

**CONTRACT FOR
ELECTRIC SERVICE
BETWEEN KENTUCKY POWER COMPANY
AND AIR PRODUCTS AND CHEMICALS, INC.**

This Contract for Electric Service (“Contract”) is entered into by and between Kentucky Power Company, a Kentucky corporation (the “Company”), and AIR PRODUCTS AND CHEMICALS, INC. (the “Customer”), a Delaware corporation, as of the date this Contract is last signed.

RECITALS

1. The Company is a corporation organized and existing under the laws of the Commonwealth of Kentucky that owns and operates facilities for the generation, transmission and distribution of electric power and energy in the Commonwealth of Kentucky and is a member of the integrated American Electric Power (“AEP”) System.


2. The Customer is a corporation, organized and existing under the laws of the State of Delaware, with operations near Ashland, Kentucky.

3. The Company’s service territory and the entire eastern Kentucky region is struggling economically and in need of jobs for Kentucky citizens.

4. The Company provides the Customer all of its electric energy under contract dated June 30, 2015, Account Number: 0344200067 (the “IRP Contract”).

5. The Customer is facing special circumstances and economic hardship as a result of the recent closure of the AK Steel mill in Ashland, Kentucky and faces a need to change its business model in order to continue operations at its Ashland, Kentucky facility.

6. In recognition of the special circumstances the Customer and its employees face, the Company agrees to provide electric power and energy to the Customer on the terms and conditions of this Contract, subject to approval by the Public Service Commission of Kentucky.

KENTUCKY PUBLIC SERVICE COMMISSION Kent A. Chandler Acting Executive Director

EFFECTIVE 4/23/2020 PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

7. In recognition of the partnership between Kentucky manufacturing operations and Kentucky Power to jointly rebuild and diversify the economy in eastern Kentucky, and the Commission-approved strategy of working together to find alternative and creative opportunities for manufacturing operations in the region through special contracts filed with the Commission, the Customer and Company have developed this Contract.

8. In recognition of the need for the efficient use of existing utility generation and transmission facilities, the Company and Customer agree to the special rate design contained in this Contract.

9. The service the Company will provide to the Customer pursuant to this Contract will provide benefits to the Customer, the Company, the Company's other customers, and the Commonwealth of Kentucky.

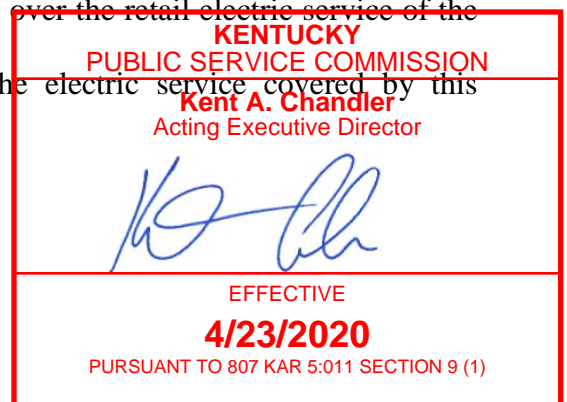
10. **NOW THEREFORE**, in consideration for the promises and the mutual covenants herein contained, and subject to the terms and conditions herein contained, the Company and the Customer agree as set forth below.

AGREEMENT

ARTICLE 1 Definitions


1.1 Whenever used in this Contract, the following terms shall have the meanings set forth below, unless a different meaning is plainly required by the context:

- A. "Commission" shall mean the Public Service Commission of Kentucky, the regulatory agency having jurisdiction over the retail electric service of the Company in Kentucky, including the electric service covered by this Contract or any successor thereto.



- B. “Contract” shall mean this Contract for electric service between the Company and the Customer, as the same may, from time to time, be amended.
- C. “Customer” shall mean Air Products and Chemicals, Inc.
- D. “Kentucky Power System” shall mean the integrated, interconnected electric system operated and owned by Kentucky Power Company.
- E. “Off-Peak Period” shall be as defined in Tariff I.G.S. The current Off-Peak Period is defined as between 9:00 PM to 7:00 AM, local time, for all weekdays, Monday through Friday, and all hours of the day on Saturdays and Sundays.
- F. “On-Peak Period” shall be as defined in Tariff I.G.S. The current On-Peak Period is defined as between 7:00 AM and 9:00 PM, local time, for all weekdays, Monday through Friday.
- G. “Parties” shall mean the Company and the Customer, collectively.
- H. “Party” shall mean either the Company or the Customer, individually.
- I. “Tariff C.S.-I.R.P.” shall mean the Company’s Contract Service – Interruptible Power Tariff, or any successor or amendment thereto, as approved by the Commission.
- J. “Tariff I.G.S.” shall mean the Company’s Industrial General Service Tariff, or any successor or amendment thereto, as approved by the Commission.

