NorthWestern Energy

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June 30, 2010

Patricia Van Gerpen
Executive Director
South Dakota Public Utilities Commission
523 E. Capitol
Pierre, SD 57501

RE: RM10-001 - In the Matter of the Request to Amend rules Regarding ARSD Chapter 20:10:17 Gas and Electric Customer Billing

Dear Ms. Van Gerpen:

NorthWestern Corporation, d.b.a. NorthWestern Energy (NorthWestern), appreciates this opportunity to respond to questions posed by Staff in the above referenced docket. Included with this communication are NorthWestern's responses to Staff questions.

NorthWestern looks forward to the opportunity to work with Staff, the Commission and other interested parties in determining what, if any, amendments may be required to ARSD Chapter 20:10:17 as it relates to natural gas and electric customer billing.

Sincerely,

Pamela A Bonrud

Pamela A. Bonrud
Director – SD/NE Government and Regulatory Affairs

CC: Kara Semmler, PUC Staff Attorney
David Jacobson, PUC Staff Analyst
Sara Dannen, Corporate Counsel, NorthWestern Energy

SLOW OR FAST METERS: ARSD 20:17:06 and 20:10:17:07

1. How many slow or fast meter errors, in the past 5 years, have you discovered? Please provide a list by year and the corresponding length of time the meter reading was in error.
   Below is a table with the number of fast meters per year for the past five years:

2004	7
2005	16
2006	15
2007	6
2008	10
2009	8

   The length of time a meter was reading in error ranged from one month to eight months.

2. Of those how many were fast? How many slow?
   All were slow reads.

3. How was each error discovered?
   Random field meter testing.

4. What were the total monetary values of the error?
   $10,701.46 was billed to customers.

5. Please detail how each error listed above was resolved.
   The meter was changed out and an adjustment was performed on the customer's account.

6. Do you believe SDCL 15-2-13 (6 year contract statute of limitation) limits the refund due a customer if there is a 2) fast or more error discovered?
   No. NorthWestern Energy's policy for performing adjustments on meter malfunctions states that the customer will be billed for any under-billed usage up to period not to exceed six months. If the customer was over-billed, the account is credited from the time that over-billing started.

7. If the error date if determined with "reasonable certainty", do you believe SDCL 15-2-13 limits the time you may back-bill and receive payment for a slow meter error?
   No. NorthWestern Energy's policy for performing adjustments on meter malfunctions states that the customer will be billed for any under-billed usage up to period not to exceed six months. If the customer was over-billed, the account is credited from the time when the overbilling started.

METER FAILING TO REGISTER: ARSD 20:10:17:08

1. Has it happened, in the past 5 years, where a meter failed to register? Please provide a list by year.
   Yes, meters have stopped registering usage in the past five years. Below is a table listing the number of failed meter registers for the past five years.

2004	94
2005	82
2006	101
2007	114
2008	88
2009	115

2. How were the failures discovered?
   Failed meter registers were discovered via:
   a) meter reading exceptions in NWE's billing system,
   b) through the company's meter reading system, customer calls, and
   c) meter reader indentifies from field.

3. Please list the total monetary value of each failure and the corresponding length of time the meter reading was in error.
   Total monetary value was $91,049.63. The length of time ranged from 1 month to 16 months.

4. Please detail how each failure was resolved.
   The meter was changed out and an adjustment was performed on the customer's account.

5. Do you believe SDCL 15-3-13 limits the utilities ability to back-bill if the meter fails to register?
   No, NorthWestern Energy's policy for performing adjustments on meter malfunctions states that the customer will be billed for any under-billed usage up to period not to exceed six months. If the customer was over-billed, the account is credited from the time when the over-billing started.

OTHER METER ERRORS: ARSD 20:10:17:09

1. How many meter errors of this type, in the past 5 years, have you discovered? Please provide a list (or all over and under billing) by year.

2004	0
2005	4
2006	3
2007	1
2008	1
2009	88

2. Please detail the nature of the error and explain how each was discovered?
   Errors of this nature are due to incorrect billing factors being set up on the account (multiplier or gauge factors). These errors are discovered through Billing Reports, Meter Reader or the Meter Shop.

3. What was the total monetary value of each error and the corresponding length of time the meter reading was in error?
   Total monetary value was a credit to customers of $54,828.07. The length of time ranges from several months to 2 years.

4. Please detail how the error was resolved.
   The billing factor was corrected on the CIS system and the customer's account was appropriately adjusted.

5. Do you believe SDCL 15-3-13 limits the time you may back bill if a meter error cause is discovered with "reasonable certainty"?
   No. NorthWestern Energy's policy for performing adjustments on meter malfunctions states that the customer will be billed for any under-billed usage up to period not to exceed six months. If the customer was over-billed, the account will be credited from the time that the over-billing started.

6. Do you believe SDCL 15-3-13 limits a customer refund if a meter error were made such that the consumer were over-billed?
   No. NorthWestern Energy's policy for performing adjustments on meter malfunctions states that the customer will be billed for any under-billed usage up to period not to exceed six months. If the customer was over-billed, the account will be credited from the time that the over-billing started.

