

Appendix A - Explanation of Terms and Instructions for Data Preparation of NX-9A

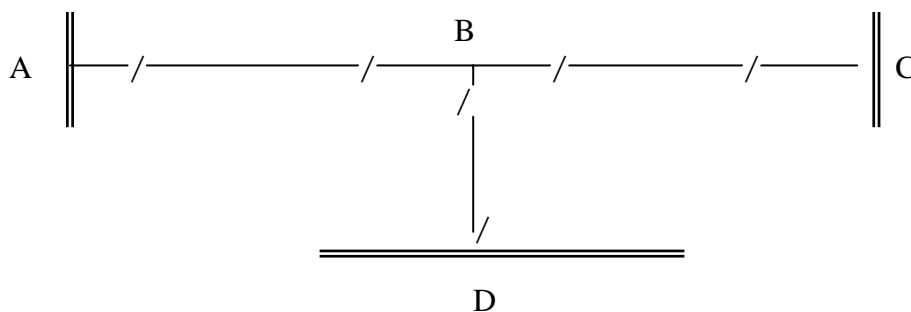
ISO New England Transmission Equipment Rating, Characteristic, and Operational Data

Transmission Line

I. GENERAL INSTRUCTIONS

Data is to be provided for all transmission line segments 69 kV and above. A transmission line segment is defined as follows:

In its simplest form, a transmission line segment connects two buses of the same kV level. As used by the ISO nodal network model, a line segment is a transmission path between two (2) electrical nodes. Switching action at either end can interrupt real/reactive power transmission between the electrical nodes. For multi-terminal lines, a line segment is defined for each electrical node whose real/reactive power can be interrupted without affecting the remaining terminal(s). In the example below, the four (4) buses; A, B, C and D, are connected by three (3) line segments. These segments are: 1) A to B; 2) B to C; and 3) B to D. Real and reactive power flow can be interrupted on any of the three (3) line segments without interrupting the flow on the remaining two (2) segments. Each of the three segments would, therefore, be treated as a separate segment for which ISO Identification Numbers would be assigned and transmission rating and characteristic data would be required.



A separate form must be provided for each transmission line segment. The ISO will provide ISO Identification Numbers for all line segments. On any jointly owned line, each Market Participant must report the data for each segment of the line that it owns.

To assist in completing the NX-9A form, a completed sample NX-9A form is attached (Example 1).

II. GENERAL INFORMATION INSTRUCTIONS

The form provides for entry of both ISO and Market Participant data. ISO will provide the Reference Number, Market Participant ID, EMS terminal A & B names, ISO ID and ISO EMS Line Number. Market Participant will provide all remaining transmission related information. This information shall be provided to ISO via the NX-9 database application. Questions on use of the NX-9 database application should be directed to the ISO Market Support Services Department at (413) 540-4220.

III. RATING DATA INSTRUCTIONS

The form provides for entry of both Summer (April 1 through October 31) and Winter (November 1 through March 31) thermal ratings. The ambient temperature (reported in Fahrenheit) and wind speed (reported in feet per second) used to establish the ratings must be entered for both Summer and Winter.

Line ratings are to be provided in MVA.

Definition of Thermal Ratings:

- A. NORMAL LIMIT - Transmission facility loadings up to this rating can be experienced without incurring equipment loss of life above design criteria.

The following Emergency ratings (LTE, STE and DAL) may involve equipment loss of life or loss of tensile strength in excess of design criteria and should not be deliberately scheduled.

- B. LONG TIME EMERGENCY LIMIT (LTE) - This rating is intended to fit a daily load cycle of twelve (12) hours summer and four (4) hours winter. A facility may operate up to this rating provided that its loading is returned to or below the Normal rating during off peak hours.
- C. SHORT TIME EMERGENCY LIMIT (STE) - This rating is a fifteen (15) minute rating. If a facility operates at this rating for more than fifteen (15) minutes, equipment will suffer thermal damage. Facility loading above the LTE rating but at or below the STE rating must be reduced to or below the LTE rating within fifteen (15) minutes.
- D. DRASTIC ACTION LIMIT (DAL) - This rating is an immediate action rating. If a facility operates at this rating for more than five (5) minutes, equipment will suffer thermal damage. Facility loadings above the STE rating but at or below DAL must be reduced to or below the LTE rating within five (5) minutes.