1.2 Unless the context plainly indicates otherwise, words importing the singular number shall be deemed to include the plural number (and vice versa). Terms such as “hereof,” “herein,” “hereunder” and other similar compounds of the word “her

KENTUCKY PUBLIC SERVICE COMMISSION
Kent A. Chandler Acting Executive Director

EFFECTIVE 4/23/2020 PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

entire Contract rather than any particular part of the same, unless otherwise specified. Certain other definitions, as required, appear in subsequent parts of this Contract.

ARTICLE 2
Delivery and Delivery Point

2.1 Subject to the terms and conditions specified herein, the Company agrees to furnish to the Customer, during the term of this Contract, and the Customer agrees to take and pay for, all of the electric power and energy that shall be required by the Customer for consumption at the premises located at 125 Russell Road, Ashland, Kentucky (the “Facility”).

2.2 The Delivery Point for electric power and energy delivered hereunder shall be Customer’s 69 kV Substation.

2.3 The Customer will provide any substation and transformation equipment and any other facilities including real property required to take delivery of the electric service to be provided by the Company under this Contract at the voltage and at the Delivery Point designated herein.

2.4 The electric energy delivered by the Company shall be three-phase alternating current having a frequency of approximately 60 cycles per second at approximately 69,000 volts and shall be delivered at the Delivery Point specified in Article 2.2. The electric energy shall be delivered and maintained reasonably close to constant voltage and frequency, as required by Company tariffs, and shall be measured by meters owned and installed by the Company and located at the Customer’s 69 kV Substation. The Company shall have the right to enter the substation to read and maintain its meters.



ARTICLE 3
Capacity Reservations and Designation of Firm Service

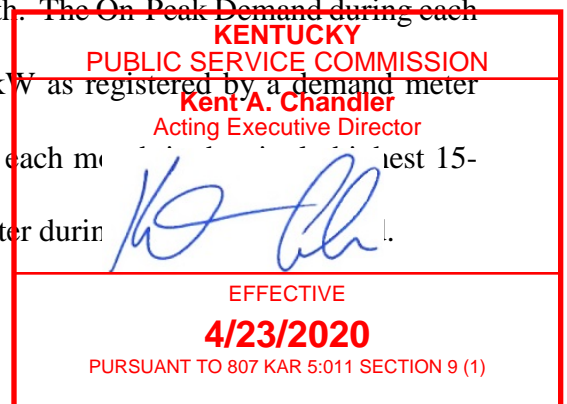
3.1 The Total Capacity Reservation contracted for by the Customer is hereby fixed at 26,900 kW. The Customer may request a change to the Total Capacity Reservation by providing written notice to the Company one year in advance of the proposed effective date of the change. The Parties may reduce the one year written notice requirement by mutual written agreement. Any change to the Total Capacity Reservation is subject to conditions as determined by the Company, such as the availability and cost of incremental capacity from the Company, and to the receipt of any necessary regulatory approvals.

3.2 The Customer designates the first 18,500 kW of the Total Capacity Reservation as the Firm Service Capacity Reservation, which is not required to be subject to interruption.

3.3 The Interruptible Capacity Reservation shall be the remaining 8,400 kW for the On-Peak Period and 8,400 kW for the Off-Peak Period, which is equal to the Total Capacity Reservation less the Firm Service Capacity Reservation. Customer shall be deemed to have provided 8,400 kW of Interruptible Capacity if its usage is at its Firm Service Capacity Reservation.

3.4 The Customer's Metered Demand shall not exceed, and the Company shall not be required to supply capacity in excess of, one hundred ten percent (110%) of the Total Capacity Reservation, except by mutual written agreement of the Parties.

3.5 The Customer's Metered Demand shall be determined each month as the greater of the On-Peak Demand and the Off-Peak Demand for the month. The On-Peak Demand during each month is the single highest 15-minute integrated peak in kW as registered by a demand meter during the On-Peak Period. The Off-Peak Demand during each month is the single highest 15-minute integrated peak in kW as registered by a demand meter during the Off-Peak Period.




