

Unitil
Gas Meter Shop Cost Effectiveness Study - 2014
Executive Summary

Introduction

This study analyzes the cost effectiveness of Unitil establishing a gas meter testing facility.

Background

This study is in response to the New Hampshire Public Utilities Commission's requirement that "Each utility shall maintain the equipment and facilities necessary for accurately testing all types and sizes of meter employed for the measurement of gas to its customers, unless arrangements approved by the commission, pursuant to Puc 201.05, have been made to have such testing done elsewhere."

Current Processes

Since 2009, Unitil has operated under a waiver granted by the NH-PUC that allows Unitil to utilize vendors to perform its gas meter testing. This study incorporates an explanation of Unitil's current practice of utilizing vendors to perform the testing and adjustment of meters for all three of its operating centers; Fitchburg, MA, Portsmouth, NH, and Portland, ME. On an annual basis, Unitil has an average of 2911 residential, 106 C&I, and 111 rotary meters tested. The average cost for these tests to be performed is \$62,682 per year.

Results

The estimated start-up and operating expenditures required to establish and operate a compliant gas meter testing facility taking into consideration:

- Cost of design and construction using two options for location
 - Renovation of exiting Fitchburg facility - \$387,735
 - Constructing an addition to the Portsmouth facility - \$946,054
- Costs associated with tools and equipment - \$242,870
- Required full-time employees – 1.56
- Operating costs:
 - Employee salaries - \$123,240
 - Utilities - \$3,500
 - Tool replacements - \$1,000

Conclusion

Due to the estimated annual operating costs of \$127,740 exceeding the current annual expenditures of \$p; paid to vendors for performing testing, it is not economical at this time for Unitil to pursue establishing a gas meter testing facility.

**Unitil
Gas Meter Shop Cost Effectiveness Study
2014**

Objective

This study analyzes the cost effectiveness of Unitil establishing a gas meter testing facility.

Reason

Section Puc 505.07 Testing Facilities and Equipment of Chapter Puc 500 Rules for Gas Service of the New Hampshire Public Utilities Commission's New Hampshire Code of Administrative Rules require that:

- (a) Each utility shall maintain the equipment and facilities necessary for accurately testing all types and sizes of meter employed for the measurement of gas to its customers, unless arrangements approved by the commission, pursuant to Puc 201.05, have been made to have such testing done elsewhere.
- (b) Meter provers used by the utility or its agent for the testing of meters shall be of an approved type and of a capacity of not less than 5 cubic feet.
- (c) Each meter prover shall be supplied with accessories needed for accurate meter testing shall be in a room suitable for the work to be done.
- (d) The utility shall maintain, or cause to have maintained on its behalf, the meter prover in good condition and correct adjustment so that it can determine the accuracy of any gas meter to within ½ of one percent.

At the present time, Unitil does not have a meter testing facility of its own, and as a result contracts with various vendors for these services. To remain in compliance with NH PUC requirements, Unitil previously received a waiver that approved Unitil's external meter testing practices.

Current Testing Processes and Associated Expenditures

Unitil utilizes vendors to perform its gas meter testing of annual average of 2911 residential, 106 C&I, and 111 rotary meters tested at an average cost of \$62,682 per year. The process is as follows:

Routine Tests

- Meters are removed from the field
- Meters are palletized by make and size at the respective operating center
- When 10 - 12 pallets are full, the testing facility, currently Utilities and Industries of 1995 Industrial Blvd, Reynoldsville, PA 15851, is contacted to schedule pick-up
- Meters are tested and adjusted to include:
 - In-test – meter data is entered into database (meter number, index readings, AMR/AMI reading devices readings, etc)
 - Test and adjust to +/- 1.0%
 - Leak test – under water with pressure applied to meter

- Wash and paint preparation
- Paint
- Meters that cannot be adjusted to required tolerances are retired
- Meters are returned to the appropriate operating center within 4 – 6 weeks
- Data files are emailed to the appropriate supervisor who verifies and files the data

Customer Requested Tests

Northern Utilities – NH and ME

- Meters are removed from the field
- Meters are packaged individually for shipping
- The appropriate vendor is contacted and overnight shipping is arranged
- The meter is tested and returned within 1 -2 days
- Test results are emailed within 1 – 2 days

Fitchburg – Customer requested tests are performed by a Massachusetts appointed inspector.

