



**NEW YORK
INDEPENDENT SYSTEM OPERATOR**

**ANNUAL
TRANSMISSION PLANNING
AND
EVALUATION REPORT**

(FERC FORM NO. 715)

April 1, 2016

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About the New York Independent System Operator

The New York Independent System Operator, Inc. (NYISO), headquartered in Rensselaer, New York, is an independent, nonprofit corporation established to ensure the continued reliable operation of the New York State (NYS) bulk electric system, and to facilitate the wholesale electricity markets throughout the State. NYISO began operation on November 18, 1999, and formally assumed responsibility for operation of the bulk electric system from the New York Power Pool (NYPP) on December 1, 1999. NYISO is regulated by the Federal Energy Regulatory Commission (FERC).

NYISO provides for reliable and efficient operation of the NYS bulk electric system by coordinating operation of the state's bulk power transmission facilities, and by committing and dispatching generation resources throughout the state on a single-system basis, in accordance with prescribed reliability rules. NYISO coordinates transmission service and facilitates the state's wholesale electricity markets through the *NYISO Open Access Transmission Tariff (OATT)*, the *NYISO Market Administration and Control Area Services Tariff*, and various agreements. NYISO also performs studies in support of planning of the NYS electric system, and to evaluate the impact of proposed interconnections of new generation, transmission, and load facilities to the transmission system.

The NYS electric system is part of a continental power system. NYISO is a registered entity of the North American Electric Reliability Corporation (NERC), an organization whose mission is to ensure the reliability of the North American bulk electric system. NYISO is also a member of the Northeast Power Coordinating Council (NPCC), which is one of eight regional entities of the NERC covering the region comprised of New York, New England, Ontario, Quebec, and the Maritimes (New Brunswick, Nova Scotia, and Prince Edward Island). Together, NERC and the regional entities establish reliability standards for the interconnected electric systems, and monitor the compliance of the industry participants, and organizations such as the NYISO, to those standards. In addition, NYISO is also subject to the reliability rules of the New York State Reliability Council (NYSRC), an organization established to address the special reliability needs of NYS.

NYISO conducts transmission operation and planning activities in coordination with eight transmission owners and operators in NYS, which are:

- ◆ Central Hudson Gas & Electric Corporation
- ◆ Consolidated Edison Company of New York, Inc.
- ◆ Long Island Power Authority
- ◆ New York Power Authority
- ◆ New York State Electric & Gas Corporation
- ◆ Niagara Mohawk, A National Grid Company
- ◆ Orange and Rockland Utilities, Inc.
- ◆ Rochester Gas and Electric Corporation

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ANNUAL TRANSMISSION PLANNING AND EVALUATION REPORT

(FERC Form No. 715 Report)

FOREWORD

This is the NYISO Annual Transmission Planning and Evaluation Report (FERC Form No. 715 or FERC 715) for 2016. NYISO is submitting a paperless filing again this year. This report was prepared in accordance with the FERC Form No. 715 instructions and in accordance with the requirements for a paperless filing.

In 2000, NYISO assumed responsibility for filing the annual FERC 715 report on behalf of the transmitting utilities of NYS, a responsibility previously performed by the NYPP. Among other things, NYISO conducts transmission planning activities in coordination with eight transmission owners and operators in NYS (NYTOs), each of which are “transmitting utilities” as defined by the Federal Energy Regulatory Commission (FERC). The NYTOs are identified in Part 1 of this report.

This report consists of six parts, corresponding to the six parts specified in the FERC 715 instructions. Where appropriate, only references are provided for documents that were provided in a previous FERC 715 report and have not changed, in accordance with the FERC 715 instructions. For Part 3, all the most recent maps and diagrams are provided in PDF files, in accordance with the requirements for a paperless filing.

Parts 2, 3, and 6 have been labeled as Critical Energy Infrastructure Information (CEII), as has been NYISO’s practice. NYISO understands that this entire filing will be considered CEII material by FERC and handled accordingly.

