



Agenda Date: 03/29/19  
Agenda Item: 6E

**STATE OF NEW JERSEY**  
**Board of Public Utilities**  
44 South Clinton Avenue, 3<sup>rd</sup> Floor, Suite 314  
Post Office Box 350  
Trenton, New Jersey 08625-0350  
[www.nj.gov/bpu/](http://www.nj.gov/bpu/)

RELIABILITY & SECURITY

IN THE MATTER OF THE METER SAMPLING PLAN )  
OF ROCKLAND ELECTRIC COMPANY )

DECISION AND ORDER

DOCKET NO. EO18101188

**Party of Record:**

**Margaret Comes, Esq.**, Rockland Electric Company

**BY THE BOARD:**

The New Jersey Board of Public Utilities ("Board") has jurisdiction to oversee the electric meter sampling program pursuant to N.J.A.C. 14:5-4.2, Periodic Testing of Electric Meters. The primary purpose of this rule is to establish meter sampling techniques to ensure electric meter accuracy. The four (4) regulated electric distribution companies in the State of New Jersey are Public Service Electric and Gas Company, Atlantic City Electric, Jersey Central Power and Light and Rockland Electric Company ("RECO"), ("EDCs"). The role of Board Staff ("Staff") is to monitor the Companies meter testing programs.

N.J.A.C. 14:5-4.2, Periodic Testing of Electric Meters, requires electric meters to be tested on different intervals depending on kilowatt rating or if it is a self-contained single-phase meter and three-wire network meters (most residential electric meters fall into this category), at least once in eight years or by a variable interval or statistical sampling technique approved by the Board. For any meter tested, results must be within the adjustment limits of no more than two percent as per N.J.A.C. 14:3-4.6(a), Adjustment of charges for meter error.

Currently each EDC has a sampling plan approved by the Board. These plans were approved by the Board at various times and lacked uniformity. Staff initiated a process to review meter sampling data to evaluate current meter sampling programs. Staff reviewed six (6) years of data from each EDC's meter sampling program. Following the evaluation, Staff was able to draw several conclusions. First and foremost, a uniform sampling technique is not utilized by the EDCs across the industry to evaluate electric meter accuracy results. Specifically, the percent of meters tested by each of the EDCs varies. Staff further determined that a national standard consistent with the American National Standards Institute ("ANSI") guidelines should be adopted. Staff held multiple meetings with the EDCs to discuss updating the sampling techniques, to agree upon a uniform methodology that would be consistent with national guidelines, and to come to a consensus on a single plan which would benefit the public.

Staff and the EDCs came to a consensus on an appropriate sampling plan based on inspection by variables. The correct protocol would utilize the ANSI Z1.9<sup>1</sup> guidelines.

Following the meetings with staff, on October 29, 2018 Rockland Electric filed a petition seeking Board approval of an updated meter sampling program.

On February 22, 2019, Rate Counsel indicated that it did not object to the plan so long as no special rate treatment will be accorded to Rockland Electric.

### **DISCUSSION AND FINDINGS**

The Board's rules at N.J.A.C. 14:5-4.2 provide that self-contained single-phase meter and three-wire network meters (most residential electric meters fall into this category), at least once in eight years or by a variable interval or statistical sampling technique approved by the Board. By and through this Petition, RECO seeks Board approval of an updated meter sampling program.

The Board notes that the ANSI Z1.9 guidelines, and the agreed upon protocol with the EDCs would create a comprehensive sampling program with clear guidelines which can be referenced and monitored, allowing for more precise and consistent reports. ANSI Z1.9 is a statistical sampling program published by The Statistics Subcommittee of the Accredited Standards Committee Z1 on Quality Environment, Dependability and Statistics. This publication is peer reviewed, and utilizes current statistical models. The utilization of this program by all of the EDCs will provide uniformity and certainty higher level of confidence with regard to the testing of meters as required by the Board's regulations. Additionally, updated reports and forms will provide staff with appropriate information to continue to review and monitor RECO's meter sampling.

The Board **FINDS** that, based on the record in this matter, Staff has generated quarterly data reporting forms and concise instructions derived from ANSI Z1.9. The Board also **FINDS** that the newly adopted standard will hold meter accuracy to a stricter, nationally recognized standard that is peer reviewed and accredited and groups of nonconforming meters will more easily be identified and repaired or replaced. As a result, the EDCs Meter Sampling Program will produce statistically sound results which are not only uniform throughout the Companies, but also provide a positive benefit in serving the public interest.