- Meters are removed from the field
- The MA state inspector is contacted to schedule all customer requested tests
- For meters up to 1000 cfh the state inspector utilizes a bell prover located in the Fitchburg operating center
- For meters > 1000 cfh and rotary meters, the state inspector utilizes a prover located at a near-by utility company that has the equipment to perform such tests

The current processes have been in place since Unital’s purchase of Northern Utilities in December of 2008. Therefore, 5 years of invoices were available and used to calculate an average annual expenditure rate (see table below).

Expense for Testing, Adjusting and Shipping				
	FGE	Northern - ME	Northern - NH	Total
2009	\$ 19,630.11	\$ 10,553.47	\$ 35,608.96	\$ 65,792.54
2010	\$ 48,360.49	\$ 6,764.31	\$ 100,809.77	\$ 155,934.57
2011	\$ 21,637.95	\$ 2,825.12	\$ 9,013.42	\$ 33,476.49
2012	\$ 15,919.81	\$ 4,678.56	\$ 11,376.10	\$ 31,974.47
2013	\$ 12,157.65	\$ 5,383.26	\$ 8,389.40	\$ 25,930.31
Totals	\$ 117,706.01	\$ 30,204.72	\$ 165,197.65	\$ 313,108.38
			Annual Average	\$ 62,621.68

Facility Design and Construction Analysis

An analysis was performed to determine the requirements for a facility that would adequately support Unital’s gas meter testing needs. The facility would need to be capable of handling the volume of meters that Unital is required to annually test and adjust, as

well as be in compliance with regulatory requirements. It was determined that the following requirements are required for a meter testing facility:

- A minimum of 3,200 square feet to support the following work stations:
 - Storage
 - In-test
 - Proving
 - Washing
 - Painting - enclosed and environmentally compliant
 - Automated Meter Reading Testing
- Climate control
- Proper lighting
- Space to support up to 6 pallets of meters
- Computer network availability
- Ergonomic work stations

Two options were analyzed for this study. The first option is to renovate an existing meter storage area in the Fitchburg operating center, and the second option is to construct an addition to the Portsmouth operating center. Martin Construction Advisors, LLC was contracted to provide and estimate to include:

- Design
- Permitting
- Demolition and abatement
- Site work
- Disposal
- Waste removal
- Construction
- HVAC
- Electrical and Communications wiring
- All associated labor

The estimate costs associated with each option are estimated to be as follows:

- Renovation of Fitchburg facility - \$387,735
- Construct addition to Portsmouth facility - \$946,054

Equipment and Tool Requirements and Associated Costs

The following equipment and expenditures are needed in order to establish a gas meter testing facility:

Unitil Gas Meter Testing Facility Equipment Requirements			
Category	Equipment	Price	Totals
Diaphragm Meters and Rotary Up and Including 16M	American Meter Custom SNAP Series III Prover	\$ 116,900	
	USB Bar Code Reader/Scanner	\$ 395	
	Installation and Commissioning (includes travel)	\$ 3,500	
	16M Universal SNAP Vacuum Blower	\$ 29,000	
	Air Temperature Acclimation System * Piping System Observed at Liberty Utilities	\$ 5,000	
			\$ 154,795
	3M175 Series B3 CD Version Reference Meter	\$ 1,709	
	23M175 Series B3 CD Version Reference Meter	\$ 3,068	
	11M175 Series B3 CD Version Reference Meter	\$ 4,459	
			\$ 9,236
Wet Leak Tester	Includes installation	\$ 25,500	\$ 25,500
	*Information obtained from NSTAR who recently purchased a leak tester for their facility upgrade		
Paint Booth Equipment	Paint - Spray Booth Item# PBMR888	\$ 2,699	
	Wagner Spray Tech Piston Pump Paint Sprayer - 6 HP Model #GPX 130	\$ 2,999	
	Miscellaneous Equipment	\$ 2,000	
			\$ 7,698
Ert Programming Equipment	Itron FC300	\$ 4,590	
	AC Power Supply	\$ 65	
	AC Power Cord	\$ 8	
	FC300 Dock, desktop with USB host/USB Client	\$ 350	
			\$ 5,013
Badger Module Programming Equipment	Orion Trimble Handheld	\$ 5,628	\$ 5,628
Meter Carts	Diaphragm 4 @ \$1125 ea.	\$ 4,500	
	Rotary Meter Test Cart 2 @ \$5500	\$ 11,000	
			\$ 15,500