Portions of this report will be available from the NYISO public web site at (http://www.nyiso.com/public/markets_operations/services/planning/documents/index.jsp). Access to other portions of the report NYISO considers to be CEII, i.e., maps, diagrams, and power flow base cases, will be restricted to parties that obtain or have the proper authorization. Instructions for requesting CEII contained in this report are provided in Appendix A.

The information contained in this report pertains to NYISO transmission planning and evaluation matters in general, and is valid as of the April 1, 2016 filing date. In the event that this information may be used for a specific purpose, it may be advisable to contact NYISO or the appropriate NYTO contact person(s), identified in Part 1 of this report, to ascertain whether this information is appropriate and sufficient for the intended purpose.

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Part 1 Identification and Certification

ORGANIZATION NAMES AND ADDRESSES

New York Independent System Operator
10 Krey Boulevard
Rensselaer, NY 12144

Central Hudson Gas & Electric Corporation
284 South Avenue
Poughkeepsie, NY 12601-4879

New York State Electric & Gas
Corporation
18 Link Drive
Binghamton, NY 13904

Consolidated Edison Company of New York, Inc.
4 Irving Place
New York, NY 10003

Niagara Mohawk, A National Grid
Company
300 Erie Boulevard West
Syracuse, NY 13202

Long Island Power Authority
333 Earle Ovington Boulevard
Suite 403
Uniondale, NY 11553

Orange and Rockland Utilities, Inc.
390 Route 59
Spring Valley, NY 10977

New York Power Authority
123 Main Street
White Plains, NY 10601

Rochester Gas and Electric Corporation
89 East Avenue
Rochester, NY 14649

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Part 1 Identification and Certification

CONTACT PERSONS

<u>Organization</u>	<u>Contact Name/Title</u>	<u>Telephone/ Fax Nos.</u>
New York Independent System Operator	Thinh T. Nguyen Manager, Interconnection Projects	518-356-6025 518-356-7570
Central Hudson Gas & Electric Corporation	Richard Wright Senior Engineer Electric Transmission Planning	845-486-5463 845-486-5697
Consolidated Edison Company of New York, Inc.	Aleksandra Gofman Engineer Transmission Planning	212-460-6116 212-529-1130
PSEG Long Island, Agent for Long Island Power Authority	Anie Philip Manager, Transmission Planning PSEG Long Island Agent for Long Island Power Authority	516-949-8290 516-545-8345
New York Power Authority	Arnold Schuff Director, Transmission Planning	914-681-6395 914-681-6932
New York State Electric & Gas Corporation and Rochester Gas and Electric Corporation	Timothy J. Lynch Manager, System Planning	607-762-7352 607-762-8645
Niagara Mohawk	Peter F. Altenburger Director, Transmission Planning and Asset Management - NY National Grid USA Service Co. Acting as agent for Niagara Mohawk	518-433-3754 518-471-7477
Orange and Rockland Utilities, Inc.	Roleto Mangonon Transmission Planning Engineer	845-577-3326 845-577-3720

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Part 1 Identification and Certification

CERTIFICATION

I certify that, to the best of my knowledge, the information and data submitted in this form by NYISO staff, on behalf of the transmitting utilities identified in Part 1, is complete and accurate, and in compliance with the “Instructions for Completing Form 715 Annual Transmission Planning and Evaluation Report.”

Thinh T. Nguyen
Manager, Interconnection Projects
New York Independent System Operator

The certifications of the authorized officials of each of the transmitting utilities that provided information to NYISO for this filing are included in this part of the report.

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Part 1 Identification and Certification

CERTIFICATION

I certify that, to the best of my knowledge, the information and data provided by Central Hudson Gas & Electric Corporation (transmitting utility) to NYISO (designated agent) for this filing is accurate and in compliance with the “Instructions for Completing Form 715 Annual Transmission Planning and Evaluation Report.” I authorize NYISO staff to submit this information and data on our behalf.