GENERAL/OTHER

1. Generally, does your tariff deviate from the administrative rules regarding these types of meter related issues?
   NorthWestern Energy's tariffs do not specifically address meter reading errors, whether they be of the slow, fast or stopped nature. NorthWestern utilizes the PUC's current administrative rules for meter errors in developing internal policies governing how we address these issues when they arise.

2. Please provide an example of the letter or other information you send a consumer if a meter error occurs.
   Please see Attachment A.

3. Please detail any internal mechanism whether in your billing system or otherwise, that warns of abnormal usage (either high or low).
   The billing system does produce both High and Low Usage Exceptions. An exception is generated from comparing the current usage to last year's usage for the same time period. If the current usage is 50) higher or 50) lower than the historical usage, a meter reading exception is generated in the system.

4. Do you ever analyze like situated commercial consumers regarding usage? For example: does your system have a mechanism to compare like situated businesses such that a red flag is raised if one is consuming half the gas or electricity of another?
   No, we do not compare like commercial accounts for average usage.

5. List by year, for the past 5 years, the number of meter checks performed on your system in South Dakota due to customer request.

2004	3343
2005	3096
2006	2628
2007	3543
2008	3744
2009	3904

6. Please explain your position regarding whether over-billing and under-billing should be handled different.
   NorthWestern Energy believes that our current policies governing how over-billing or under-billing is handled are appropriate, balanced and reasonable. NorthWestern Energy's policy for performing adjustments on meter malfunctions states that the customer will be billed for any under-billed usage up to a period not to exceed six months. If the customer was over-billed, the account will be credited from the time the overbilling started. The effectiveness of NorthWestern Energy's approach to these types of customer situations can be further supported by how few contacts the Commission receives from our customers with a complaint as to how we resolve these situations. Our policies are balanced in holding the customer accountable, treating the customer fairly and do not burden the customer by going back too far when an under-billing is discovered due to a slow meter.

7. Please provide the annual number of errant billings for each of the last 5 years where the date of the cause of the error can be fixed with reasonable certainty. Please provide the dollar amount of the refund or collection for each of the errant billings above separately identifying the base rate and FAC or PGA amount.

2004	101	$15,162.23
2005	102	$16,854.92
2006	119	$36,619.28
2007	121	$25,649.11
2008	99	$12,391.75
2009	211	-$59,754.27

Our billing system does not track the base rate and FAC/PGA amount for each separate account so this information is not readily available.

8. Please provide Company policy regarding the length of time allowed a customer to pay a collection for an errant billing where the date of the cause of the error can be fixed with reasonable certainty. How do you communicate this to the consumer?
The customer is given equal amount of months to pay compared to the amount of months that an adjustment is made to their account for an errant billing. For example, if the adjustment was a pickup for 5 months, the customer has 5 months to pay the balance. This is communicated with the customer if they contact us to set up payment arrangements on the account.

9. In the computation of the overbilling or under billing caused by meter error, explain how the fuel clause amount or PGA amount of the revised billing is calculated, i.e. is historic FACs or PGAs used to determine to amount awed or refunded?
If an adjustment is due to an incorrect billing factor, the adjustment is configured to use the PGA/FCA rate for each month the adjustment covers. If the adjustment is due to a non-registering meter, the adjusted usage is billed at the current rate and a 10) discount is given to the total adjustment.

10. Please explain whether and how FAC or PGA amounts over or under collected due to meter error, are subsequently recovered from, or refunded to, all customers through the FAC or PGA or for natural gas service, through the lost and unaccounted for gas factor.
When a bill is canceled and re-billed through the billing system, the FAC or PGA amounts are included in the monthly interface between the billing system and the General Ledger. In this instance, retail sales are automatically adjusted and the units and PGA/FAC revenue is included in the true-up recovery.

When a manual correction to the account is needed, the units are included in the adjustment in addition to the dollars. On the larger adjustments, we split the revenue between delivery and PGA/FAC so it is correctly unaccounted for in the true-ups. The units are included in the PGA/FAC true-up recovery and are picked us as retail sales. As for the lost and unaccounted

annual calculation, when the units are accounted for in retail sales, they will not be counted as lost gas.

11. If it is assumed each rate case test year includes some level of errant billings due to errant metering, explain why it is appropriate to subsequently go back and refund or rebill customers when meter errors are found if there has been an intervening rate case.
Rebilling or crediting is an attempt to treat each customer fairly and to hold each customer responsible for their bill. If there are no re-bills for stopped meters, there is no incentive (outside of moral and ethical behavior) for the customer to make the company aware that a customer's meter has stopped. All other customers are then asked to compensate the company for the lost revenue. In the instance of an over-bill, the individual customer should be treated fairly and be allowed to receive the appropriate refund. A known error should be refunded to the customer so they are alleviated from the burden of paying more than their fair share.

