

January 9, 2019

**VIA HAND DELIVERY & ELECTRONIC MAIL**

Luly E. Massaro, Commission Clerk  
Rhode Island Public Utilities Commission  
89 Jefferson Boulevard  
Warwick, RI 02888

**RE: Docket 4915 - National Grid's Proposed FY 2020 Electric Infrastructure, Safety, and Reliability Plan**  
**Copy of Responses Submitted to Division's Third Set of Data Requests**

Dear Ms. Massaro:

On behalf of National Grid,<sup>1</sup> I have enclosed ten (10) copies of the Company's responses to the Rhode Island Division of Public Utilities' (Division) Third Set of Data Requests issued on December 19, 2018, during the Division's review in this matter. The Company provided these responses to the Division today under separate cover.

Thank you for your attention to this transmittal. If you have any questions, please contact me at 401-784-7288.

Very truly yours,



Jennifer Brooks Hutchinson

Enclosures

cc: Dockets 4915 & 4857 Service Lists  
John Bell, Division  
Greg Booth, Division  
Christy Hetherington, Esq.  
Al Contente, Division

---

<sup>1</sup> The Narragansett Electric Company d/b/a National Grid (National Grid or the Company).

Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate was electronically transmitted to the individuals listed below.

The paper copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities and Carriers.



\_\_\_\_\_  
Joanne M. Scanlon

January 9, 2019  
Date

**Docket No. 4915 - National Grid's Electric ISR Plan FY 2020**  
**Docket No. 4857 - Performance Incentives Pursuant to R.I.G.L. §39-1**  
**27.7.1(e)(3)**

**Service List as of 1/4/2019**

<b>Name/Address</b>	<b>E-mail Distribution</b>	<b>Phone</b>
Jennifer Hutchinson, Esq. <b>National Grid</b> 280 Melrose St. Providence, RI 02907	<a href="mailto:jennifer.hutchinson@nationalgrid.com">jennifer.hutchinson@nationalgrid.com</a> ; <a href="mailto:celia.obrien@nationalgrid.com">celia.obrien@nationalgrid.com</a> ; <a href="mailto:Joanne.scanlon@nationalgrid.com">Joanne.scanlon@nationalgrid.com</a> ;	401-784-7288
National Grid Melissa Little John Nestor Ryan Moe Adam Crary William Richer Kathy Castro	<a href="mailto:Melissa.Little@nationalgrid.com">Melissa.Little@nationalgrid.com</a> ; <a href="mailto:Ryan.Moe@nationalgrid.com">Ryan.Moe@nationalgrid.com</a> ; <a href="mailto:John.Nestor@nationalgrid.com">John.Nestor@nationalgrid.com</a> ; <a href="mailto:Adam.Crary@nationalgrid.com">Adam.Crary@nationalgrid.com</a> ; <a href="mailto:William.Richer@nationalgrid.com">William.Richer@nationalgrid.com</a> ; <a href="mailto:Kathy.Caston@nationalgrid.com">Kathy.Caston@nationalgrid.com</a> ;	
<b>Division of Public Utilities (Division)</b> Christy Hetherington, Esq. Dept. of Attorney General 150 South Main St. Providence, RI 02903	<a href="mailto:Chetherington@riag.ri.gov">Chetherington@riag.ri.gov</a> ; <a href="mailto:Dmacrae@riag.ri.gov">Dmacrae@riag.ri.gov</a> ; <a href="mailto:John.bell@dpuc.ri.gov">John.bell@dpuc.ri.gov</a> ; <a href="mailto:Macky.McCleary@dpuc.ri.gov">Macky.McCleary@dpuc.ri.gov</a> ; <a href="mailto:Jonathan.Schrag@dpuc.ri.gov">Jonathan.Schrag@dpuc.ri.gov</a> ; <a href="mailto:Kevin.Lynch@dpuc.ri.gov">Kevin.Lynch@dpuc.ri.gov</a> ; <a href="mailto:Joseph.shilling@dpuc.ri.gov">Joseph.shilling@dpuc.ri.gov</a> ;	
Greg Booth Linda Kushner PowerServices, Inc 1616 E. Millbrook Road, Suite 210 Raleigh, NC 27609	<a href="mailto:gbooth@powerservices.com">gbooth@powerservices.com</a> ; <a href="mailto:Lkushner@powerservices.com">Lkushner@powerservices.com</a> ;	919-256-5900

<b>Office of Energy Resources (OER)</b> Andrew Marcaccio, Esq. Dept. of Administration Division of Legal Services One Capitol Hill, 4 <sup>th</sup> Floor Providence, RI 02908	<a href="mailto:Andrew.marcaccio@doa.ri.gov">Andrew.marcaccio@doa.ri.gov</a> ;	401-222-3417
Christopher Kearns, OER Carrie Gill Nick Ucci	<a href="mailto:Christopher.Kearns@energy.ri.gov">Christopher.Kearns@energy.ri.gov</a> ; <a href="mailto:Carrie.Gill@energy.ri.gov">Carrie.Gill@energy.ri.gov</a> ; <a href="mailto:Nicholas.Ucci@energy.ri.gov">Nicholas.Ucci@energy.ri.gov</a> ;	
<b>File an original &amp; ten copies w/:</b> Luly E. Massaro, Commission Clerk John Harrington, Commission Counsel Public Utilities Commission 89 Jefferson Blvd. Warwick, RI 02888	<a href="mailto:Luly.massaro@puc.ri.gov">Luly.massaro@puc.ri.gov</a> ; <a href="mailto:John.harrington@puc.ri.gov">John.harrington@puc.ri.gov</a> ; <a href="mailto:Cynthia.WilsonFrias@puc.ri.gov">Cynthia.WilsonFrias@puc.ri.gov</a> ; <a href="mailto:Alan.nault@puc.ri.gov">Alan.nault@puc.ri.gov</a> ;	401-780-2107

January 9, 2019

**VIA HAND DELIVERY & ELECTRONIC MAIL**

Rhode Island Division of Public Utilities and Carriers  
c/o Luly Massaro  
89 Jefferson Boulevard  
Warwick, RI 02888

**RE: National Grid's Proposed FY 2020 Electric Infrastructure, Safety, and Reliability Plan  
Responses to Division Data Requests – Set 3**

Dear Ms. Massaro:

Enclosed are National Grid's<sup>1</sup> responses to the third set of data requests issued by the Rhode Island Division of Public Utilities and Carriers in the above-referenced matter.

Thank you for your attention to this transmittal. If you have any questions, please contact me at 401-784-7288.

Very truly yours,



Jennifer Brooks Hutchinson

Enclosure

cc: Christy Hetherington, Esq.  
John Bell, Division  
Greg Booth, Division  
Al Contente, Division

---

<sup>1</sup> The Narragansett Electric Company d/b/a National Grid (National Grid or the Company).