Richard Wright
Senior Engineer, Electric Transmission Planning
Central Hudson Gas & Electric Corporation

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Part 1 Identification and Certification

CERTIFICATION

I certify that, to the best of my knowledge, the information and data provided by Consolidated Edison Company of New York, Inc. (transmitting utility) to NYISO (designated agent) for this filing is accurate and in compliance with the “Instructions for Completing Form 715 Annual Transmission Planning and Evaluation Report.” I authorize NYISO staff to submit this information and data on our behalf.

Aleksandra Gofman
Engineer, Transmission Planning
Consolidated Edison Company of New York, Inc.

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Part 1 Identification and Certification

CERTIFICATION

I certify that, to the best of my knowledge, the information and data provided by PSEG Long Island, Agent for the Long Island Power Authority (transmitting utility) to NYISO (designated agent) for this filing is accurate and in compliance with the “Instructions for Completing Form 715 Annual Transmission Planning and Evaluation Report.” I authorize NYISO staff to submit this information and data on our behalf.

Anie Philip
Manager, Transmission Planning
PSEG Long Island
Agent for the Long Island Power Authority

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Part 1 Identification and Certification

CERTIFICATION

I certify that, to the best of my knowledge, the information and data provided by New York Power Authority (transmitting utility) to NYISO (designated agent) for this filing is accurate and in compliance with the “Instructions for Completing Form 715 Annual Transmission Planning and Evaluation Report.” I authorize NYISO staff to submit this information and data on our behalf.

Arnold Schuff
Director, Transmission Planning
New York Power Authority

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Part 1 Identification and Certification

CERTIFICATION

I certify that, to the best of my knowledge, the information and data provided by New York State Electric & Gas Corporation and Rochester Gas and Electric Corporation (transmitting utilities) to NYISO (designated agent) for this filing is accurate and in compliance with the “Instructions for Completing Form 715 Annual Transmission Planning and Evaluation Report.” I authorize NYISO staff to submit this information and data on our behalf.

Timothy J. Lynch
Manager, System Planning
New York State Electric & Gas Corporation
and
Rochester Gas and Electric Corporation

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Part 1 Identification and Certification

CERTIFICATION

I certify that, to the best of my knowledge, the information and data provided by Niagara Mohawk (transmitting utility) to NYISO (designated agent) for this filing is accurate and in compliance with the “Instructions for Completing Form 715 Annual Transmission Planning and Evaluation Report.” I authorize NYISO staff to submit this information and data on our behalf.

Peter F. Altenburger
Director Transmission Planning and Asset Management - NY
National Grid USA Service Co.
Acting as agent for Niagara Mohawk

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Part 1 Identification and Certification

CERTIFICATION

I certify that, to the best of my knowledge, the information and data provided by Orange and Rockland Utilities, Inc. (transmitting utility) to NYISO (designated agent) for this filing is accurate and in compliance with the “Instructions for Completing Form 715 Annual Transmission Planning and Evaluation Report.” I authorize NYISO staff to submit this information and data on our behalf.

John Coffey
Chief Engineer, Transmission and Substation Engineering
Orange and Rockland Utilities, Inc.

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Part 2 Power Flow Base Cases

Contains Critical Energy Infrastructure Information – Do Not Release

The following power flow base cases are included in this part of the report:

- Case #1: Winter 2015/2016 Peak Load
- Case #2: Summer 2016 Peak Load
- Case #3: Spring 2017 Light Load
- Case #4: Summer 2017 Peak Load
- Case #4a: Summer 2017 Peak Load based on a 90/10 statewide forecast
- Case #5: Winter 2017/2018 Peak Load
- Case #6: Spring 2021 Light Load
- Case #7: Summer 2021 Peak Load
- Case#7a: Summer 2021 Peak Load based on a 90/10 statewide forecast
- Case #8: Winter 2021/2022 Peak Load
- Case #9: Summer 2026 Peak Load
- Case#9a: Summer 2026 Peak Load based on a 90/10 statewide forecast

NYISO and the NYTOs named in Part 1 participate in the NPCC regional base case development process. NYISO maintains a centralized database of power flow data for the NYS electric power system for use in both planning and operating studies. Through an annual process, the NYTOs provide data to NYISO to update the NYS power flow base cases, and NYISO in turn updates its centralized database and provides data to NPCC to update its regional base cases. NPCC compiles the regional base cases and makes them available to its members and to NERC.