- E. **OTHER LIMITS** - If special ratings exist and are to be used under certain circumstances (additional wind and temperature ratings or configuration differences for example), additional rating records must be added with comments to describe the associated circumstances for use of the special ratings. The Market Participant is also responsible for providing a statement as to the authority the ISO and the Local Control Center have for use and distribution of these special ratings.

IV. CHARACTERISTIC AND OPERATIONAL DATA INSTRUCTIONS

Impedance and charging data should be submitted in percentages on a 100 MVA base.

- R = resistance
- X = reactance
- B = susceptance

V. EQUIPMENT RATING, CHARACTERISTIC, AND OPERATIONAL DATA CHANGE EXPLANATION

Anytime new equipment is added or existing equipment is altered in any way, a brief description of the change must be provided in the Reason for Revision field. It will provide a written record of the change. For example: ABC line was re-conducted on January 1, 2005.

VI. GENERAL COMMENTS

Other explanations of pertinent data supplied on this form are desired and should be entered in the Comments area.

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ISO-NEW ENGLAND TRANSMISSION EQUIPMENT RATING,
CHARACTERISTIC, AND OPERATIONAL DATA IMPLEMENTATION FORM
TRANSMISSION LINE
NX-9A

Main Form Screen Shot:

Transmission Lines (NX-9A)

Update this NX9 NEW NX9 using this data Delete this NX9 Close

NEPOOL Transmission Facility Rating and Characteristics Data Implementation Form
Transmission Line (NX-9A)

Reference Number: 5465 Replaces Ref Num: ID: Participant: TEST Participant ID: abc

Form State: Preliminary ISO ID: abc

Conductor Type: 2250 CU PTC ISO EMS Line Number: abc

Terminal A: test1 Bus #: 555 EMS: TEST1

Terminal B: test2 Bus #: 666 EMS: TEST2

Nominal Line Voltage: 345 Underground Cable: Conductor Length (mi): 4.2

Season	Temp (°F)	Wind (ft/s)	Special Condition	Normal	LTE	STE	DAL
Summer	100	3	Line xyz is in service	550	844	977	977
Winter	50	3	Line xyz is in service	706	883	1061	1061
	100	3	Line xyz is out of service	720	873	906	906
	50	3	Line xyz is out of service	794	932	1005	1005

Impedance Data (%) (100 MVA Base)

R: 0.018 X: 0.084 B: 87.5

Form Removed From Service: Comments: When Line xyz is in service, LTE is 4 hours.
When Line xyz is out of service, LTE is 12 hours.

Data Revision Number: 0 Date Created: 8/3/00 Prepared By: test

Date Received: Requested Effective Date: 8/3/00

Implementation Date: Approved By: Record: 1 of 1

ISO-NEW ENGLAND TRANSMISSION EQUIPMENT RATING,
 CHARACTERISTIC, AND OPERATIONAL DATA IMPLEMENTATION FORM
 TRANSMISSION LINE
 NX-9A

Sub Form (Rating Details) Screen Shot:

ISO New England, Inc. NX-9 Database

File Edit Insert Records Window Help

Transmission Lines (NX-9A) Ratings Details

Reference Number: 5465 Copy Record Close

Default Summer Default Winter Temperature (°F): 100 Wind Speed (ft/s): 3

Condition: Line xyz is in service

	MVA	Limiting Device	Location
Normal	550	Conductor	Conductor
LTE	844	Conductor	Conductor
STE	977	Conductor	Conductor
DAL	977	Conductor	Conductor

