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October 20, 2016

Executive Secretary
North Dakota Public Service Commission
State Capitol Building
Bismarck, ND 58505-0480


Re: Substitute Testimony of Darcy J. Neigum
Case No. PU-16-666

Montana-Dakota Utilities Co. (Montana-Dakota), a Division of MDU Resources Group, Inc., herewith submits the original and ten (10) copies of the substitute testimony of Darcy J. Neigum in the above referenced case. The testimony originally submitted on October 14, 2016 contained an error at page 8 lines 7-10 that also affected the testimony at page 10 lines 6-8. The attached testimony marked as "substitute" corrects the error regarding changes in transmission expenses associated with the replacement of transmission agreements that expired in 2015.

Montana-Dakota requests that the original testimony of Mr. Neigum filed on October 14, 2016 be replaced with this substitute testimony in its entirety to avoid a piecemeal process of pulling and replacing only the affected pages.

I apologize for any inconvenience caused by this error.

Please contact me at 701.222.7856 if you have any questions.

Sincerely,

Tamie A. Aberle
Director of Regulatory Affairs

cc: K. Liepitz
P. Sanderson

MONTANA-DAKOTA UTILITIES CO.
A Division of MDU Resources Group, Inc.

Before the North Dakota Public Service Commission

Case No. PU-16-666

Direct Testimony
of
Darcy J. Neigum

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

2 A. My name is Darcy J. Neigum and my business address is 400
3 North Fourth Street, Bismarck, North Dakota 58501.

4 **Q. By whom are you employed and in what capacity?**

5 A. I am the Director of System Operations and Planning for Montana-
6 Dakota Utilities Co. (Montana-Dakota), a Division of MDU Resources
7 Group, Inc.

8 **Q. Please describe your duties and responsibilities with Montana-
9 Dakota.**

10 A. I have managerial responsibility for overseeing the day-to-day
11 operations of the Company's electric control center and System
12 Operations & Planning Department.

13 **Q. Please outline your educational and professional background.**

14 A. I hold a Bachelor's Degree in Electrical and Electronics
15 Engineering from North Dakota State University as well as a Masters of
16 Business Administration from the University of Mary. My work experience
17 includes four years as a nuclear plant engineer; three years of experience

1 as a coal-fired power plant engineer; eleven years of generation
2 development and operational responsibilities for coal-fired, gas-fired, and
3 renewable generation sources; and seven years of experience managing
4 the system operations & planning department for Montana-Dakota.

5 **Q. Have you testified in other proceedings before regulatory bodies?**

6 A. Yes. I have previously presented testimony before this
7 Commission, the Public Service Commissions of Montana and Wyoming,
8 the Public Utilities Commission of South Dakota and the Federal Energy
9 Regulatory Commission (FERC).

10 **Q. What is the purpose of your testimony in this proceeding?**

11 A. I will discuss the final costs and provide an update on the
12 operational status of the Thunder Spirit Wind project and I will also discuss
13 changes in transmission service that Montana-Dakota has incurred since
14 Western Area Power Administration (Western) and Basin Electric Power
15 Cooperative (Basin Electric) joined Southwest Power Pool (SPP) on
16 October 1, 2015.

17 **Q. Please describe the Thunder Spirit Wind Project.**

18 A. Thunder Spirit Wind (Thunder Spirit) is the 107.5 megawatt (MW)
19 wind project located in Adams County, North Dakota, northeast of the City
20 of Hettinger issued an Advance Determination of Prudence and Certificate
21 of Public Convenience and Necessity by this Commission in Case Nos.
22 PU-14-843 and PU-14-844. Thunder Spirit is comprised of 43 Nordex
23 N100/2500 (2.5 MW) wind turbines erected on 80 meter towers.

1 Thunder Spirit interconnects to the adjacent Hettinger 230 kilovolt
2 (kV) Junction Substation owned by Montana-Dakota.

3 Montana-Dakota has all of the necessary land agreements and
4 interconnection rights to expand the Thunder Spirit project to a total
5 project size of 150 MW in the future.

6 **Q. Who was the developer of the Thunder Spirit project?**

7 A. Montana-Dakota purchased the Thunder Spirit project from Allete
8 Clean Energy (ACE), a subsidiary of Allete, Inc., which has developed
9 other wind projects in North Dakota.

10 **Q. When did Montana-Dakota complete the purchase of Thunder Spirit?**

11 A. Montana-Dakota completed the purchase of the Thunder Spirit
12 project from ACE on December 30, 2015.

13 **Q. When was the last turbine at Thunder Spirit erected?**

14 A. The last turbine at Thunder Spirit was erected on November 19,
15 2015.

16 **Q. When did the first turbine at Thunder Spirit start producing power?**

17 A. The first turbine at Thunder Spirit started producing power on
18 October 21, 2015.

19 **Q. When did Montana-Dakota place Thunder Spirit in-service?**

20 A. Montana-Dakota placed Thunder Spirit in-service (commercial
21 operation) on December 31, 2015.

22 **Q. What is the total cost of the Thunder Spirit project?**

1 A. The total cost of the Thunder Spirit project was \$214 million,
2 including substation and transmission investments, which was less than
3 the original forecasted cost of \$225 million.