Accordingly, the Board **HEREBY ORDERS** that the RECO shall use the techniques outlined in the attached instructions which are consistent with ANSI Z1.9 and the forms and instructions derived by Staff to report quarterly meter testing results. The quarterly reporting forms are attached to this Order as Exhibit A and shall be used as guidelines for the approved gas meter sampling program.

After consideration of the matters, the Board **FURTHER FINDS** these revisions to be reasonable and in the public interest and **HEREBY ACCEPTS** these revisions. The revised meter sampling program shall be implemented on January 1, 2020, to allow the industry time to update their meter sampling programs.

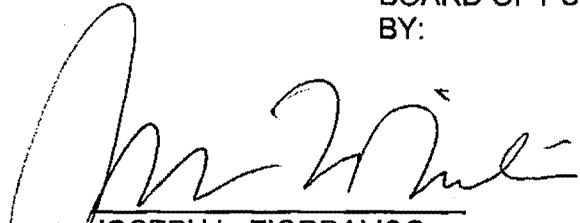
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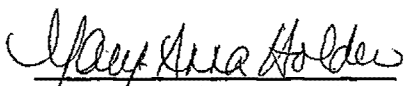
<sup>1</sup> The Statistics Subcommittee of the Accredited Standards Committee Z1 on Quality, Environment, Dependability and Statistics (2013, October) ANSI/ASQ Z1.9-2003 (R2013) Sampling Procedures And Tables For Inspection By Variables For Percent Nonconforming.


This Order shall be effective on April 8, 2019.


DATED: 3/29/19

BOARD OF PUBLIC UTILITIES  
BY:

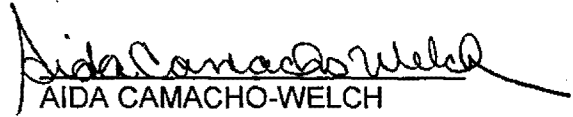
  
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ATTEST:   
\_\_\_\_\_  
AIDA CAMACHO-WELCH  
SECRETARY

I HEREBY CERTIFY that the within  
document is a true copy of the original  
in the files of the Board of Public Utilities.

IN THE MATTER OF THE METER SAMPLING PLAN OF ROCKLAND ELECTRIC COMPANY  
DOCKET NO. EO1810188

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BOARD OF PUBLIC UTILITIES  
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**ELECTRIC METER REPORTING INSTRUCTIONS IN CONJUNCTION WITH ANZI 1.9**

**A. REGULATIONS**

The following regulations shall be adhered to:

- N.J.A.C. 14:3-4.4* Testing of Utility Meter Testing Equipment
- N.J.A.C. 14:5-4.1* Testing of Electric Meters
- N.J.A.C. 14:5-4.2* Periodic Testing of Electric Meters
- N.J.A.C. 14:5-4.3* Determination of Electric Meter Accuracy
- N.J.A.C. 14:5-4.5* Readjustment of Electric Meters
- N.J.A.C. 14:3-4.7* Meter test reports and records

**B. DATA SHEETS**

The attached data spread sheets shall be used to report electric meter tests results to the New Jersey Board of Public Utilities. The five spread sheets are:

1. Cover Sheet
2. Table I – Statistical Sampling Data Sheet
3. Table II – Periodic Meters Data Sheet
4. Table III – Customer Complaints and “Other Reasons”
5. Table IV Rejected Meter Removal Data Sheet

The meter testing information shall be entered correctly and submitted to NIBPU in a timely fashion (see section K below) to satisfy *N.J.A.C. 14:3-4.7*.

### **C. REQUIRED ANSI Z1.9 PROTOCOL**

The reference text **ANSI/ASQ Z1.9-2003(R2013)**, Sampling Procedure and Tables for Inspection by Variables for Percent Non-conforming is used to analyze meter test data results. The ANSI Z1.9 protocol requires a series of calculations done in a specific order. Values are calculated and it is determined by comparison to a pre-determined constant if a lot passes.