Delete Record

Default Summer Default Winter Temperature (°F): 50 Wind Speed (ft/s): 3

Condition: Line xyz is in service

	MVA	Limiting Device	Location
Normal	706	Conductor	Conductor
LTE	883	Conductor	Conductor
STE	1061	Conductor	Conductor
DAL	1061	Conductor	Conductor

Delete Record

Default Summer Default Winter Temperature (°F): 100 Wind Speed (ft/s): 3

Condition: Line xyz is out of service

	MVA	Limiting Device	Location
Normal	720	Conductor	Conductor
LTE	873	Conductor	Conductor
STE	906	Conductor	Conductor
DAL	906	Conductor	Conductor

Delete Record

Default Summer Default Winter Temperature (°F): 50 Wind Speed (ft/s): 3

Condition: Line xyz is out of service

Record: 1 of 4 (Filtered)

Record: 1 of 1

Form View FLTR NUM

*** Example 1 ***

ISO-New England Transmission Facility Rating and Characteristic, and Operational Data Implementation Form Transmission Line (NX-9A)

Reference Number 5465	Replaces Ref Num
Market Participant TEST	Market Participant Line ID abc
Form State Preliminary	ISO ID abc
Conductor Type 2250 CU PTC	ISO EMS Line Number abc
Terminal A test1 TEST1	Bus # 555 EMS
Terminal B test2 TEST2	Bus # 666 EMS
Nominal Line Voltage 345	Underground Cable Y Conductor Length (mi.) 4.2

<u>Default Summer</u>	<u>MVA</u>	<u>Limiting Device</u>	<u>Location</u>
Temperature (°F) 100	Normal 550	Conductor	Conductor
Wind Speed (ft/s) 3	LTE 844	Conductor	Conductor
Line xyz is in service	STE 977	Conductor	Conductor
	DAL 977	Conductor	Conductor

<u>Default Winter</u>	<u>MVA</u>	<u>Limiting Device</u>	<u>Location</u>
Temperature (°F) 50	Normal 706	Conductor	Conductor
Wind Speed (ft/s) 3	LTE 883	Conductor	Conductor
Line xyz is in service	STE 1061	Conductor	Conductor
	DAL 1061	Conductor	Conductor

<u>Line xyz is out of service</u>	<u>MVA</u>	<u>Limiting Device</u>	<u>Location</u>
Temperature (°F) 100	Normal 720	Conductor	Conductor
Wind Speed (ft/s) 3	LTE 873	Conductor	Conductor
Line xyz is out of service	STE 906	Conductor	Conductor
	DAL 906	Conductor	Conductor

<u>Line xyz is out of service</u>	<u>MVA</u>	<u>Limiting Device</u>	<u>Location</u>
Temperature (°F) 50	Normal 794	Conductor	Conductor
Wind Speed (ft/s) 3	LTE 932	Conductor	Conductor
Line xyz is out of service	STE 1005	Conductor	Conductor
	DAL 1005	Conductor	Conductor

Impedance Data (%) (100 MVA Base)

R 0.018 X 0.084 B 87.5

Form Removed From Service

Comments When Line xyz is in service, LTE is 4 hours.
When Line xyz is out of service, LTE is 12 hours.

Data Revision Number 0	Date Created 8/3/00	Prepared By test
Date Received Implementation Date	Approved By	Requested Effective Date 8/3/00

OP 16 APPENDIX A REVISION HISTORY

Document History (This Document History documents action taken on the equivalent NEPOOL Procedure prior to the RTO Operations Date as well revisions made to the ISO New England Procedure subsequent to the RTO Operations Date.)

Rev. No.	Date	Reason
Rev 1	09/06/02	
Rev 2	02/01/05	Updated to conform to RTO terminology
Rev 3	08/05/05	Clarified terminology and added reference to new "Reason for Revision" field to aid NX-9 administration and conform to PP7