Division 3-1

Request:

Regarding the Company's response to R-II-3, what are the Company's proposed steps and timeline to prepare a plan to manage hazard tree removals due to pest infestation? When does the Company anticipate completion of the plan and a forecasted budget?

Response:

The Company has already begun managing hazard tree removals to address Gypsy Moth infestation. In the spring of 2018, the Company met with the Rhode Island Department of Transportation (RIDOT) to create a plan for removing dead oak trees along state roads. By working with RIDOT, the Company has been able to remove the impacted trees safely and efficiently, and at a lower cost. The Company has already removed over 1,100 oak trees which have been killed by Gypsy Moth and identified over 1,100 more. Initial estimates for the total number of trees killed by Gypsy Moth are around 25,000; however, not all of the affected trees will damage the power lines if they fail. The Company is continuing its field investigation and expects to have a more refined estimate this spring when the trees begin to regrow leaves, at which point, it will be easier to identify which ones have been killed by Gypsy Moth. The Company's Massachusetts affiliate conducted similar surveys in Massachusetts and estimated that about 50% of the impacted oak trees will damage power lines, if they fail. In the study that the Company conducted with BioCompliance in 2017 to estimate the impacts of Emerald Ash Borer (EAB) on its electric system in Rhode Island, it was also estimated that 50% of the impacted ash trees would strike the power lines. If the Company sees similar results for Gypsy Moth in Rhode Island that would mean 12,500 oak trees will need to be removed. The Company will be able to provide a more accurate number and cost for removals this spring.

As previously mentioned above and in R-II-3, the Company has already conducted a study to estimate the impacts of EAB on its electric system. Based on this study, the Company determined that there are approximately 31,325 ash trees in proximity to distribution and sub-transmission lines in the State of Rhode Island. About half of these (15,663), are likely to impact the Company's system once they are killed by Emerald Ash Borer. The study initially estimated that it would cost about \$16 million to remove the impacted ash trees over a period of 4-7 years. The Company plans to take a similar approach to addressing ash trees killed by EAB as it has taken with oak trees killed by Gypsy Moth. This should allow the Company to complete ash removals at a significantly lower cost.

The Narragansett Electric Company  
d/b/a National Grid  
In Re: Division's Review of FY 2020 Proposed Electric ISR Plan  
Responses to Division's Third Set of Data Requests  
Issued December 19, 2018

---

Division 3-1, page 2

The cost of removals can vary greatly across the State of Rhode Island. Right now, the Company is averaging less than \$400 per tree. However, it is important to note that these trees are in large clusters on state roads. Once these are removed, the Company will begin removing smaller pockets of trees and individual trees on private property. This will increase the time required and the cost to remove each tree. Currently, the average cost for a typical hazard tree removal is \$700-\$800. To remove these trees, the Company will need to obtain permission from property owners, pay for police details, and for cleanup of the site.

The Narragansett Electric Company  
d/b/a National Grid  
In Re: Division's Review of FY 2020 Proposed Electric ISR Plan  
Responses to Division's Third Set of Data Requests  
Issued December 19, 2018

---

DIV 3-2

Request:

Provide copies of invoices for vegetation management that the Company has submitted to communication companies under any joint ownership pole agreements over the past two years. State whether the invoices have been paid and, if so, how have the payments been reflected in the ISR Plan budget and reconciliation?

Response:

There are two separate Joint Ownership Agreements covering the costs related to jointly-owned poles between the Company and Verizon for Fiscal Years 2018 and 2019; one was effective as of October 1, 1980 and the other effective May 31, 2017. Under the provisions of the agreement effective October 1, 1980, the Company did not invoice Verizon for vegetation management costs. Under the provisions of the current agreement effective May 31, 2017, the Company invoices Verizon for installation of jointly-owned poles at a fixed cost per pole; Vegetation management is not a specific component of the invoice nor separately billed. The Company credits Construction Work in Progress (CWIP) when the invoices are billed.

Attachment DIV 3-2 includes a summary of invoices submitted to Verizon for fiscal years 2018 and 2019 to date and payments received against those invoices as well as copies of each invoice.

The credits for Verizon billing are reflected in the Customer Requests/Public Requirements Spending Rationale in the ISR. The budget for that category is based on trending actual information, which would, therefore, indirectly include the impact of any invoices billed to Verizon. As these invoices are processed from CWIP to Plant in Service, the amount of Plant in Service to be included in the ISR reconciliation filings would thereby be reduced.

**National Grid Invoices to Verizon for RI joint pole agreements  
Valued as of 01/07/2019**

<b>Invoice Date</b>	<b>Ngrid Inv. #</b>	<b>Ngrid Invoice to Verizon</b>	<b>Payment Date</b>	<b>Amount Paid</b>	<b>Outstanding Balance</b>	<b>Attach. DIV 3-2 Page Reference</b>
7/26/2017	800225659	\$ 4,500.00	10/2/2017	\$ 4,500.00	\$ -	2
7/26/2017	800225660	\$ 135,400.00	10/2/2017	\$ 135,400.00	\$ -	3
7/26/2017	800225661	\$ 106,400.00	10/2/2017	\$ 106,400.00	\$ -	4
7/5/2018	800270124	\$ 42,040.00	8/7/2018	\$ 42,040.00	\$ -	5
7/23/2018	800271627	\$ 113,820.00	8/22/2018	\$ 113,820.00	\$ -	6
7/17/2018	800271628	\$ 82,160.00	8/22/2018	\$ 82,160.00	\$ -	7
9/26/2018	800280886	\$ 50,440.00	10/31/2018	\$ 50,440.00	\$ -	8
		<b>\$ 534,760.00</b>		<b>\$ 534,760.00</b>		



**nationalgrid**

**INVOICE**  
National Grid  
Non-Utility Billing  
300 Erie Blvd. West  
Syracuse NY 13202  
(315) 428-3110

VERIZON  
459 Main St  
Attn: Roland Fortin  
Saugus MA 02056-3154

Page: 1  
Invoice No: 800225659  
Invoice Date: 07/26/2017  
Customer Number: 200094309  
Payment Terms: Net 30  
Due Date: 08/25/2017  
Sales Order #: 5360 / 600085559  
Reference #: 0800225659

Line	Description	Quantity UOM	Unit Amt	Net Amount
JOINT POLE RECONCILIATION WITH VERIZON FOR FEBRUARY 2017				
If you have any questions about this invoice, please contact TIMOTHY BACON at (781) 907-2894				
10	Non Utility Billing Line Item	1.000 EA	4,500.00	\$4,500.00
Sub Total :				4,500.00
Total Taxes :				0.00
TOTAL AMOUNT DUE				\$4,500.00

