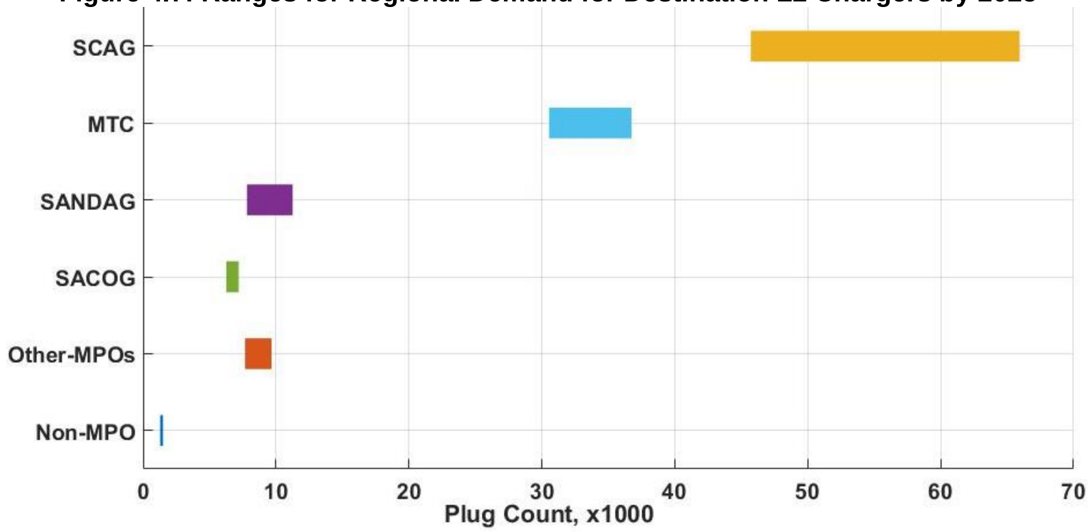
Source: California Energy Commission and NREL

The Regional Analysis

The authors performed EVI-Pro simulations at the county level, and differences in regional travel behavior significantly affected infrastructure demand. Figures 4.7 and 4.8 present the aggregated charging demand at the metropolitan regions for destination charging and fast charging, respectively. These bar charts also show that the size of the estimates can be narrower or wider, depending on the regional travel patterns. For instance, if a region has a dominance of work-related travel, then the range for the lower and higher charger estimates will be narrower due to higher peak-time demand, which is the basis for the lower estimate. This implies that the PEV drivers have a limited opportunity for sharing the available infrastructure. Appendix E and Appendix F present lower and higher estimates of charger counts for each county, which can be used to quantify charger-per-vehicle values.

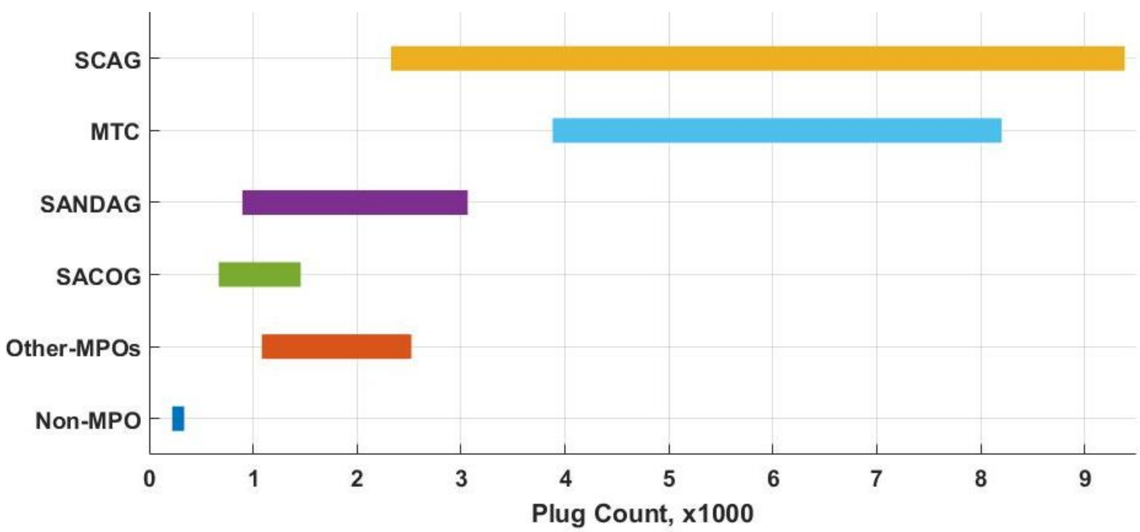
For comparison, the Southern California region has the highest amount of new vehicle adoptions and always has a higher need for destination chargers. On the other hand, the peak time-related demand (lower estimate) for fast charging is higher in the Bay Area than in Southern California. This difference may exist due to differences in regional and interregional travel behavior of BEV drivers, the relative of prevalence of housing types, the geographic area of the combined counties and development density, or combinations thereof. Finally, about 70 percent of both destination level 2 chargers and fast chargers within Other MPOs are located in the Central Valley area, while about 30 percent of the chargers are located in the Central Coast. Staff will continue to reevaluate the regional demand to answer these questions, including through the application of updated CHTS data expected to be released in 2018.

Figure 4.7: Ranges for Regional Demand for Destination L2 Chargers by 2025



Source: California Energy Commission and NREL

Figure 4.8: Ranges for Regional Demand for Fast Chargers by 2025



Source: California Energy Commission and NREL

Location Fuel Price Sensitivity Analysis

Staff performed a sensitivity analysis where PEV driver behaviors were simulated with a minor difference in their charging preferences. In this scenario, all other inputs described in "The Default Scenario Formation" section (also Appendix C and Appendix D) are consistent. The only difference is that BEV drivers preferred public L2s over fast chargers, instead of the converse. To implement this scenario, relative charging prices were input as $Price_{Public\ Level\ 2} < Price_{Public\ DCFC}$ in contrast to the description within "The Default Scenario Formation" section. This scenario may provide an infrastructure solution with a lower unit equipment cost. However, the assumption that fast chargers are perceived as the last option for enabling BEV travel may not be reflected in current market deployment conditions. As seen in Table 4.4, the demand for fast charging is shifted to public L2 chargers. The estimate for number of fast chargers needed by 2025 decreased to 3,700-8,500 from 9,000-25,000 calculated previously under the default scenario. The overall results present an increase in the reliance on destination charging. In comparing the new scenario results for fast charging to the actual quantity of fast chargers for 2017, staff concluded that this pricing scenario does not reflect the current market status. Fast charging deployment is more than two times higher than the lower estimate and more than 80 percent of the higher estimate derived from the alternative pricing scenario (compare 1,601 existing chargers[22] to between 759 and 1,949 from EVI-Pro). At a high level, this sensitivity could be used to compare the relative tradeoffs of developing fewer fast chargers in favor of more public L2 chargers (for example, land acquisition, site management, and electricity demand).

Table 4.4: Results From the Location Fuel Price Sensitivity

Demand for L2 Destination (Workplace & Public) Chargers (Alternative Pricing Scenario)			
	Total PEVs	**Lower Estimate (Chargers)**	**Higher Estimate (Chargers)**
As of 2017	239,328	24,891	34,506
By 2020	645,093	63,333	84,934
By 2025	1,321,371	122,347	160,161
Demand for DC Fast Chargers (Alternative Pricing Scenario)			
	Total BEVs	**Lower Estimate (Chargers)**	**Higher Estimate (Chargers)**
As of 2017	133,446	759	1,949
By 2020	356,814	1,965	4,579
By 2025	729,094	3,726	8,504

Source: California Energy Commission and NREL

22 U.S. Department of Energy (DOE). 2017. "Alternative Fueling Station Locator." http://www.afdc.energy.gov/locator/stations. Accessed February 2018.

CHAPTER 5: Conclusions and Future Work

Conclusions

Overall Statewide Charger Needs by 2025

This staff report analyzed the PEV charging infrastructure needed for enabling BEV travel and maximizing electric miles for PHEVs. The authors performed the analysis at the county level for each year from 2017 through 2025 while considering potential technological improvements. They gathered the statewide results for 2025 from county-level simulations done for each year. The results from this study present an infrastructure solution that can promote market growth for PEVs to reach the state's ZEV goals by 2025. The overall results show a need for 99,000 to 133,000 destination chargers, including workplaces and public locations, and 9,000 to 25,000 fast chargers. Different from fast chargers, the majority (83 percent) of destination chargers serve PHEVs, which typically have shorter electric range. Although it is not required for enabling travel, destination chargers for PHEVs should be seen as a critical tool for reducing petroleum use in accordance with the state's environmental goals. The results also show a need for dedicated or shared residential charging solutions at multifamily dwellings. It is estimated that, by 2025, about 121,000 PEV drivers will reside at multifamily dwellings. Therefore, the total number of chargers needed to support PEVs in California ranges from 229,000 to 279,000. This range does not account for chargers located at single-family homes. EVI-Pro results can be compared with actual or planned charger deployments. The number of fast chargers available in California in 2017 was fewer than the number of chargers calculated by EVI-Pro necessary to expand the market for battery electric vehicles (that is, the 1,500 existing fast chargers is at least 25 percent less than the 2,005-5,877 fast chargers listed "As of 2017" within Table ES. 1). Staff should work with CARB and other agencies, including those at the regional and municipal levels, to specify the numbers of chargers needed at residential locations after conducting a detailed geospatial analysis that quantifies any limitations to charging posed by the local built environment, with specific attention to parking availability.

Need for Ongoing Analysis and Immediate Action

Staff has discussed numerous issues that create variance and uncertainty within the modeling framework. However, stakeholders need to evaluate these results in the context of continuously changing technologies and markets. Charging infrastructure industry participants and policy makers should target an approach that uses stable policy frameworks and that ensures incremental and steady growth in PEV infrastructure that is consistent throughout California. Meanwhile, tracking changes in vehicle and charging technology and consumer preferences can improve future modeled estimates and functionalities. Updated data and input from stakeholders will be essential to calibrate the model to characterize network growth and provide insight on the adequacy of service. To immediately promote the adoption of electric vehicles, current charging technologies should be used to close gaps in needed infrastructure. Energy Commission staff will continue to develop analyses, policies, and investment programs to support improved accessibility and deployment of charging across California.

Shared Use of Chargers Is Critical to Ensure Efficient Investment

Representing an improvement to the scientific literature, this analysis presents the significance of infrastructure reliability and accessibility on the quantification of charger demand. Higher reliability and accessibility of chargers will promote efficient sharing and reduce overall costs. The savings from cost reductions can be evaluated by comparing the lower and higher estimates from EVI-Pro. For instance, higher reliability and accessibility of chargers could reduce the cost of equipment for fast charging by 60 percent (comparing 25,000 to 9,000 DCFC). Ensuring the reliability and accessibility of chargers to achieve savings in the charging segments depends on several site-level issues, such as visibility for drivers, use of networking and real-time tracking technologies to ensure chargers are maintained, and parking enforcement for internal combustion cars that block PEV access to chargers.

Widespread Charger Deployments Should Be Efficiently Integrated With the Electric System

This analysis simulated the use of 1.3 million PEVs for a typical weekday and weekend given driver travel schedules and drivers' consideration of electric range and refueling prices. Staff found that the PEV charging load from residential and nonresidential locations accounts for nearly 1 GW during the peak-demand period of the grid. The extent to which residential demand can be shifted temporally and among locations to, for example, shape load to better fit a solar generation profile will depend on the use of charging technologies and price incentives that aid dispatch ability and avoid substantive changes to driver travel and behaviors. Two enabling factors include 1) increasing the heterogeneity and rated capacity of the assumed residential chargers to permit shifting demand to the early morning and 2) the use of chargers in nonresidential areas to reduce the need for additional grid ramping capacity and operational costs associated with the charging scenario examined. Networking technologies that enable shared use should be leveraged to automate demand responsive charging.

These load profiles may have significant impacts at the local level. While the spatial distribution of chargers among sites within a county was not the focus of this analysis, future installations should recognize the likelihood for grid impacts and thus proactively manage costs. The travel simulations of EVI-Pro indicate that weekend DC fast charger demand would more than double within one hour to peak load of 120 MW. This sharp increase in DC fast charging demand, albeit dispersed among local sites, should be managed with appropriate electrical service and distributed generation and storage resources to effectively prevent system overloading and to avoid utility peak demand charges.

Future Analyses and Improvements

Commission staff intends to use EVI-Pro to track progress on the state's goals for transportation electrification infrastructure. Using EVI-Pro as a consistent reference point, particularly in the context of diverse publicly and privately supported investments in charging infrastructure, can provide insight into the adequacy of the network necessary to support PEV travel or identify where additional targeted investments are needed. A Web-based portal housing the 2018-2025 infrastructure demand results of EVI-Pro will be published in association with this report for electricity, air quality, and transportation planning (Appendix G). To ensure relevance for policy making and improve the accuracy and transparency of the results, the Energy Commission will establish a platform for stakeholders to engage with scenario development. Ongoing stakeholder engagements can contribute valuable information that improves EVI-

Pro. Examples include the identification of prospective charging station installations and data enabling analysis of network adequacy and reliability. In addition, staff will provide annual updates that incorporate information about both public and private charging deployments and county-level PEV sales.

