The Narragansett Electric Company
d/b/a National Grid
National Grid Hurricane Irene Response Assessment
Division Docket No. D-11-94
Responses to Division Data Requests – Set 1

Division 1-22

National Grid underwent a North American Electric Reliability Corporation (NERC) Standards Compliance Audit conducted by Northeast Power Coordinating Council (NPCC) in April of 2011. NPCC's audit included evaluation of Narragansett Electric Company's compliance with NERC Standard FAC-003, "Transmission Vegetation Management Program".

The result of NPCC's compliance audit of FAC-003 was "No Finding." The complete public audit report, documenting Narragansett Electric's compliance with this standard, is attached under "Reference Documents" located at the end of this process narrative.

FAC-003-1: Transmission Vegetation Management Program

Purpose of Standard:
To improve the reliability of the electric transmission systems by preventing outages from vegetation located on transmission rights-of-way (ROW) and minimizing outages from vegetation located adjacent to ROW, maintaining clearances between transmission lines and vegetation on and along transmission ROW, and reporting vegetation related outages of the transmission systems to the respective Regional Reliability Organizations (RRO) and NERC. The RRO in the northeast is NPCC.

Requirement R1:
The Transmission Owner shall prepare, and keep current, a formal transmission vegetation management program (TVMP). The TVMP shall include the Transmission Owner's objectives, practices, approved procedures, and work specifications.

Compliance with R1 (incl. R1.1-R1.5):
National Grid's Transmission Vegetation Management Program is carried out by National Grid's Transmission Forestry Department. All objectives, practices, approved procedures and work specifications are described in Transmission Group Procedure TGP25, our "Right-of-Way Vegetation Management Plan" (See "Reference Documents") TGP25 is reviewed on an annual basis and updated as needed. The latest version was updated on January 31, 2011. Compliance with vegetation management sub-requirements R1.1 – R1.5 is explained within TGP25:

- R1- Transmission Group Procedure (TGP25) Right of Way Vegetation Management Plan (Version 11)
- R1.1- TGP25: Section 5.4 (Page 15) and Section 10 (Page 34) and Appendix 8 (Page 63)
- R1.2- TGP25: Section 5.3 (Pages 12-15)
- R1.2.1- TGP25: Section 5.3.1 (Page 13)

- R1.2.2- TGP25: Section 5.3.2 (Page 15)
- R1.2.2.1- TGP25: Section 5.3.2 (Page 15)
- R1.2.2.2- Not applicable
- R1.3- TGP25: Section 6.2 (Page 16), Section 6.3 (Page18), Section 7.2 (Page 18), and Section 7.3 (Page 19)
- R1.4- TGP25: Section 5.5 (Page 15)
- R1.5- TGP25: Section 5.2.2 (Page 12)

Additionally, transmission lines operated at 200 kV and above and to any lower voltage lines designated by the RRO [redacted]

Region	Right-of-Way	kV	ROW#	Company
NERI	[redacted]	[redacted]	[redacted]	NECO
NERI				NECO
NERI				NECO
NERI				NECO
NERI				NECO

Requirement R2:
The Transmission Owner shall create and implement an annual plan for vegetation management work to ensure the reliability of the system. The plan shall describe the methods used, such as manual clearing, mechanical clearing, herbicide treatment, or other actions. The plan should be flexible enough to adjust to changing conditions, taking into consideration anticipated growth of vegetation and all other environmental factors that may have an impact on the reliability of the transmission systems. Adjustments to the plan shall be documented as they occur. The plan should take into consideration the time required to obtain permissions or permits from landowners or regulatory authorities. Each Transmission Owner shall have systems and procedures for documenting and tracking the planned vegetation management work and ensuring that the vegetation management work was completed according to work specifications.

Compliance with R2:
National Grid's vegetation management work is outlined in Transmission Group Procedure TGP25, our "Right-of-Way Vegetation Management Plan". As stated above, TGP25 is reviewed and updated annually; and is carried out through an "Annual Work Plan" (See "Reference Documents") which identifies the vegetation management field work that will be carried out in a specific year. The vegetation management work is organized into two programs:

(1) Right-of-Way Floor Program-management of vegetation within the right-of-way corridor, and

(2) Off Right-of-Way Danger Tree Program-management of vegetation adjacent to the right-of-way corridor.

The "Annual Work Plan" discusses the "Right-of-Way Floor IVM Work" and "Off-Right-of-Way Danger Tree Removal and/or Pruning"; and references the scorecards used to plan, monitor and report progress of IVM Floor and Danger Tree Work for the Transmission Lines/ROWs operating at >200kV or that are designated by the RRO as critical to the reliability of the electric system. These FY11 scorecards are attached. (See "Reference Documents").

Methods Used:

To achieve its vegetation management objectives, National Grid utilizes its Integrated Vegetation Management (IVM) program which emphasizes selective herbicide use to control incompatible vegetation. IVM integrates the use of various methods of herbicide applications and non-herbicide mechanical vegetation management methods used on both the right-of-way floor and the adjacent utility forest. The IVM program includes the use of herbicide (supplied as Basal Application, Stump Application and Foliar Application), Hand Cutting, Mowing, Selective Mowing and Selective Pruning methods. (Reference: TGP25, Section 5.2, Pages 11-12)

Flexibility of Plan:

TPG25 and the annual work plans are flexible in that they employ various methods of vegetation management described above. National Grid's strategic approach to vegetation management within the right-of-way is to establish and maintain right-of-ways that are largely clear of all incompatible vegetation while maintaining a stable low-growing plant community that is pleasing to the eye and beneficial to wildlife.

National Grid's strategic approach to manage vegetation adjacent to the right-of-way is to prune and/or remove danger trees and/or hazard trees where property rights allow vegetation management work. Right-of-ways that are largely clear of incompatible vegetation present a very low risk of vegetation-caused outages. Vegetation adjacent to right-of-ways (danger and hazard trees) presents a greater risk of outages.

The risk from danger trees and hazard trees is related the following variables that are considered and add to the flexibility of the Vegetation Management plan:

- the distance from conductor to the adjacent tree line
- conductor distance above the ground
- height of trees
- tree species, and
- tree health and condition.

National Grid seeks to mitigate risk of outages from trees adjacent to the right-of-way through site specific management of these variables. (Reference: TGP25, Section 5.2, Pages 11-12)

Adjustments to Plan:
Work is scheduled by Right-of-Way segment. Right-of-Way segments scheduled on April 1st of a fiscal year are so dated. Modifications to the plan are noted when made. (Reference: NERC Annual Work Plan for Vegetation Management)

Consideration of Time to Acquire Permissions/Permits:
All state permits and/or permissions are obtained in a timely fashion. National Grid ensures that all required internal and external documents have been developed and submitted to required parties. (Reference: TGP25, Section 6.2.1, Page 16)

Systems for Documenting/Tracking/Completing Work:
Information collected during patrols is entered into the Transmission Forestry Ground and Aerial Patrol spreadsheet. & Ground Patrol Forms. (Reference: TGP25, Section 10.1, Pages 34-35).

Requirement R3:
The Transmission Owner shall report quarterly to its Regional Reliability Organization (RRO), or the RRO's designee, sustained transmission line outages determined by the Transmission Owner to have been caused by vegetation.

Compliance with R3 (incl. R3.1-3.4):
National Grid provides quarterly reports of sustained transmission line outages to the Northeast Power Coordinating Council (NPCC). Each quarter, from Q4 of calendar 2010 through Q3 of calendar 2011, National Grid has asserted and self-certified to NPCC that it has had no sustained transmission line outages during the reporting period. Quarterly reporting is accomplished systemically to NPCC using their "Vegetation Quarterly Outage LOC" on-line form. Additionally, in January of each new year, National Grid provides an annual report and self-certification to NPCC for the calendar year just completed. The aforementioned quarterly reports from Q4'10 through Q3'11, along with the annual report submitted in January 2011 covering all of calendar 2010, are attached below under "Reference Documents".

Requirement R4:
The RRO shall report the outage information provided to it by Transmission Owner's, as required by Requirement 3, quarterly to NERC, as well as any actions taken by the RRO as a result of any of the reported outages.

Compliance with R4:
Not applicable. Compliance with this requirement to report National Grid's Transmission Line Outages to NERC is the responsibility of NPCC.

The Narragansett Electric Company
d/b/a National Grid
National Grid Hurricane Irene Response Assessment
Division Docket No. D-11-94
Responses to Division Data Requests – Set 1

Reference Documents:

NERC Standard

FAC-003-1.pdf (26 KB)

NPCC Audit Report (Password is NPCC_NEP_041111)

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R1 & R2

TGP25_Issue 1_Right-of-Way Ve.

R2

NERC FY2011 Annual Work Plan f..

R2

FY11 IVM or_DangerTree Scor

R3

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R3

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R3

FAC-003-1 uarterly Q3'11 NGUS

R3

FAC-003-1 Annual 2010 TNEC (TO...

Logged in as:
Michael Jones
Log Out

- System Administration
- Compliance
- TFE Request
- 2011 Schedule
- 2010 Schedule
- Self Reports
- Complaints
- Mitigation Plans
- Violation Retractions

FAC-003-1 Self Certification (TO) - 01/01/2010 to 12/31/2010

Save Item | Delete Item | Cancel Changes | Save PDF | Return To Search Results

New Mitigation Plan | Attachments (0)

This form was marked as ready to be added to a certification statement on 1/13/2011 by Michael Jones (Michael.Jones@us.ngrid.com).

* Required Fields

Status: Saved

Technical Contact

* Edward Dahill (edward.dahill@us.ngrid.com) Find | Clear | New Contact

Notice: Prior to submitting this self-certification form, you are directed to review the complete text of the applicable reliability standard (including interpretations) that is found at www.nerc.com. Each registered entity should evaluate its compliance with the official standard in preparing this filing.

Evidence must be retained to support the responses to this Self-Certification, including any follow-up investigation, until the completion of the next scheduled audit, unless the NERC or Regional Entity advises otherwise.

NPCC will disclose this information to NERC and other third parties, only as required, and in accordance with established procedures pursuant to section 1500 of the NERC rules of procedure.

This self-certification covers the Reporting Period for **01/01/2010 to 12/31/2010**. The response to the certification should accurately reflect the entity's compliance status for the entire Reporting Period.

Applicable Function: TO

As an authorized representative of **The Narragansett Electric Company**, I certify the following:

1. **The Narragansett Electric Company** was in Compliance with the NERC Reliability Standard FAC-003-1 for the entire Reporting Period.

2. **The Narragansett Electric Company** is Not in Compliance for a portion of or the entire Reporting Period with the following requirement(s) of NERC Reliability Standard FAC-003-1 (indicated by checkmark) but was in compliance with all other requirements of the standard for the entire Reporting Period.

   - **The Narragansett Electric Company** is indicating a possible violation that has **not** been previously identified to NPCC.
   - **The Narragansett Electric Company is indicating a possible violation that was previously identified to NPCC.** Provide issues tracking number, if known.

   Check all requirements for which The Narragansett Electric Company was Not in Compliance for a portion of or the entire Reporting Period:

- **R1.** The Transmission owner shall prepare, and keep current, a formal transmission vegetation management (TVMP). The TVMP shall include the Transmission Owner's objectives, practices, approved procedures, and work specifications.
  - **R1.1.** The TVMP shall define a schedule for and the type (aerial, ground) of ROW vegetation inspections. This schedule should be flexible enough to adjust for changing conditions. The inspection schedule shall be based on the anticipated growth of vegetation and any other environmental or operational factors that could impact the relationship of vegetation to the Transmission Owner's transmission lines.
  - **R1.2.** The Transmission Owner, in the TVMP, shall identify and document clearances between vegetation and any overhead, ungrounded supply conductors, taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum

design loading, and the effects of wind velocities on conductor sway. Specifically, the Transmission Owner shall establish clearances to be achieved at the time of vegetation management work identified herein as Clearance 1, and shall also establish and maintain a set of clearances identified herein as Clearance 2 to prevent flashover between vegetation and overhead ungrounded supply conductors.

- **R1.2.1.** Clearance 1 — The Transmission Owner shall determine and document appropriate clearance distances to be achieved at the time of transmission vegetation management work based upon local conditions and the expected time frame in which the Transmission Owner plans to return for future vegetation management work. Local conditions may include, but are not limited to: operating voltage, appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species types and growth rates, species failure characteristics, local climate and rainfall patterns, line terrain and elevation, location of the vegetation within the span, and worker approach distance requirements. Clearance 1 distances shall be greater than those defined by Clearance 2 below.
- **R1.2.2.** Clearance 2 — The Transmission Owner shall determine and document specific radial clearances to be maintained between vegetation and conductors under all rated electrical operating conditions. These minimum clearance distances are necessary to prevent flashover between vegetation and conductors and will vary due to such factors as altitude and operating voltage. These Transmission Owner-specific minimum clearance distances shall be no less than those set forth in the Institute of Electrical and Electronics Engineers (IEEE) Standard 516-2003 (Guide for Maintenance Methods on Energized Power Lines) and as specified in its Section 4.2.2.3, Minimum Air Insulation Distances without Tools in the Air Gap.
  - **R1.2.2.1.** Where transmission system transient overvoltage factors are not known, clearances shall be derived from Table 5, IEEE 516-2003, phase-to-ground distances, with appropriate altitude correction factors applied.
  - **R1.2.2.2.** Where transmission system transient overvoltage factors are known, clearances shall be derived from Table 7, IEEE 516-2003, phase-to-phase voltages, with appropriate altitude correction factors applied.
- **R1.3.** All personnel directly involved in the design and implementation of the TVMP shall hold appropriate qualifications and training, as defined by the Transmission Owner, to perform their duties.
- **R1.4.** Each Transmission Owner shall develop mitigation measures to achieve sufficient clearances for the protection of the transmission facilities when it identifies locations on the ROW where the Transmission Owner is restricted from attaining the clearances specified in Requirement 1.2.1.
- **R1.5.** Each Transmission Owner shall establish and document a process for the immediate communication of vegetation conditions that present an imminent threat of a transmission line outage. This is so that action (temporary reduction in line rating, switching line out of service, etc.) may be taken until the threat is relieved.

- **R2.** The Transmission Owner shall create and implement an annual plan for vegetation management work to ensure the reliability of the system. The plan shall describe the methods used, such as manual clearing, mechanical clearing, herbicide treatment, or other actions. The plan should be flexible enough to adjust to changing conditions, taking into consideration anticipated growth of vegetation and all other environmental factors that may have an impact on the reliability of the transmission systems. Adjustments to the plan shall be documented as they occur. The plan should take into consideration the time required to obtain permissions or permits from landowners or regulatory authorities. Each Transmission Owner shall have systems and procedures for documenting and tracking the planned vegetation management work and ensuring that the vegetation management work was completed according to work specifications.
- **R3.** The Transmission Owner shall report quarterly to its RRO, or the RRO's designee, sustained transmission line outages determined by the Transmission Owner to have been caused by vegetation.
  - **R3.1.** Multiple sustained outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.
  - **R3.2.** The Transmission Owner is not required to report to the RRO, or the RRO's designee, certain sustained transmission line outages caused by vegetation: (1) Vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters shall not be considered reportable (examples of disasters that could create non-reportable outages include, but are not limited to, earthquakes, fires, tornados, hurricanes, landslides, wind shear, major storms as defined either by the Transmission Owner or an applicable regulatory body, ice storms, and floods), and (2) Vegetation-related outages due to human or animal activity shall not be considered reportable (examples of human or animal

activity that could cause a non-reportable outage include, but are not limited to, logging, animal severing tree, vehicle contact with tree, arboricultural activities or horticultural or agricultural activities, or removal or digging of vegetation).

- **R3.3.** The outage information provided by the Transmission Owner to the RRO, or the RRO's designee, shall include at a minimum: the name of the circuit(s) outaged, the date, time and duration of the outage; a description of the cause of the outage; other pertinent comments; and any countermeasures taken by the Transmission Owner.
- **R3.4.** An outage shall be categorized as one of the following:
  - **R3.4.1.** Category 1 — Grow-ins: Outages caused by vegetation growing into lines from vegetation inside and/or outside of the ROW;
  - **R3.4.2.** Category 2 — Fall-ins: Outages caused by vegetation falling into lines from inside the ROW;
  - **R3.4.3.** Category 3 — Fall-ins: Outages caused by vegetation falling into lines from outside the ROW.

3. The NERC Reliability Standard FAC-003-1 **does not** apply to **The Narragansett Electric Company** because

Additional Comments:

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FAC-003-1 Quarterly Vegetation Outage LOC - Vegetation Quarterly Outage LOC - 3rd Quarter 2011

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New Mitigation Plan | Attachments (0)

Reference Document: FAC-003-1 Vegetation Management

This form was submitted by Michael Jones (Michael.Jones@us.ngrid.com) on 10/11/2011.

* Required Fields

Status: Saved

Technical Contact

* Craig Allen (craig.allen@us.ngrid.com) Find | Clear | New Contact

The information in this submittal is designated as "Confidential". As such, it includes trade secrets, commercial or financial information that the submitter believes is commercially valuable and does not customarily disclose to the public. Disclosure of this information to the public could reasonably be expected to cause substantial competitive harm to the submitter. Member compliance results and comments are generally shared with NERC in an aggregated manner. Data will be shared with NERC, on request, pursuant to the NERC-NPCC Confidentiality Agreement.

Note: this LOC is applicable to owners or operators of transmission lines rated 200 kV and above or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system. It also applies to generation owners who own transmission lines rated 200 kV and above or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system.

1. The NERC Reliability Standard FAC-003-1 on Vegetation Management applies to National Grid USA because National Grid USA owns transmission circuits 200 kV or higher or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system.

For the reporting period of 3rd Quarter 2011:

All outages on transmission circuits 200 kV or higher or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system shall be reported where the cause of the outage is the line faulting due to contact with vegetation, except:

- Multiple outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.
- A single trip followed by a successful automatic reclose within a 24-hour period shall not be a reportable outage.
- Vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters shall not be considered reportable (examples of disasters that could create non-reportable outages include, but are not limited to, earthquakes, fires, tornados, hurricanes, landslides, wind shear, major storms as defined either by the Transmission Owner or an applicable regulatory body, ice storms, and floods).
- Vegetation-related outages due to human or animal activity shall not be considered reportable (examples of human or animal activity that could cause a non-reportable outage include, but are not limited to, logging, animal severing tree, vehicle contact with tree, arboricultural activities or horticultural or agricultural activities, or removal or digging of vegetation).

a. No vegetation-related line outages occurred during the compliance reporting period. Submittal of a **Vegetation-Related Line Outage Reporting Form** is **not** required.

b. _____ vegetation-related line outages occurred during 3rd Quarter 2011.

In addition to this letter of certification, *0* Vegetation-Related Line Outage Reporting Form(s) must be submitted (one outage per form).

2. The NERC Reliability Standard FAC-003-1 on Vegetation Management does not apply to National Grid USA because National Grid USA does not own transmission lines 200 kV or higher or any other lower voltage lines designated by NPCC to be critical to the reliability of the electric system. (No further submittals are required in addition to this Letter of Certification.)

3. The NERC Reliability Standard FAC-003-1 on Vegetation Management applies to National Grid USA and our data has been coordinated with and is covered by the submittal(s) of

Master Account	First Name	Last Name	Telephone	Email

.

Section B:

1. This submittal also covers:

Master Account	First Name	Last Name	Telephone	Email

Note: For companies not listed, please contact compliance-support@npcc.org

Additional Comments:

***** A certification statement and officer signature is NOT required for quarterly Vegetation Outage LOC or RF.***

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FAC-003-1 Quarterly Vegetation Outage LOC - Vegetation Quarterly Outage LOC - 2nd Quarter 2011

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New Mitigation Plan | Attachments (0)

Reference Document: FAC-003-1 Vegetation Management

This form was submitted by Michael Jones (Michael.Jones@us.ngrid.com) on 7/8/2011.

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Technical Contact

* Edward Dahill (edward.dahill@us.ngrid.com) Find | Clear | New Contact

The information in this submittal is designated as "Confidential". As such, it includes trade secrets, commercial or financial information that the submitter believes is commercially valuable and does not customarily disclose to the public. Disclosure of this information to the public could reasonably be expected to cause substantial competitive harm to the submitter. Member compliance results and comments are generally shared with NERC in an aggregated manner. Data will be shared with NERC, on request, pursuant to the NERC-NPCC Confidentiality Agreement.

