



UTILITIES CO.

A Subsidiary of MDU Resources Group, Inc.

400 North Fourth Street
Bismarck, ND 58501
(701) 222-7900

November 6, 2019

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

Re: Case No. PU-19-_____
2020 Avoided Costs Updates

Montana-Dakota Utilities Co. (Montana-Dakota), a Subsidiary of MDU Resources Group Inc., herewith requests Commission approval to revise its Occasional Power Purchase Non-Time Differentiated Rate 95 and Parallel Generation Peaking Facility Purchase Rate 96 Time Differentiated. This filing is made in compliance with the Order in Case No. 10,000 and in accordance with the Cogeneration and Small Power Producer Rules, Section 69-09-07-09 of the North Dakota Administrative Code.

Montana-Dakota requests approval of the following revised tariff sheets:

- 20th Revised Sheet No. 44
- 16th Revised Sheet No. 44.1
- 20th Revised Sheet No. 45
- 18th Revised Sheet No. 45.1.

The methodology used to develop the proposed energy payments is consistent with the approved avoided cost rate tariffs. The proposed energy payments for Rates 95 and 96 were generated using Montana-Dakota's production costing model PLEXOS[®] for Power Systems (PLEXOS), reflecting a test year of calendar year 2020. The proposed energy payments under Rates 95 and 96 reflect an increase in the energy payment per Kwh attributable to an increase in the forecasted Midcontinent Independent System Operator, Inc.'s (MISO) market prices from those included in the currently approved energy payments. The proposed energy payments are shown on Attachment A.

As noted in the Company's 2019 Integrated Resource Plan (IRP), Montana-Dakota has adequate capacity through 2021. As such, the capacity payment rate proposed to be included in the Rate 96 tariff is the MISO capacity auction price for Zone 1, the pricing zone for Montana-Dakota. The Company has updated the tariff language to provide a general reference to the use of MISO capacity auction prices rather than referencing actual auction prices. This change is being made to accommodate the fact that MISO capacity prices change annually each June 1, while this filing is submitted in late fall. Monthly capacity payments shall be the MISO capacity auction clearing price for Zone 1 through the year 2021, after which Montana-Dakota becomes capacity deficient based on the 2019 IRP. The current MISO clearing price is \$0.0299 per Kw. Starting in the year 2022, the capacity payment determination will again reflect the projected levelized cost of a new peaking turbine. The workpapers supporting the proposed capacity payment for the year 2022 are provided in Attachment B.

The proposed metering charges for Rates 95 and 96 reflect updated meter costs, including the carrying charge and maintenance expenses. The workpapers supporting the proposed metering charges are provided in Attachment C.

Montana-Dakota serves eight customers under Rate 95 as of September 30, 2019. Assuming the same customer loads and generation as the past twelve months, these customers would experience increased energy payments, which would be offset by increased metering charges resulting in a proposed net increase in annual charges of \$23 in total for all customers. A monthly history of the energy purchased under Rate 95 is included as Attachment D.

Included herein is a second set of the affected tariffs on which Montana-Dakota has indicated the revisions requested by lining through the existing language which the Company proposes to delete and clearly highlighting the new language proposed.

Montana-Dakota respectfully requests that the rate schedules set forth herein be approved with an effective date of service rendered on and after January 1, 2020.

The original and seven (7) copies of this Letter of Transmittal and tariffs have been provided to the North Dakota Public Service Commission.

Enclosed is a check for \$50.00 in accordance with North Dakota Century Code Section 49-05-05 to cover the filing fee associated with this filing.

Montana-Dakota respectfully requests that this filing be accepted as being in full compliance with the filing requirements of this Commission.

Please acknowledge receipt by stamping or initialing the duplicate copy of this letter attached hereto and returning the same in the enclosed self-addressed envelope.

If you have any questions regarding this filing, please contact me at (701) 222-7856 or tamie.aberle@mdu.com.

Sincerely,

A handwritten signature in blue ink that reads "Tamie A. Aberle". The signature is written in a cursive style with a large initial "T".

Tamie A. Aberle
Director of Regulatory Affairs

Attachments



Montana-Dakota Utilities Co.

A Subsidiary of MDU Resources Group, Inc.

