

Exhibit No.:
Issue(s): Fuel Adjustment Clause
Witness: Andrew Meyer
Type of Exhibit: Rebuttal Testimony
Sponsoring Party: Union Electric Company
File No.: ER-2021-0240
Date Testimony Prepared: October 15, 2021

MISSOURI PUBLIC SERVICE COMMISSION

FILE NO. ER-2021-0240

REBUTTAL TESTIMONY

OF

ANDREW MEYER

ON

BEHALF OF

UNION ELECTRIC COMPANY

D/B/A AMEREN MISSOURI

**St. Louis, Missouri
October, 2021**

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REBUTTAL TESTIMONY

OF

ANDREW MEYER

FILE NO. ER-2021-0240

1 **I. INTRODUCTION AND PURPOSE OF TESTIMONY**

2 **Q. Please state your name and business address.**

3 A. My name is Andrew Meyer. My business address is One Ameren Plaza,
4 1901 Chouteau Ave., St. Louis, Missouri.

5 **Q. Are you the same Andrew Meyer that submitted direct testimony in**
6 **this case?**

7 A. Yes, I am.

8 **Q. To what testimony or issues are you responding?**

9 A. I am responding to Fuel Adjustment Clause ("FAC") recommendations made
10 by Staff witness Brooke Mastrogiannis regarding FAC modifications and additional filing
11 requirements in section XV, subsections A&B of the Staff Direct (Cost of Service) Report. I am
12 also responding to recommendations made by Office of the Public Counsel ("OPC") Witness
13 Lena Mantle regarding proposed modifications to the FAC concerning treatment of
14 extraordinary changes in net fuel and purchased power costs, final coal inventory adjustments,
15 and treatment of Research and Development projects. I will also address Staff's
16 recommendations regarding the FAC from Staff's Class Cost of Service Report.

1 **Q. Please address Staff's recommendation regarding treatment of High**
2 **Prairie and Atchison wind farm revenue, as reflected in the last bulleted item on page 198.**

3 A. Staff has requested that the Commission order Ameren Missouri to include
4 language in its FAC tariff that all wind revenues associated with High Prairie and Atchison
5 Wind Farms will be included in the FAC. Such additional language is unnecessary though, as
6 under the current FAC tariff all such revenues from High Prairie and Atchison Wind Farms are
7 already included in Factor OSSR. The applicable section of Rider FAC defining Factor OSSR
8 reads as follows:

9 OSSR = *Costs and revenues in FERC Account 447 (excluding (a) amounts*
10 *associated with portions of Power Purchase Agreements dedicated to*
11 *specific customers under the Renewable Choice Program tariff or any*
12 *subsequent renewable subscription program that is approved by the*
13 *Commission in an order that acknowledges that such program's impacts*
14 *should be excluded from Factor OSSR, (b) amounts associated with*
15 *generation assets dedicated, as of the date BF was determined, to*
16 *specific customers under the Renewable Choice Program tariff or any*
17 *subsequent renewable subscription program that is approved by the*
18 *Commission in an order that acknowledges that such program's impacts*
19 *should be excluded from Factor OSSR and (c) amounts associated with*
20 *generation assets that began commercial operation after the date BF*
21 *was determined and that were dedicated to specific customers under*
22 *the Renewable Choice Program tariff or any subsequent renewable*
23 *subscription program that is approved by the Commission in an order*
24 *that acknowledges that such program's impacts should be excluded from*
25 *Factor OSSR when it began commercial operation) for:*
26 1. *Capacity;*
27 2. *Energy;*
28 3. *Ancillary services, including:*
29 A. *Regulating reserve service (MISO Schedule 3, or its*
30 *successor);*
31 B. *Energy Imbalance Service (MISO Schedule 4, or its successor;*
32 C. *Spinning reserve service (MISO Schedule 5, or its successor);*
33 *and*
34 D. *Supplemental reserve service (MISO Schedule 6, or its*
35 *successor);*
36 4. *Make-whole payments, including:*
37 A. *Price volatility; and*
38 B. *Revenue sufficiency guarantee; and*
39 5. *Hedging.*

1 The High Prairie and Atchison Wind Farms are not dedicated to specific customers
2 under the Renewable Choice Program or under any other subscription-based program tariff.
3 Since these resources do not qualify for any such program exclusions in Factor OSSR, the
4 revenues from these facilities are already included in the FAC.

5 **Q. On page 205 of the Staff Cost of Service Report, the 9th bullet requests**
6 **that the Commission require the Company to submit a monthly natural gas fuel**
7 **report that includes all transactions (spot and longer term), including terms, volumes,**
8 **price and analysis of number of bids. What is the Company's position?**

9 A. The Company does not maintain such a report. Moreover, the Company
10 does not agree that it is appropriate to provide a new report of this type, as the information
11 requested in this report does not align with the Company's natural gas procurement strategy
12 for its combustion turbine generator ("CTG") fleet. Ameren Missouri's CTG fleet primarily
13 operates as peaking resources, meaning the CTGs are committed by the Midcontinent
14 Independent System Operator, Inc. ("MISO") during periods of high demand, low baseload
15 generation availability, or to address transmission congestion issues. The Company offers
16 these resources into the day-ahead and real-time market, and then typically makes fuel
17 arrangements once the MISO commitments are known. This frequently positions the
18 Company as buying natural gas for generation via the Intercontinental Exchange ("ICE")
19 online brokerage platform, or directly from suppliers in bilateral supply agreements. The
20 majority of these purchases are in the next-day or same-day gas markets. The transaction
21 terms are governed by the applicable Master Service Agreements with the counterparty.
22 The request to provide the "number of bids" is not relevant to a brokered marketplace, and
23 would be more relevant to reporting on a response to a request for proposal seeking longer

1 term gas supplies. The gas supply transactions for these units do have volumes, prices,
2 locations, etc. However, this detailed transaction information, as well as the Master Service
3 Agreements, are typically provided in discovery for rate cases and FAC prudence reviews,
4 as it is in those dockets that issues would be appropriately addressed. Creating a brand new
5 report and then providing this same information on a monthly basis creates an unnecessary
6 administrative burden.