Note: this LOC is applicable to owners or operators of transmission lines rated 200 kV and above or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system. It also applies to generation owners who own transmission lines rated 200 kV and above or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system.

1. The NERC Reliability Standard FAC-003-1 on Vegetation Management applies to The Narragansett Electric Company because The Narragansett Electric Company owns transmission circuits 200 kV or higher or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system.

For the reporting period of 2nd Quarter 2011:

All outages on transmission circuits 200 kV or higher or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system shall be reported where the cause of the outage is the line faulting due to contact with vegetation, except:

- Multiple outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.
- A single trip followed by a successful automatic reclose within a 24-hour period shall not be a reportable outage.
- Vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters shall not be considered reportable (examples of disasters that could create non-reportable outages include, but are not limited to, earthquakes, fires, tornados, hurricanes, landslides, wind shear, major storms as defined either by the Transmission Owner or an applicable regulatory body, ice storms, and floods).
- Vegetation-related outages due to human or animal activity shall not be considered reportable (examples of human or animal activity that could cause a non-reportable outage include, but are not limited to, logging, animal severing tree, vehicle contact with tree, arboricultural activities or horticultural or agricultural activities, or removal or digging of vegetation).

a. No vegetation-related line outages occurred during the compliance reporting period. Submittal of a **Vegetation-Related Line Outage Reporting Form** is **not** required.

b. _____ vegetation-related line outages occurred during 2nd Quarter 2011.

In addition to this letter of certification, *0* Vegetation-Related Line Outage Reporting Form(s)

must be submitted (one outage per form).

2. The NERC Reliability Standard FAC-003-1 on Vegetation Management does not apply to The Narragansett Electric Company because The Narragansett Electric Company does not own transmission lines 200 kV or higher or any other lower voltage lines designated by NPCC to be critical to the reliability of the electric system. (No further submittals are required in addition to this Letter of Certification.)

3. The NERC Reliability Standard FAC-003-1 on Vegetation Management applies to The Narragansett Electric Company and our data has been coordinated with and is covered by the submittal(s) of

Master Account	First Name	Last Name	Telephone	Email

.

Section B:

1. This submittal also covers:

Master Account	First Name	Last Name	Telephone	Email

Note: For companies not listed, please contact compliance-support@npcc.org

Additional Comments:

***** A certification statement and officer signature is NOT required for quarterly Vegetation Outage LOC or RF.***

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FAC-003-1 Quarterly Vegetation Outage LOC - Vegetation Quarterly Outage LOC - 1st Quarter 2011

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New Mitigation Plan | Attachments (0)

Reference Document: FAC-003-1 Vegetation Management

This form was submitted by Michael Jones (Michael.Jones@us.ngrid.com) on 4/19/2011.

* Required Fields

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Technical Contact

* Edward Dahill (edward.dahill@us.ngrid.com) Find | Clear | New Contact

The information in this submittal is designated as "Confidential". As such, it includes trade secrets, commercial or financial information that the submitter believes is commercially valuable and does not customarily disclose to the public. Disclosure of this information to the public could reasonably be expected to cause substantial competitive harm to the submitter. Member compliance results and comments are generally shared with NERC in an aggregated manner. Data will be shared with NERC, on request, pursuant to the NERC-NPCC Confidentiality Agreement.

Note: this LOC is applicable to owners or operators of transmission lines rated 200 kV and above or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system. It also applies to generation owners who own transmission lines rated 200 kV and above or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system.

1. The NERC Reliability Standard FAC-003-1 on Vegetation Management applies to The Narragansett Electric Company because The Narragansett Electric Company owns transmission circuits 200 kV or higher or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system.

For the reporting period of 1st Quarter 2011:

All outages on transmission circuits 200 kV or higher or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system shall be reported where the cause of the outage is the line faulting due to contact with vegetation, except:

- Multiple outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.
- A single trip followed by a successful automatic reclose within a 24-hour period shall not be a reportable outage.
- Vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters shall not be considered reportable (examples of disasters that could create non-reportable outages include, but are not limited to, earthquakes, fires, tornados, hurricanes, landslides, wind shear, major storms as defined either by the Transmission Owner or an applicable regulatory body, ice storms, and floods).
- Vegetation-related outages due to human or animal activity shall not be considered reportable (examples of human or animal activity that could cause a non-reportable outage include, but are not limited to, logging, animal severing tree, vehicle contact with tree, arboricultural activities or horticultural or agricultural activities, or removal or digging of vegetation).

a. No vegetation-related line outages occurred during the compliance reporting period. Submittal of a **Vegetation-Related Line Outage Reporting Form** is **not** required.

b. _____ vegetation-related line outages occurred during 1st Quarter 2011.

In addition to this letter of certification, *0* Vegetation-Related Line Outage Reporting Form(s)

must be submitted (one outage per form).

2. The NERC Reliability Standard FAC-003-1 on Vegetation Management does not apply to The Narragansett Electric Company because The Narragansett Electric Company does not own transmission lines 200 kV or higher or any other lower voltage lines designated by NPCC to be critical to the reliability of the electric system. (No further submittals are required in addition to this Letter of Certification.)

3. The NERC Reliability Standard FAC-003-1 on Vegetation Management applies to The Narragansett Electric Company and our data has been coordinated with and is covered by the submittal(s) of

Master Account	First Name	Last Name	Telephone	Email

.

Section B:

1. This submittal also covers:

Master Account	First Name	Last Name	Telephone	Email

Note: For companies not listed, please contact compliance-support@npcc.org

Additional Comments:

***** A certification statement and officer signature is NOT required for quarterly Vegetation Outage LOC or RF.***

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FAC-003-1 Quarterly Vegetation Outage LOC - Vegetation Quarterly Outage LOC - 4th Quarter 2010

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New Mitigation Plan | Attachments (0)

Reference Document: FAC-003-1 Vegetation Management

This form was submitted by Michael Jones (Michael.Jones@us.ngrid.com) on 1/13/2011.

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Technical Contact

* Edward Dahill (edward.dahill@us.ngrid.com) Find | Clear | New Contact

The information in this submittal is designated as "Confidential". As such, it includes trade secrets, commercial or financial information that the submitter believes is commercially valuable and does not customarily disclose to the public. Disclosure of this information to the public could reasonably be expected to cause substantial competitive harm to the submitter. Member compliance results and comments are generally shared with NERC in an aggregated manner. Data will be shared with NERC, on request, pursuant to the NERC-NPCC Confidentiality Agreement.

Note: this LOC is applicable to owners or operators of transmission lines rated 200 kV and above or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system. It also applies to generation owners who own transmission lines rated 200 kV and above or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system.

1. The NERC Reliability Standard FAC-003-1 on Vegetation Management applies to The Narragansett Electric Company because The Narragansett Electric Company owns transmission circuits 200 kV or higher or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system.

For the reporting period of 4th Quarter 2010:

All outages on transmission circuits 200 kV or higher or other lower voltage lines designated by NPCC to be critical to the reliability of the electric system shall be reported where the cause of the outage is the line faulting due to contact with vegetation, except:

- Multiple outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.
- A single trip followed by a successful automatic reclose within a 24-hour period shall not be a reportable outage.
- Vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters shall not be considered reportable (examples of disasters that could create non-reportable outages include, but are not limited to, earthquakes, fires, tornados, hurricanes, landslides, wind shear, major storms as defined either by the Transmission Owner or an applicable regulatory body, ice storms, and floods).
- Vegetation-related outages due to human or animal activity shall not be considered reportable (examples of human or animal activity that could cause a non-reportable outage include, but are not limited to, logging, animal severing tree, vehicle contact with tree, arboricultural activities or horticultural or agricultural activities, or removal or digging of vegetation).

a. No vegetation-related line outages occurred during the compliance reporting period. Submittal of a **Vegetation-Related Line Outage Reporting Form** is **not** required.

b. _____ vegetation-related line outages occurred during 4th Quarter 2010.

In addition to this letter of certification, *0* Vegetation-Related Line Outage Reporting Form(s)

must be submitted (one outage per form).

2. The NERC Reliability Standard FAC-003-1 on Vegetation Management does not apply to The Narragansett Electric Company because The Narragansett Electric Company does not own transmission lines 200 kV or higher or any other lower voltage lines designated by NPCC to be critical to the reliability of the electric system. (No further submittals are required in addition to this Letter of Certification.)

3. The NERC Reliability Standard FAC-003-1 on Vegetation Management applies to The Narragansett Electric Company and our data has been coordinated with and is covered by the submittal(s) of

Master Account	First Name	Last Name	Telephone	Email

.

Section B:

1. This submittal also covers:

Master Account	First Name	Last Name	Telephone	Email

Note: For companies not listed, please contact compliance-support@npcc.org

Additional Comments:

***** A certification statement and officer signature is NOT required for quarterly Vegetation Outage LOC or RF.***

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Submit to NPCC

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FY2011 TRANSMISSION DANGER TREE SCORECARD-ONLY 200+kV NECO ROWs

Rownum	Line #	Line Name	KV	Company	Region	State	Forester	Segment Miles
3001	332	West Farnum - Kent County	345	NECO	NERI	RI	JCM	21.80
3216	347	Sherman Rd - CT S/L	345	NECO	NERI	RI	JCM	8.60
3214	336	Sherman Rd. - Mass S/L	345	NECO	NERI	RI	JCM	0.20
								30.60

ON LUMP SUM BID LIST	Available Budget:$1,800,000 For estimating costs: use $20,000 per mile Can do ~90 miles of actual work

Complete

Description (Each level adds a requirement to the previous level)	
Level 1	Prune or remove danger trees to achieve At Time of Vegetation Management (ATVM) Clearance distances. Remove danger trees within the cleared ROW (encroached). Dead or damaged branches and leaders on off right-of-way danger trees that are capable of falling onto the conductors shall be pruned.
Level 2	Prune or remove high risk hazard trees.
Level 3	Prune or remove all hazard trees.
Level 4	Prune or remove danger trees emergent above the general canopy height. Pruning is the preferred method.
Level 5	Prune or remove danger trees to specified Risk Factor. Data for Risk Factor calculation shall be measured and document at least once per 5 spans.
Level 6	Remove all trees to a new cleared width (widening) and Level 1, 2, 3, 4, or 5 danger tree work.

Other: Below add information on any lines that local Distribution arborists/supervisors have asked you to work on

Rownum	Line #	Line Name	KV	Company	Region	State	Forester	Name of NG Employee that asked you to do the work

CY2010/FY2011 NE TRANSMISSION IVM SCORECARD

Rownum	Line #	Line Name	KV	CO	Region	State	Forester	RW Width	Segment Miles	CM Gross Acres
1107	451/452	Hampshire S/L	450	NEH	NEMW	MA	JPC	250	12.40	431.44
1221	315	Wrentham JCT - RI S/L	345	NEP	NEMS	MA	JCM	125	3.26	55.87
1272	394	Sub.	345	NEP	NEMN	MA	JPC	200	5.20	138.07
1335	E205E&W	Bear Swamp to E205 Main ROW	230	NEP	NEMW	MA	JPC	250	5.40	178.80
1337	E205E	Barre - Pratts Jct.	230	NEP	NEMW	MA	JCM	125	21.33	375.85
1417	A127/B128	Barre Jct. - Millbury #2	115	NEP	NEMW	MA	JCM	125	22.60	430.24
1479	S145/T146 TAP	Junction	115	NEP	NEMN	MA	JPC	250	8.20	217.22
1495	E157	343 ROW - Northboro Rd.	115	NEP	NEMS	MA	JCM	100	10.50	143.21
1496	X24W	Grafton Tap	69	NEP	NEMS	MA	JCM	80	1.40	13.30
1497	X24W-E	Westboro tap	69	NEP	NEMS	MA	JCM	80	0.40	3.70
1498	E157	East Main St. Tap	115	NEP	NEMS	MA	JCM	100	0.30	3.52
1605	A1/B2	Switch	69	NEP	NEMW	MA	JPC	100	18.40	222.27
1607	A1/B2	Switch	69	NEP	NEMW	MA	JPC	100	14.30	173.32
1609	A1/B2 TAP	Athol Tap	69	NEP	NEMW	MA	JPC	125	5.90	90.28
1611	A1/B2 TAP	Baldwinville Tap	69	NEP	NEMW	MA	JPC	66	1.00	8.54
1613	A1/B2 TAP	Gardner Tap	69	NEP	NEMW	MA	JPC	100	1.66	19.65
1615	A1/B2 TAP	Westminster Tap	69	NEP	NEMW	MA	JPC	125	1.20	17.68
1645	O15	Ware - X176 ROW	69	NEP	NEMW	MA	JCM	100	10.30	99.91
1647	N14/O15	Palmer - East Longmeadow	69	NEP	NEMW	MA	JCM	100	23.00	180.11
1648	N14	1647 ROW - Shaker Rd. & tap	69	NEP	NEMW	MA	JCM	60	1.79	13.11
1655	S19	302 ROW to E. Webster Sub.	69	NEP	NEMW	MA	JCM	100	7.60	92.34
1661	U21/V22	Pratts Junction to Ayer Sub.	69	NEP	NEMW	MA	JPC	125	11.00	165.82
1663	U21/V22 TAP	Prospect Street Tap	69	NEP	NEMW	MA	JPC	110	1.90	25.94
1665	U21/V22 TAP	Fort Devens Tap	69	NEP	NEMW	MA	JPC	100	0.36	4.69
1691	W23	Clinton - Wachusett Dam	69	NEP	NEMW	MA	JCM	60	1.80	13.13
1693	W23	Road Sub	69	NEP	NEMW	MA	JCM	60	10.40	75.62
1700	A53	Oakdale Jct. to MDC Station	69	NEP	NEMW	MA	JCM	75	1.30	12.60
1701	Attleboro Taps	Read St. - West St.	69	NEP	NEMS	MA	JCD	125	3.70	57.03
2000	331	Bridgewater Sub - BECO str #399	345	NEP	NEMS	MA	JCM	300	12.00	690.60
2002	331	Titicut Rd. - Bridgewater	345	NEP	NEMS	MA	JCM	300	4.40	159.11
2024	N12/M13	Montaup - Bell Rock	115	NEP	NEMS	MA	JCD	150	3.34	44.74

CY2010/FY2011 NE TRANSMISSION IVM SCORECARD

Rownum	Line #	Line Name	KV	CO	Region	State	Forester	RW Width	Segment Miles	CM Gross Acres
2025	D21	T/L (str. 71)	115	NEP	NEMS	MA	JCD	150	4.20	76.15
4003	136 Tap	Pratts Jct - Litchfield Sub.	115	MECO	NEMW	MA	JPC	180	2.90	64.60
4005	A53/B54	Oakdale Jct. - Cooks Pond	69	MECO	NEMW	MA	JCM	100	9.80	104.35
4009	C3-99	S9 ROW - N. Abington	115	MECO	NEMS	MA	JCD	75	1.90	15.20
4012	H1	S9 ROW - Water St.	115	MECO	NEMS	MA	JCD	60	2.67	20.36
4013	L1	East Bridgewater - E20 ROW	115	MECO	NEMS	MA	JCD	50	1.90	11.68
4014	M1	East Bridgewater - Middleboro T/L	115	MECO	NEMS	MA	JCD	90	5.00	54.07
4016	S9/C3	Auburn St - Scituate	115	MECO	NEMS	MA	JCD	125	14.55	202.38
										4706.50

FY2011 TRANSMISSION DANGER TREE SCORECARD

Rownum	Line #	Line Name	KV	Company	Region	State	Forester	Segment Miles
1203	302	Carpenter Hill - Millbury #3	345	NEP	NEMW	MA	JCM	15.70
1209	303	So. Wrentham - W. Medway	345	NEP	NEMS	MA	JCM	10.30
3001	**332**	**West Farnum - Kent County**	**345**	**NECO**	**NERI**	**RI**	**JCM**	**21.80**
3216	**347**	**Sherman Rd - CT S/L**	**345**	**NECO**	**NERI**	**RI**	**JCM**	**8.60**
4012	H1	Jct. S9 to Water Street Sub. Hanover	115	MECO	NEMS	MA	JCD	0.60
3236	**R9-Q10**	**Staples - Massachusetts S/L**	**115**	**NECO**	**NERI**	**RI**	**JCM**	**5.30**
3243	**61-62**	**Dexter Sub to Jepson Sub**	**69**	**NECO**	**NERI**	**RI**	**JCM**	**0.30**
3244	**63**	**Jepson Sub to Gate 2 Sub**	**69**	**NECO**	**NERI**	**RI**	**JCM**	**0.30**
1102	451/452	HVDC Converter to A201/B202 ROW	450				JPC	0.7
1103	HVDC Serv	Comerford 230 KV Yard to HVDC Yard	13.8	NEP	NENV	NH	JPC	0.20
1273	394	Ward Hill Sub. to Boxford Junction	345	NEP	NEMN	MA	JPC	2.80
1275	394	Boxford Junction to King Street Sub.	345	NEP	NEMN	MA	JPC	4.00
1309	A201/B202	New Hampshire S/L to Tewksbury Sub	230				JPC	6.40
1453	I135/I136	Troy Sub to Massachusetts SL	115	NEP	NENV	NH	JPC	11.10
1605	A1/B2	Massachusetts S/L to Baldwinville Switch	69	NEP	NEMW	MA	JPC	18.40
1645	O15	Ware Sub. to Blanchardville Sub.	69	NEP	NEMW	MA	JCM	5.40
1667	G33	Bellows Falls to Connecticut River (VT)	69	NEP	NENV	VT	JPC	11.80
1667	G33	Bellows Falls to Connecticut River (VT)	69	NEP	NENV	VT	JPC	4.00
1669	G33	Connecticut River to Vernon Station (NH)	69	NEP	NENV	NH	JPC	7.60
1669	G33	Connecticut River to Vernon Station (NH)	69	NEP	NENV	NH	JPC	1.50
1695	Y25	# 5 Station to Vermont S/L	69	NEP	NEMW	MA	JPC	3.30
1697	Y25	Massachusetts S/L to Searsburg Station	69	NEP	NENV	VT	JPC	9.70
1699	Y25	Searsburg Station to Str 33/Twin S/L	69	NEP	NENV	VT	JPC	3.00
1817	3315	Moore to Comerford Vermont Portion	34.5	NEP	NENV	VT	JPC	5.10
3004	**V148**	**Woonsocket Sub. to Massachusetts S/L**	**115**	**NECO**	**NERI**	**RI**	**JCM**	**4.00**
3017	**1870**	**West Kingston Sub. to Connecticut S/L**	**115**	**NECO**	**NERI**	**RI**	**JCM**	**7.00**
3214	**336**	**Sherman Rd. - Mass S/L**	**345**	**NECO**	**NERI**	**RI**	**JCM**	**0.20**
4008	A94	Auburn St. - U2 Jct.	115	MECO	NEMS	MA	JCD	9.30
4010	D911	Ames St #911 - Dupont #91	115	MECO	NEMS	MA	JCD	2.70
								181.10

ON LUMP SUM BID LIST	Available Budget:$1,800,000
	For estimating costs: use $20,000 per mile
	Can do ~90 miles of actual work

Complete

Description (Each level adds a requirement to the previous level)	
Level 1	Prune or remove danger trees to achieve At Time of Vegetation Management (ATVM) Clearance distances. Remove danger trees within the cleared ROW (encroached). Dead or damaged branches and leaders on off right-of-way danger trees that are capable of falling onto the conductors shall be pruned.
Level 2	Prune or remove high risk hazard trees.
Level 3	Prune or remove all hazard trees.
Level 4	Prune or remove danger trees emergent above the general canopy height. Pruning is the preferred method.
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Level 6	Remove all trees to a new cleared width (widening) and Level 1, 2, 3, 4, or 5 danger tree work.