For payments up to \$5000, you can pay these charges with a Credit Card- Debit Card-ACH for a fee through Western Union Speedpay web site  
<https://paynow7.speedpay.com/nationalgrid/index.asp>

PLEASE DETACH AND RETURN THIS STUB IN THE ENVELOPE PROVIDED

Make checks payable to National Grid

Mail Payment to:

Invoice No: 800225659  
Invoice Date: 07/26/2017  
Customer Number: 200094309  
Due Date: 08/25/2017

National Grid  
PO Box-29793  
New York, NY 10087-9793

AMOUNT DUE \$4,500.00

Enclosed: \_\_\_\_\_

**nationalgrid****INVOICE**  
National Grid  
Non-Utility Billing  
300 Erie Blvd. West  
Syracuse NY 13202  
(315) 428-3110Page: 1  
Invoice No: 800225660  
Invoice Date: 07/26/2017  
Customer Number: 200094309  
Payment Terms: Net 30  
Due Date: 08/25/2017  
Sales Order #: 5360 / 600085563  
Reference #: 0800225660VERIZON  
ATT:ROLAND FORTIN  
459 Main St  
Attn: Roland Fortin  
Saugus MA 02056-3154

Line	Description	Quantity UOM	Unit Amt	Net Amount
JOINT POLE RECONCILIATION WITH VERIZON FOR MARCH 2017				
If you have any questions about this invoice, please contact TIMOTHY BACON at (781) 907-2894				
10	Non Utility Billing Line Item	1.000 EA	135,400.00	\$135,400.00
Sub Total :				135,400.00
Total Taxes :				0.00
TOTAL AMOUNT DUE:				\$135,400.00

For payments up to \$5000, you can pay these charges with a Credit Card- Debit Card-ACH  
for a fee through Western Union Speedpay web site  
<https://paynow7.speedpay.com/nationalgrid/index.asp>

**PLEASE DETACH AND RETURN THIS STUB IN THE ENVELOPE PROVIDED**

Make checks payable to National Grid

Mail Payment to:

Invoice No: 800225660  
Invoice Date: 07/26/2017  
Customer Number: 200094309  
Due Date: 08/25/2017National Grid  
PO Box-29793  
New York, NY 10087-9793

AMOUNT DUE: \$135,400.00

Enclosed: \_\_\_\_\_

**nationalgrid****INVOICE**  
National Grid  
Non-Utility Billing  
300 Erie Blvd. West  
Syracuse NY 13202  
(315) 428-3110VERIZON  
ATT:ROLAND FORTIN  
459 Main St  
Attn: Roland Fortin  
Saugus MA 02056-3154Page: 1  
Invoice No: 800225661  
Invoice Date: 07/26/2017  
Customer Number: 200094309  
Payment Terms: Net 30  
Due Date: 08/25/2017  
Sales Order #: 5360 / 600085566  
Reference #: 0800225661

Line	Description	Quantity	UOM	Unit Amt	Net Amount
JOINT POLE RECONCILIATION WITH VERIZON FOR APRIL 2017					
If you have any questions about this invoice, please contact TIMOTHY BACON at (781) 907-2894					
10	Non Utility Billing Line Item	1.000	EA	106,400.00	\$106,400.00
Sub Total :					106,400.00
Total Taxes :					0.00
TOTAL AMOUNT DUE					\$106,400.00

For payments up to \$5000, you can pay these charges with a Credit Card- Debit Card-ACH for a fee through Western Union Speedpay web site  
<https://paynow7.speedpay.com/nationalgrid/index.asp>

**PLEASE DETACH AND RETURN THIS STUB IN THE ENVELOPE PROVIDED****Make checks payable to National Grid****Mail Payment to:**National Grid  
PO Box-29793  
New York, NY 10087-9793Invoice No: 800225661  
Invoice Date: 07/26/2017  
Customer Number: 200094309  
Due Date: 08/25/2017**AMOUNT DUE: \$106,400.00****Enclosed: \_\_\_\_\_**



**INVOICE**  
National Grid  
Non-Utility Billing  
300 Erie Blvd. West  
Syracuse NY 13202  
(315) 428-3110

Page: 1  
Invoice No: 800270124  
Invoice Date: 07/05/2018  
Customer Number: 200094309  
Payment Terms: Net 30  
Due Date: 08/04/2018  
Sales Order #: 5360 / 600090215  
Reference #: 0800270124

VERIZON  
ATT:ROLAND FORTIN  
459 Main St  
Saugus MA 02056-3154

Line	Description	Quantity	UOM	Unit Amt	Net Amount
JOINT POLE RECONCILIATION WITH VERIZON FOR JUNE 2017.					
If you have any questions about this invoice, please contact TIMOTHY BACON at (781) 907-2894					
10	Non Utility Billing Line Item	1.000	EA	42,040.00	\$42,040.00
Sub Total :					42,040.00
Total Taxes :					0.00
TOTAL AMOUNT DUE:					\$42,040.00

For payments up to \$5000, you can pay these charges with a Credit Card- Debit Card-ACH for a fee through Western Union Speedpay web site  
<https://paynow7.speedpay.com/nationalgrid/index.asp>

PLEASE DETACH AND RETURN THIS STUB IN THE ENVELOPE PROVIDED

Make checks payable to National Grid

Mail Payment to:

Invoice No: 800270124  
Invoice Date: 07/05/2018  
Customer Number: 200094309  
Due Date: 08/04/2018

National Grid  
PO Box-29793  
New York, NY 10087-9793

AMOUNT DUE: \$42,040.00

Enclosed: \_\_\_\_\_



**INVOICE**  
National Grid  
Non-Utility Billing  
300 Erie Blvd. West  
Syracuse NY 13202  
(315) 428-3110

Page: 1  
Invoice No: 800271627  
Invoice Date: 07/17/2018  
Customer Number: 200094309  
Payment Terms: Net 30  
Due Date: 08/16/2018  
Sales Order #: 5360 / 600090349  
Reference #: 0800271627

VERIZON  
ATT:ROLAND FORTIN  
459 Main St  
Saugus MA 02056-3154

Line	Description	Quantity	UOM	Unit Amt	Net Amount
JOINT POLE RECONCILIATION WITH VERIZON FOR JULY 2017.					
If you have any questions about this invoice, please contact TIMOTHY BACON at (781) 907-2894					
10	Non Utility Billing Line Item	1.000	EA	113,820.00	\$113,820.00
Sub Total :					113,820.00
Total Taxes :					0.00
TOTAL AMOUNT DUE:					\$113,820.00

For payments up to \$5000, you can pay these charges with a Credit Card- Debit Card-ACH for a fee through Western Union Speedpay web site  
<https://paynow7.speedpay.com/nationalgrid/index.asp>

