

 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">1 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

Title : DET005 Distribution Lines, Substation, & Power Quality Manual
 Document Code : NEA-QMS-SP-XX
 Document Type : Data Entry Template Manual
 Effective Date : February 19, 2018
 Review Frequency : 1 Year
 Distribution : Printed, LAN, Web

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National
Electrification
Administration

Manual Title:

DATA ENTRY TEMPLATE MANUAL

Doc Code:

**NEA-QMS-
SP-XX**

Page:

2 of 15

Document Title:

**DET005 DISTRIBUTION LINES, SUBSTATION, & POWER
QUALITY MANUAL**

Rev. No.

00

Effective:

February 19, 2018

Review / Revision History			
Revision No.	Date	Description	Approved By
0			
1			
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 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">3 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

1.0 OBJECTIVE

This manual aims to guide Electric Cooperatives (ECs) in filling out and submitting Data Entry Templates (DET) in the Web Portal. This must be observed in order to monitor the available circuit and substation performance. This is formed in the Monthly Engineering Report.

2.0 SCOPE

This manual establishes the guidelines of Data Entry Template (DET) standardization, the field mapping from old report to new DET format, and the procedures for the submission of DET008 Power Supplier Agreement in the Web Portal System performed by Electric Cooperatives (ECs).

3.0 DEFINITION OF TERMS

Data Entry Field	-	Intended value of the data entry field.
Data Entry Template (DET)	-	Input Templates used to fill out information and submitted by the ECs to the Web Portal for NEA acknowledgement and reports generation. These templates serve as sources of inputs in the generation of reports.
Description	-	Brief explanation of the data entry field.
DET005 – Distribution Lines, Substation, & Power Quality	-	Data entry template used to detail the EC's substation, power quality, and km of lines per month.
Existing Report	-	Existing report equivalent of the data entry template.
Existing Report Field Equivalent	-	Data entry field equivalent in the existing report.

 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">4 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

- Existing Report Table - Section where the data entry field can be located in the existing report.
- Formula - Computation equivalent of the data entry field.
- List of Values (LOV) - Defined values under the dropdown tab.
- Reporting Month - The month covered by the data being reported. This is the data for the month earlier than the current month (Month X – 1).
- Required? (Y/N) - Indicates if a field is required to be filled up or not.
- Source - Indicates if field information is a data entry or calculated automatically in the data entry template.
- Validation Rules - Standard values that should be entered in the data entry field or criteria that should be followed.

4.0 ROLES AND RESPONSIBILITIES

- Electric Cooperative (EC) - Responsible for accomplishing, submitting, revising, and resubmitting of DETs. Also accountable for the correctness and accuracy of the submitted data through the DETs.
- NEA DET Reviewers - Responsible for acknowledging/ reviewing the submitted DETs by the ECs.

5.0 MANUAL

This is DET is composed of the following tables:

The table below presents the definition of each data entry field that corresponds to the columns found in the tables in the DET.

Data Entry Field	Description	Required? (Y/N)	Source	Formula	Validation Rules	Existing Report	Existing Report Table	Existing Report Field Equivalent
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 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">5 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

Data Entry Field	Description	Required? (Y/N)	Source	Formula	Validation Rules	Existing Report	Existing Report Table	Existing Report Field Equivalent
EC Name	The acronym of the Electric Cooperative (EC). <i>List of dropdown values will refer to Master List – EC Profile. (E.g. BENEKO, GENPELCO, INEC, etc.).</i>	Y	Data Entry	N/A	Value should be selected from the list of dropdown values.	MONTHLY ENGINEERING REPORT		EC Name
Reporting Year	The year during which the data is being reported. <i>List of dropdown values will be years from 2017 to 2070.</i>	Y	Data Entry	N/A	Value should be selected from the list of dropdown values.	MONTHLY ENGINEERING REPORT		Reporting Year
Reporting Month	The month during which the reported data happened. <i>List of dropdown values will be months from January to December.</i>	Y	Data Entry	N/A	Value should be selected from the list of dropdown values.	MONTHLY ENGINEERING REPORT		Reporting Month
DISTRIBUTION LINES ENERGIZED (KM) - TO DATE								
Type of Circuit	The type of circuit the EC has.	N	Data Entry	N/A	Must be a positive numerical value and is displayed with 2 decimal places.			
Type of Circuit - Overhead	The type of distribution system circuit the EC has.	N	Data Entry	N/A	Must be a positive numerical value and is displayed with 2 decimal places.			
Type of Circuit - Underground	The distribution system facility installed underground to distribute power to consumers.	N	Data Entry	N/A	Must be a positive numerical value and is displayed with 2 decimal places.			