400 N 4th Street
Bismarck, ND 58501

State of North Dakota Electric Rate Schedule

NDPSC Volume 4
20th Revised Sheet No. 44
Canceling 19th Revised Sheet No. 44

OCCASIONAL POWER PURCHASE Rate 95 NON-TIME DIFFERENTIATED

Page 1 of 2

Availability:

To any qualifying cogeneration and small power production facilities for the purpose of generating occasional electric energy in parallel with the Company's system. This schedule is applicable to cogeneration and small power production facilities with a design capacity of 100 Kw or less, that are Qualifying Facilities (QF) as defined under 18 CFR, Part 292.

Rate:

Metering charge for single phase service: \$0.05 per day
With instrument transformers: \$0.19 per day

Metering charge for three phase service: \$0.12 per day
With instrument transformers: \$0.33 per day

Energy delivered to and accepted by Company by a QF shall be paid for by Company in accordance with one of the following two options, elected by the QF:

1. Simultaneous Purchase and Sale:

Energy sales to QF - Service provided to such customers by the Company shall be billed at the appropriate rate, by class of customers (i.e., residential, small and general electric service, etc.) that is currently on file with the Commission.

Energy purchases by Company:

Energy Payment = 2.472¢ per Kwh

2. Net Billing:

Energy generated will be compensated on a net billing basis. The Company will install a meter to measure the energy generated by the QF. The Company will also install a meter to measure the energy consumed by the QF. Metered generation will be subtracted from the metered consumption for the billing period.

Date Filed: November 6, 2019

Effective Date:

Issued By: Tamie A. Aberle
Director of Regulatory Affairs

Case No.:



Montana-Dakota Utilities Co.

A Subsidiary of MDU Resources Group, Inc.

400 N 4th Street
Bismarck, ND 58501

State of North Dakota Electric Rate Schedule

NDPSC Volume 4
16th Revised Sheet No. 44.1
Canceling 15th Revised Sheet No. 44.1

OCCASIONAL POWER PURCHASE Rate 95 NON-TIME DIFFERENTIATED

Page 2 of 2

If metered generation is less than metered consumption, the QF will be billed the applicable retail rate. If metered generation is greater than the metered consumption, the QF will be paid for each Kwh at an amount equal to:
2.472¢ per Kwh

General Terms and Conditions:

1. Change of Rates: This schedule shall be reviewed annually, updated if necessary, and revised upon the Commission's approval.
2. The Company shall install appropriate metering facilities to record all flows of energy necessary to bill and pay in accordance with the charges and payments contained in this rate schedule.
3. The customer shall, with prior written consent of the Company, furnish, install and wire the necessary service entrance equipment, meter sockets, meter enclosure cabinets, or meter connection cabinets that may be required by the Company to properly meter usage and sales to the Company.
4. A written contract with the Company shall be signed stipulating the terms and conditions of the interconnection and sale of the electricity to the Company. The term of the contract hereunder shall be at least one year but less than five years.
5. In order to qualify for the net billing option, the generating equipment and the load of the facility must be located at the same "physical site". "Physical site" shall mean on the same tract of land and the generator output must be physically connected to the load service entrance.
6. For general terms and conditions covering QF's, see Rate 140.
7. All services provided by the Company under this and all other schedules are governed by the rules and regulations approved by the North Dakota Public Service Commission. Rates charged hereunder may be modified by Company at any time by making a unilateral rate application with the North Dakota Public Service Commission or its successor. The new rates shall be effective upon approval by the Commission.

Date Filed: November 6, 2019

Effective Date:

Issued By: Tamie A. Aberle
Director of Regulatory Affairs

Case No.:



Montana-Dakota Utilities Co.

A Subsidiary of MDU Resources Group, Inc.

400 N 4th Street
Bismarck, ND 58501

State of North Dakota Electric Rate Schedule

NDPSC Volume 4
20th Revised Sheet No. 45
Canceling 19th Revised Sheet No. 45

PARALLEL GENERATION PEAKING FACILITY PURCHASE Rate 96 TIME DIFFERENTIATED

Page 1 of 3

Availability:

To any qualifying cogeneration and small power production facilities for the purpose of generating electric energy in parallel with the Company's system. This schedule is applicable to cogeneration and small power production facilities with a design capacity of 1000 Kw or less, that operate as a peaking facility (defined below), and are Qualifying Facilities (QF) as defined under 18 CFR, Part 292.