The above base cases were initially based on the 2015 NPCC base cases. However, the NYS and outside area representations in these cases have been reviewed and updated based on information provided to NYISO up through approximately March 16, 2016.

The first case is the base case that was used for the NYISO Winter 2015/2016 Operating Study. The second case is the base case being used for the NYISO Summer 2016 Operating Study. In general, these cases represent the existing transmission system and system conditions as were expected to occur at the time of the respective seasonal peak load. These cases would be appropriate for use as a starting point for current year (2016) transmission studies.

The last ten cases represent the planned transmission system and forecasted system conditions in future years, in this case, 2017 (near-term), 2021 (mid-term) and 2026 (long-term). The four near-term cases were developed to satisfy NERC standards requirements for near-term (one year out) transmission assessments. The near-term cases represent only proposed new or modified generation and transmission facilities that are planned to occur within that time frame. The NYS representations for the mid-term and long-term cases include only those future new or modified

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Part 2 Power Flow Base Cases

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generation and transmission facilities that: (1) have met the qualifications to be included in a NYISO Interconnection Facilities Study (IFS); or (2) have been proposed by the NYTOs as firm projects. Other proposed new or modified generation and transmission facilities that may be under study are not represented. The near-term, mid-term and long-term cases would be appropriate for use as a starting point for transmission planning studies in those respective time frames. NYISO expects to use these base cases as a starting point for conducting various planning studies and transmission reliability assessments in 2016.

Each of these power flow cases contain a detailed representation of the NYS electric power system for the given time period, with appropriate reductions of the representations of the electric systems outside NYS. These cases are valid for the study of the NYS system only. Furthermore, these power flow cases and their associated data are intended for power flow analysis only, and are not intended for use in stability, short-circuit, or other types of analyses.

The NYS system load model utilized in the peak load base cases is representative of a statewide coincident peak load for baseline load growth and weather conditions. Baseline peak weather conditions are 50/50 for all NYTO service areas except for Consolidated Edison Company of New York and Orange and Rockland Utilities. This value may be lower than the sum of the individual NYTOs' peak loads since these individual peak loads generally do not occur at the same time. The NYS system load model utilized in the spring light load base case represents a load level equal to approximately 45% of the statewide coincident summer peak load level. Again this year, in addition to the summer peak baseline load cases, three additional summer peak load cases based on a 90/10 statewide peak load forecast (referred to as Case#4a, Case#7a and Case#9a above) also are included in this filing. A 50/50 forecast means that, on a probability distribution curve, there is a 50% chance that the actual peak load will be below the forecast value, and a 50% chance of it being above the forecast. A 67/33 forecast means that there is a 67% chance that the actual peak load will be below the forecast value, and a 33% chance of it being above the forecast. A 90/10 forecast means that there is a 90% chance that the actual peak load will be below the forecast value, and a 10% chance of it being above the forecast. NYISO uses both the baseline and 90/10 cases in various transmission planning analyses.

The cases are in the RAWD data format of the Siemens - Power Technologies, Inc. (PTI) Power System Simulator for Engineering (PSS/e) power flow program. All twelve cases were created using PSS/e version 33.

The cases have been solved using the fixed-slope decoupled Newton iterative algorithm (FDNS) with stepping transformer taps, area interchange and phase shifters engaged, switched shunts and DC line taps unlocked, and VAR limits applied immediately. An acceleration factor of 1.0 and a

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Part 2 Power Flow Base Cases

Contains Critical Energy Infrastructure Information – Do Not Release

tolerance of 1.0 were employed during the solution process. The zero impedance line threshold was set at 0.0001 pu. The cases were developed on a Windows operating system.

The raw data input files and the corresponding output data files for all twelve base cases are provided in machine readable format on a single CD-ROM. The combined size of the input/output data files are approximately 32 MB per case.