Staff intends to run additional EVI-Pro simulations to ensure adequate characterization of changes to the functioning of the transportation and charging markets and emissions reduction policy. Results from this analysis may be sensitive to changes in environmental regulation, the performance and cost of PEV technologies, consumer preferences, and information about the built environment, among other factors. Key new data and trends that can improve EVI-Pro include, but are not limited to:

- Updates to the *California Household Travel Survey* and new data on commercial and government vehicle travel.
- Representative and localized information about the availability of electricity nearby residential parking, defined at least at the county level.
- Improvements in PEV and charging technology projections, including light-duty vehicle class- and powertrain-specific charging and range capabilities, depending on the availability of data about new or expected models.
- Improvements in assumptions affecting the potential for the shared use of chargers (for example, geospatial distribution of currently deployed and anticipated investments in charging, pricing, and shared use of residential chargers, pricing of and access to workplace and public charging, connector/vehicle interoperability, and equipment decay rates).
- Surveys or models that reveal the range, time value, and load-shifting preferences of drivers who have purchased PEVs or intend to in the future.
- Changes in light-duty vehicle use due to shared or automated mobility.

Likewise, changes to other state agency or local municipal programs and policies that can affect and be informed by EVI-Pro include:

- Advanced Clean Cars Program regulations for model years 2026 and beyond.
- Expansion of charging infrastructure through the Low Carbon Fuel Standard Program.
- Clean Vehicle Rebate Program and other geo-targeted consumer incentives for vehicles and infrastructure.
- Electric utility transportation electrification investments and integrated resource planning, including time-variant pricing tariffs.
- Implementation of sustainable communities strategies and transportation plans by local governments.
- *Vehicle-Grid Integration Roadmap.*[23]
- California Green Building Standards Code[24] requirements for the new construction and retrofit of existing buildings.
- California Transportation Plan and others.

23 California Independent System Operator. February, 2014. *Vehicle-Grid Integration Roadmap.* http://www.caiso.com/documents/vehicle-gridintegrationroadmap.pdf. Accessed February 27, 2018.
24 California Building Standards Commission. 2018. "*California Green Building Standards Code (Cal. Code Regs., Title 24, Part 11).*" http://www.bsc.ca.gov/Home/CALGreen.aspx. Accessed February 2018.

The extent to which these policies interact with charger demand is not known at this time. For example, Senate Bill 375: the Sustainable Communities and Climate Protection Act (Steinberg, Chapter 727, Statues of 2008) could affect housing patterns and single-occupancy vehicle travel demand, which are key inputs affecting demand for infrastructure. Beyond California, national and international electrification trends and experience will inform modeling efforts and deployment strategies. Coordination around EVI-Pro can improve the state's understanding of interactive effects across mobility, the electricity system, and private investment to support expeditious charging deployment.

More important, the Executive Order B-48-18 target to more than triple the number ZEVs deployed between 2025 and 2030 will require close coordination among the agencies, researchers and the Energy Commission. Commission staff looks forward to working collaboratively to maintain and use EVI-Pro to continuously spur the construction and installation of charging infrastructure essential for widespread PEV adoption in California.

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Acronyms and Abbreviations

Original Term	Acronym/Abbreviation
Alternative Fuels Data Center	AFDC
Battery electric vehicle	BEV
California Air Resources Board	CARB
California Household Travel Survey	CHTS
Clean technologies and fuels	CTF
Clean Vehicle Rebate Project	CVRP
Direct current	DC
Direct current fast charger	DCFC
(United States) Department of Energy	U.S. DOE
Electric vehicle-miles traveled	eVMT
Electric Vehicle Infrastructure Projections	EVI-Pro
Fuel cell electric vehicle	FCEV
Kilowatt/kilowatt-hour	kW/kWh
Level 1/Level 2	L1/L2
Metropolitan Transportation Commission	MTC
Metropolitan Planning Organization	MPO
Multiunit dwellings	MUD
Megawatt	MW
National Household Travel Survey	NHTS
National Renewable Energy Laboratory	NREL
Plug-in hybrid electric vehicle	PHEV
Plug-in electric vehicle	PEV
Sacramento Council of Governments	SACOG
San Diego Association of Governments	SANDAG
Southern California Association of Governments	SCAG
State of charge	SOC
Time of use	TOU
Zero-emission vehicle	ZEV

APPENDIX A:
Existing PEV Fleet Distributed by County

The data below are based on the Clean Vehicle Rebate Project (CVRP) data from January 1, 2017, accounting for the rebate participation rates at the county level. The rebate participation rates for each BEV and PHEV buyer are reported by CVRP for the period of 2010-2015. Statewide average participation is applied for the seven counties with insufficient data.

The existing PHEV: PEV ratio is used in projecting the future shares of BEVs and PHEVs for 2017. Moving forward, an adjustment is made to keep existing outliers within an early PEV market within 10 percent of the state average (44 percent). Therefore, the counties that exceed the 54 percent PHEV:PEV ratio is kept at 54 percent, while the counties that have a ratio below 34 percent are kept at 34 percent.

Table A.1: Estimates for the Existing PEV Fleet Distributed by County

COUNTY	PEV20	PEV40	PEV80	PEV230	PEV Totals	PEV% of the State	PHEV:PEV Ratio
Alameda	3480	3429	10200	2141	19250	8.04%	0.36
Alpine	2	0	3	0	5	0.00%	0.40
Amador	11	13	26	6	56	0.02%	0.43
Butte	53	39	87	31	210	0.09%	0.44
Calaveras	17	10	22	17	66	0.03%	0.41
Colusa	2	2	3	2	9	0.00%	0.44
Contra Costa	2564	1770	3528	1538	9400	3.93%	0.46
Del Norte	5	3	5	0	13	0.01%	0.62
El Dorado	260	203	310	133	906	0.38%	0.51
Fresno	238	306	1583	127	2254	0.94%	0.24
Glenn	5	2	2	3	12	0.01%	0.58
Humboldt	233	91	144	27	495	0.21%	0.65
Imperial	13	10	9	15	47	0.02%	0.49
Inyo	6	2	0	3	11	0.00%	0.73
Kern	261	155	500	76	992	0.41%	0.42
Kings	11	14	45	2	72	0.03%	0.35
Lake	34	22	41	3	100	0.04%	0.56
Lassen	0	2	3	0	5	0.00%	0.40
Los Angeles	14525	16423	21704	10073	62725	26.21%	0.49
Madera	21	34	150	18	223	0.09%	0.25
Marin	862	641	1756	736	3995	1.67%	0.38
Mariposa	3	3	10	5	21	0.01%	0.29
Mendocino	163	90	133	36	422	0.18%	0.60
Merced	59	40	100	21	220	0.09%	0.45

Modoc	2	0	2	0	4	0.00%	0.50
Mono	3	3	0	2	8	0.00%	0.75
Monterey	293	215	329	240	1077	0.45%	0.47
Napa	184	155	243	195	777	0.32%	0.44
Nevada	66	47	115	64	292	0.12%	0.39
Orange	8503	5862	8668	5305	28338	11.84%	0.51
Placer	418	421	664	257	1760	0.74%	0.48
Plumas	2	3	5	0	10	0.00%	0.50
Riverside	2173	1699	1726	657	6255	2.61%	0.62
Sacramento	1152	810	2047	406	4415	1.84%	0.44
San Benito	91	45	42	29	207	0.09%	0.66
San Bernardino	1691	1238	1444	457	4830	2.02%	0.61
San Diego	4078	3075	8269	3079	18501	7.73%	0.39
San Francisco	1391	657	2689	1123	5860	2.45%	0.35
San Joaquin	323	296	660	183	1462	0.61%	0.42
San Luis Obispo	223	223	427	149	1022	0.43%	0.44
San Mateo	1593	1483	4499	2419	9994	4.18%	0.31
Santa Barbara	295	389	561	329	1574	0.66%	0.43
Santa Clara	6109	7162	18083	5516	36870	15.41%	0.36
Santa Cruz	646	475	826	303	2250	0.94%	0.50
Shasta	49	45	81	12	187	0.08%	0.50
Sierra	2	0	3	0	5	0.00%	0.40
Siskiyou	5	3	6	9	23	0.01%	0.35
Solano	570	386	375	151	1482	0.62%	0.65
Sonoma	1014	819	1764	319	3916	1.64%	0.47
Stanislaus	131	166	397	67	761	0.32%	0.39
Sutter	23	13	13	10	59	0.02%	0.61
Tehama	13	6	13	3	35	0.01%	0.54
Trinity	3	2	3	0	8	0.00%	0.63
Tulare	39	35	179	29	282	0.12%	0.26
Tuolumne	9	17	11	7	44	0.02%	0.59
Ventura	1027	1459	1296	819	4601	1.92%	0.54
Yolo	222	171	380	86	859	0.36%	0.46
Yuba	10	17	18	6	51	0.02%	0.53
TOTALS	**55181**	**50701**	**96202**	**37244**	**239328**	**100%**	**0.44**

Source: California Energy Commission and NREL

APPENDIX B:
New Vehicle Adoption Distributed by County

The data below are from a consulting firm, IHS' annual vehicle registration survey data for 2016 (released in 2017). The concept of "new vehicles" applied for the vehicles that are sold during the last five years. Therefore, staff considered the cumulative vehicle registrations from the last five-year period (2012-2016) to find the new vehicle adoption split presented below.

Table B.1: New Electric Vehicle Adoption Distributions by County

County	New Vehicle Adoption Rate (% of the State Total)
Alameda	3.82%
Alpine	0.00%
Amador	0.08%
Butte	0.38%
Calaveras	0.10%
Colusa	0.05%
Contra Costa	2.94%
Del Norte	0.04%
El Dorado	0.47%
Fresno	1.81%
Glenn	0.05%
Humboldt	0.23%
Imperial	0.45%
Inyo	0.04%
Kern	1.96%
Kings	0.29%
Lake	0.11%
Lassen	0.05%
Los Angeles	26.94%
Madera	0.26%
Marin	0.76%
Mariposa	0.04%
Mendocino	0.17%
Merced	0.43%
Modoc	0.02%
Mono	0.03%
Monterey	0.83%
Napa	0.35%

Nevada	0.21%
Orange	10.04%
Placer	1.11%
Plumas	0.04%
Riverside	6.02%
Sacramento	3.96%
San Benito	0.13%
San Bernardino	5.00%
San Diego	9.05%
San Francisco	1.77%
San Joaquin	1.43%
San Luis Obispo	0.66%
San Mateo	2.59%
Santa Barbara	0.93%
Santa Clara	5.25%
Santa Cruz	0.55%
Shasta	0.36%
Sierra	0.00%
Siskiyou	0.07%
Solano	1.14%
Sonoma	1.19%
Stanislaus	0.99%
Sutter	0.20%
Tehama	0.12%
Trinity	0.02%
Tulare	0.81%
Tuolumne	0.10%
Ventura	2.37%
Yolo	1.05%
Yuba	0.13%
TOTAL	**100.00%**

Source: California Energy Commission and NREL

APPENDIX C:
All Vehicle-Level Assumptions

Table C.1: All Vehicle-Level Assumptions

Input	Unit	Assigned Values	PEV Type
Vehicle Drive Efficiency	Watt-hour/mile	250	PHEV & BEV
Vehicle On-Board Charger Efficiency	%	90	PHEV & BEV
Min. Range Tolerance	miles	20	BEV-only
Min. Vehicle Dwell Time to Consider Charging (L1&L2 only)	minutes	30	PHEV & BEV
PHEV Cost of Gasoline Operation	$/mile	$3.00 gal / 40 mpg	PHEV-only
Max. AC Charging Power Level	kW	Varies annually	PHEV & BEV
Battery/Electric Range	Miles	Varies annually	PHEV & BEV
Maximum State of Charge (SOC) to Consider Fast Charging	%	85	BEV-only
Fast Charging SOC Cut-off	%	95	BEV-only

Source: California Energy Commission and NREL

APPENDIX D:

Annual Technology Projections for New Vehicles and Chargers

The technology projections for the electric range are consistent with California Air Resources Board's Mid-Term Review projections as detailed in Chapter 4.1. These values are considered as a reasonable estimate for the average range and charging power level limitations through 2025. Note that the PEV ranges for the 2017 fleet for the Energy Commission's assessment are different than the As-of-2017 values provided below. As-of-2017 values are used as the initial point upon which linear improvements in technology are projected.