Rate:

Metering charge for single phase service: \$ 0.16 per day
With instrument transformers: \$ 0.30 per day

Metering charge for three phase service: \$ 0.18 per day
With instrument transformers: \$ 0.38 per day

1. Capacity delivered to the Company:

Monthly capacity payments for a QF (not registered as a MISO generator) shall be assigned by Montana-Dakota based upon the amount of qualifying capacity assigned to an eligible resource under BPM-011 Resource Adequacy of the MISO tariff subject to adjustment annually in accordance with BPM-011.

Monthly capacity payments for a MISO-registered QF shall be based on the capacity credits assigned by MISO on an annual basis.

Monthly capacity payment shall be the MISO capacity auction clearing price for Zone 1. The capacity payment is subject to change annually through the year 2021. Effective in 2022 the monthly capacity payment shall be \$7.893 per Kw applicable for the remainder of the term of the contact.

Capacity payments will be paid in the subsequent billing period.

Date Filed: November 6, 2019

Effective Date:

Issued By: Tamie A. Aberle
Director – Regulatory Affairs

Case No.:



Montana-Dakota Utilities Co.

A Subsidiary of MDU Resources Group, Inc.

400 N 4th Street
Bismarck, ND 58501

State of North Dakota Electric Rate Schedule

NDPSC Volume 4
18th Revised Sheet No. 45.1
Canceling 17th Revised Sheet No. 45.1

PARALLEL GENERATION PEAKING FACILITY PURCHASE Rate 96 TIME DIFFERENTIATED

Page 2 of 3

2. Energy Payment:

ON-PEAK
2.444¢ per Kwh

OFF-PEAK
2.464¢ per Kwh

Peak Periods: The On-Peak Period is defined as those hours between 12 p.m. and 8 p.m. local time, Monday through Friday in the months of June through September. The Off-Peak Period is defined as all other hours. Definitions of On-Peak and Off-Peak periods are subject to change with change in the Company's system operating characteristics.

Energy Sales to Qualifying Facilities:

Service provided to such customers by the Company shall be billed at the appropriate rate, by class of customers (i.e., residential, small and general electric service, etc.) that is currently on file with the Commission.

General Terms and Conditions:

1. Change of Rates: This schedule shall be reviewed annually, updated if necessary, and revised upon the Commission's approval.
2. Service under this schedule shall be on a simultaneous purchase and sale basis only.
3. The Company shall install appropriate metering facilities to record all flows of energy necessary to bill and pay in accordance with the charges and payments contained in this rate schedule.
4. The customer shall, with prior written consent of the Company, furnish, install and wire the necessary service entrance equipment, meter sockets, meter enclosure cabinets, or meter connection cabinets that may be required by the Company to properly meter usage and sales to the Company.
5. A written contract with the Company shall be signed stipulating the terms and conditions of the interconnection and sale of the electricity to the Company. The term of the contract hereunder shall be five years or more.

Date Filed: November 6, 2019

Effective Date:

Issued By: Tamie A. Aberle
Director – Regulatory Affairs

Case No.:

Tariffs Reflecting Proposed Changes



Montana-Dakota Utilities Co.

A Subsidiary of MDU Resources Group, Inc.

400 N 4th Street
Bismarck, ND 58501

State of North Dakota Electric Rate Schedule

NDPSC Volume 4
2019th Revised Sheet No. 44
Canceling 198th Revised Sheet No. 44

OCCASIONAL POWER PURCHASE Rate 95 NON-TIME DIFFERENTIATED

Page 1 of 2

Availability:

To any qualifying cogeneration and small power production facilities for the purpose of generating occasional electric energy in parallel with the Company's system. This schedule is applicable to cogeneration and small power production facilities with a design capacity of 100 Kw or less, that are Qualifying Facilities (QF) as defined under 18 CFR, Part 292.

Rate:

Metering charge for single phase service: \$0.05 per day
With instrument transformers: ~~\$0.160.19~~ per day

Metering charge for three phase service: \$0.110.12 per day
With instrument transformers: ~~\$0.280.33~~ per day

Energy delivered to and accepted by Company by a QF shall be paid for by Company in accordance with one of the following two options, elected by the QF:

1. Simultaneous Purchase and Sale:

Energy sales to QF - Service provided to such customers by the Company shall be billed at the appropriate rate, by class of customers (i.e., residential, small and general electric service, etc.) that is currently on file with the Commission.