ARTICLE 4
Interruptible Service – Discretionary Interruption Product

4.1 The Company in its sole discretion, reserves the right to call for curtailments of Customer's interruptible load at any time by notifying Customer to maintain its usage at its 18,500 kW Firm Service Capacity Reservation . Such curtailments shall be designated as Discretionary Interruptions and shall not exceed an aggregate of 60 hours of interruption during any Interruption Year. The Interruption Year shall be defined as the consecutive twelve (12) month period commencing on June 1 and ending on May 31.

4.2 The Company will endeavor to provide the Customer with as much advance notice as possible of a Discretionary Interruption. The Company shall provide notice at least 60 minutes prior to the commencement of a Discretionary Interruption. Such notice shall include both the start and end time of the Discretionary Interruption. During any Discretionary Interruption, the Customer can choose to continue to operate and not curtail its interruptible load; if the Customer chooses to not curtail its interruptible load during a Discretionary Interruption, the Customer shall pay the Buy-Through Price of \$0.50 per kilowatt hour (kWh) for all usage above 18,500 kW. Discretionary Interruptions shall begin and end on the clock hour. If the Customer chooses to pay the Buy-Through Price, those hours shall count toward the aggregate total of 60 interruptible hours.

4.3 The Customer may elect to engage in a Partial Interruption. If the Customer elects a Partial Interruption, the Customer shall pay the Buy-Through Price per kWh set forth in Article 4.2 for that portion of its Interruptible Capacity Reservation that is uninterrupted.

4.4 Discretionary Interruption events shall be at least three (3) consecutive hours and there shall not be more than twelve (12) hours of Discretionary Interruption per calendar day. During the calendar months of June, July, August, and September, th

KENTUCKY PUBLIC SERVICE COMMISSION
Kent A. Chandler Agency Executive Director

EFFECTIVE 4/23/2020 PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

(1) Discretionary Interruption per day. During the calendar months of January and February, there shall be no more than two (2) Discretionary Interruption events per day and such events will be separated by no less than three (3) consecutive hours without Discretionary Interruption.

4.5 If the Customer, in its sole discretion, decides to interrupt some or all of its load that has been designated as the Firm Service Capacity Reservation in Article 3.2 during a Discretionary Interruption, the Company will compensate the Customer for this additional interruptible load at \$3.68 per kW-month.


a. The \$3.68 per kW-month credit will apply to the average amount of additional interruption kW during the total hours of interruptions called by the Company under Article 4.1.

b. The additional interruption credit will be applied to the Customer's monthly bills each month of the following Interruption Year.

4.6 The Company will notify the Customer of curtailments through the webDistribute System ("wDS"), or any successor system thereto, to be provided by the Company. The Customer is ultimately responsible for receiving and acting upon a curtailment notification from the Company provided to it through the wDS.

4.7 If the Customer fails to comply with the mandatory provisions of curtailment under this Contract, the Company and the Customer will, in addition to exercising any other rights or taking any other actions authorized in this Contract, discuss what steps the Customer will take to comply during future events.

4.8 **NO RESPONSIBILITY OR LIABILITY OF ANY KIND SHALL ATTACH TO OR BE INCURRED BY THE COMPANY, ANY AFFILIATE, OR THE AEP SYSTEM FOR, OR ON ACCOUNT OF, ANY LOSS, COST, EXPENSE, C**

KENTUCKY PUBLIC SERVICE COMMISSION
Kent A. Chandler Acting Executive Director
 ED BY
EFFECTIVE 4/23/2020 PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

OR RESULTING FROM, EITHER DIRECTLY OR INDIRECTLY, ANY CURTAILMENT OF SERVICE UNDER THE PROVISIONS OF THIS SPECIAL CONTRACT.

**ARTICLE 5
Billing**

5.1 The Customer agrees to pay for all electric service supplied hereunder in accordance with the following provisions:

A. The Monthly Firm Service Charge shall be computed and applied in accordance with the following pricing provisions.

B. The Monthly Energy Charge shall be the product of the Monthly Billing Energy and the applicable kWh rate contained in Table 1 below:

Table 1

Year 1	[REDACTED]
Year 2	[REDACTED]
Year 3	[REDACTED]
Year 4	[REDACTED]
Year 5	[REDACTED]
Year 6	[REDACTED]
Year 7	[REDACTED]

5.2 The Monthly Billing Energy shall equal the sum of the kWh registered during the month by the Company's energy meter(s) at the Delivery Point.