Table D.1: PEV Technology Projections

Existing Fleet (As of 2017)		Vehicles	Range (miles)	Residential L2 (kW)	Destination L2 (kW)	Public DC (kW)
Group1	BEV80	96202	80	6.6	6.6	50.0
Group2	BEV230	37244	230	6.6	6.6	105.0
Group3	PHEV20	55181	20	3.6	3.6	N/A
Group4	PHEV40	50701	40	3.6	3.6	N/A
Future Fleet (2018-2025)		**Vehicles**	**Range**	**Residential**	**Destination**	**Public DC**
Group1	BEV-2018	74463	132.8	7.2	6.6	66.4
Group2	BEV-2019	74463	143.9	7.8	6.6	71.9
Group3	BEV-2020	74463	154.9	8.4	6.6	77.4
Group4	BEV-2021	74463	165.9	9.0	6.6	83.0
Group5	BEV-2022	74463	176.9	9.6	6.6	88.5
Group6	BEV-2023	74463	188.0	10.2	6.6	94.0
Group7	BEV-2024	74463	199.0	10.8	6.6	99.5
Group8	BEV-2025	74463	210.0	11.4	6.6	105.0
Group9	PHEV-2018	60806	30.9	3.8	3.8	N/A
Group10	PHEV-2019	60806	32.2	3.9	3.9	N/A
Group11	PHEV-2020	60806	33.5	4.1	4.1	N/A
Group12	PHEV-2021	60806	34.8	4.2	4.2	N/A
Group13	PHEV-2022	60806	36.1	4.4	4.4	N/A
Group14	PHEV-2023	60806	37.4	4.5	4.5	N/A
Group15	PHEV-2024	60806	38.7	4.7	4.7	N/A
Group16	PHEV-2025	60806	40.0	4.9	4.9	N/A
	TOTAL	**1321371**				

Source: California Energy Commission and NREL

APPENDIX E:
County-Level Results for Residential Charging

Table E.1: County-Level Results From EVI-Pro for Residential Charging Demand by 2025

County	Number of PEVs by 2025 (Input)	PEVs Participating in Residential Charging	Residential Charging Participation Rate	PEVs Participating in Residential Charging at MUDs	PEVs Participating in Residential Level 2 Charging
Alameda	80622	75734	94%	7185	4466
Alpine	27	27	100%	0	0
Amador	647	602	93%	0	68
Butte	2928	2676	91%	110	229
Calaveras	801	769	96%	7	89
Colusa	300	300	100%	0	58
Contra Costa	45873	42544	93%	2426	2655
Del Norte	255	231	91%	0	6
El Dorado	5580	5220	94%	133	369
Fresno	17703	16270	92%	780	869
Glenn	352	308	88%	9	21
Humboldt	2863	2627	92%	191	133
Imperial	2878	2517	87%	105	138
Inyo	281	230	82%	0	9
Kern	14872	13305	89%	550	897
Kings	1987	1921	97%	16	175
Lake	963	811	84%	0	74
Lassen	299	263	88%	0	16
Los Angeles	350881	320971	91%	49960	16982
Madera	2230	2093	94%	53	217
Marin	16518	16062	97%	2204	812
Mariposa	268	243	91%	0	33
Mendocino	2300	2171	94%	39	55
Merced	3266	2974	91%	40	182
Modoc	98	85	87%	0	4
Mono	185	154	83%	0	11
Monterey	8274	7460	90%	528	374
Napa	4434	3998	90%	252	226
Nevada	2137	2004	94%	33	212
Orange	145559	131538	90%	11215	7404

Placer	11976	11210	94%	403	695
Plumas	276	255	92%	12	14
Riverside	55287	50080	91%	1772	4397
Sacramento	37240	35507	95%	1576	2764
San Benito	1422	1340	94%	0	137
San Bernardino	44846	41230	92%	1749	3133
San Diego	110227	103516	94%	11489	5925
San Francisco	28222	23610	84%	6518	1367
San Joaquin	13035	12366	95%	520	1228
San Luis Obispo	7046	6255	89%	275	328
San Mateo	45544	43366	95%	3948	2010
Santa Barbara	10333	9420	91%	752	479
Santa Clara	141786	131768	93%	11533	6267
Santa Cruz	10066	9120	91%	468	696
Shasta	2765	2420	88%	113	93
Sierra	40	40	100%	0	6
Siskiyou	511	447	87%	5	36
Solano	11345	10778	95%	616	897
Sonoma	18918	17861	94%	929	1649
Stanislaus	8277	7831	95%	210	636
Sutter	1400	1400	100%	35	136
Tehama	797	786	99%	63	63
Trinity	131	108	82%	0	5
Tulare	5770	5281	92%	86	442
Tuolumne	758	641	85%	28	33
Ventura	28096	25730	92%	1071	1403
Yolo	8957	8830	99%	762	773
Yuba	909	864	95%	42	62
TOTAL	**1321371**	**1218182**	**92%**	**120811**	**72458**

Source: California Energy Commission and NREL

APPENDIX F:

County-Level Results for Nonresidential Charging

The table below shows EVI-Pro results at the county level. In some cases, the assumption of the shared use of chargers between two vehicles reduces the high estimate below what is required to serve the total number of vehicles needing to charge during the peak period (defined as the Low Estimate in Chapter 3). In the counties in which this convergence occurs, during post-processing staff equated the high estimate to the low estimate. For more detail about counties with zero or low ranges in chargers demanded, see discussion in Chapter 4.

Table F.1: County-Level Results From EVI-Pro for Destination Chargers and Fast Chargers Demand 2025

County	Workplace L2		Public L2		Destination L2 (Work & Public)		Fast Chargers		Metro (MPO) Region
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	
Alameda	3853	3853	2629	3581	6482	7434	645	1740	MTC
Alpine	0	0	1	4	1	4	1	3	Non-MPO
Amador	20	30	39	52	59	82	14	29	Non-MPO
Butte	122	123	132	184	254	307	37	77	MPO-Other
Calaveras	21	25	45	45	66	70	16	20	Non-MPO
Colusa	13	13	20	20	33	33	7	9	Non-MPO
Contra Costa	1195	1507	2107	2420	3301	3927	352	674	MTC
Del Norte	1	8	11	17	11	25	1	6	Non-MPO
El Dorado	92	115	306	330	397	445	59	108	SACOG
Fresno	598	598	418	774	1016	1372	135	382	MPO-Other
Glenn	8	12	15	15	23	27	5	6	Non-MPO
Humboldt	78	79	166	236	244	315	24	57	Non-MPO
Imperial	96	114	95	117	190	231	26	43	SCAG
Inyo	7	15	14	16	21	31	2	5	Non-MPO
Kern	499	557	506	722	1005	1279	131	313	MPO-Other
Kings	75	75	139	139	214	214	32	75	Non-MPO
Lake	43	43	62	79	105	122	15	21	Non-MPO
Lassen	12	12	9	14	21	26	7	11	Non-MPO
Los Angeles	14497	16298	11695	20479	26192	36777	1097	5073	SCAG
Madera	48	62	50	65	97	127	30	57	MPO-Other
Marin	562	638	914	914	1476	1552	296	336	MTC
Mariposa	3	9	8	9	11	17	1	6	Non-MPO
Mendocino	110	127	150	181	260	307	38	48	Non-MPO
Merced	90	90	115	152	205	242	30	59	MPO-Other

Modoc	0	2	5	5	5	7	1	3	Non-MPO
Mono	15	11	15	24	30	34	5	11	Non-MPO
Monterey	341	363	350	490	691	853	63	139	MPO-Other
Napa	165	176	262	262	427	438	70	91	MTC
Nevada	43	48	111	143	154	191	41	54	Non-MPO
Orange	5829	6806	4653	9560	10482	16366	644	2375	SCAG
Placer	451	502	640	817	1090	1318	107	292	SACOG
Plumas	6	9	12	14	18	23	6	6	Non-MPO
Riverside	1397	1589	2537	4014	3934	5603	297	1003	SCAG
Sacramento	2024	2024	1656	2705	3680	4729	311	826	SACOG
San Benito	11	16	58	58	69	74	9	11	MTC
San Bernardino	1848	1997	1444	2669	3293	4666	156	598	SCAG
San Diego	4066	4034	3746	7224	7812	11258	896	3064	SANDAG
San Francisco	1379	1489	1498	1929	2877	3418	584	1281	MTC
San Joaquin	520	520	538	677	1058	1197	156	317	MPO-Other
San Luis Obispo	244	268	258	452	501	719	67	179	MPO-Other
San Mateo	1582	1695	1402	1468	2985	3163	614	775	MTC
Santa Barbara	389	425	583	725	972	1150	153	344	MPO-Other
Santa Clara	6532	7591	4190	6612	10722	14202	1045	2780	MTC
Santa Cruz	221	282	381	632	602	914	83	212	MTC
Shasta	107	136	165	250	273	386	49	105	MPO-Other
Sierra	0	0	0	2	0	2	1	1	Non-MPO
Siskiyou	24	28	20	24	45	52	12	15	Non-MPO
Solano	413	408	489	642	902	1050	72	139	MTC
Sonoma	449	703	940	1157	1389	1860	201	388	MTC
Stanislaus	251	277	210	334	461	611	65	150	MPO-Other
Sutter	69	69	75	89	144	158	12	17	SACOG
Tehama	21	25	51	51	72	76	4	8	Non-MPO
Trinity	0	3	6	7	6	10	1	3	Non-MPO
Tulare	135	156	130	225	265	381	43	107	MPO-Other
Tuolumne	32	35	33	58	65	93	8	19	Non-MPO
Ventura	716	884	915	1418	1631	2301	105	296	SCAG
Yolo	377	377	545	577	922	954	169	204	SACOG
Yuba	35	35	37	42	71	77	13	13	SACOG
TOTAL	**51737**	**57375**	**47596**	**75895**	**99333**	**133270**	**9064**	**24967**	

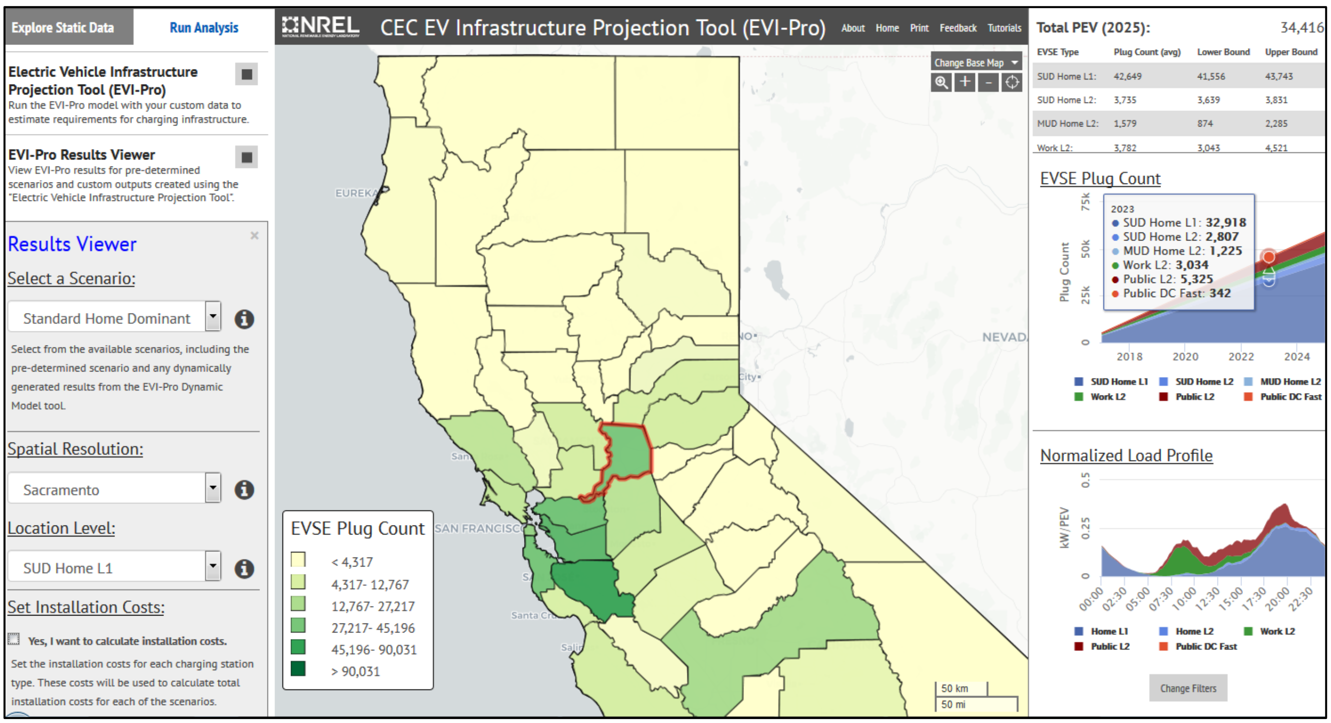
***Metropolitan Planning Organization (MPO) regions are classified under six; (1) Metropolitan Transportation Commission (MTC) representing the Bay Area, (2) Sacramento Council of Governments (SACOG), (3) Southern California Association of Governments (SCAG), (4) San Diego Association of Governments (SANDAG), (5) Other MPO regions, and, finally, (6) Rural non-MPO regions.**

Source: California Energy Commission and NREL

APPENDIX G:
EVI-Pro Web Portal

The screenshot below shows EVI-Pro results through an interactive Web interface. For instance, stakeholders will be able to view charging station quantities, load shapes, and infrastructure cost estimates resulting from the scenarios described in this report. In addition, a chloropleth map will be sortable by spatial resolution, location type, and other parameters. The EVI-Pro Web portal will be accessible on the Commission Web page.

Figure G.1: A Snapshot of the EVI-Pro Web Portal



Source: California Energy Commission and NREL

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 20

Responding Witness: Eileen L. Saunders

Q-20. Refer to KU's response to the Kentucky Solar Industries' First Request for Information, Item 14a.

a. State whether any of the customers presently taking service under NMS-1 generate electricity from a technology other than solar PV. If yes, specify the rate schedule, number of customers, and total generating capacity of each non-PV generating technology.

b. For each of the past five years, provide the annual kWh generation that has flowed back onto the grid produced by the customers presently taking service under NMS-1, disaggregated by generation technology and customer class, in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

A-20.

a. Yes, KU's response to the KSIA 1-14a included customers taking service under NMS-1 with generating facilities other than solar PV. See the table below for a listing of those customers.

Non-PV Generating Technology	Rate Schedule	Number of NMS-1 Customers	Total Generating Capacity (kW-DC)
Hydro	GS	1	50
Wind	GS	1	2.4
Wind	RS	4	8.9

b. See attachment being provided in Excel format.

The attachment is being provided in a separate file in Excel format.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 21

Responding Witness: Eileen L. Saunders

Q-21. Refer to Tariff SQF. Identify the cost of the time differentiated recording meter and associated equipment, including installation and programming. Explain whether this meter is capable of recording both the consumption and production of a customer-generator. If not, identify which of KU's meters would be capable of recording both consumption and production of a customer-generator with time-differentiated export rates, and identify the cost of manufacturing, installing, and programming that meter.