In addition to the above power flow base cases, a “data dictionary” also is provided in this filing. The data dictionary contains a listing of bus names and numbers from the Summer 2021 Peak Load case, with corresponding full names for each bus. This data dictionary applies to all eight base cases.

The data dictionary also contains the Energy Information Administration (EIA) plant codes for generating plants represented in the cases, as appropriate.

The power flow base cases and data dictionary included in this filing are considered CEII and as such, access will be restricted to parties that obtain or have the proper authorization to receive them (see Appendix A).

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Part 3 Transmitting Utility Maps and Diagrams

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The maps and diagrams provided with this report are as follows:

	Latest Version (Date Originally Filed)
• 2016 NYISO Electric System Map	2016
• NYISO One-Line Diagram of the NYS Bulk Power System	2016
• One-Line Diagrams of Each of the NYTOs' Systems:	
- Central Hudson Gas & Electric Corporation	2016
- Consolidated Edison Company of New York	2016
- Long Island Power Authority	2016
- New York Power Authority	2016
- New York State Electric & Gas Corporation	2016
- Niagara Mohawk, A National Grid Company	2016
- Orange & Rockland Utilities, Inc.	2016
- Rochester Gas & Electric Corporation	2016

The 2016 NYISO Electric System Map depicts high voltage transmission facilities (115 kV and above) and major generation facilities within NYS.

The NYISO one-line diagram (4 pages) depicts the existing NYS bulk power system, which consists principally of relatively large generating units and the high voltage transmission system. Generally these are generating units of 300 MW or larger and transmission facilities of 230 kV and above, although smaller generating units and lower voltage transmission on which faults or disturbances can have a significant effect on the continuity of service of the NYS system, or can have a significant effect on areas outside of the NYS system, also are considered part of the bulk power system. An updated one-line diagram is provided with this report.

The NYTO one-line diagrams depict the respective existing transmission and generation facilities of the NYTOs' systems. In some cases, the NYTO one-line diagrams show more detail of the lower voltage transmission system than is shown in the NYISO diagram. The most recent versions of the NYTO diagrams are provided with this report.

The maps and diagrams included in this filing will be restricted to parties that obtain or have the proper authorization (see Appendix A).

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Part 4 Transmission Planning Reliability Criteria

This part includes a listing of any new or revised transmission planning reliability criteria (“criteria”) documents provided with this filing and previously filed criteria documents that are still in effect.

NYISO and the NYTOs are subject to the reliability standards established by NERC. The NERC Reliability Standards are available from the NERC web site at (<http://www.nerc.com/pa/Stand/Pages/ReliabilityStandards.aspx>).

NYISO and the NYTOs also are subject to the NPCC Criteria and the NYSRC Reliability Rules. In addition, the NYTOs each have supplemental transmission planning reliability criteria as well. The applicable NPCC, NYSRC, and NYTOs criteria documents are listed as document #s 3-23 below.

The new, revised, or previously filed criteria documents that pertain to this filing are as follows:

1. Standard TPL-001-4 – *Transmission System Planning Performance Requirements*; North American Electric Reliability Corporation, effective date January 1, 2015 (filed 2014).
2. Standard FAC-013-2 – *Assessment of Transfer Capability for the Near-Term Transmission Planning Horizon*; North American Electric Reliability Corporation, effect date April 1, 2013 (filed 2014).
3. NPCC Regional Reliability Reference Directory #1 *Design and Operation of the Bulk Power System (Directory #1)*; Northeast Power Coordinating Council, September 30, 2015 (filed 2016). **A copy of this revised document is included in this filing.** The NPCC Directories are available from the NPCC web site at (<https://www.npcc.org/Standards/Directories/Forms/Public%20List.aspx>).
4. NPCC Regional Reliability Reference Directory #12 *Under frequency Load Shedding Program Requirements (Directory #12)*; Northeast Power Coordinating Council, July 9, 2013 (filed 2014).
5. *NYSRC Reliability Rules & Compliance Manual for Planning and Operating the New York State Power System (Version 36)*; New York State Reliability Council, March 11, 2016 (filed 2016). **A copy of this revised document is included in this filing.** The NYSRC Reliability Rules are available from the NYSRC web site at (<http://www.nysrc.org/NYSRCReliabilityRulesComplianceMonitoring.html>).
6. *Central Hudson Gas & Electric Corporation Transmission Planning Guidelines*; Central Hudson Gas & Electric Corporation, March 16, 2016 (filed 2016). **A copy of this revised document is included in this filing.**