5.3 The Monthly Bill under this Contract shall be the sum of the following:

- A. The tariff IGS customer charge;
- B. The Monthly Energy Charge;

**KENTUCKY
PUBLIC SERVICE COMMISSION**

Kent A. Chandler
Acting Executive Director


EFFECTIVE
4/23/2020

PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

- C. Any applicable Buy-Through charges per Article 4.2; and
- D. Any applicable taxes and franchise fees;
- E. Less any compensation for additional interruptible load.

5.4 Customer revenues from the Contract will be allocated to the Company's various bill components by month, and as allowed, in the following order:

- 1. Fuel (Base Fuel Rate and Fuel Adjustment Clause)
- 2. Capacity Charge
- 3. Purchase Power Adjustment
- 4. Big Sandy Decommissioning Rider
- 5. Environmental Surcharge
- 6. Base Rates

5.5 Bills computed under this Contract are net if the account is paid in full within fifteen (15) days of the date of the bill. Unless otherwise stated in this Contract, the standard billing and payment provisions of Tariff I.G.S. shall apply.

5.6 An illustrative billing calculation based upon current Tariff I.G.S. rates is included as an addendum to this Contract ("Bill Illustration Addendum"). The Bill Illustration Addendum is incorporated by reference and made a part of this Contract.



ARTICLE 6
Effective Date and Term of Contract

6.1 The Effective Date of this Contract shall be the first day of the first billing month following the approval of this Contract by the Commission. In no event shall this Contract become effective without the approval of the Commission as required by Article 8.2.


6.2 This Contract shall commence on the Effective Date as established under Article 6.1 and continue for the following seven years (the “Term”). Upon the Effective Date, this Contract cancels and supersedes all previous agreements, including the IRP Contract, relating to the purchase by Customer, and sale by Company, of electric energy to Customer at the Customer’s Facility.

6.3 In no later than Year Six (6) of the Term, the Company and the Customer commit to begin negotiating a contract extension or a new contract.

6.4 If generally available tariffs providing for interruptible service comparable to the service provided herein are approved by the Commission during the term of this Contract, then the Company and the Customer may, upon mutual agreement, take steps to transition the Customer’s service to such tariffs and modify this Contract accordingly.

6.5 If the Company’s Average Annual Fuel Rate (Base Fuel Rate plus Fuel Adjustment Clause) for any calendar year of the Contract is more than 75 percent of the Monthly Energy Charge for that year (as stated in Article 5.1 (B)), then the Monthly Energy Charge may be revised by mutual agreement of the Parties. If the Company and the Customer cannot come to an agreement regarding a revised Monthly Energy Charge, the Company will initiate a proceeding with the Commission in order to determine the appropriate Monthly Energy Charge revision.

KENTUCKY
PUBLIC SERVICE COMMISSION
Kent A. Chandler
Acting Executive Director



EFFECTIVE
4/23/2020
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

6.6 If the Customer wishes to move to the Company's standard Tariff at any time during the Contract term, the Company will transition the Customer to its applicable standard Tariff.

**ARTICLE 7
Service Conditions**


7.1 Each Party shall exercise reasonable care to maintain and operate, or to cause to be maintained and operated, its respective facilities in accordance with good engineering practices.

7.2 To the extent not expressly modified by this Contract, the Company's Terms and Conditions of Service, as filed with the Commission, including any amendments thereto, are incorporated by reference and made a part of this Contract. The Customer acknowledges receipt of the currently approved Terms and Conditions of Service. In the event of a conflict between explicit provisions of this Contract and the provisions of the Company's Terms and Conditions of Service, the provisions of this Contract shall control.

7.3 The Company reserves the right to disconnect from the Kentucky Power System the Customer's conductors or apparatus without notice when, in the exercise of reasonable care, the Company determines that it is necessary in the interest of preserving or protecting life and/or property.

7.4 During the term hereof, the Customer shall not receive electric service, as the term "service" is defined in Chapter 278 of the Kentucky Revised Statutes, from any source other than from the Company. This provision does not apply to emergency generation that is not designed or required to operate in parallel with the Kentucky Power System and which the Customer utilizes to mitigate the impact of any interruption or reduction as might occur in accordance with Article 4 herein.