4 **Q. What was the expected capacity factor for Thunder Spirit?**

5 A. Wind studies for Thunder Spirit estimated an annual capacity factor
6 for the project of 45.2 percent or 426,000 megawatt-hours per year.

7 **Q. What has been the capacity factor for Thunder Spirit so far in 2016?**

8 A. Through September 19, the year to date capacity factor for Thunder
9 Spirit has been 42.4 percent as compared to the forecasted year to date
10 capacity of 43.3 percent. The lower capacity factor can mainly be
11 attributed to turbine outages associated with startup and first year
12 operations.

13 **Q. Who provides the turbine and balance of plant operations and
14 maintenance for Thunder Spirit?**

15 A. Nordex, under a maintenance service arrangement (MSA), will
16 perform the operation and maintenance (O&M) of the project wind turbines
17 for the first five years of the project excluding the supply of major
18 components like turbine blades, generators, gearboxes, bedplates, and
19 tower sections.

20 The Nordex Turbine Supply Agreement (TSA) provides for two
21 years of equipment warranty coverage after which Montana-Dakota will
22 need to supply spare parts for the project. Nordex will continue to supply
23 consumables, excluding gearbox oil changes, under the MSA.

1 Following the initial five years of the MSA, Montana-Dakota has the
2 option to contract with Nordex for an additional five years of O&M under
3 similar terms and conditions as the initial five year term including any
4 future negotiated price adjustments.

5 Montana-Dakota will be responsible for the operation and
6 maintenance of Thunder Spirit's balance of plant equipment which
7 includes all equipment from the turbine padmount transformers through
8 the collector system and back to the point of interconnection at Montana-
9 Dakota's Hettinger 230kV Junction Substation.

10 Montana-Dakota is responsible for all requirements under the wind
11 lease and easement agreements with local landowners. Montana-Dakota
12 is responsible for all agreements and permits including the interconnection
13 agreement with MISO and the terms and conditions of the Site Certificate
14 transferred to Montana-Dakota by this Commission in Case No. PU-15-
15 592.

16 Montana-Dakota has hired two new employees, including one full-
17 time wind technician and one manager of combustion turbines and wind
18 generation who will be partially allocated to the Thunder Spirit project for
19 the balance of plant O&M, and TSA and MSA administration activities.

20 **Q. When did Western and Basin join SPP as a transmission owning**
21 **member?**

22 A. Western and Basin Electric joined SPP on October 1, 2015 as
23 transmission owning members.

24 **Q. What impact did this have on Montana-Dakota customers?**

1 A. Montana-Dakota had long-standing reciprocal transmission sharing
2 agreements with both Western and Basin Electric. The Western
3 agreement has historically been referred to as the Western Transmission
4 Service Agreement (TSA) or the WAPA wheeling agreement. The Basin
5 Electric agreement has historically been referred to as the Interconnection
6 and Common Use Agreement (ICCUA).

7 The Western TSA expired on December 31, 2015 and had to be
8 replaced with network integrated transmission service (NITS) from SPP for
9 usage of those transmission facilities that Montana-Dakota previously
10 used under the Western TSA.

11 Basin Electric and Montana-Dakota mutually agreed to suspend the
12 ICCUA on December 31, 2015 as its origin and implementation was based
13 upon the existence of the Western TSA. In replacement of the ICCUA
14 Montana-Dakota agreed to take NITS service from SPP for those Basin
15 Electric transmission facilities previously under the ICCUA which
16 Montana-Dakota needed to support its SPP NITS service from Western's
17 transmission system. In turn, Basin Electric is taking service for a portion
18 of its member's load from MISO under Montana-Dakota's transmission
19 service schedule to meet the needs of its loads previously provided
20 service under the ICCUA.

21 The SPP NITS service is in addition to the MISO NITS that
22 Montana-Dakota continues to take for all of its customer loads. Therefore,
23 Montana-Dakota is taking NITS service from both MISO and SPP for the
24 same load.

1 **Q. Did Montana-Dakota explore other alternatives to taking NITS service**
2 **from SPP and MISO?**

3 **A.** Montana-Dakota reviewed several alternatives to taking NITS
4 service from SPP and MISO including (1) withdrawal from MISO and
5 joining SPP, and (2) splitting its transmission system into a MISO and SPP
6 system.

7 Ultimately the SPP NITS, where needed, and MISO NITS service
8 for all load was the most economical solution based upon a Settlement
9 Agreement with SPP, Western, Basin Electric, Heartland Consumers and
10 MISO that was approved by the FERC in Docket Nos. ER14-2850-006
11 and ER14-2851-006 (Settlement Agreement).

12 **Q. What is the basis of the SPP Settlement Agreement?**

13 **A.** Under the Settlement Agreement, Montana-Dakota agreed to take
14 NITS service from SPP for loads which rely upon transmission facilities
15 owned by either Western or Basin Electric for power deliveries on a first
16 contingency basis.