7 **Q. Staff is requesting additional information about the Renewable Choice**
8 **Program to be provided within the FAC Monthly Reports. Is this acceptable to the**
9 **Company?**

10 A. Yes, the Company agrees to provide information related to the Renewable
11 Choice Program, as referenced in the Non-Unanimous Stipulation and Agreement
12 approved in File No. ET-2018-0063, in its FAC Monthly Reports.

13 **Q. Staff also recommends that Ameren Missouri include information within**
14 **the FAC Monthly Reports to reflect tracking of efforts to make and maximize off-system**
15 **sales and revenues. What is the Company view of this request?**

16 A. The request is overly broad and unnecessary. The entirety of the Company's
17 generation fleet operates within regional transmission organizations ("RTOs") with centralized
18 energy and ancillary markets. As such, to the extent that any generation has been offered at a
19 cost lower than the revenue received from the market for the commitment period, regardless of
20 whether it is designated for serving native load or for off-system sales, will be cleared in the
21 market. The MISO also facilitates a centrally cleared Planning Resource Auction, which allows
22 for sales of capacity. In addition, the Company maintains employees responsible for managing
23 Company interaction with these RTO markets, and for managing compliance with the

1 Company's Commodity Risk Management Policy. These employees are continually monitoring
2 the market to identify when approved risk mitigation strategies, such as price hedging or asset
3 management strategies, should be employed to manage the level of market risk. The commodity
4 market strategies and authorized and unauthorized transactions are stated explicitly in the
5 Company policy. Execution of these strategies generally results in a bilateral transaction or a
6 MISO generator commitment. The financial impacts of both of these types of financial
7 commitments are already included in the FAC monthly reports, in aggregate.

8 **Q. On page 206, Staff is requesting notification within 30 days of the date**
9 **the Company enters a new long-term contract for purchased power or changes to a**
10 **purchased power contract. Is this requirement acceptable to the Company?**

11 A. Yes, the Company will provide the notifications.

12 **III. SHARED ISSUES OF STAFF AND OPC**

13 **Q. Staff has recommended the Commission order a change to the FAC tariff**
14 **definition of "fuel costs," as noted in the bulleted item at the top of on page 199. What is**
15 **prompting this recommendation?**

16 A. This recommendation appears to stem from the initial inclusion of Research and
17 Development ("R&D") electricity costs specific to the mining of digital currency in the Fuel
18 Adjustment Rate filings for the 37th Accumulation Period, and for the true up of the 34th
19 Recovery Period.¹ The Company and Staff have since filed a Stipulation and Agreement
20 ("Stipulation") addressing this issue, which was approved by the Commission on September 14,
21 2021. Item 2.e of the Stipulation and Agreement speaks to language that will be added to
22 the Rider FAC to address this topic. Attached to this rebuttal testimony as Schedule AMM-

¹ File Nos. ER-2022-0026 and EO-2022-0027.

1 R1 is a redlined version of the Rider FAC tariff submitted with the Company's direct filing
2 that shows the language reflecting the agreement that was reached on this topic.²

3 **Q. Does the Company agree with Staff's broader recommendation to exclude**
4 **R&D project costs from the FAC, and related reporting requirements?**

5 A. To the extent it goes beyond the terms of the Commission-approved Stipulation,
6 no. The Stipulation specified the language to be added to Rider FAC effective with the effective
7 date of new rates in this case (in Item 2.e). Staff's proposed change to Rider FAC is broader than
8 the agreement, with which both the Company and the Staff have been ordered to comply.

9 **Q. Similar to Staff, OPC witness Lena Mantle recommended a modification**
10 **to the Company's FAC regarding treatment of R&D projects. Does the Company's**
11 **response to Staff also address the OPC recommendation?**

12 A. Yes. The Stipulation addresses the same issue. As I understand it, since there
13 was no objection to the Stipulation it was treated as unanimous and thus the agreed-upon
14 language is all that should be required.

15 **Q. Staff has recommended that any retirement and/or decommissioning costs**
16 **related to the retirement of Meramec Plant be removed from the FAC.³ Which costs**
17 **might this include?**

18 A. Considering the context of this recommendation is related to the Rider FAC, the
19 Company interprets the Staff's phrase "retirement and/or decommissioning costs related to the

² Please note that the schedule also includes very minor changes to the Large Public Service ("LPS") rate cap test language in Rider FAC (arising from the terms of Section 393.1655, RSMo.) which have been agreed upon between the Company and the Staff. Please also note that this Schedule shows redlining from the Company's direct case filing (Schedule AMM-D1). Changes from the direct case reflected in Schedule AMM-R1 are highlighted in yellow.

³ See bullet number 6 on page 198.

1 retirement of Meramec Plant" as solely specific to how the cost of the Meramec basemat coal
2 will be recovered.

3 **Q. Did OPC recommended a similar FAC modification?**

4 A. Yes, although OPC's recommendation was slightly broader as it refers the final
5 adjustment to coal fuel inventory for *any* plant that is ceasing generating, not just Meramec. In
6 both Staff and OPC's arguments, the recommendation is that the FAC language should be
7 modified to specifically state that such costs should not flow through the FAC.

8 **Q. Does the Company agree with this recommendation?**

9 A. Yes, conditionally. The Company will support the inclusion of such language
10 in the tariff (applicable to Meramec or other coal plants) so long as the language indicates
11 such amounts are eligible for deferral to a regulatory asset for consideration of recovery
12 through an amortization in subsequent rate proceedings. As I understand it, this is how such
13 costs are being handled for the other electric utilities in Missouri. Schedule AMM-R1
14 contains a proposed modification to Rider FAC to address this issue.

15 **IV. OPC PROPOSED FAC MODIFICATIONS**

16 **Q. Ms. Mantle recommends that a discussion take place regarding possible**
17 **FAC modifications for treatment of exceptional costs. Does the Company agree that this**
18 **issue needs to be addressed in this rate review?**

19 A. As Ms. Mantle identified, the restriction by statute that FACs can only be
20 changed in rate cases necessitates that a change to an FAC tariff will have to be made in a rate
21 review. The Company is willing to explore whether universal changes to the FACs of all the
22 investor-owned utilities in the state should be made. However, the questions of what constitutes
23 exceptional costs and revenues, how they should be treated, and what alternate recovery

1 treatment would be appropriate if changes were determined to be warranted, are broad policy
2 issues that should first be vetted in a workshop for all utilities simultaneously and then, if
3 changes are to be made, via a formal rulemaking applying the general principles to all electric
4 utilities. It is not appropriate (nor feasible given the limited time available in this rate review) to
5 make any changes in this case.