**KENTUCKY
PUBLIC SERVICE COMMISSION**
Kent A. Chandler
Acting Executive Director



EFFECTIVE
4/23/2020
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

7.5 The Customer shall notify the Company as soon as possible after discovery of any impairment of or defect in the Company's service that significantly disrupts the Customer's operations, and the Customer shall confirm such notice in writing by the close of the next business day. The Company shall not be liable for any loss, injury, or damage that could have been prevented by timely notice of a defect or impairment of service.

7.6 The Customer shall notify the Company in advance of any changes to be made to the Customer's Facility having the potential of materially affecting the Kentucky Power System or other facilities interconnected to the Kentucky Power System.

7.7 The Customer shall notify the Company of any changes to its operations that impair the Customer's ability to interrupt.

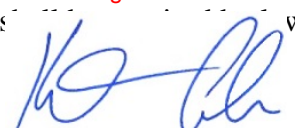
7.8 If the Customer and the Company agree that changes in service conditions under this Article preclude the Customer from meeting its obligations under this Contract, then the Contract may be modified by mutual agreement.

7.9 The Customer shall adhere to Addendum 1 to this Contract regarding voltage flicker criteria and harmonic distortion criteria ("Flicker/Harmonics Addendum"). The Flicker/Harmonics Addendum is incorporated by reference and made a part of this Contract.

ARTICLE 8 Regulatory Authorities

8.1 The Parties recognize this Contract is subject to the jurisdiction of the Commission, and is also subject to such lawful action, as any regulatory authority having jurisdiction shall take with respect to the provision of services under the Contract. The performance of any obligation of either Party shall be subject to the receipt from time to time as required of such authorizations, approvals or actions of regulatory authorities having jurisdiction as s

**KENTUCKY
PUBLIC SERVICE COMMISSION**
Kent A. Chandler
Acting Executive Director



**EFFECTIVE
4/23/2020**
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

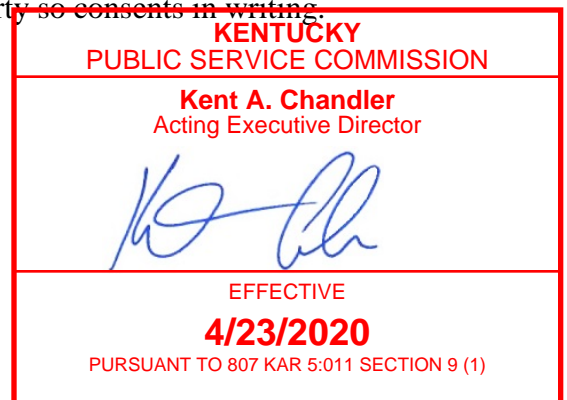
8.2 The Company and the Customer agree that this Contract reflects the steps required to ensure adequate service to the Customer and that the Company will file this Contract with the Commission. This Contract is expressly conditioned upon the issuance of a final and non-appealable order by the Commission approving the Contract without change or condition. In the event that the Commission does not approve this Contract without change or condition, then this Contract shall not become effective unless the Parties agree otherwise in writing. To the extent a subsequent Commission order alters the terms of this Contract, this Contract shall terminate unless within thirty day of the Commission Order the Parties agree in writing otherwise. In the event of a termination of the Contract due to subsequent Commission order, the Customer shall take service under the appropriate Company tariff.

**ARTICLE 9
Assignment**

9.1 This Contract shall inure to the benefit of and be binding upon the successors and assigns of the Parties.

9.2 This Contract shall not be assigned by either Party, other than to an affiliate, subsidiary, or parent company, without the written consent of the other Party, which shall not be unreasonably withheld. Either Party's consent to one or more assignments shall not relieve the other party or its assignees, as the case may be, from the necessity of obtaining the written consent to other and/or additional assignments.

9.3 Any assignment by one Party to this Contract shall not relieve that Party of its financial obligations under this Contract unless the other Party ~~so consents in writing.~~



ARTICLE 10
General

10.1 Any waiver, at any time, of any rights as to any default or other matter arising under this Contract shall not be deemed a waiver as to any other proceeding or subsequent default or matter. Any delay, excepting the applicable statutory period of limitation, in asserting or enforcing any right hereunder shall not be deemed a waiver of such right.

10.2 Except as set forth in Article 8, in the event that any of the provisions, or portions thereof, of this Contract is held to be unenforceable or invalid by any court of competent jurisdiction, the validity and enforceability of the remaining provisions, or portions thereof, shall not be affected.

10.3 All terms and stipulations made or agreed to regarding the subject matter of this Contract are completely expressed and merged in this Contract, and no previous promises, representations or agreements made by the Company's or the Customer's officers or agents shall be binding on either Party unless contained herein.