Other: Below add information on any lines that local Distribution arborists/supervisors have asked you to work on

Rownum	Line #	Line Name	KV	Company	Region	State	Forester	Name of NG Employee that asked you to do the work

NERC CY2010 / FY2011 Annual Work Plan for Vegetation Management:

Scope: This Annual Work Plan (AWP) covers all New England transmission rights-of-way (ROW) 69 kV and higher and New York transmission ROW's 115 kV and higher. Vegetation management work includes the ROW floor Integrated Vegetation Management (IVM) program and off-ROW Danger Tree program. IVM work includes mechanical methods such as hand cutting, mowing, tree pruning and herbicide application. Danger tree work includes pruning and removal of off-ROW trees. All vegetation management methods are described in the October 2009 Transmission Right-of-Way Vegetation Management Plan (VMP), also identified as National Grid Transmission Group Procedure 25 (TGP-25).

Timing: National Grid plans work on a fiscal year basis. The fiscal year runs from April 1 to March 31. Because of certain calendar year state level reporting requirements and state level permit requirements, work for a given year may be completed any time from January 1 of a calendar year to March 31 of the next calendar year. No work is reported in more than one year.

Annual Work Plan - Scheduled Work:

Inspections: Vegetation conditions on National Grid transmission rights-of-way are inspected per TGP-25. Aerial and ground based patrols are carried out on ROW's subject to FAC-003-1.

Right-of-Way Floor IVM Work:

New England: See attached New England Transmission Floor IVM scorecard for FY 2011.

New York: See attached New York Transmission Floor IVM scorecard for FY 2011.

Work shall be considered complete if all 200 kV+ ROW's are 95% complete and 69-115 kV ROW's are at least 80% complete. Incomplete ROW's shall be prep cut and made safe and rescheduled in the following year.

Off-Right-of-Way Danger Tree Removal and/or Pruning:

New England: See attached New England Off-ROW Danger Tree scorecard for FY 2011.

New York: See attached New York Off-ROW Danger Tree scorecard for FY 2011.

Off-ROW Danger Tree work on a given ROW segment may take one to several years to complete. Miles are scheduled and reported for a given year. Work shall be considered complete if scheduled 200 kV+ ROW miles are 90% complete and scheduled 69-115 kV ROW miles are 80% complete. Incomplete ROW's shall be rescheduled in the following year.

Changes to Annual Work Plan:

Work is scheduled by ROW segment. ROW segments scheduled on April 1 of a fiscal year are so dated. Modifications to the plan are noted when made.

Scorecards:

Scorecards showing completion of scheduled work are updated monthly by Transmission Forestry Staff.

Annual Work Plan -Unscheduled Work:

In response to certain vegetation conditions found during aerial helicopter patrols, ground patrols, off-cycle site inspections and storm patrols, National Grid will carry out vegetation management work to assure compliance with minimum clearance distances.

nationalgrid

United States Operations

Transmission Group Procedure

TGP25

Right-of-Way Vegetation Management Plan

Authorized by:

Paul R. Renaud Date: 2/1/11

Paul Renaud, Vice President
Transmission Asset Management
National Grid USA Service Company, Inc.

National Grid USA Service Company, Inc.
40 Sylvan Road
Waltham, MA 02451

1.0 Change Control

Version	Date	Modification	Author(s)	Reviews and Approvals by
Issue 1	December 20, 2001	Updates	Tom Sullivan	Marc Mahoney
Issue 2	December 9, 2002	Updates	Tom Sullivan	Marc Mahoney
Issue 3	April 22, 2004	Updates	Tom Sullivan	Marc Mahoney
Issue 4	November 1, 2005	Complete review and total rewrite to integrate NE and NY operations information.	Tom Sullivan	Alan Robb
Issue 5	March 1, 2007	Updates and conformance with NERC FAC-003-1	Tom Sullivan	David Wright
Issue 6	September 21, 2007	Updates	Tom Sullivan	David Wright
Issue 7	March 3, 2008	Updates	Tom Sullivan	David Wright
Issue 8	September 30, 2008	Updates to reflect current personnel, clearances, and use of ROW Information System Access Database	Dawn Travalini	Paul Renaud
Issue 9	October 14, 2009	Updates	Dawn Travalini	Paul Renaud
Issue 10	December 14, 2010	Updates	Tom Sullivan	Paul Renaud
Issue 11	January 31, 2011	Updates	Tom Sullivan	Paul Renaud

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LIST OF APPENDICES:

2.0 Introduction

2.1 Purpose

The purpose of this Right-of-Way Vegetation Management Plan (VMP) is to document the requirements for vegetation management on transmission and distribution right-of-ways for National Grid. This VMP defines:

- Objectives, strategies and approved practices and procedures for all phases of vegetation management on electric right-of-ways;
- Clearance requirements between conductors and vegetation acceptable to National Grid for maintaining reliable electric transmission service;
- Responsibilities of Company personnel and contractors;
- Procedures to be followed by contractors performing all work within the scope of this VMP.

2.2 Scope

The requirements of the VMP apply to all National Grid electric right-of-ways.

3.0 Definitions

Annual Work Plan – Identifies the vegetation management field work that will be carried out in a specified year.

Article VII Right-of-way – a right-of-way approved for construction and maintenance under the Article VII regulations of the N.Y.S. Public Service Commission. These lines generally have additional environmental protections and restrictions associated with access, vegetative screening, integrated management, etc.

Basal Application – Herbicide application method in which the lower portion of the target species stems and root collar is completely covered by the herbicide solution.

Capable Species – Tree and shrub species that have the ability to grow into the minimum clearance distance from conductors.

Clearance Distances – 1) the At Time of Vegetation Management (ATVM) Clearance Distance from vegetation, in a radius around the conductor, to be achieved at the time of vegetation management and 2) Minimum Clearance Distance, in a radius around the conductor, between conductors and vegetation to be maintained under all rated electrical operating conditions. Clearance distances are provided in Section 5.3.

Danger Tree – A tree on or off the right-of-way that if were cut or failed could contact electric lines.

Forestry GIS – Transmission Corridor Manager Forestry Geographic Information System. The following Land Use Categories are employed in Forestry GIS.

Land Use In Forestry GIS	
Access Road	Off Right-of-way access road
Brush Land	Land covered by brush
Campsite	Managed camping area
Christmas Trees	Managed conifer trees for agriculture
Commercial/Industrial	Land used for Commercial/Industrial
Cropland	Cropland in active cultivation
Field	Open mowed fields; hay or crop
Golf Course	Managed golf course
Hedgerow	Border between managed fields
Nursery	Managed trees for agriculture
Orchard	Managed fruit trees
Organic Farm	Certified organic farm
Owner No Herbicide	No herbicide; per landowner agreement
Parking Lot	Paved or gravel lot with no vegetation
Pasture	Animal pasture
Pond/Lake	Water body; not wetland or river
Private Well	Private water supply; encased or open spring
Protected Watershed	Watershed areas with restrictions
Public Surface Water	Public water sources: reservoirs and tributaries
Public Well	Managed well for public water supplies
Railroad	Active railway
Residential	Residence with maintained lawn and/or trees
River Crossing	River crossings with maintained buffers
Road Crossing	Roads with or without maintained buffers
Road Crossings	Multiple roads within one site
Roadside	Road parallels transmission line
School	Public/private school where herbicide restrictions exist
Special	Any area that requires special treatment/no listed land use applies
State Park/Forest	Managed/regulated park or forest
Streams	Stream crossing; may be seasonal
Substation Perimeter	Area around substation that requires vegetation management
Wetlands	Regulated wetlands
Woodlands	Area that may remain wooded

Hand Cutting – Vegetation management method in which woody vegetation is felled through the use of hand tools, including chainsaws and brush saws.

Hazard Tree – Danger trees which due to species and/or structural defect are likely to fail and fall into the electric facility.

Herbicide – Chemical used to control, suppress or kill plants or severely interrupt their normal growth processes.

Incompatible Vegetation – Species of vegetation, trees and certain tall-growing shrubs, that have mature height great enough to grow within the Minimum Clearance Distances.

Integrated Vegetation Management – IVM is an adaptation of Integrated Pest Management (IPM) where the pest is tall growing, undesirable vegetation. IPM/IVM is a system of controlling pests in which pests are identified, action thresholds considered, all possible control options evaluated and selective, physical, biological and chemical controls are considered. When chemical controls become necessary to control and prevent the growth of undesirable, tall growing woody species, the Company is committed to employing selective, targeted applications. These treatments shall use approved herbicide products and mixtures that target specific plants or plant communities in a manner calculated to control and eliminate the tall-growing, undesirable woody species, while preserving as much of the small, compatible woody shrub and herbaceous vegetation as practicable.

ISO – Independent System Operator

NERC – North American Electric Reliability Council

NH PES – New Hampshire Pesticide Bureau

NPCC – Northeast Power Coordinating Council

NY DPS – New York Department of Public Service

NY Part 84- The New York long-range transmission ROW management program required by the NY Public Service Commission.

Non-Selective Treatment – the broadcast application of approved herbicide products and mixtures to all woody vegetation.

Pasture – Fenced area used for grazing livestock.

Pruning – the cutting and removal of tree branches to provide specified clearance distance between vegetation and the conductors. See A.N.S.I. A300 for additional detail.

Removal – Felling or killing of undesirable vegetation.

RI DEM – Rhode Island Department of Environmental Management

Right-of-Way - A cleared corridor of land over which electric transmission lines are located. The companies may own the land in fee, own an easement, or have certain franchise or license rights to construct and maintain electric facilities.

Selective Mowing – Mowing small areas of high-density target species, or dense woody vegetation encroaching upon roadways or trails to structures or adjacent to structures.

Selective Treatments – Removal of individual undesirable woody plant species through the use of a controlled vegetation management method.

Sensitive Area – Areas on right-of-ways where legal, visual, or environmental impacts/concerns require compromises to the general IVM policy.

Slash – All branches, tops, small diameter main stems and debris resulting from any cutting operation.

Stump Application – Herbicide application method in which the herbicide is applied only to the freshly cut surface of the stump of the target tree.

"T" Sheet – Strip map of a right-of-way showing line features.

Transmission – includes all electric lines 115kV and higher in New York and 69kV and higher in New England, used to transport electricity between various generation, switching, and distribution substations.

Tree Removal – the cutting and felling of trees, including wood and brush disposal. Removal includes the use of approved herbicides to enable the chemical removal of the target plant(s) from the right-of-way.

Utility Forest – the forested areas within or adjacent to right-of-ways that are tall enough or may grow tall enough to impact the reliability of the transmission facility.

VMP – Right-of-Way Vegetation Management Plan

VMS – Right-of-Way Vegetation Management Specification

VT ARMES – Vermont Agency of Agriculture, Division of Agricultural Resource Management and Environmental Stewardship

Visual Buffer – areas of vegetation preserved on the right-of-way, on both sides of selected improved road crossings, yards, for the purpose of minimizing the visual impacts and linear view of the right-of-way for motorists.

Water – standing or running water, existing at the time of maintenance operations, which has impact outside the right-of-way.

Wire Zone/Border Zone – the wire zone is defined as that portion of the right-of-way floor that is situated either directly beneath the conductor area or for a distance extending approximately ten (10) feet to either side of the conductor. The border zone is that portion of the right-of-way floor situated to the outside of the wire zone extending to the right-of-way edge. It is sometimes referred to as a transition zone between the wire zone and the adjacent forest edge. The wire zone mid-span is the portion of the span where the conductor is at or near its lowest ground clearance distance, generally 60-70% of the span length.

YOP – Yearly Operational Plan, Massachusetts

4.0 General Policy

4.1 The maintenance cycle for all right-of-ways shall be: Right-of-Way Floor Program, four to eight years and Off Right-of-Way Danger Tree Program, four to sixteen years. Note: Certain right-of-ways are wide enough that Danger Tree work is never necessary.

4.2 Herbicide treatments within the context of an Integrated Vegetation Management strategy shall be the preferred method of vegetation management.

4.3 Hand cutting or mowing shall be used where herbicide use is prohibited.

4.4 All vegetation management operations shall be conducted in a safe, effective manner in conformity with Federal and State laws, regulations and permit conditions.

4.5 All vegetation management operations shall be conducted in conformance with national and regional standards including but not limited to NERC FAC-003-1 (see Appendix 1), New England and New York Independent System Operator standards, and ISO 14001.

4.6 All state permits necessary for any vegetation management operations shall be obtained.

4.7 All applicable state notification procedures shall be followed.

4.8 Transmission Forestry, in consultation with vegetation management contractors, shall establish procedures for notifying nearby residents of all vegetation management activities.

4.9 National Grid Transmission Forestry staff and/or contractors shall respond quickly to any questions or complaints relating to right-of-way vegetation management from the public and/or government agencies.

4.10 Appropriately licensed, certified and qualified contractors shall be retained to implement National Grid's vegetation management programs. Contractors shall conduct all vegetation management operations consistent with National Grid safety requirements and the A.N.S.I. Z-133 safety standard.

4.11 Transmission Forestry shall provide local supervision, coordination and enforcement of this VMP and the companion Vegetation Management Specification (VMS) for contractors.

4.12 The document control process for this VMP and VMS is as follows: Both documents are generally updated annually and distributed as hard copy. The applicable hard copy cover date shall be for the current year.

5.0 Vegetation Management Plan

5.1 Objectives

The primary objective of National Grid's VMP is to minimize outages due to vegetation. Other objectives include providing a clear and safe work space and access for maintenance activities.

5.2 Strategy

National Grid's strategic approach to vegetation management within the right-of-way is to establish and maintain right-of-ways that are largely clear of all incompatible vegetation while maintaining a stable low-growing plant community that is pleasing to the eye and beneficial to wildlife. National Grid's strategic

approach to manage vegetation adjacent to the right-of-way is to prune and/or remove danger trees and/or hazard trees where property rights allow vegetation management work.

Right-of-ways that are largely clear of incompatible vegetation present a very low risk of vegetation-caused outages. Vegetation adjacent to right-of-ways (danger and hazard trees) presents a greater risk of outages. The risk from danger trees and hazard trees is related the following variables: the distance from conductor to the adjacent tree line, conductor distance above the ground, height of trees, tree species, and tree health and condition. National Grid seeks to mitigate risk of outages from trees adjacent to the right-of-way through site specific management of these variables.

Vegetation management work on transmission and distribution right-of-ways is organized into two programs:

- Right-of-Way Floor Program – management of vegetation within the right-of-way corridor, and

- Off Right-of-Way Danger Tree Program – management of vegetation adjacent to the right-of-way corridor.

To achieve its vegetation management objectives, National Grid utilizes an Integrated Vegetation Management approach which emphasizes selective herbicide use to control incompatible vegetation. IVM integrates the use of various methods of herbicide applications and non-herbicide mechanical vegetation management methods described in Section 8.0 and is used on both the right-of-way floor and the adjacent utility forest. The IVM program includes the use of herbicide (supplied as Basal Application, Stump Application and Foliar Application), Hand Cutting, Mowing, Selective Mowing and Selective Pruning methods.

5.2.1 Contractors

Appropriately certified and qualified contractors are retained to carry out nearly all hands-on vegetation management work on National Grid right-of-ways. Additional information on contractor qualifications can be found in Section 7.0.

5.2.2 Imminent Threats of Outage

National Grid personnel or contractor personnel shall report any observed vegetation-related imminent threats that may cause outages to the appropriate Company Regional Control Center. Control Centers are listed in Appendix 2. The Regional Control Center shall take appropriate action per National Grid Control Center operating procedures.

5.2.3 Inquiries and Complaints from Landowners and/or Public

National Grid companies' representatives respond quickly to any questions or complaints from the public relating to right-of-way vegetation management. Inquiries and/or complaints from external parties will be documented and reported to the Transmission Forester.

5.3 Clearance Standards

National Grid specifies clearance distances to be achieved at the time of vegetation management work and minimum clearances to be maintained at all times. Clearance standards established by National Grid below conform to the following regulatory standards and industry guidelines:

- North American Electrical Reliability Counsel (NERC) Vegetation Management Standard FAC-003-1;
- National Electric Safety Code (NESC) Rule 218; and
- Applicable State and Independent System Operator vegetation management standards or regulations.

5.3.1 National Grid At Time of Vegetation Management Clearance Distances
When performing right-of-way vegetation management, the following At Time of Vegetation Management (ATVM) Clearance Distances, by voltage, shall be achieved. Note: ATVM Clearances apply to incompatible species only. (See Definitions in Section 3.0).

At Time of Vegetation Management Clearance Distances (Clearance 1)		
Voltage	**Vertical (feet)**	**Horizontal (feet)**[1]
23 to 46kV	12	12 – 38
69kV	14	14 – 42
115kV	18	18 - 50
230kV	22	22 – 50
345kV	26	26 – 50
450kV DC	28	28 - 50

ATVM Clearance Distances are greater than the Minimum Clearance Distances specified in 5.3.2. In establishing these clearance standards, National Grid considered site-specific conditions such as operating voltage, IVM techniques, fire risks, tree and conductor movement, species types and growth rates, species failure characteristics, local climate rainfall patterns, line terrain and elevation, location of vegetation within the span, worker approach distance requirements and the expected time frame (maintenance cycle) before vegetation management will be repeated at the site.

1 For span lengths greater than 500 feet, contractors need to achieve a horizontal ATVM clearance distance at the higher end of the range. Each range incorporates span lengths; an increase in voltage, increases span length, and therefore increases clearance distance.

5.3.2 National Grid Minimum Clearance Distances

Notwithstanding the ATVM Clearance Distances above, the Minimum Clearance Distances specified below shall be maintained. Minimum Clearance Distances shall be maintained at all times in order to prevent flashover between vegetation and conductors. The transient overvoltage factor is known for the most of the 12kV through 345kV voltages, however, National Grid has chosen to base the Minimum Clearance Distances on Table D.3 of the IEEE Standard 516-2003, a more conservative approach. For the 450kV DC voltage, Table 10.3 of the EPRI HVDC Reference Book is cited for the Minimum Clearance Distance.

Minimum Clearance Distances (Clearance 2)	
Voltage	**Radial Clearance (feet)**
12 to 46kV	1
60kV	2
115kV	4
230kV	6
345kV	10
450kV DC	10

5.4 Inspections of Right-of-Way Vegetation Conditions

National Grid Forestry staff is responsible for inspection of vegetation conditions on right-of-ways. Inspections are carried out for several purposes including, but not limited to: determination of treatment efficacy of herbicide floor work following work completion by contractors (the Spring following treatment); evaluation of efficacy of floor maintenance cycle length; planning danger tree work and patrolling the transmission system to find vegetation conditions that are an imminent threat to the reliability of the electric system. Details of the inspection program are presented in Section 10.0 of this VMP.

5.5 Exceptions to ATVM Clearances

Legal restrictions and environmental and social concerns may prevent National Grid from achieving ATVM Clearance Distances at various sites across the transmission system. National Grid shall map these sites within the Forestry GIS system. All such sites will be inspected and mitigation procedures taken to assure compliance with Minimum Clearance Distances. Note: in National Grid's New York territory, the mid-cycle inspection program has changed. These sites will be mapped over the present maintenance cycle, year 2006 to 2012. During this time period all right-of-way sites are inspected annually per Section 10.1.

6.0 National Grid Roles and Responsibilities

6.1 Transmission Owner

National Grid companies own and are responsible for ensuring maintenance of their transmission, sub-transmission and distribution facilities on right-of-ways.

6.2 Transmission Forestry Department

The Transmission Forestry Department is responsible for system-wide design, planning, coordination and supervision of all right-of-way vegetation management operations. The Transmission Forestry Department is divided into two departments, Forestry Strategy and Forestry Delivery. Forestry Strategy is responsible for preparing this VMP, obtaining necessary permits, preparing required notifications, providing technical expertise and acting as a liaison between National Grid and local and state officials, or other interested parties. Forestry Delivery is responsible for implementing this VMP, scheduling work, estimating budgets, prescribing herbicides and application methods for each right-of-way, selecting contractors, spot checking treatment crews, and acting as a liaison between National Grid and landowners. Both departments provide local oversight, coordination and enforcement of vegetation management policy, procedures and this VMP on National Grid transmission right-of-ways. Specified duties are listed below.

6.2.1 Prepare documents

Forestry Strategy is responsible for ensuring that all required internal and external documents, the Annual Work Plan, Field Inventory, plans, permits and reports have been developed and submitted to required parties. Key regulatory documents are summarized below.