PLEASE DETACH AND RETURN THIS STUB IN THE ENVELOPE PROVIDED

Make checks payable to National Grid

Mail Payment to:

Invoice No: 800271627  
Invoice Date: 07/17/2018  
Customer Number: 200094309  
Due Date: 08/16/2018

National Grid  
PO Box-29793  
New York, NY 10087-9793

AMOUNT DUE: \$113,820.00

Enclosed: \_\_\_\_\_



**INVOICE**  
National Grid  
Non-Utility Billing  
300 Erie Blvd. West  
Syracuse NY 13202  
(315) 428-3110

Page: 1  
Invoice No: 800271628  
Invoice Date: 07/17/2018  
Customer Number: 200094309  
Payment Terms: Net 30  
Due Date: 08/16/2018  
Sales Order #: 5360 / 600090350  
Reference #: 0800271628

VERIZON  
ATT:ROLAND FORTIN  
459 Main St  
Saugus MA 02056-3154

Line	Description	Quantity	UOM	Unit Amt	Net Amount
JOINT POLE RECONCILIATION WITH VERIZON FOR AUGUST 2017.					
If you have any questions about this invoice, please contact TIMOTHY BACON at (781) 907-2894					
10	Non Utility Billing Line Item	1.000	EA	82,160.00	\$82,160.00
Sub Total :					82,160.00
Total Taxes :					0.00
TOTAL AMOUNT DUE:					\$82,160.00

For payments up to \$5000, you can pay these charges with a Credit Card- Debit Card-ACH for a fee through Western Union Speedpay web site  
<https://paynow7.speedpay.com/nationalgrid/index.asp>

PLEASE DETACH AND RETURN THIS STUB IN THE ENVELOPE PROVIDED

Make checks payable to National Grid

Mail Payment to:

Invoice No: 800271628  
Invoice Date: 07/17/2018  
Customer Number: 200094309  
Due Date: 08/16/2018

National Grid  
PO Box-29793  
New York, NY 10087-9793

AMOUNT DUE: \$82,160.00

Enclosed: \_\_\_\_\_



**INVOICE**  
National Grid  
Non-Utility Billing  
300 Erie Blvd. West  
Syracuse NY 13202  
(315) 428-3110

Page: 1  
Invoice No: 800280886  
Invoice Date: 09/25/2018  
Customer Number: 200094309  
Payment Terms: Net 30  
Due Date: 10/25/2018  
Sales Order #: 5360 / 600091229  
Reference #: 0800280886

VERIZON  
ATT:ROLAND FORTIN  
459 Main St  
Saugus MA 02056-3154

Line	Description	Quantity	UOM	Unit Amt	Net Amount
JOINT POLE RECONCILIATION WITH VERIZON FOR SEPTEMBER 2017					
If you have any questions about this invoice, please contact TIMOTHY BACON at (781) 907-2894					
10	Non Utility Billing Line Item	1.000	EA	50,440.00	\$50,440.00
Sub Total :					50,440.00
Total Taxes :					0.00
TOTAL AMOUNT DUE:					\$50,440.00

For payments up to \$5000, you can pay these charges with a Credit Card- Debit Card-ACH for a fee through Western Union Speedpay web site  
<https://paynow7.speedpay.com/nationalgrid/index.asp>

PLEASE DETACH AND RETURN THIS STUB IN THE ENVELOPE PROVIDED

Make checks payable to National Grid

Mail Payment to:

Invoice No: 800280886  
Invoice Date: 09/25/2018  
Customer Number: 200094309  
Due Date: 10/25/2018

National Grid  
PO Box-29793  
New York, NY 10087-9793

AMOUNT DUE: \$50,440.00

Enclosed: \_\_\_\_\_

The Narragansett Electric Company  
d/b/a National Grid  
In Re: Division's Review of FY 2020 Proposed Electric ISR Plan  
Responses to Division's Third Set of Data Requests  
Issued December 19, 2018

---

DIV 3-3

Request:

How does the Company plan to assign vegetation management costs associated with hazard tree removals due to pest infestation to communication companies under joint ownership pole agreements?

Response:

Under the terms of the Joint Ownership Agreement by and between The Narragansett Electric Company and Verizon New England effective May 31, 2017, the Company is responsible for all Jointly-Owned pole placements, replacements and relocations. The Company invoices a fixed per Pole fee for each joint owned pole it installs. Vegetation management is not a specific component of the invoice nor separately billed. The fixed per pole rate is in effect for an initial term of 4 years.



The Narragansett Electric Company  
d/b/a National Grid  
In Re: Division's Review of FY 2020 Proposed Electric ISR Plan  
Responses to Division's Third Set of Data Requests  
Issued December 19, 2018

---

DIV 3-4

Request:

Regarding the Company's response to R-II-6, provide a detailed list (see representative sample below), in Excel format, of all outstanding Level II and III Deficiencies that have not been repaired, including the year that the deficiency was identified.

Inspection Date	Feeder Number	Town	Street	Region Name	Maintenance Code	Level	Maintenance Code Description
1/1/2016	5F1	BARRINGTON	ADAMS POINT RD	Capital	270	II	Spacer Cable - Damaged/Missing spacer
1/1/2016	5F1	BARRINGTON	ADAMS POINT RD	Capital	272	II	Spacer Cable - Bracket not bonded

Response:

Please see Attachment DIV 3-4 in Excel format.

The Narragansett Electric Company  
d/b/a National Grid  
In Re: Division's Review of FY 2020 Proposed Electric ISR Plan  
Responses to Division's Third Set of Data Requests  
Issued December 19, 2018

---

DIV 3-5

Request:

List each project scheduled for proposed work under the URD Replacement category. For each project, provide number of interruptions, duration, and customers affected (for the years that the Company evaluated the projects to determine a replacement strategy). Also indicate whether the project involves a loop or radial feed.

Response:

Summarized below are a sample of the FY2020 proposed URD cable replacement projects, all of which have a vintage of XLPE known for treeing and neutral corrosion. Included in the summary are the number of outages, average duration, and average customers affected. Notice that the average duration for all projects is greater than the system 2008 year to date CAIDI of 1.09 hours (65.264 minutes).

The Company will prioritize the projects based on reliability, construction complexity and resource availability. The list of projects changes as new URDs enter into the program with a higher prioritization. It is also important to note that some of these projects are in progress at different stages of engineering and construction.