The specific protocol: "Double Specification Limit, Variability Unknown-Standard Deviation Method" requires the maximum and minimum allowable values to be part of the calculation sequence. Hence, if it is decided to make the test more stringent due to changing electric meter technology, one can adjust the maximum and minimum values, as well as the Assurance Quality Limit (AQL) and Inspection Level. This protocol can be found on pp 38 -54. An example of this ANSI Z1.9 protocol can be found in section G.

### **D. TESTING PROCEDURES CONSTANT PARAMETERS**

#### **PHASE ONE METERS: NEWLY PURCHASED METERS**

1. Assurance Quality Limit (AQL): kept constant at 10.0, or increased stringency.
2. Inspection Level: kept constant at Level II, or increased stringency.
3. All refurbished and rebuilt meters shall be tested before being placed back into service.

#### **PHASE TWO METERS: AT FIVE YEARS OF SERVICE**

1. Assurance Quality Limit (AQL): kept constant at 10.0, or increased stringency.
2. Inspection Level: kept constant at Level II, or increased stringency.

#### **PHASE THREE METERS: AT TEN YEARS OF SERVICE**

1. Assurance Quality Limit (AQL): kept constant at 10.0, or increased stringency.
2. Inspection Level: Level II, or increased stringency.

*The above parameters shall not be changed.*

### **E. DETERMINATION OF SAMPLE SIZE AND M VALUE**

1. Determine the sample size code letter from Table A-2, Sample Size Code Letters.
2. Go to Table B-3. Use the Sample Size Code Letter and AQL to determine the sample size and M value. The M value is the percentage of meters allowed to be non-conforming and will be used in the latter end of the calculations. Note that for normal and tightened inspections the same table is used.

The number of required meter tests for the year can be distributed over four quarters. The final conclusion as to whether or not a type passes does not have to be concluded until December 31 of the test year. If it is apparent that a group will fail, all remaining tests still must be completed by the end of the year.

## **F. EXPLANATION OF CALCULATIONS**

The first section gives a brief description of sequence of calculations. Section G cites an example from ANSI Z1.9.

1. Determine sample size.
2. Total the meter readouts.
3. Total the square of the meter readouts.
4. Calculate a correction factor: follow the calculations in the example below.
5. Correct the sum of the squares: follow the calculations in the example below.
6. Calculate the variance: follow the calculations in the example below.
7. Estimate the standard deviation: follow the calculations in the example below.
8. Calculate the sample mean: follow the calculations in the example below.
9. State the Upper Specification Limit, U: 102
10. State the Lower Specification Limit, L: 98
11. Calculate the upper Quality Index  $Q_U$ .
12. Calculate the lower Quality Index  $Q_L$ .
13. Estimation of percent non-conforming above U, the upper specification limit. This is equal to  $P_U$ .
14. Estimation of percent non-conforming below U, the lower specification limit. This is equal to  $P_L$ .
15. Calculate the total estimated percent non-conforming, this is equal to P.  $P = P_U + P_L$ .
16. Determine M, the maximum allowable percent non-conforming. The value is found in table B-3.
17. The acceptability Criterion: compare P with M. If P is less than M, the lot passes. Else, the lot fails.

## **G. EXAMPLE OF ANSI Z1.9 CALCULATIONS**

The example is found on page 40 of the above noted ANSI manual, it is titled: "Example B-3, Example of Calculations, Double Specification Limit, Variability Unknown-Standard Deviation Method, One AQL Value for Both Upper and Lower Specification Limit Combined". The example illustrates the step by step procedure to assess meter testing results. In this specific example, the maximum and minimum limits being 209°F and 180°F, respectively. Inspection level II and the AQL = 1%.

### **EXAMPLE B-3**

Example of Calculations

Double Specification Limit

Variability Unknown—Standard Deviation Method

One AQL Value for Both Upper and Lower Specification Limit Combined

Example: The minimum temperature of operation for a certain device is specified as 180°F. The maximum temperature is 209°F. A lot of 40 items is submitted for inspection. Inspection Level II, normal inspection, with AQL = 1% is to be used. From Tables A-2 and B-3 it is seen that a sample of size 5 is required. Suppose the measurements obtained are as follows: 197°, 188°, 184°, 205°, and 201°; and compliance with the acceptability criterion is to be determined.