12. Please describe the Companies meter testing program including the timeframe of testing the entire population of the company's meters and whether certain meters are tested more often than others. Provide the average annual cost of meter testing and the numbers and types of meters tested. If testing costs differ between specific types or sizes of meters, provide the average cost of testing a meter of each type or size.
Please see Attachment B.
These standards are continually reviewed and updated. They are currently being reviewed for accuracy with current industry best practices based on technology, manufacturers' recommendations and our own field data on the meters performance in the SD environment.

Below are the numbers of meters tested in 2009 by type:

Electric Meters

Residential	3682*
Small Commercial	513
Industrial	268

*2297 of these were accomplished at the factory

Natural Gas Meters

Residential/Small Commercial	806*
Large commercial/industiral meters	132
On-site meter testing	106

*An additional 1000 new meter tests accomplished at the factory

13. Are large usage customers' meters check more often, thus limiting the amount of potential over – and under billings?
Yes.

14. If the answer to (13) is yes, what is your policy for checking those meters? If the answer is no, explain why that risk is not being mitigated by more frequent testing of large user meters, and also state whether you would suggest a separate refunding or rebilling policy for small v. large usage customer?
    Please refer to Attachment C.

15. If it is decided to limit the time period to calculate customer rebilling for error correction, how would you propose to "make up" for forgone net revenues?
    Following current practices whereby NWE chooses to only go back 6 months for under- billings, the lost net revenue is not specifically collected. During a rate case test year, whatever under-collections happen to fall into that test year, will be collected from all customers. An option is to track the amount of revenue lost between rate cases and include that cost in the next rate case. However, based on the amount of error billings, it may not be worth the time and effort required to track this expense.

ATTACHMENT A

RM10-001
In the Matter of the Request to Amend Rules Regarding
ARSD Chapter 20:17:10
Gas and Electric Customer Billing

NorthWestern Energy
Responses

June 30, 2010

RE: Electric Service Billing Adjustment ***Date:*** **MM/DD/YYYY**

Account Number:
Service Address:

Recently, we discovered that the electric meter at your location was not registering your usage correctly. The malfunctioning unit started to encounter problems in MM,YYYY. The old meter has since been replaced with a new meter on MM,YYYY.

South Dakota Public Service Commission rules allow NorthWestern Energy to recover unbilled usage in these situations (up to a maximum of six months from the date the problem was discovered).

The corrected usage is based on the usage from same billing period last year with a 10% discount applied.

Below is a summary of the adjustment that appears on your enclosed bill. The Total Adjusted Dollar Amount of $XXX.XX is reflected on your bill.

Read Dates		Usage (kwh)			Dollars		
From	To	Original Bill	Corrected Bill	Adjusted Usage	Original Bill	Corrected Bill	Adjusted Dollars
					#N/A	#N/A	#N/A
	Totals				#N/A	#N/A	$100.0C

We sincerely apologize for this inconvenience. If you have any questions, please contact our Contact Center at (800)245-6977 during the hours of 6AM and 10PM, M-F or visit your local NorthWestern Energy office.

Sincerely,

NorthWestern Energy

ATTACHMENT B

RM10-001
In the Matter of the Request to Amend Rules Regarding
ARSD Chapter 20:17:10
Gas and Electric Customer Billing

NorthWestern Energy
Responses

June 30, 2010

2010 Meter Shop Budget	O&M	Capital	Total
Electric Meter Shop			
Capital Electric Periodics		55,000	55,000
Electric Meter Oper & Inspection	9,761		9,761
Electric Meter Maint & Repair	28,137		28,137
Electric Meter Testing	31,483		31,483
Misc Operation-Electric	31,019		31,019
SD Area Electric Meter Testing	13,422		13,422
SD Area Electric Meter Operation & Inspect	159,991		159,991
SD Area Electric Meter Maint & Repair	17,590		17,590
Total Electric	291,404	55,000	346,404
Gas Meter Shop			
Capital Gas Periodics		35,000	35,000
Gas Meter Oper & Inspection	15,817		15,817
Gas Meter Maint & Repair	111,913		111,913
Gas Meter Calibration Inspection	9,876		9,876
Gas Meter Testing	6,433		6,433
Misc Operations-Gas	17,651		17,651
SD & NE Area Gas Meter Testing	96,968		96,968
SD & NE Area Gas Meter Operation & Inspect	182,553		182,553
SD & NE Area Gas Meter Calibration Inspect	8,895		8,895
SD & NE Area Gas Meter Maintenance & Repai	81,714		81,714
Total Gas	531,820	35,000	566,820

ATTACHMENT C

RM10-001
In the Matter of the Request to Amend Rules Regarding
ARSD Chapter 20:17:10
Gas and Electric Customer Billing

NorthWestern Energy
Responses

June 30, 2010

Electric Standards Subject: Measurement Meter Testing & Record Keeping		Date Effective 05/15/2001	Section Number E6030
Supersedes Section: E6030	Dated 02/15/2000	Prepared By R. Drew	Approved By D. Hinders

1.0 Scope

The purpose of this standard is to state the meter testing and record keeping procedure for NorthWestern's electric meters.