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Part 4 Transmission Planning Reliability Criteria

7. *Central Hudson Gas & Electric Corporation (CHG&E) Application Process for Distributed Generators of Greater than 300 kVA Connected in Parallel with the CHG&E Electrical Delivery System*; Central Hudson Gas & Electric Corporation, April 16, 2002 (filed 2003).
8. *Central Hudson Gas & Electric Corporation (CHG&E) Interconnection Protection Requirements for Distributed Generators of Greater than 300 kVA Connected in Parallel with the CHG&E Electrical Delivery System*; Central Hudson Gas & Electric Corporation, May 5, 2002 (filed 2003).
9. TRANSMISSION PLANNING CRITERIA (EP-7100-12); Consolidated Edison Company of New York, July 13, 2015 (filed 2016). **A copy of this revised document is included in this filing.**
10. Management of Standard Large Facility Interconnection Projects (EP-7510-5); Consolidated Edison Company of New York, Inc., July 2015 (filed 2016). **A copy of this revised document is included in this filing.**
11. Developer Welcome Kit; Consolidated Edison Company of New York, Inc., May 2012 (filed 2013).
12. STANDARD ENGINEERING DESIGN GUIDELINES FOR AREA SUBSTATIONS, TRANSMISSION SUBSTATIONS AND PURS FACILITIES (CE-ES-2002); Consolidated Edison Company of New York, Inc., September 2009 (filed 2013).
13. *Transmission & Distribution Planning Criteria & Guidelines (Revision 3)*; Long Island Power Authority, September 20, 2010 (filed 2011). The latest documents are available from the PSEG-LIPA web site at <https://www.psegliny.com/page.cfm/AboutUs/CompanyProfile/DocumentLibrary>
14. REQUIREMENTS FOR GENERATING FACILITY INTERCONNECTION TO THE LIPA TRANSMISSION SYSTEM, Long Island Power Authority, April 2007 (filed 2013). The latest documents are available from the PSEG-LIPA web site at <https://www.psegliny.com/page.cfm/AboutUs/CompanyProfile/DocumentLibrary>
15. BULK POWER SYSTEM FACILITY AND END USER INTERCONNECTION REQUIREMENTS TO THE LIPA TRANSMISSION SYSTEM, Long Island Power Authority, April 13, 2007 (filed 2013).
16. *Smart Grid Small Generator Interconnection Procedures for New Distributed Resources 20*

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Part 4 Transmission Planning Reliability Criteria

MW of Less Connected in Parallel with LIPA Distribution Systems, Long island Power Authority (filed 2013).

17. *Design Criteria for Developer Connection to the New York Power Authority Transmission System, Rev. 5*; New York Power Authority, November 24, 2015 (filed 2016). **A copy of this revised document is included in this filing.**
18. **IBERDROLA USA ELECTRIC SYSTEM PLANNING MANUAL – CRITERIA & PROCESSES**, NYSEG, RG&E, CMP and MEPCO, November 06, 2014 (filed 2016). **A copy of this revised document is included in this filing.**
19. *Requirements For Independent Power Producers Of Electricity (BULLETIN 86-01)*; New York State Electric & Gas Corporation and Rochester Gas and Electric Corporation, October 3, 2011 (filed 2016). **A copy of this revised document is included in this filing.**
20. *Transmission Planning Guide (TGP28 – Issue 3)*; National Grid, November 22, 2010 (filed 2011).
21. *National Grid Electric System Bulletin No.756: Supplement to Specifications for Electrical Installations, Requirements for Parallel Generation Connected To a National Grid Owned EPS*; National Grid, version 2.2, September 2014 (filed 2015).
22. **ORANGE AND ROCKLAND UTILITIES, INC. TRANSMISSION DESIGN STANDARDS (Revision 4)**; Orange and Rockland Utilities, Inc., September 10, 2014 (filed 2015).
23. **ORU-ENGR-004 - Revision 2: Management of Standard Large and Small Facility Interconnection Projects**, Orange & Rockland Utilities, Inc., May 16, 2011 (filed 2015).).