Line	Information Needed	Value Obtained	Explanation
1	Sample Size: n	5	
2	Sum of Measurements: $\Sigma X$	975	
3	Sum of Squared Measurements: $\Sigma X^2$	190,435	
4	Correction Factor (CF): $(\Sigma X)^2/n$	190,125	$(975)^2/5$
5	Corrected Sum of Squares (SS): $\Sigma X^2 - CF$	310	$190,435 - 190,125$
6	Variance (V): $SS/(n - 1)$	77.5	$310/4$
7	Estimate of Lot Standard Deviation s: $\sqrt{V}$	8.80	77.5
8	Sample Mean $\bar{X}$ : $\Sigma X/n$	195	$975/5$
9	Upper Specification Limit: U	209	
10	Lower Specification Limit: L	180	
11	Quality Index: $QU = (U - \bar{X})/s$	1.59	$(209 - 195)/8.80$
12	Quality Index: $QL = (\bar{X} - L)/s$	1.70	$(195 - 180)/8.80$
13	Est. of Lot Percent Ncf. above U: pU	2.19%	See Table B-5
14	Est. of Lot Percent Ncf. below L: pL	0.66%	See Table B-5
15	Total Est. Percent Ncf. in Lot: $p = pU + pL$	2.85%	$2.19\% + 0.66\%$
16	Max. Allowable Percent Ncf.: M	3.33%	See Table B-3
17	Acceptability Criterion: Compare $p = pU + pL$ with M	$2.85\% < 3.33\%$	See Para. B12.1.2(7)

The lot meets the acceptability criterion, since  $p = pU + pL$  is less than M. This calculation cannot be performed until all meters are tested.

#### **H. TEST RESULTS**

The categories for test results are:

- 1) Slow = <98% accurate
- 2) Accurate = 98%-102% accurate
- 3) Fast = > 102% accurate
- 4) Indeterminate accuracy
- 5) Does not register (DNR)

#### **I. TESTING SCHEMES**

Scheme 1: A type is tested using the normal testing procedure and is accepted. Testing is continued under the normal inspection protocol the following calendar year.

Scheme 2: A type is tested using the normal testing procedure and is not accepted. Testing is continued for the rest of the year. The following year the type is tested using the tightened protocol. See 2A, 2B and 2C below.

Scheme 2A: Utilizing the tightened protocol: if five consecutive lots (five consecutive calendar years) are accepted, the type is returned to the normal protocol.

Scheme 2B: Utilizing the tightened protocol: if two consecutive lots fail, the type is rejected. The entire type is replaced in four years. See item J below.

Scheme 2C: Utilizing the tightened protocol: if two of five consecutive lots fail, the type is rejected. The entire type is replaced in four years. See item J below.



**J. FIVE YEAR REPLACEMENT PROTOCOL FOR REJECTED TYPES**

A rejected type shall have all meters replaced by the end of five years. All data shall be recorded in Table IV of this document.

**K. DUE DATES**

Pursuant to *N.J.A.C. 14:3-4.7*: "Each utility shall provide the Board with summaries of all meter tests. Each utility have 500 or more meters shall report quarterly. Utilities having less than 500 meters shall report annually."

The quarterly reports are due:

1<sup>st</sup> Quarter: May 31

2<sup>nd</sup> Quarter: August 31

3<sup>rd</sup> Quarter: November 30

4<sup>th</sup> Quarter: March 31

**L. ANNUAL REPORT: N.J.A.C. 14:3-4.4(b)**

There are two methods to satisfy the above regulation a or b below.

a. Pursuant to *N.J.A.C. 14:3-4.4 (b)* to comply with *N.J.A.C. 14:3-4.4* a utility "must have its meter testing equipment tested and sealed by NJ Weights and Measures"

or

b. Both of the following requirements must be met:

1. "Have its meter testing equipment tested and certified by a laboratory approved and recognized by National Institute of Standards and Technology (NIST) with testing equipment traceable to NIST."

**Supporting documents shall be supplied to NJBPU staff each year. Attach to a quarterly report on a cyclic yearly basis.**

2. "Prior to utilizing the equipment for compliance with this subchapter, submit to the Board a written approval, issued by the Superintendent of NJ Weights and Measures, accepting the laboratory that performed the certification for purposes of compliance with this subchapter."