2.0 Meter Testing Program

2.1 The following Electric Meter Testing Program in effect is the minimum requirements for meter testing based on our Commercial Rate Schedules: (Except single phase self-contained included in sample test program)

Rate 16, 17, 18	Remove meter at the end of each irrigation season and test.
Rate 21	Meters to be tested as follows, based on monthly kilowatt hour consumption: 0-2000 KWH per month test every 8 years, Above 2000 KWH per month test every 5 years.
Rate 23	Included in sample testing program.
Rate 24, 25	Meters to be tested as follows, based on monthly kilowatt hour consumption: 0-5000 KWH per month test every 8 years, Above 5000 KWH per month test every 5 years.
Rate 33, 41	Meters to be tested as follows, based on monthly consumption: 0-3000 KWH per month test every 8 years, 3000-5000 KWH per month test every 5 years, Above 5000 KWH per month test every 3 years.
Rate 34, 70	Meters to be tested as follows, based on monthly consumption: 0-50,000 KWH per month test every 3 years, 50,000-150,000 KWH per month test every 2 years, Above 150,000 KWH per month test every year.

2.2 The Electric Central Meter Department will select and oversee Meter Periodic Exchange (Spring) and Meter Periodic Exchange (Fall) programs. They will issue print out sheets of meters to be tested based on the above test schedules for Rate 16, 17, 18, 21, 24, 25, 33, 41, and 70. The Electric Central Meter Department will also issue instructions and supervise the removal and testing of the meters. Each Area Meterman is to be responsible for the changing out of meters and checking the installation in their area.

3.0 Testing Transformer-rated Polyphase Watthour Meters

These meters are included in the Periodic Testing Program. (Whenever transformer-rated meters are changed out, all wiring and connections between the instrument transformer and meter are to be checked with a burden meter, phase angle meter and verified. The Meter Installation Verification, Form 84, will be filled out and resubmitted to the Electric Central Meter Department for checking and verifying with CIS.

4.0 Substation and Plant Meter Testing

See Electric Standards Section E6010.

5.0 Testing Single Phase Watthour Meters

All single-phase self-contained watthour meters are included in the Sample Meter Testing Program.

5.1 All Meters included in the Sample Meter Testing Program are grouped into lots of similar characteristics as follows:

Area, Manufacturer, Meter Size, and Serial Number

5.2 All meters in the Sample Testing Program will be tested each year, in accordance with the procedures described in Military Standard 414, June 11, 1957, page 41, Standard Deviation Method Variability Unknown, Part II Double Specification Limits.

5.3 A random sample of each group of meters on a area will be drawn to determine if the group of meters meets acceptable quality levels.

5.4 All meters of acceptable groups may remain in service without further testing or maintenance for one year.

5.5 Meters in a group which do not meet acceptability will be rejected and the group will be handled as follows:

5.5.1 If both additional samples indicate that the group is acceptable, the group may remain in service without further testing or maintenance for one year.

5.5.2 If either of the additional samples indicate a defective group, all meters in said group will be put on an Accelerated Testing Program not exceeding five years, or replaced.

Electric Standards Subject: Measurement Meter Testing & Record Keeping		Date Effective 05/15/2001	Section Number E6030
Supersedes Section: E6030	Dated 02/15/2000	Prepared By R. Drew	Approved By D. Hinders

6.0 Procedure For Gathering Meters For Samples Testing

6.1 The Electric Central Meter Department will send print out sheets and a list of meters by Company Numbers and Groups that are to be returned to Huron for Sample Testing.

6.2 Along with the list of meters to be returned for Sample Testing, the Electric Central Meter Department will issue the necessary replacement meters along with the copy of CIS Electric Meter Transfer Inventory Screen transferring the meters to the Area.

6.3 Area Meterman will see that the meters are removed from service and prepared for transfer to the Electric Central Meter Department at Huron. (Each group should be prepared and ready as one complete group, rather than a few meters at a time.) This work should be given adequate attention so that the Sample Testing Program can be set and kept on a routine schedule.

6.4 The copy of CIS Electric Meter Transfer Inventory Screen will be sent to Electric Central Meter Department printer.

6.5 The meters will be delivered to and picked up from the Areas, as directed by the Electric Central Meter Department.

7.0 New Meter Purchases

All new meters will be ordered, numbered and tested by the Electric Central Meter Department. Requests for meters for Area stock should be made to the Electric Central Meter Department.

8.0 Procedure For Electric Meter Testing And Record Keeping

8.1 Record in Lotus 123

8.2 Check and record in CIS

9.0 Monthly Meter Report

Meter inventory will be taken on the 20th (or nearest working day) of each month. If inventory checks out no report is needed. If meters missing report made out with list of meters not found and sent to Electric Central Meter Department.

Electric Standards Subject: Measurement Meter Testing & Record Keeping		Date Effective 05/15/2001	Section Number E6030
Supersedes Section: E6030	Dated 02/15/2000	Prepared By R. Drew	Approved By D. Hinders

10.0 Metering Responsibilities

10.1 The following guidelines are being submitted to make sure the Area Metermen are not overlooking some important aspects of their metering responsibilities:

10.1.1 All meters on Rate 21 scheduled for testing should be changed out no later than June. The list of these meters should be received by the Division February 1.