6 **V. STAFF'S CLASS COST OF SERVICE REPORT**

7 **Q. At pages 69-70 of Staff's Class Cost of Service Report, Staff includes certain**
8 **FAC-tariff related recommendations. Please address each of them.**

9 A. Staff recommends a rebase of the Base Factors ("BF") based on Staff's modeling
10 results using data for the 12-months ending June 30, 2021, and has provided specific BF
11 calculations based on that data. As the Staff itself indicates, the BFs should instead be rebased
12 as a result of final true-up production cost modeling runs and other net base energy cost
13 components determined through the true-up period, that is, the 12 months ending September
14 30, 2021. That data is not yet available but will be presented in the Company's surrebuttal/true-
15 up testimony. Similarly, while the Company takes no issue with the methodological approach
16 taken by the Staff to calculating a transmission percentage (page 70 of the Class Cost of Service
17 Report) the final calculation should be based upon the true-up data.

18 With respect to the "Policy" recommendations on page 70 of the Class Cost of Service
19 Report, Staff already included identical recommendations in its Cost of Service Report (bullets
20 6-8 on pages 198-199 of that Report) and I have addressed each of them above.

21 **Q. Does this conclude your rebuttal testimony?**

22 A. Yes, it does.

RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE

(Applicable To Service Provided On The Effective Date Of This Tariff Sheet And Thereafter)

APPLICABILITY

This rider is applicable to kilowatt-hours (kWh) of energy supplied to customers served by the Company under Service Classification Nos. 1(M), 2(M), 3(M), 4(M), 5(M), 6(M), 11(M), and 12(M).

Costs passed through this Fuel and Purchased Power Adjustment Clause (FAC) reflect differences between actual fuel and purchased power costs, including transportation and emissions costs and revenues, net of off-system sales revenues (OSSR) (i.e., Actual Net Energy Costs (ANEC)) and Net Base Energy Costs (B), calculated and recovered as provided for herein.

The Accumulation Periods and Recovery Periods are as set forth in the following table:

| <u>Accumulation Period (AP)</u> | <u>Recovery Period (RP)</u> |
|---------------------------------|-----------------------------|
| February through May | October through May |
| June through September | February through September |
| October through January | June through January |

AP means the four (4) calendar months during which the actual costs and revenues subject to this rider will be accumulated for the purposes of determining the Fuel Adjustment Rate (FAR).

RP means the calendar months during which the FAR is applied to retail customer usage on a per kWh basis, as adjusted for service voltage.

The Company will make a FAR filing no later than sixty (60) days prior to the first day of the applicable Recovery Period above. All FAR filings shall be accompanied by detailed workpapers supporting the filing in an electronic format with all formulas intact.

FAR DETERMINATION

Ninety five percent (95%) of the difference between ANEC and B for each respective AP will be utilized to calculate the FAR under this rider pursuant to the following formula with the results stated as a separate line item on the customers' bills.

RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)

(Applicable To Service Provided On The Effective Date Of This Tariff Sheet And Thereafter)

FAR DETERMINATION (Cont'd.)

For each FAR filing made, the FAR_{RP} is calculated as:

$$FAR_{RP} = [(ANEC - B) \times 95\% \pm I \pm P \pm TUP] / S_{RP}$$

Where:

$$ANEC = FC + PP + E \pm R - OSSR$$

FC = Fuel costs and revenues associated with the Company's generating plants consisting of the following:

1) For fossil fuel plants:

A. the following costs and revenues (including applicable taxes) arising from steam plant operations recorded in FERC Account 501: coal commodity, gas, alternative fuels, Btu adjustments assessed by coal suppliers, quality adjustments related to the sulfur content of coal assessed by coal suppliers, railroad transportation, switching and demurrage charges, railcar repair and inspection costs, railcar depreciation, railcar lease costs, similar costs associated with other applicable modes of transportation, fuel hedging costs, fuel oil adjustments included in commodity and transportation costs, fuel additive costs included in commodity or transportation costs, oil costs, ash disposal costs and revenues, and expenses resulting from fuel and transportation portfolio optimization activities; **provided that costs otherwise included in the foregoing associated with coal remaining at a coal plant after the coal plant ceases coal-fired generation shall be excluded from Factor FC and instead deferred on the Company's books to a regulatory asset for consideration of recovery in a general rate proceeding over a reasonable amortization period as determined by the Commission;**

B. the following costs and revenues reflected in FERC Account 502 for: consumable costs related to Air Quality Control System (AQCS) operation, such as urea, limestone, and powder activated carbon; and

C. the following costs and revenues (including applicable taxes) arising from non-steam plant operations recorded in FERC Account 547: natural gas generation costs related to commodity, oil, transportation, storage, capacity reservation, fuel losses, hedging, and revenues and expenses resulting from fuel and transportation portfolio optimization activities, but excluding fuel costs related to the Company's landfill gas generating plant known as Maryland Heights Energy Center; and

2) The following costs and revenues (including applicable taxes) arising from nuclear plant operations, recorded in FERC Account 518: nuclear fuel commodity expense, waste disposal expense, and nuclear

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ISSUED BY Martin J. Lyons Chairman & President St. Louis, Missouri
 NAME OF OFFICER TITLE ADDRESS

UNION ELECTRIC COMPANY

ELECTRIC SERVICE

MO.P.S.C. SCHEDULE NO. 6

Original

SHEET NO. 71.17

CANCELLING MO.P.S.C. SCHEDULE NO. _____

SHEET NO. _____

APPLYING TO _____

MISSOURI SERVICE AREA

fuel hedging costs.

DATE OF ISSUE March 31, 2021

DATE EFFECTIVE April 30, 2021

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NAME OF OFFICER

Chairman & President
TITLE

St. Louis, Missouri
ADDRESS

MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 71.18

CANCELLING MO.P.S.C. SCHEDULE NO. _____ SHEET NO. _____

APPLYING TO MISSOURI SERVICE AREARIDER FACFUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)(Applicable To Service Provided On The Effective Date Of This Tariff Sheet And
Thereafter)FAR DETERMINATION (Cont'd.)

