Transmission Structure

Wireless Occupancy Process
# NATIONAL GRID
## ELECTRIC TRANSMISSION STRUCTURE
### WIRELESS OCCUPANCY PROCESS

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1. **Scope:**


The Licensing and installation of Wireless Facilities shall conform to:

- **Master License Agreement (MLA)** - the Master License Agreement in New England (NE) / Wireless Facilities Right-of-Occupancy Agreement in New York (NY)
- **Site License Agreement (SLA)** - the Site License Agreement in NE / Supplemental Agreement in NY

**Note:** Strict compliance by the Wireless Service Provider with the Wireless Telecommunication Installations Specification is critical to efficient and timely project review and acceptance.

2. **Policy Regarding Direct Attachments and Substantially Modified Transmission Structures**

National Grid allows third party direct attachments on existing transmission structures. A direct attachment is an installation where modifications to the existing structure are not required or are considered minor by National Grid.

Wireless Provider proposals to substantially modify existing transmission structures in order to accommodate telecommunications attachments are typically rejected. Substantially modified transmission structures are partial or complete new transmission structures that replace existing structures in order to specifically accommodate third party attachments, and which are substantially modified from the existing structure, often by increasing the height by 10 feet or more. This would include installing a supplemental steel pole extended upward through an existing lattice transmission tower, and extending above the tower top. This policy seeks to minimize any potential future interference to National Grid when performing future maintenance or expansion of transmission assets.

Wireless Facilities on transmission structures that preliminarily appear to comply with the National Grid policy will require a Wireless Service Provider paid structural analysis to determine that substantial modification is not required.
Installation and maintenance of Wireless Facilities on transmission structures are typically worked with lines still energized by qualified electrical workers experienced with high voltage work.

3. **Summary of Responsibilities**

**Wireless Service Providers (WSP):**

- Identify potential site/Structure and make application to NGrid for site visit.
- Make application and obtain required approvals for above or below ground testing.
- Design and submit Location Plan depicting conceptual design for site improvements and WSP Wireless Facilities to NGrid for review and acceptance.
- Identify, make application and obtain required municipal and regulatory approvals and permits providing authorization and approvals to construct and operate WSP Wireless Facilities and associated site improvements.
- Make application and secure electric and telephone service.
- Submit structural analysis for NGrid review and acceptance.
- Submit Ground Potential Rise (GPR) analysis and grounding system design for NGrid review and acceptance.
- Design and submit Construction Drawings depicting design for site improvements and WSP Wireless Facilities to NGrid for review and acceptance.
- Identify any sensitive and/or regulated environmental, historical or cultural resources that may be impacted by the project and, should impacts be identified, document such impacts.
- Submit copies of all regulatory, environmental and governmental permits and approvals obtained.
- Authorize and agree to pay charges associated with NGrid review and acceptance requirements of all submittals.
- Procure cost proposals and authorize NGrid or qualified approved contractor(s) for support and construction activities.
- Install WSP ground level and approve and pay for aerial equipment installation.
- Submit written certification, in a form acceptable to NGrid, stating WSP Wireless Facilities installation conforms to applicable NESC and NGrid Standards.
- Obtain title report and title insurance/guarantees, as needed.
- Comply with all applicable regulations, codes and standards.
- Provide as-built plans upon completion of project.

**Telecommunications Attachments Group (TAG):**

- Overall coordination of the site licensing process including site review, development and acceptance.
- Coordination of NGrid review and acceptance of WSP submittals.
- Management of all applicable Agreements between NGrid and WSP.
- Coordination and management of invoicing for billable work and license fees to WSP.

4. **Definitions**

**Building Permit (BP)** shall mean municipal approval to commence construction on Wireless Facilities.

**Construction Drawings (CD)** shall mean engineered drawings developed for use in the construction of Wireless Facilities, related buildings, ancillary equipment and other related improvements.

**Construction Field Issue (CFI)** is the document generated by NGrid Transmission Line Engineering which details NGrid requirements to perform the installation of Wireless Facilities.

**Field Construction Supervisor (FCS)** is a NGrid employee that shall coordinate the daily activities of contractors performing maintenance and construction of Wireless Facilities.