 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">6 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

Data Entry Field	Description	Required? (Y/N)	Source	Formula	Validation Rules	Existing Report	Existing Report Table	Existing Report Field Equivalent
Type of Circuit - Submarine	The electric facility installed underwater to transmit and distribute electricity.	N	Data Entry	N/A	Must be a positive numerical value and is displayed with 2 decimal places.			
Voltage Level	The line to line voltages of the EC.	N	Data Entry	N/A	Must be a positive numerical value and is displayed with 2 decimal places.			
TOTAL - KILOMETERS	The total count of kilometers for all voltage levels.	Y	Calculated	TOTAL KILOMETERS= Sum (Voltage Level) per Type of Circuit - Level 2	Must be a positive numerical value and is displayed with 2 decimal places.			
TOTAL - CIRCUIT KM	The total count of all circuit kilometers accounting for multipliers for each type of circuit.	Y	Calculated	TOTAL CIRCUIT KM = TOTAL KILOMETERS * X wherein: if Quadruple Circuit: X=12; if Triple Circuit: X= 9; if Double Circuit: X= 6; if Three Phase: X= 3; if V-Phase: X= 2; if Single-Phase: X= 1; if UB - 3 wire: X=2; if UB - 1 wire: X=1; if OS 2 wire: X= 1; if OS 3 wire: X= 2; if OS 4 wire: X= 3	Must be a positive numerical value and is displayed with 2 decimal places.			
GRAND TOTAL - Voltage Level	The total line to line voltages of the EC.	Y	Calculated	GRAND TOTAL Voltage Level = Sum (Sub Total	Must be a positive numerical value and is displayed with 2			

 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">7 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

Data Entry Field	Description	Required? (Y/N)	Source	Formula	Validation Rules	Existing Report	Existing Report Table	Existing Report Field Equivalent
				Voltage Level)	decimal places.			
GRAND TOTAL - KILOMETER	The total count of kilometers for all types of circuits' voltage levels.	Y	Calculated	GRAND TOTAL Voltage Level = Sum (Sub Total TOTAL KILOMETERS)	Must be a positive numerical value and is displayed with 2 decimal places.			
GRAND TOTAL - CIRCUIT KM	The total count of all types of circuits' circuit kilometers accounting for multipliers for each type of circuit.	Y	Calculated	GRAND TOTAL TOTAL CIRCUIT KM = Sum (Sub Total TOTAL CIRCUIT KM)	Must be a positive numerical value and is displayed with 2 decimal places.			
POWER QUALITY								
System Average RMS Voltage Index (SARVI) 110	Total number of feeders with 110 up nominal voltage over total number of feeders. Values should be from the nearest Transformer from substation.	Y	Data Entry	N/A	Must be a positive numerical value between 0 and 1.	MONTHLY ENGINEERING REPORT	POWER QUALITY REPORT	SYSTEM AVERAGE RMS VOLTAGE INDEX (SARVI) 110
System Average RMS Voltage Index (SARVI) 90	Total number of feeders with 90 and below nominal voltage over total number of feeders. Values should be from the farthest Transformer from substation.	Y	Data Entry	N/A	Must be a positive numerical value between 0 and 1.	MONTHLY ENGINEERING REPORT	POWER QUALITY REPORT	SYSTEM AVERAGE RMS VOLTAGE INDEX (SARVI) 90
Nominal Voltage (V)	*Note1: Default value is 230V	Y	Data Entry	N/A	Must be a positive numerical value displayed with 2 decimal places.			
Over Voltage	The long duration voltage	Y	Data Entry	N/A	Must be a positive			

 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">8 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