PP = Purchased power costs and revenues and consists of the following:

- 1) The following costs and revenues for purchased power reflected in
FERC Account 555, excluding (a) amounts associated with the
subscribed portions of Power Purchase Agreements dedicated to
specific customers under the Renewable Choice Program tariff or any
subsequent renewable subscription program that is approved by the
Commission in an order that acknowledges that such program's impacts
should be excluded from Factor PP, (b) all charges under
Midcontinent Independent System Operator, Inc. ("MISO") Schedules
10, 16, 17 and 24 (or any successor to those MISO Schedules), ~~and~~
excluding (c) generation capacity charges for contracts with terms in
excess of one (1) year, and (d) amounts associated with energy
purchased from the MISO market to serve digital currency mining by
the Company. Such costs and revenues include:

- A. MISO costs or revenues for MISO's energy and operating reserve
market settlement charge types and capacity market settlement
clearing costs or revenues associated with:
 - i. Energy;
 - ii. Losses;
 - iii. Congestion management:
 - a. Congestion;
 - b. Financial Transmission Rights; and
 - c. Auction Revenue Rights;
 - iv. Generation capacity acquired in MISO's capacity auction or
market; provided such capacity is acquired for a term of
one (1) year or less;
 - v. Revenue sufficiency guarantees;
 - vi. Revenue neutrality uplift;
 - vii. Net inadvertent energy distribution amounts;
 - viii. Ancillary Services:
 - a. Regulating reserve service (MISO Schedule 3, or its
successor);
 - b. Energy imbalance service (MISO Schedule 4, or its
successor);
 - c. Spinning reserve service (MISO Schedule 5, or its
successor); and
 - d. Supplemental reserve service (MISO Schedule 6, or its
successor); and
 - ix. Demand response:
 - a. Demand response allocation uplift; and
 - b. Emergency demand response cost allocation (MISO Schedule
30, or its successor);

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APPLYING TO MISSOURI SERVICE AREA

RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)

(Applicable To Service Provided On The Effective Date Of This Tariff Sheet And Thereafter)

FAR DETERMINATION (Cont'd.)

- B. Non-MISO costs or revenues as follows:
 - i. If received from a centrally administered market (e.g. PJM/SPP), costs or revenues of an equivalent nature to those identified for the MISO costs or revenues specified in subpart A of part 1 above;
 - ii. If not received from a centrally administered market:
 - a. Costs for purchases of energy; and
 - b. Costs for purchases of generation capacity, provided such capacity is acquired for a term of one (1) year or less; and
- C. Realized losses and costs (including broker commissions and fees) minus realized gains for financial swap transactions for electrical energy that are entered into for the purpose of mitigating price volatility associated with anticipated purchases of electrical energy for those specific time periods when the Company does not have sufficient economic energy resources to meet its native load obligations, so long as such swaps are for up to a quantity of electrical energy equal to the expected energy shortfall and for a duration up to the expected length of the period during which the shortfall is expected to exist.

2) One and 4487/100 percent (1.4487%) of transmission service costs reflected in FERC Account 565 and one and 4487/100 percent (1.4487%) of transmission revenues reflected in FERC Account 456.1 (excluding (a) amounts associated with the subscribed portions of Purchased Power Agreements dedicated to specific customers under the Renewable Choice Program tariff or any subsequent renewable subscription program that is approved by the Commission in an order that acknowledges that such program's impacts should be excluded from this Factor PP and (b) costs or revenues under MISO Schedule 10, or any successor to that MISO Schedule). Such transmission service costs and revenues included in Factor PP include:

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MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 71.20

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APPLYING TO MISSOURI SERVICE AREA

RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)

(Applicable To Service Provided On The Effective Date Of This Tariff Sheet And Thereafter)

FAR DETERMINATION (Cont'd.)

3)A. MISO costs and revenues associated with:

- i. Network transmission service (MISO Schedule 9 or its successor);
- ii. Point-to-point transmission service (MISO Schedules 7 and 8 or their successors);
- iii. System control and dispatch (MISO Schedule 1 or its successor);
- iv. Reactive supply and voltage control (MISO Schedule 2 or its successor);
- v. MISO Schedule 11 or its successor;
- vi. MISO Schedules 26, 26A, 26C, 26D, 37 and 38 or their successors;
- vii. MISO Schedule 33; and
- viii. MISO Schedules 41, 42-A, 42-B, 45 and 47;

B. Non-MISO costs and revenues associated with:

- i. Network transmission service;
- ii. Point-to-point transmission service;
- iii. System control and dispatch; and
- iv. Reactive supply and voltage control.

E = Costs and revenues for SO₂ and NO_x emissions allowances in FERC Accounts 411.8, 411.9, and 509, including those associated with hedging.

R = Net insurance recoveries for costs/revenues included in this Rider FAC (and the insurance premiums paid to maintain such insurance), and subrogation recoveries and settlement proceeds related to costs/revenues included in this Rider FAC.

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APPLYING TO MISSOURI SERVICE AREA

RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)

(Applicable To Service Provided On The Effective Date Of This Tariff Sheet And Thereafter)

FAR DETERMINATION (Cont'd.)

OSSR = Costs and revenues in FERC Account 447 (excluding (a) amounts associated with portions of Power Purchase Agreements dedicated to specific customers under the Renewable Choice Program tariff or any subsequent renewable subscription program that is approved by the Commission in an order that acknowledges that such program's impacts should be excluded from Factor OSSR, (b) amounts associated with generation assets dedicated, as of the date BF was determined, to specific customers under the Renewable Choice Program tariff or any subsequent renewable subscription program that is approved by the Commission in an order that acknowledges that such program's impacts should be excluded from Factor OSSR and (c) amounts associated with generation assets that began commercial operation after the date BF was determined and that were dedicated to specific customers under the Renewable Choice Program tariff or any subsequent renewable subscription program that is approved by the Commission in an order that acknowledges that such program's impacts should be excluded from Factor OSSR when it began commercial operation) for:

1. Capacity;
2. Energy;
3. Ancillary services, including:
 - A. Regulating reserve service (MISO Schedule 3, or its successor);
 - B. Energy Imbalance Service (MISO Schedule 4, or its successor);
 - C. Spinning reserve service (MISO Schedule 5, or its successor); and
 - D. Supplemental reserve service (MISO Schedule 6, or its successor);
4. Make-whole payments, including:
 - A. Price volatility; and
 - B. Revenue sufficiency guarantee; and
5. Hedging.

