

# **SPECIFICATIONS FOR ELECTRICAL INSTALLATIONS AND SUPPLEMENTS**

## **ERRATA and REVISIONS**

as of

**April 30, 2009**

for the

## **ELECTRIC SYSTEM BULLETIN 750 SERIES**

**NOTICE:** This publication contains changes and corrections to the Company's Specifications for Electrical Installations, the "ESB 750-2002 Book", and its supplements. This is periodically issued when the need arises. The most current information on a topic will therefore be a combination of the base document listed in this table of contents and the current version of this list. Upon periodic revision of a base document herein referenced, all list items associated with that base document will be removed.

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ESB 750series Errata & Revisions April 2009.doc/SEIC

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(Underlined, Red Highlighting of Bulletin Number Indicates New Information)

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### **General Notices -**

**P.S.C. No. 220:** P.S.C. No. 220 Schedule for Electric Service (“P.S.C. No. 220 Electricity Tariff”) supersedes and replaces former P.S.C. No. 207 Schedule for Electric Service (“P.S.C. No. 207 Electricity Tariff”) effective April 27, 2009 (“Effective Date”). As of the Effective Date, all references to P.S.C. No. 207 Electricity Tariff in agreements existing as of the Effective Date shall be construed as references to P.S.C. No. 220 Electricity Tariff.

The Rule Numbers, Forms, and Service Classifications in P.S.C. No. 220 Electricity Tariff as of the Effective Date are identical to those of P.S.C. No. 207 Electricity Tariff as of the day immediately prior to the Effective Date, but Leaf Numbers may differ. To avoid any possible ambiguity resulting from this change, references to Leaf Numbers in P.S.C. No. 207 Electricity Tariff in agreements existing as of the Effective Date shall be construed as references to the equivalent Leaf Numbers for the same Rule Numbers, Forms, and Service Classifications in P.S.C. No. 220 Electricity Tariff.

**Therefore, all references to P.S.C. No. 207 in any of the Company’s ESB 750 series bulletins shall be construed as references to P.S.C. No. 220 (see: [http://www.nationalgridus.com/niagaramohawk/non\\_html/rates\\_psc220.pdf](http://www.nationalgridus.com/niagaramohawk/non_html/rates_psc220.pdf)).**

### **ESB 750-2002 (Feb. 2002) – Specifications for Electrical Installations (Upstate NY)**

PAGE	SECTION	EFFECTIVE DATE	CHANGE
1-2	1.7	Apr-2004	Rewrite Section 1.7 as follows: <b>“1.7 Customer’s Responsibility</b> 1.7.1 All Customers In accordance with Company requirements, the

PAGE	SECTION	EFFECTIVE DATE	CHANGE
			<p>Customer shall (i) provide the entire service entrance including the service connection, point of attachment, service cable, metering, electric service equipment and wiring on the Customer's premises beyond the point of delivery, (ii) be responsible for proper operation and maintenance of such equipment to keep it in good working order, and (iii) be responsible for on-going compliance with regulatory codes.</p> <p>In issuing this guide, the Company in no sense relieves the Customer of the responsibility to (i) install all equipment and wiring in accordance with the National Electrical Code, other relevant standards, and NYS or local building code ordinances, or (ii) to operate and maintain such equipment and wiring in a safe manner. The Company accepts no responsibility for the condition of the Customer's electric service equipment.</p> <p>The Customer shall assume, or delegate to an authorized representative, all responsibility for approval and acceptance of their equipment and the timing of its installation. The Customer shall be responsible for contacting all third parties to obtain the necessary permits, approvals, inspections, and underground facility locating services for their installation. Documentation substantiating the completion of such activities shall be furnished to the Company upon request.</p> <p>1.7.2 Customers served at voltages above 600 Volts</p> <p>1.7.2.1 Design Acceptance</p> <p>The planning and design of electric service equipment at voltages above 600 volts requires skilled application of engineering principles and data to ensure proper interconnection and functionality with the utility electric supply system; and to ensure safe operation and maintenance of the equipment following installation. Therefore, a NYS-licensed Professional Engineer shall prepare all documents submitted to the Company in connection with all electric service equipment above 600 volts. This requirement applies to new installations and alterations to existing installations. Designs involving alterations to existing electric service equipment shall include retrospective review of the original design to ensure the alteration will function properly.</p> <p>This requirement applies to all submittals detailed in ESB's 752, 753, 756B and 758, at all stages of a project, from initial conceptual planning through the final for-construction design that is accepted by the Company. All drawings shall be prepared in conformance with ANSI Y32.2, IEEE 141, and IEEE 446 symbol and drafting nomenclature.</p> <p>Signature, license number, seal, or letterhead with return address, as appropriate, will suffice as evidence of preparation by a NYS PE. Documents not evidencing preparation by a NYS PE will be returned to the submitter</p>