**To be done once, unless there is a change in the laboratory doing the certification.**

**M. RETENTION OF DATA**

Manufacturers' test data shall be retained for the in-service life span of all meters plus 6 years.

The last meter test data results shall be retained.

**N. PERIODIC METER TESTING**

Periodic meters shall be tested by the end of the year tests are due. If a meter cannot be tested the reason must be noted for each meter.

## TABLE I: ELECTRICAL STATISTICAL SAMPLING DATA

### Meter Population Grouping and Sub-Groups

Meter populations are grouped by: Group Designation I (Column A) and Group Designation II (Column B). Grouping entails using "like" significant characteristics or similar characteristics of operation.

Large group designations may be subdivided into smaller groups for testing based on significant like characteristic(s) or similar characteristic(s) of operation. In addition it may be necessary to create a subgroup when an error is identified. This change in group must be clearly noted in the report for the period in which the change occurred.

When a group's population becomes too low to reasonably sample, it may be necessary to combine two or more groups with significant like characteristics or similar characteristics of operation. This change in group must be clearly noted in the report for the period in which the change occurred.

An example of meters with "like" characteristics: a utility purchased a model AC250 meter over a several year period. It was set in 1995 in three locations, A, B and C. The number of meters set in each location is 7062, 4473 and 9825, respectively. In addition, 675 were set in 2004 and 38 were set in 1956, each in a different location. Each group may be independent of each other.

The chart would resemble such:

<u>AC250 Group</u>	<u># METERS IN SERVICE (see item B below)</u>
AC250-A	7062
AC250-B	4473
AC250-C	9825
AC250-2004	675
AC250-1956	38

Each is referred to as a "line item". It is satisfactory to use the term families, but families do not exist with respect to determining the number of meters to be tested.

### COLUMN A: GROUP DESIGNATION I

Designate a characteristic for each group. If additional characteristics are required, use Column B.

### COLUMN B: GROUP DESIGNATION II

List any additional characteristics for the Group in Column A.

Note: Column A and Column B are where the groups are clearly broken into populations for random sampling. These groups shall not change unless clearly noted in the report for the period in which the change occurred.

### COLUMN C: # IN SERVICE

Column C requires a tally of the total number of meters in service per Group.

Each meter in service must satisfy the two parameters below:

1. Stationed on customers' premises, in use, recording customer usage.
2. Generates revenue for the utility.

**COLUMN D: NORMAL OR TIGHTENED (N/T)**

Enter N or T depending upon whether or not the normal or tightened protocol is used, respectively.

**COLUMN E: # TESTS DUE**

Enter the number of meter tests due per each line item

**COLUMNS F THRU I: THE NUMBER OF METERS TESTED FOR EACH QUARTER**

This is the number of meters tested for each quarter for each "line item". At the end of the fourth quarter, the year-to-date total number of meters tested shall be equal to the number of meter tests required for the entire year.

**COLUMN J # METERS TESTED (YTD)**

Enter the number of meters tested year-to-date. Hence, this value changes every quarter.

**COLUMN K: # SLOW METERS FOR THE QUARTER**

Enter the number of slow meters, i.e. have an accuracy of <98% for the quarter.

**COLUMN L: # ACCURATE METER FOR THE QUARTER**

Enter the number of meters that are accurate, i.e. have an accuracy of 98-102% for the quarter.

**COLUMN M: # FAST METERS FOR THE QUARTER**

Enter the number of meters that are fast, i.e. have an accuracy of >102% for the quarter.

**COLUMN N: #FAULTY METERS FOR THE QUARTER**

Faulty meter(s) are meters that DNPG, DNR or are IND.

**COLUMN O: ACCEPTED (AC) OR REJECTED (RE)**

*Do not fill in this information until the required number of meters are tested.*

Once testing is complete, i.e. all of the required number of meters are tested, determine if the type is accepted (AC) or rejected (RE). Enter the appropriate conclusion.

**COLUMN P: COMMENTS**

Enter any pertinent comment(s).

**TABLE II: PERIODIC METERS TEST DATA**

Table II is used to tally periodic meters test results. That the meters are periodic, 100% of the meters with tests due shall be tested by the end of the cycle year.

**COLUMN A: GROUP DESIGNATION I**

Designate a characteristic for each group.

**COLUMN B: GROUP DESIGNATION II**

List any additional characteristics for the Group in Column A.