For purposes of factors FC, E, and OSSR, "hedging" is defined as realized losses and costs (including broker commissions and fees associated with the hedging activities) minus realized gains associated with mitigating volatility in the Company's cost of fuel, off-system sales and emission allowances, including but not limited to, the Company's use of futures, options and over-the-counter derivatives including, without limitation, futures contracts, puts, calls, caps, floors, collars, and swaps.

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RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)

(Applicable To Service Provided On The Effective Date Of This Tariff Sheet And Thereafter)

FAR DETERMINATION (Cont'd.)

Should FERC require any item covered by factors FC, PP, E or OSSR to be recorded in an account different than the FERC accounts listed in such factors, such items shall nevertheless be included in factor FC, PP, E or OSSR. In the month that the Company begins to record items in a different account, the Company will file with the Commission the previous account number, the new account number and what costs or revenues that flow through this Rider FAC are to be recorded in the account.

B = BF x S_{AP}

BF = The Base Factor, which is equal to the normalized value for the sum of allowable fuel costs (consistent with the term FC), plus cost of purchased power (consistent with the term PP), and emissions costs and revenues (consistent with the term E), less revenues from off-system sales (consistent with the term OSSR) divided by corresponding normalized retail kWh as adjusted for applicable losses. The normalized values referred to in the prior sentence shall be those values used to determine the revenue requirement in the Company's most recent rate case. The BF applicable to June through September calendar months (BF_{SUMMER}) is \$0.9125901149 per kWh. The BF applicable to October through May calendar months (BF_{WINTER}) is \$0.9116701036 per kWh.

S_{AP} = kWh during the AP that ended immediately prior to the FAR filing, as measured by taking the most recent kWh data for the retail component of the Company's load settled at its MISO CP node (AMMO.UE or successor node), but excluding kWh for digital currency mining operations by the Company, plus the metered net energy output of any generating station operating within its certificated service territory as a behind the meter resource in MISO, the output of which served to reduce the Company's load settled at its MISO CP node (AMMO.UE or successor node).

S_{RP} = Applicable RP estimated kWh representing the expected retail component of the Company's load settled at its MISO CP node (AMMO.UE or successor node) but excluding kWh for digital currency mining operations by the Company, plus the metered net energy output of any generating station operating within its certificated service territory as a behind the meter resource in MISO, the output of which served to reduce the Company's load settled at its MISO CP node (AMMO.UE or successor node).

UNION ELECTRIC COMPANY

ELECTRIC SERVICE

MO.P.S.C. SCHEDULE NO. 6

Original

SHEET NO. 71.22

CANCELLING MO.P.S.C. SCHEDULE NO. _____

SHEET NO. _____

APPLYING TO _____

MISSOURI SERVICE AREA

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NAME OF OFFICER

Chairman & President
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MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 71.23

CANCELLING MO.P.S.C. SCHEDULE NO. _____ SHEET NO. _____

APPLYING TO MISSOURI SERVICE AREA

RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)

(Applicable To Service Provided On The Effective Date Of This Tariff Sheet And Thereafter)

FAR DETERMINATION (Cont'd.)

I = Interest applicable to (i) the difference between ANEC and B for all kWh of energy supplied during an AP until those costs have been recovered;

(ii) refunds due to prudence reviews ("P"), if any; and (iii) all under- or over-recovery balances created through operation of this FAC, as determined in the true-up filings ("TUP") provided for herein. Interest shall be calculated monthly at a rate equal to the weighted average interest rate paid on the Company's short-term debt, applied to the month-end balance of items (i) through (iii) in the preceding sentence.

P = Prudence disallowance amount, if any, as defined below.

TUP = True-up amount as defined below.

The FAR, which will be multiplied by the Voltage Adjustment Factors (VAF) set forth below is calculated as:

$$FAR = \text{The lower of (a) PFAR and (b) RAC.}$$

where:

FAR = Fuel Adjustment Rate applied to retail customer usage on a per kWh basis starting with the applicable Recovery Period following the FAR filing.

FAR_{RP} = FAR Recovery Period rate component calculated to recover under- or over-collection during the Accumulation Period that ended immediately prior to the applicable filing.

FAR_(RP-1) = FAR Recovery Period rate component for the under- or over-collection during the Accumulation Period immediately preceding the Accumulation Period that ended immediately prior to the application filing for FAR_{RP}.

PFAR = The Preliminary FAR, which is the sum of FAR_{RP} and FAR_(RP-1)

RAC = Rate Adjustment Cap: applies to the FAR rate and shall apply so long as the rate caps provided for by Section 393.1655, RSMo. are in effect, and shall be calculated by multiplying the rate as determined under Section 393.1655.4 by the 2.85% Compound Annual Growth Rate compounded for the amount of time in days that has passed since the effective date of rate schedules published to effectuate the Commission's Order that approved the Stipulation and Agreement that resolved File No. ER-2016-0179, and subtracting the then-current RESRAM rate under Rider RESRAM and the average base rate determined from the most recent general rate proceeding as calculated pursuant to Section 393.1655, and dividing that result by the weighted average voltage adjustment factor 1.04760455%.

DATE OF ISSUE March 31, 2021 DATE EFFECTIVE April 30, 2021

ISSUED BY Martin J. Lyons Chairman & President St. Louis, Missouri
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RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)

(Applicable To Service Provided On The Effective Date Of This Tariff Sheet And Thereafter)

FAR DETERMINATION (Cont'd.)

The Initial Rate Component For the Individual Service Classifications shall be determined by multiplying the FAR determined in accordance with the foregoing by the following Voltage Adjustment Factors (VAF):

| | |
|--|------------|
| Secondary Voltage Service (VAF _{SEC}) | 1.05700539 |
| Primary Voltage Service (VAF _{PRI}) | 1.02240222 |
| High Voltage Service (VAF _{HV}) | 1.0059 |
| Transmission Voltage Service (VAF _{TRANS}) | 0.9928 |

Customers served by the Company under Service Classification No. 11(M), Large Primary Service, shall have their rate capped such that their FAR_{LPS} does not exceed RAC_{LPS}, where

RAC_{LPS} = Rate Adjustment Cap Applicable to LPS Class: applies to the FAR rate applicable to customers in the LPS class and shall apply so long as the rate caps provided for by Section 393.1655, RSMo. are in effect, and shall be calculated by multiplying the class average overall rate as determined under Section 393.1655.6 by the 2.00% Compound Annual Growth Rate compounded for the amount of time that has passed in days since the effective date of rate schedules published to effectuate the Commission's Order that approved the Stipulation and Agreement that resolved File No. ER-2016-0179, and subtracting the then-current RESRAM rate under Rider RESRAM and the class average base rate determined from the most recent general rate proceeding as calculated pursuant to Section 393.1655.