Regulatory Documents Required						
Document Required	**NERC**	**MA DAR**	**RI DEM**	**NH PES**	**VT ARMES**	**NY PSC/DEC**
Long-Term VMP (TGP 25)	√	√		√	√	√
Annual Work Plan (YOP and NY PART 84)	√	√				√
Annual Self-Certification	√					
Permit				√	√	√
Annual Report						√

6.2.2 Obtain Permits/Plans/Approvals

Forestry Strategy has responsibility for ensuring that all required state level plans, permits and approvals have been obtained prior to initiating vegetation management activities.

6.2.3 Procure Services

Forestry Delivery has responsibility for ensuring that appropriate contractor services have been procured in order to fulfill the requirements of the Annual Work Plan.

6.2.4 Prepare VMP and VMS

Forestry Strategy annually reviews this VMP and the VMS, and revise the documents as required. Forestry Delivery informs the contractor which right-of-ways will be treated, the range of dates of treatment and the vegetation management methods, materials and mixing rates to be used. Forestry Delivery also provides inventory information, right-of-way maps and other information from the Transmission Forestry GIS.

6.2.5 Bidding

Copies of appropriate maps and drawings shall be furnished to all prospective bidders, together with a detailed site-by-site Field Inventory. The drawings and/or inventories may be marked to show additional pruning and tree removal requirements and areas where completed wood and brush removal will be required. These drawings and inventories will subsequently be incorporated into and become part of the contract.

6.2.6 Purchase Order

Before beginning a treatment operation, the contractor will be sent a Purchase Order, with Terms and Conditions attached, from the National Grid Procurement Department. The Terms and Conditions attached to the Purchase Order are incorporated in the VMS. Contact National Grid Forestry staff if a Purchase Order has not been received by the time right-of-ways are scheduled for treatment. The contractor must return the signed acknowledgement copy of the Purchase Order to the Procurement Department before any work is done.

6.2.7 Maintain Transmission Forestry GIS

The Company utilizes a Smallworld-based GIS as an asset register for all transmission facilities. Facilities include transmission lines and structures, real property information, and Forestry-defined right-of-way segments and sites. Forestry segments are the basic unit for tracking and scheduling vegetation management work across the system and range in size from approximately 1 to 40 miles in length and 10 to 1,000 acres in area. Vegetation sites are the individual areas within forestry segments where vegetation management work is described in detail. Sites may be as small as a fraction of an acre or 100+ acres in area. Site details include Land Use Code (see definitions), a description of vegetation, a prescription identifying work to be carried out, and may include landowner information such as name, address and many other attributes.

6.2.8 Notifications

Forestry Delivery, with assistance from Forestry Strategy, will establish procedures for notifying nearby residents of vegetation management activities to be carried out on right-of-ways.

6.2.9 Operations Monitoring

Transmission Forestry monitors various aspects of this VMP. Foresters conduct aerial and ground-based patrols, review contractor's use of herbicides, and herbicide application rates.

6.2.10 Contractor Performance

Transmission Foresters audit contractor performance including conformance with this VMP, Treatment Effectiveness and compliance with environmental and safety requirements.

6.2.11 Reporting of Outages

Certain vegetation-caused sustained outages shall be reported to the Northeast Power Coordinating Council (NPCC). The Forestry Delivery Manager, working with the Transmission Operation Planning and Review

Department, shall report these outages to the appropriate Independent System Operator.

6.3 Transmission Forestry Personnel Qualifications

6.3.1 Managers of Forestry Delivery and Forestry Strategy

The Transmission Forestry Managers shall have at least 10 years of electric utility experience. The Managers may also have the vegetation management qualifications listed below for Transmission Foresters.

6.3.2 Foresters

The Transmission Foresters hold 2-year or 4-year degrees in forestry, urban forestry, arboriculture or related field. Other qualifications may include certified pesticide applicator license, ISA Certified Arborist, utility industry experience and/or significant experience in contract and contractor management. Forester tasks may be carried out by in-house staff or professional-level contractors holding equivalent qualifications.

7.0 Contractor Duties and Responsibilities

Vegetation management operations must be conducted according to the Right-of-Way VMS and according to the written directives of the Company's Transmission Forestry staff. Failure to do so is grounds for removal of the crew from the treatment site by National Grid companies' Forestry staff and possible termination of the contractor's contract.

7.1 Environmental and Safety Compliance

The Contractor shall comply with all applicable Federal, State and local laws and regulations and with the requirements of all permits and approvals obtained by National Grid.

National Grid is committed to minimizing its impacts to the environment and requires contractors to demonstrate the same level of commitment as National Grid in the management of the environment. National Grid's commitment to the environment is communicated in the National Grid – Environmental Policy, see Appendix 3.

The contractor shall immediately notify the Company of any release of any quantity of oil or hazardous material. The contractor is responsible to make all required notifications of releases to appropriate regulatory agencies and to ensure that the response to the release is prompt and done in a proper manner.

National Grid Contractor Safety Requirements establish safety requirements for contractors. This document has been provided during the contractor qualification and bidding process. Highlights of the Contractor Safety Requirements are presented in Appendix 4.

All safety incidents shall be reported to the Company. The initial call should be to a National Grid Forester. All injuries must be reported through the Injury Hotline.

7.2 Qualifications

Contractor shall utilize only experienced and/or trained workers who are appropriately licensed or certified. Workers must conduct themselves professionally at all times. Each herbicide applicator shall hold, at minimum, a pesticide applicators license or equivalent from any state within National Grid

service territory and comply with license requirements for the state within which applications are taking place.

Contractor shall utilize appropriately licensed or certified supervisors who are knowledgeable with regard to all aspects of the contracted treatment, and who are responsive to the guidance of Company Foresters. Each supervisor must be able to effectively communicate with the public. They must also effectively supervise contractor crews in order to insure the satisfactory completion of the treatment operation. Supervisors of herbicide applications must hold, at minimum, a commercial certification license or equivalent from any state within National Grid service territory and comply with license requirements of the state within which applications are taking place.

7.3 Training

Contractor shall provide their employees with training that includes, but is not limited to, recognition of electrical hazards, working in proximity to energized facilities, identification of operating voltages, minimum approach distances, and other applicable rules and regulations associated with worker safety.

Additionally, National Grid trains vegetation management contractors annually on the contents of this VMP and the Specification.

7.4 Commencement of Operations

Contractor may not initiate activities without a Purchase Order, with Terms and Conditions attached, from the National Grid Procurement Department. The Terms and Conditions attached to the Purchase Order are incorporated in this VMP. Contractor shall contact Company Transmission Forestry staff if a Purchase Order has not been received by the time the right-of-ways are scheduled for treatment. The contractor must return the signed acknowledgement copy of the Purchase Order to the Procurement Department before any work is done.

7.5 Permits/Plans/Approvals

Contractor shall follow all conditions of state permits/plans/approvals obtained by the Companies.

7.6 Notifications to National Grid

At least one week prior to the initiation of vegetation management operations on a specific right-of-way, the contractor must specify to Transmission Forestry the date work on that right-of-way will begin.

At least one week prior to the completion of vegetation management operations on specific right-of-way, the contractor must specify to Transmission Forestry the date work on that right-of-way will end.

The contractor will notify National Grid companies' Forestry staff of the approximate work schedule the contractor's crew will follow for the treatment year. The contractor shall complete treatment on each right-of-way segment with as few work interruptions as possible.

The contractor must supply crew work locations on a daily basis by calling the Transmission Call-in system (ROWInfoSysWEB), and/or other parties specified by the Company Transmission Forestry staff, before the beginning of the workday and at the end of the workday. The location information will include the right-of-

way segment number, the contractor company, number of crewmembers, foreman name, and the nearest transmission/distribution line structure number.

The contractor must keep Company Transmission Forestry staff informed about crew location, conditions encountered, and problems that arise as work progresses. Should a contractor cause an event on a transmission or distribution line, the contractor must immediately notify the appropriate New England or New York Control Center. Refer to Appendix 2 for a listing of National Grid Transmission Forestry staff and Control Center contact information.

The contractor must supply completed daily time sheets with information regarding all time and materials work as per direction of Company Transmission Forestry staff.

The contractor shall notify and provide copies of any records/reports of any regulatory inspection by federal, state or municipal officials.

7.7 Notifications to Customers/Landowners

The Contractor shall make every reasonable effort to notify nearby residents of all vegetation management activities. They shall also notify any property owner where a yard tree requires pruning or removal. The property owner shall also be notified prior to extensive widening or danger tree removal, unless the Company has provided prior notification or otherwise specified by the Transmission Forester.

Certain statutes and regulations in New York, Massachusetts, Vermont, New Hampshire and Rhode Island require notification to residents/occupants of nearby homes/dwellings prior to use of herbicides. The contractor shall comply with the appropriate state notification statutes and regulations. Documentation of notification shall be maintained by the contractor.

Notification materials are presented in Appendix 5.

7.8 Documentation

The Contractor shall provide the following documents:

The contractor must supply supplemental or new information regarding site conditions that affect current or future treatment operations, such as new construction and sensitive areas and landowner concerns/requirements.

The Contractor shall complete and return a completed copy of the Field Inventory or weekly time sheets (as appropriate for NE or NY) to include the treatment date, the type and amount of herbicide used, any approved changes in site density, treatment method, etc. to the Transmission Forester, who will then enter the completed work in the Forestry GIS. Submittal of these treatment records is required for final payment; therefore, prior to final payment, the Company will require receipt of a complete treatment record/inventory.

7.9 Interaction with Public

The Company strives in every way possible to maintain good relations with the property owner and general public. The actions of the Contractor reflect on the Company; therefore, the Contractor shall give diligent consideration to the interests of property owners, tenants, and the general public, whenever involved,

and shall carry out the work in such a manner as to cause a minimum inconvenience.

The contractor, or his representative, will only respond to inquiries regarding what they are doing, where they are treating, and when they are treating. Copies of appropriate plans or permits may be shown as well. Refer all other inquiries to Company Transmission Forestry staff.

Landowner complaints must be forwarded immediately by telephone to Transmission Forestry staff. The contractor must provide the name, address and telephone number of the major people involved, as well as the complaint or question.

7.10 Demands that a Treatment Operation Cease

Handle demands that a treatment operation cease as follows:

- Immediately remove all personnel, equipment and materials to another property and continue treatments.
- Notify Company Transmission Forestry staff as soon as practical, if not immediately, of a demand that treatment cease. Upon contacting Transmission Forestry, relate the chain of events and current status of the situation.
- Do not return to that site until Company Transmission Forestry staff notified the contractor when and under what circumstances the crew may return.

7.11 Access

Access to the right-of-way shall be limited to public road crossings. Where this is not possible, the Contractor shall obtain permission for the use of private roads, driveways, and other access to the right-of-way from the property owners involved and shall be responsible for any damage thereto. When permission for off right-of-way access cannot be obtained from the property owners involved, and other ingress/egress is unavailable, the Contractor shall notify the Transmission Forester or their designee.

In general, vehicular traffic shall be restricted to a 20-foot wide roadway into and along the right-of-way. When present, existing roads into and along the right-of-way shall be used as the primary access, and maintained in as good or better condition for the duration of the Contractor's use. Additionally, primary ingress and egress on Article VII right-of-ways are restricted to designated access routes. Access to the overall right-of-way is allowed only for selective vegetation maintenance with all terrain spray units, skidder buckets for danger tree removal, and similar right-of-way maintenance activities. Other vehicles must remain on the designated access roads. Appropriate efforts to minimize unnecessary or excessive environmental or vegetation damage are required. Repair or replacement of excessive or unnecessary damage shall be the responsibility of the Contractor.

7.12 Site Conditions

Unreasonable site damage or destruction during any phase of the vegetation management operation by the contractor, his agents or employees, must be repaired immediately to the satisfaction of Company Transmission Forestry staff at no cost to National Grid companies. Company Transmission Forestry staff will determine what constitutes unreasonable site damage.

The Contractor shall leave all culverts, stream fords, fences, gates, walls and roads in the same or better condition as when they commenced their work. Any trees to be removed that have fence wire attached, or that are part of a permanent functional fence, shall be cut off above the top strand of wire. Care shall be taken that all fences and gates are closed or left in such condition that livestock cannot escape. If fences or gates of an active pasture along the right-of-way are in a state of disrepair prior to the start of clearing and could allow livestock to escape, the contract shall attempt to notify both the property owner and the Forester of this condition. Where movement of the Contractor's equipment is required through existing fences, the Contractor shall make appropriate openings and adequate facilities for closing these openings during and after their use.

7.13 Herbicides

Application of herbicides by the Contractor shall conform to the following:

The contractor shall utilize only herbicides, mixture rates and solutions prescribed by Transmission Forestry (Reference Herbicide Mixes listed in the appendix of Right-of-Way Vegetation Management Specifications). Herbicides, adjuvants, carriers and additives are hereinafter collectively referred to as "materials."

7.13.1 Handling, Mixing, Loading and Labeling Herbicide Concentrates

All containers (tanks, gerry jugs, etc.) containing herbicide mixes shall be labeled with the trade name and concentration of each herbicide in the mix.

The majority of the Contractor's handling, mixing and loading of herbicide concentrates is to be done at the contractor's base location. If it is necessary to handle, mix, or load herbicide concentrates at any other location, the contractor is required to comply with herbicide label directions and existing regulations regarding setbacks from sensitive areas and safety precautions.

No handling, mixing, or loading of herbicide concentrates will be done within the buffer zones adjacent to any drinking water supplies or surface waters, or within 100 feet of any other sensitive area. All water to be used to mix herbicide solutions will be secured from a faucet or open bodies of water, which are not drinking water supplies. If pumps are used, they must be equipped with anti-siphoning devices. Pumps and hoses used for water will not be used to pump or mix herbicides. If separate tank trucks are used for supplying water for mixing, the tanks shall never contain any material other than water.

7.13.2 Treatment Width

All treatment operations must be applied to the full cleared width of the right-of-way. Company Transmission Forestry staff will determine whether the full cleared width of the right-of-way has been treated. The contractor must, at his own expense, re-treat the site upon notification by Company Transmission Forestry staff that a treatment was not applied to the full cleared right-of-way width. Re-treatment must be accomplished by using the application method and materials prescribed by Transmission Forestry.

The Contractor shall confine their activities within the limits of the right-of-way, except for danger tree removals and authorized off right-of-way

access. All right-of-way restrictions, noted in the inventory and/or on the drawings, shall be strictly adhered to by the Contractor.

7.13.3 Treatment Effectiveness

Treatments must result in 100% control or removal of all target species greater than or equal to six feet in height. The contractor shall also provide a minimum of 95% control or removal of all target species less than six feet in height. Treatment effectiveness extends over the full 4- to 8-year treatment cycle. Any target species identified as a hazard to the line and shown to have been six feet or taller at the time of treatment shall be subject to this provision. Company Transmission Forestry staff will determine whether a treatment has been effective.

The contractor must, at his own expense, re-treat the site(s) upon notification by Company Transmission Forestry staff that a treatment was ineffective. Re-treatment must be accomplished by using the application method and materials prescribed by Transmission Forestry. Exceptions to this treatment effectiveness standard are limited to trees in yards, special road crossings, landowner treatment sites and must be noted in right-of-way Field Inventory.

7.14 Danger Trees

IVM treatment crews shall routinely check for Danger Trees adjacent to the right-of-way to assess and identify any Hazard Tree conditions. Hazard Tree conditions, or Danger Tree growth approaching Minimum Clearance Distances shall be reported to the Transmission Forester.

7.15 Wetlands and Sensitive Areas

The IVM treatment crew will deploy a cutting crew or point person in advance of the main herbicide application operation to locate and flag the boundaries of these Sensitive Areas and/or the appropriate buffer zones.

7.16 Railroads

Where the Company's right-of-way parallels or crosses railroad property, and the Contractor elects to gain access to the right-of-way from railroad property, they shall be responsible for all applicable rules and regulations pertaining thereto.

The contractor must:

- Obtain a permit or work with National Grid to obtain a permit if required, from the railroad near whose tracks he or she will be treating.

- Check with each railroad near whose tracks he will be treating to ensure that the contractor carries all insurance which the railroad may require. Contact Company Transmission Forestry staff if any problems arise.

- Refrain from beginning a treatment whenever a railroad has failed to provide a flagman or has removed the railroad from service. Contact Company Transmission Forestry staff immediately so that he or she can contact the railroad.

7.17 Native American Lands

The Contractor shall not use herbicides to manage vegetation on Native American reservations without prior, express approval of the Transmission Forester. Where required to complete work upon reservations, the contractor shall employ the designated Native American personnel for the successful completion of the project. The only reservation with a tentative agreement allowing the use of herbicides in New York is the Seneca Reservation in southwest New York.

7.18 Equipment

The contractor crew supervisor or foreman must be equipped with a pager or cellular telephone. The pager or cellular telephone number must be provided to the division control center.

Applicator crews should carry with them at all times a shovel, a broom, heavy-duty plastic bags or other leak-proof container, absorptive clay and activated charcoal.

Contractor's equipment, including backup equipment, must be sufficient to maintain the highest practical level of efficiency and effectiveness. Equipment must be maintained in good visual and working condition.

7.19 Site Restoration

Work shall also include grading, mulching, and reseeding of rutted or scarified soils caused by the Contractor's operations when directed by the Transmission Forester. This shall include repair of all environmental damage, maintenance of stream crossings, wetlands, crop fields, fence lines, etc. which are adversely impacted by the Contractor so as to leave the right-of-way in as good or better condition than found.

Inclusion of the repair of any previously existing environmental damage, including grading, seeding, mulching, stream, culvert and ditch repair, etc. shall be specified at the time of bidding or completed on a Time and Material basis if required.

8.0 Vegetation Management Practices and Procedures

8.1 Practices and Procedures – Maintenance

8.1.1 Right-of-Way Floor Program

A treatment operation generally includes most of the vegetation management methods described below. Herbicide treatments, employing herbicides and treatment methods consistent with the sensitivity of the site, shall be the preferred method of vegetation management. Four methods of herbicide treatments are utilized: basal application, cut stump application and low-volume and high-volume foliar applications.

Treatment is generally carried out in two phases: Preparatory Treatment and Foliar Treatment. These two phases may be carried out separately or simultaneously depending on vegetative conditions or permit requirements for each right-of-way segment.

Company Transmission Foresters identify right-of-way segments to be treated each year in the Annual Work Plan. Field inventories of each right-of-way segment to be treated are completed by Company Transmission

Foresters and provided to the Contractor. Inventory codes used by the Company Transmission Foresters are presented in Appendix 6.

An IVM treatment operation is carried out within a treatment/calendar year. Preparatory treatment is generally completed prior to June 1 so that any vegetation approaching the minimum clearance distance is treated prior to new annual growth. Foliar treatment shall be completed prior to October 1 of each year. Certain sites requiring hand cutting, mowing and/or cut stump treatment may be carried out after October 1.

The contractor shall perform an end-to-end inspection of the right-of-way segment and preparatory treat all vegetation approaching the Minimum Clearance Distance prior to June 1 of a treatment year to assure reliability of the line.

8.1.1.1 Selective Vegetation Management

The Contractor shall treat all incompatible vegetation listed in Appendix 7, Exhibit A (tall growing trees) within the wire zone and border zone of the right-of-way.

The contractor shall treat all incompatible vegetation listed in Appendix 7, Exhibit B (small trees) within the mid-span of the wire zone of the right-of-way, except where the mature height would not approach the minimum clearance distance.

Vegetation listed in Appendix 7, Exhibit B will be retained in the border zone of wider right-of-ways.

Small trees shall also be removed from the wire zone and border zone on narrow right-of-ways such as sub-transmission.

Incompatible hardwood vegetation greater than the height specified below shall be hand cut and stump treated. Incompatible hardwood vegetation less than the height specified below shall be foliar or basal treated. A height limit of 12 feet is applicable for low-volume backpack foliar treatments. A height limit of 16 feet is applicable for high volume or low volume hydraulic foliar treatments (NY only).

Incompatible conifers (except Cedar species) over 2 feet tall (knee-height) shall be hand cut. Only Pitch Pine shall be stump treated. Conifer species less than 2 feet tall shall be foliar treated (except in Mass.).