Energy purchases by Company:

Energy Payment = ~~2.2542.472~~¢ per Kwh

2. Net Billing:

Energy generated will be compensated on a net billing basis. The Company will install a meter to measure the energy generated by the QF. The Company will also install a meter to measure the energy consumed by the QF. Metered generation will be subtracted from the metered consumption for the billing period.

Date Filed: ~~February 12, 2019~~ November 6, 2019

Issued By: Tamie A. Aberle
Director of Regulatory Affairs

Effective Date: ~~Service rendered on and after February 15, 2019~~

Case No.: PU-18-432



Montana-Dakota Utilities Co.

A Subsidiary of MDU Resources Group, Inc.

400 N 4th Street
Bismarck, ND 58501

State of North Dakota Electric Rate Schedule

NDPSC Volume 4

165th Revised Sheet No. 44.1

Canceling 154th Revised Sheet No. 44.1

OCCASIONAL POWER PURCHASE Rate 95 NON-TIME DIFFERENTIATED

Page 2 of 2

If metered generation is less than metered consumption, the QF will be billed the applicable retail rate. If metered generation is greater than the metered consumption, the QF will be paid for each Kwh at an amount equal to:

2.2542.472¢ per Kwh

General Terms and Conditions:

1. Change of Rates: This schedule shall be reviewed annually, updated if necessary, and revised upon the Commission's approval.
2. The Company shall install appropriate metering facilities to record all flows of energy necessary to bill and pay in accordance with the charges and payments contained in this rate schedule.
3. The customer shall, with prior written consent of the Company, furnish, install and wire the necessary service entrance equipment, meter sockets, meter enclosure cabinets, or meter connection cabinets that may be required by the Company to properly meter usage and sales to the Company.
4. A written contract with the Company shall be signed stipulating the terms and conditions of the interconnection and sale of the electricity to the Company. The term of the contract hereunder shall be at least one year but less than five years.
5. In order to qualify for the net billing option, the generating equipment and the load of the facility must be located at the same "physical site". "Physical site" shall mean on the same tract of land and the generator output must be physically connected to the load service entrance.
6. For general terms and conditions covering QF's, see Rate 140.
7. All services provided by the Company under this and all other schedules are governed by the rules and regulations approved by the North Dakota Public Service Commission. Rates charged hereunder may be modified by Company at any time by making a unilateral rate application with the North Dakota Public Service Commission or its successor. The new rates shall be effective upon approval by the Commission.

Date Filed: ~~February 12, 2019~~ November 6, 2019

Issued By: Tamie A. Aberle
Director of Regulatory Affairs

Effective Date: ~~Service rendered on and after February 15, 2019~~

Case No.: PU-18-432



Montana-Dakota Utilities Co.

A Subsidiary of MDU Resources Group, Inc.

400 N 4th Street
Bismarck, ND 58501

State of North Dakota Electric Rate Schedule

NDPSC Volume 4

2019th Revised Sheet No. 45

Canceling 198th Revised Sheet No. 45

PARALLEL GENERATION PEAKING FACILITY PURCHASE Rate 96 TIME DIFFERENTIATED

Page 1 of 3

Availability:

To any qualifying cogeneration and small power production facilities for the purpose of generating electric energy in parallel with the Company's system. This schedule is applicable to cogeneration and small power production facilities with a design capacity of 1000 Kw or less, that operate as a peaking facility (defined below), and are Qualifying Facilities (QF) as defined under 18 CFR, Part 292.

Rate:

Metering charge for single phase service: \$ 0.150.16 per day
With instrument transformers: \$ 0.260.30 per day

Metering charge for three phase service: \$ 0.160.18 per day
With instrument transformers: \$ 0.330.38 per day

1. Capacity delivered to the Company:

Monthly capacity payments for a QF (not registered as a MISO generator) shall be assigned by Montana-Dakota based upon the amount of qualifying capacity assigned to an eligible resource under BPM-011 Resource Adequacy of the MISO tariff subject to adjustment annually in accordance with BPM-011.