**Ground Protection Rise (GPR)** shall mean the voltage that a transmission structure(s) grounding grid may attain relative to distant grounding point assumed to be at the potential of remote earth.

**Location Plan (LP)** shall mean a document which includes a site plan and elevation and may be used in a contractual agreement with NGrid.

**Master License Agreement (MLA)** is the contractual Agreement that contains the basic terms and conditions upon which each property or portion thereof is licensed by WSP from NGrid.

**Notice To Proceed (NTP)** shall mean documented transmittal by TAG authorizing ground level and/or aerial work on Wireless Facilities.
**Site License Agreement (SLA)** is any supplement to the MLA defining specific conditions to Wireless Facilities on identified property.

**Structure** shall mean NGrid’s electrical transmission towers or poles.

**Telecommunications Attachments Group (TAG)** provides overall coordination of the site licensing process within NGrid.

**Transmission Line Engineering (TLE)** provides technical and engineering review and acceptance to design and structural submittals by WSP.

**Wireless Facilities** shall mean the necessary facilities, including temporary facilities and all related equipment, including antenna, cable and telephone lines, accessories and the equipment shelters or cabinets, electrical lines, batteries, solar arrays, backup power generators and fuel tanks associated with the wireless communications systems of the Wireless Service Provider that are installed on property in compliance with the MLA and SLA.

**Wireless Service Provider (WSP)** shall mean a Licensee to whom NGrid licenses the right to operate the Wireless Facilities located on a particular property.

5. **Master License Agreement / Right-of-Occupancy Agreement:**

   Structure occupancy and use by WSP shall be authorized and conform to the terms of the Master License Agreement. Each specific site/property licensed shall be defined in a separate Site License Agreement which the Telecommunications Attachments Group (TAG) will coordinate with the WSP.

6. **Site Evaluation, Application and Review Processes:**

   **Preliminary Site Investigation, Site Visit and Site Evaluation**

   WSP initiates a site visit by submitting **Exhibit B - Request for Right of Entry** form and **Exhibit B-1 – Collocation Application** to TAG.

   TAG provides a preliminary assessment to WSP, typically within ten (10) business days of receipt of Request for Right of Entry form.

   If NGrid consents to WSPs Request for Right of Entry, TAG will schedule an initial site visit, which is limited to visual inspection only.

   Upon favorable preliminary site evaluation by WSP, WSP submits request for readily available maps and related information to TAG.

   **Submittals related to Preliminary Site Visit**
Site Application and Above Ground Testing

WSP is responsible for all costs related to site application submittal and above ground testing.

WSP submits Exhibit C - Site Application in order to conduct above ground surveys, tests and inspections subject to the NGrid Conditions for Proposed Activities Within Transmission Line Rights-of-Way. The Site Application shall include:

i. Site Application Fee (NE only – TAG will invoice WSP)
ii. Review Fee
   1. TAG NE will invoice WSP the then current Review Fee.
   2. TAG NY will create a billable Work Order to capture reimbursable costs and invoice WSP.
iii. Site specific certificate of insurance as required by the Master License Agreement. Certificate of insurance shall list appropriate NGrid Company and "National Grid USA and its Subsidiaries" as additional insured.
iv. Test description which shall provide information on vehicles and equipment involved, setup, proposed schedule, duration and type of test.
v. Plan or drawing which shall provide information sufficient to indicate anticipated relationships of testing vehicle/equipment to NGrid properties, including transmission lines.
vi. Risk assessment and mitigation plan related to testing.

If a crane is required for testing, a NGrid approved crane service must be utilized.

Current NGrid approved crane services are listed in Appendix A.

Revisions or acceptance of the Site Application related to a telecommunication drive test submittal is documented by signature of the involved NGrid reviewer(s) by using the Telecommunications Drive Test Review Form. TAG will notify WSP of review results and forward a signed Site Application to WSP if the drive test submittal is accepted.

NGrid Field Construction Supervisor (FCS) shall be required to monitor testing if WSP contractor’s vehicles and equipment are within 50 feet of energized lines or other hazardous situations are identified.
Submittals related to Site Application and Above Ground Testing

- Exhibit C - Site Application (with applicable attachments)

Location Plan Review and Acceptance

WSP is responsible for all costs related to Location Plan development.