Cedar species in the border zone over 12 feet tall shall be hand cut. Cedar species in the wire zone over 6 feet tall shall be hand cut (NY only).

8.1.1.2 Non-Selective Vegetation Management

All vines growing on guys, poles and towers shall be treated.

All woody-stemmed species growing within 10 feet of guys, poles and towers shall be cleared and treated using the treatment technique being applied to the surrounding site. Wherever

practicable, grape vines shall be treated with low-volume basal or low-volume foliar method.

All trees and shrubs growing within the established or designated access road(s) along the right-of-way shall be treated to provide an access route 20 feet in width. Where there is no established access road, a route shall be designated and/or approved by the Transmission Forester, and the Contractor shall clear the same. Where multiple improved access roads exist within the right-of-way, the Contractor shall maintain all roads.

Treatments will also extend around the perimeter of any substations (within five feet of fence line) and along short side taps associated with the right-of-way segment.

8.1.1.3 Vegetation Management in Visual Buffers

Where incompatible vegetation, listed in Appendix 7 Exhibits A and B, cannot be removed, generally trees that are visual buffers, in yards and road crossings, said vegetation shall be pruned to the At Time of Vegetation Management clearance distances shown in Section 5.3.1. The specific maintenance technique is specified in the Field Inventory.

8.1.1.4 Vegetation Management in Protective Buffers

The size/dimensions of protective buffers are generally specified in state level plans/permits. Incompatible vegetation in protective buffers is hand cut or mowed as specified in the Field Inventory.

8.1.2 Off Right-of-Way Danger Tree Program

8.1.2.1 Off Right-of-Way Trees

National Grid right-of-ways are generally cleared to their full width consistent with legal real estate rights and/or permits for initial construction of the electric lines. The forested landscape, beyond the maintained right-of-way, contains trees tall enough and close enough to electric conductors to be capable of growing or falling into the lines. These trees are classified as danger trees and hazard trees. National Grid prunes or removes danger trees and hazard trees to reduce the risk of off ROW tree-caused outages. (See Section 3.0 for danger tree and hazard tree definitions.)

Danger trees beyond the cleared width are generally on land belonging to others. In New England, there are generally no rights to remove trees beyond the fee-owned or easement right-of-way. In New York, there generally are rights to remove danger trees beyond the fee-owned or easement right-of-way.

8.1.2.2 Risk to Transmission Lines

Danger trees falling into the lines present the greatest risk of tree-caused outages on transmission circuits. The risk is primarily related to two (2) non-biotic variables: 1) distance from conductor to the adjacent tree line (clear width), and 2) conductor distance above the ground; and three (3) biotic factors: 1) height of trees, 2)

tree species, and 3) tree health and condition. National Grid seeks to mitigate risk of outages from danger trees through site specific management of these variables.

Risk can be quantified using the Optimal Width Calculator (OWC) software licensed to National Grid by Ecological Solutions, Inc. The OWC calculates a Risk Factor based on the variables discussed above. Data has been collected across National Grid's NY 115kV, 230kV and 345kV transmission system to calculate average Risk Factor by voltage class.

8.1.2.3 Ranking by Voltage Class

(1) High voltage transmission lines, 230kV and 345kV, are ranked above lower voltages in terms of allowed risk to the system from trees. These circuits are also subject to the NERC Vegetation Management Standard FAC-003-1. These lines are generally constructed with greater ground clearances and clear widths, resulting in much lower risk of outages from danger trees. The present tree condition and Risk Factors result in very few outages.

(2) Sub-transmission lines, 23kV to 69kV, serve customer load. Tree-caused outages on these circuits contribute to about 4% of customer non-storm SAIFI. Given the contribution to SAIFI, National Grid has prioritized this group of circuits below high voltage (345kV and 230kV) but above 115kV transmission lines.

(3) 115kV transmission lines primarily serve customer load. While customer load is very important to National Grid, tree-caused outages on these lines contribute very little to customer non-storm SAIFI – significantly less than 1%. Risk Factors for 115kV lines clearly reflect the lower conductor height and smaller clear width on these lines (compared to high voltage transmission lines).

8.1.2.4 Prioritization Within Voltage Classes

National Grid determines a Line Importance Factor (LIF) for all 115kV, 230kV, and 345kV circuits. The LIF takes into account impacts to generators, customers, redundancy of supply, etc. The LIF is used to prioritize lines within each voltage class. Historic outages and customer impacts will be used to prioritize off right-of-way danger tree work within the 23kV, 34.5kV, 46kV and 69kV voltage classes.

8.1.2.5 Specification

Off Right-of-Way Danger Tree work will be specified for each right-of-way segment and for each right-of-way edge dependent on voltage class, line importance and vegetation management rights. Work is defined as Level 1, Level 2, etc. These are presented as a hierarchy. Work specified as Level 1 requires work per definition of Level 1. Work specified as Level 2 requires work per Level 2 and Level 1. Level 3 includes Level 2 and Level 1, etc.

- Level 1: Prune (see Section 8.3.2.4) or remove danger trees to achieve At Time of Vegetation Management Clearance distances (see Section 5.3.1). Remove danger trees within the cleared ROW (encroachment). Dead or damaged branches and leaders on off right-of-way danger trees that are capable of falling onto the conductors shall be pruned.

- Level 2: Prune or remove high risk hazard trees.

- Level 3: Prune or remove all hazard trees.

- Level 4: Prune or remove danger trees emergent above the general canopy height. Pruning is the preferred method.

- Level 5: Prune or remove danger trees to specified Risk Factor. Data for Risk Factor calculation shall be measured and documented at least once per five (5) spans.

- Level 6: Remove all trees to a new cleared width (widening) and Level 1, 2, 3, 4, or 5 danger tree work.

8.2 Practices and Procedures – New Construction

Initial clearing of new right-of-ways and clearing of additional width along existing right-of-way generally requires significant land clearing activities. Land clearing generally involves the removal of all trees on the right-of-way. Most of the vegetation management techniques discussed below are employed. In addition, cutting, skidding and chipping of whole trees is generally necessary. In most instances specific job requirements for equipment and degree of clearing are specified in state or federal permits for the construction job.

8.3 Vegetation Management Techniques

8.3.1 Herbicides

8.3.1.1 Basal Application

Apply basal treatments with basal wands. Keep pump pressures at the minimum required to adequately cover the target. When treatments are interrupted by rain, resume the treatment only after the rain ends. Resume treatment at the point where it was interrupted, once it is observed that the lower stem of the target species is predominantly dry.

This method includes the application of an approved herbicide product to the base of the target stem for a distance of up to 18 inches. This method is utilized within sites of higher environmental, aesthetic or public sensitivity where cut and stump treatment would not be as effective in controlling target species.

8.3.1.2 Stump Application (Cut Surface)

After the stem of the target species is cut, apply herbicide with a squirt bottle or backpack sprayer. When treatments are interrupted

by rain, resume the treatment only after the rain ends. Resume treatment at the point where it was interrupted.

This method includes the application of an approved herbicide product to the cut surface and/or stump of a recently cut stem. This method is utilized within sites of higher environmental, aesthetic or public sensitivity.

8.3.1.3 Foliar Application

When applying foliar treatments on the edge of the treatment area, (forest edge, site borders) spray herbicide toward the center of the right-of-way in order to prevent off-site drift.

Keep pump pressures at the minimum required to adequately cover the target. When herbicide treatments are interrupted by rain, resume the treatment only after the rain ends. Resume treatments after active leaf runoff has ended and then re-treat those portions of the site that were treated within approximately four hours before the rain started.

Do not apply foliar treatments during windy periods when spray material has a high propensity to drift or if standing water is present under the target plant during treatment.

High Volume and Low Volume Hydraulic Application

This method includes treatments of water-borne herbicide mixtures, using hydraulic spray tanks, mounted on all-terrain units such as pickup trucks, skidders, tracked units, etc. In addition, the applicator should be within 10 feet of the target plant in order to maximize the accuracy of the application and minimize off-target damage.

Low Volume Backpack Applications

This method includes light and very light applications of more concentrated herbicide mixtures, using hand-operated backpacks, to selectively deliver the herbicide mixture to the target plants.

This method is especially preferred for its highly selective control in areas that are suitable for foliar treatments but not accessible to or appropriate for treatment with hydraulic units.

8.3.2 Mechanical

8.3.2.1 Hand Cutting

Hand cutting is generally the method of choice where herbicides cannot be applied or where incompatible vegetation exceeds certain specified heights (see Section 8.1).

Cut stems parallel to slope as close to the ground as practical. Do not leave stumps that exceed three (3) inches in height.

8.3.2.2 Mowing

Use extreme care in order to provide for the safety of workers and the general public. Provide a buffer to shield operations that are carried out close to residences or high public use areas, and/or employ a knowledgeable person to act as a guard. Cut stumps as close to the ground as practical, making sure that stumps do not exceed three inches in height unless otherwise directed by National Grid Forestry staff.

8.3.2.3 Selective Mowing

Selective mowing shall mean mowing small areas of high-density target species such as extensive Sumac, Buckthorn or Multi-flora Rose, particularly in wire zone mid-spans, or dense woody vegetation encroaching upon roadways or trails to structures.

8.3.2.4 Pruning

Pruning may be required in order to achieve At Time of Vegetation Management clearances between the line conductors and vegetation.

- At designated road crossings, or designated portions of lines along high use public roads.
- Along the edge of the cleared right-of-way where, in order to obtain conductor clearances specified in Section 5.3.1, side pruning or removal of danger trees is required. The pruning and/or removal of danger trees located beyond the limits of the right-of-way is specified on the Field Inventory.
- On designated portions of lines passing through natural preserves, or public or private parks.
- On designated portions of lines passing over ridges or other exposed views of the right-of-way in areas of high aesthetic value.
- In general, along all or part of the route of the line when removal of vegetation is to be minimized consistent with reliable line operation.

Pruning shall be carried on in accordance with the A.N.S.I. A-300 standard.

8.4 Management of Wood and Brush (Slash)

Wood and brush slash may be generated during vegetation management activities. In general, where tree removal or pruning, or mechanized clearing is required, the brush that has been cut (diced) may be left where it falls after being cut so as to lie close to the ground. Length of diced stems or branches should not exceed 10 feet; height of diced slash should not exceed 2 feet.

Near public roads or private roads, residential or commercial areas, parks, streams, on access roads, or in any sensitive areas indicated in the Field Inventory, the brush shall be disposed of by either chipping or removal to a suitable location within the right-of-way and neatly piled, windrowed or dispersed. The site-specific slash disposal method is identified in the Field Inventory.

When chipping is required, the chips may be disposed of by dispersing on site in less sensitive areas. Chips shall be removed in areas of more intense landscape management such as lawns.

Where trees and limbs larger than 4 inches in diameter at the small end are removed and the designated slash disposal is a windrow, the wood shall be neatly piled on the site, taking care not to block any access roads used by either the property owner or the Company. When the authorized slash disposal method is chipping, it may be necessary to remove the larger wood from the site to another approved area of the right-of-way and piled neatly, or moved to an approved off right-of-way disposal site.

No burning of wood or brush will be permitted unless specifically authorized by the Company Transmission Forester.

All species of wild cherry (Prunus serotina, P. virginiana, P. pennsylvanica) that are cut or treated during the growing season can become toxic to livestock during the wilting stage of the leaves. In addition, several species of Maple (Acer) have been identified as toxic to horses in the wilting stage as well. Therefore, Maple and Cherry stems, which are cut or treated in active pastures, shall be immediately removed from the pasture following clearing, or arrangements made with the farmer to utilize alternate pastures until the wilting stage and hazard has passed.

8.5 Mitigation of Impacts

If, during their operations, the Contractor causes any damage to occur to the land such as deep cuts, ruts or scarified areas, which in the opinion of the Transmission Forester could cause future erosion or interfere with access for line maintenance, the Contractor shall re-grade the site to original contours, and seed and mulch as required. Areas that do become rutted or where erosion occurs during sideline program operations will be restored per National Grid companies' policies.

The Contractor shall take reasonable precautions not to remove or damage existing low-growing vegetation, either natural or planted, which are to be preserved on the right-of-way. Where road crossing buffer vegetation, either natural or planted, has been damaged beyond reasonable repair because of the Contractor's negligence, this vegetation will be replaced at the Contractor's expense.

The Contractor shall take care not to rut or scarify the right-of-way for the duration of their operation. All environmental damage resulting from the Contractor's operation shall be permanently repaired at the Contractor's sole expense.

Mobile equipment shall not intrude into road crossing buffers, stream buffer zones or pruning and topping areas, except on designated access routes. When a tree that has been cut must be removed from such an area, it must first be limbed and the brush hand carried to the chipping location or pile site. The trunk wood may be removed by means of a winch line taking adequate care to avoid damaging residual vegetation.

In certain areas, where feasible and advantageous, the Forester may authorize the use of aerial lifts and other specialized equipment, in road crossing buffers for the purpose of pruning trees, and disposal. In no case, however, will any vegetation

be cleared or any new road be authorized, other than the approved access road through the screen to facilitate the use of this equipment.

The Contractor shall take adequate precautions to protect the watercourses and wetlands from pollution and shall avoid disturbing streambeds and banks and the low-growing vegetation protecting them. Felling vegetation in or across streams and watercourses should be avoided. Vegetation that is felled into watercourses shall be removed as soon as practicable. Brush chipping shall be performed in such a manner that the chipped material shall not enter any watercourse or wetland area, nor accumulate in excess of four inches in depth at any location.

8.6 Key Specification Requirements

A summary of key specification requirements for vegetation practices and procedures is presented in Appendix 9.

9.0 Work Precautions

9.1 Safety

As a contractual term, National Grid requires all contractors to comply with all appropriate state and federal safety laws and regulations. This includes applicable sections of the Occupational Safety and Health Act (OSHA) and all worker safety-related statements and instructions on the herbicide label.

It shall be understood and agreed to by the Contractor that herbicide application, hand cutting, pruning and clearing near existing transmission and distribution lines shall be undertaken while lines are presumed to be energized and operating at voltages up to and including 345kV AC and 450kV DC. The Contractor shall provide competent, trained personnel to complete the work.

In order to insure the safety of their employees, the general public and continuity of service in the energized lines, the Contractor shall exercise extraordinary precautions in removing trees and tree limbs that are in such close proximity to the conductors as to constitute a hazard. Such trees shall be pruned, removed with the aid of ropes, equipment, or taken down one section at a time.

National Grid has documented its safety requirements for contractors in the Contractor Safety Requirements, see Appendix 4.

In addition, all vegetation management work shall be carried out in compliance with A.N.S.I. Z133.1, American National Standards Institute, Standard for Arboricultural Operations – Safety Requirements.

9.2 Sensitive Areas

Sensitive Areas are defined as areas on a right-of-way where legal, visual or environmental impacts/concerns require compromises to the general IVM program policy. Sensitive Areas include: Public Surface, Public Well and Private Well Drinking Water Supplies; Lakes, Ponds, Rivers, Streams, and any other surface waters; Wetlands; Endangered Species sites; Agricultural areas including croplands, orchards, tree plantations and animal pastures; Buffers at road

crossings; Buffers at residential and/or commercial yards; and easement restrictions and/or landowner agreements.

These Sensitive Areas have varying legal definitions in each of the states in which National Grid companies have transmission and distribution facilities. Permits for IVM activities in these states vary as well. For purposes of this document, Sensitive Areas and vegetation management within them are discussed in a general way.

In some Sensitive Areas use of herbicides may not be allowed including in Wetlands; Endangered Species sites; Agricultural Areas including croplands, orchards, tree plantations and animal pastures. Hand cutting and limited herbicide applications are generally used in these areas.

The IVM treatment crew will deploy a cutting crew or point person in advance of the main herbicide application operation to locate and flag the boundaries of these Sensitive Areas and/or the appropriate buffer zones.

9.3 Visual and Protective Buffers

Visually and environmentally sensitive sites must be buffered and treated according to procedures and specifications set forth in Sections 8.1.1.3 and 8.1.1.4.

Visual buffers, consist of trees and/or shrubs, screen the general public from potentially objectionable views of structures and substations. They may be maintained at Road Crossings, Recreational Areas, Residential or Commercial Yards. Specific dimensions for visual buffers may be set by State regulations and/or permit conditions and/or National Grid company policy.

Use shrub buffers on most road crossings or on vantage points where a visual screen is determined to be desirable. Utilize tree/shrub buffers only when legally required or where sites are extremely sensitive visually and shrub growth is inadequate for screening.

Protective buffers are established to protect a sensitive area from herbicide deposition. In most instances no herbicides can be applied within these Protective Buffers. In some instances herbicides may be applied under certain conditions. Hand cutting or mowing is the primary vegetation management method used in these buffers.

9.4 Weather

Herbicide application will be restricted during certain adverse weather conditions such as rain, wind or deep snow.

Herbicide applications will not be made during periods of moderate or heavy rainfall.

Foliar applications are effective in light mist situations; however, any measurable rainfall that creates leaf runoff will wash the herbicide off the target. If foliar applications are interrupted by unexpected rainfall, the treatment will not resume until the rain ends and active leaf runoff has ceased.

Basal applications are ineffective during measurable rainfall. Basal applications that are interrupted by rainfall will not be resumed until at least fifty percent of the application zone of the target species is dry.

Excessive wind can create drift during foliar applications. Significant herbicide drift can cause damage to desirable vegetation on or off the right-of-way. Basal or cut-stump treatments are much less affected by wind because they are applied in such close proximity to the ground.

To prevent any significant off-target drift of herbicides, the applicator will comply with the following restrictions:

a. During periods of wind, which are strong enough to bend the tops of the main stems of tree species on the right-of-way, the contractor crew supervisor will periodically observe the application of the foliar treatment to insure that there is no significant movement of the herbicide solution. If the supervisor can see the solution moving off target, applications will immediately stop until the wind has subsided enough to permit further applications.

b. All herbicide solutions to be used for a foliar application will contain low-drift agents. Low-drift agents will be added to the foliar herbicide solution as per the low-drift agent label.

c. Foliar treatments will not be applied to target vegetation that exceeds approximately twelve feet in height for backpack applications and sixteen feet in height for hydraulic applications.

9.5 Wetlands

IVM methods using herbicides on right-of-ways in wetlands have come to be accepted in several states. Tall growing trees generally only occur in wooded swamps, areas that are dry for long enough periods each year to support tree growth. Emergent wetlands including: wet meadows, cattail swamps, shrub swamps and bogs, generally do not support tree growth and; therefore, do not require management of vegetation. Occasional high ground or hummocks within emergent wetlands may support tree growth and are hand cut. In addition, herbicide use within wetlands is always limited by the presence of surface water including: lakes, ponds, rivers, streams, seasonal ponds and streams, and flood storage following heavy rainfall. These buffer zones clearly prevent use of herbicides within or in close proximity to surface water.

Herbicide use in wetlands, therefore, is generally limited to wooded swamps where no standing water is present. State regulations and permits specify restrictions on herbicide use.

10.0 Inspections

10.1 Ground Patrols

Transmission Forestry and/or contractor personnel carry out a ground-based patrol one time per year on 230kV and 345kV right-of-ways. The procedure for ground patrols is included in Appendix 8.

In addition to the annual ground patrol above, Transmission Forestry and/or contractor personnel carry out a ground patrol one time per Right-of-Way Floor Program maintenance cycle, 4 to 8 years.

Information collected during ground patrols and corrective actions are entered into the Transmission Forestry Ground Patrol forms and the Ground and Aerial Patrol spreadsheet, located on the Transmission Forestry shared drive.

10.2 Aerial Helicopter Patrols

Transmission Forestry personnel carry out an aerial patrol one time per year on all 230kV and 345kV right-of-ways. Transmission Forestry personnel carry out aerial patrols on all 115kV in New York and 69kV and 115kV right-of-ways in New England one time every two years (generally one-half of the circuits are patrolled annually).

Information collected during aerial patrols and corrective actions are entered into the Transmission Forestry Ground and Aerial Patrol spreadsheet, located on the Transmission Forestry shared drive.

10.3 Line Department Aerial Patrols

Line Department personnel carry out periodic ground patrols and annual aerial patrols of all 115kV and higher circuits in NY and 69 kV and higher circuits in NE.