<b>Project Description</b>	<b># of outages in Past 10 Years</b>	<b>Average Duration hrs.</b>	<b>Average Customers Affected</b>	<b>Looped/Radial</b>
BAINBRIDGE APTS URD, JOHNSTON	2	11.50	62	Loop
EVERGREEN APTS URD, E. PROVID	6	4.67	43	Loop
HIGH HAWK URD, EAST GREENWICH	10	8.00	47	Loop/Radial
JUNIPER HILLS URD, W. WARWICK	10	7.00	33	Radial
NORTH FARM URD, BRISTOL	5	18.00	94	Loop
PEQUAW HONK URD, LITTLE COMPTON	12	6.75	12	Radial
SILVER MAPLE URD, COVENTRY	3	11.33	64	Loop
WESTWOOD ESTATES URD, COVENTRY	4	7.25	59	Loop with Radial Section
WIONKHEIGE URD, SMITHFIELD	3	14.00	34	Loop
WOOD ESTATES PHASE 2 URD, Coventry	31	7.84	31	Loop/Radial
ROBIN HILLS ESTATES URD, WESTERLY	2	3.50	55	Loop

The Narragansett Electric Company  
d/b/a National Grid  
In Re: Division's Review of FY 2020 Proposed Electric ISR Plan  
Responses to Division's Third Set of Data Requests  
Issued December 19, 2018

Division 3-6

Request:

Provide the historical Budget and Actual expenditures for each year from FY 2015 through FY 2019 (forecast) for the following categories:

- a. Reliability COS0015
- b. Load Relief COS0016
- c. Asset Replacement (Blanket) COS0017
- d. Asset Replacement - I&M (NE)
- e. Damage/Failure

Response:

Please see table below.

**DISTRIBUTION LINE BLANKET REVIEW**  
\$000

Blanket Description	Project #	FY2015 Budget	FY15 Actual	FY2016 Budget	FY16 Actual	FY2017 Budget	FY17 Actual	FY2018 Budget	FY18 Actual	FY19 ISR Budget	FY2019 Forecast (8+4 Prelim)	FY2020 Budget (Prelim)
Reliability	COS0015	683	834	660	984	798	1,126	944	664	1,125	1,065	845
Load Relief	COS0016	254	539	381	213	380	275	255	270	307	217	265
Asset Replacement	COS0017	1,166	1,856	1,929	2,620	2,605	1,920	2,300	2,940	2,353	3,138	3,200
Damage/Failure	COS0014	7,207	9,211	8,500	10,260	8,243	10,201	8,781	10,180	10,445	10,332	10,330
I&M		7,040	7,593	6,705	4,811	2,510	3,031	1,600	1,251	1,700	1,714	1,700

The Narragansett Electric Company  
d/b/a National Grid  
In Re: Division's Review of FY 2020 Proposed Electric ISR Plan  
Responses to Division's Third Set of Data Requests  
Issued December 19, 2018

---

Division 3-7

Request:

Regarding the Company's response to R-II-13 (Other Load Relief & Reliability category), please explain in detail the following programs and specific work proposed in FY2020:

- a. Preliminary Survey and Investigation (proposed budget of \$290,000)
- b. Cutout Mounted Recloser Program (proposed budget of \$125,000)
- c. Mobile Substation Refurbishment and Upgrade (proposed budget of \$250,000)

Response:

- a. Preliminary Survey and Investigation costs represent time spent to study, perform analysis, and develop a plan for potential capital projects. Time spent that qualifies for this treatment is initially charged here. If a capital project does result from the study, costs associated with that project are transferred out of this project and into the specific project to which they relate. If a capital project does not result, the cost is charged to expense. The FY 2020 plan amount was derived by reviewing recent trending of costs incurred in this project and estimated to result in a capital project.
- b. The Cutout Mounted Recloser program has been underway in Rhode Island since 2016. The FY 2020 work plan is to install 22 cutout mounted reclosers.
- c. The mobile substation refurbishment and upgrade cost is to refurbish the substation transformer #5616 to meet protection requirements and accept distributed generation installations. This unit has many set up configurations that allows the Company to match many of the 23-13.2kV autotransformer stations, and older 23-4.16kV and 13.8-4.16kV stations. In addition to the transformer, its trailer needs repair or replacement.

Division 3-8

Request:

Referencing the Company's Meters – Dist category, provide:

- a. The components and associated budget comprising the total proposed \$3.030 M. Include categories for testing, repair, meter cost, and instrument transformer cost where applicable.
- b. The total number of meters currently installed by type (electromechanical with solid state reading, digital AMR, single phase, poly-phase, etc.) class (residential, commercial, industrial), manufacturer and year installed.
- c. The forecasted number and types of meters to be installed or replaced in FY 2020.
- d. The average age of each type of meter currently installed.
- e. The number of meters replaced and reason for replacement, for each type of meter, for the past five years.
- f. The results of the Company's testing performed on electromechanical meters for the past three years (number tested, number which failed and failure mode and percentage out of tolerance).

Response:

- a. Please see Attachment DIV 3-8(a) for the components and associated budget comprising the total proposed \$3.030 million. Please note meter testing or repair is not applicable to this budget.
- b. Please see Attachment DIV 3-8(b) for the total number of meters currently installed by type, class, manufacturer, and year installed.
- c. In FY 2020 National Grid has forecasted approximately 15,000 digital single phase and poly-phase AMR meters to be installed or replaced.
- d. The chart below shows the average age of each type of meter currently installed.

Division 3-8, page 2

Meter Type	Construction	Average Age (Years)
AB	Electromechanical	19
ALPHA	Electromechanical	17
D2	Electromechanical	49
D4	Electromechanical	43
D5	Electromechanical	30
I70	Electromechanical	29
J4	Electromechanical	40
J5	Electromechanical	29
MS	Electromechanical	32
MX	Electromechanical	21
P20	Electromechanical	51
S12	Electromechanical	33
V612	Electromechanical	37
V62	Electromechanical	34
CENTRON	Digital (solid-state)	9
FOCUS	Digital (solid-state)	2
I210	Digital (solid-state)	5
KV	Digital (solid-state)	19
KV2	Digital (solid-state)	4
S4 - SANG	Digital (solid-state)	30
SENTINEL	Digital (solid-state)	11

- e. Please see Attachment DIV 3-8(e) for the total number of meters replaced and reason for replacement, for each type of meter, for the past five years.
- f. Please see Attachment DIV 3-8(f) for the Company's Meter Testing Reports (Statistical Analysis) reported for the last three years that the Company filed with the PUC in compliance with Division Order No. 17957 and Section VII.C.5 (b) of the Division's Rules Prescribing Standards for Electric Utilities. These reports contain the statistical analysis of all meter types tested in the calendar years 2015-2017. As reflected in the attached reports, no meter types failed during these years. Please note the report includes both solid state and electromechanical meters. The chart in response to Division 3-8(d) illustrates meter type (electromechanical or digital).