Work Station Computers	2 Company Issued	\$ 2,000	2000
Miscellaneous Tooling		\$ 10,000	\$ 10,000
Meter Parts		\$ 7,500	\$ 7,500
Total Equipment Costs			\$242,870.00

Staffing Requirements

Unutil Gas Meter Testing Facility Full-Time Employee Requirements					
Work Category	Quantity (Annual Average)	Time per Unit (Minutes)	Time per Unit (Hours)	Annual Hours	FTE's Required
In Tests	3129.4	3	0.05	156	0.11
Residential Meter Test and Adjust or Retired	2911.6	20	0.33	971	0.71
C&I Tested and Adjusted or Retired	106.8	30	0.50	53	0.04
Rotary Tested and Adjusted or Retired	111	225	3.75	416	0.30
Paint	626	3	0.05	31	0.02
Out Test	939	3	0.05	47	0.03
New Residential Meters	3881	3	0.05	194	0.14
New C&I	275	5	0.08	23	0.02
New Rotary Meters	128	5	0.08	11	0.01
Meter Set-up - Instrument Arms	100	20	0.33	33	0.02
AMR/AMI Module Replacements	200	15	0.25	50	0.04
Equipment Maint and Shop Clean-up	52	60	1.00	52	0.04
Inventory Tracking/Investigation	120	20	0.33	40	0.03
Monthly Reporting	48	60	1.00	48	0.04
Annual Reports	1	480	8.00	8	0.01
				Total FTE's	1.56

Proposed Full-Time Employee

The analysis determined that 2 full-time employees would be needed to operate the testing facility. The proposed positions with duties are as follows:

Supervisor, Technical Service - Gas Meter

(Estimated Annual Salary = \$65,000/yr.)

Responsible for gas meter shop supervisor duties including:

Meter inventory

Meter purchases

Equipment maintenance

Testing metrics

Supervising personnel

Coordinating meter testing and shipments with regional operating centers

Special Meter Maintenance Technician

(Estimated \$28/hr. * 2080 hrs. /yr. = \$58,240/yr.)

Proving/Adjusting all meters

Large Volume meter setup

Diaphragm Meter Repair

Rotary and Turbine Meter Repair

Instrument Testing and Repair

Leak Testing – all sizes

Fork Lift Operation

AMI/AMR module Testing - all sizes

Condemning

Cost Summary

Start-up Costs	Location	
	Fitchburg	Portsmouth
Facility Estimate	\$387,735	\$946,054
Equipment Estimate	\$242,870	\$242,870
Total	\$630,605	\$1,188,924
Fixed Costs - Annual		
2 Full Time Employees	\$123,240	\$123,240
Utility Expenses	\$3,500	\$3,500
Tool Replacements	\$1,000	\$1,000
Total	\$127,740	\$127,740

Conclusion

The estimated operating costs of \$127,740 exceed the current annual expenditures for gas meter testing of \$62,682 and therefore it is not feasible for Unitil to establish a gas meter testing facility.

Northern Utilities, Inc.
 Petition for Waiver of Puc 505.07
 DG 10-245
 Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
 Request No. Staff 1-1

Date of Response: 09/03/2014
 Witness: Justin Eisfeller

Request:

Please provide a breakdown by state of meters sent out for testing per year in the following categories:

- Diaphragm meters <500 cfh
- Diaphragm meters > 500 cfh but less than 1000 cfh
- Diaphragm meters >1000 cfh
- Rotary Meters (by Size)
- Turbine Meters

Please subdivide each response by state.