17 In return for taking NITS service from SPP, the Settlement
18 Agreement creates a mechanism where Montana-Dakota is able to
19 receive transmission bill credits for those transmission facilities owned by
20 Montana-Dakota which are needed by other SPP customers, including
21 Western and Basin Electric, in areas where Montana-Dakota is taking
22 SPP NITS Service. These are transmission facilities owned by Montana-
23 Dakota that were under the Western TSA and the Basin Electric ICCUA.

1 The SPP Settlement Agreement also outlined various planning,
2 operation, and outage reporting requirements that Montana-Dakota will
3 have for the SPP bill credited facilities even though Montana-Dakota
4 remains a MISO transmission owning member for those same facilities.

5 **Q. What is the net customer impact of the expiration of Western TSA**
6 **and the Basin Electric ICCUA?**

7 A. Montana-Dakota estimates the net impact in 2016 to all customers
8 within Montana-Dakota's integrated transmission system to be \$2.3 million
9 above the 2015 levels that Montana-Dakota paid collectively to Western
10 and Basin Electric. This amount does not include the MISO Facility Credit
11 amount of \$908,476 that Basin is requesting from MISO to receive from
12 MDU's MISO transmission pricing zone.

13 **Q. Did Montana-Dakota foresee this cost increase coming to its**
14 **customers?**

15 A. Since 2005, Montana-Dakota has been in conversations with
16 Western about the impact associated with the expiration of the TSA. The
17 TSA did not have any extension options within the contract and Western
18 was unwilling to renegotiate the agreement.

19 Prior to joining SPP, Western and Basin Electric had an Integrated
20 System (IS) Tariff which Montana-Dakota would have had to take service
21 from at the end of the Western TSA if Western had not joined SPP.

22 Montana-Dakota had previously estimated the customer impact of
23 taking IS Tariff service at the end of the Western TSA to be around a \$4
24 million net increase to all customers.

1 If Montana-Dakota had withdrawn from MISO and joined SPP,
2 Montana-Dakota's customers would have been impacted by differences in
3 resource adequacy between MISO and SPP whereby Montana-Dakota
4 would have needed an additional 100 MW of capacity resources to meet
5 its SPP obligations or similar to the addition of another Heskett III
6 combustion turbine, which would have an annual revenue requirement of
7 approximately \$10 million per year just to meet the additional capacity
8 requirements under SPP's tariff.

9 If Montana-Dakota would have split its system into a SPP and
10 MISO system, it would still be impacted by the additional resource
11 adequacy requirements in SPP. Montana-Dakota's generation fleet would
12 also have been fragmented with the majority of gas and renewables in
13 SPP and the baseload coal resources in MISO.

14 **Q. Could Montana-Dakota have built sufficient new transmission**
15 **facilities and not relied on Western and Basin Electric's transmission**
16 **facilities?**

17 A. Montana-Dakota's transmission system is heavily integrated with
18 Western and Basin Electric in Western North Dakota and Eastern
19 Montana. It would have cost several hundred million dollars to build
20 facilities not connected to Western and Basin Electric and over a decade
21 to construct.

22 **Q. How does Basin Electric replace transmission service from Montana-**
23 **Dakota previously provided under the ICCUA?**

1 Basin Electric either uses facilities which Montana-Dakota receives
2 credits for under the SPP Tariff or is taking NITS transmission service
3 from MISO.

4 There are a few 60kV transmission facilities which Montana-Dakota
5 was unable to receive SPP facility credits in the SPP Settlement
6 Agreement; however, Basin Electric will pay \$244,000 per year to use
7 those facilities under a Facility Sharing Agreement accepted by the FERC
8 in Docket No. ER16-1262-000.

9 **Q. What makes up the net \$2.3 million increase in 2016 costs over 2015**
10 **for the replacement of the WAPA TSA and Basin Electric ICCUA?**

11 A. The increase is made up of:

\$21,282,684 SPP NITS (Schedule 9 and 11) plus Schedules 1
(Sched & Dispatch), 1a (Admin), 2 (Voltage &
Reactive), and 12 (FERC allocation).

(\$11,884,401) Facility Credits to Montana-Dakota from SPP

(\$4,101,524) Basin Transmission Service from MISO

(\$651,230) Reduced MISO Schedule 26 Costs assigned to
Basin

(\$1,300,000) Elimination of WAPA IS NITS payments

(\$400,000) Elimination of WAPA TSA payments

(\$400,000) Elimination of Basin ICCUA payments

(\$244,000) New Basin facility sharing agreement

\$2,301,529¹ Net increase to all Montana-Dakota customers

¹This amount does not include the MISO Facility
Credit amount of \$908,476 that Basin is requesting
from MISO to receive from MDU's MISO
transmission pricing zone.

1 **Q. How are these transmission cost changes reflected in this case?**

2 A. Mr. Travis Jacobson will address the proposed cost recovery
3 associated with the changes in transmission expenses in his direct
4 testimony.