ISR GROUPING	Project #	Project Description	Components	Component Budget	DRAFT PLAN - FY2020 Capital
Meters - Dist	CN04904	NARRAGANSETT METER PURCHASES			1,620
			<i>Install/Change Meters</i>	975	
			<i>Sub-Station Rated Meter</i>	22	
			<i>Instrument Transformers</i>	121	
			<i>Tax (.05)</i>	56	
			<i>Burden</i>	404	
			<i>Indirect Material / Transportation</i>	42	
	COS0004	OCEAN ST-DIST-METER BLANKET			910
			<i>Labor for Installations</i>	910	
	C080728	RI NonAMR Meter Replacement Program			500
			<i>Meters</i>	352	
			<i>Tax (.05)</i>	18	
			<i>Labor for Installations</i>	88	
			<i>Indirect Material / Transportation</i>	42	
					3,030

Sum of Number of Meters			Yr																											
Type of Use	Construction	Manufacturer	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Grand Total	
Poly Phase / C&I	Digital AMR	DUNCAN - L & G	7	34	32	30	22	49	30	27	11	8	26	17	36	23	27	5	3	7	4	1							399	
		GENERAL ELECTRIC				15	24	35	96	92	80	77	68	38	36	40	22	42	175	722	1125	1014	1048	927	1088	1136	2496	5	10401	
		SCHLUMBERGER											27	406	581	740	711	877	906	432	302	94	148	76	103	77	106	5584		
	WESTINGHOUSE - ABB				1	181	75	118	126	247	430	473	227	146	154	104	74	144	187	58	54	31	64	52	58	121	1	3126		
Digital AMR Total			7	34	32	46	227	159	244	245	338	515	594	688	799	957	864	998	1228	1348	1489	1163	1225	1067	1243	1271	2723	6	19510	
Poly Phase / C&I Total			7	34	32	46	227	159	244	245	338	515	594	688	799	957	864	998	1228	1348	1489	1163	1225	1067	1243	1271	2723	6	19510	
Single Phase / Residential	Digital AMR	DUNCAN - L & G												1	2	3	3	1	3	485	119	45	130	72	1215	2530	3152	2481	16	10258
		GENERAL ELECTRIC							1			2	5	4	15	32	35	37	54	4243	7264	9535	9099	10431	8039	7558	3891	4743	15	65004
		SCHLUMBERGER								2	2	3	5826	5877	9763	7842	9858	7939	8194	4687	881	413	1015	1559	810	5574	10199	6663	18	87125
	WESTINGHOUSE - ABB								2	10	24	38	36	9	25	71	33	37	24	25	7	3	5			1			358	
	Digital AMR Total					1		5	12	29	5869	5918	9789	7902	9967	8010	8288	9439	8289	10000	10251	12065	10069	15663	17243	13887	49	162745		
	Electromechanical with solid state reading	DUNCAN - L & G	138	20	28	68	15	8	1081	40759	4512	2229	726	175	312	218	212	206	170	95	26	15	15	8	13	23				51087
		GENERAL ELECTRIC	76	12	218	42	46	19	1942	61095	6550	3183	1332	292	415	249	220	213	231	101	42	34	24	24	23	28	27			76438
		SANGAMO	10	4	3	3	5	4	83	8171	768	7025	44173	79	33	31	35	32	36	27	28	19	15	11	16	10	25			60646
WESTINGHOUSE - ABB		22	1	158	45	53	10	61796	55368	3749	8373	2369	452	987	668	514	630	647	445	163	232	98	49	54	61	62			137006	
Electromechanical with solid state reading Total		246	37	407	158	119	41	64902	165393	15579	20810	48600	998	1747	1166	981	1081	1084	668	259	300	152	99	101	112	137			325177	
Single Phase / Residential Total		246	37	407	158	120	41	64907	165405	15608	26679	54518	10787	9649	11133	8991	9369	10523	8957	10259	10511	12217	10168	15764	17355	14024	49		487922	
Grand Total		253	71	439	204	347	200	65151	165650	15946	27194	55112	11475	10448	12090	9855	10367	11751	10305	10719	11714	13442	11238	17007	18626	16747	55		507432	



Removal Reason	AB	ALPHA	CENTRON	D2	D4	D5	FOCUS	I210	I70	J4	J5	KV	KV2	MARKV	MS	MX	P20	S12	S4 - SANG	SENTINEL	V612	V62	Grand Total
AMR DEMAND REPROGRAM SCHEDULED	1		3					3											1				8
AMR DEMAND TO DEMAND					2														1	2			5
AMR DEMAND TO KWH	35		39		6	2		6	19	1	11		6		8	2				2			137
AMR TOU TO KWH																				3			3
BROKEN GLASS	320	1	43	4	59	28	1	33	281	43	188	1	4		152	38		7	4	4	10	1	1222
CORRODED METER	1		2		1	1			1		5				3								14
CURRENT DIVERSION	65		34		10	3	8	57	62	11	40		1		39	5							335
DAMAGED	397	38	206	2	51	36	10	169	294	52	217	8	15		162	36		12	9	37	11	2	1764
DIALS OUT OF ALIGNMENT	139	2	4	2	26	19		5	22		23		1		12	2		4	1		7	2	271
DUPLICATE METER NUMBER	1		2					4					1										8
HIT BY LIGHTNING	253	13	153		38	25	11	107	228	30	131	2	24		117	14		1	4	30	1	7	1189
INSTALL AMR METER	1995	351	435	83	641	225	38	327	1266	106	721	51	94		753	108	6	1109	120	171	986	51	9637
INSTALL DEMAND	1189	84	949	43	237	88	182	1472	792	90	496	12	136		487	72	1	40	37	113	54	25	6599
INSTALL ERT DEVICE	2	1				1			2		5				4								15
MALFUNCTION	148	1	61		16	16	2	43	183	35	163		5		105	10		1		4			793
MISCELLANEOUS	4582	302	897	210	1399	546	40	933	2651	266	1499	27	172	1	1755	282	3	1525	95	255	1968	56	19464
NONBILLING			3		1				2	4					3					2			15
PICK FOR TEST ELECT STATISTICAL	829	370	828	170	540	459	315	711	841	559	839	187	277	2	827	411	23	379	257	308	373	134	9639
PICK FOR TEST RETIREMENT	83	1	4		7	7	1	7	30	2	19	1	3		15	1		2			2	2	187
RATE CHANGE	3	10	20				2	11	6		3	1	7						1	7			71
SOLID STATE DISPLAY BAD		14	18					6	1		1	6	33		5				4	16	1		105
UPGRADE SERVICE	168	35	72	3	18	17	5	54	123	13	60	5	36		77	4		1	12	30	12	6	751
Grand Total	10531	1239	4032	519	3090	1492	660	4303	6963	1232	4526	304	874	4	4614	993	33	3085	548	1009	3436	288	53775