Response:

Meter Class – Tested 2009	NH	ME	MA
Diaphragm meters <500 cfh	613	157	994
Diaphragm meters > 500 < 1000 cfh	45	2	50
Diaphragm meters >1000 cfh	14	5	13
Rotary Meters 1.5C	8	0	2
Rotary Meters 3M	138	15	2
Rotary Meters 5M	36	11	0
Rotary Meters 7M	13	1	0
Rotary Meters 11M	14	2	1
Rotary Meters 16M	10	0	0
Rotary Meters 23M	0	0	0
Turbine Meters	7	0	0
Totals -	898	193	1062

Meter Class – Tested 2010	NH	ME	MA
Diaphragm meters <500 cfh	353	127	797
Diaphragm meters > 500 < 1000 cfh	18	6	0
Diaphragm meters >1000 cfh	17	4	0
Rotary Meters 1.5C	5	1	3
Rotary Meters 3M	86	21	2
Rotary Meters 5M	25	12	2
Rotary Meters 7M	12	3	0
Rotary Meters 11M	6	2	0
Rotary Meters 16M	1	0	0
Rotary Meters 23M	0	1	0
Turbine Meters	1	0	0
Totals -	524	177	804

Northern Utilities, Inc.
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 Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
 Request No. Staff 1-1

Date of Response: 09/03/2014
 Witness: Justin Eisfeller

Meter Class – Tested 2011	NH	ME	MA
Diaphragm meters <500 cfh	1250	321	2221
Diaphragm meters > 500 < 1000 cfh	66	8	1
Diaphragm meters >1000 cfh	30	5	0
Rotary Meters 1.5C	0	0	5
Rotary Meters 3M	72	25	2
Rotary Meters 5M	13	4	1
Rotary Meters 7M	7	1	0
Rotary Meters 11M	3	5	0
Rotary Meters 16M	0	0	0
Rotary Meters 23M	0	0	0
Turbine Meters	0	0	0
Totals -	1441	369	2230

Meter Class – Tested 2012	NH	ME	MA
Diaphragm meters <500 cfh	754	244	2061
Diaphragm meters > 500 < 1000 cfh	70	10	9
Diaphragm meters >1000 cfh	24	4	0
Rotary Meters 1.5C	1	1	1
Rotary Meters 3M	59	7	6
Rotary Meters 5M	10	2	2
Rotary Meters 7M	6	4	3
Rotary Meters 11M	5	3	0
Rotary Meters 16M	1	2	0
Rotary Meters 23M	0	0	0
Turbine Meters	0	0	0
Totals -	930	277	2082

Northern Utilities, Inc.
 Petition for Waiver of Puc 505.07
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 Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
 Request No. Staff 1-1

Date of Response: 09/03/2014
 Witness: Justin Eisfeller

Meter Class – Tested 2013	NH	ME	MA
Diaphragm meters <500 cfh	689	362	2581
Diaphragm meters > 500 < 1000 cfh	35	18	9
Diaphragm meters >1000 cfh	25	10	1
Rotary Meters 1.5C	0	1	17
Rotary Meters 3M	28	22	8
Rotary Meters 5M	11	3	5
Rotary Meters 7M	5	1	0
Rotary Meters 11M	4	1	0
Rotary Meters 16M	0	1	0
Rotary Meters 23M	0	0	0
Turbine Meters	0	0	0
Totals -	797	419	2621

Northern Utilities, Inc.
Petition for Waiver of Puc 505.07
DG 10-245
Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
Request No. Staff 1-2

Date of Response: 09/03/2014
Witness: Justin Eisfeller

Request:

Please provide the locations that customers can witness tests if desired. Provide by the categories listed above. Please estimate costs associated with witness testing at each location.

Response:

The following categories of meters can be witness tested at Unutil's Portsmouth Operating Center located at 325 West Road, Portsmouth, NH:

- Diaphragm meters <500 cfh
- Diaphragm meters > 500 cfh but less than 1000 cfh
- Diaphragm meters >1000 cfh
- Rotary Meters (by Size)
- Turbine Meters

The cost associated with this will cover the vendor's travel expenses and rate to perform the test: estimated at \$2000.

Another option is that a consultant can be hired to witness the test at the testing facility which is located at Utilities and Industries, 1995 Industrial Blvd., Reynoldsville, PA, 15851. Estimated cost between \$300 and \$500.