10.4 Observed Conditions

Forestry personnel observe all aspects of vegetation conditions: vegetation growth, clearance, danger trees, and efficacy of work by contractors. Line Department personnel primarily only report vegetation conditions where clearance is approaching the Minimum Clearance distance and observed hazard trees.

10.5 Follow-up to Patrols

Vegetative conditions found in non-compliance with Clearance 1 or Clearance 2 (see section 5.3.1 and 5.3.2), and any hazard tree conditions that present a threat to the transmission system, shall be mitigated within one week of observation. Any conditions found to be an imminent threat will be reported per Section 5.2.2 and mitigated as soon as possible.

11.0 Monitoring and Measurement

National Grid's Vegetation Management Program is subject to various types and levels of audits in order to ensure compliance with environmental laws and regulations, its Environmental Management System, and to its operating procedures including this VMP.

11.1 National Grid Environmental and Safety Audit Programs

National Grid's Environmental Safety and Audit Program is administered by the Legal Department and is documented on the National Grid Infonet.

11.2 Environmental Performance

National Grid's environmental performance, as reported publicly, is audited both internally and by outside parties. National Grid's Vegetation Management

Program and the VMP are referenced in the Company's Environmental Management Systems (EMS). The EMS is ISO 14001 Registered.

11.3 Monitoring of Contractors

Transmission Foresters conduct periodic inspections of contractors and their work, utilizing various contractor inspection forms, including but not limited to Key Performance Indicators (KPI) and/or Compliance Assessments.

11.4 NERC Audits

National Grid will commit all necessary resources in order to fully participate in any audits conducted by NERC at three-year intervals or as so desired by NERC, the NPCC or its designee.

11.5 Self-Certification of Annual Work Plan

National Grid will annually determine whether the requirements of the Annual Work Plan have been fulfilled and will self-certify to that effect to NERC, NPCC or its designee as required.

12.0 Records

Transmission Forestry records/systems are maintained such that they are:

- Legible,
- Identifiable and traceable to the activity,
- Can be readily retrieved and stored in a protective manner, and
- Retention times as specified.

Transmission records and retention times are indicated in the table below.

Document/System	Retention Time (as applicable)
Correspondence with Landowners	Permanently
Correspondence with Municipalities and Regulators	Permanently
Massachusetts Right-of-Way Yearly Operational Plan	Permanently
Transmission Forestry Right-of-Way Vegetation Management Specification	Permanently
Massachusetts Five Year Right-of-Way Vegetation Management Plan	Permanently
Transmission Right-of-Way Management Program (New York Part 84 Plan)	Permanently
Transmission Group Procedure 25 (TGP25)	Permanently
Forestry GIS	Maintain current version on an ongoing basis
Invoices/Contractor Daily Progress Report	6 years
Landowner Agreements	Permanently
ROW Inventory Reports	Maintain versions on an ongoing basis
Spill Forms	1 year
Ground Patrol and Aerial Patrol Inspection Data	5 years

Appendix 1
NERC FAC-003-1

Standard FAC-003-1 — Transmission Vegetation Management Program

A. Introduction

1. **Title:** **Transmission Vegetation Management Program**
2. **Number:** FAC-003-1
3. **Purpose:** To improve the reliability of the electric transmission systems by preventing outages from vegetation located on transmission rights-of-way (ROW) and minimizing outages from vegetation located adjacent to ROW, maintaining clearances between transmission lines and vegetation on and along transmission ROW, and reporting vegetation-related outages of the transmission systems to the respective Regional Reliability Organizations (RRO) and the North American Electric Reliability Council (NERC).
4. **Applicability:**
   - **4.1.** Transmission Owner.
   - **4.2.** Regional Reliability Organization.
   - **4.3.** This standard shall apply to all transmission lines operated at 200 kV and above and to any lower voltage lines designated by the RRO as critical to the reliability of the electric system in the region.
5. **Effective Dates:**
   - **5.1.** One calendar year from the date of adoption by the NERC Board of Trustees for Requirements 1 and 2.
   - **5.2.** Sixty calendar days from the date of adoption by the NERC Board of Trustees for Requirements 3 and 4.

B. Requirements

R1. The Transmission Owner shall prepare, and keep current, a formal transmission vegetation management program (TVMP). The TVMP shall include the Transmission Owner's objectives, practices, approved procedures, and work specifications[1].

R1.1. The TVMP shall define a schedule for and the type (aerial, ground) of ROW vegetation inspections. This schedule should be flexible enough to adjust for changing conditions. The inspection schedule shall be based on the anticipated growth of vegetation and any other environmental or operational factors that could impact the relationship of vegetation to the Transmission Owner's transmission lines.

R1.2. The Transmission Owner, in the TVMP, shall identify and document clearances between vegetation and any overhead, ungrounded supply conductors, taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. Specifically, the Transmission Owner shall establish clearances to be achieved at the time of vegetation management work identified herein as Clearance 1, and shall also establish and maintain a set of clearances identified herein as Clearance 2 to prevent flashover between vegetation and overhead ungrounded supply conductors.

R1.2.1. Clearance 1 — The Transmission Owner shall determine and document appropriate clearance distances to be achieved at the time of transmission vegetation management work based upon local conditions and the expected time frame in which the Transmission Owner plans to return for future

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[1] ANSI A300, Tree Care Operations – Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices, while not a requirement of this standard, is considered to be an industry best practice.

vegetation management work. Local conditions may include, but are not limited to: operating voltage, appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species types and growth rates, species failure characteristics, local climate and rainfall patterns, line terrain and elevation, location of the vegetation within the span, and worker approach distance requirements. Clearance 1 distances shall be greater than those defined by Clearance 2 below.

R1.2.2. Clearance 2 — The Transmission Owner shall determine and document specific radial clearances to be maintained between vegetation and conductors under all rated electrical operating conditions. These minimum clearance distances are necessary to prevent flashover between vegetation and conductors and will vary due to such factors as altitude and operating voltage. These Transmission Owner-specific minimum clearance distances shall be no less than those set forth in the Institute of Electrical and Electronics Engineers (IEEE) Standard 516-2003 (*Guide for Maintenance Methods on Energized Power Lines*) and as specified in its Section 4.2.2.3, Minimum Air Insulation Distances without Tools in the Air Gap.

R1.2.2.1 Where transmission system transient overvoltage factors are not known, clearances shall be derived from Table 5, IEEE 516-2003, phase-to-ground distances, with appropriate altitude correction factors applied.

R1.2.2.2 Where transmission system transient overvoltage factors are known, clearances shall be derived from Table 7, IEEE 516-2003, phase-to-phase voltages, with appropriate altitude correction factors applied.

R1.3. All personnel directly involved in the design and implementation of the TVMP shall hold appropriate qualifications and training, as defined by the Transmission Owner, to perform their duties.

R1.4. Each Transmission Owner shall develop mitigation measures to achieve sufficient clearances for the protection of the transmission facilities when it identifies locations on the ROW where the Transmission Owner is restricted from attaining the clearances specified in Requirement 1.2.1.

R1.5. Each Transmission Owner shall establish and document a process for the immediate communication of vegetation conditions that present an imminent threat of a transmission line outage. This is so that action (temporary reduction in line rating, switching line out of service, etc.) may be taken until the threat is relieved.

R2. The Transmission Owner shall create and implement an annual plan for vegetation management work to ensure the reliability of the system. The plan shall describe the methods used, such as manual clearing, mechanical clearing, herbicide treatment, or other actions. The plan should be flexible enough to adjust to changing conditions, taking into consideration anticipated growth of vegetation and all other environmental factors that may have an impact on the reliability of the transmission systems. Adjustments to the plan shall be documented as they occur. The plan should take into consideration the time required to obtain permissions or permits from landowners or regulatory authorities. Each Transmission Owner shall have systems and procedures for documenting and tracking the planned vegetation management work and ensuring that the vegetation management work was completed according to work specifications.

R3. The Transmission Owner shall report quarterly to its RRO, or the RRO's designee, sustained transmission line outages determined by the Transmission Owner to have been caused by vegetation.

R3.1. Multiple sustained outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.

R3.2. The Transmission Owner is not required to report to the RRO, or the RRO's designee, certain sustained transmission line outages caused by vegetation: (1) Vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters shall not be considered reportable (examples of disasters that could create non-reportable outages include, but are not limited to, earthquakes, fires, tornados, hurricanes, landslides, wind shear, major storms as defined either by the Transmission Owner or an applicable regulatory body, ice storms, and floods), and (2) Vegetation-related outages due to human or animal activity shall not be considered reportable (examples of human or animal activity that could cause a non-reportable outage include, but are not limited to, logging, animal severing tree, vehicle contact with tree, arboricultural activities or horticultural or agricultural activities, or removal or digging of vegetation).

R3.3. The outage information provided by the Transmission Owner to the RRO, or the RRO's designee, shall include at a minimum: the name of the circuit(s) outaged, the date, time and duration of the outage; a description of the cause of the outage; other pertinent comments; and any countermeasures taken by the Transmission Owner.

R3.4. An outage shall be categorized as one of the following:

R3.4.1. Category 1 — Grow-ins: Outages caused by vegetation growing into lines from vegetation inside and/or outside of the ROW;

R3.4.2. Category 2 — Fall-ins: Outages caused by vegetation falling into lines from inside the ROW;

R3.4.3. Category 3 — Fall-ins: Outages caused by vegetation falling into lines from outside the ROW.

R4. The RRO shall report the outage information provided to it by Transmission Owner's, as required by Requirement 3, quarterly to NERC, as well as any actions taken by the RRO as a result of any of the reported outages.

C. Measures

M1. The Transmission Owner has a documented TVMP, as identified in Requirement 1.

M1.1. The Transmission Owner has documentation that the Transmission Owner performed the vegetation inspections as identified in Requirement 1.1.

M1.2. The Transmission Owner has documentation that describes the clearances identified in Requirement 1.2.

M1.3. The Transmission Owner has documentation that the personnel directly involved in the design and implementation of the Transmission Owner's TVMP hold the qualifications identified by the Transmission Owner as required in Requirement 1.3.

M1.4. The Transmission Owner has documentation that it has identified any areas not meeting the Transmission Owner's standard for vegetation management and any mitigating measures the Transmission Owner has taken to address these deficiencies as identified in Requirement 1.4.

M1.5. The Transmission Owner has a documented process for the immediate communication of imminent threats by vegetation as identified in Requirement 1.5.

M2. The Transmission Owner has documentation that the Transmission Owner implemented the work plan identified in Requirement 2.

M3. The Transmission Owner has documentation that it has supplied quarterly outage reports to the RRO, or the RRO's designee, as identified in Requirement 3.

M4. The RRO has documentation that it provided quarterly outage reports to NERC as identified in Requirement 4.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

RRO

NERC

1.2. Compliance Monitoring Period and Reset

One calendar Year

1.3. Data Retention

Five Years

1.4. Additional Compliance Information

The Transmission Owner shall demonstrate compliance through self-certification submitted to the compliance monitor (RRO) annually that it meets the requirements of NERC Reliability Standard FAC-003-1. The compliance monitor shall conduct an on-site audit every five years or more frequently as deemed appropriate by the compliance monitor to review documentation related to Reliability Standard FAC-003-1. Field audits of ROW vegetation conditions may be conducted if determined to be necessary by the compliance monitor.

2. Levels of Non-Compliance

2.1. Level 1:

2.1.1. The TVMP was incomplete in one of the requirements specified in any subpart of Requirement 1, or;

2.1.2. Documentation of the annual work plan, as specified in Requirement 2, was incomplete when presented to the Compliance Monitor during an on-site audit, or;

2.1.3. The RRO provided an outage report to NERC that was incomplete and did not contain the information required in Requirement 4.

2.2. Level 2:

2.2.1. The TVMP was incomplete in two of the requirements specified in any subpart of Requirement 1, or;

2.2.2. The Transmission Owner was unable to certify during its annual self-certification that it fully implemented its annual work plan, or documented deviations from, as specified in Requirement 2.

2.2.3. The Transmission Owner reported one Category 2 transmission vegetation-related outage in a calendar year.

2.3. Level 3:

2.3.1. The Transmission Owner reported one Category 1 or multiple Category 2 transmission vegetation-related outages in a calendar year, or;

2.3.2. The Transmission Owner did not maintain a set of clearances (Clearance 2), as defined in Requirement 1.2.2, to prevent flashover between vegetation and overhead ungrounded supply conductors, or;

2.3.3. The TVMP was incomplete in three of the requirements specified in any subpart of Requirement 1.

2.4. Level 4:

2.4.1. The Transmission Owner reported more than one Category 1 transmission vegetation-related outage in a calendar year, or;

2.4.2. The TVMP was incomplete in four or more of the requirements specified in any subpart of Requirement 1.

E. Regional Differences

None Identified.

Version History

Version	Date	Action	Change Tracking
Version 1	TBA	1. Added "Standard Development Roadmap." 2. Changed "60" to "Sixty" in section A, 5.2. 3. Added "Proposed Effective Date: April 7, 2006" to footer. 4. Added "Draft 3: November 17, 2005" to footer.	01/20/06

Appendix 2
National Grid Forester and Control Center Contact Information

Contact	Location	Telephone Number
NE Control Center	Northboro, MA	(800) 423-6029
NY Control Centers:	West	(716) 831-7225
	Central	(315) 460-2395
	East	(518) 356-6471

Transmission Call-in:	System	(508) 421-7452
Ryan Blothenburg	Fredonia, NY	(716) 673-7216
Jeremiah (JT) Carroll	Albany, NY	(518) 433-3320
John Cookson	Lebanon, NH	(603) 443-4276
Kenneth Kirkman	Syracuse, NY	(315) 428-5273
Jason Magoon	Worcester, MA	(508) 860-6212
Teri Niedzielski	Utica, NY	(315) 798-5345
Mariclaire Rigby	Waltham, MA	(781) 907-2442
Dawn Travalini	Waltham, MA	(781) 907-2448
Injury Hotline	System	(866) 322-5594

Appendix 3
National Grid Environmental Policy

National Grid and the environment

We, at National Grid, will be the foremost international electricity and gas company, delivering unparalleled safety, reliability and efficiency, vital to the wellbeing of our customers and communities.

We are committed to being an innovative leader in energy management and to safeguarding our global environment for future generations.

Investing in, and operating a safe, and reliable gas and electricity supply network uses energy and raw materials, and produces waste. Our effect on the environment and the communities we serve depends on how we and our supply chain work.

We will face these challenges by deploying best practice throughout our operations, by engaging on national and international energy issues and by supporting renewable energy targets. We will show leadership by working with others to deliver a more sustainable future.

We are committed to:

- reducing the effect our activities have on the environment by considering whole life environmental costs and benefits in our business decisions
- using resources efficiently through good design, using sustainable materials, responsibly refurbishing existing assets, and reducing and recycling waste
- reducing the effect our business has on climate change by decreasing our emissions of greenhouse gases by 45% by 2020 and by 80% by 2050
- respecting the environmental status and biodiversity of the places we work, aiming to enhance areas for the benefit of local communities or the natural environment
- managing the risks associated with sites where we have responsibility for dealing with contamination associated with past operations
- helping consumers reduce their dependency on fossil fuels by giving them access to more sustainable energy and through innovative energy efficiency programmes
- working with governments and regulators to help them develop and deliver more effective environmental polices and targets
- continually improving our management systems to prevent pollution, reduce the risk of environmental incidents, and comply with environmental laws, policies, charters and other commitments to which we subscribe
- making sure that our employees have the training, skills, knowledge and resources they need to meet our environmental commitments
- openly sharing our performance with employees, members of the public and others, and giving them the opportunity to comment on our performance
- requiring those working on our behalf to demonstrate at least the same level of commitment to the environment and creating a culture where best practice can be shared.

Steve Holliday
Chief Executive

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April 2009

Appendix 4
National Grid Contractor Safety Requirements

National Grid's Contractor Safety Requirements
Section 9.0 Forestry and Vegetation Management

(The extract below is from version 5 of the National Grid Safety Procedure-Contractor Safety Requirements. The entire Contractor Safety Requirements document can be found within individual Vegetation Management contracts.)

9.0 FORESTRY AND VEGETATION MANAGEMENT

Applies to: All contractors, as-needed.

In addition to the other requirements referenced in this document, this section covers requirements that are specific to vegetation management work.

9.1 PPE Requirements

Applies to: All contractors, as-needed.

1. For work along roads and other areas of vehicular traffic, contractors shall wear high visibility clothing or vests as referenced in section 4.0 and in addition to other PPE appropriate to the work.

2. Flame Resistant Clothing is not required per the OSHA applicable Forestry standard. Forestry contractors must instead wear natural fiber clothing when working within 10 feet of energized equipment.

3. Forestry contractors must wear a properly adjusted full-body fall protection harness connected to an appropriate lanyard when working from an aerial lift. The lanyard must connect to an attachment anchored to either the boom or bucket mounting hardware. Attachment points anchored through only the fiberglass portion of the bucket are not acceptable.

4. Forestry contractors will be required to wear chaps while operating a chainsaw or when assisting and/or working in close proximity to a chainsaw that is being operated.

5. Saws shall not be left unattended with the engine running.

6. When a contractor employee carries a saw, the engine shall be off and/or covered or the saw shall be carried with the blade to the rear and locked.

9.2 Equipment and Work Methods

Applies to: All contractors, as-needed.

1. Forestry contractors will be required to utilize fiberglass sticks and stick saws for work around energized equipment and to test/document their integrity annually. Test results and expirations shall be available on each vehicle as needed.

2. Forestry contractors will be required to perform and document dielectric testing of all aerial units annually. Test results and expirations shall be available on each vehicle as needed.

3. For lump sum or unit price mileage trimming projects, a single foreman may supervise up to four (4) bucket trucks on the same project. However, in that case the minimum qualifications for the "lead" person on each of the other trucks shall be a Journeyman Tree Trimmer or equivalent (Qualified Line Clearance Tree Trimmer). At least one other employee on the truck shall be an OSHA defined, Qualified Line Clearance Tree Trimmer Trainee.

4. By April 1st of each year, the contractor shall provide a list of employees that could reasonably be expected to work on National Grid property. This listing shall include:

   • identify the current pay classification of each employee,
   • the date of their progression to their current pay level,
   • the dates each employee completed each level of the contractor line clearance tree trimmers training program,
   • the dates each employee completed their required OSHA safety and other training, or retraining, including any annual refreshers,
   • the date each employee last demonstrated their tree rescue and climbing proficiency where applicable
   • the date each employee completed CPR and first aid training,
   • Identify each certified pesticide applicator, their certification number and category certified.

9.3 Training

Applies to: All contractors, as-needed.

1. Forestry contractor management will be required to attend safety council meetings hosted by National Grid as required. The contractor will ensure that all appropriate safety personnel for theNational Grid territory are in attendance.

2. Forestry contractors shall implement and provide the required training and certification programs necessary to provide OSHA defined Qualified Line Clearance Tree Trimmers or Qualified Line Clearance Tree Trimmer Trainees. Forestry contractors will be required to provide an updated Health & Safety Plan (HASP) by April 1st of each year for all work being conducted at National Grid.

3. All contractors using ATV's for transmission or Forestry work, are required to follow all local OHRV requirements for PPE and Driving safety

9.4 Herbicide Applications

Applies to: All contractors, as-needed.

Forestry contractor requirements for vegetation spraying are referenced under the Substations Work section 7.4 of this document.

Appendix 5
Notification Materials

Important Information for Homeowners Along Transmission Rights-of-Way

Our Vegetation Management Department will soon carry out routine maintenance on the electricity transmission right-of-way on or adjacent to your property.

A variety of Integrated Vegetation Mangement (IVM) methods will be used, including hand cutting, mowing and selective herbicide application, and will be implemented by our licensed and experienced contractors.

IVM is essential to provide safe and reliable delivery of electricity. It prevents tall-growing vegetation from growing into the overhead lines.

In addition, we manage vegetation to allow access to the lines for routine maintenance and for restoration of electric service following major storms.

By implementing IVM methods, we create stable, low-growing plant communities that require minimal maintenance and disruption of the environment. These plant communities provide a healthy wildlife habitat, especially for those animals requiring open fields, meadows and shrubs.