FAR_{LPS} = The weighted average of the voltage specific Fuel Adjustment Rate Rates that will be applicable to customers taking service under Service Classification No. 11(M), Large Primary Service, which is calculated as the minimum lesser of (a) the Combined Initial Rate Component for the FAR applicable to Primary Voltage Service and RAC_{LPS} Comparison or (b) RAC_{LPS}. The lesser of (a) the Combined Initial Rate Component for RAC_{LPS} Comparison or (b) RAC_{LPS}.

Combined Initial Rate Component for RAC_{LPS} Comparison = The sum of the products of each of the Primary, High Voltage, and Transmission Initial Rate Components for the Individual Service Classifications and the applicable following LPS Weighting Factor(s) (WF):

| | |
|--|--------|
| Primary Voltage LPS Weighting Factor (WF _{PRI}) | 0.1587 |
| High Voltage LPS Weighting Factor (WF _{HV}) | 0.3967 |
| Transmission Voltage LPS Weighting Factor (WF _{TRANS}) | 0.4446 |

The Weighting Factors are the ratios between each voltage's annual kWh and total

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ELECTRIC SERVICE

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annual LPS kWh. The above Combined Initial Rate Component is developed for the purposes of determining if the statutory RAC_{LPS} has been exceeded, and if it has, calculating the FAR Shortfall Adder to be applied across all non-LPS service classifications in the immediately concluded AP.

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FAR DETERMINATION (Cont'd.)

Where the Combined Initial Rate Component for ~~Primary Customers~~ RAC_{LPS} Comparison is greater than FAR_{LPS}, then a Per kWh FAR Shortfall Adder shall apply to each of the respective Initial Rate Components to be determined as follows:

Per kWh FAR Shortfall Adder = $\frac{(((\text{Combined Initial Rate Component For } \text{Primary Customers} \text{ RAC}_{LPS} \text{ Comparison} - \text{FAR}_{LPS}) \times \text{SLPS}) / (\text{SRP} - \text{SRP-LPS}))}{\text{SRP} - \text{SRP-LPS}}$

Where:

- SLPS = Estimated Recovery Period LPS kWh sales at the retail meter
- SRP-LPS = Estimated Recovery Period LPS kwh sales at the Company's MISO CP Node (AMMO.UE or successor node)

The FAR Applicable to the Non-LPS Individual Service Classifications shall be determined as follows:

- FARSEC = Initial Rate Component For Secondary Customers + (Per kWh FAR Shortfall Adder x VAFSEC)
- FARPRI = Initial Rate Component For Primary Customers + (Per kWh FAR Shortfall Adder x VAFPRI)
- FARHV = Initial Rate Component For High Voltage Primary Customers + (Per kWh FAR Shortfall Adder x VAFHV)
- FARTRANS = Initial Rate Component For Transmission Primary Customers + (Per kWh FAR Shortfall Adder x VAFTRANS)

The FAR Applicable to the LPS Individual Service Classifications shall be determined as follows:

- LPSFARPRI = Initial Rate Component For Primary Customers x LPS RAC Cap Multiplier
- LPSFARHV = Initial Rate Component For High Voltage Customers x LPS RAC Cap Multiplier
- LPSFARTRANS = Initial Rate Component For Transmission Customers x LPS RAC Cap Multiplier

Where the LPS RAC Cap Multiplier is the FAR_{LPS} divided by the Combined Initial Rate Component for RAC_{LPS} Comparison.

The FAR applicable to the individual Service Classifications, including the calculations on Lines ~~1624~~ through ~~2129~~ of Rider FAC, shall be rounded to the nearest \$0.00001 to be charged on a \$/kWh basis for each applicable kWh billed.

TRUE-UP

After completion of each RP, the Company shall make a true-up filing on the same day as its FAR filing. Any true-up adjustments shall be reflected in TUP above. Interest on the true-up adjustment will be included in I above.

The true-up adjustments shall be the difference between the revenues billed and the revenues authorized for collection during the RP.

MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 71.26

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RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)

(Applicable To Service Provided On The Effective Date Of This Tariff Sheet And Thereafter)

GENERAL RATE CASE/PRUDENCE REVIEWS

The following shall apply to this FAC, in accordance with Section 386.266.4, RSMo. and applicable Missouri Public Service Commission Rules governing rate adjustment mechanisms established under Section 386.266, RSMo:

The Company shall file a general rate case with the effective date of new rates to be no later than four years after the effective date of a Commission order implementing or continuing this FAC. The four-year period referenced above shall not include any periods in which the Company is prohibited from collecting any charges under this FAC, or any period for which charges hereunder must be fully refunded. In the event a court determines that this FAC is unlawful and all moneys collected hereunder are fully refunded, the Company shall be relieved of the obligation under this FAC to file such a rate case.

Prudence reviews of the costs subject to this FAC shall occur no less frequently than every eighteen months, and any such costs which are determined by the Commission to have been imprudently incurred or incurred in violation of the terms of this rider shall be returned to customers. Adjustments by Commission order, if any, pursuant to any prudence review shall be included in the FAR calculation in P above unless a separate refund is ordered by the Commission. Interest on the prudence adjustment will be included in I above.