A-21. The cost of the time differentiated recording meter and associated equipment, including installation and programming is $693.73. (See table below)

Meter:	$159.00	(time differentiated recording meter)
Associated equipment:	$341.00	(includes metering wire, meter-base, screws/bolts, hangers, and straps)
Installation:	$172.20	(4 meter tech hours @ $43.05)
Programming:	$21.53	(0.5 meter tech hours @ $43.05)
TOTAL	$693.73	

The time differentiated recording meter is capable of recording both consumption (delivered to customer) and excess customer generation (received from customer). Current operational configurations for the billing system and metering require two separate meters for SQF billing.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 22

Responding Witness: John K. Wolfe

Q-22. Refer to KU's response to Staff's Fifth Request, Item 19, which states: "The Companies are currently studying whether a Distributed Energy Management System (DERMS) will be needed to address problems created by distributed energy resources (DERs). DERs are more likely than not to create issues on the distribution system which will result in increased costs." Provide a detailed description of the "problems" that DERs are creating, the solutions that KU is studying, and provide the studies conducted to date

A-22. Please see KU's response to PSC 6-7 and 6-12. DERs are not yet creating problems on the KU electric system due to the relatively low amount of capacity interconnected. KU has learned of issues faced by other utilities with greater penetrations of DER resources on their distribution grids through information obtained from industry peers, associations, and publications. Examples of issues being experienced by other utilities include:

- Reverse power flow
- System imbalance
- Frequency control and stability
- Voltage control and stability
- Capacity constraints
- Need for more robust modeling capabilities
- Increased system maintenance costs
- Bulk power system reliability and resiliency during grid disturbances
- Load masking

KU's current investment in grid modernization, ADMS, GIS and ultimately AMI, will provide the technology foundation to address challenges of DER penetration on the distribution grid. Combine these technologies with ongoing research, training, and industry best practices, KU will be well positioned to navigate the increased adoption of DER in the future.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 23

Responding Witness: David S. Sinclair / John K. Wolfe

Q-23. Refer to the Seelye Testimony.

a. State whether KU connects residential customers with one uniform kW service line or whether the company has more than one service line size. If KU has more than one size of service line, provide the number of residential customers connected to each size of service line, the unit installed cost of each service line, and the inventory cost of each service line.

b. Provide the number of residential customers taking service by size of final line transformer, in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

c. Identify the number of multi-family residential customers that KU serves in its service territory.

d. State whether KU has segment load research data for multi- versus single-family residential customers. If yes, provide the most recent calendar year of data available, in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

e. State whether KU has equipment cost data (e.g., for service drops) differentiated by multi- versus single-family residential customers. If yes, provide the data, in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

A-23.

a. See attached for the size of KU service lines. The Companies do not have the number of customers connected to each size of service line, unit installed cost of each service line or the inventory cost of each service line.

b. The Companies do not have this data.

c. The Companies do not have this data.

d. The Companies do not have this data.

e. The Companies do not have this data.

LG&E Services by Wire Size		
Overhead		**Underground***
Wire_Size		**Wire_Size**
#2		2/0
1/0		4/0
2/0		350MCM
4/0		500 MCM
397		
795		

* LG&E Customer owns underground service

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 24

Responding Witness: David S. Sinclair

Q-24. Refer to the Seelye Testimony, pages 44–46, and KU's response to AG-KUIC's First Request, Item 172. Provide any third party (e.g., NYMEX) forwards and futures energy forecasts that KU used to compare its PROSYM modeling results and proposed avoided cost of energy. Provide the most recent version of the forecast for a five year period, if available, and shorter, if not.

A-24. The Companies have not performed this comparison.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 25

Responding Witness: Daniel K. Arbough / Lonnie E. Bellar

Q-25. Refer to the Application, Tab 15 - 807 KAR 5:001, Section 16(7)(b), filing requirements. Describe how KU forecasts its transmission spending, including explanations for the projected 2020-2023 capital expenditures. Provide all transmission planning documents, both internal and public. Include all associated workpapers in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

A-25. Transmission develops the capital forecast through a multi-layered approach to incorporate Transmission Expansion Planning identified projects, projects required for NERC and Open Access Transmission Tariff (OATT) compliance, asset management needs, reliability improvements, and energy management system requirements.

See the response to PSC 1-31 for a description of the Transmission Planning processes. The FERC approved OATT requires the company to provide to its Independent Transmission Organization a detailed analysis and justification of all Transmission Expansion Plan projects. See attachment no. 1 for the list of projects and justifications. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

Asset management – LG&E and KU select system integrity programs and projects based on the condition, technical obsolescence, age, and consequence of failure of the various assets within the transmission system. The company inspects and maintains assets (such as transformers) on a regular basis and uses available diagnostics to determine the condition and replace or repair them before they deteriorate to the point of failure.

However, condition data for other assets is not as readily available, so LG&E and KU use asset age as well as historical performance and experience to estimate the condition of that asset. The company has developed a proactive targeted replacement program to reduce the average age of all assets and to replace poorly performing assets. The investment strategy, including project selection and prioritization for asset replacements can be found in the Transmission System

Improvement Plan (TSIP). See Case No. 2016-00370 Direct Testimony KU LGE Thompson Exhibit PWT-2 for the previously filed TSIP. Annual updates to the TSIP have been provided to the KYPSC in 2018, 2019, and 2020 in Case Nos. 2016-00370 and 2016-00371.

Reliability projects focus on line sectionalization, which consists of identifying long lines with multiple load taps and/or serving many customers and installing in-line breakers or switches to decrease customer exposure to outages and reduce SAIDI associated with these lines.

Priority of lines is based on the amount of exposure (length of transmission line) and the number of customers or amount of energy demand served from each circuit, while focusing on lines with historically poor SAIDI performance.

Installation of motor operated switches and switches are considered when installation of breakers is cost prohibitive. Motors are added to switches if the customer count being served exceeds 1,900 or if there is an operational need. Smart line fault indicators are added to lines with long taps and rough terrain to enable faster fault location and therefore quicker restoration. Switches will not reduce the number of outages but will reduce the overall duration (SAIDI) of those outages.

The transmission capital budget includes hardware and software upgrades to the Energy Management System (EMS) and associated applications that are required to monitor, maintain, and operate the transmission grid safely and reliably while meeting the NERC regulatory requirements. The budget is set to include a complete EMS software upgrade every two years, with minor upgrades and patches in between, to remain compliant with NERC reliability standards. Also covered in the budget is the annual purchase and installation of new software from the EMS vendor that will enhance safety and reliability above and beyond our current capabilities.

Transmission projects are presented for inclusion in the business plan by the teams or sponsors that oversee their perspective programs. The projects are presented and timed in the business plan according the criteria outlined above. Transmission management will review and retime projects, utilizing the business plan forecasting file to balance the budget that is allocated to the Transmission system by Financial Planning. This process results in a balanced business plan that consistently prioritizes projects based on transmission system requirements. This process is managed utilizing the Transmission Capital Forecast file. See attachment no. 2 for the Excel spreadsheet used to coordinate the capital business plan process. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

The entire attachment is Confidential and provided separately under seal.

The entire attachment is Confidential and provided separately under seal in Excel format.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 26

Responding Witness: David S. Sinclair

Q-26. Refer to the Application, Tab 16 – 807 KAR 5:001, Section 16(7)(c), filing requirements. Provide a detailed description of how the PROSYM model performs unit commitment decisions.

A-26. See attached. The information requested is confidential and proprietary and is being provided under seal pursuant to a petition for confidential protection.

The entire attachment is Confidential and provided separately under seal.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 27

Responding Witness: Robert M. Conroy

Q-27. Refer to proposed tariff Environmental Cost Recovery Surcharge. For the following, provide responses and all associated workpapers in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

a. Provide the average $/kWh value of the ECR surcharge by month over the past three years for the GS and RS customer classes.

b. Provide the average ECR bill surcharge by month over the past three years for the GS and RS schedules.

A-27. a-b. For clarification, the Environmental Cost Recovery Surcharge is applied to customer bills as a percentage of revenue in the manner specified in Rate Sheet No. 87. It is not charged to customers on a per kWh. The information requested for part a is a calculation of the ECR revenues divided by the energy sales by month for each of the two classes of customers. The information requested for part b is a calculation of the ECR revenues divided by the number of customers by month for each of the two classes of customers. See attachment being provided in Excel format.

The attachment is being provided in a separate file in Excel format.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 28

Responding Witness: David S. Sinclair

Q-28. Identify all firm capacity sales that KU has made to other load serving entities within the last five years. Also, identify the average price of firm capacity that KU charged to these other load serving entities.

A-28. Over the last five years, KU has provided sales to the following municipal electric customers: Barbourville, Bardstown, Bardwell, Berea, Corbin, Falmouth, Frankfort, Madisonville, Nicholasville, Paris, and Providence.

KU's municipal electric customers pay a two-part charge consisting of a demand charge and an energy charge, both of which are determined in accordance with the Generation Formula approved by FERC. The Generation Formula is updated annually and filed with FERC no later than the first business day in May, with an effective date of July 1st. Information on KU's last five annual updates to the Generation Formula can be found below:

2016
Docket Number: ER13-2428-000
Accession Numbers: 20160502-5428 and 20160502-5441
https://elibrary.ferc.gov/eLibrary/filelist?document_id=14456174&optimized=false
https://elibrary.ferc.gov/eLibrary/filelist?document_id=14456189&optimized=false

2017
Docket Number: ER13-2428-000
Accession Numbers: 20170501-5271 and 20170501-5271
https://elibrary.ferc.gov/eLibrary/filelist?document_id=14567748&optimized=false
https://elibrary.ferc.gov/eLibrary/filelist?document_id=14569322&optimized=false

2018
Docket Number: ER13-2428-000
Accession Numbers: 20180501-5438 and 20180501-5439

https://elibrary.ferc.gov/eLibrary/filelist?document_id=14666766&optimized=false
https://elibrary.ferc.gov/eLibrary/filelist?document_id=14666768&optimized=false

2019
Docket Number: ER13-2428-000
Accession Numbers: 20190501-5231 and 20190501-5232
https://elibrary.ferc.gov/eLibrary/filelist?document_id=14766720&optimized=false
https://elibrary.ferc.gov/eLibrary/filelist?document_id=14766724&optimized=false

2020
Docket Number: ER13-2428-000
Accession Numbers: 20200501-5349 and 20200501-5355
https://elibrary.ferc.gov/eLibrary/filelist?document_id=14857333&optimized=false
https://elibrary.ferc.gov/eLibrary/filelist?document_id=14857327&optimized=false

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 29

Responding Witness: Robert M. Conroy

Q-29. Refer to Tariff LQF. For the following, provide responses and all associated workpapers in Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

a. State when the avoided capacity cost calculation methodology for Rider LQF was most recently approved and provide a citation to the Order approving the avoided capacity cost methodology.

b. Provide the testimony explaining and supporting the methodology for calculating the Rider LQF avoided capacity cost.

c. Provide the hourly avoided capacity cost (ACC) in $/kWh payable to a QF for delivery of capacity over the past three years.

d. If KU has conducted any forward-looking estimate of future hourly ACC payments, provide all such values.

e. For each of the past three years, indicate whether the CAPi was 0 or another value in each hour.

f. For each of the past three years, provide the hourly avoided capacity cost payment [ACC x CAPi] paid to customers on the LQF tariff.

A-29.

a. The Companies' methodology for Rider LQF was filed by LG&E in Case No. 95-239 and approved by the Commission in it's Order issued on October 30, 1995. Upon the merger of LG&E and KU, KU adopted the methodology through a tariff filing that was Commission approved April 17, 1999. See the attached copy of the Commission's order in Case No. 95-239 and approved tariff issued April 17, 1999.

b. See attached for a copy of LG&E's application in Case No. 95-239.

c. ACC has been zero over this time period.

d. The Company has not conducted any such analysis.

e. CAPi has been zero over this time period.

f. [ACC x CAPi] has been zero over this time period.

KENTUCKY UTILITIES COMPANY

Third Revision of Original Sheet No. 22.2

P.S.C. No. 11

ELECTRIC RATE SCHEDULE RATE LQF

Cogeneration and Small Power Producer

AVAILABILITY

In all territory served. T

APPLICABLE

Applicable to any small power production or cogeneration "qualifying facility" with capacity over 100 Kw as defined by the Kentucky Public Service Commission Regulation 807 KAR 5:054, and which contracts to sell energy or capacity or both to the Company.

RATES FOR PURCHASES FROM QUALIFYING FACILITIES

Energy Component Payments

The hourly avoided energy cost (AEC) in \$ per MWh, which is payable to a QF for delivery of energy, shall be equal to the Company's actual variable fuel expenses, for Company-owned coal and natural gas-fired production facilities, divided by the associated megawatt-hours of generation, as determined for the previous month. The total amount of the avoided energy cost payment to be made to a QF in an hour is equal to [AEC x E_{QF}], where E_{QF} is the amount of megawatt-hours delivered by a QF in that hour and which are determined by suitable metering.

Capacity Component Payments

The hourly avoided capacity cost (ACC) in \$ per MWh, which is payable to a QF for delivery of capacity, shall be equal to the effective purchase price for power available to the Company from the inter-utility market (which includes both energy and capacity charges) less the Company's actual variable fuel expense (AEC). The total amount of the avoided capacity cost payment to be made to a QF in an hour is equal to [ACC x CAP_I], where CAP_I, the capacity delivered by the QF, is determined on the basis of the system demand (D_I) and the Company's need for capacity in that hour to adequately serve the load.

