

**Unitil**  
**Gas Meter Shop Cost Effectiveness Study – 2010**

**Overview**

**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**

This study incorporates an explanation of Unitil's current practice of utilizing vendors to perform the testing and refurbishment of meters for all three of its operating centers; Fitchburg, MA, Portsmouth, NH, and Portland, ME. This equates to approximately 3500 residential, 175 C&I meters, and 300 rotary meters per year with associated costs of \$85,785.

**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 existing Fitchburg facility - \$359,085
  - Constructing an addition to the Portsmouth facility - \$871,704
- Costs associated with tools and equipment - \$153,978
- Required full-time employees – 1.92
- Operating costs:
  - Employee salaries - \$112,000
  - Utilities - \$3,500
  - Tool replacements - \$1,000

**Conclusion**

Due to the estimated annual operating costs of \$116,500 exceeding the current annual expenditures of \$85,785 paid to vendors for performing testing, it is not economical at this time for Unitil to pursue establishing a gas meter testing facility.

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**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 requires 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, in July of 2009, Unitil received a one-year waiver that approved Unitil's external meter testing practices.

**Current Testing Processes and Associated Expenditures**

Currently, Unitil utilizes vendors to perform its gas meter testing of approximately 3,500 residential, 175 C&I meters and 300 rotary meters per year for Massachusetts, New Hampshire, and Maine. The process involves:

**Routine Tests**

- Meters are removed from the field
- Meters are palletized by make and size at the respective operating center
- When 3 – 4 pallets are full, the appropriate vendor is contacted to schedule pick-up
  - Diaphragm meters up to 1000 cfh are shipped to Austin, Int'l., York, SC
  - Diaphragm meters > 1000 cfh and rotary meters are shipped to Imac, Inc., Tullytown, PA
- Meters are tested and refurbished 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%
- Components are changed for those that are not adjustable to within established tolerances of +/- 0.5%
- Leak test – under water with pressure applied to meter
- Wash and paint preparation
- Paint
- 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 local utility company that has the equipment to perform such tests

The current processes have been in place since Unutil’s purchase of Northern Utilities in December of 2008. Therefore, 18 months of invoices were available and used to calculate an average monthly expenditure rate, which was then used to calculate an annual expenditure rate. Meter testing expenditures for 2009 and the first 6 months of 2010, as well as calculated annual expenditures are as follows (includes shipping):

Vendor	2009	2010 (Jan – June)	Totals
AUSTIN INTERNATIONAL INC	\$ 42,861.14	\$ 10,005.44	\$ 52,866.58
IMAC SYSTEMS INC	\$ 25,970.91	\$ 49,840.62	\$ 75,811.53
Total	\$ 68,832.05	\$ 59,846.06	\$ 128,678.11
		<b>Annual Average</b>	<b>\$ 85,785.41</b>

**Facility Design and Construction Analysis**

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

The analysis included site visits to various established testing facilities including:

- Austin, Int. – York, SC
- Elster-American, Inc – Cartersville, GA
- NSTAR, Inc – Southborough, MA

It was determined that the following requirements are necessary 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 an 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 - \$358,085
- Construct addition to Portsmouth facility - \$871,704

### 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 up to 1000 cubic feet	American Meter SNAP 2006 Series III Prover	\$ 45,490	
	Optic Index Sensor Assembly	\$ 710	
	USB Bar Code Reader/Scanner	\$ 395	
	Installation and Commissioning (plus travel)	\$ 1,800	
	Vacuum Pump	\$ 4,950	
			\$ 53,345
Large Diaphragm and Rotary Meters	Model #5 Roots Prover 5M/20M	\$ 42,830	
	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	
			\$ 52,066
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	Campbell Hausfeld AL2810 1.5 GPB Gas Piston Airless Sprayer	\$ 3,619	\$ 3,619
	Campbell Hausfeld MP331100AJ HVLP Spray Gun	\$ 75	\$ 75
Ert Programming Equipment	Itron FC300 S read Radio	\$ 4,990	
	AC Power Supply	\$ 65	
	AC Power Cord	\$ 8	
	FC300 Dock, desktop with USB host/USB Client	\$ 350	
			\$ 5,413
Badger Module Programming Equipment	Orion Trimble Handheld	\$ 4,960	\$ 4,960
Meter Carts	4 @ \$1125 ea.	\$ 4,500	\$ 4,500
	*Information obtained from NSTAR who recently purchased a leak tester for their facility upgrade		

Unitil Gas Meter Testing Facility Equipment Requirements (Continued)			
Work Station Computers	2 Company Issued	\$ 2,000	\$ 2,000
Miscellaneous Tooling		\$ 2,500	\$ 2,500
<b>Total Equipment Costs</b>			<b>\$153,978.13</b>

### Staffing Requirements

Unitil 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 Test	10250	3	0.05		513	0.32
Residential Meter Test and Adjust	2750	20	0.33		917	0.57
C&I Test and Adjust	175	30	0.50		88	0.05
Rotary Test and Adjust	300	225	3.75		1125	0.70
Paint	3225	3	0.05		161	0.10
Out Test	3225	3	0.05		161	0.10
Condemn Meters	575	10	0.17		96	0.06
New Residential Meters	1850	3	0.05		93	0.06
New Rotary Meters	225	3	0.05		11	0.01
Meter Set-up - Instrument Arms	75	20	0.33		25	0.02
AMR/AMI Module Replacements	225	10	0.17		38	0.02
Inventory Tracking/Investigation	120	20	0.33		40	0.03
Annual Reports	3	480	8.00		24	0.02
					<b>Total FTE's</b>	<b>2.06</b>

### 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 = \$60,000/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 \$25/hr \* 2080 hrs/yr = \$52,000/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	\$ 359,085.00	\$ 871,704.00
Equipment Estimate	\$ 153,978.00	\$ 153,978.00
Total	\$ 513,063.00	\$ 1,025,682.00
<b>Operating Costs - Annual</b>		
2 Full Time Employees	\$ 112,000.00	\$ 112,000.00
Utility Expenses	\$ 3,500.00	\$ 3,500.00
Tool Replacements	\$ 1,000.00	\$ 1,000.00
Total	\$ 116,500.00	\$ 116,500.00

**Conclusion**

The estimated operating costs of \$116,500 exceed the current annual expenditures for gas meter testing of \$85,785 and therefore it is not feasible for Unitil to establish a gas meter testing facility.