Northern Utilities, Inc.
Petition for Waiver of Puc 505.07
DG 10-245
Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
Request No. Staff 1-3

Date of Response: 09/03/2014
Witness: Justin Eisfeller

Request:

Please provide a written procedure that addresses how customer witness testing for types of meters used in New Hampshire will be performed.

Response:

Customers that request the opportunity to be present during the testing of their meter will be notified of where the test will be performed as outlined in Unutil's response to Request Staff 1-2. Arrangements will be made to test the meter during normal business hours and at the customer's convenience. The customer's meter will be quarantined until that time. The meter will be tested in accordance with Chapter 500 Part Puc 505 Section Puc 505.03 Test and Calibration of Meters of the NH Code of Administrative Rules. The accuracy of the meter will be calculated by adding open (80 – 120% of full rating) flow accuracy and check (15 - 25% of full rating) flow accuracy, and dividing the sum by two. An accurate meter will register between +/- 2% accuracy.

Northern Utilities, Inc.
Petition for Waiver of Puc 505.07
DG 10-245
Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
Request No. Staff 1-4

Date of Response: 09/03/2014
Witness: Justin Eisfeller

Request:

Please provide the manufacturer, age, and model type of bell prover, including available specifications used at the testing locations and locations where witness testing will take place.

Response:

The following information pertains to the equipment that will be used by the testing vendor for witness testing. The unit is mobile and testing will take place at 325 West Road, Portsmouth, NH:

Computer controlled sonic nozzle provers (tests meters up to 16M)

- Manufacturer - Dresser
- Model 5 Prover
- Manufactured in 2006
- Certified each fall, last certification was 9/9/13.
- Serial Numbers are:
 - 2M master meter – 0292010 - 35 to 2,300 CFH
 - 10M master meter – 0291018 - 100 to 10,000 CFH

Northern Utilities, Inc.
Petition for Waiver of Puc 505.07
DG 10-245
Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
Request No. Staff 1-5

Date of Response: 09/03/2014
Witness: Justin Eisfeller

Request:

Please provide the cost to purchase a diaphragm meter <500 cfh and average cost to install.

Response:

1. AC250
 - a. Without endpoint = \$63.50
 - b. With endpoint = \$127.00
2. AL425
 - a. Without endpoint = \$203.17
 - b. With endpoint = \$266.67
3. Average cost to install = \$75 direct cost to cover material, travel, and labor.

Northern Utilities, Inc.
Petition for Waiver of Puc 505.07
DG 10-245
Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
Request No. Staff 1-6

Date of Response: 09/03/2014
Witness: Justin Eisfeller

Request:

Please provide the number of requests for customer-witnessed tests received since the merger.

Response:

Since its acquisition of Northern in 2008, Unitil has not received any requests from its customers, at any of its locations, to witness a meter test.

Northern Utilities, Inc.
Petition for Waiver of Puc 505.07
DG 10-245
Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
Request No. Staff 1-7

Date of Response: 09/03/2014
Witness: Justin Eisfeller

Request:

Please verify that all N.H. meters are segregated, batched and returned for installation in New Hampshire.

Response:

The vendors that provide meter testing services consider each of Unitil's 3 gas operating centers as separate companies. The shipping information, invoices, data transfer, and contact information are unique to each operating center. Additionally, each meter is associated with a specific operating center's inventory system and would be identified as not being in inventory if it was inadvertently returned to an incorrect operating center.

Northern Utilities, Inc.
Petition for Waiver of Puc 505.07
DG 10-245
Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
Request No. Staff 1-8

Date of Response: 09/03/2014
Witness: Justin Eisfeller

Request:

Please provide the total annual quantity of certifications done by Massachusetts inspectors by meter type listed in 1 above that can serve as a quality assurance check.