Use of herbicides within our IVM approach is regulated by federal and state statutes and regulations.

These requirements protect sensitive areas such as:

- surface water supplies
- wetlands
- public and private wells
- visually sensitive sites near roads and residences

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The work takes place in up to four phases:

- Crews hand cut tall hardwood and conifer trees within the right-of-way, and identify appropriate buffers surrounding public water supplies, private wells, streams, ponds, lakes and residences.
- Crews treat the stumps of cut hardwood trees with herbicide to prevent re-sprouting.
- Selective foliar (leaf) application of herbicides, primarily to hardwood trees, takes place while leaves are on the trees.
- Work at roads and yards is carried out throughout the year.

If you have any questions/concerns, or a private water supply well within 100 feet of the right-of-way, please contact the contractor representative below.

The contractor doing the work in your area is:

_____

The contractor's representative is:

_____

and may be contacted at:

_____

The electric company identification for the right-of-way is:

_____

We at National Grid believe our IVM approach to right-of-way vegetation management is the most environmentally friendly and customer-friendly way to accomplish this necessary task. We would be happy to answer any questions you may have as the work is carried out.

This is an important notice. Please have it translated.

Este é um aviso importante. Queira mandá-lo traduzir.
Este es un aviso importante. Sírvase mandarlo traducir.
Avis important. Veuillez traduire immediatement.
ĐÂY LÀ MỘT BẢN THÔNG CÁO QUAN TRỌNG XIN VUI LÒNG CHO DỊCH LẠI THÔNG CÁO ẤY
Questa è un' informazione importante, si prega di tradurla.
Это очень важное сообщение. Пожалуйста, попросите чтобы вам его перевели.

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CM4713 5/10

Important Information for Homeowners Along Transmission Rights-of-Way

Our Vegetation Management Department will soon carry out selective side pruning and/or "danger tree" removal along the electric transmission right-of-way on or adjacent to your property. Our goal is to ensure safe and reliable delivery of electricity. The work will be completed by licensed and experienced contract tree crews.

Side pruning procedures consist of tree crown reduction and/or selective pruning of branches from trees growing along the right-of-way corridor posing an immediate or potential threat to the lines. In such cases, pruning is performed by removing tree limbs to produce a "rolled back" effect, directing tree growth away from the line.

Danger trees are defined as a tree on or off the right-of-way that if were cut or failed could contact electric lines. While we aim to selectively prune rather than remove trees, removal may be necessary when a danger tree poses a direct threat.

As the work is carried out, crews attempt to reduce visual impacts as much as possible. Cut tree branches are diced close to the ground and left to decompose. Stumps are left as low as possible. Logs are cut and piled along the right-of-way edge following danger tree removal. As a result, aesthetic quality is maintained to the greatest extent possible.

National Grid makes every reasonable effort to notify nearby residents of all vegetation management activities.

continued on back

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The contractor doing the work in your area is:

_____

The contractor's representative is:

_____

and may be contacted at:

_____

The electric company identification for the right-of-way is:

_____

If you have any questions/concerns, please contact the contractor representative above.

This is an important notice. Please have it translated.

Este é um aviso importante. Queira mandá-lo traduzir.
Este es un aviso importante. Sírvase mandarlo traducir.
Avis important. Veuillez traduire immediatement.

ĐÂY LÀ MỘT BẢN THÔNG CÁO QUAN TRỌNG
XIN VUI LÒNG CHO DỊCH LẠI THÔNG CÁO ẤY

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Это очень важное сообщение. Пожалуйста, попросите чтобы вам его перевели.

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Work is scheduled for the transmission line right-of-way that is adjacent to or crosses your property.

This brochure provides landowners with information about vegetation maintenance activities used by National Grid.

National Grid endeavors to promote safety near transmission lines and respect the property of others by providing notification of our activities and by addressing landowner concerns as they arise.

National Grid

National Grid provides the transmission of electric power to 3.5 million customers across New York State and New England.

Vegetation maintenance is critical to ensuring electric reliability and safety.

Regular patrols and periodic maintenance help to keep the lines free of vegetation that could potentially cause a power outage or endanger persons living or working near electric transmission lines.

Still have questions? Contact our local Transmission Forester at:

_____

Or e-mail us at:
transmissionforestry@us.ngrid.com

This is an important notice.
Please have it translated.

Este é um aviso importante. Queira mandá-lo traduzir.
Este es un aviso importante. Sírvase mandarlo traducir.
Avis important. Veuillez traduire immédiatement.
Questa è un' informazione importante, si prega di tradurla.
ĐÂY LÀ MỘT BẢN THÔNG CÁO QUAN TRỌNG
XIN VUI LÒNG CHO DỊCH LẠI THÔNG CÁO NÀY
**Это очень важное сообщение.
Пожалуйста, попросите чтобы
вам его перевели.**

OM4729 5/10 Printed on recycled paper

Information for Landowners Along Our Transmission Lines

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Transmission Line Rights-of-Way

National Grid has the legal responsibility to provide safe and reliable electric service. In both New York and New England, public service laws establish responsibility and accountability for providing efficient, safe and reliable power within certain quality parameters.

Trees & Transmission Lines

Trees and transmission lines are not compatible. Trees that grow too close to electric transmission lines can conduct electricity and provide a path to ground potentially causing an outage and other significant consequences. Trees do not have to physically touch an energized power line to be dangerous. Electricity can arc or jump, from a power line to nearby vegetation.

In addition to causing an outage, this can also cause a wildfire and is very dangerous. Electric current flowing through a tree can electrocute anyone in close proximity.

Therefore, assuring trees remain clear of transmission lines is not only vital for service reliability, it is a crucial public and worker safety issue.

Right-of-Way Floor Vegetation Management

National Grid utilizes a program called Integrated Vegetation Management (IVM) to establish and foster low-growing vegetative plant communities that, in turn, require minimal maintenance and create numerous benefits for the environment.

National Grid uses herbicides to selectively remove tall-growing tree species from the rights-of-way. The remaining low-growing plant communities provide a stable vegetative cover resistant to the re-establishment of tall-growing vegetation. This also provides improved access, erosion control and improved wildlife habitat.

The IVM program focuses on complete removal of tall-growing vegetation. Pruning or topping vegetation is a short term measure that does not provide the same benefits as removal. Topped vegetation poses a higher risk to reliability, safety and does nothing to foster a stable, desirable plant community as the topped trees vigorously sprout back and shade out the desirable plants.

Right-of-Way Edge Danger Tree Program

Our goal is to continually improve service reliability. To this end, trees that are growing along the edges of the right-of-way corridors are periodically pruned or removed.

Targeted edge trees are those with hazardous structural defects (e.g., cracks, cavities, decay, poor limb attachments) or are species with a history of failure (e.g., poplars, white pine). Research and experience have shown that it is prudent to remove these trees before they cause an outage.

As the work is carried out, our crews will make every reasonable attempt to protect private property. Disruption to livestock, roadways, soil, fences and gates are avoided as much as possible. Any damages are repaired within a reasonable amount of time after the disturbance.

Cut tree branches are diced close to the ground and left to decompose. Stumps are cut as low to the ground as practicable. Any useable wood, such as larger limbs and/or logs, remains along the right-of-way edge for the landowner.

Landowner Use of Transmission Rights-of-Way

Land uses such as cropland, gardens, lawns, pastureland and planting of low-growing trees and shrubs are compatible with our transmission line rights-of-way. These land uses are allowable and welcomed by National Grid. In-fact, the company has a list of low-growing plants that can be planted by land owners on electric rights-of-way that can be found on our website, **www.nationalgridus.com/trees**.

Unauthorized use of National Grid's transmission rights-of-way such as planting tall growing trees, cutting or pruning trees, constructing structures, stockpiling materials, excavating or operating heavy equipment all pose a threat to reliability as well as personal and public safety. Unauthorized use could result in the removal of structures or other personal property at the expense of the property owner.

We ask that prior to engaging in such activities on our transmission rights-of-way that landowners contact National Grid to discuss and review the proposed activity. This courtesy notification could prevent future dangerous conflicts with the electric transmission line and possibly save a life.

Landowner Cooperation

Landowner cooperation is critical to the success of National Grid's vegetation management programs. In order to keep its transmission corridors safe and to prevent injury, property damage, environmental damage and unauthorized use of rights-of-way, National Grid must cooperate with property owners for crew access, maintenance activities, tree removal and security.

This cooperation is a two way street. It is important for National Grid to understand property owners' needs and sensitivities. At the same time property owners need to understand the company's requirements and responsibilities.

Appendix 6
Inventory Codes

The Transmission Right-of-Way Inventory

1. Inventory Method

The Transmission Foresters shall ensure a detailed site-by-site inventory is completed for each electric line right-of-way scheduled for regular maintenance either prior to or at the time of actual treatment. Currently, the Forester completes the inventories in advance of actual treatment, but in the future, treatment crews may be able to accurately report equivalent field inventory data at the time of treatment, using advanced information technology and handheld geo-referenced systems. Since gas right-of-ways are generally maintained by mowing, inventories for these right-of-ways are not necessary.

2. Purpose of the Site-by-Site Inventory

A site is an area within the right-of-way that consists of a common land use pattern or characteristic, or that requires a unique and different treatment method from adjacent areas. Each site may be as large or small as a land use or treatment method requires. The smallest reportable site shall be a tenth of an acre.

The purpose of the inventory is to thoroughly assess site-by-site field conditions, accurately document desirable and undesirable vegetation conditions, insure the assignment of the appropriate prescriptive treatment methods, and record herbicide use requirements. The inventory also identifies special landowner concerns or sensitive site conditions.

3. Inventory Records

The inventory data is presently collected using handheld data envy systems to record site-specific data. Data collected through the inventory process is then transferred to the master program and summarized for a variety of reports that are used within the maintenance program.

The items documented in the site-by-site inventory include:

a) Location: The inventory shall describe the site in relation to the adjacent structures, assigning a unique management site number to each site. A management area shall be an area of similar vegetation components that warrant a common management technique.

b) Land use: The inventory shall identify the right-of-way and/or adjacent land use categories for each site, together with the site sensitivities that influence the management technique that is selected. In the event of multiple uses or sensitivities, the category having the greatest influence on the maintenance method chosen should be assigned. The special note area can be used to further describe and define sensitivities.

The land use codes have remained unchanged from the beginning of the program, which has allowed for consistent review and performance assessment over the last 23 years. The land use code for a particular site is a combination of numbers assigned to represent the land use activity, height, and density class of undesirables requiring treatment and the density of the retained shrub community.

The land use categories are:

Land use (in the thousands position)
- 1000 – Streams
- 2000 - Wetlands
- 3000 - Road Crossings
- 4000 – Commercial/Industrial
- 5000 - Residential
- 6000 – Active Cropland
- 7000 - Active Pasture
- 8000 - Brush Lands
- 9000 – Woodlands

Height - Undesirable, taller growing species (in the hundreds position)
- 000 - no height
- 100 - small (less than 6 ft.)
- 200 - medium (6 to 12 ft.)
- 300 - tall (over 12 ft.)

Density - Undesirables (in the tens position)
- 00 - no density
- 10 - very light (generally less than 100 stems acre)
- 20 - light (up to 30% canopy cover, and 100 to 1,500 stems/acre)
- 30 - medium (30 - 65% cover, and 1,500 to 5,000 stems/acre)
- 40 - heavy (greater than 65% cover, and over 5,000 stems/acre)

Density - Compatible shrubs (in the ones position)
- 0 - none
- 1 - light (less than 30% woody shrub canopy)
- 2 - medium (30 - 65% canopy cover)
- 3 - heavy (greater than 65% canopy closure)

c) Plant community: The inventory shall include identifying and reporting the height and density of undesirable taller growing species, together with the density of the predominate desirable woody shrub species. The species lists in Appendix 7 shall be used as a guide to identify woody tree and shrub species and their compatibility within each site. Within the Limits of any easement, property owner concerns, or environmental constraints, the long-term objective should remain the eventual removal of any species capable of invading the wire security zone, while retaining and fostering smaller compatible species already present within the site.

Appendix 7
Border Zone/Wire Zone Vegetation Lists

EXHIBIT A:

Undesirable Tall Growing Species

The following is a list of tall growing tree species that are considered undesirable in most right-of-way situations and should be removed from the right-of-way floor wherever practicable, to the extent permitted by landowner constraints and easement conditions. The primary objective of the Transmission Right-of-Way Management Program is to effectively remove and control the re-growth and reinvasion of these species.

Ash	ASH	Cucumber Tree	CUC
Mountain	MAS	Elm	ELM
Balsam Fir	BAF	Hemlock	HEM
Basswood	BAS	Hickory	HIC
Beech	BEE	Hophombeam	HOP
Birch	BIR	Maple	MAP
Cherry		Oak	OAK
Black	BCH	Pine	PIN
Choke	CCH	Poplar/Aspen	POP
Domestic	DCH	Red Mulberry	MUL
Pin (Fire)	PCH	Sassafras	SAS
Black Gum/Tupelo	BGU	Spruce	SPR
Black Locust	BLO	Tamarack/Larch	TAM
Black Walnut	BWA	Tree-of-Heaven	THE
Butternut	BUT	Tulip/Yellow Poplar	TUL
Catalpa	CAT	Willow	WIL
Cedar	CED	Other	OTH
Chestnut	CHE		

EXHIBIT B:

Small to Medium Trees

The following is a list of small to medium trees that may be compatible along the edges of the right-of-way, except on narrower sub-transmission right-of-ways. They should be removed within the wire zone except where the mature height would not invade the Minimum Clearance Distance, or local conditions do not warrant removal. Any plant on the right-of-way that invades the Minimum Clearance Distance may be removed. These smaller tree species may be preferred for retention in buffer areas and other sensitive sites rather than taller growing tree species.

Species	**Code**
Apple	APP
Autumn Olive	AUT
Buckthorn	BUC
Common Buckthorn	"
European Buckthorn	"
Dogwood	
Alternate Leaf	ADG
Flowering	FDG
Cedars	CED
American Hornbeam "Ironwood"	HOR
Hawthorne	HAW
Mountain Maple	MOM
Pear	PER
Russian Olive	RUS
Shadbush/Serviceberry	SHD
Shrub Willow	WIL
Speckled Alder	ALD
Staghorn Sumac	SUM
Witch Hazel	WIH

EXHIBIT C:

Wood Shrubs

The following is a list of shrub species commonly found on right-of-ways across the service territory. While they are nearly always compatible in the border zone, several may grow tall enough to enter Minimum Clearance Distance.

Species	**Code**
American Barberry	BAR
Chokeberry	
Black Chokeberry	BCB
Red Chokeberry	RCB
Blueberry	
Low	BLU
Highbush	HBL
Button Bush	BTN
Dewberry	DEW
Dogwood	DOG
Red Osier	"
Stiff (similar to Red Osier)	"
Grey	"
Silky	"
Roundleaf	"
Elderberry	ELD
Hazelnut	HAZ
American Hazelnut	"
Beaked Hazelnut	"
Honeysuckle	HON
Huckleberry	HUC
Juniper	GRJ
Dwarf	"
Ground/Trailing	"
Mountain Holly	MOH
Mountain Laurel	MOL
New Jersey Tea	NJT
Norther Prickly Ash	NPA
Shrub Oak	SOK
Privet	PRI
Gooseberry	RIB
Rose	
Domestic	DOR
Multiflora	MUR

EXHIBIT C: (cont.)

Rubus	RUB
Blackberry	"
Raspberry	"
Silverberry	
American	SIL
Sumac	SUM
Smooth	"
Winged	"
Common Spicebush	SPB
Spirea	SPI
Sweetfern	"
Steeple Bush	"
Sweetfern	SWF
Viburnum	VIB
Arrowwood	ARR
Highbush Cranberry	HCR
Mapleleaf	MVB
Nannyberry	NAN
Northern Wild Raisin	RAI
Hobblebush	HOB
Winterberry Holly	WIN
American Yes	AMY

Climbing Vines

Bittersweet	CLB
Grape	GRA

Wood Shrubs (cont.)

Note that some of these species can be classified as either exotic or invasive. In addition, some of these species are noxious plants – particularly Multiflora Rose and Poison Sumac. In most situations management objectives within and adjacent to the right-of-way may warrant the removal or reduction of these species. Future discussions with State and Federal agencies to address invasive and exotic species on a landscape scale may require modifications of the current treatment course of action for some species.

Appendix 8
Ground Patrol Procedure

Ground Based Patrol For:

Vegetation on High Voltage Transmission Lines

Performance of a ground based patrol on 230kV and 345kV AC and 450kV DC transmission lines is prescribed annually. The patrol is conducted in the fall and winter of each year and completed no later than June 15th to ensure that vegetation threatening the operation of any line is removed or pruned prior to the growing season.

The following guidance is provided to each member of the patrol team to ensure consistency in identifying vegetation and in reporting and documentation.

Vegetation to be Identified:

The ground patrol shall focus on identifying vegetation (including vines) that has grown to **within 15 feet** of conductors and **off-right-of-way hazard trees.** The ground patrol will also check At Time of Vegetation Management clearances on right-of-ways treated the previous calendar year.

Tools:

Each patrol person shall have the following tools at their disposal:

Necessary

- NGrid ID Badge
- ROW Map
- Transmission Conductor Height Meter
- Hypsometer Laser Range Finder (or equivalent tools for tree height measurements)

Optional

- Binoculars
- Digital Camera
- NGrid Street Atlas
- Specifications for ROW Veg. Mgmt.
- ATV (when available)

Data Collection: Hand held device and/or spreadsheets.

Corrective Action: Entry on data sheet must include the best means to eliminate the condition, location and access points. These corrective actions shall be completed prior to June 20.

Data Documentation: All data collected in the field and corrective actions must be entered on the Transmission Forestry Ground Patrol forms and the Ground and Aerial Patrol spreadsheet, located on the Transmission Forestry shared drive.

Definitions:

Danger Tree: A tree on or off the right-of-way that if were cut or failed could contact electric lines.

Hazard Tree: Danger Trees which due to species and/or structural defect are likely to fail and fall in to the electric facility. Factors to consider for identifying a hazard tree include the following:

Defect	Tree Condition	Site Conditions
Crack	Lean	Side hill
Decay	Species that are prone to fail	Saturated or unstable soils
Decline	Emergence (Tree crown above canopy)	Human Activity (Logging; compaction, excavation)
Uprooted		Animal Activity
Co-dominant Stem		Storm damage
Scarring		Topography (Berms, rock outcrops)
Excessive Pruning/Topping		

Appendix 9
Summary of Key Specification Requirements

Specification Summary	NY	MA	RI	NH	VT
Inspection of floor herbicide work carried out the Spring following treatment. This inspection is the responsibility of National Grid.	Y	Y	Y	Y	Y
All workers hold “applicator license” or “apprentice”	Y	Y	Y	Y	Y
All supervisors hold “category/commercial certification”	Y	Y	Y	Y	Y
National Grid voluntary notification to all nearby residents	Y	Y	Y	Y	Y
Notification per legal requirements	Y:DEC	Y:VMP	N	Y: Ag	Y:PSB & Ag
Herbicide products specified by National Grid	Y	Y	Y	Y	Y
No mixing or handling of concentrates in Sensitive Areas	Y	Y	Y	Y	Y
Extent of Work – Performance					
Removal/Treatment of full width of ROW	Y	Y	Y	Y	Y
Removal/Treatment of 100% target vegetation greater than 6 ft	Y	Y	Y	Y	Y
Removal/Treatment of 95% of target vegetation less than 6 feet	Y	Y	Y	Y	Y
Warranty of work over full cycle any vegetation that was 6 feet tall at the time of treatment	Y	Y	Y	Y	Y
End-to-end inspection/mitigation of ROW segment prior to June 1 of IVM treatment year by contractor (included in contractor IVM bid)	Y	Y	Y	Y	Y
Modified Border Zone/Wire Zone	Y	Y	Y	Y	Y
Wire Zone Target Shrubs/Short Trees: See Appendix 7 Exhibits A and B	Y	Y	Y	Y	Y
Hardwoods: Cut and CST over specified height	16 feet Hydraulic 12 feet Backpack	12 feet	12 feet	12 feet	12 feet
Hardwoods: Foliar spray less than specified height	Y	Y	Y	Y	Y
Conifers: Cut over specified height (knee-height)	2 feet	2 feet	2 feet	2 feet	2 feet
Conifers: Foliar spray less specified height (knee-height)	Y	N	Y	Y	Y
Cedars: Cut all over specified height	6 feet in WZ 12 feet in BZ	12 feet	12 feet	12 feet	12 feet
Treat/Remove all woody species within 10 feet of structures and guys	Y	Y	Y	Y	Y
Treat/Remove all woody species along roads to provide access route 20 feet wide	Y	Y	Y	Y	Y
Treat/Remove all vegetation within 5 feet of substation fence line	Y	Y	Y	Y	Y
Vegetation Management in Protective Buffers	Y:PSC Plan	Y:VMP	Y:MA VMP	Y: Permit	Y: Permit
Herbicide Use in Wetlands	Y:DEC Permit	Y:VMP	Y: Label	N	Y: Permit

Confidential Information (including Privileged and Critical Energy Infrastructure Information)
Has Been Removed

NORTHEAST POWER COORDINATING COUNCIL, INC.
1040 AVE OF THE AMERICAS, NEW YORK, NY 10018 TELEPHONE (212) 840-1070 FAX (212) 302-2782

Compliance Audit Report
Public Version

The Narragansett Electric Company
NERC ID# NCR07218

Confidential Information (including Privileged and Critical Energy Infrastructure Information) Has Been Removed

Date of Audit: April 11 to May 12, 2011

Confidential Information (including Privileged and Critical Energy Infrastructure Information)
Has Been Removed

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Confidential Information (including Privileged and Critical Energy Infrastructure Information)
Has Been Removed

Executive Summary

A compliance audit of The Narragansett Electric Company (NECO), NERC ID # - NCR07218 was conducted from April 11, 2011 to May 12, 2011. At the time of the audit, NECO was registered for the TO, DP, LSE and PSE functions.