10.1.2 All meters on Rates 17, 25, 32, 33, 34 and 41 scheduled for testing should be changed out no later than December. The list of these meters should be received by the Division August 1.

10.1.3 Meter Verification Forms must be made out every time a Transformer Rated meter, or any meter with a multiplier, is installed, field tested, or a name change Service Order is worked. One copy should remain with the Area Meterman and the other is to be sent to the Electric Central Meter Department within one week. We plan to verify the multiplier before the customer receives his first billing. All Service Orders involving Transformer Rated Meters shall be worked by an Electric Meterman.

10.1.4 The Meter Departments should be advised of any meter tampering within the Area, and this information forwarded to the Electric Central Meter Department.

10.1.5 At the time the meters are tested or changed out on a transformer rated installation, the CT's should be tested for ratio verification, burden test and phase angle with phasors drawn. When metering wire is found to be bad, it shall be rewired or made into a self-contained installation when possible.

10.1.6 Meters to be removed for Sample Testing should be changed out and returned to the Electric Central Meter Department within six weeks after receipt of the meters.

10.1.7 A Voltmeter shall be used to check voltage at each socket terminal before installing a meter. We are still finding 3-phase 4-wire delta sockets that are wired wrong.

10.1.8 Meter personnel will be present when wires are being changed around CT metering. There is no way metering will stay correct, if meter personnel do not police it.

10.2 We want to make sure all aspects of metering are given a No. 1 priority, including those above, plus those other areas normally handled by Meter personnel -- new meter installations, high bill complaints, power factor program and etc.

Form 84 (Rev. 8-'87)

Northwestern Public Service Company

METER INSTALLATION VERIFICATION

☐ New ☐ Tenant Change ☐ Meter Change ☐ Rewired ☐ Meter Tested

Customer _____ Address _____

Meter Location _____ Acct. No. _____ Type of Load _____

Class of Business _____ Service Voltage _____ Amp. Rating Main Switch _____ Phase ____ Wire ____ Rate ___

KWH METER DATA

Company No. _____ Mfgr's. No. _____ Make _____ Type _____

Amp _____ Volts _____ No. Ele. _____ No. of Dials _____ Kr _____ Kh _____ RR ____

Type of Demand _____ Full Scale KW _____ Demand Interval _____ Multiplier _____

Type of Contacts _____ Mp _____ Recorder No. _____ Type _____

☐ KQH ☐ KVARH METER DATA

Wired: ☐ Lead ☐ Lag

Company No. _____ Mfgr's. No. _____ Make _____ Type _____

Amp _____ Volts _____ No. Ele. _____ No. of Dial _____ Kr _____ Kh _____ RR ____

Type of Contacts _____ Mp _____ Detent _____ Multiplier _____

INSTRUMENT TRANSFORMER DATA

Company No.	Mfg. No.	Make	Type	Primary Volts	Primary Amp	Secondary Volts	Secondary Amp.	Ratio

For Diagram of connections see Wiring Diagram No. _____

Multiplier as shown on Company records _____

Signed _____
Accounting Department

Division _____ Signed _____

Date _____ Approved _____

INSTALLATION DATA

600 Volts or less.

	Volts Primary		Volts Secondary
A-B	_____		_____
B-C	_____		_____
C-A	_____		_____
		A-N	_____
		B-N	_____
		C-N	_____

600 Volts or less

	Primary Amps	Secondary Amps
A	_____	_____
B	_____	_____
C	_____	_____

Check with Burden Meter |_|

Phase Angle Meter
Delta

|_| CWR

A-B	A	_____
A-B	B	_____
A-B	C	_____
B-C	A	_____
B-C	B	_____
B-C	C	_____
C-A	A	_____
C-A	B	_____
C-A	C	_____

|_| CCWR

A-C	A	_____
A-C	B	_____
A-C	C	_____
C-B	A	_____
C-B	B	_____
C-B	C	_____
B-A	A	_____
B-A	B	_____
B-A	C	_____

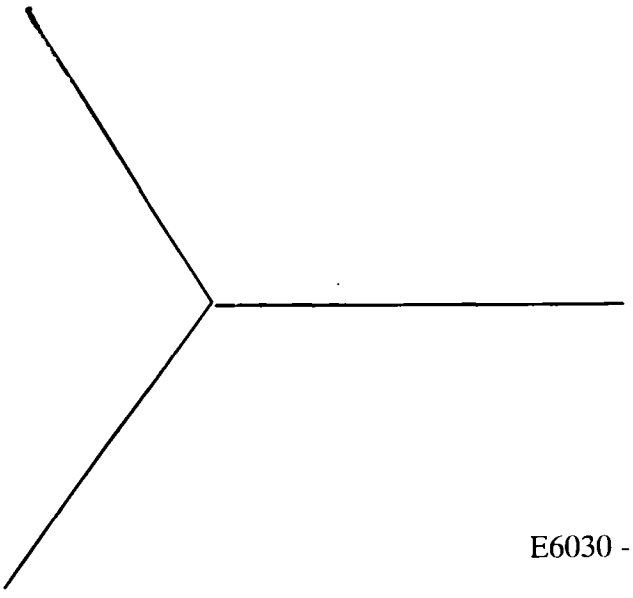
NOTE: On 3Ø 3W Delta, Common is to be designated B phase.