5 **Q. Would you please provide a schedule of the various charge types**
6 **associated with MISO and SPP service that Montana-Dakota is**
7 **subject to and the applicable recovery mechanism for each charge**
8 **type?**

9 A. Yes. Please refer to Exhibit No.____(DJN-1) which lists all of the
10 transmission and market settlement charge types, including the current
11 and proposed cost recovery mechanism, that are applicable to Montana-
12 Dakota's service level from each regional transmission organization.

13 **Q. Does this conclude your direct testimony?**

14 A. Yes, it does.

MISO Charge Types

August 9, 2016

Day-Ahead Charge Types		Applicable to Montana-Dakota		Balancing Authority	Generation Asset Owner	Load Serving Entity	Non-Asset Owner	Granted Dispute Amounts	FERC Mandated Interest Refunds	Resource Adequacy Auction	Recovery Mechanism	Market Charge Description
Day-Ahead Asset Energy Amount	DA_ASSET_EN	X		X	X						FCA	Net charges and credits expressed in Dollars related to all energy schedules and Day-Ahead Financial Schedules settled at an AO's asset related CPNodes.
Day-Ahead Financial Bilateral Transaction Congestion Amount	DA_FIN_CG			X	X						FCA	Net Day-Ahead Financial Schedule congestion charges and credits expressed in Dollars.
Day-Ahead Financial Bilateral Transaction Loss Amount	DA_FIN_LS			X	X						FCA	Net Day-Ahead Financial Schedule loss charges and credits expressed in Dollars.
Day-Ahead Market Administration Amount	DA_ADMIN	X		X	X						FCA	The total Day-Ahead Administration charges for an AO expressed in Dollars.
Day-Ahead Schedule 24 Allocation Amount	DA_SCHD_24_ALC	X		X	X						FCA	The total Day-Ahead Schedule 24 charges for an AO, expressed in Dollars.
Day-Ahead Non-Asset Energy Amount	DA_NASSET_EN			X	X						FCA	Net charges and credits expressed in Dollars related to all Day-Ahead Interchange Schedules and Day-Ahead Financial Schedules settled at CPNodes where the AO does not own an asset. The amount is expressed in Dollars.
Day-Ahead Congestion Rebate on Carve-Out Grandfathered Agreements	DA_GFACO_RBT_CG			X	X						FCA	Net Carve-Out Grandfathered Agreement Transaction congestion rebate expressed in Dollars.
Day-Ahead Losses Rebate on Carve-Out Grandfathered Agreements	DA_GFACO_RBT_LS			X	X						FCA	Net Carve-Out Grandfathered Agreement Transaction losses rebate expressed in Dollars.
Day-Ahead Congestion Rebate on Option B Grandfathered Agreements	DA_GFAOB_RBT_CG			X	X						FCA	Net Option B Grandfathered Agreement Financial Schedule congestion rebate expressed in Dollars.
Day-Ahead Losses Rebate on Option B Grandfathered Agreements	DA_GFAOB_RBT_LS			X	X						FCA	Net Option B Grandfathered Agreement Financial Schedule loss rebate expressed in Dollars.
Day-Ahead Revenue Sufficiency Guarantee Distribution Amount	DA_RSG_DIST	X		X	X						FCA	The total Day-Ahead RSG Distribution amount obligation for an AO expressed in Dollars.
Day-Ahead Revenue Sufficiency Guarantee Make Whole Payment Amount	DA_RSG_MWP	X		X	X						FCA	The total Day-Ahead Revenue Sufficiency MWP credit for all assets of an AO expressed in Dollars.
Day-Ahead Virtual Energy Amount	DA_VIRT_EN			X	X						FCA	Net charges and credits related to settling Day-Ahead Virtual Schedules expressed in Dollars.
Real-Time Charge Types												
Real-Time Asset Energy Amount	RT_ASSET_EN	X		X	X						FCA	Net charges and credits expressed in Dollars related to all Actual Energy Withdrawals and Financial Schedules settled at an AO's asset related CPNodes.
Real-Time Distribution of Losses Amount	RT_LOSS_DIST	X		X	X						FCA	Total AO distribution of surplus losses collected in the Hour expressed in Dollars.
Real-Time Financial Bilateral Transaction Congestion Amount	RT_FIN_CG			X	X						FCA	Net Real-Time Financial Schedule congestion charges and credits expressed in Dollars.
Real-Time Financial Bilateral Transaction Loss Amount	RT_FIN_LS			X	X						FCA	Net Real-Time Financial Schedule loss charges and credits expressed in Dollars.
Real-Time Congestion Rebate on Carve-Out Grandfathered Agreements	RT_GFACO_RBT_CG			X	X						FCA	Net Carve-Out Grandfathered Agreement Transaction congestion rebate expressed in Dollars.
Real-Time Losses Rebate on Carve-Out Grandfathered Agreements	RT_GFACO_RBT_LS			X	X						FCA	Net Carve-Out Grandfathered Agreement Transaction losses rebate expressed in Dollars.
Real-Time Market Administration Amount	RT_ADMIN	X		X	X						FCA	The total Real-Time Administration charges for an AO expressed in Dollars.
Real-Time Schedule 24 Allocation Amount	RT_SCHD_24_ALC	X		X	X						FCA	The total Real-Time Schedule 24 charges for an AO, expressed in Dollars.