Monthly capacity payments for a MISO-registered QF shall be based on the capacity credits assigned by MISO on an annual basis.

Monthly capacity payment shall be the MISO capacity auction clearing price for Zone 1. The capacity payment is subject to change annually through the year 2021. Effective in 2022 the monthly capacity payment shall be \$7.893 per Kw applicable for the remainder of the term of the contract. = \$0.03 per Kw through May 31, 2019. The capacity payment is subject to change each June 1 through Year 2023 to reflect the MISO capacity clearing price for Zone 1.

Effective June 1, 2024, the monthly capacity payment shall be \$8.454 per Kw applicable for the remainder of the contract.

Date Filed: February 12, 2019 November 6, 2019

Effective Date: Service rendered on and after February 15, 2019

Issued By: Tamie A. Aberle
Director – Regulatory Affairs

Case No.: PU-18-432



Montana-Dakota Utilities Co.

A Subsidiary of MDU Resources Group, Inc.

400 N 4th Street

Bismarck, ND 58501

State of North Dakota Electric Rate Schedule

NDPSC Volume 4

2019th Revised Sheet No. 45

Canceling 198th Revised Sheet No. 45

**PARALLEL GENERATION PEAKING FACILITY
PURCHASE Rate 96 TIME DIFFERENTIATED**

Page 2 of 3

Capacity payments will be paid in the subsequent billing period.

Date Filed: ~~February 12, 2019~~ November 6, 2019

Issued By: Tamie A. Aberle
Director – Regulatory Affairs

Effective Date: ~~Service rendered on and after February 15, 2019~~

Case No.: PU-18-432



Montana-Dakota Utilities Co.

A Subsidiary of MDU Resources Group, Inc.

400 N 4th Street
Bismarck, ND 58501

State of North Dakota Electric Rate Schedule

NDPSC Volume 4

187th Revised Sheet No. 45.1

Canceling 176th Revised Sheet No. 45.1

PARALLEL GENERATION PEAKING FACILITY PURCHASE Rate 96 TIME DIFFERENTIATED

Page 3 of 3

2. Energy Payment:

ON-PEAK

2.4052.444¢ per Kwh

OFF-PEAK

2.2522.464¢ per Kwh

Peak Periods: The On-Peak Period is defined as those hours between 12 p.m. and 8 p.m. local time, Monday through Friday in the months of June through September. The Off-Peak Period is defined as all other hours. Definitions of On-Peak and Off-Peak periods are subject to change with change in the Company's system operating characteristics.

Energy Sales to Qualifying Facilities:

Service provided to such customers by the Company shall be billed at the appropriate rate, by class of customers (i.e., residential, small and general electric service, etc.) that is currently on file with the Commission.

General Terms and Conditions:

1. Change of Rates: This schedule shall be reviewed annually, updated if necessary, and revised upon the Commission's approval.
2. Service under this schedule shall be on a simultaneous purchase and sale basis only.
3. The Company shall install appropriate metering facilities to record all flows of energy necessary to bill and pay in accordance with the charges and payments contained in this rate schedule.
4. The customer shall, with prior written consent of the Company, furnish, install and wire the necessary service entrance equipment, meter sockets, meter enclosure cabinets, or meter connection cabinets that may be required by the Company to properly meter usage and sales to the Company.
5. A written contract with the Company shall be signed stipulating the terms and conditions of the interconnection and sale of the electricity to the Company. The term of the contract hereunder shall be five years or more.

Date Filed: ~~February 12, 2019~~ November 6, 2019

Effective Date: ~~Service rendered on and after February 15, 2019~~

Issued By: Tamie A. Aberle
Director – Regulatory Affairs

Case No.: PU-18-432

**Montana-Dakota Utilities Co.
Electric Utility - North Dakota
Lambda
2020**

Month	Year	Lambda		
		On-Peak \$/MWh	Off-Peak \$/MWh	Total \$/MWh
January	2020		\$30.34	\$30.34
February	2020		30.04	30.04
March	2020		24.24	24.24
April	2020		23.14	23.14
May	2020		17.92	17.92
June	2020	\$18.39	16.98	17.32
July	2020	26.04	25.91	25.94
August	2020	28.68	25.77	26.43
September	2020	24.65	24.65	24.65
October	2020		24.58	24.58
November	2020		25.47	25.47
December	2020		26.61	26.61
Average		\$24.44	\$24.64	\$24.72