*National Grid - Rhode Island*

Page 1 of 1  
01/04/19 1:41 PM

**Meter Group Statistical Analysis Report - All Meter Types**

Test Period: 01/01/2015 to 12/31/2015

Data as of:

Meter Model	Population	Tests Required	Tested Amount	Defective Meters	Passing/Failing			Total Population Extrapolation				Mtrs excl. from stats (outliers)	Current % ncf	Allowed % ncf	Status	Mean	Std. Dev.
					# tests >102%	# tests <98%	% Tests Failed	# of all >102%	# of all <98%	% > 102%	% < 98%						
AB	127,771	150	154	3	0	5	3.25	0	8	0.00	0.01	1	0.01	4.42	pass	100.07	0.42
ALPHA	4,338	75	76	1	0	1	1.32	0	0	0.00	0.00	0	0.00	4.83	pass	99.95	0.05
CENTRON	67,182	150	155	5	0	5	3.23	0	4	0.00	0.01	0	0.01	4.42	pass	99.98	0.12
D2	511	35	40	1	0	1	2.50	0	0	0.00	0.00	0	0.00	5.58	pass	100.05	0.40
D3	6	3	3	0	0	1	33.33	0	0	0.00	0.00	1	0.00	7.59	pass	100.20	0.20
D4	17,084	100	107	2	0	4	3.74	0	1	0.00	0.01	0	0.01	4.67	pass	99.89	0.49
D5	9,892	75	79	0	0	2	2.53	0	16	0.00	0.16	0	0.16	4.83	pass	99.79	0.62
FOCUS	1,025	35	36	0	0	0	0.00	0	0	0.00	0.00	0	0.00	5.58	pass	99.97	0.06
I210	42,712	150	155	0	0	0	0.00	0	0	0.00	0.00	0	0.01	4.42	pass	100.03	0.07
I70	84,183	150	162	2	0	2	1.23	0	5	0.00	0.01	0	0.01	4.42	pass	100.00	0.25
J4	10,703	100	103	1	1	1	1.94	0	0	0.00	0.00	1	0.01	4.67	pass	99.80	0.26
J5	56,425	150	165	0	0	0	0.00	0	0	0.00	0.00	0	0.01	4.42	pass	99.83	0.26
KV	939	35	37	0	0	1	2.70	0	0	0.00	0.04	0	0.04	5.58	pass	99.88	0.59
KV2	5,202	75	76	0	0	0	0.00	0	0	0.00	0.00	0	0.00	4.83	pass	100.00	0.03
MARKV	5	3	3	0	0	0	0.00	0	0	0.00	0.00	0	0.00	7.59	pass	99.98	0.03
MS	49,359	150	156	3	0	3	1.92	0	3	0.00	0.01	0	0.01	4.42	pass	99.95	0.28
MX	7,767	75	80	0	0	0	0.00	0	0	0.00	0.00	0	0.00	4.83	pass	99.91	0.23
P20	21	4	5	0	0	0	0.00	0	0	0.00	0.00	0	0.00	10.88	pass	100.00	0.28
QUANTUM	4	3	3	0	0	0	0.00	0	0	0.00	0.00	0	0.00	7.59	pass	99.99	0.13
S12	4,226	75	76	0	0	0	0.00	0	0	0.00	0.00	0	0.00	4.83	pass	100.09	0.26
S2 - SCHL	4	3	3	0	0	0	0.00	0	0	0.00	0.00	0	0.00	7.59	pass	100.26	0.05
S4 - SANG	1,724	50	54	0	0	1	1.85	0	0	0.00	0.00	1	0.00	5.21	pass	100.03	0.42
SENTINEL	6,368	75	76	0	0	0	0.00	0	0	0.00	0.00	0	0.00	4.83	pass	100.02	0.11
V612	4,753	75	82	0	0	1	1.22	0	0	0.00	0.00	0	0.00	4.83	pass	99.95	0.39
V62	455	25	29	0	0	0	0.00	0	0	0.00	0.00	0	0.00	5.98	pass	99.97	0.27
V65	54	7	8	0	0	0	0.00	0	0	0.00	0.00	0	0.00	8.40	pass	99.99	0.24
V66	9	3	4	0	0	0	0.00	0	0	0.00	0.00	0	0.00	7.59	pass	100.08	0.13
<b>Totals:</b>	<b>502,722</b>	<b>1,831</b>	<b>1,927</b>	<b>18</b>	<b>1</b>	<b>28</b>	<b>1.50%</b>	<b>0</b>	<b>37</b>	<b>0.00%</b>	<b>0.01%</b>	<b>4</b>					

Notes: 1) Passing/Failing results include all outlier meter tests.  
2) Total Population Extrapolation is based on statistical tests results which do not include outlier meter tests.



*National Grid - Rhode Island*

Page 1 of 1  
01/04/19 1:38 PM

**Meter Group Statistical Analysis Report - All Meter Types**

Test Period: 01/01/2016 to 12/31/2016

Data as of:

Meter Model	Population	Tests Required	Tested Amount	Defective Meters	Passing/Failing			Total Population Extrapolation				Mtrs excl. from stats (outliers)	Current % ncf	Allowed % ncf	Status	Mean	Std. Dev.
					# tests >102%	# tests <98%	% Tests Failed	# of all >102%	# of all <98%	% > 102%	% < 98%						
<b>Status: All</b>																	
AB	126,027	150	154	0	0	1	0.65	0	8	0.00	0.01	1	0.01	4.42	pass	100.10	0.31
ALPHA	4,222	75	76	0	0	0	0.00	0	0	0.00	0.00	0	0.00	4.83	pass	99.94	0.06
CENTRON	67,184	150	156	2	0	2	1.28	0	4	0.00	0.01	0	0.01	4.42	pass	100.00	0.13
D2	427	25	29	0	0	0	0.00	0	0	0.00	0.00	0	0.00	5.98	pass	99.85	0.31
D4	16,587	100	105	0	0	2	1.90	0	1	0.00	0.01	1	0.01	4.67	pass	99.94	0.35
D5	9,628	75	75	1	0	2	2.67	0	1	0.00	0.02	0	0.02	4.83	pass	99.79	0.50
FOCUS	2,236	50	60	0	0	0	0.00	0	0	0.00	0.00	0	0.00	5.21	pass	99.99	0.04
I210	50,086	150	151	2	0	2	1.32	0	3	0.00	0.01	0	0.01	4.42	pass	100.03	0.08
I70	82,890	150	158	4	0	6	3.80	0	5	0.00	0.01	2	0.01	4.42	pass	100.00	0.28
J4	10,439	100	103	3	1	3	3.88	0	0	0.00	0.00	0	0.01	4.67	pass	99.85	0.36
J5	55,489	150	164	1	0	2	1.22	0	3	0.00	0.01	0	0.01	4.42	pass	99.84	0.36
KV	878	35	36	0	0	0	0.00	0	0	0.00	0.00	0	0.00	5.58	pass	99.90	0.13
KV2	6,178	75	77	0	0	0	0.00	0	0	0.00	0.00	0	0.00	4.83	pass	100.00	0.04
MARKV	6	3	3	0	0	0	0.00	0	0	0.00	0.00	0	0.00	7.59	pass	100.01	0.04
MS	48,545	150	165	1	0	1	0.61	0	3	0.00	0.01	0	0.01	4.42	pass	99.96	0.24
MX	7,584	75	78	0	0	0	0.00	0	0	0.00	0.00	0	0.00	4.83	pass	99.88	0.25
P20	10	3	3	0	0	0	0.00	0	0	0.00	0.00	0	0.00	7.59	pass	99.81	0.66
QUANTUM	4	3	3	0	0	0	0.00	0	0	0.00	0.00	0	0.00	7.59	pass	100.03	0.17
S12	3,594	75	78	0	0	0	0.00	0	0	0.00	0.00	0	0.00	4.83	pass	100.14	0.27
S4 - SANG	1,611	50	50	0	0	1	2.00	0	0	0.00	0.00	1	0.00	5.21	pass	100.08	0.26
SENTINEL	6,263	75	76	0	0	0	0.00	0	0	0.00	0.00	0	0.00	4.83	pass	100.01	0.08
V612	4,102	75	77	0	0	0	0.00	0	0	0.00	0.00	0	0.00	4.83	pass	99.98	0.20
V62	396	20	23	0	0	0	0.00	0	0	0.00	0.00	0	0.00	6.18	pass	100.00	0.34
V65	43	5	7	0	0	0	0.00	0	0	0.00	0.00	0	0.00	9.80	pass	100.07	0.29
V66	4	3	3	0	0	0	0.00	0	0	0.00	0.00	0	0.00	7.59	pass	100.22	0.53
<b>Totals:</b>	<b>504,433</b>	<b>1,822</b>	<b>1,910</b>	<b>14</b>	<b>1</b>	<b>22</b>	<b>1.20%</b>	<b>0</b>	<b>28</b>	<b>0.00%</b>	<b>0.01%</b>	<b>5</b>					

Notes: 1) Passing/Failing results include all outlier meter tests.  
2) Total Population Extrapolation is based on statistical tests results which do not include outlier meter tests.



*National Grid - Rhode Island*

Page 1 of 1  
02/08/18 9:38 AM

**Meter Group Statistical Analysis Report - All Meter Types**

Test Period: 01/01/2017 to 12/31/2017

Data as of: 12/15/2017

Meter Model	Population	Tests Required	Tested Amount	Defective Meters	Passing/Failing			Total Population Extrapolation				M's excl. from stats (outliers)	Current % ncf	Allowed % ncf	Status	Mean	Std. Dev.
					# tests >102%	# tests <98%	% Tests Failed	# of all >102%	# of all <98%	% > 102%	% < 98%						
<b>AB</b>	123,549	150	161	3	0	4	2.43	0	7	0.00	0.01	1	0.01	4.42	pass	100.08	0.30
<b>ALPHA</b>	4,053	75	77	4	0	4	5.19	0	0	0.00	0.00	0	0.00	4.83	pass	99.92	0.14
<b>CENTRON</b>	71,388	150	160	4	0	4	2.50	0	4	0.00	0.01	0	0.01	4.42	pass	99.97	0.12
<b>D2</b>	294	20	23	0	0	0	0.00	0	0	0.00	0.00	0	0.00	6.18	pass	100.04	0.38
<b>D4</b>	15,609	100	108	5	0	6	5.56	0	1	0.00	0.01	1	0.01	4.67	pass	99.91	0.25
<b>D5</b>	9,358	75	80	1	0	3	3.75	0	10	0.00	0.10	0	0.10	4.83	pass	99.73	0.57
<b>FOCUS</b>	4,624	75	104	1	0	1	0.96	0	0	0.00	0.01	0	0.01	4.83	pass	99.99	0.06
<b>I210</b>	57,266	150	159	1	0	1	0.63	0	3	0.00	0.01	0	0.01	4.42	pass	100.02	0.10
<b>I70</b>	81,059	150	157	11	0	13	8.28	0	5	0.00	0.01	0	0.01	4.42	pass	100.01	0.39
<b>J4</b>	10,123	100	112	2	0	3	2.68	0	79	0.00	0.78	0	0.78	4.67	pass	99.66	0.69
<b>J5</b>	54,141	150	166	2	0	3	1.81	0	3	0.00	0.01	1	0.01	4.42	pass	99.85	0.27
<b>KV</b>	820	35	37	3	0	4	10.81	0	0	0.00	0.00	1	0.00	5.58	pass	99.98	0.32
<b>KV2</b>	7,236	75	78	1	0	1	1.28	0	0	0.00	0.00	0	0.00	4.83	pass	99.99	0.04
<b>MARKV</b>	6	3	3	0	0	0	0.00	0	0	0.00	0.00	0	0.00	7.59	pass	99.95	0.03
<b>MS</b>	47,395	150	158	10	0	10	6.33	0	3	0.00	0.01	0	0.01	4.42	pass	99.94	0.26
<b>MX</b>	7,351	75	83	3	0	5	6.02	0	0	0.00	0.00	1	0.00	4.83	pass	99.90	0.41
<b>P20</b>	7	3	3	0	0	0	0.00	0	0	0.00	0.00	0	0.00	7.59	pass	100.12	0.54
<b>S12</b>	2,525	50	55	0	0	0	0.00	0	0	0.00	0.00	0	0.00	5.21	pass	100.07	0.27
<b>S4 - SANG</b>	1,480	50	51	2	0	4	7.84	0	164	0.00	11.08	1	11.08	5.21	fail	99.82	1.23
<b>SENTINEL</b>	6,154	75	79	3	0	3	3.80	0	0	0.00	0.00	0	0.00	4.83	pass	100.03	0.10
<b>V612</b>	2,476	50	56	1	0	2	3.57	0	14	0.00	0.55	0	0.55	5.21	pass	99.88	0.72
<b>V62</b>	329	20	21	0	0	0	0.00	0	0	0.00	0.00	0	0.00	6.18	pass	100.08	0.33
<b>Totals:</b>	<b>507,243</b>	<b>1,781</b>	<b>1,931</b>	<b>57</b>	<b>0</b>	<b>71</b>	<b>3.68%</b>	<b>0</b>	<b>293</b>	<b>0.00%</b>	<b>0.06%</b>	<b>6</b>					

Notes: 1) Passing/Failing results include all outlier meter tests.  
2) Total Population Extrapolation is based on statistical tests results which do not include outlier meter tests.