The audit team evaluated NECO for compliance with 27 requirements in the 2011 NERC Compliance Monitoring and Enforcement Program (CMEP). The audit team assessed compliance with the NERC Reliability Standards and applicable Regional Reliability Standards for the period of June 18, 2007 to April 11, 2011. NECO submitted information and documentation for the audit team's evaluation of compliance with requirements. The audit team reviewed and evaluated all information provided by NECO to assess compliance with standards applicable to NECO at this time.

Based on the information and documentation provided by NECO, the audit team found NECO to have no findings of non-compliance with 20 applicable requirements. The audit team determined that 7 requirements were not applicable to NECO. The audit team identified no Possible Violation(s). There were no ongoing or recently completed mitigation plans and therefore none were reviewed by the audit team.

Any Possible Violations were processed through the NERC and NPCC CMEP. The following is a link to the general NOP page located on the NERC public website: http://www.nerc.com/filez/enforcement/index.html

The NPCC audit team lead certifies that the audit team adhered to all applicable requirements of the NERC Rules of Procedure (ROP) and Compliance Monitoring and Enforcement Program (CMEP).[1]

Audit Process

The compliance audit process steps are detailed in the NPCC CMEP. The NPCC CMEP generally conforms to the United States Government Accountability Office Government Auditing Standards and other generally accepted audit practices.

[1] This statement replaces the Regional Entity Self-Certification process.

Objectives

All Registered Entities are subject to an audit for compliance with all reliability standards applicable to the functions for which the Registered Entity is registered.[2] The audit objectives are to:

- Review compliance with the requirements of reliability standards that are applicable to NECO, based on the functions that NECO is registered to perform;
- Validate compliance with applicable reliability standards from the NERC 2011 Implementation Plan list of actively monitored standards and additional NERC Reliability Standards selected by NPCC;
- Validate compliance with applicable regional standards from the NPCC 2011 Implementation Plan list of actively monitored standards;
- Validate evidence of self-reported violations and previous self-certifications;
- Observe and document NECO's compliance program and culture;
- Review the status of mitigation plans.

Scope

The scope of the compliance audit included the NERC Reliability Standards from the NPCC 2011 Implementation Plan. In addition, this audit included a review of mitigation plans or remedial action directives which have been completed or pending in the year of the compliance audit.

At the time of the audit, NECO was registered for the functions of TO, DP, LSE and PSE. The audit team evaluated NECO for compliance during the period of June 18, 2007 to April 11, 2011.

Confidentiality and Conflict of Interest

Confidentiality and conflict of interest of the audit team are governed under the NPCC Delegation Agreement with NERC and Section 1500 of the NERC Rules of Procedure. NECO was informed of NPCC's obligations and responsibilities under the agreement and procedures. The work history for each audit team member was provided to NECO. NECO was given an opportunity to object to an audit team member's participation on the basis of a possible conflict of interest or the existence of other circumstances that could interfere with an audit team member's impartial performance of duties. NECO had not submitted any objections by the stated fifteen day objection due date and accepted the audit team member participants without objection. There have been no denials of or access limitations placed upon this audit team by NECO.

[2] North American Electric Reliability Corporation CMEP, paragraph 3.1, Compliance Audits

Methodology

The audit team reviewed the information, data, and evidence submitted by NECO and assessed compliance with requirements of the applicable reliability standards. Submittal of information and data were sent to NPCC 30 days before the scheduled date of the entity review. Additional information relevant to the audit could be submitted until the conclusion of the exit briefing. After that date, only data or information which was relevant to the content of the report or its finding can be submitted upon agreement by the audit team lead.

The audit team requested and received additional information and sought clarification from subject matter experts during the audit.

The audit team reviewed documentation provided by NECO. Data, information and evidence submitted in the form of policies, procedures, e-mails, logs, studies, data sheets, etc. which were validated, substantiated and cross-checked for accuracy as appropriate. Requirements which required a sampling to be conducted were developed based upon the significance of the sampling to the reliability of the bulk electric system (BES).

Findings were based on the audit team's knowledge of the BES, the NERC Reliability Standards and their professional judgment. All findings were developed based upon the consensus of the audit team.

Company Profile

The Narragansett Electric Company is a wholly owned subsidiary of National Grid USA. NECO serves 465,000 customers in 38 communities in Rhode Island. NECO's peak load was 1,825 MW in 2010. NECO has 47 Miles of 345 kV transmission lines, 259 miles of 115 kV transmission lines as well as 14 miles of 69 kV transmission lines. The New England Control Center/ REMVEC is a central dispatch office and satellite dispatching center providing security services in support of ISO-NE and on behalf of National Grid affiliates, with operations in Vermont, New Hampshire, Massachusetts and Rhode Island, twenty-nine municipals and Fitchburg Gas & Electric (FG&E). The New England Control Center/REMVEC's staff and facilities are provided, operated, and managed by National Grid USA Service Company. In addition to the services it provides in support of the ISO, the Control Center/REMVEC performs services on behalf of Narragansett Electric Company ("NEC"), under an agreement called the "REMVEC II agreement". Some of the services the New England Control Center/REMVEC performs on behalf of NEC are services that sustain NEC's compliance with NERC Reliability Standards.

Audit Participants

The following is a listing of all personnel from the Audit Team and NECO who were present during the meetings or interviews.

Audit Team Participants

Title	Entity
Lead Auditor	NPCC
Auditor	NPCC
Auditor	NPCC
Audit Manager	NPCC

NECO Audit Participants

Title	Entity
Director – Reliability Compliance	NGRID
Lead Auditor	NGRID
Manager, PTO	NGRID
Counsel	NGRID
Manager, Protection Standards	NGRID
Sr. Coordinator	NGRID

Audit Results

The audit team evaluated NECO for compliance with 27 requirements in the 2011 NERC Compliance Monitoring and Enforcement Program (CMEP). The audit reviewed NERC Reliability Standards for the period of June 18, 2007 to April 11, 2011. NECO submitted information and documentation for the audit team's evaluation of compliance with requirements. The audit team reviewed and evaluated all information provided by NECO to assess compliance with standards applicable to NECO at this time.

Based on the information and documentation provided by NECO, the audit team found NECO to have no findings of non-compliance with 20 applicable requirements. The audit team determined that 7 requirements were not applicable to NECO. The audit team identified no Possible Violation(s).

Findings

The following table details the findings for compliance for the scope identified for this audit.

Reliability Standard	Requirement	Finding
CIP-001-1	R1.	No Finding
CIP-001-1	R2.	No Finding
CIP-001-1	R3.	No Finding
CIP-001-1	R4.	No Finding
COM-001-1.1	R6	Not Applicable
IRO-004-1	R4.	No Finding

IRO-005-2	R13.	No Finding
FAC-003-1	R1	No Finding
FAC-003-1	R2	No Finding
FAC-008-1	R1	No Finding
FAC-008-1	R2	No Finding
FAC-009-1	R1	No Finding
FAC-009-1	R2	No Finding
MOD-004-1	R3	Not Applicable
MOD-004-1	R10	Not Applicable
PRC-004-1	R2.	No Finding
PRC-005-1	R1.	No Finding
PRC-005-1	R2.	No Finding
PRC-008-0	R1	No Finding
PRC-008-0	R2	No Finding
PRC-011-0	R1	Not Applicable
PRC-017-0	R1	Not Applicable
PRC-017-0	R2	Not Applicable
PRC-023-1	R1	No Finding
PRC-023-1	R2	Not Applicable
TOP-002-2a	R3.	No Finding
TOP-002-2a	R18.	No Finding

Compliance Culture

NECO's compliance culture was reviewed by the audit team. National Grid has a comprehensive FERC compliance program. This program addresses compliance for all its regulated subsidiaries including New England Power, Narragansett Electric, Massachusetts Electric, and Granite State Electric and includes compliance with NERC Reliability Standards.

National Grid plc ("NGPLC") and National Grid USA ("NGUSA") (collectively, "National Grid" or "the Company") operates its compliance program through a variety of centralized, enterprise-wide processes and procedures in coordination with employees within various parts of the global business.

During all contact, NGRID and NECO staff was professional in their approach to compliance and understood the importance of the compliance and its role in maintaining reliability and security. For those that participated in the audit, it was clear that all were committed to both compliance and the improved reliability and security that a strong compliance program leads to.

Additional information pertaining to the compliance culture of NECO can be found in the Internal Compliance Survey.

Standard FAC-003-1 — Transmission Vegetation Management Program

A. Introduction

1. Title: **Transmission Vegetation Management Program**

2. Number: FAC-003-1

3. Purpose: To improve the reliability of the electric transmission systems by preventing outages from vegetation located on transmission rights-of-way (ROW) and minimizing outages from vegetation located adjacent to ROW, maintaining clearances between transmission lines and vegetation on and along transmission ROW, and reporting vegetation-related outages of the transmission systems to the respective Regional Reliability Organizations (RRO) and the North American Electric Reliability Council (NERC).

4. Applicability:

4.1. Transmission Owner.

4.2. Regional Reliability Organization.

4.3. This standard shall apply to all transmission lines operated at 200 kV and above and to any lower voltage lines designated by the RRO as critical to the reliability of the electric system in the region.

5. Effective Dates:

5.1. One calendar year from the date of adoption by the NERC Board of Trustees for Requirements 1 and 2.

5.2. Sixty calendar days from the date of adoption by the NERC Board of Trustees for Requirements 3 and 4.

B. Requirements

R1. The Transmission Owner shall prepare, and keep current, a formal transmission vegetation management program (TVMP). The TVMP shall include the Transmission Owner's objectives, practices, approved procedures, and work specifications[1].

R1.1. The TVMP shall define a schedule for and the type (aerial, ground) of ROW vegetation inspections. This schedule should be flexible enough to adjust for changing conditions. The inspection schedule shall be based on the anticipated growth of vegetation and any other environmental or operational factors that could impact the relationship of vegetation to the Transmission Owner's transmission lines.

R1.2. The Transmission Owner, in the TVMP, shall identify and document clearances between vegetation and any overhead, ungrounded supply conductors, taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. Specifically, the Transmission Owner shall establish clearances to be achieved at the time of vegetation management work identified herein as Clearance 1, and shall also establish and maintain a set of clearances identified herein as Clearance 2 to prevent flashover between vegetation and overhead ungrounded supply conductors.

R1.2.1. Clearance 1 — The Transmission Owner shall determine and document appropriate clearance distances to be achieved at the time of transmission vegetation management work based upon local conditions and the expected time frame in which the Transmission Owner plans to return for future

[1] ANSI A300, Tree Care Operations – Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices, while not a requirement of this standard, is considered to be an industry best practice.

vegetation management work. Local conditions may include, but are not limited to: operating voltage, appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species types and growth rates, species failure characteristics, local climate and rainfall patterns, line terrain and elevation, location of the vegetation within the span, and worker approach distance requirements. Clearance 1 distances shall be greater than those defined by Clearance 2 below.

R1.2.2. Clearance 2 — The Transmission Owner shall determine and document specific radial clearances to be maintained between vegetation and conductors under all rated electrical operating conditions. These minimum clearance distances are necessary to prevent flashover between vegetation and conductors and will vary due to such factors as altitude and operating voltage. These Transmission Owner-specific minimum clearance distances shall be no less than those set forth in the Institute of Electrical and Electronics Engineers (IEEE) Standard 516-2003 (*Guide for Maintenance Methods on Energized Power Lines*) and as specified in its Section 4.2.2.3, Minimum Air Insulation Distances without Tools in the Air Gap.

R1.2.2.1 Where transmission system transient overvoltage factors are not known, clearances shall be derived from Table 5, IEEE 516-2003, phase-to-ground distances, with appropriate altitude correction factors applied.

R1.2.2.2 Where transmission system transient overvoltage factors are known, clearances shall be derived from Table 7, IEEE 516-2003, phase-to-phase voltages, with appropriate altitude correction factors applied.

R1.3. All personnel directly involved in the design and implementation of the TVMP shall hold appropriate qualifications and training, as defined by the Transmission Owner, to perform their duties.

R1.4. Each Transmission Owner shall develop mitigation measures to achieve sufficient clearances for the protection of the transmission facilities when it identifies locations on the ROW where the Transmission Owner is restricted from attaining the clearances specified in Requirement 1.2.1.

R1.5. Each Transmission Owner shall establish and document a process for the immediate communication of vegetation conditions that present an imminent threat of a transmission line outage. This is so that action (temporary reduction in line rating, switching line out of service, etc.) may be taken until the threat is relieved.

R2. The Transmission Owner shall create and implement an annual plan for vegetation management work to ensure the reliability of the system. The plan shall describe the methods used, such as manual clearing, mechanical clearing, herbicide treatment, or other actions. The plan should be flexible enough to adjust to changing conditions, taking into consideration anticipated growth of vegetation and all other environmental factors that may have an impact on the reliability of the transmission systems. Adjustments to the plan shall be documented as they occur. The plan should take into consideration the time required to obtain permissions or permits from landowners or regulatory authorities. Each Transmission Owner shall have systems and procedures for documenting and tracking the planned vegetation management work and ensuring that the vegetation management work was completed according to work specifications.

R3. The Transmission Owner shall report quarterly to its RRO, or the RRO's designee, sustained transmission line outages determined by the Transmission Owner to have been caused by vegetation.

R3.1. Multiple sustained outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.

R3.2. The Transmission Owner is not required to report to the RRO, or the RRO's designee, certain sustained transmission line outages caused by vegetation: (1) Vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters shall not be considered reportable (examples of disasters that could create non-reportable outages include, but are not limited to, earthquakes, fires, tornados, hurricanes, landslides, wind shear, major storms as defined either by the Transmission Owner or an applicable regulatory body, ice storms, and floods), and (2) Vegetation-related outages due to human or animal activity shall not be considered reportable (examples of human or animal activity that could cause a non-reportable outage include, but are not limited to, logging, animal severing tree, vehicle contact with tree, arboricultural activities or horticultural or agricultural activities, or removal or digging of vegetation).

R3.3. The outage information provided by the Transmission Owner to the RRO, or the RRO's designee, shall include at a minimum: the name of the circuit(s) outaged, the date, time and duration of the outage; a description of the cause of the outage; other pertinent comments; and any countermeasures taken by the Transmission Owner.

R3.4. An outage shall be categorized as one of the following:

R3.4.1. Category 1 — Grow-ins: Outages caused by vegetation growing into lines from vegetation inside and/or outside of the ROW;

R3.4.2. Category 2 — Fall-ins: Outages caused by vegetation falling into lines from inside the ROW;

R3.4.3. Category 3 — Fall-ins: Outages caused by vegetation falling into lines from outside the ROW.

R4. The RRO shall report the outage information provided to it by Transmission Owner's, as required by Requirement 3, quarterly to NERC, as well as any actions taken by the RRO as a result of any of the reported outages.

C. Measures

M1. The Transmission Owner has a documented TVMP, as identified in Requirement 1.

M1.1. The Transmission Owner has documentation that the Transmission Owner performed the vegetation inspections as identified in Requirement 1.1.

M1.2. The Transmission Owner has documentation that describes the clearances identified in Requirement 1.2.

M1.3. The Transmission Owner has documentation that the personnel directly involved in the design and implementation of the Transmission Owner's TVMP hold the qualifications identified by the Transmission Owner as required in Requirement 1.3.

M1.4. The Transmission Owner has documentation that it has identified any areas not meeting the Transmission Owner's standard for vegetation management and any mitigating measures the Transmission Owner has taken to address these deficiencies as identified in Requirement 1.4.

M1.5. The Transmission Owner has a documented process for the immediate communication of imminent threats by vegetation as identified in Requirement 1.5.

M2. The Transmission Owner has documentation that the Transmission Owner implemented the work plan identified in Requirement 2.

M3. The Transmission Owner has documentation that it has supplied quarterly outage reports to the RRO, or the RRO's designee, as identified in Requirement 3.

M4. The RRO has documentation that it provided quarterly outage reports to NERC as identified in Requirement 4.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

RRO

NERC

1.2. Compliance Monitoring Period and Reset

One calendar Year

1.3. Data Retention

Five Years

1.4. Additional Compliance Information

The Transmission Owner shall demonstrate compliance through self-certification submitted to the compliance monitor (RRO) annually that it meets the requirements of NERC Reliability Standard FAC-003-1. The compliance monitor shall conduct an on-site audit every five years or more frequently as deemed appropriate by the compliance monitor to review documentation related to Reliability Standard FAC-003-1. Field audits of ROW vegetation conditions may be conducted if determined to be necessary by the compliance monitor.

2. Levels of Non-Compliance

2.1. Level 1:

2.1.1. The TVMP was incomplete in one of the requirements specified in any subpart of Requirement 1, or;

2.1.2. Documentation of the annual work plan, as specified in Requirement 2, was incomplete when presented to the Compliance Monitor during an on-site audit, or;

2.1.3. The RRO provided an outage report to NERC that was incomplete and did not contain the information required in Requirement 4.

2.2. Level 2:

2.2.1. The TVMP was incomplete in two of the requirements specified in any subpart of Requirement 1, or;

2.2.2. The Transmission Owner was unable to certify during its annual self-certification that it fully implemented its annual work plan, or documented deviations from, as specified in Requirement 2.

2.2.3. The Transmission Owner reported one Category 2 transmission vegetation-related outage in a calendar year.

2.3. Level 3:

2.3.1. The Transmission Owner reported one Category 1 or multiple Category 2 transmission vegetation-related outages in a calendar year, or;

2.3.2. The Transmission Owner did not maintain a set of clearances (Clearance 2), as defined in Requirement 1.2.2, to prevent flashover between vegetation and overhead ungrounded supply conductors, or;

2.3.3. The TVMP was incomplete in three of the requirements specified in any subpart of Requirement 1.

2.4. Level 4:

2.4.1. The Transmission Owner reported more than one Category 1 transmission vegetation-related outage in a calendar year, or;

2.4.2. The TVMP was incomplete in four or more of the requirements specified in any subpart of Requirement 1.

E. Regional Differences

None Identified.

Version History

Version	Date	Action	Change Tracking
Version 1	TBA	1. Added "Standard Development Roadmap." 2. Changed "60" to "Sixty" in section A, 5.2. 3. Added "Proposed Effective Date: April 7, 2006" to footer. 4. Added "Draft 3: November 17, 2005" to footer.	01/20/06