Phase Angle Meter
Wye

|_| CWR

|_| CCWR

A-N	A	_____
A-N	B	_____
A-N	C	_____
B-N	A	_____
B-N	B	_____
B-N	C	_____
C-N	A	_____
C-N	B	_____
C-N	C	_____



Form 52

NORTHWESTERN PUBLIC SERVICE COMPANY

METER DEPARTMENT
ELECTRIC TEST DATA SHEET
JANUARY 2000

DATE TESTED	METER NUMBER	FOUND READING	DEMAND READING	LEFT READING	% FULL LOAD	% LIGHT LOAD	% POWER FACTOR	RESIDENTAL NEW	RESIDENTAL OLD	COMMERCIAL NEW	COMMERCIAL OLD	REMARKS SCF	REMARKS JRM	TESTED BY	NOTE: REMARKS S SHOP TEST
														LS	
														LS	

C COMPLAINT
F FIELD TEST
RM REPLACED MODULE
RR REPLACED REGIST
J JUNKED
JO JUNKED OPEN COIL

NorthWestern Energy

Gas Standards Subject: Measurement Monitoring Fixed Factor Meters		Date Effective 6/30/2008	Standard Number 6050
Supersedes 6050	Dated 12/04/96	Prepared By K. Shuttlesworth	Approved By Committee

1.0 Scope

The purpose of this standard is to clarify the proper monitoring of fixed factor metering.

2.0 General

2.1 Once each calendar year the IT Department or Meter Shop will provide a list of accounts that are being metered and billed with the use of a pressure correction factor. This list shall be checked against the Area/Division records to verify that the accounts with correction factors are being properly billed.

2.2 Metering pressure should be set/checked at the inlet of the meter for accurate measurement. For 175 to 425 cfh meters, this is less critical. All larger meters the pressure will be set at the inlet of the meter.

2.3 **Meters should be flowing 30% or more of the expected load when the pressure is set or checked.** This allows for greatest accuracy when the most flow is being measured thus the best overall measurement accuracy.

Quick Reference Chart for Periodic Check

Pressure/ Meter Size	175-425	430-1205	1205+
7" WC to 2PSIG	nothing	3 Yrs (gauge)	1 Yr. (gauge)*
Above 2 PSIG	5 Yr. (gauge)	1 Yr. (gauge)*	1 Yr. (gauge)*

* A chart may be useful if the load cannot be adjusted to above 30% or the load is unknown.

3.0 175 CFH through 425 CFH

3.1 Meters sized 175 CFH through 425 CFH, operating at (2) two PSIG pressure or less, shall be adjusted to desired pressure at the time of installation, then the proper factor shall be applied to that account. These meters will not require pressure testing again. If company work is required around this metering that affords time to check the metering pressure, if should be checked. At this time we must verify the proper correction factor on the meter change order.

3.2 Meters sized 175 CFH through 425 CFH, operating at pressures above (2) two PSIG shall be adjusted to desired pressure at the time of installation, and then the proper factor shall be applied to that account. These meters shall be checked for proper pressure settings once every (5) five years, with a high quality gauge and the factor shall be verified in the billing system.

Gas Standards Subject: Measurement Monitoring Fixed Factor Meters		Date Effective 6/30/2008	Standard Number 6050
Supersedes 6050	Dated 12/04/96	Prepared By K. Shuttlesworth	Approved By Committee

4.0 <u>430 CFH through 1205 CFH</u>

4.1 Meters sized 430 CFH through 1205 CFH, operating at pressures up to (2) two PSIG shall be adjusted to the desired pressure at the time of installation, then the proper pressure factor shall be applied to that account. These meters shall be checked for proper pressure settings once (3) years, with a high quality gauge and the factor shall be verified in the billing system.

4.2 Meters sized 430 CFH through 1205 CFH, operating at pressures above (2) two PSIG shall be adjusted to desired pressure at the time of installation, and then the proper factor shall be applied to that account. These meters shall be checked for proper pressure settings once each calendar year, and the factor shall be verified. The pressure will be checked with a high quality gauge or chart and the factor shall be verified in the billing system. A chart may be useful if the load cannot be adjusted to above 30% or the load is unknown.

5.0 All meters larger than 1205 CFH operating at pressure above 7" water column, and utilizing a fixed factor measurement method, shall be adjusted to the desired pressure at the time of installation, then the proper factor shall be applied to that account. These meters shall be checked for proper pressure settings once each calendar year, and the factor shall be verified. The pressure will be checked with a high quality gauge or chart and the factor shall be verified in the billing system. A chart may be useful if the load cannot be adjusted to above 30% or the load is unknown.