PAGE	SECTION	EFFECTIVE DATE	CHANGE
			<p>without comment for resubmittal to the Company.</p> <p>1.7.2.2 Operation and Maintenance</p> <p>Customers owning electric service equipment above 600 volts shall operate and maintain such equipment in accordance with Company supplied operating instructions and specifically ESB 755, "Operation and Maintenance Requirements for Services above 600 Volts". Additional operation and maintenance requirements are addressed in ESB's 752, 753, 756A, 756B and 758."</p>
1-3	1.8	Nov-2002	<p>Rewrite Section 1.8 as follows:</p> <p><b>"1.8 Inspection</b></p> <p>To protect the Customer's interest, as well as its own, the Company requires the Customer to furnish satisfactory evidence from the local authority having jurisdiction as to the safe condition of their installation and wiring. This evidence is in the form of an approval or certificate from an inspection organization acceptable to the Company, and to the local authority having jurisdiction (AHJ) for the National Electrical Code (NEC). Application for inspection should be made before the work is started and this application shall reference the Company's electric service order (ESO) number.</p> <p>The Company requires certificates of inspection:</p> <ol style="list-style-type: none"> <li>1. On all new services and</li> <li>2. To re-energize any existing service that has been de-energized by any disconnect method (cutting service lateral conductors at pole or weatherhead, meter removal, etc.) for any of the reasons or durations listed below: <ol style="list-style-type: none"> <li>1. an emergency,</li> <li>2. theft of service,</li> <li>3. duration exceeding twelve months,</li> <li>4. following 36 months of service inactivity, and</li> <li>5. when premises wiring (system) is replaced, altered or extended."</li> </ol> </li> </ol>
3-4	3.8	Oct-2002	<p>Change 3.8 to read as follows:</p> <p><b>"3.8 Services No Longer Standard</b></p> <p>Non-standard services include, but are not limited to: 25 Hertz, 2 phase systems, 2 wire 120 volts, 240 volts delta, 460 volts wye, 480 volts delta, 2400 volts, 4160 volts or 4800 volts services. While 2400 volts, 4160 volts, or 4800 volts are no longer standard, they may still be available at certain locations; consult the Company.</p> <p>Customers now receiving service no longer standard with the Company shall not expand the use of such service, except in very limited circumstances at the sole discretion of the Company.</p>

PAGE	SECTION	EFFECTIVE DATE	CHANGE
			Customers with an existing non-standard service requesting a service change shall consult with the Company to obtain a standard single or three phase 60 Hertz service at an appropriate delivery voltage.”
4-3	4.1.9.2	Apr-2002	Remove the “40” designation from 6 <sup>th</sup> column heading to read as: “PVC w/3” conc. enc.”.
7-1	7.1.1	Apr-2002	Insert the word “see” before “Section” in last sentence.
7-3	7.4	Apr-2002	<p>Change 7.4 to read as follows:</p> <p>“It is in the interest of both the Customer and the Company that a suitable meter location be provided. <b>The Company will designate this location.</b> The Company requires the Customer to install their service wiring so that the meter is accessible to Company employees from the outside of the Customer’s building in accordance with the Company’s tariff.</p> <p><b>Access:</b></p> <p>Meters shall not be installed in, or allowed to remain in areas that later become, stairways, fire escapes, coal bins, fruit cellars, bathrooms, toilets, bedrooms, attics, store windows, transformer vaults, behind shelves, near moving machinery or similar inconvenient or dangerous locations.</p> <p><b>Physical Protection:</b></p> <ul style="list-style-type: none"> <li>• Electric Meters shall be located away, or fully protected in a manner acceptable to the Company, from opening doors, commercial driveways, areas used for the piling of snow and where, in the Company’s determination, the meter or service entrance is subject to damage through vibration or any other physical means. Examples of suitable protection methods include bollards, fender posts, guard rails, etc.</li> <li>• Where the meter is located in residential driveway or walkway areas, they shall be mounted so as to have reasonable protection from damage.</li> <li>• Where the Company provides the gas service, no electrical equipment or electric meter(s) shall be located directly over or under any gas meter or regulator vent. Eighteen inches (450 mm) of horizontal clearance shall be maintained between any electric meter socket and a gas regulator vent. Consult the Company for location prior to the installation of either service to avoid conflicts or where the gas service is supplied by others, consult that company.</li> </ul> <p><b>Violations:</b></p> <p>Any Customer or Contractor wiring to a meter or service location not entirely approved by the Company does so at their own risk. Corrections of such violations shall be at the Customer’s expense.”</p>