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Part 5 Transmission Planning Assessment Practices

This part includes a listing of any new or revised transmission planning assessment practices (“practices”) documents provided with this filing and previously filed practices documents that are still in effect. NYISO and the NYTOs have and use various documents (procedures, guidelines, etc.) that define or strongly relate to practices for assessment of the transmission system for planning purposes.

The new, revised, or previously filed practices documents that pertain to this filing are as follows:

1. NPCC *Guidelines for NPCC Area Transmission Reviews*. This document has been incorporated into NPCC Directory #1 as Appendix B (see Part 4, document #3).
2. *Classification of Bulk Power System Elements (Document A-10)*, Northeast Power Coordinating Council, December 1, 2009 (filed 2010). The NPCC criteria are available from the NPCC web site (<https://www.npcc.org/Standards/Criteria/Forms/Public%20List.aspx>).
3. *New York ISO Comprehensive System Planning Process* (Attachment Y of the NYISO OATT), May 1, 2015 (filed 2016). **A copy of this revised document is included in this filing.** This document, which may not reflect tariff revisions pending Commission approval, is available from the NYISO web site at (http://www.nyiso.com/public/markets_operations/documents/tariffs/index.jsp).
4. *NYISO Transmission Expansion and Interconnection Manual*; October 30, 2015 (filed 2016). **A copy of this revised document is included in this filing.** This manual is available from the NYISO web site at (http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp).

Note that the *Transmission Expansion and Interconnection Manual* contains the following transmission planning guidelines:

- a. Attachment F: NYISO Transmission Planning Guideline #1-1, Guideline for System Reliability Impact Studies, October 18, 2012;
- b. Attachment G: NYISO Transmission Planning Guideline #2-1, Guideline for Voltage Analysis and Determination of Voltage-Based Transfer Limits, October 18, 2012;
- c. Attachment H: NYISO Transmission Planning Guideline #3-1, Guideline for Stability Analysis and Determination of Stability-Based Transfer Limits, October 18, 2012;

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Part 5 Transmission Planning Assessment Practices

- d. Attachment I: NYISO Transmission Planning Guideline #4-1, NYISO Guideline for Fault Current Assessment, October 18, 2012;
 - e. Attachment J: NYISO Transmission Planning Guideline #5-0, NYISO Guideline on Application of High-Speed Autoreclosing, July 25, 2002.
5. NYISO *Reliability Planning Process Manual*; April 1, 2016 (filed 2016). **A copy of this revised document is included in this filing.** This document is available from the NYISO web site at http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp.

6. NYISO Operations Manuals:

Operations manuals often describe operating rules and procedures that have a bearing on transmission planning studies in that these rules and procedures should be taken into consideration and modeled to the extent possible in performing analyses intended to simulate the operation and performance of the transmission system. For example, rules and procedures in areas such as **voltage control** and **operation of phase angle regulators** have significant relevance to transmission planning studies. NYISO operations manuals that have such significant relevance are as follows:

- a. NYISO *Transmission and Dispatching Operation Manual*; February 11, 2016 (filed 2016). **A copy of this revised document is included in this filing.**
- b. NYISO *Emergency Operations Manual*, April 1, 2016 (filed 2016). **A copy of this revised document is included in this filing.**

These manuals are available from the NYISO web site at http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp

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7. NYISO *Methodology for Assessment of Transfer Capability in the Near-Term Transmission Planning Horizon*, May 20, 2013 (filed 2014).
8. *Voltage Schedule, Control, and Operation of the Transmission System (EP-7000-12)*; Consolidated Edison Company of New York, Inc., November 2015 (filed 2016). **A copy of this revised document is included in this filing.**

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Part 6 Evaluation of Transmission System Performance

Contains Critical Energy Infrastructure Information – Do Not Release

NYISO conducts studies to evaluate transmission system performance in two general time frames: the operating time frame (nominally out to a year), and the planning time frame (future years). The reports of both types of NYISO studies have been provided in previous FERC 715 filings.