Determination of CAP_I

For the following determination of CAP_I, C_{KU} represents the Company's installed or previously arranged capacity at the time a QF signs a contract to deliver capacity; C_{QF} represents the actual capacity provided by a QF, but no more than the contracted capacity; and C_M represents capacity purchased from the inter-utility market. T

PUBLIC SERVICE COMMISSION
OF KENTUCKY
EFFECTIVE

APR 17 1999

PURSUANT TO 807 KAR 5:011,
SECTION 9 (1)

BY: Stephan O Bell
SECRETARY OF THE COMMISSION

CANCELLED
MAR 2000

Date of Issue: March 18, 1999
Cancelling Second Revision of
Original Sheet No. 22.2
Issued June 30, 1994

Issued By
R. L. Willhite
R. L. Willhite, Vice President
Lexington, Kentucky

Date Effective: April 17, 1999

Cogeneration and Small Power Producer

1. System demand is less than or equal to the Company's capacity: T
   $D_1 \leq C_{KU}$; $CAP_i = 0$

2. System demand is greater than the Company's capacity but less than or equal to the total of the Company's capacity and the capacity provided by a QF:

   $C_{KU} < D_i \leq [C_{KU} + C_{QF}]$; $CAP_i = C_M$

3. System demand is greater than the total of the Company's capacity and the capacity provided by a QF:

   $D_i > [C_{KU} + C_{QF}]$; $CAP_i = C_{QF}$

PAYMENT

The Company shall pay each bill for electric power rendered to it in accordance with the terms of the contract, within 10 days of the date the bill is rendered. In lieu of such payment plan, the Company will, upon written request, credit the Customer's account for such purchases.

TERM OF CONTRACT

For contracts which cover the purchase of energy only, the term shall be one year, and shall be self-renewing from year-to-year thereafter, unless canceled by either party on one year's written notice.

For contracts which cover the purchase of capacity and energy, the term shall be 5 years.

TERMS AND CONDITIONS

1. Qualifying facilities shall be required to pay for any additional interconnection costs, to the extent that such costs are in excess of those that the Company would have incurred if the qualifying facility's output had not been purchased.

2. A qualifying facility operating in parallel with the Company must demonstrate that its equipment is designed, installed, and operated in a manner that insures safe and reliable interconnected operation. A qualifying facility should contact the Company for assistance in this regard.

3. The purchasing, supplying and billing for service, and all conditions applying hereto, shall be specified in the contract executed by the parties, and are subject to the jurisdiction of the Kentucky Public Service Commission, and to the Company's Service Regulations currently in effect, as filed with the Commission. T

PUBLIC SERVICE COMMISSION
OF KENTUCKY
EFFECTIVE

APR 17 1999

PURSUANT TO 807 KAR 5:011,
SECTION 9 (1)

BY: Stephan O Bell
SECRETARY OF THE COMMISSION

CANCELLED
MAR 2000

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE TARIFF FILING OF LOUISVILLE GAS AND ELECTRIC COMPANY TO REVISE THE SMALL POWER PRODUCTION AND CO-GENERATION PURCHASE RATE SCHEDULES SPPC-I & II	)	CASE NO. 95-239

O R D E R

On May 2, 1995, Louisville Gas and Electric Company ("LG&E") filed revisions to its Small Power Production and Cogeneration Purchase Rate Schedules SPPC-I & II. These rate schedules provide the rates and conditions of service for LG&E's purchase of energy and capacity from small power production or cogeneration facilities known as qualifying facilities ("QFs"). The proposed tariff revisions were suspended on May 31, 1995 to allow the Commission an opportunity to review thoroughly the proposed modifications to Schedules SPPC-I & II.

LG&E's proposed tariff revisions are a result of increasing competition in the off-system power market, in which LG&E and other utilities purchase wholesale electricity from utility and non-utility sources. LG&E contends that increased competition and abundant power purchase opportunities benefit customers by deferring the construction of new generating facilities.

In order to make its existing method of pricing purchases from QFs more responsive to the changing wholesale market, LG&E proposes tariff revisions including a reduction of QF contract terms under Schedules SPPC-I & II from twenty years to five years and a new methodology for calculating the energy and capacity purchase rates under Schedule SPPC-II. The new pricing methodology includes hourly pricing for purchases of power delivered from QFs and a determination of avoided capacity costs based on the wholesale market value of power. LG&E contends that its avoided costs are no longer represented by the deferral savings on new generation capacity but by the purchase price of power available in the wholesale market.

LG&E's proposed tariff modifications represent a significant shift in the manner in which avoided capacity costs and QF purchase rates have traditionally been calculated in Kentucky. Nevertheless, the increasingly competitive market for off-system power and the growing trend among utilities to incorporate wholesale power purchases in their long-range resource plans justifies such actions. In a more competitive wholesale power market, the pricing of power purchases from non-utility sources such as QFs must be consistent with that of inter-utility power purchases. Such equitable treatment of competitive resources is necessary in order for utilities to make reasonable and economic power procurement decisions.

IT IS THEREFORE ORDERED that LG&E's proposed tariff revisions to Schedules SPPC-I & II be and are hereby approved.

Done at Frankfort, Kentucky, this 30th day of October, 1995.

PUBLIC SERVICE COMMISSION

Chairman

Vice Chairman

Commissioner

ATTEST:

Executive Director

LG&E

Louisville Gas and Electric Company
220 West Main Street
P.O. Box 32010
Louisville, Kentucky 40232

May 1, 1995

Don Mills, Executive Director
Kentucky Public Service Commission
730 Schenkel Lane
Post Office Box 615
Frankfort, Kentucky 40602

Re: Small Power Production and Cogeneration Purchase Rate Schedules SPPC-I & II

Dear Mr. Mills,

Enclosed are four copies of the following sheets of our Electric Tariff PSC of Ky. No. 4:

Electric Tariff PSC of Ky. No. 4.:
13th Revised Sheet No. 15-D canceling 12th Revised Sheet No. 15-D
13th Revised Sheet No. 15-F canceling 12th Revised Sheet No. 15-F
2nd Revised Sheet No. 15-G canceling 1st Revised Sheet No. 15-G

This tariff revision proposes a change in the pricing methodology for the purchase of energy and capacity from a qualified facility (QF) under the Small Power Production and Cogeneration Purchase Rate Schedules (Rates SPPC-I & II).

BACKGROUND

The electric power generation business is changing at a rapid pace. With the current trends and recent developments in the industry, LG&E has found that it must continually adapt in order to maintain a position of being a low cost, quality supplier of energy. Of significant importance is the Clean Air Act Amendment of 1990 and the Energy Policy Act of 1992 whose impacts are now unfolding. These Acts have provided a major influence on the price and availability of interchange power. As a result, the off-system power market has evolved into a highly competitive exchange.

This increased competition has brought benefits to the customers. In particular, utilities will be able to purchase additional resource requirements through firm reservations of power during the peak periods of each year -- well into the future. The impact of this new acquisition potential is a significant deferral in generation construction requirements. The result means lower costs for retail customers.

In order to maintain equity between the advances in the industry and pricing of services to our customers, our tariff must likewise evolve. Flexibility is essential given the direction of the industry and the market trend toward more abundant and cheaper sources of energy. Thus, we have revisited the issue of purchased energy and capacity from QF's in order to develop a modern methodology that we feel is in full accord with the PURPA regulations.

CURRENT METHODOLOGY

Our current method of determining the prices for energy and capacity purchases from a QF under SPPC I & II is based on the following:

Energy Purchase Rates are based on LG&E's estimated weighted average avoided energy cost as determined for each calendar year. The avoided energy cost rate is updated every year. The current rate is 1.689 cents per kilowatt-hour and is applied to all kilowatt-hours delivered by a QF during each billing month.

Capacity Purchase Rates are based on the avoided costs determined by the effect on LG&E's expansion plan of a 75 megawatt purchase from a QF. The avoided costs are estimated by calculating the difference in the weighted[1] present value of revenue requirements of the capacity expansion plan with and without such a purchase. The avoided capacity cost rate is updated every other year. The current rate is 0.896 cents per kilowatt-hour and is applied to all kilowatt-hours delivered by a QF during each billing month.

The primary deficiency of the existing method of pricing purchases from QF's is that it is not market responsive. In other words, it does not convey the 'real time' price changes that are occurring in the wholesale environment of today's inter-utility energy and capacity transactions.

RATE SCHEDULE SPPC-I

The SPPC-I Schedule, which is applicable to QF's with a capacity of 100 kW or less, currently has a contract term of twenty years. Under an agreement, the purchase arrangement would fix the capacity payments to a QF at the then current tariff price for this twenty year period. Given the trend in the market toward progressively lower prices for power from available off-system sources, as discussed above, a twenty year contract term for fixed capacity payments to a supplier would not serve the best interest of the retail customers who purchase their requirements from LG&E.

Thus, we propose to reduce the twenty year term of the SPPC-I Schedule to a five year term. Using the current method of computing the difference in the net present value revenue requirements of the system resource planning costs (with and without purchases from QF's), we have updated the avoided capacity costs based on a five year period. The resulting capacity purchase price is equal to 0.107 cents per kWh (see Attachment A). Likewise, we have updated our avoided energy cost which is now determined to be 1.200 cents per kWh.

Again because of the direction of the industry, we feel that the avoided costs should be reviewed on a much more routine basis than annually. We therefore plan to monitor the changes in our avoided costs on a continual basis and submit future filings of updated prices for energy and/or capacity as a course of timeliness with market conditions as opposed to annually (biennially with respect to capacity) as a matter of custom. We feel that the modified approach proposed here provides an increased level of refinement in pricing which is fitting for a class of supplier which is by nature small in size and relatively unsophisticated in terms of power production.

[1] The resource plan is based on a weighted average of a high, a base, and a low forecast.

RATE SCHEDULE SPPC-II

In contrast to SPPC-I QF's, SPPC-II Schedule QF's are larger[2] than those under the SPPC-I Schedule and generally more sophisticated as power producers. In other words, a single SPPC-II QF can be viewed as a source that can provide a 'block of power', which is more representative of the class of inter-utility power suppliers.[3]

Our proposed method of pricing the purchase of energy and capacity from small power producers and cogeneration customers under the SPPC-II Schedule is an attempt to align QF's more equitably with other large suppliers in the available resource mix. Once this 'level playing field' is established, LG&E can procure lower cost power for its customers while treating all competitive resources fairly and impartially and within the regulations and guidelines established for purchases from QF's.

A principal change proposed in the revised tariff is the application of hourly pricing for purchases of power delivered from QF's. Hourly pricing is much more efficient at matching the costs of the required power with respect to the load changes on the system than are prices which are averaged over longer periods of time. The hourly method will be utilized for pricing of the capacity component of the delivered power.

Avoided Capacity Costs

In order to deliver and receive compensation for capacity under the SPPC-II schedule, a QF must specify a level of contract capacity in kilowatts. This contract amount then represents the maximum capacity deliverable to LG&E from the qualifying facility under any conditions. However, the system demand[4] in any hour will dictate the amount of resources, in addition to LG&E's existing resources, which will be needed to adequately serve the load in that hour. If $C_{LG\&E}$ represents LG&E's installed or previously arranged capacity at the time a QF signs a contract to deliver capacity, and C_{QF} represents the capacity to be provided by a QF, then $C = C_{LG\&E} + C_{QF}$ represents the resources available to LG&E other than those which are available from the inter-utility wholesale markets.

Since the inter-utility market for power has become so plentiful as to significantly impact LG&E's capacity resource acquisition strategy, LG&E's avoided capacity costs are no longer represented by the deferral savings on new generation capacity but by the purchase price of power available in the wholesale markets. Thus, it follows that the capacity costs that are avoidable by purchases from a QF are equal to the wholesale market value of power. Therefore, the inter-utility cost of power available to LG&E in each hour, as needed, serves as the basis for LG&E's payment of avoided capacity rates to QF's in those same hours.

The cost to LG&E of inter-utility market power, includes both capacity charges and energy charges. The effective purchase price (P_M) of power received during an interchange transaction, in $ per MWh, is calculated by

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[2] SPPC-II QF's have capacities exceeding 100 kW.

[3] An analogy would be customers on an interruptible rate schedule. A single large customer that can offer a large block of load for curtailment is more readily and efficiently dispatched than several smaller customers that each can only provide small interruptible load increments which in total amount to the same interruptible load as the single large customer.

[4] System demand as defined here is LG&E's retail electric load, less contracted interruptible capacity, plus reserve margin requirements.

$$P_M = [(P_C \times C_M) + (P_E \times E_M)] \div E_M$$

where:

P_C is the demand or capacity cost component of inter-utility market power,

C_M is the capacity in megawatts purchased from the market to serve the demand which is in excess of LG&E's installed or previously arranged capacity ($C_{LG\&E}$) over the reservation period,

P_E is the energy cost component of inter-utility market power, and

E_M is the energy in megawatt-hours purchased from the market over the reservation period.

The *per unit* avoided capacity cost (ACC) in $ per MWh is equal to the effective purchase power price from the inter-utility market, i.e., P_M, less the actual variable fuel expenses for LG&E coal and natural gas fired production facilities ($F_{LG\&E}$), thus ACC is equal to [P_M - $F_{LG\&E}$].

System demand (D_i) changes from hour to hour and so LG&E's need for capacity also varies hourly. As a result, three different capacity resource requirement conditions are possible in any hour with respect to C, $C_{LG\&E}$, and C_{QF}.