Data Entry Field	Description	Required? (Y/N)	Source	Formula	Validation Rules	Existing Report	Existing Report Table	Existing Report Field Equivalent
(V)	variation where the RMS value of the voltage is greater than or equal to 110% of the nominal voltage.				numerical value displayed with 2 decimal places. Cell will be highlighted in red if value exceeds Nominal Voltage Value*1.1			
Under Voltage (V)	The long duration voltage variation where the RMS value of the voltage is less than or equal to 90% of the nominal voltage.	Y	Data Entry	N/A	Must be a positive numerical value displayed with 2 decimal places. Cell will be highlighted in red if value is below Nominal Voltage Value*0.9			
Voltage Unbalance (%)	This is computed using prescribed formula and will report the worst value.	Y	Data Entry	N/A	Must be a positive numerical value displayed with 2 decimal places. Cell will be highlighted in red if value is below Nominal Voltage Value*0.9			
Loading (Current) Unbalance (%)	This is computed using prescribed formula and will report the worst value.	Y	Data Entry	N/A	Must be a positive numerical value displayed with 2 decimal places. Cell will be highlighted in red if value is greater than 10%.			
DISTRIBUTION SUBSTATION AND POWER PLANT'S SUBSTATION								

 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">9 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

Data Entry Field	Description	Required? (Y/N)	Source	Formula	Validation Rules	Existing Report	Existing Report Table	Existing Report Field Equivalent
A. DISTRIBUTION SUBSTATION ID								
Substation Name	The name of the Distribution Substation.	Y	Data Entry	N/A	Value should be selected from the list of dropdown values based on Substation Master Data (should only show Substation that belongs to the EC that are tagged as Substation Type: Distribution Substation).	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	DISTRIBUTION SUBSTATION
Transformer Unit ID	The unique number assigned identification number of the Transformer unit.	Y	Data Entry	N/A	Value should be selected from the list of dropdown values based on Transformer Master Data (should only show Transformers that belongs to selected Substation).	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	TRANSFORMER UNIT NO. IDENTIFICATION
Source Voltage (kV) - Peak		Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	SOURCE VOLTAGE - PEAK
Source Voltage (kV) - Off-Peak		Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	SOURCE VOLTAGE – OFF-PEAK
Secondary Voltage (kV) -		Y	Data Entry	N/A	Must be a positive numerical value.			

 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">10 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

Data Entry Field	Description	Required? (Y/N)	Source	Formula	Validation Rules	Existing Report	Existing Report Table	Existing Report Field Equivalent
Peak								
Secondary Voltage (kV) - Off-Peak		Y	Data Entry	N/A	Must be a positive numerical value.			
Secondary Line Current (A) - A	The peak current reading of the line A for the month.	Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	SECONDARY LINE CURRENT - A
Secondary Line Current (A) - B	The peak current reading of the line B for the month.	Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	SECONDARY LINE CURRENT - B
Secondary Line Current (A) - C	The peak current reading of the line C for the month.	Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	SECONDARY LINE CURRENT - C
Secondary Line Current (A) - N	The peak current reading of the Neutral Line for the month.	Y	Data Entry	N/A	Must be a positive numerical value.			
kVarh	The total kVarh for the month.	Y	Data Entry	N/A	Must be a positive numerical value.			
kWh	The total kWh for the month.	Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION	SECONDARY LINE CURRENT - C

 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">11 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

Data Entry Field	Description	Required? (Y/N)	Source	Formula	Validation Rules	Existing Report	Existing Report Table	Existing Report Field Equivalent
							REPORT	
Peak Demand (kW)	The peak demand for the specific power transformer.	Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	PEAK DEMAND (kW)
Power Factor	The ratio of the real power flowing to the load to the apparent power *Note1: Power Factor 85% lagging to 90% leading	Y	Calculated	Power Factor = kWh / SQRT(kWh ² + kVarh ²)	Must be a positive numerical value. If value is less than 0.85, highlight cell in red.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	POWER FACTOR (%)
Load Factor (%)	The ratio of actual utilization and possible available electrical energy usage *Note1: Load factor is usually above 55%.	Y	Calculated	Load Factor (%) = kWh / 720 / Peak Demand	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	LOAD FACTOR (%)
B. POWER PLANT SUBSTATION ID								
Substation Name	The name of the Power Plant Substation.	Y	Data Entry	N/A	Value should be selected from the list of dropdown values based on Substation Master Data (should only show Substation that belongs to the EC that are tagged as Substation Type: Distribution	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	POWER PLANT SUBSTATION

 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">12 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