NorthWestern Energy

Gas Standards Subject: Meaurement General		Date Effective 6/30/2008	Standard Number 6000
Supersedes 6000	Dated 12/11/2000	Prepared By K. Shuttlesworth	Approved By Committee

1.0 Scope:

The Measurement section of this Plan is meant to provide guidelines for maintaining natural gas metering accuracy. It meets all the requirements for Montana, South Dakota and Nebraska tariffs. There is no Federal DOT 49 CFR part 192 requirements addressed in this section.

2.0 General

The tarrifs require or generally excepted practice is a metering accuracy of +- 2%. This standard outlines the processes and procedures to maintain customer's meters to that accuracy.

3.0 Provisions

3.1 Measurement Standards in this plan should be followed in order to establish uniform procedures for natural gas metering.

3.2 In some cases, the Standards provided in this section may not be suitable. Deviation from these Standards is acceptable if approved by Company Management, unless specifically required by tariff.

3.3 Meeting State or Federal regulatory code requirements is not the intent of this section of Standards.

3.4 Accuracy of small meters, 630 and less, will be controlled by use of random sampling and statistical analysis using ANSI/ASQC Z1.9-1993 (Previously MIL105).

3.5 Meters larger than 630 will be tested, proved or changed out on a set schedule based on the manufactures recommendations and historical performance for each model. The as found meter test data may be analyzed from time to time to adjust the scheduled intervals.

NorthWestern Energy

Gas Standards Subject: Measurement Accuracy & Performance Periodic Testing		Date Effective 6/30/2008	Standard Number 6010
Supersedes 6010	Dated 12/11/2000	Prepared By K. Shuttlesworth	Approved By Commitee

1.0 Scope

The purpose of this standard is to describe in general the minimum requirements of NorthWestern Energy's general operations and maintenance procedures and policies concerning measurement performance of gas meters. These procedures are intended to comply with the minimum requirements as set by applicable tariffs and accepted industry practice.

2.0 Performance Guidelines for Periodic Testing

This standard has been prepared to provide company employees with guidelines in a measurement accuracy and performance guideline for Sampling or Periodic Testing. The chart below lists the meters NorthWestern uses which are covered under this standard. Whenever possible 100 percent of testing will be achieved each year.

3.0 Testing Criteria for Returning Meters to Service

3.1 After a meter enters the shop on the periodic change out or is field proved, it may not be put back into service unless it meets the following criterion:

3.1.1 Criteria 1 – Check Run +-0.5%

3.1.2 Criteria 2 – Open Run +-0.5%

3.1.3 Criteria 3 – Criteria 1 and Criteria 2 can't be more than 0.5% apart for shop tests or 0.8% for field tests

3.2 Adjustments should be made or parts replaced to meet the above criterion. If this level of registration cannot be achieved, the meter will be retired.

4.0 Meter Testing/Proving Program

The meter-proving program is comprised of two parts, Residential/Light Commercial meters, and Large Meters.

4.1 Residential and Light Commercial meters – Class 1

4.1.1 Residential and Light Commercial meters, (175 through 630), will be tested using a Statistical Sampling program based on an the standard specified in Standard 6000 3.4. Meters will be grouped by family (i.e., manufacturer, size, model and age).

4.1.2 From the CIS database, a list of meters will be randomly generated from the Statistical Gas Metering Program; this will be the statistical sample. The sample will include meters that were changed for cause throughout the year. These meters will be handled as follows:

4.1.2.1 Meters that are ten (10) years old or less will be returned directly to service, unless a problem is indicated (leaks, noise, stuck, etc.) or the paint is not suitable for service. All meters with problems need to be labeled or tagged indicating the problem.

4.1.2.2 Meters 10 years old or less will not be part of the sampling program, as the meter manufactures guarantee accuracy beyond 10 years for normal service.

4.1.2.3 All meters greater than ten (10) years old, will be stored inside, if at all possible. The ERTs and indexes are to remain on the meter, even junk meters. Only remove ERTs when the meter clearly cannot be proved. Each meter should be handled with care until it is proved, just like new meters. After proving, then and only then will the meters be packaged for repair, remanufacture, sale, or junked. Junk meters can be disposed of at the site and not shipped. Meters proved and packaged will be shipped to the Meter Shop, or gathered and shipment to an approved facility. Each Meter Technician will be current on what meters are junk, for sale, etc.

4.1.3 The proving data is added to the database to complete the statistics. The data from the previous year will be used in the statistical algorithms to govern the size of the sample as well as the pass or fail of any family. The list of meters to periodic, will be sent to Area/Division Management. All meters on that list will be changed out in a timely manner.

4.1.4 For a meter family to fail, it must fail the statistical program 2 consecutive years. Upon the first failure, the family may be analyzed and split into sub-families if falure characteristics indicate that is appropriate. A failed family will be budgeted for change out beginning in the next budget cycle.

4.2 Large Meters

4.2.1 Large Meters are divided into five classes and may be proved/tested and possibly repaired in the field.

4.2.2 The following is the proving/testing cycle for NWE meters:

Meter Type	Meter Class	Periodic Cycle
Small Meters (630 and less)	1	Statistical sampling
35B, 80B, S675, AL800, AL1000, S1000	2	15 Years
250B, AL1400, AL2300, 500B, AL5000	3	5 Years
8C-11M Rotary	4	5 Years
16M-23M, Turbine	5	3 Years
38-56M or larger	6	1 Years

5.0 Diaphragm Meter Service Life

5.1 Except for cast iron meters, large diaphragm meters field proved or shop serviced that meet the criteria of 3.0 of this standard, may remain in service or return to service until the next periodic test cycle.