Upon favorable testing results, WSP submits RF Data / Structural Loading Form to TAG which provides antenna, mechanical equipment and RF data for the Wireless Facilities.

WSP will submit for NGrid review and acceptance a Location Plan (LP), detailing the proposed Wireless Facilities and site improvements (see Section 7.0 of the Wireless Telecommunication Installations Specification). The LP must incorporate all applicable items listed on the Location Plan Checklist identified as Appendix 3 in the Wireless Telecommunication Installations Specification.

The Location Plan Checklist shall be completed by the WSP and must be submitted with each LP. The LP package shall be submitted to TAG drawn on 8 1/2” x 11” paper with all improvements shown and as a *.PDF file.

TAG shall coordinate the review and obtain preliminary acceptance of the LP within NGrid. Revisions or acceptance of the LP is documented by signature of the involved NGrid reviewers by using the Telecommunications Location Plan Review Form which TAG will forward to WSP.

Temporary Emergency Generators

If a temporary emergency generator is proposed for the site, the following WSP requirements shall apply as follows:

1. An Amendment to the Supplemental Agreement, which may add additional cost if the ground space exceeds the original lease area.
2. The location of the pad for the generator shall be depicted on a Location Plan
3. Photographs and cut sheets specifications for the specific generator
4. Appropriate environmental assessment form, i.e. SEQR required in New York
5. Public Service Commission review and approval in New York
6. Building Permit

- Temporary emergency generators may be liquid fueled and shall be subject to the following restrictions/requirements:
i. WSP shall notify TAG in advance of placement of a temporary emergency generator.

ii. Temporary liquid fueled emergency generators cannot be used for longer than five (5) days or the duration of the electric outage, whichever is less. At the termination of the outage, the generator(s) and its/their fuel must be removed from the location.

iii. Volume of liquid fuel in use or storage at the location shall be less than 55 gallons.

iv. The entity responsible for the generator shall also accept responsibility for any release of fuels from the generator(s) and related equipment including regulatory reporting and cleanup. In the event of a release (spill), WSP shall make the required Regulatory reporting including notice to NGrid within two (2) hours of knowledge of the event.

v. Tanks shall be inspected daily by WSP for leaks while the tanks are on site.

**Permanent Emergency Generators**

If a permanent emergency generator is proposed for the site, the following requirements shall apply and be depicted on the Location Plan:

- Permanently installed emergency generators shall be fueled using gaseous fuels such as natural gas or propane. Permanent diesel generators are disallowed within a transmission right-of-way.

- Compliance with the following criteria will meet NGrid Safety Department requirements and therefore will not necessitate NGrid Safety Department acceptance of each site individually:
  
  i. The fuel storage area and generator shall be protected with appropriate fencing to prevent unauthorized access.
  
  ii. The fuel storage must be configured so NGrid owned structures (any building, wood pole or steel tower) are not subjected to heat or damage in the event of a catastrophic event.
  
  iii. Fuel storage must be installed and maintained in accordance with applicable National Fire Protection Codes.
  
  iv. All electrical connections must comply with appropriate National Electrical Code and National Electrical Safety Code requirements.

NGrid shall review and use its best efforts to accept or recommend modifications to the Location Plan within fifteen (15) business days of receipt from WSP.
If NGrid requests amendments to the Location Plan, WSP will resubmit and NGrid shall review and accept amended Location Plans within ten (10) business days after WSP submittal.

**Submittals related to Location Plan Review and Acceptance**

- RF Data / Structural Loading Form
- Location Plan
- Location Plan Checklist

**Site Design, Review and Acceptance**

WSP is responsible for all costs related to site design, review and acceptance.

Once Location Plans are accepted by NGrid, WSP will develop and submit for NGrid review and acceptance a proposed site which shall conform to the requirements in the most recent issue of NGrid Wireless Telecommunications Installations Specification (See Section 5.0). Site design submittals shall include:

i. Ground Potential Rise (GPR) Analysis
ii. Grounding System Design
iii. Structural Analysis
iv. Existing Conditions Plan
v. Construction Drawings
vi. Environmental Submittals
vii. RF Safety Submittals

**Transmittal T-1 Structure Location Information** shall be submitted to TAG by WSP to request structure loads and fault current information for the development of the GPR analysis, grounding system design and structural analysis.