Response:

Section 103, Accuracy of Meters; Records, of Part 1, Title XXII, Chapter 164 of the Administration of the Government of the Commonwealth of Massachusetts requires that the department "ascertain and prove the accuracy of all meters which are to be used for measuring the illuminating gas and which are to be furnished to, or for the use of, any consumer or company." The Massachusetts state inspector inspected all meters returned from the testing facilities to Unutil's Fitchburg operating center and therefore the following number of meters by size can serve as a quality check:

Meter Class – Tested 2009	MA
Diaphragm meters <500 cfh	994
Diaphragm meters > 500 < 1000 cfh	50
Diaphragm meters >1000 cfh	13
Rotary Meters 1.5C	2
Rotary Meters 3M	2
Rotary Meters 5M	0
Rotary Meters 7M	0
Rotary Meters 11M	1
Rotary Meters 16M	0
Rotary Meters 23M	0
Turbine Meters	0
Totals -	1062

Northern Utilities, Inc.
 Petition for Waiver of Puc 505.07
 DG 10-245
 Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
 Request No. Staff 1-8

Date of Response: 09/03/2014
 Witness: Justin Eisfeller

Meter Class – Tested 2010	MA
Diaphragm meters <500 cfh	797
Diaphragm meters > 500 < 1000 cfh	0
Diaphragm meters >1000 cfh	0
Rotary Meters 1.5C	3
Rotary Meters 3M	2
Rotary Meters 5M	2
Rotary Meters 7M	0
Rotary Meters 11M	0
Rotary Meters 16M	0
Rotary Meters 23M	0
Turbine Meters	0
Totals -	804

Meter Class – Tested 2011	MA
Diaphragm meters <500 cfh	2221
Diaphragm meters > 500 < 1000 cfh	1
Diaphragm meters >1000 cfh	0
Rotary Meters 1.5C	5
Rotary Meters 3M	2
Rotary Meters 5M	1
Rotary Meters 7M	0
Rotary Meters 11M	0
Rotary Meters 16M	0
Rotary Meters 23M	0
Turbine Meters	0
Totals -	2230

Northern Utilities, Inc.
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 Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
 Request No. Staff 1-8

Date of Response: 09/03/2014
 Witness: Justin Eisfeller

Meter Class – Tested 2012	MA
Diaphragm meters <500 cfh	2061
Diaphragm meters > 500 < 1000 cfh	9
Diaphragm meters >1000 cfh	0
Rotary Meters 1.5C	1
Rotary Meters 3M	6
Rotary Meters 5M	2
Rotary Meters 7M	3
Rotary Meters 11M	0
Rotary Meters 16M	0
Rotary Meters 23M	0
Turbine Meters	0
Totals -	2082

Meter Class – Tested 2013	MA
Diaphragm meters <500 cfh	2581
Diaphragm meters > 500 < 1000 cfh	9
Diaphragm meters >1000 cfh	1
Rotary Meters 1.5C	17
Rotary Meters 3M	8
Rotary Meters 5M	5
Rotary Meters 7M	0
Rotary Meters 11M	0
Rotary Meters 16M	0
Rotary Meters 23M	0
Turbine Meters	0
Totals -	2621

Northern Utilities, Inc.
Petition for Waiver of Puc 505.07
DG 10-245
Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
Request No. Staff 1-9

Date of Response: 09/03/2014
Witness: Justin Eisfeller

Request:

Please provide the duration of contract anticipated with Utilities and Industries.

Response:

Unitil does not have a binding contract with the gas meter testing vendors it currently utilizes. Utilities and Industries operates under a Purchase Order which can be cancelled at anytime or renewed, which is done on an annual basis.

Northern Utilities, Inc.
Petition for Waiver of Puc 505.07
DG 10-245
Response to Staff's First Set of Data Requests

Date Request Received: 09/27/2010
Request No. Staff 1-10

Date of Response: 09/03/2014
Witness: Justin Eisfeller

Request:

Please submit the latest E-7 reporting for 2009 - 2013.

Response:

See attachments: Annual E-7 Report Gas Meter Test 2009 – 2013.