1. D_i could be equal to or less than $C_{LG\&E}$. Therefore, LG&E would not require capacity to be delivered from either a QF or the inter-utility markets.

2. D_i could exceed $C_{LG\&E}$ but be less than or equal to C and thus the increment of capacity needed above $C_{LG\&E}$ may be less than or equal to C_{QF}. Therefore, LG&E would require a portion or all of the capacity provided from a QF in order to serve the load.

3. D_i could exceed C. Therefore, LG&E would require all of the capacity provided from a QF plus additional capacity from the inter-utility market in order to serve the load.

The total amount of the hourly avoided capacity cost payments due to a QF can be determined for each of the possible conditions described above on the basis of the hourly costs of the inter-utility power purchases.

Case # 1: The avoided capacity cost is zero since LG&E's installed or previously arranged capacity resources ($C_{LG\&E}$) are fully adequate to serve the load in that hour, and thus LG&E would not require any deliveries from any other sources.

Case # 2: The total amount of the avoided capacity cost payment to be made to a QF is equal to [ACC × C_M]. The capacity for which QF compensation is being provided is limited to the amount being purchased from the inter-utility transaction since the entire QF capacity, i.e., C_{QF}, is not required to adequately serve the load.

Case #3: The total amount of the avoided capacity cost to be made to a QF is equal to [ACC × C_{QF}] since the entire QF capacity (and more) is necessary to adequately serve the load.

Avoided Energy Costs

QF's also receive compensation for energy delivered under the SPPC-II schedule. Currently the avoided energy cost is a weighted average over a year. This weighting is based on three time-differentiated periods; namely, summer on-peak hours, winter on-peak hours, and all other hours (which consequentially are off peak).

LG&E is not proposing to change its calculation of the avoided energy costs to a full hour-by-hour basis. Unlike the avoided capacity costs which can modulate over short periods of time, LG&E's energy costs typically do not portray a notable variation from hour to hour or even from day to day. As can be observed in the report of hourly energy costs which is filed each year, the per unit energy costs are rather stable in the short run. Thus, the application of hourly avoided energy costs for QF compensation would not result in an enhancement to the comprehension of costs or the price signal aspects of the delivered energy.

Alternatively, recognition of a variation in avoided energy costs on a month-to-month basis is a more practical solution for capturing energy cost changes which do occur over longer intervals of time. The proposed *per unit* avoided energy cost (AEC) in $ per MWh, which is applicable for payment to a QF in a particular month, will be equal to LG&E's actual variable fuel expenses divided by the associated megawatt-hours of generation, as determined for the previous month (i.e., AEC = $F_{LG\&E}$ as defined above). The data required to calculate AEC is readily available from FERC Accounts 501 and 547 in which are recorded the actual fuel costs and megawatt-hour output of LG&E's coal and natural-gas production facilities.

The total amount of the avoided energy cost payment to be made to a QF in an hour is equal to [AEC × E_{QF}], where E_{QF} is the amount of megawatt-hours delivered by a QF in that hour.

Total Avoided Cost per Hour

The total hourly avoided cost payable for energy and capacity delivered by a QF is summarized below for the three cases previously described.

1. System demand is less than or equal to LG&E's capacity:

$$D_i \leq C_{LG\&E}\ ; \qquad AC_T = AEC \times E_{QF}$$

2. System demand is greater than LG&E's capacity but less than or equal to the total of LG&E's capacity and the capacity provided by the QF:

$$C_{LG\&E} < D_i \leq C\ ; \qquad AC_T = [\ AEC \times E_{QF}\ ] + [\ ACC \times C_M\ ]$$

3. System demand is greater than LG&E's capacity and the capacity provided by the QF:

$$D_i > C\ ; \qquad AC_T = [\ AEC \times E_{QF}\ ] + [\ ACC \times C_{QF}\ ]$$

LG&E

Term of Contract

Currently the SPPC-II schedule specifies that the term of contract shall be for 20 years. Because of the changes which have already occurred in the industry along with perhaps even more dramatic changes expected in the future, such a long term of contract is not fitting with the emerging utility business.

As with the proposed change of term in the SPPC-I Schedule, we feel that it is in the best interest of our customers and all other parties concerned, to establish the term of the SPPC-II Schedule at five years. Again this alteration is an attempt to move QF power sources into an equitable position with respect to the other wholesale market resources available to LG&E. This change in term would also afford the QF the flexibility to seek other customers should other opportunities arise as a result of changes in the overall market for power.

Please acknowledge this filing by returning a stamped copy of the proposed tariffs.

Sincerely,

Larry Vogt

Larry J. Vogt
Rates and Regulatory Coordinator

Enclosures

bc: Dave R. Carey
Doug M. Brooks
Bob J. Ehrler, Jr.
Pat S. Ryan
Bob E. Lyon
Robert M. Conroy
Steve S. Seelye

AVOIDED CAPACITY COST STUDY
For 75 MW Qualifying Facility
5 Year Period (1995 – 1999)
(1000's $1995)

	Base	Cannelton	Difference
Weighted PVRR	$303,455	$301,590	$1,865
Levelized Annual	$80,358	$79,864	$494

$$\text{CRF} = \frac{(i) * (1 + i)^5}{(1 + i)^5 - 1} = \frac{(.1015)*(1.1015)^5}{(1.1015)^5 - 1.0} = 0.26481$$

$$\text{Avoided Cost} = \frac{\$493,866}{\text{yr}} \times \frac{1}{75,000 \text{ kw}} = \$6.58 \text{ \$/kw-yr}$$

$$\$0.55 \text{ \$/kw-mo}$$

$$\text{Avoided Cost} = \frac{\$493,866}{\text{yr}} \; \frac{1 \text{ yr}}{8760 \text{ hr}} \; \frac{1}{(75,000 \text{ kw})(0.70)} = \underline{1.07} \text{ mills}$$

LOUISVILLE GAS AND ELECTRIC COMPANY

13th Rev. SHEET NO. 15-D
CANCELLING 12th Rev. SHEET NO. 15-D

P.S.C. OF KY. ELECTRIC NO. 4

SPPC-I

Small Power Production and Cogeneration
Purchase Schedule

Applicable:
In all territory served.

Availability:
Available to any small power production or cogeneration "qualifying facility" with capacity of 100 Kw or less as defined by the Kentucky Public Service Commission Regulation 807 KAR 5:054, and which contracts to sell energy or capacity or both to the Company.

Rates for Purchases from
Qualifying Facilities:

Energy Component Per Kilowatt-hour Delivered . . . . 1.200¢ R

Capacity Component Per Kilowatt-hour Delivered . . . . 0.107¢ R

Payment:
The Company shall pay each bill for electric power rendered to it in accordance with the terms of the contract, within 15 days of the date the bill is rendered. In lieu of such payment plan, the Company will, upon written request, credit the Customer's account for such purchases.

Term of Contract:
For contracts which cover the purchase of energy only, the term shall be one year, and shall be self-renewing from year-to-year thereafter, unless cancelled by either party on one year's written notice.

For contracts which cover the purchase of capacity and energy, the term shall be 5 years. T

Terms and Conditions:
1. Qualifying facilities shall be required to pay for any additional interconnection costs, to the extent that such costs are in excess of those that the Company would have incurred if the qualifying facility's output had not been purchased.

DATE OF ISSUE April 28, 1995 DATE EFFECTIVE June 1, 1995

ISSUED BY Victor A. Staffieri (NAME) President (TITLE) Louisville, Kentucky (ADDRESS)

LOUISVILLE GAS AND ELECTRIC COMPANY

13th Rev. SHEET NO. 15-F

CANCELLING 12th Rev. SHEET NO. 15-F

P.S.C. OF KY. ELECTRIC NO. 4

SPPC-II

Small Power Production and Cogeneration
Purchase Schedule

Applicable:
In all territory served.

Availability:
Available to any small power production or cogeneration "qualifying facility" with capacity over 100 Kw as defined by the Kentucky Public Service Commission Regulation 807 KAR 5:054, and which contracts to sell energy or capacity or both to the Company.

Rates for Purchases From Qualifying Facilities:

Energy Component Payments

The hourly avoided energy cost (AEC) in $ per MWh, which is payable to a QF for delivery of energy, shall be equal to the Company's actual variable fuel expenses, for Company-owned coal and natural gas-fired production facilities, divided by the associated megawatt-hours of generation, as determined for the previous month. The total amount of the avoided energy cost payment to be made to a QF in an hour is equal to [AEC x E_{QF}], where E_{QF} is the amount of megawatt-hours delivered by a QF in that hour and which are determined by suitable metering.

Capacity Component Payments

The hourly avoided capacity cost (ACC) in $ per MWh, which in payable to a QF for delivery of capacity, shall be equal to the effective purchase price for power available to the Company from the inter-utility market (which includes both energy and capacity charges) less the Company's actual variable fuel expense (AEC). The total amount of the avoided capacity cost payment to be made to a QF in an hour is equal to [ACC x CAP_i], where CAP_i, the capacity delivered by the QF, is determined on the basis of the system demand (D_i) and the Company's need for capacity in that hour to adequately serve the load.

Determination of CAP_i

For the following determination of CAP_i, $C_{LG\&E}$ represents the Company's installed or previously arranged capacity at the time a QF signs a contract to deliver capacity; C_{QF} represents the actual capacity provided by a QF, but no more than the contracted capacity; and C_M represents capacity purchased from the inter-utility market.

DATE OF ISSUE April 28, 1995 DATE EFFECTIVE June 1, 1995

ISSUED BY Victor A. Staffieri President Louisville, Kentucky
NAME TITLE ADDRESS

LOUISVILLE GAS AND ELECTRIC COMPANY

2nd Rev. SHEET NO. 15-G

CANCELLING 1st Rev. SHEET NO. 15-G

P.S.C. OF KY. ELECTRIC NO. 4

SPPC-II

Small Power Production and Cogeneration
Purchase Schedule (Continued)

1. System demand is less than or equal to the Company's capacity: $D_i \leq C_{LG\&E}$; $CAP_i = 0$

2. System demand is greater than the Company's capacity but less than or equal to the total of the Company's capacity and the capacity provided by a QF: T

   $C_{LG\&E} < D_i \leq [C_{LG\&E} + C_{QF}]$; $CAP_i = C_M$

3. System demand is greater than the total of the Company's capacity and the capacity provided by a QF:

   $D_i > [C_{LG\&E} = C_{QF}]$; $CAP_i = C_{QF}$

Payment:

The Company shall pay each bill for electric power rendered to it in accordance with the terms of the contract, within 15 days of the date the bill is rendered. In lieu of such payment plan, the Company will, upon written request, credit the Customer's account for such purchases.

Term of Contract:

For contracts which cover the purchase of energy only, the term shall be one year, and shall be self-renewing from year-to-year thereafter, unless cancelled by either party on one year's written notice.

For contracts which cover the purchase of capacity and energy, the term shall be 5 years. T

Terms and Conditions:

1. Qualifying facilities shall be required to pay for any additional interconnection costs, to the extent that such costs are in excess of those that the Company would have incurred if the qualifying facility's output had not been purchased.

2. A qualifying facility operating in parallel with the Company must demonstrate that its equipment is designed, installed, and operated in a manner that insures safe and reliable interconnected operation. A qualifying facility should contact the Company for assistance in this regard.

3. The purchasing, supplying and billing for service, and all conditions applying hereto, shall be specified in the contract executed by the parties, and are subject to the jurisdiction of the Kentucky Public Service Commission, and to the Company's Service Regulations currently in effect, as filed with the Commission.

DATE OF ISSUE April 28, 1995 DATE EFFECTIVE June 1, 1995

ISSUED BY Victor A. Staffieri ~~President~~ Louisville, Kentucky
NAME TITLE ADDRESS

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 30

Responding Witness: Lonnie E. Bellar / William Steven Seelye

Q-30. Explain, in detail, how KU transmission costs are caused (e.g., planning triggers and/or monthly peaks). Also, explain and justify how KU classifies and allocates transmission costs to customer classes, including the number of peaks costs are based on.

A-30. Transmission planning is primarily performed in accordance with locational fault analysis as prescribed in NERC TPL-001 and the Companies' transmission planning guidelines posted on OASIS. See response to Question 25. Changes in load -- typically increases in load -- on localized circuits and transmission substations are normally what result in plant additions on the transmission system. For example, increases in load in specific regions of the transmission system can result in the Companies' fault analysis models identifying the need for the addition of substation capacity or the selective reconductoring of transmission lines in particular locations. The Companies' electric cost of service studies allocate transmission costs on the basis of class peak demands, which are reflective of the non-coincident, locational nature of the transmission planning process.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 31

Responding Witness: Robert M. Conroy / William Steven Seelye

Q-31. State whether KU conducted a review of best practices for avoided costs methods. If so, provide any and all internal memos, consultant deliverables, and reports related to avoided cost best practices. If comparative quantitative analysis was conducted on various methodological approaches, provide these analyses in Excel spreadsheet format will all formulas, columns, and rows unprotected and fully accessible.

A-31. The Companies are unaware of the compilation of best practices for avoided cost methods for distributed energy resources (DER) prepared by EPRI, EEI, NARUC, DOE, or any other utility or commission group that would provide an objective and unbiased view on the topic.

The methodologies used to calculate avoided generation capacity and energy costs are well established, and involve analyzing the change in costs (e.g., net present revenue requirements) resulting from a change in load or system resources. Methodologies for calculating avoided transmission and distribution costs are much more complicated due to the locational nature of any changes in costs due to changes in DER on the system. Increases in distributed generation on the distribution system are just as likely to result in increased costs rather than avoided costs on the system.