**Montana-Dakota Utilities Co.
Electric Utility - North Dakota
Calculation of Capacity Payment
2022**

Rate 96

Capital cost of combustion turbine	\$974	1/
Levelized Fixed Charge	9.725%	2/
Monthly Capacity Payments:	<u>\$7.893</u>	\$/kW-Month 3/

1/ Cost of combustion turbine based on projected cost of a GE 7EA simple cycle unit in 2019 dollars of \$878 escalated at a rate of 3.5% per year to 2022.

2/ See Attachment B pages 2-4.

3/ Rate 96 Capacity Payment formula: = $\$878 \times 1.035^{(2022-2019)} \times .09725 / 12$

**Montana-Dakota Utilities Co.
Electric Utility - North Dakota
2020 Avoided Cost Rate Update
Levelized Fixed Charge Rate - CT**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
	Net	Return	Book	O&M	Ad Valorem	Total	Present	Present	Accum.	LF	Tax	Deferred	
Year	Investment		Depr.		Tax	Charge	Value	Value	Present	Value	Accel.	Income	
							Factor		Value	LF		Tax	
1	1	1.000	0.08981	0.02500	0.01000	0.00394	0.12875	0.93141	0.11992	0.11992	0.12875	0.05000	0.00610
2	2	0.969	0.08702	0.02500	0.01000	0.00394	0.12596	0.86753	0.10927	0.22919	0.12740	0.09500	0.01708
3	3	0.927	0.08324	0.02500	0.01000	0.00394	0.12218	0.80802	0.09872	0.32791	0.12578	0.08550	0.01476
4	4	0.887	0.07967	0.02500	0.01000	0.00394	0.11861	0.75260	0.08926	0.41718	0.12418	0.07700	0.01269
5	5	0.849	0.07628	0.02500	0.01000	0.00394	0.11522	0.70098	0.08077	0.49794	0.12263	0.06930	0.01081
6	6	0.814	0.07306	0.02500	0.01000	0.00394	0.11200	0.65290	0.07313	0.57107	0.12116	0.06230	0.00910
7	7	0.779	0.07000	0.02500	0.01000	0.00394	0.10894	0.60812	0.06625	0.63732	0.11976	0.05900	0.00830
8	8	0.746	0.06701	0.02500	0.01000	0.00394	0.10595	0.56641	0.06001	0.69733	0.11843	0.05900	0.00830
9	9	0.713	0.06402	0.02500	0.01000	0.00394	0.10296	0.52756	0.05432	0.75165	0.11716	0.05910	0.00832
10	10	0.680	0.06103	0.02500	0.01000	0.00394	0.09997	0.49138	0.04912	0.80077	0.11594	0.05900	0.00830
11	11	0.646	0.05804	0.02500	0.01000	0.00394	0.09698	0.45767	0.04438	0.84516	0.11476	0.05910	0.00832
12	12	0.613	0.05505	0.02500	0.01000	0.00394	0.09399	0.42628	0.04006	0.88522	0.11362	0.05900	0.00830
13	13	0.580	0.05205	0.02500	0.01000	0.00394	0.09099	0.39704	0.03613	0.92135	0.11253	0.05910	0.00832
14	14	0.546	0.04906	0.02500	0.01000	0.00394	0.08800	0.36981	0.03254	0.95389	0.11147	0.05900	0.00830
15	15	0.513	0.04607	0.02500	0.01000	0.00394	0.08501	0.34444	0.02928	0.98318	0.11044	0.05910	0.00832
16	16	0.480	0.04308	0.02500	0.01000	0.00394	0.08202	0.32082	0.02631	1.00949	0.10945	0.02950	0.00110