**COLUMN C: NUMBER IN SERVICE FIRST OF YEAR**

List the number of meters in service first of the year for each group.  
Each meter in service must satisfy the two parameters below:

1. Stationed on customers' premises, in use, recording customer usage.
2. Concurrently generates revenue for the utility.

**COLUMN D: TOTAL NUMBER OF METERS DUE FOR TESTING FOR THE YEAR**

Tally the number of meters required to be tested for each group.

**COLUMN E: METER TESTING CYCLE: PER N.J.A.C. 14:6-4.2**

Enter the appropriate cycle (in years) for the meter model.

**COLUMN F THRU I: NUMBER OF METERS TESTED (FOR EACH QUARTER)**

This is the total of meters tested for each quarter. When entering the data for the fourth quarter, the year-to-date information shall be equal to the number of meters tested for the entire year.

**COLUMN J: YTD # METERS TESTED**

Enter the total of meters tested year-to-date, i.e. cumulative. Hence the value will change with every quarter.

**COLUMN K: # METERS THAT ARE SLOW (YTD)**

Enter the total of meters that are slow.

**COLUMN L: # METERS THAT ARE ACCURATE (YTD)**

Enter the total of meters that are accurate.

**COLUMN M: # METERS THAT ARE FAST (YTD)**

Enter the total of meters that are fast.

**COLUMN N: FAULTY/DNR/DNPG METERS (YTD)**

Enter the total of meters that DNPG, DNR or are faulty.

**COLUMN O: COMMENTS**

Enter any pertinent comments.

**TABLE III**

**TALLY OF TESTS PERFORMED DUE TO CUSTOMER COMPLAINTS AND "OTHER REASONS"**  
**(COMBINED)**

Table III is used to tally all meter test results that are conducted due to "customer complaints" and "other reasons". Each quarter combine both totals for each category and enter in the table.

## **TABLE IV – REJECTED METERS**

Table IV chronologically tallies the removal of rejected meters. A rejected meter is a meter removed from “in-service” due to individual or type accuracy flaws. Meters are logged into the table when they are first rejected, noting the reason for the rejection. Every quarter post-rejection, for four years, the meters are added to the tally to highlight how many meters are removed and how many meters are remaining “in-service”. All meters to be removed within years.

### **COLUMN A: TYPES**

List the meter type.

### **COLUMN B: REJECTION DATE**

List the month and year of rejection. A utility may have identical meter types with different rejection dates, and hence shall be independently listed.

### **COLUMN C: # TOTAL NUMBER OF REJECTED METERS**

This is the number of in-service meters that are rejected, i.e. the entire number of meters in the rejected group.

### **COLUMN D: # METERS REPLACED**

This is the number of rejected meters replaced at year 0, reported quarterly.

### **COLUMN E: # METERS IN SERVICE AT THE END OF YEAR 0**

This is number of rejected meters remaining at the end of each quarter for year 0.

### **COLUMNS F: # METERS REPLACED DURING YEAR 1**

This is the number of meters in the rejected group that are removed during year 1, one year post rejection.

### **COLUMN G: # METERS IN SERVICE AT THE END OF YEAR 1**

After meters are removed one year post rejection, this is the number of meters remaining.

### **COLUMN H: # METERS REPLACED DURING YEAR 2**

This is the number of meters in the rejected group that are removed two years post rejection.

### **COLUMN I: # METERS IN SERVICE AT THE END OF YEAR 2**

This is the number of meters remaining at the end of year two after meter removal.

### **COLUMN J: # METERS REPLACED DURING YEAR 3**

This is the number of meters in the rejected group that are removed three years post rejection.

### **COLUMN K: # METERS IN SERVICE AT THE END OF YEAR 3**

This is the number of meters remaining at the end of year three after meter removal.

### **COLUMN L: METERS REPLACED DURING YEAR 4**

This is the number of meters in the rejected group that are removed four years post rejection.

**COLUMN M: METERS IN-SERVICE AT THE END OF YEAR 4**

This is the number of meters remaining at the end of year four after meter removal. All rejected meters shall be removed.

**COLUMN N: COMMENTS**

Note why the meter type was rejected. This shall be entered Year 0.