WSP shall submit multiple **Transmittal T-1 Structure Location Information** forms if the target Structure is in close proximity to other transmission or distribution structures.

**Fault Current Information**

TAG will return Transmittal T-1 and **Transmittal T-2A Fault Current Information** to WSP. Transmittal T-2A provides information to perform the GPR analysis and grounding system design and shall include:

i. Fault current information
NOTE: Changes on a transmission line can change the fault current and impedance data provided on Transmittal T-2A if there is a lengthy interval between providing the data and commencing construction, thereby invalidating the GPR and grounding design. NGrid may need to evaluate if the changes are significant enough to affect the GPR and grounding design and require WSP to update the GPR analysis and grounding design at WSP cost.

Fault Current/Structural Information

TAG will return Transmittal T-1 and Transmittal T-2B Structural Information with associated attachments to WSP. Information provided on Transmittal T-2B shall include, when available:

ii. Structure loading information
iii. Wire information
iv. Structure drawings

Ground Potential Rise (GPR) Analysis and Grounding System Design

WSP is responsible for all costs related to GPR Analysis and Grounding System Design development.


Current NGrid approved consultant to perform GPR/grounding design is listed in Appendix B.

Soil resistivity measurements shall be performed using the Four Pont Wenner Method or an equal approved by NGrid.

WSP does not require NGrid approval of firm performing the field resistivity measurement work.

WSP will submit the Grounding Analysis report and grounding system design to TAG in both electronic (*.PDF) and hard copy form. The report shall include GPR Analysis Submittal – R1 Ground Potential Rise (GPR) Study form, stamped and signed by a registered and professional engineer licensed in the state in which the installation is being built. The following items shall be included in a report for a Ground Potential Rise study:

1. Purpose of analysis
2. Analysis procedure and programs employed
3. Tables of user input and corresponding analysis output
4. Assumptions with justifications
5. All items included in **GPR Analysis Submittal - R1**
6. Schematics showing proposed grounding grid relative to the location of the transmission structure and telecom equipment. Schematics shall include, at a minimum:
   a. A plan and profile of the entire grounding grid.
   b. Location of proposed ground rod locations and corresponding depths.
   c. Location and corresponding dimensions of proposed fencing.
   d. Location and corresponding dimensions of proposed counterpoise.
   e. Location and corresponding size of proposed stone material and relative depths.
   f. Location and dimensioning of proposed underground conduit/burial material.
7. Schematics illustrating locations of soil resistivity measurements.
8. References

**Submittals related to GPR Analysis and Grounding System Design**

- Transmittal T-1 Structure Location Information
- Ground Potential Rise Analysis Report
- GPR Analysis Submittal – R1 Ground Potential Rise (GPR) Study

**Structural Analysis**

WSP is responsible for all costs related to Structural Analysis development.

All submittals and requirements for an acceptable Structural Analysis shall be in accordance with the most recent issue of NGrid Wireless Telecommunications Installations Specification (see Section 8.0).

Information in the **Structural Analysis Report** shall conform to the requirements in the most recent issue of NGrid Wireless Telecommunications Installations Specification.

The Structural Analysis of the Transmission Structures shall be performed using Power Line Systems® software. A request to use other software may be submitted to NGrid.

Each transmission structure shall be analyzed using all applicable codes, requirements and engineering practices to determine its structural capacity to support the proposed Wireless Facilities.
Current NGrid approved engineering consultants to perform Structural Analyses are listed in Appendix C.

WSP will submit two (2) printed sets of a complete Structural Analysis Report to TAG including a Consultant Submittal S-1 Structural Analysis Report for Telecommunications Installation, stamped and signed by a licensed professional engineer registered in the state where the WSP Wireless Facilities is proposed.

**Submittals related to Structural Analysis**

- Transmittal T-1 Structure Location Information
- Structural Analysis Report
- Consultant Submittal S-1 Structural Analysis Report for Telecommunications Installations

**Construction Drawings**

WSP is responsible for all costs related to Construction Drawings development.