**Montana-Dakota Utilities Co.
Electric Utility - North Dakota
2020 Avoided Cost Rate Update
Levelized Fixed Charge Rate - CT**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
	Net	Return	Book	O&M	Ad Valorem	Total	Present	Present	Accum.		Tax	Deferred	
Year	Investment		Depr.		Tax	Charge	Value	Value	Present	LFCR	Accel.	Income	
							Factor		Value		Depr.	Tax	
17	17	0.454	0.04074	0.02500	0.01000	0.00394	0.07968	0.29881	0.02381	1.03330	0.10852	0.00000	(0.00610)
18	18	0.435	0.03904	0.02500	0.01000	0.00394	0.07798	0.27832	0.02170	1.05500	0.10765	0.00000	(0.00610)
19	19	0.416	0.03734	0.02500	0.01000	0.00394	0.07628	0.25923	0.01977	1.07477	0.10684	0.00000	(0.00610)
20	20	0.397	0.03564	0.02500	0.01000	0.00394	0.07458	0.24145	0.01801	1.09278	0.10609	0.00000	(0.00610)
21	21	0.378	0.03395	0.02500	0.01000	0.00394	0.07289	0.22489	0.01639	1.10917	0.10538	0.00000	(0.00610)
22	22	0.359	0.03225	0.02500	0.01000	0.00394	0.07119	0.20946	0.01491	1.12409	0.10471	0.00000	(0.00610)
23	23	0.340	0.03055	0.02500	0.01000	0.00394	0.06949	0.19510	0.01356	1.13764	0.10408	0.00000	(0.00610)
24	24	0.321	0.02885	0.02500	0.01000	0.00394	0.06779	0.18172	0.01232	1.14996	0.10349	0.00000	(0.00610)
25	25	0.302	0.02716	0.02500	0.01000	0.00394	0.06610	0.16925	0.01119	1.16115	0.10293	0.00000	(0.00610)
26	26	0.283	0.02546	0.02500	0.01000	0.00394	0.06440	0.15764	0.01015	1.17130	0.10240	0.00000	(0.00610)
27	27	0.265	0.02376	0.02500	0.01000	0.00394	0.06270	0.14683	0.00921	1.18051	0.10189	0.00000	(0.00610)
28	28	0.246	0.02206	0.02500	0.01000	0.00394	0.06100	0.13676	0.00834	1.18885	0.10142	0.00000	(0.00610)
29	29	0.227	0.02037	0.02500	0.01000	0.00394	0.05931	0.12738	0.00755	1.19641	0.10096	0.00000	(0.00610)
30	30	0.208	0.01867	0.02500	0.01000	0.00394	0.05761	0.11864	0.00684	1.20324	0.10053	0.00000	(0.00610)
31	31	0.189	0.01697	0.02500	0.01000	0.00394	0.05591	0.11050	0.00618	1.20942	0.10013	0.00000	(0.00610)
32	32	0.170	0.01528	0.02500	0.01000	0.00394	0.05422	0.10293	0.00558	1.21500	0.09974	0.00000	(0.00610)
33	33	0.151	0.01358	0.02500	0.01000	0.00394	0.05252	0.09587	0.00503	1.22003	0.09937	0.00000	(0.00610)
34	34	0.132	0.01188	0.02500	0.01000	0.00394	0.05082	0.08929	0.00454	1.22457	0.09902	0.00000	(0.00610)
35	35	0.113	0.01018	0.02500	0.01000	0.00394	0.04912	0.08317	0.00409	1.22866	0.09869	0.00000	(0.00610)
36	36	0.094	0.00849	0.02500	0.01000	0.00394	0.04743	0.07746	0.00367	1.23233	0.09837	0.00000	(0.00610)
37	37	0.076	0.00679	0.02500	0.01000	0.00394	0.04573	0.07215	0.00330	1.23563	0.09807	0.00000	(0.00610)
38	38	0.057	0.00509	0.02500	0.01000	0.00394	0.04403	0.06720	0.00296	1.23859	0.09778	0.00000	(0.00610)
39	39	0.038	0.00339	0.02500	0.01000	0.00394	0.04233	0.06259	0.00265	1.24124	0.09751	0.00000	(0.00610)
40	40	0.019	0.00170	0.02500	0.01000	0.00394	0.04064	0.05830	0.00237	1.24361	0.09725	0.00000	(0.00610)

**Montana-Dakota Utilities Co.
Electric Utility - North Dakota
2020 Avoided Cost Rate Update
Levelized Fixed Charge Rate - CT**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Year	Net Investment	Return	Book Depr.	O&M	Ad Valorem Tax	Total Charge	Present Value Factor	Present Value	Accum. Present Value	LFCR	Tax Depr. Accel.	Deferred Income Tax