MISO Charge Types

August 9, 2016

		Applicable to Montana-Dakota		Balancing Authority		Generation Asset Owner		Load Serving Entity		Non-Asset Owner		Granted Dispute Amounts (Outside Resettlement Window)		FERC Mandated Interest Refunds		Resource Adequacy Auction		Recovery Mechanism		Market Charge Description	
Real-Time Schedule 24 Distribution Amount	RT_SCHD_24_DIST																				The portion of the combined, total Day-Ahead and Real-Time Schedule 24 Allocation (collections) funds disbursed to each LBA, expressed in Dollars.
Real-Time Miscellaneous Amount	RT_MISC	X		X	X	X	X	X	X	X	X	X	X								The total Dollars charged from miscellaneous related activities. The amount is expressed in Dollars.
Real-Time Net Inadvertent Distribution	RT_NI_DIST	X		X	X	X	X	X	X	X	X	X	X								The prorated charge or credit that results from Net Inadvertent across MISO. The amount is expressed in Dollars.
Real-Time Non-Asset Energy Amount	RT_NASSET_EN			X	X	X	X	X	X	X	X	X	X								Net charges and credits expressed in Dollars related to all Real-Time Interchange Schedules and Real-Time Financial Schedules settled at CPNodes where the AO does not own an asset. The amount is expressed in Dollars.
Real-Time Revenue Neutrality Uplift Amount	RT_RNU	X			X																On an hourly basis, all charges and credits that have no other distribution method are summed, and the subsequent total charge or credit for the hour is distributed to AOs based on their load ratio share exclusive of Load served by Carved-Out GFAs. The amount is expressed in Dollars.
Real-Time Revenue Sufficiency Guarantee 1st Pass Distribution Amount	RT_RSG_DIST1	X		X	X	X	X	X	X	X	X	X	X								The charge related to funding Real-Time RSGs expressed in Dollars.
Real-Time Revenue Sufficiency Guarantee Make Whole Payment Amount	RT_RSG_MWP	X		X	X	X	X	X	X	X	X	X	X								The total credits received for Real-Time RSG MWPs expressed in Dollars.
Real-Time Virtual Energy Amount	RT_VIRT_EN			X	X	X	X	X	X	X	X	X	X								Net charges and credits related to backing out Day-Ahead Virtual Schedules in the Real-Time Energy and Operating Reserve Market. The amount is expressed in Dollars.
Real-Time Price Volatility Make Whole Payment	RT_PV_MWMP	X		X	X	X	X	X	X	X	X	X	X								The total credits received from the combination of Day-Ahead Margin Assurance Preservation (DA MAP) and Real-Time Offer Revenue Sufficiency Guarantee Payment (RT_ORSGP) expressed in Dollars.
Real-Time Demand Response Uplift	RT_DRR_UPL	X		X	X	X	X	X	X	X	X	X	X								
Real-Time Resource Adequacy Auction Amount	RT_RAA	X		X	X	X	X	X	X	X	X	X	X								
Financial Transmission Rights Charge Types																					
Financial Transmission Rights Hourly Allocation Amount	FTR_HR_ALC			X	X	X	X	X	X	X	X	X	X								The total net charge or credit from the hourly settlement allocation of FTRs expressed in Dollars.
Financial Transmission Rights Market Administration Amount	FTR_ADMIN			X	X	X	X	X	X	X	X	X	X								The total FTR Administration charges for an AO expressed in Dollars.
Financial Transmission Rights Monthly Allocation Amount	FTR_MN_ALC			X	X	X	X	X	X	X	X	X	X								The total net charge or credit from the monthly revenue settlement allocation of FTRs expressed in Dollars.
Financial Transmission Rights Transaction Amount	FTR_MO_TXN			X	X	X	X	X	X	X	X	X	X								The daily net charge or credit resulting from ownership transfers due to a monthly and/or yearly FTR auction expressed in Dollars.
Financial Transmission Rights Yearly Allocation Amount	FTR_YR_ALC			X	X	X	X	X	X	X	X	X	X								The total net charge or credit from the yearly revenue settlement allocation of FTRs expressed in Dollars.
Financial Transmission Rights Full Funding Guarantee Amount	FTR_FFG			X	X	X	X	X	X	X	X	X	X								The credit amount added to the actual value of an FTR to bring its total to the target value expressed in Dollars.
Financial Transmission Rights Guarantee Uplift Amount	FTR_GUL			X	X	X	X	X	X	X	X	X	X								The charge to distribute the cost of the Full Funding Guarantee amount expressed in Dollars.
Auction Revenue Rights Transaction Amount	FTR_ARR_TXN	X		X	X	X	X	X	X	X	X	X	X								The net charge or credit from the monthly revenue settlement of ARRs expressed in Dollars.