Unitil
New Hampshire Location

SCHEDULE 2

2009 ANNUAL METER TEST RESULTS

Meter Class	# of Meters in Service 2008	Test Results	
		# of Meters Tested	Accuracy Rate
Diaphragm 0-500 CFH	26,760	200	96.5%
Diaphragm Over 500 CFH	785	50	96.0 %
All Rotary Meters	902	80	91.0 %
All Turbine Meters	6	6	66.7%
TOTAL	28,453	336	

**METERS TO BE TESTED IN 2010
BASED ON 2009 TEST RESULTS**

Meter Class	# of Meters In Service 2009	# of Meters to Test
Diaphragm 0-500 CFH	27,283	200
Diaphragm Over 500 CFH	804	50
Rotary Meters	945	125
Turbine Meters	6	6
TOTAL	29,038	

Date: _____

Signed by: _____
Manager, Technical Services

Unitil
New Hampshire Location

FORM E-7

2010 ANNUAL REPORT of GAS METER TESTS

Meter Class	# of Meters in Service 2009	Test Results	
		# of Meters Tested	Accuracy Rate
Diaphragm 0-500 CFH	27,283	200	93.5%
Diaphragm Over 500 CFH	804	50	94.0%
All Rotary Meters	945	125	96.8%
All Turbine Meters	5	5	60.0%
TOTAL	29,037	374	

**METERS TO BE TESTED IN 2011
BASED ON 2010 TEST RESULTS**

Meter Class	# of Meters In Service 2010	# of Meters to Test
Diaphragm 0-500 CFH	27,611	500
Diaphragm Over 500 CFH	826	80
Rotary Meters	982	50
Turbine Meters	5	5
TOTAL	29,424	

Date: _____

Signed by: _____
Manager, Technical Services

Unitil
NU - New Hampshire Location

FORM E-7

2011 ANNUAL REPORT of GAS METER TESTS

Meter Class	# of Meters in Service 2010	Test Results	
		# of Meters Tested	Accuracy Rate
Diaphragm 0-500 CFH	27,611	500	94.4%
Diaphragm Over 500 CFH	826	80	91.3%
All Rotary Meters	983	50	96.0%
All Turbine Meters	5	5	100.0%
TOTAL	29,425	635	

**METERS TO BE TESTED IN 2012
BASED ON 2011 TEST RESULTS**

Meter Class	# of Meters In Service 2011	# of Meters to Test
Diaphragm 0-500 CFH	28,282	500
Diaphragm Over 500 CFH	747	125
Rotary Meters	926	50
Turbine Meters	5	5
TOTAL	29,960	680

Date: _____

Signed by: _____
Manager, Technical Services

Unitil
New Hampshire Location

FORM E-7

2012 ANNUAL REPORT of GAS METER TESTS

Meter Class	# of Meters in Service 2011	Test Results	
		# of Meters Tested	Accuracy Rate
Diaphragm 0-500 CFH	28,282	500	96.2%
Diaphragm Over 500 CFH	747	125	96.0%
All Rotary Meters	926	50	96.0%
All Turbine Meters	5	4	100.0%
TOTAL	29,960	679	

**METERS TO BE TESTED IN 2013
BASED ON 2012 TEST RESULTS**

Meter Class	# of Meters In Service 2012	# of Meters to Test
Diaphragm 0-500 CFH	28,901	200
Diaphragm Over 500 CFH	747	50
Rotary Meters	935	50
Turbine Meters	4	4
TOTAL	30,587	304

Date: _____

Signed by: _____
Manager, Technical Services

**NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION
ANNUAL REPORT OF GAS METER TESTS
(In compliance with Puc 509.09)**

Company Name:

Unit:

Year Ending: December 31, 2013

Meter Group	# of Meters in Service 2012	# of Meters Tested	Test Results	
			Accuracy Rate	Required Accuracy Rate
Diaphragm 0 - 500 CFH	28,901	200	93.5%	N/A
Diaphragm Over 500 CFH	747	50	94.0%	N/A
All Rotary Meters	935	50	92.0%	N/A
All Turbine Meters	4	4	100.0%	N/A
TOTAL	30,587	304		

METERS TO BE TESTED IN 2014 BASED ON 2013 TEST RESULTS

Meter Group	# of Meters In Service 2013	# of Meters to Test
Diaphragm 0 - 500 CFH	29,374	500
Diaphragm Over 500 CFH	964	80
All Rotary Meters	987	125
All Turbine Meters	4	4
TOTAL	31,329	709

Supervisor's Name / Title:
(please print)

Chris Dube Manager, Technical Services

Supervisor's Signature: _____

Date Submitted: _____