The *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Project* is generally recognized as establishing the standard tests ("California Tests") used for measuring the cost-benefits of demand-side management (DSM) programs and can therefore be viewed as representing "best practices" for the evaluation of DSM programs.

The *Net-Energy Metering 2.0 Lookback Study* conducted for the California Public Utilities Commission ("CPUC") by Verdant Associates et al. applied the California Tests to the current net metering scheme in California (NEM 2.0) and found that the net metering scheme did not pass the Ratepayer Impact Measure (RIM) test or the Total Resource Cost (TRC) test. The RIM and TRC are two of the standard California Tests.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 32

Responding Witness: Robert M. Conroy / William Steve Seelye

Q-32. Refer to the Direct Testimony of Benjamin D. Inskeep (Inskeep Testimony) filed on behalf of the Kentucky Solar Industries Association, Inc., page 53, Figure 2, and footnote 53.

a. Explain what operational, planning, or other circumstances that makes KU distinct from the 15 states studied in the analysis, all of which included avoided generation and transmission capacity in their cost-benefit study of net metering and distributed solar.

b. Explain what operational, planning, or other circumstances that makes KU distinct from the ten states studied in the analysis that included avoided distribution capacity in their cost-benefit study of net metering and distributed solar.

A-32. a. & b.

In the abstract, avoided generation, transmission, or distribution capacity costs are potential savings categories to consider when evaluating how to compensate net metering customers for energy they produce onto a utility's grid.

But the more concrete statutory context of Kentucky's Net Metering Statutes does not state or imply that net metering customers should be compensated for anything other than energy.[8] Energy and capacity are not the same; therefore, it is not clear that net metering customers can be compensated for supposed avoided capacity costs.

In addition, saying that a potential savings category is worth considering is not the same as saying it should have a non-zero value.

The Commission's orders in the Companies' recent proceeding concerning a 100 MW solar power-purchase agreement ("Solar PPA") and related renewable power agreements ("RPAs") under the Companies' Green Tariff Option No. 3

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[8] *See* KRS 278.465 and 278.466.

are instructive. In that proceeding, the Companies' proposed RPAs with two large customers included intermediate and peak demand offsets related to the Solar PPA (i.e., a generation capacity value), but they did not include base demand offsets (i.e., transmission and distribution offsets). The Commission did not question the exclusion of base demand offsets, but it characterized the inclusion of intermediate and peak demand offsets as subsidies that it rejected: "Toyota and Dow will receive a subsidy because nonfirm energy produced by the solar facility offsets Toyota's and Dow's demand, resulting in a shift in cost recovery of fixed assets in subsequent rate proceedings from Toyota and Dow to LG&E/KU's nonparticipating customers."[9] In a later order in the same proceeding, the Commission stated, "As a non-firm energy-only purchase agreement, the PPA cannot be relied upon for generating capacity used to meet the statutory requirement that electric utilities provide adequate, efficient and reasonable service."[10]

Applying the Commission's position to net metering compensation precludes assigning any non-zero value to avoided generation, transmission, and distribution costs. If the Solar PPA's 100 MW of solar capacity installed on the Companies' system that is backed by contractual performance guaranties and subject to liquidated damages "cannot be relied upon for generating capacity used to meet the statutory requirement that electric utilities provide adequate, efficient and reasonable service," then there is no ground for asserting that smaller amounts of renewable capacity (both individually and in the aggregate) distributed across the Companies' service territories can be relied upon to provide generating capacity. And if it cannot be relied upon to provide generating capacity, it cannot provide an avoided generating capacity benefit. Moreover, if it cannot be relied upon to provide generating capacity, it cannot be relied upon to offset transmission or distribution costs for the very same reasons and should not be compensated for those supposed benefits.

It is noteworthy that the Companies' proposal in the Solar PPA proceeding was to provide Toyota and Dow with intermediate and peak demand charge offsets only to the extent the Solar PPA facility actually produced energy at the times used to set their demand charges. The Companies did not propose to assume in advance that the Solar PPA would in fact provide energy at the relevant times and give those customers an ongoing credit regardless of when the Solar PPA energy arrived, yet that is exactly what giving net metering customers a per-kWh avoided cost credit would do: it would assume beneficial results in advance of those results ever arriving.

It is also important to bear in mind that future residential and small non-residential net metering customers will in fact receive generation, transmission, and

[9] Case No. 2020-00016, Order at 6-7 (Ky. PSC June 18, 2020).
[10] Case No. 2020-00016, Order at 7 (Ky. PSC Dec. 16, 2020).

distribution cost compensation for every kWh they consume from their own production; they will avoid paying the entire retail energy rate for each such kWh, which includes all generation and transmission cost recovery, as well as a distribution cost component, regardless of when that energy is produced and consumed. What requires justification and support—which have not been provided in the record of these proceedings—is providing ***any*** compensation at all for avoided generation, transmission, and distribution capacity costs for as-available, non-firm energy that sits behind a customer's own load. In addition, it is possible that distributed energy resources could result in ***additional*** net distribution capacity costs, not avoided costs.

Moreover, the Companies have provided evidence in these proceedings that the avoided generation, transmission, and distribution capacity value of future net metering customers' excess energy is zero or is already fully compensated by the Companies' proposed NMS-2 rates.[11]

There are several other issues this request raises that require response.

First, the study to which Mr. Inskeep refers purports to be a meta-analysis of 15 studies selected from 40 studies the authors considered. Of the 15 studies analyzed, less than half were sponsored by state regulatory agencies; the rest were sponsored by third parties or commission staffs:[12]

[11] *See* Seelye Rebuttal at 5-61; Conroy Rebuttal at 1-24.
[12] *See id.* at 5.

Table 1. Selection of studies analyzed

State	Year	Study Sponsor	Prepared by
Arkansas	2017	Sierra Club	Crossborder Energy
District of Columbia	2017	Office of the People's Counsel	Synapse Energy Economics
Georgia	2017	Southern Company	Southern Company
California	2016	California Public Utility Commission (CPUC)	CPUC/Energy and Environmental Economics (E3)
Nevada	2016	State of Nevada Public Utilities Commission	E3
New York	2016	New York Public Service Commission (PSC)	NY Department of Public Service (DPS) Staff
Hawaii	2015	Interstate Renewable Energy Council	Clean Power Research
Louisiana	2015	Louisiana Public Service Commission	Acadian Consulting Group
Maine	2015	Maine Public Utility Commission	Clean Power Research
Oregon	2015	Portland General Electric	Clean Power Research
South Carolina	2015	South Carolina Office of Regulatory Staff	E3
Minnesota	2014	Minnesota Department of Commerce	Clean Power Research
Mississippi	2014	Public Service Commission of Mississippi	Synapse Energy Economics
Utah	2014	Utah Clean Energy	Clean Power Research
Vermont	2014	Public Service Department (PSD) Staff	VT PSD

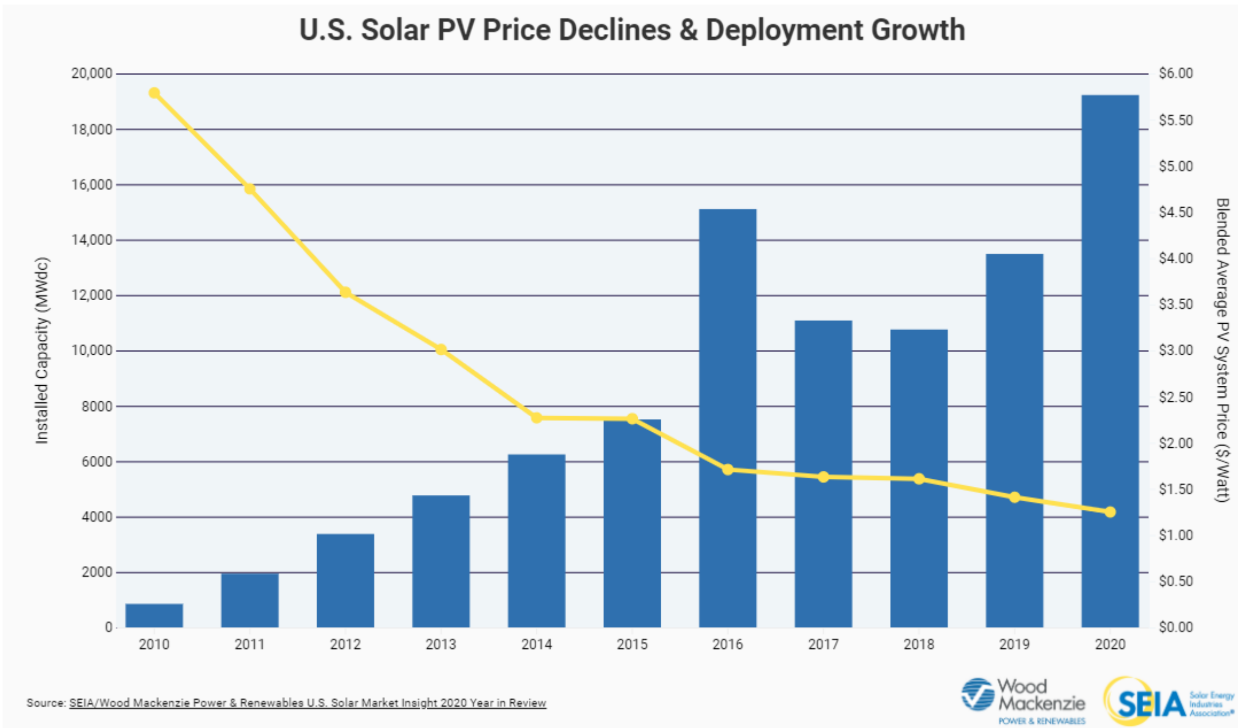
Therefore, the document cited by Mr. Inskeep cannot be relied upon to support an assertion that all or even most of the studies cited in the meta-analysis represent the positions of the associated states or state commissions.

Second, the age of the cited studies raises doubts about their relevance. The meta-analysis was published in May 2018 and stated that one of the criteria for including studies in the meta-analysis was the age of the study: "The study was released in 2014, or later[.]" Recency does matter: As W. Steven Seelye noted in his rebuttal testimony, California is currently considering significant changes to its net metering policy even after just a few years of its current NEM 2.0 approach that was implemented following the California study cited in the meta-analysis. Applying the same age-of-study criterion now that it is April 2021 would eliminate all but three of the studies from consideration (i.e., all but the 2017 studies). Notably, none of the 2017 studies was conducted or sponsored by a utility commission.

The age-of-study criterion is particularly important due not just to the changing regulatory climate regarding net metering, but also due to the even more rapidly changing market conditions regarding solar PV generation. For example, as the Solar Energy Industry Association ("SEIA") states on its website, "Solar energy in the United States is booming."[13] SEIA further notes, "An average-sized

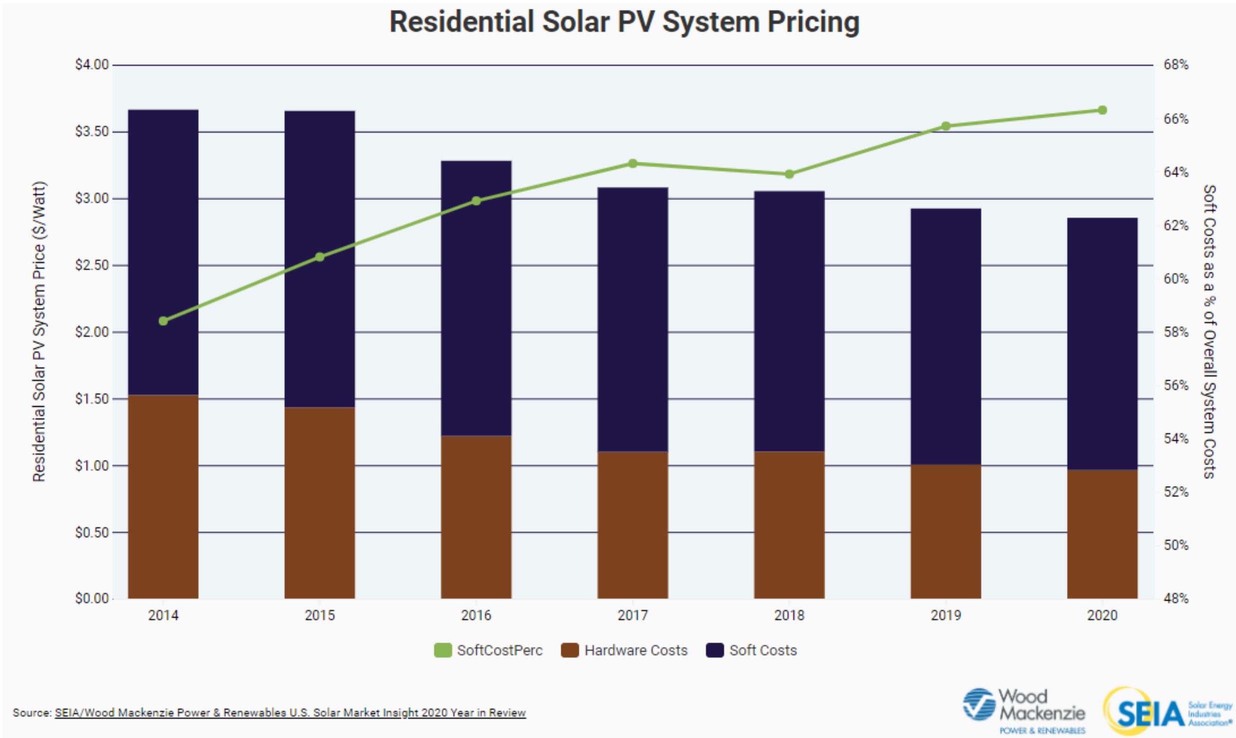
[13] https://www.seia.org/solar-industry-research-data (viewed on April 15, 2021).