10.4 All notices permitted or required to be given hereunder shall be in writing and shall be delivered by first-class mail to the Company and to the Customer at its respective addresses set forth below. When a notice is mailed pursuant to this paragraph, the postmark shall be deemed to establish the date on which the notice is given:

If to Company:

President and Chief Operating
Officer
Kentucky Power Company
855 Central Avenue, 02
Ashland, KY 41101

If to Customer:

Air Products and Chemicals Inc.
125 Russell Road
Ashland, KY 41101



10.5 The rights and remedies granted under this Contract shall not be exclusive rights and remedies but shall be in addition to all other rights and remedies available at law or in equity.


10.6 The validity and meaning of this Contract shall be governed by the laws of the Commonwealth of Kentucky without regard to conflict of law rules.

10.7 This Contract may be executed in counterparts, each of which shall be an original, but all of which, together, shall constitute one and the same Contract.

ARTICLE 11
Liability and Force Majeure

11.1 Neither the Company nor the Customer shall be liable to the other for damages caused by the interruption, suspension, reduction or curtailment of the delivery of electric energy hereunder due to, occasioned by or in consequence of, any of the following causes or contingencies, (hereinafter “events of Force Majeure”) including: acts of God, the elements, storms, hurricanes, tornadoes, cyclones, sleet, floods, backwaters caused by floods, lightning, earthquakes, landslides, washouts or other revulsions of nature, epidemics, accidents, fires, failures of facilities, collisions, explosions, strikes, lockouts, differences with workers and other labor disturbances, vandalism, sabotage, riots, inability to secure cars, coal, fuel, or other materials, supplies or equipment from usual sources, breakage or failure of machinery, generating equipment, electrical lines or equipment, wars, insurrections, blockades, terrorism, war, insurrection, cybersecurity attacks, acts of the public enemy, arrests and restraints of rulers and people, civil disturbances, acts or restraints of federal, state or other governmental authorities, and any other causes or contingencies not within the control of the Party whose performance is interfered with, whether of the kind herein enumerated or otherwise. It is expressly understood and agreed that economic conditions, such as a downturn in the market for the product produced at any of the Customer’s facilities, do not constitute an event of Force Majeure or strikes

KENTUCKY
PUBLIC SERVICE COMMISSION
Kent A. Chandler
Acting Executive Director

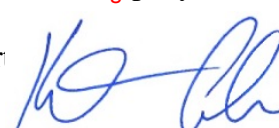


EFFECTIVE
4/23/2020
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

and lockouts shall be wholly within the discretion of the Party having the difficulty. An event or events of Force Majeure shall not relieve the Company or the Customer of liability in the event of its concurring negligence or in the event of failure of either to use reasonable means to remedy the situation and remove the cause in an adequate manner and with reasonable dispatch. An event or events of Force Majeure shall not relieve either the Company or the Customer from its obligation to pay amounts due hereunder.

11.2 The Company assumes no responsibility of any kind with respect to construction, maintenance, or operation of the electric facilities or other property owned or used by the Customer and shall not be liable for any loss, injury (including death), damage to or destruction of property (including loss of use thereof) arising out of such installation, maintenance or operation or out of any use by the Customer or others, of said energy and/or capacity provided by the Company except to the extent such damage or injury shall be caused by the negligence or willful misconduct of the Company, its agents, or employees. The Customer assumes no responsibility of any kind with respect to construction, maintenance or operation of the electric facilities or other property owned or used by the Company and shall not be liable for any loss, injury (including death), damage to or destruction of property (including loss of use thereof) arising out of such installation, maintenance or operation except to the extent such damage or injury shall be caused by the negligence or willful misconduct of the Customer, its agents, or employees.

11.3 To the extent permitted by law, the Customer shall protect, defend, indemnify, and hold harmless the Company from and against any losses, liabilities, costs, expenses, suits, actions, claims, and all other obligations and proceedings whatsoever, including, without limitation, all judgments rendered against and all fines and penalties imposed upon the Company arising out of injuries to persons, including death, or damage to third-party property by, or

KENTUCKY
PUBLIC SERVICE COMMISSION
Kent A. Chandler
Acting Executive Director

EFFECTIVE
4/23/2020
PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

occurring in connection with any willful or negligent act or omission of the Customer, its employees, agents or contractors, or which are due to or arise out of defective electrical equipment belonging to the Customer. Neither the Company nor the Customer shall be liable for any indirect, special, incidental or consequential damages, including loss of profits due to business interruptions or otherwise, in connection with this Special Contract. To the extent permitted by law, the Company shall protect, defend, indemnify, and hold harmless the Customer from and against any losses, liabilities, costs, expense, suits, actions, claims, and all other obligations whatsoever, including, without limitation, all judgments rendered against and all fines and penalties imposed upon the Customer, arising out of injuries to persons, including death, or damages to third-party property, to the extent caused by or occurring in connection with any willful or negligent act or omission of the Company, its employees, agents or contractors.