PAGE	SECTION	EFFECTIVE DATE	CHANGE
<u>12-2</u>	<u>12.2.3</u>	<u>Apr-2009</u>	<u>In accordance with the NEC, a sign shall be placed at the service-entrance equipment that indicates the type and location of on-site standby power sources.</u>
12-2	12.2.3.3	October 2004	Substitute the following language regarding automatic transfer switches: <b>SEE BELOW **</b>
Figure 3-1	Figure 3	Apr-2002	Insert the word “Demand” at the end of the title.
Figure 4-2	Notes for Figure 4	Apr-2002	In Note #4, change the reference section to “7.7”.
Figure 9-1	Figure 9	Apr-2002	For the 3 <sup>rd</sup> meter shown on the right, mark an asterisk note as follows: “* Must be cold sequenced for 480V service.”
Appendix 1-2	Appendix 1	Apr-2002	In the title of the last detail for anchoring methods, change title from “1 $\phi$ , 100 Amp & 1 $\phi$ , 150 Amp” to “1 $\phi$ , 200 Amp & below”.
Appendix 2-1	Appendix 2	November 2003	Niagara Mohawk will no longer provide a pre-approved list of commercial meter sockets in ESB 751. The following changes reflect this new policy:  Paragraph 1 under 2.1.1 (Identification) has been revised as follows:  1. <u>Previously Accepted Sockets</u> : Residential and commercial meter sockets on the Company’s previously accepted list (see ESB 751) may be indelibly stamped by the manufacturer with a Company item number.  Delete paragraph 2 (Approved Sockets) and paragraph 3 (Certification).
Appendix 2-2	Appendix 2	November 2003	Paragraph 11 under Appendix 2.2 shall be replaced with the following: Refer to ESB 751 for commercial meter socket requirements.
Change Proposal Form	Back of Book	Apr-2002	Change E-mail address in footer to “seic@us.ngrid.com”.

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These requirements apply to closed transition schemes associated with standby or emergency generators where the generator will momentarily operate in parallel with the Company’s system. This can be accomplished utilizing breakers or an Automatic Transfer Switch (ATS).

- The Customer shall submit for acceptance by the Company three copies of the single line, specifications, complete vendor prints, relay settings and a description of operation of the system.
- Requirements for Closed Transition Switching back to the Company’s system:
  1. Closed transition switching shall occur within 15 cycles.
  2. Once the parallel is made, a transfer failure relay shall monitor the utility and generator breaker to ensure the transfer operation has been completed. If the transfer has not been completed within 30 cycles, the transfer failure relay shall trip the generator breaker. For ATS installations, the transfer failure relay shall monitor the switch contacts.
  3. The settings for paralleling the generator to the Company’s system shall not exceed the values listed in Table 14. All devices that perform paralleling shall be utility grade, that is, they meet the requirements of IEEE C37.90.1, 2, and 3.

**Table 14 – Relay settings to parallel standby or emergency generators with the Company system**

Generator Size (kW)	Max. Frequency Difference ( $\Delta f$ , Hz)	Max. Voltage Difference ( $\Delta V$ , %)	Max. Phase Angle Difference ( $\Delta \Phi$ , degrees)
0-500	0.3	10	20
>500 – 1,500	0.2	5	15
>1,500 – 10,000	0.1	3	10

4. The system shall be designed such that loss of the utility source will automatically open the utility breaker prior to closing the generator breaker (open transition).
  5. The system shall allow functional testing of the various operating and failure modes outlined in the description of operation.
  6. The Company reserves the right to witness functional testing of the transfer scheme, including failure modes. In these cases, it shall be the responsibility of the Customer to demonstrate proper operation and functional testing.
- Exercising Generator:
    1. If there is no load bank, and it is the intention of the customer to exercise the generator in parallel with the Company for an extended period of time (> 30 cycles), the generator shall meet the requirements of [ESB 756 Appendix A](#).
    2. The Customer can exercise the generator with building load under requirements Items one through six above and the Company’s filed Tariff.