5.2 Cast iron meters will be in-tested and test results saved for analysis, but will not be returned to service.

6.0 New Large Diaphragm Meters (Greater than 630 cfh)

6.1 Once a new large diaphragm meter, or a repaired meter is set, it should be field proved and adjusted to meet or exceed the test criteria of 3.0 of this standard after 3 months, but not longer than 9 months of being put into service. This is only for repairs that involve the grinding of valve seats, or anything below the vavle table.

6.2 Proper pressure set points, instruments parameters (if installed), and billing system information will be verified at this time.

7.0 Rotary Meters

7.1 The perfered method of testing rotary meters is **Differential Testing**. This method, however, does not yield a meter accuracy but is an indicator of meter condition. If a meter passes a differential test it indicates that the meter is within the same accuracy range as it was new.

7.1.1 Differntial testing requires that the meter be operating between 20% to 100% of its capacity. Meters operating at pressures above 15 psig should have a flow rate of 40% or greater.

7.1.2 A differential pressure gauge or manometer should be accurate to a minimum of 0.1 inches of water column.

7.1.3 A meter will pass a differential test if the differential pressure found has increased less than 50% from that of a typical new meter.

7.1.4 Standard 6020 outlines the differential test procedure.

7.1.5 Differntial testing is not suitable as a customer requested accuracy test, unless agreed to by the customer.

NorthWestern Energy

Gas Standards Subject: Measurement Rotary Meter Differential Testing		Date Effective 6/30/2008	Standard Number 6020
		Prepared By K. Shuttlesworth	Approved By Commitee

1.0 Scope

The purpose of this standard is to describe the general procedures for the differential testing of rotary meters. These procedures are intended to comply with the minimum requirements as set by applicable tariffs and accepted industry practice.

2.0 General Conditions for Differential Testing

The meter should be at a stable flow rate between 20% and 100% of the meter rating. The test will be based on one revolution of the ID drive or fastest odometer wheel. Increases of up to 50% of the initial or typical differential pressure demonstrates a less than 1% affect on accuracy. The meter will be timed at least twice. The average of the times will be used for the pass/fail determinization. If the flow rate substancially changes during the test, that test will be discarded and a stable flow rate will be established again.

3.0 Differential Testing Proceedure

3.1 Clock meter under existing conditions. This only need be a rough flow rate to determine if the flow is with in the required range. The meter will be timed during the differential pressure reading.

- 3.1.1 Flow rate should be 20% to 100% of meter rating.
- 3.1.2 Flow should be stable over the duration of the test.

3.2 Connect Manometer

- 3.2.1 Close all three valves on the manifold (not applicable to single button manifolds).
- 3.2.2 Connect the high pressure hose to the inlet pressure tap on the meter.
- 3.2.3 Connect the low pressure hose to the outlet pressure tap of the meter.

3.3 Record the inlet pressure.

3.4 Read the differential pressure with 3 valve manifold

- 3.4.1 Open the manifold valve on the inlet side.
- 3.4.2 Open the manifold by-pass valve.
- 3.4.3 Zero the instrument.
- 3.4.4 Open the manifold valve on the outlet side.
- 3.4.5 Close the manifold by-pass valve.
- 3.4.6 Start timing one revolution of the ID drive or fastest odometer wheel.

3.4.7 Take several differential pressure reading during one revolution.

3.4.8 Close the inlet and outlet valves.

3.4.9 Disconnect all hoses.

3.5 Read the differential pressure with push button valve manifold

3.5.1 Zero the instrument.

3.5.2 Push button to open the manifold valves.

3.5.3 Start " Acquiring Data" and start timing one revolution of the ID drive or fastest odometer wheel.

3.5.4 Stop data acquisition and release manifold button.

3.5.5 Take several differential pressure reading runs as desired (repeat steps 2, 3, and 4).

3.5.6 Disconnect all hoses.

3.6 Determining Pass/Fail

3.6.1 Using the Dresser "Differential Test Acceptance Calculator" software, enter the following information:

3.6.1.1 Meter Series (LMMA or B3), use LMMA for Romet meters.

3.6.1.2 Meter Size (i.e. 3M, 5M ...)

3.6.1.3 Line Pressure in psig.

3.6.1.4 The average differential pressure in "H2O.

3.6.1.5 Specific gravity (0.6 for natural gas).

3.6.1.6 Volume per revolution of ID or odometer wheel, whichever was used.

3.6.1.7 Time in seconds for one revolution.

3.6.1.8 Click Calculate.

3.6.1.9 Print report.

3.6.2 If meter fails, remove and flush. After meter is reinstalled and run for at least 30 minutes, retest. If the meter fails after flushing, replace with another meter, return failed meter to the shop or factory for servicing.