11.4 Any indemnification of the Parties or any limitation of the Parties' liability which is made or granted under this Special Contract shall to the same extent apply to the Party's directors, officers, partners, employees and agents, and to the Party's affiliated companies, including any directors, officers, partners, employees and agents thereof.

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be duly executed the day and year last written below.

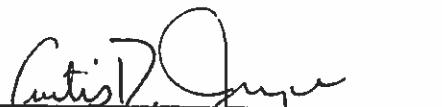
KENTUCKY POWER COMPANY

AIR PRODUCTS AND CHEMICALS, INC.

By



By



Title

DIRECTOR REGULATORY SERVICES

Title

Business Director North

Date

3/11/20

Date

March 9th, 2020

KENTUCKY PUBLIC SERVICE COMMISSION

Kent A. Chandler
Acting Executive Director

ADDENDUM 1 TO CONTRACT FOR ELECTRIC SERVICE-Flicker/Harmonics

This Addendum is entered into this ___ day of _____, by and between **Kentucky Power Company**, hereafter called the Company, and **Air Products and Chemicals, Inc.** or its heirs, successors or assigns, hereafter called the Customer.

WHEREAS, the Company's terms and conditions of service contained in the applicable tariffs indicate that the Customer shall not use the electrical service provided for under the terms of the Contract for Electric Service dated _____ in a manner detrimental to other customers or in such a way as to impose unacceptable voltage fluctuations or harmonic distortions, and

WHEREAS, the Customer anticipates utilizing certain equipment at the service location covered by the Contract that could impose an unacceptable level of voltage flicker or harmonic distortion,

NOW THEREFORE, the parties hereby agree as follows:

I. COMPLIANCE POINTS

Compliance Points are where compliance with the voltage flicker and harmonic distortion requirements is evaluated. For Air Products, compliance is evaluated at Bellefonte Station. Voltage flicker and harmonic distortion shall not exceed the applicable limits, whether or not complaints are received or service/operational problems are experienced on the AEP System.

II. VOLTAGE FLICKER REQUIREMENTS

The random voltage fluctuations (flicker) occurring at the Compliance Points directly attributable to Air Products shall remain within the limits specified in IEEE Standard 1453-2015, "IEEE Recommended Practice for Measurement and Limits of Voltage Fluctuations and Associated Light Flicker on AC Power Systems." These limits are 0.8 and 0.6 for the P_{ST} (short term) and P_{LT} (long term) flicker measures, respectively. P_{ST} is the standard reading of a flicker meter, obtained for each 10-minute interval; P_{LT} is derived mathematically (cube root-mean-cube) from twelve consecutive P_{ST} readings (Table 1).

III. HARMONIC DISTORTION AND COMMUNICATION INTERFERENCE REQUIREMENTS

A. Voltage Distortion

The total harmonic voltage distortion shall not exceed 5.0% at 69 kV at the Compliance Points per AEP's Harmonic Distortion Requirements (Table 1), which are based on IEEE Standard 519-2014, "IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems."

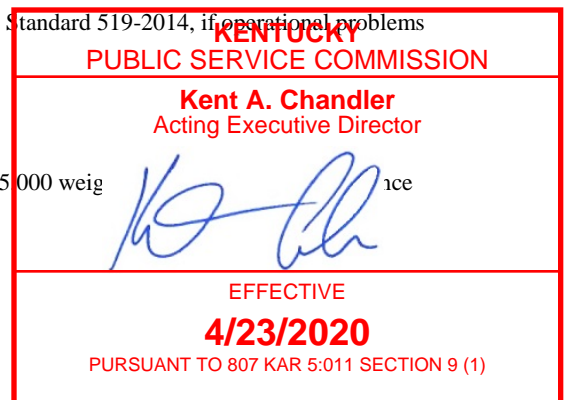
B. Current Distortion

The harmonic current distortion occurring at the Compliance Points, with respect to the fundamental component of the contracted peak demand of 26 MW, shall not exceed AEP's Harmonic Distortion Requirements (Table 1), which are based on IEEE Standard 519-2014.