MISO Charge Types

August 9, 2016

Applicable to Montana-Dakota		Balancing Authority	Generation Asset Owner	Load Serving Entity	Non-Asset Owner	Granted Dispute Amounts (Outside Resettlement Window)	FERC Mandated Interest Refunds	Resource Adequacy Auction	Recovery Mechanism	Market Charge Description
Financial Transmission Rights Annual Transaction Amount	FTR_ARR_FTR_TXN	X	X	X	X				FCA	The monthly net charge or credit for FTRs purchased, sold or self-scheduled from ARR in the Annual FTR Auction expressed in Dollars.
Auction Revenue Rights Infeasible Uplift Amount	FTR_ARR_INF_UPL	X	X	X	X				FCA	The monthly charge to LTR holders for infeasible ARRs expressed in Dollars.
Auction Revenue Rights Stage 2 Distribution Amount	FTR_ARR_STG2_DIST	X	X	X	X				FCA	The monthly credit from residual auction revenue expressed in Dollars.
Ancillary Service Charge Types										
Day-Ahead Regulation Amount	DA_ASM_REG	X	X	X	X				FCA	The total daily amount due an AO that owns the Regulation Qualified Resources with Day-Ahead Schedules for Regulating Reserve.
Day-Ahead Spinning Reserve Amount	DA_ASM_SPIN	X	X	X	X				FCA	The total daily amount due an AO that owns the Spin Qualified Resources with Day-Ahead Schedules for Spinning Reserve.
Day-Ahead Supplemental Reserve Amount	DA_ASM_SUPP	X	X	X	X				FCA	The total daily amount due an AO that owns the Supplemental Qualified Resources with Day-Ahead Schedules for Supplemental Reserve.
Real-Time Regulation Amount	RT_ASM_REG	X	X	X	X				FCA	The total daily net charge or credit for an AO that owns Regulation Qualified Resources with cleared Hourly Real-Time Regulating Reserve Delta MWs, expressed in Dollars.
Real-Time Spinning Reserve Amount	RT_ASM_SPIN	X	X	X	X				FCA	The total daily net charge or credit for an AO that owns Spin Qualified Resources with cleared Hourly Real-Time Spinning Reserve Delta MWs, expressed in Dollars.
Real-Time Supplemental Reserve Amount	RT_ASM_SUPP	X	X	X	X				FCA	The total daily net charge or credit for an AO that owns Supplemental Qualified Resources with cleared Hourly Real-Time Supplemental Reserve Delta MWs, expressed in Dollars.
Regulation Cost Distribution Amount	RT_ASM_REG_DIST	X	X	X	X				FCA	The total daily charges or credits to an AO for Day-Ahead and net Real-Time Regulating Reserve procurement costs expressed in Dollars.
Spinning Reserve Cost Distribution Amount	RT_ASM_SPIN_DIST	X	X	X	X				FCA	The total daily charges or credits to an AO for Day-Ahead and net Real-Time Spinning Reserve procurement costs expressed in Dollars.
Supplemental Reserve Cost Distribution Amount	RT_ASM_SUPP_DIST	X	X	X	X				FCA	The total daily charges or credits to an AO for Day-Ahead and net Real-Time Supplemental Reserve procurement costs expressed in Dollars.
Real-Time Excessive Deficient Energy Deployment Charge Amount	RT_ASM_EXE_DFE_DEP	X	X	X	X				FCA	The total daily AO Charge associated with the AOs that failed to follow Setpoint Instructions in four or more consecutive Dispatch Intervals within an Hour.
Non-Excessive Energy Amount	RT_ASM_NXE	X	X	X	X				FCA	The total daily net charge or credit for an AO that owns Resources providing Actual Energy injections less than or equal to the Resource Excessive Energy Threshold, expressed in Dollars.
Excessive Energy Amount	RT_ASM_EXE	X	X	X	X				FCA	The total daily net charge or credit for an Asset Owner that owns Resources for the portion of Actual Energy injections greater than the Resource Excessive Energy Threshold, expressed in Dollars.