***New England Green Book (July 2000) – Electrical Service Information and Requirements***

Refer to: [http://www.nationalgridus.com/non\\_html/shared\\_construction\\_greenbk.pdf](http://www.nationalgridus.com/non_html/shared_construction_greenbk.pdf)

No errata

***ESB No. 751-2003 (November 2003) “Approved Meter Sockets and Overhead Service Attachment Brackets”***

No errata

***ESB No. 752-1994, 2<sup>nd</sup> Printing April 2002 “Service above 15,000 volts”***

PAGE	SECTION	EFFECTIVE DATE	CHANGE
6	I.G.4.b	Jul-2002	Move first sentence of second bullet to Section I.G.4.c.
7	I.G.4.c	Jul-2002	After the second sentence, insert first sentence of I.G.4.b’s second bullet.
15	V.F.1	Nov-2002	Add the following before the first sentence in V.F.1:  “The Company shall review and accept the protective relay devices provided by the Customer for protection schemes required by the Company to protect its system. The use of utility grade relays and relay redundancy is a normal Company requirement.”
15	V.F.3	Nov-2002	Change V.F.3 to read as follows:  “3. <u>Company-designated protective devices</u> The Company will review for acceptance the Customer’s proposed settings of those relays that the Company’s System Protection Engineering Dept. designates as being required to satisfy the Company’s protection practices. Any

PAGE	SECTION	EFFECTIVE DATE	CHANGE
			relay setting accepted by the Company shall not be changed or modified at any time without the prior written consent of the Company.”
16	V.F.5	Nov-2002	Change V.F.5 to read as: “The Customer is responsible for specifying the relay settings and performing the calibration, testing, maintenance and trouble-shooting of their entire protective system. The Customer shall provide written notice to the Company prior to energization that these items have been verified.”

**ESB No. 753-1993, 2<sup>nd</sup> Printing April 2002 “Primary Meter Pole”**

PAGE	SECTION	EFFECTIVE DATE	CHANGE
<a href="#">Figures 3 through 4</a>	<a href="#">Note 4</a>	<a href="#">Apr-2009</a>	<a href="#">The “johnny ball” guy insulator is no longer acceptable as they do not meet present insulation requirements for this type of installation. Fiberglass guy strain insulators are now specified. Ensure the guy insulators are placed to prevent the transfer of energy from the Company’s wires to (i) the Customer wires, (ii) any communication wires on the pole or (iii) the public on the ground. Depending on spacings on the pole, multiple guy insulators may be needed to meet the multiple requirements. Consult the Company for inquiries regarding the design, equipment, and installation of the pole guy.</a>

**ESB No. 754A-1992, 2<sup>nd</sup> Printing June 2002 “Single Phase Outdoor Pad Mounted Transformer”**

No errata.

**ESB No. 754/759-2007 “Outdoor Pad Mounted or Vault Enclosed Three Phase Transformer”**

No errata.

**ESB No. 755-2003 “Operation & Maintenance Requirements for Services Above 600 volts”**

No errata.

**ESB No. 756-2007 “General Requirements for Parallel Generation Connected to a National Grid Owned EPS”**

PAGE	SECTION	EFFECTIVE DATE	CHANGE
	<a href="#">Table of Contents</a>	<a href="#">Apr-2009</a>	<a href="#">Correct title of Appendix C to: “Requirements for Parallel Generation Connected to National Grid Facilities in Massachusetts”</a>
	<a href="#">Table of Contents</a>	<a href="#">Apr-2009</a>	<a href="#">Correct last Appendix number to: “Appendix E”</a>

**ESB No. 756 Appendix A; 2007 “Requirements for Parallel Generation Connected to National Grid Facilities in NY”**

No errata.