While IEEE Standard 519-2014 recommends that even-numbered harmonic currents be limited to only 25% of the stated values, the requirements established herein are uniform at the full-limit values for both odd and even harmonics. AEP reserves the right to limit the even harmonic currents, as recommended by IEEE Standard 519-2014, if operational problems and/or customer complaints are experienced in the future.

C. Communication Interference

The total communication interference (I-T product) shall not exceed 25000 weight Points (Table 1), per IEEE Standard 519-2014.



IV. OTHER REQUIREMENTS

A. Compliance Assessment

To achieve compliance, at least 95% of all recordings within each harmonic measure and 99% within each flicker measure must fall below the applicable limit, i.e. Air Products will be in material non-compliance with AEP's Power Quality Requirements if more than 5% of the harmonic voltage and harmonic current recordings and 1% of the flicker recordings exceed the specified limits.

B. Electrical Interactions

If power quality compliance recordings or analytical studies conducted by AEP indicate likely adverse electrical interactions between Air Products and the AEP System, joint efforts will be undertaken by the Parties to determine the nature and extent of the electrical interaction and to resolve, at no expense to AEP, any likely adverse impacts on the performance of AEP facilities.

Kentucky Power Company

Date: 3/11/20

By: [Signature]

Title: DIRECTOR REGULATORY SERVICES

Date: 3/11/20

Air Products and Chemicals, Inc.

By: [Signature]

Title: Business Director, North

Date: March 9th, 2020

Table 1

AEP Power Quality Limits for Air Products Delivery Point
Air Products @ 69 kV

Voltage Flicker	
P _{ST} (short term) measure	0.8
P _{LT} (long term) measure	0.6
Total Harmonic Voltage Distortion (THD _V) *	5.0%
Total Harmonic Current Distortion (THD _I) **	15.0%
H < 11 th Harmonic	12.0%
11 th <= H < 17 th	5.5%
17 th <= H < 23 rd	5.0%
23 rd <= H < 35 th	2.0%
35 th <= H	1.0%
Communication Interference (I-T) ***	25,000 A (Category II: Levels that may cause interference, IEEE Standard 519-2014)

**KENTUCKY
PUBLIC SERVICE COMMISSION**

Kent A. Chandler
Acting Executive Director

[Signature]

**EFFECTIVE
4/23/2020**

PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Notes:

$$* THD_V = \frac{\sqrt{V_2^2 + V_3^2 + \dots + V_{25}^2}}{39837.2 V} \times 100\%$$

$$** THD_I = \frac{\sqrt{I_2^2 + I_3^2 + \dots + I_{50}^2}}{225.1 A} \times 100\%$$

$$*** I - T = \sqrt{(0.5I_1)^2 + (10I_2)^2 + \dots + (9670I_{50})^2} \text{ Weighted Amperes}$$

**KENTUCKY
PUBLIC SERVICE COMMISSION**

Kent A. Chandler
Acting Executive Director



EFFECTIVE

4/23/2020

PURSUANT TO 807 KAR 5:011 SECTION 9 (1)

Bill Illustration Addendum

<u>Contract Article</u>	<u>Description</u>	<u>12-Month Average Usage</u>	<u>Contract Usage</u>	<u>IGS-Sub Tran Usage</u>	
4.1 B	Monthly Billing Energy	[REDACTED]	[REDACTED]	[REDACTED]	kWh
3.1	Metered Demand	[REDACTED]	[REDACTED]	[REDACTED]	kW
3.5	On-Peak Demand	[REDACTED]	[REDACTED]	[REDACTED]	kW
3.5	Off-Peak Demand	[REDACTED]	[REDACTED]	[REDACTED]	kW
5	Contract Billing	Units	Rate	Billing	
5.1 A	Customer Charge	[REDACTED]	\$ [REDACTED]	[REDACTED]	
5.1 B	Energy Charge	[REDACTED]	\$ [REDACTED]	[REDACTED]	
5.2	Tariff IGS Rate Billing - Total			\$ [REDACTED]	

KENTUCKY
PUBLIC SERVICE COMMISSION

Kent A. Chandler
Acting Executive Director


EFFECTIVE
4/23/2020

PURSUANT TO 807 KAR 5:011 SECTION 9 (1)