- (1) Prior year's Net investment - Book Depreciation - Deferred Income Tax.
- (2) Return (adjusted for taxes) x Net Investment.
- (3) Depreciation rate based on the life of the investment.
- (4) Distribution O&M expense as percent of distribution plant.
- (5) Ad valorem tax rate on distribution plant.
- (6) Sum of return, depreciation, O&M and ad valorem taxes.
- (7) Present value factor reflecting overall rate of return.
- (8) Present value factor x total charge.
- (9) Accumulated present value.
- (10) Levelized fixed charge rate = accumulated present value x $((+ROR*(1+ROR)^{book\ life})/((1+ROR)^{book\ life}-1))$
- (11) Tax depreciation rates for a CT uses a 15 year tax life.
- (12) (Tax life - book life) x tax rate.

Assumptions

ROR	7.364%
ROR with taxes	8.981%
Federal Tax Rate	21.000%
State Tax Rate	4.310%
Combined Federal/State Tax Rate	24.4049%
1 - Tax Rate	75.5951%
Service Life of Asset (in years)	40
Tax Life (in years - 5, 7, 10, 15, 20 , or 39)	15
Property Tax Rate	0.394%

**Montana-Dakota Utilities Co.
Electric Utility - North Dakota
Calculation of Metering Charges - Rate 95
2020 Avoided Cost Updates**

Rate 95	Single-Phase		Three-Phase	
	Without Instrument Transformer	With Instrument Transformer	Without Instrument Transformer	With Instrument Transformer
Estimated Meter Cost 1/	\$111	\$586	\$322	\$1,035
Levelized Fixed Charge Rate 2/	10.594%	10.594%	10.594%	10.594%
Annual Carrying Cost/Meter	\$11.76	\$62.08	\$34.11	\$109.65
Annual O&M Expense	7.47	7.47	11.21	11.21
Total Annual Cost of Meter	<u>\$19.23</u>	<u>\$69.55</u>	<u>\$45.32</u>	<u>\$120.86</u>
Calculated Monthly Charge	\$1.60	\$5.80	\$3.78	\$10.07
Monthly Metering Charge	\$1.60	\$5.80	\$3.80	\$10.10
Daily Metering Charge	0.05	0.19	0.12	0.33

1/ Including installation and testing.

2/ Reflective of capital costs, depreciation and taxes.

**Montana-Dakota Utilities Co.
Electric Utility - North Dakota
Calculation of Metering Charges - Rate 96
2020 Avoided Cost Updates**

Rate 96	Single-Phase TOD, Demand		Three-Phase TOD, Demand	
	Without Instrument Transformer	With Instrument Transformer	Without Instrument Transformer	With Instrument Transformer
Estimated Meter Cost 1/	\$355	\$830	\$365	\$1,078
Levelized Fixed Charge Rate 2/	10.594%	10.594%	10.594%	10.594%
Annual Carrying Cost/Meter	\$37.61	\$87.93	\$38.67	\$114.20
Annual O&M Expense	22.41	22.41	26.15	26.15
Total Annual Cost of Meter	<u>\$60.02</u>	<u>\$110.34</u>	<u>\$64.82</u>	<u>\$140.35</u>
Calculated Monthly Charge	\$5.00	\$9.20	\$5.40	\$11.70
Monthly Metering Charge	\$5.00	\$9.20	\$5.40	\$11.70
Daily Metering Charge	0.16	0.30	0.18	0.38

1/ Including installation and testing.

2/ Reflective of capital costs, depreciation and taxes.

Montana-Dakota Utilities Co.
Electric Utility - North Dakota
Summary of Billed Use & Purchased Energy - Rate 95 Customers
Twelve Months Ended September 30, 2019

	Kwh Billed Customer 1/	Kwh Purchased under Rate 95
October 2018	9,198	2
November	13,354	0
December	19,498	2
January 2019	24,986	3
February	29,486	3
March	27,027	5
April	11,229	854
May	7,696	1,610
June	2,932	243
July	11,559	2,053
August	19,454	2,008
September	17,411	1,040
	<u>193,830</u>	<u>7,823</u>

1/ Kwh billed to customer under customer's otherwise applicable tariff.