residential system has dropped from a pre-incentive price of $40,000 in 2010 to roughly $20,000 today, while recent utility-scale prices range from $16/MWh - $35/MWh, competitive with all other forms of generation,"[14] and provides the following graph:

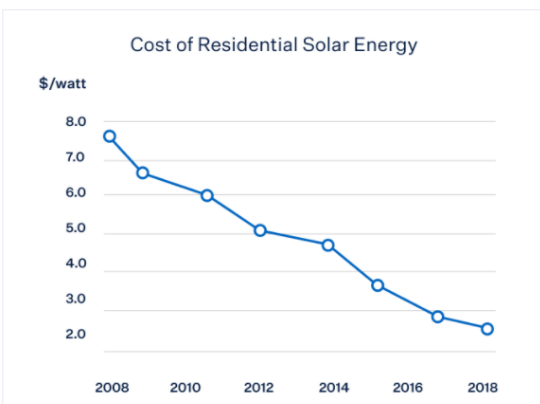


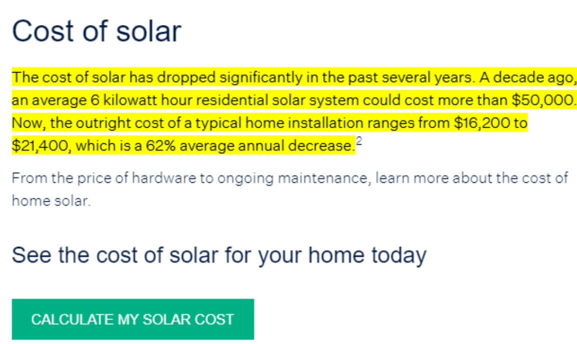
SEIA's data shows that not only are PV prices decreasing generally, they are decreasing for residential PV installations, too:

[14] *Id.*



SEIA's data is consistent with information provided by solar installer SunRun, as well:[15]





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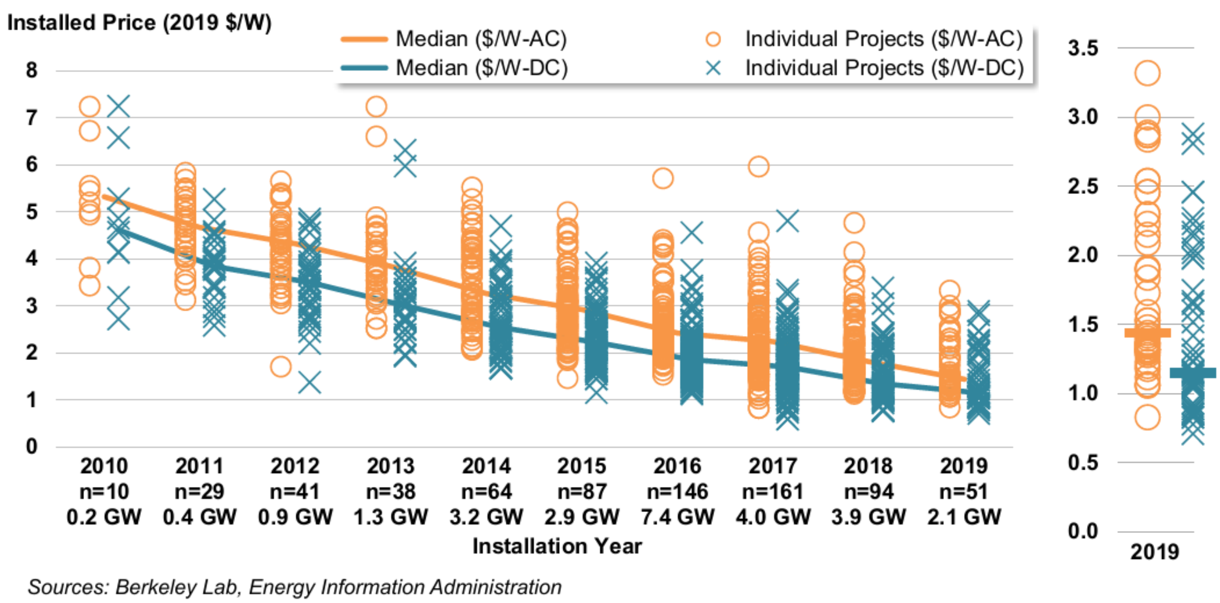
15 https://www.sunrun.com/solar-lease/cost-of-solar#:~:text=The%20cost%20of%20solar%20has,a%2062%25%20average%20annual%20decrease.

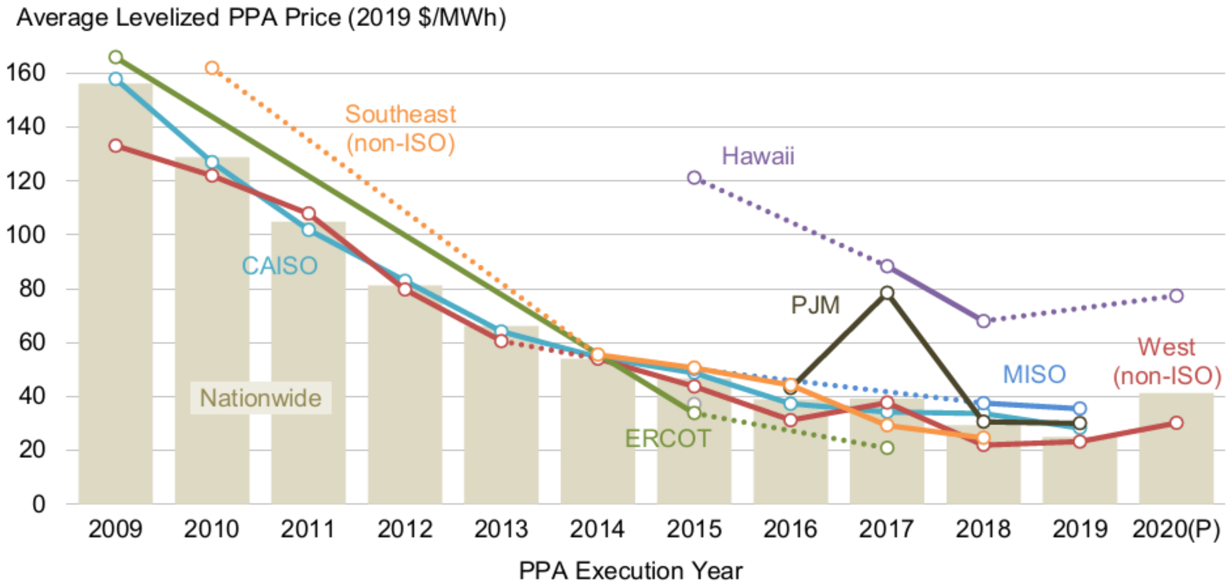
As much as residential PV costs have declined, utility-scale solar has grown tremendously as prices have decreased—and decreased substantially ***below*** residential PV prices:[16]



According to the Lawrence Berkeley National Laboratory, "The median installed price of [utility-scale solar] projects that came online in 2019 fell to $1.4/W_{AC}$ ($1.2/W_{DC}$), down 20% from 2018 and down by more than 70% from 2010."[17]

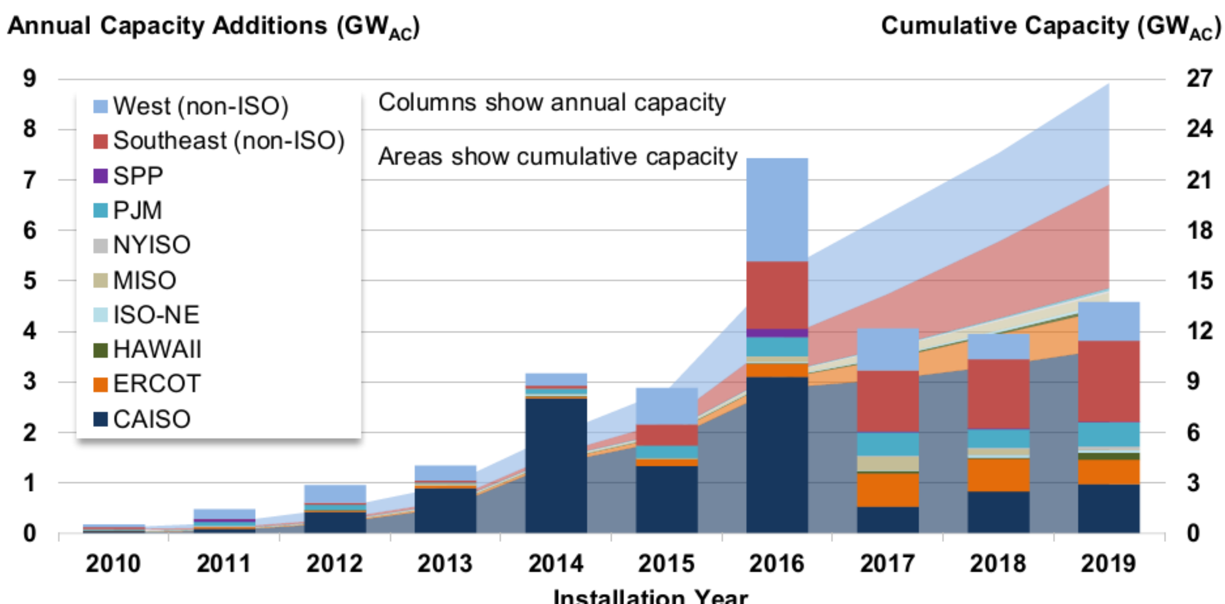
Utility-scale PPA pricing has fallen accordingly:[18]

[16] Lawrence Berkeley National Laboratory, "Utility-Scale Solar Data Update: 2020 Edition," slide 18. Available at: https://emp.lbl.gov/sites/default/files/2020_utility-scale_solar_data_update.pdf (viewed on Apr. 19, 2021).
[17] *Id.*
[18] *Id.* at slide 31.



Source: Berkeley Lab, FERC

As utility-scale solar prices have declined, utility-scale solar capacity has significantly increased:[19]



Source: Berkeley Lab

All of this data supports two important points: (1) utility-scale solar shows dramatic economies of scale relative to rooftop solar, resulting in significant relative decreases for utility-scale power as compared to the price paid under traditional net metering; and (2) decreasing installed solar costs and increasing

[19] *Id*. at slide 13.

utility-scale installations indicate that subsidies for distributed generation are less justified than ever. In other words, it is not clear why the Commission should seek to include additional net metering compensation components that are speculative at best in these market conditions.

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 33

Responding Witness: Robert M. Conroy

Q-33. Refer to Case No. 2020-000174,[20] final Order at 100, wherein the Commission ordered Kentucky Power Company to use a minimum contract term of five years for cogeneration and small power producers. Explain any changes that would be necessary for KU to use a minimum contract term of five years.

A-33. The Company would have to modify both its SQF and LQF tariffs' terms and conditions to reflect this minimum contract term along with performance metrics related to capacity obligations. These changes would also be implemented on a prospective basis for existing customers served under these tariffs.

[20] Case No. 2020-00174, Electronic Application of Kentucky Power Company for (1) A General Adjustment of Its Rates For Electric Service; (2) Approval of Tariffs and Riders; (3) Approval of Accounting Practices to Establish Regulatory Assets and Liabilities; (4) Approval of a Certificate of Public Convenience and Necessity; and (5) All Other Required Approvals and Relief (Ky. PSC Jan. 13, 2021).

KENTUCKY UTILITIES COMPANY

Response to Commission Staff's Sixth Request for Information
Dated April 14, 2021

Case No. 2020-00349

Question No. 34

Responding Witness: Lonnie E. Bellar

Q-34 Regarding KU's One Quality Street Headquarters, provide the following:

a. The total amount spent updating the property, including an itemization of the total amount;

b. The number of employees who work at the property for the years 2019 and 2020; and

c. The total number of hours worked at the property for the years 2019 and 2020.

A-34.

a. The KU General Office Renovation project was approved in 2019 and is expected to be completed by year end 2021. The scope of this project includes a full renovation of five of the floors and a partial renovation of four of the floors. It also includes a full replacement of the elevators, new windows on most floors and a "restack" of building occupants. The renovation is addressing several current building code requirements, primarily related to the number of restroom facilities on each floor and Americans with Disabilities Act access requirements. Fully renovated floors are receiving new office furniture, flooring, lighting, ceiling grid, ceiling tiles and paint. The itemized amounts spent in 2019 and 2020 and the estimated amounts for the full year of 2021 are shown in the table below.

	Actual 2019	Actual 2020	Forecast 2021	Total
Labor	159,272	237,683	42,958	439,913
Contractor Costs	224,891	5,423,638	5,337,693	10,986,222
Materials	-	1,740,561	-	1,740,561
Transportation	8,322	10,536	3,303	22,161
Other	2,724	80,321	64,371	147,416
Total	395,209	7,492,739	5,448,325	13,336,273

b. The total headcount for regular and temporary employees who are assigned to work at the One Quality Street headquarters was 197 employees in 2019 and 208 employees in 2020. This number does not include employees who may work there but are assigned to another location.

c. The total hours worked by employees assigned to the One Quality Street headquarters was 392,546 hours in 2019 and 431,936 hours in 2020. This does not reflect hours of employees assigned to other work locations but may have worked there or any reduction of hours of employees assigned there but may have worked elsewhere for reasons such as the pandemic.