MISO Charge Types

August 9, 2016

Applicable to Montana-Dakota		Generation Asset Owner	Load Serving Entity	Non-Asset Owner	Granted Dispute Amounts (Outside Resettlement Window)	FERC Mandated Interest Refunds	Resource Adequacy Auction	Recovery Mechanism	Market Charge Description
Net Regulation Adjustment Amount	RT_ASM_NRGA	X						FCA	The total daily net charge or credit for an AO that owns Resources providing Regulation Service where Energy provided associated with the Regulation Service is above or below the Resource's average Dispatch Target for Energy, expressed in Dollars.
Contingency Reserve Deployment Failure Charge Amount	RT_ASM_CRDFC	X						FCA	The total daily net charge for an AO that owns Resources that failed to deploy the specified amount of Contingency Reserve within the Contingency Reserve Deployment Period following a Contingency Reserve Deployment Instruction, expressed in Dollars.
Transmission Charges									
Scheduling, System Control and Dispatch Service	Schedule 1							TT	
Reactive Supply and Voltage Control Service	Schedule 2							TT	
Long-Term Firm and Short-Term Firm PTP Transmission	Schedule 7							TT	
Non-Firm PTP Transmission	Schedule 8							TT	
Network Integrated Transmission	Schedule 9							TT	
FERC annual Charges Recovery	Schedule 10							TT	
ISO Cost Recovery - Demand	Schedule 10-Demand	X						TT	
ISO Cost Recovery - Energy	Schedule 10-Energy	X						TT	
MISO Alternative Administrative Cost Addr	Schedule 10-A	X						N/A	
American Transmission Systems Inc. Cost Addr	Schedule 10-D							N/A	
DEODEK & Eligible Customer Administrative Cost Addr	Schedule 10-G							N/A	
Wholesale Distribution Service (Pass Through - Adjustments)	Schedule 11	X						TT	
Treatment of Station Power	Schedule 20							TT	
Recovery of Schedule 10 Costs for Certain GFAs	Schedule 23							TT	
Network upgrade Charge from Transmission Expansion Plan	Schedule 26	X						TT	
Multi-value Project Usage Rate	Schedule 26-A	X						TT	
Shared Network Upgrade Charge	Schedule 26-B							TT	
Blackstart Service	Schedule 33							TT	
Allocation of Cost Associated with Reliability Penalty Assessments	Schedule 34	X						TT	
HYDC Agreement Cost Recovery Fee	Schedule 35							TT	
Regional Charge to Recover Costs of ITC Transmission Phase Angle Regulators from PJM and NYISO RTO Regions	Schedule 36							N/A	
MTEP Project Cost Recovery for ATSI Zone	Schedule 37	X						TT	
MTEP Project Cost Recovery for DEODEK Zone	Schedule 38	X						TT	
Charge to Recover Costs of Energy Storm Security Charges from Energy Operating Pricing Zones	Schedule 41							N/A	
Regional Charge to Recover Costs of ITC Transmission Phase Angle Regulators from PJM and NYISO RTO Regions	Schedule 42A							N/A	
Credit Associated with AFUDC from Energy Operating Companies Pricing Zones	Schedule 42B							N/A	
Cost Recovery of NERC Recommendations of Essential Action	Schedule 45							N/A	
Energy Operating Companies MISO Transition Cost Recovery	Schedule 47							N/A	
Compensation for Rescheduling Generator Outages	Schedule BB							TT	
Compensation for Rescheduling Transmission Outages	Schedule JJ							TT	

These are all based on North Dakota.
 FCA The cost is recovered in the Fuel Clause Adjustment
 TT The cost is recovered in the Transmission Tracker
 N/A Not Applicable

Southwest Power Pool Charges Applicable to Montana-Dakota 9-Aug-16

Energy Charge Types		Applicable to MDU	Proposed Recovery Mechanism
DaEnergyHrlyAmt	Day Ahead Asset Energy		
DaNEnergyHrlyAmt	Day Ahead Non-Asset Energy		
DaVEnergyHrlyAmt	Day Ahead Virtual Energy		
RtEnergy5minAmt	Real-Time Asset Energy		
RtNEnergy5minAmt	Real-Time Non-Asset Energy		
RtVEnergy5minAmt	Real-Time Virtual Energy		
OCL Distribution Charge Types			
RtOclDistHrlyAmt	Real Time Over Collected Losses	X	FCA
Operating Reserve Charge Types			
DaRegUpHrlyAmt	Day Ahead Regulation-Up		
DaRegDnHrlyAmt	Day Ahead Regulation-Down		
DaSpinHrlyAmt	Day Ahead Spinning Reserves		
DaSuppHrlyAmt	Day Ahead Supplemental Reserves		
DaRegUpDistHrlyAmt	Day Ahead Regulation-Up Distribution		
DaRegDnDistHrlyAmt	Day Ahead Regulation-Down Distribution		
DaSpinDistHrlyAmt	Day Ahead Spinning Reserves Distribution		
DaSuppDistHrlyAmt	Day Ahead Supplemental Reserves Distribution		
RtRegUp5minAmt	Real Time Regulation-Up		
RtRegDn5minAmt	Real Time Regulation-Down		
RtSpin5minAmt	Real Time Spinning Reserves		
RtSupp5minAmt	Real Time Supplemental Reserves		
RtRegUpDistHrlyAmt	Real Time Regulation-Up Distribution		
RtRegDnDistHrlyAmt	Real Time Regulation-Down Distribution		
RtSpinDistHrlyAmt	Real Time Spinning Reserves Distribution		
RtSuppDistHrlyAmt	Real Time Supplemental Reserves Distribution		
DaMwpCpAmt	Make Whole Payment Charge Types		
DaMwpDistHrlyAmt	Day Ahead Make Whole Payment		
RtMwpCpAmt	Real Time Make Whole Payment		
RtMwpDistHrlyAmt	Real Time Make Whole Payment Distribution		
RegUpUnusedMileMwp5minAmt	Unused Reg-Up mileage MWP		
RegDnUnusedMileMwp5minAmt	Unused Reg-Down mileage MWP		
Other Charge Types with Distribution			
RtRegNonPerf5minAmt	Real Time Regulation Non-Performance		
RtRegNonPerfDistHrlyAmt	Real Time Regulation Non-Performance Distribution		
RtCRDepFailAmt	Real Time Contingency Reserve Deployment Failure		
RtCRDepFailDistHrlyAmt	Real Time Contingency Reserve Deployment Failure Distribution		
RtRsg5minAmt	Real Time Reserve Sharing Group		
RtRsgDistHrlyAmt	Real Time Reserve Sharing Group Distribution		