**New Jersey Board of Public Utilities**  
**44 South Clinton Avenue**  
**3<sup>rd</sup> floor, Suite 314, PO Box 350**  
**Trenton, NJ 08625**

**ELECTRIC METER SAMPLING RETURN COVER SHEET**  
**IN CONJUNCTION WITH ANSI Z1.9**

**INSTRUCTIONS: THIS COVER SHEET SHALL BE FILLED OUT AND RETURNED WITH THE**  
**GAS METER TEST RESULTS**

**FROM: COMPANY:**  
**RESPONSIBLE PERSON:**  
**ADDRESS:**  
**ADDRESS:**  
**ADDRESS:**

**TESTING PERIOD:**

**TO: THE NEW JERSEY BOARD OF PUBLIC UTILITIES**  
**44 SOUTH CLINTON AVE.**  
**P.O. Box 350**  
**TRENTON, NJ 08625**

**PLEASE FILL IN THE APPROPRIATE INFORMATION BELOW.**

**I,**  
**Position/Title:**  
**Company:**

**Do hereby certify that the within report consisting of this sheet and supplementary**  
**sheets have been prepared under my direction, that I have examined the said**  
**report and to the best of my knowledge and belief, the information contained herein**  
**is a correct report of all meter tests made by the Company during the**  
**period stated.**

**Signature:**

**Date:**













STATE OF NEW JERSEY  
BOARD OF PUBLIC UTILITIES  
44 SOUTH CLINTON AVE.  
P.O. BOX 350  
TRENTON, NJ 08625-0350

TABLE III  
TALLY OF METERS TESTS DUE TO "CUSTOMER COMPLAINTS" AND "OTHER REASONS"  
COMPANY: \_\_\_\_\_  
YEAR/QUARTER: \_\_\_\_\_

	1ST QUARTER	2ND QUARTER	3RD QUARTER	4TH QUARTER		
	# METER TESTS PERFORMED	# METER TESTS PERFORMED	# METER TESTS PERFORMED	# METER TESTS PERFORMED	YTD TOTAL	COMMENTS
CUSTOMER COMPLAINTS TO OTHER REASONS						



## Rockland Electric Company ("Rockland") Electric Meter Sampling Plan

- Rockland will utilize two test programs for In-Service Electric Meter Testing. An ANSI Z1.9 Sampling by Variables for Percent Nonconforming test program will be used to determine in-service performance of both Residential and Small Commercial customer electric meters.  
Polyphase and Transformer rated electric meters will be tested utilizing a traditional periodic test program as defined N.J.A.C. 14:5-4.2 Periodic Testing of Electric Meters.
- The Sampling program Instituted will follow requirements in ANSI Z1.9-2003 (R2013). Section A, General Description of Sampling Plans will be used.
  - Electric Meters will be placed into Population Groups from which test samples will be drawn annually for testing.
  - Normal Testing Inspection Procedures will be implemented. Test samples will utilize Inspection Level II with an AQL of 1.0.
  - Sample performance will be determined as stated in Section B, Part II of ANSI Z1.9 the Standard Deviation Method for Double Specification Limits.
  - Rockland will determine if a failed Sample Group is placed on a retirement program or a Tightened Inspection level.
  - Sample Failures will follow the Guidelines stated in Section A on ANSI Z1.9 to determine if a sample group is placed in a Tightened Inspection level.
  - Reporting will follow existing BPU requirements.
- Self-contained Polyphase and Transformer Rated electric meters will follow the periodic test schedule stated in N.J.A.C. 14:5-4.2.
  - All Solid-State electric meters in this category that utilize programmable algorithms to determine Demand calculations will be placed in the 16 year test cycle. These devices are not equipped with traditional mechanical demand measurement registers.
  - All mechanical meters will follow the existing schedule in N.J.A.C. 14:5-4.2.

- The quarterly reports during the year shall be submitted to the Board no later than the last day of the month following the close of the quarter.
  - The fourth quarter, year-end closing report, shall be submitted to the Board no later than the last day of March the following calendar year.
  - Reporting will follow existing BPU requirements and utilize the format set out in Exhibit 1 attached to this Attachment A.
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- The annual test equipment certification shall be submitted to the Board no later than January 31 of each year for the previous calendar year's calibration certification submitted pursuant to N.J.A.C. 14:3-4.4, or on any other date directed by the BPU.