DATE OF ISSUE March 31, 2021 DATE EFFECTIVE April 30, 2021

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RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)

FAC CHARGE TYPE TABLE

MISO Energy & Operating Reserve Market Settlement Charge Types and Capacity Market Charges and Credits

| | |
|---|---|
| DA Asset Energy Amount; | RT Asset Energy Amount; |
| DA Congestion Rebate on Carve-out GFA; | RT Congestion Rebate on Carve-out GFA; |
| DA Congestion Rebate on Option B GFA; | RT Contingency Reserve Deployment Failure Charge Amount; |
| DA Financial Bilateral Transaction Congestion Amount; | RT Demand Response Allocation Uplift Charge; |
| DA Financial Bilateral Transaction Loss Amount; | RT Distribution of Losses Amount; |
| DA Loss Rebate on Carve-out GFA; | RT Excessive Energy Amount; |
| DA Loss Rebate on Option B GFA; | RT Excessive\Deficient Energy Deployment Charge Amount; |
| DA Non-Asset Energy Amount; | RT Financial Bilateral Transaction Congestion Amount; |
| DA Ramp Capability Amount; | RT Financial Bilateral Transaction Loss Amount; |
| DA Regulation Amount; | RT Loss Rebate on Carve-out GFA; |
| DA Revenue Sufficiency Guarantee Distribution Amount; | RT Miscellaneous Amount; |
| DA Revenue Sufficiency Guarantee Make Whole Payment Amount; | RT Ramp Capability Amount; |
| DA Spinning Reserve Amount; | Real Time MVP Distribution; |
| DA Supplemental Reserve Amount; | RT Net Inadvertent Distribution Amount; |
| DA Virtual Energy Amount; | RT Net Regulation Adjustment Amount; |
| FTR Annual Transaction Amount; | RT Non-Asset Energy Amount; |
| FTR ARR Revenue Amount; | RT Non-Excessive Energy Amount; |
| FTR ARR Stage 2 Distribution; | RT Price Volatility Make Whole Payment; |
| FTR Full Funding Guarantee Amount; | RT Regulation Amount; |
| FTR Guarantee Uplift Amount; | RT Regulation Cost Distribution Amount; |
| FTR Hourly Allocation Amount; | RT Resource Adequacy Auction Amount; |
| FTR Infeasible ARR Uplift Amount; | RT Revenue Neutrality Uplift Amount; |
| FTR Monthly Allocation Amount; | RT Revenue Sufficiency Guarantee First Pass Dist Amount; |
| FTR Monthly Transaction Amount; | RT Revenue Sufficiency Guarantee Make Whole Payment Amount; |
| FTR Yearly Allocation Amount; | RT Schedule 49 Distribution |
| FTR Transaction Amount; | RT Spinning Reserve Amount; |
| | RT Spinning Reserve Cost Distribution Amount; |
| | RT Supplemental Reserve Amount; |
| | RT Supplemental Reserve Cost Distribution Amount; |
| | RT Virtual Energy Amount; |

MISO Transmission Service Settlement Schedules

| | |
|---|---|
| MISO Schedule 1 (System control & dispatch); | MISO Schedule 41 (Charge to Recover Costs of Entergy Strom Securitization); |
| MISO Schedule 2 (Reactive supply & voltage control); | MISO Schedule 42A (Entergy Charge to Recover Interest); |
| MISO Schedule 7 & 8 (point to point transmission service); | MISO Schedule 42B (Entergy Credit associated with AFUDC); |
| MISO Schedule 9 (network transmission service); | MISO Schedule 45 (Cost Recovery of NERC Recommendation or Essential Action); |
| MISO Schedule 11 (Wholesale Distribution); | MISO Schedule 47 (Entergy Operating Companies MISO Transition Cost Recovery); |
| MISO Schedules 26, 26A, 37 & 38 (MTEP & MVP Cost Recovery); | |
| MISO Schedules 26-C & 26-D - (TMEP Cost Recovery); | |
| MISO Schedule 33 (Black Start Service); | |

MISO Charge Types Which Appear On MISO Settlement Statements Represent Administrative Charges And Are Specifically Excluded From The FAC

| | |
|--|---|
| DA Market Administration Amount; | RT Market Administration Amount; |
| DA Schedule 24 Allocation Amount; | RT Schedule 24 Allocation Amount; |
| FTR Market Administration Amount; | RT Schedule 24 Distribution Amount; |
| Schedule 10 - ISO Cost Recovery Adder; | Schedule 10 - FERC - Annual Charges Recovery; |

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Schedule AMM-R1

RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)

FAC CHARGE TYPE TABLE (Cont'd.)

PJM Market Settlement Charge Types

Auction Revenue Rights;
 Balancing Operating Reserve;
 Balancing Operating Reserve for Load Response;

 Balancing Spot Market Energy;
 Balancing Transmission Congestion;
 Balancing Transmission Losses;
 Capacity Resource Deficiency;
 Capacity Transfer Rights;
 Day-ahead Economic Load Response;
 Day-Ahead Load Response Charge Allocation;
 Day-ahead Operating Reserve;
 Day-ahead Operating Reserve for Load Response;
 Day-ahead Spot Market Energy;
 Day-ahead Transmission Congestion;
 Day-ahead Transmission Losses;
 Demand Resource and ILR Compliance Penalty;
 Emergency Energy;
 Emergency Load Response;
 Energy Imbalance Service;
 Financial Transmission Rights Auction;
 Generation Deactivation;
 Generation Resource Rating Test Failure;
 Inadvertent Interchange;
 Incremental Capacity Transfer Rights;
 Interruptible Load for Reliability;

Load Reconciliation for Inadvertent Interchange;
 Load Reconciliation for Operating Reserve Charge;
 Load Reconciliation for Regulation and Frequency Response Service;
 Load Reconciliation for Spot Market Energy;
 Load Reconciliation for Synchronized Reserve;
 Load Reconciliation for Synchronous Condensing;
 Load Reconciliation for Transmission Congestion;
 Load Reconciliation for Transmission Losses;
 Locational Reliability;
 Miscellaneous Bilateral;
 Non-Unit Specific Capacity Transaction;
 Peak Season Maintenance Compliance Penalty;
 Peak-Hour Period Availability;
 PJM Customer Payment Default;
 Planning Period Congestion Uplift;
 Planning Period Excess Congestion;
 Ramapo Phase Angle Regulators;
 Real-time Economic Load Response;
 Real-Time Load Response Charge Allocation;
 Regulation and Frequency Response Service;
 RPM Auction;
 Station Power;
 Synchronized Reserve;
 Synchronous Condensing;
 Transmission Congestion;
 Transmission Losses;