Energy calculations are performed on an hourly basis for each operating day and are based upon the results of the DA Market clearing for that Operating Day

Energy calculations are performed on a dispatch interval basis for each operating day and are based upon the difference between the results of the RTBM process and the DA Market clearing for that Operating day.

The Marginal Losses Component of the DA and RT LMP paid for Energy results from the economic market solution which considers the cost of marginal losses, congestion costs and incremental Energy costs. This creates an over collection related to payment for losses that must be refunded via the OCL Distribution Charge Type.

Regulation UP/Down maintain the balance between load and generation. Spinning/Supplemental must be available in the event of an outage. The Operating Reserve Charge Type include the payment for procurement of reserves.

Represents an Asset Owners share of the total cost to procure operating reserve products in a reserve zone in the DA Market or RTBM.

Regulation UP/Down maintain the balance between load and generation. Spinning/Supplemental must be available in the event of an outage. The Operating Reserve Charge Type include the payment for procurement of reserves.

Represents an Asset Owners share of the total cost to procure operating reserve products in a reserve zone in the DA Market or RTBM.

Make Whole Payments (MWP) are needed to ensure revenue sufficiency for Resources to cover their eligible costs associated with a Commitment Period. Any resource that is economically committed by SPP during the DA Market or RTBM is eligible for a MWP.

These charge types are all related to the deployment, reserves, fees and other miscellaneous Charges.

Southwest Power Pool Charges Applicable to Montana-Dakota 9-Aug-16

Demand Response Charge Types	
Day Ahead Demand Reduction	These charge types are to provide host load demand reduction credits and to allocate the costs associated with payment to Demand Response Resources to those MPs that benefited from the DRR Output.
DaDRHrlyAmt	
DaDRDisHrlyAmt	
RtDR5minAmt	
RtDRDistHrlyAmt	
Other Charge Types	
RtOom5minAmt	
RtRegAdj5minAmt	
ARR/TCR Charge Types	
TcrAucTxnDlyAmt	These charge types are all related to Transmission Congestion Rights (TCR) and Auction Revenue Rights (ARR) for transmission. Mainly these are used to headge against congestion in the DA Mkt.
ArrAucTxnDlyAmt	
ArrUpliftDlyAmt	
ArrPaybackMnthlyAmt	
ArrPaybackYrlyAmt	
ArrCloseoutYrlyAmt	
TcrFundHrlyAmt	
TcrUpliftDlyAmt	
TcrPaybackMnthlyAmt	
TcrPaybackYrlyAmt	
TcrCloseoutYrlyAmt	
TcrCloseoutYrlyAmt	
Real-Time Revenue Neutrality Uplift Distribution	
RtRnuHrlyAmt	Calculated at each AO for each hour so SPP remains revenue neutral.
Grandfathered Agreement Charge Types	
DaGFAAoAmt (SPP Accounts)	
DaGFAAoMnthlyAmt (SPP Accounts)	
DaGFAAoYrlyAmt (SPP Accounts)	
DaGFACarveOutDistDlyAmt	
DaGFACarveOutDistMnthlyAmt	
DaGFACarveOutDistYrlyAmt	
Pseudo-Tie Charges (only applies to Pseudo-Tie Resources and Loads)	
RtPseudoTieCong5minAmt	
RtPseudoTieLoss5minAmt	
Miscellaneous or Special Charges	
MiscDlyAmt	Charges use to calculate Congestion and Losses of Pseudo-Tied assets.
Transmission Settlements	
Schd1ScNltsChg	Schedule 01 - Scheduling
Schd1aTnltsChg	Schedule 01 - Tariff Admin
Schd2RvNltsChg	Schedule 02 - Reactive Support
Schd9NltsChg	Schedule 09 - Network Integrated Transmission Service
Schd11BprNltsChg	Schedule 11 - Base Plan (Region Wide Requirement)
Schd11BpzNltsChg	Schedule 11 - Base Plan (Zonal Requirement)
Schd12FercPpWlNltsCfaChag	Schedule 12 - FERC Assessment

These are all based on North Dakota.
The cost is recovered in the Fuel Clause Adjustment
The cost is recovered in the Transmission Tracker
Not Applicable

FCA
TT
N/A