**ESB No. 756 Appendix B; 2007 “Requirements for DG Connected to National Grid’s Radial Distribution per the NYS SIR”**

PAGE	SECTION	EFFECTIVE DATE	CHANGE
<a href="#">35</a>	<a href="#">3.2</a>	<a href="#">Apr-2009</a>	<p><a href="#">Delete process illustration due to revised NYS SIR, Feb. 2009 and add “Refer to the process steps located in Section I at <a href="http://www.dps.state.ny.us/Final_SIR_02-12-09_Clean.pdf">http://www.dps.state.ny.us/Final_SIR_02-12-09_Clean.pdf</a> of the New York State Standardized Interconnection Requirements and Application Process for New Distributed Generators 2 MW or Less Connected in Parallel with Utility Distribution Systems.”</a></p> <p><a href="#">The NYS SIR, Feb. 2009 prevails where there may be a process difference from ESB 756 Appendix B.</a></p>

**ESB No. 756 Appendix C; 2007 “Requirements for Parallel Generation Connected to National Grid Facilities in Massachusetts”**

PAGE	SECTION	EFFECTIVE DATE	CHANGE
<a href="#">45</a>		<a href="#">Apr-2009</a>	<p><a href="#">On page 45, change the Web site address to: “<a href="https://www.nationalgridus.com/masselectric/non_html/rates_tariff.pdf#nameddest=interconnection">https://www.nationalgridus.com/masselectric/non_html/rates_tariff.pdf#nameddest=interconnection</a>”.</a></p>

**ESB No. 756 Appendix D; 2007 “Requirements for Parallel Generation Connected to National Grid Facilities in Rhode Island”**

PAGE	SECTION	EFFECTIVE DATE	CHANGE
<a href="#">136</a>		<a href="#">Apr-2009</a>	<p><a href="#">Change the Web address so the paragraph will read as follows: “Refer to Narragansett Electric Company Standards for Connecting Distributed Generation, R.I.P.U.C. No 2007 at: <a href="https://www.nationalgridus.com/narragansett/non_html/distgen_standards.pdf">https://www.nationalgridus.com/narragansett/non_html/distgen_standards.pdf</a>, Effective March 2008, which describes the process and requirements of Narragansett Electric for those instances when a Customer desires to connect a customer-owned Generating Facility to Narragansett Electric’s Distribution System.”</a></p>

**ESB No. 756 Appendix E; 2007 “Requirements for Parallel Generation Connected to National Grid Facilities in New Hampshire”**

PAGE	SECTION	EFFECTIVE DATE	CHANGE
<a href="#">137</a>		<a href="#">Apr-2009</a>	<p><a href="#">Change the Web address so the paragraph will read as follows: “For net-metered generators sized less than 25 KVA, see PUC900 at: <a href="http://www.puc.state.nh.us/Regulatory/Rules/PUC900%20Net%20Metering.pdf">http://www.puc.state.nh.us/Regulatory/Rules/PUC900%20Net%20Metering.pdf</a> For all other generators, refer to the Massachusetts Department of Telecommunications and Energy (MDTE) document No.</a></p>

PAGE	SECTION	EFFECTIVE DATE	CHANGE
			<a href="#">1116-A, effective April 2, 2007 contained in Appendix C of this document.</a>

**ESB No. 757, Aug. 1973 “Network Services”**

PAGE	SECTION	EFFECTIVE DATE	CHANGE
1	1.1	Nov-1999	Change “800 amperes and above at 480Y/277 volts” to “480Y/277 volts”.
10	4.2.3	Nov-1999	Delete the Local Authority Approval part in its entirety.
19	13.4.1	Nov-1999	Delete “paragraphs 94, 97 and 100”.

**ESB No. 758, Jan. 1985 “Primary Service to Metal Enclosed Gear”**

PAGE	SECTION	EFFECTIVE DATE	CHANGE
2	C Paragraph 11	Nov-1999	Delete the Inspection part in its entirety.
3	H	Nov-1999	Delete Paragraphs 18 through 20 and Paragraph 22.
4 and 5	I	Nov-1999	Delete Paragraphs 23 through 26.
5	J Paragraph 28	Nov-1999	In the first sentence, change “outdoor” to “indoor”.
8 - 10	M	Apr-2002	Delete this metering section in its entirety as it is covered by ESB 750 Appendix 4.
Fig. 1	Note #3	Apr-2002	In Note 3, change “see Paragraph 18” to “see ESB 750 Section 4”.

**ESB No. 759**

No longer in print, see ESB 754/759.

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