PJM Transmission Service Charge Types

Black Start Service;
 Day-ahead Scheduling Reserve;
 Direct Assignment Facilities;
 Expansion Cost Recovery;
 Firm Point-to-Point Transmission Service;
 Internal Firm Point-to-Point Transmission Service;
 Internal Non-Firm Point-to-Point Transmission Service;
 Load Reconciliation for PJM Scheduling, System Control and Dispatch Service;
 Load Reconciliation for PJM Scheduling, System Control and Dispatch Service Refund;
 Load Reconciliation for Reactive Services;
 Load Reconciliation for Transmission Owner Scheduling, System Control and Dispatch Service;
 Network Integration Transmission Service;
 Network Integration Transmission Service (exempt);

Network Integration Transmission Service Offset;
 Non-Firm Point-to-Point Transmission Service;
 Non-Zone Network Integration Transmission Service;
 Other Supporting Facilities;
 PJM Scheduling, System Control and Dispatch Service Refunds;
 PJM Scheduling, System Control and Dispatch Services;
 Qualifying Transmission Upgrade Compliance Penalty;
 Reactive Supply and Voltage Control from Generation and Other Sources Service;
 Transmission Enhancement;
 Transmission Owner Scheduling, System Control and Dispatch Service;
 Unscheduled Transmission Service;
 Reactive Services;

RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)

FAC CHARGE TYPE TABLE (Cont'd.)

PJM Charge Types Which Appear On The Settlement Statements Represent Administrative Charges Are Specifically Excluded From The FAC

| | |
|---|--|
| Annual PJM Building Rent; | Michigan - Ontario Interface Phase Angle Regulators; |
| Annual PJM Cell Tower; | North American Electric Reliability Corporation |
| FERC Annual Charge Recovery; | (NERC); |
| Load Reconciliation for FERC Annual Charge Recovery; | Organization of PJM States, Inc. (OPSI) Funding; |
| Load Reconciliation for North American Electric Reliability Corporation (NERC); | PJM Annual Membership Fee; |
| Load Reconciliation for Organization of PJM States, Inc. (OPSI) Funding; | PJM Settlement, Inc.; |
| Load Reconciliation for Reliability First Corporation (RFC); | Reliability First Corporation (RFC); |
| Market Monitoring Unit (MMU) Funding; | RTO Start-up Cost Recovery; |
| | Virginia Retail Administrative Fee; |

SPP Market Settlement Charge Types

| | |
|---|---|
| DA Asset Energy Amount; | Transmission Congestion Rights Annual Closeout |
| DA Non-Asset Energy Amount; | Auction Revenue Rights Uplift |
| DA Make-Whole Payment Distribution; | Auction Revenue Rights Monthly Payback |
| DA Make-Whole Payment;; | Auction Revenue Rights Annual Payback |
| DA Virtual Energy; | DA Regulation Up |
| DA Virtual Energy Transaction Fee; | DA Regulation Down |
| DA Demand Reduction Amount; | DA Regulation Up Distribution |
| DA Demand Reduction Distribution Amount; | DA Regulation Down Distribution |
| DA GFA Carve-Out Daily Amount; | DA Spinning Reserve |
| DA GFA Carve-Out Monthly Amount; | DA Spinning Reserve Distribution |
| DA GFA Carve-Out Yearly Amount; | DA Supplemental Reserve |
| GFA Carve Out Distribution Daily Amount; | DA Supplemental Reserve Distribution |
| GFA Carve Out Distribution Monthly Amount; | RT Regulation Up |
| GFA Carve Out Distribution Yearly Amount; | RT Regulation Up Distribution |
| RT Asset Energy Amount | RT Regulation Down |
| RT Over Collected Losses Distribution; | RT Regulation Down Distribution |
| RT Miscellaneous Amount; | RT Regulation Out of Merit |
| RT Non-Asset Energy; | RT Spinning Reserve Amount |
| RT Revenue Neutrality Uplift; | RT Supplemental Reserve Amount |
| RT Joint Operating Agreement; | RT Spinning Reserve Cost Distribution Amount |
| RUC Make Whole Payment Distribution; | RT Supplemental Reserve Distribution Amount |
| RUC Make Whole Payment; | RT Regulation Non-Performance |
| RT Virtual Energy Amount; | RT Regulation Non-Performance Distribution |
| RT Demand Reduction Amount; | RT Regulation Deployment Adjustment; |
| RT Demand Reduction Distribution Amount; | RT Contingency Reserve Deployment Failure |
| Transmission Congestion Rights Daily Uplift; | RT Contingency Reserve Deployment Failure Distribution; |
| Transmission Congestion Rights Monthly Payback; | RT Reserve Sharing Group; |
| Transmission Congestion Rights Auction Transaction; | RT Reserve Sharing Group Distribution; |
| Transmission Congestion Rights Annual Payback; | RT Pseudo-Tie Congestion Amount; |
| Transmission Congestion Rights Funding; | RT Pseudo-Tie Losses Amount; |
| Auction Revenue Rights Annual Closeout; | RT Unused Regulation -Up Mileage Make Whole Payment; |
| Auction Revenue Rights Funding; | RT Unused Regulation -Down Mileage Make Whole Payment; |

DATE OF ISSUE March 31, 2021

DATE EFFECTIVE April 30, 2021

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MO.P.S.C. SCHEDULE NO. 6 Original SHEET NO. 71.30

CANCELLING MO.P.S.C. SCHEDULE NO. _____ SHEET NO. _____

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RIDER FAC

FUEL AND PURCHASED POWER ADJUSTMENT CLAUSE (Cont'd.)

FAC CHARGE TYPE TABLE (Cont'd.)

SPP Transmission Service Charge Types

- Schedule 1 - Scheduling, System Control & Dispatch Service;
- Schedule 2 - Reactive Voltage;
- Schedule 7 - Zonal Firm Point-to-Point;
- Schedule 8 - Zonal Non-Firm Point-to-Point;
- Schedule 11 - Base Plan Zonal and Regional;

SPP charge types representing administrative charges specifically excluded from the FAC

- ~~Transmission~~ - Schedule 1A - Tariff Administrative Fee;
- ~~Schedule 1A2~~ - Transmission ~~Congestionk Rights Administratoin~~
- ~~Schedule 1A3~~ - Integrated Marketplace Clearing Administration
- ~~Schedule 1A4~~ - Integrated Marketplace Facilitation Administration
- Schedule 12 - FERC Assessment;

DATE OF ISSUE March 31, 2021 DATE EFFECTIVE April 30, 2021

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