In the operating time frame, NYISO completed two seasonal operating studies since the last FERC 715 filing, the Summer 2015 Operating Study and the Winter 2015-2016 Operating Study. These studies assessed the transfer limits of the New York operating transmission interfaces for conditions expected to occur during the summer 2015 and winter 2015-2016 peak load periods, respectively.

Copies of these study reports are included in this filing and are available from the NYISO web site at (http://www.nyiso.com/public/markets_operations/market_data/reports_info/index.jsp).

In the planning time frame, NYISO completed a 2015 Comprehensive Area Transmission Review of the planned NYS bulk power transmission system in the year 2020 (draft report under review and approval as of the date of this filing). As part of the NPCC reliability compliance and enforcement program, each NPCC Area (in this case, New York) is required to conduct an annual assessment of the reliability of its planned bulk power transmission system with respect to the NPCC Directory #1 (see Part 4), in accordance with the *Guidelines for NPCC Area Transmission Reviews* (Directory #1, Appendix B). Under this program, each Area is required to conduct a Comprehensive Review at least once every five years and either an Interim or Intermediate Review in the intervening years. **A copy of the draft NYISO 2015 Comprehensive Area Transmission Review Report is included in this filing.**

In 2014, related to NERC Standard FAC-013-2 (see Document #6 in Part 4 of this filing), NYISO completed an assessment of Planning Transfer Capability (PTC) of the planned New York State Bulk Power System Transmission Facilities (BPTF) for the near-term (years one through five) planning horizon, assessing the planned system through 2018. This assessment was performed in accordance with the NYISO *Methodology for Assessment of Transfer Capability in the Near-Term Transmission Planning Horizon* (see Document #7 in Part 5 of this filing).

Also in the planning time frame, NYISO performs Reliability Needs Assessment (RNA) and develops a Comprehensive Reliability Plan (CRP) on a biennial basis under the NYISO Comprehensive System Planning Process (CSPP). Documents describing the CSPP are listed in Part 5 of this report. Under this process, NYISO first evaluates and identifies the reliability needs of the NYS electric system over a ten-year period, then solicits solutions and develops a plan for addressing any identified reliability needs. NYISO considers generation, transmission, and demand-side solutions together in developing the CRP. **A copy of the NYISO 2014 RNA report was included in the 2015 filing. A copy of the 2014 CRP report is included in this filing.** These reports are available from the NYISO web site at

New York Independent System Operator 2016

FERC Form No. 715 Report

Part 6 Evaluation of Transmission System Performance

Contains Critical Energy Infrastructure Information – Do Not Release

(http://www.nyiso.com/public/markets_operations/services/planning/planning_studies/index.jsp).

Appendix A

Requesting NYISO FERC 715 Information

The NYISO 2016 “Annual Transmission Planning and Evaluation Report” (FERC 715 Report) and various documents included or referenced in the report and not considered to be CEII are available from the NYISO public web site at (http://www.nyiso.com/public/markets_operations/services/planning/documents/index.jsp).

However, the Part 2 power flow base cases and Part 3 map and one-line diagrams are considered to be CEII and are not publicly available. In order to obtain either the Part 2 power flow base cases or the Part 3 map and one-line diagrams, a requestor must complete a NYISO CEII Request Form, instructions for which are available from the NYISO public web site at http://www.nyiso.com/public/webdocs/markets_operations/services/customer_relations/CEII_Request_Form/CEII_Request_Form_and_NDA_complete.pdf