Data Entry Field	Description	Required? (Y/N)	Source	Formula	Validation Rules	Existing Report	Existing Report Table	Existing Report Field Equivalent
					Substation).			
Transformer Unit ID	The unique number assigned identification number of the Transformer unit.	Y	Data Entry	N/A	Value should be selected from the list of dropdown values based on Transformer Master Data (should only show Transformers that belongs to selected Substation).	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	TRANSFORMER UNIT NO. IDENTIFICATION
Source Voltage (kV) - Peak		Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	SOURCE VOLTAGE - PEAK
Source Voltage (kV) - Off-Peak		Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	SOURCE VOLTAGE – OFF-PEAK
Secondary Voltage (kV) - Peak		Y	Data Entry	N/A	Must be a positive numerical value.			
Secondary Voltage (kV) - Off-Peak		Y	Data Entry	N/A	Must be a positive numerical value.			
Secondary Line Current (A) - A	The peak current reading of the line A for the month.	Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION	SECONDARY LINE CURRENT - A

 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">13 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

Data Entry Field	Description	Required? (Y/N)	Source	Formula	Validation Rules	Existing Report	Existing Report Table	Existing Report Field Equivalent
							REPORT	
Secondary Line Current (A) - B	The peak current reading of the line B for the month.	Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	SECONDARY LINE CURRENT - B
Secondary Line Current (A) - C	The peak current reading of the line C for the month.	Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	SECONDARY LINE CURRENT - C
Secondary Line Current (A) - N	The peak current reading of the Neutral Line for the month.	Y	Data Entry	N/A	Must be a positive numerical value.			
kVarh	The total kVarh for the month.	Y	Data Entry	N/A	Must be a positive numerical value.			
kWh	The total kWh for the month.	Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	SECONDARY LINE CURRENT - C
Peak Demand (kW)	The peak demand for the specific power transformer.	Y	Data Entry	N/A	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	PEAK DEMAND (kW)
Power Factor	The ratio of the real power flowing to the load to the	Y	Calculated	Power Factor = kWh / SQRT(kWh ²)	Must be a positive numerical value.	MONTHLY ENGINEERING	DISTRIBUTION SUBSTATION	POWER FACTOR (%)

 National Electrification Administration	<i>Manual Title:</i> <p style="text-align: center;">DATA ENTRY TEMPLATE MANUAL</p>	<i>Doc Code:</i> <p style="text-align: center;">NEA-QMS- SP-XX</p>	<i>Page:</i> <p style="text-align: center;">14 of 15</p>
	<i>Document Title:</i> <p style="text-align: center;">DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL</p>	<i>Rev. No.</i> <p style="text-align: center;">00</p>	<i>Effective:</i> <p style="text-align: center;">February 19, 2018</p>

Data Entry Field	Description	Required? (Y/N)	Source	Formula	Validation Rules	Existing Report	Existing Report Table	Existing Report Field Equivalent
	apparent power *Note1: Power Factor 85% lagging to 90% leading			+ kVarh^2)	If value is less than 0.85, highlight cell in red.	REPORT	and POWER PLANTS SUBSTATION REPORT	
Load Factor (%)	The ratio of actual utilization and possible available electrical energy usage *Note1: Load factor is usually above 55%.	Y	Calculated	Load Factor (%) = kWh / 720 / Peak Demand	Must be a positive numerical value.	MONTHLY ENGINEERING REPORT	DISTRIBUTION SUBSTATION and POWER PLANTS SUBSTATION REPORT	LOAD FACTOR (%)

Notes:

- Duplex wires are reported by classifying as either OS or Underbuilt (UB) based on actual installation/ construction.
- UB 2 wire with no ground/ neutral is included in UB 3 wire when reported.
- KM Lines will not be inflated if underbuilt and secondary wires are included in the formula.

6.0 PROCEDURE

7.0 REFERENCE

NEA BIT Support Process



 National Electrification Administration	<i>Manual Title:</i> DATA ENTRY TEMPLATE MANUAL	<i>Doc Code:</i> NEA-QMS- SP-XX	<i>Page:</i> 15 of 15
	<i>Document Title:</i> DET005 DISTRIBUTION LINES, SUBSTATION, & POWER QUALITY MANUAL	<i>Rev. No.</i> 00	<i>Effective:</i> February 19, 2018

8.0 ATTACHMENTS

9.0 RECORDS