Construction Drawings (CD) shall conform to the requirements in the most recent issue of NGrid Wireless Telecommunications Installations Specification (see Section 10.0).

Existing Conditions Plan developed by a professional surveyor licensed in the state where the work is located, is included in the CD and shall conform to the requirements in the most recent issue of NGrid Wireless Telecommunications Installations Specification (see Section 9.0).

WSP will submit a complete set of CDs with AutoCAD in a *.dwg format to TAG. All applicable drawings shall be stamped and signed by a registered professional engineer or land surveyor licensed in the state in which the project is located.

CD drawings related to grounding shall be stamped and signed by a registered professional electrical engineer licensed in the state in which the project is located.

**Vegetation**

Although visual screening of ground based WSP Wireless Facilities with plantings is strongly discouraged, NGrid Forestry Department has approved specific vegetation, which shall be depicted on the Construction Drawings. Current NGrid approved transmission line trees are listed in Appendix D

**Review and Acceptance**

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NGrid shall review and use its best efforts to accept or recommend modifications to the Construction Drawings within fifteen (15) business days of receipt from WSP.

If NGrid requests amendments of the Construction Drawings, WSP will resubmit and NGrid shall review and accept amended Construction Drawings within ten (10) business days after WSP submittal.

**Submittals related to Construction Drawings**

- **Construction Drawings**

**Environmental Testing**

WSP is responsible for all costs related to environmental testing.

**Site Visual Review**

TAG will initiate a NGrid performed visual review of a proposed site on NGrid owned property or on an easement (excluding substations) for evidence of existing contamination once the Location Plan for the site has been accepted.

TAG will advise the WSP of NGrid findings.

If no contamination is observed, TAG will insert language in the SLA or SA that states a site visit was conducted on “date of review” and no evidence of contamination was found.

If contamination is observed, TAG will notify WSP that a Phase I Environmental Site Assessment Report or additional analyses, at WSP expense, is required.

**Phase I Environmental Site Assessment Study Determination**

*Immediately adjacent to electrical substations:* WSP shall perform a Phase I environmental site assessment study. Phase I findings may result in additional site investigation. All site investigations required beyond a Phase I study will be performed under the direction and control of NGrid at WSP expense.

**Environmental Submittals**

WSP is responsible for all costs related to environmental submittals.
WSP shall be responsible for identifying any sensitive and/or regulated environmental resources that may be impacted by the project and, should impacts be identified, documenting such impacts. Resources to be investigated include, but are not limited to:

- Buildings, sites, or districts listed on the State or National Registers of Historic Places
- Sites listed on the Register of National Landmarks
- Designated wilderness areas and preserves, threatened, rare or endangered species & critical habitats, historic places, Indian religious sites, flood plain and wetlands determination & surface waterways
- Species of plant or animal life identified as threatened, rare or endangered by state or federal agencies
- Scenic views important to the community
- State or federally regulated or protected streams
- State or federally regulated lakes, ponds or wetlands
- Agricultural Districts certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304
- Critical Environmental Areas designated pursuant to Article 8 of the ECL
- 100 year flood plains

WSP shall submit to TAG any environmental studies or proof of compliance including, but not limited to:

i. Compliance with the New York State Environmental Quality Review Act (e.g., copy of SEQRA application and determination)
ii. Compliance with FCC filings related to the National Environmental Protection Act (NEPA)
iii. Compliance with FCC filings related to the National Historic Preservation Act (NHPA)
iv. Phase I Environmental Site Assessment prepared in accordance with ASTM E-1527 dependant on results of site visual review. WSP shall submit a Phase I Assessment if the performance of one is required by WSP Corporate Policy.
v. Phase II Environmental Assessment (if required, to be managed by NGrid)
vi. Phase III Environmental Assessment (if required, to be managed by NGrid)
vii. National Environmental Policy Act (NEPA) compliance (required)
viii. Endangered Species Act compliance
ix. environmental permits
x. any other environmental studies as required

TAG will notify WSP of acceptance of the environmental submittals.

**Radio Frequency (RF) Safety Submittals**

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WSP is responsible for all costs related to RF Safety Submittals.

WSP will submit to TAG the Frequency (MHz), Gain (dBi) and Effective Isotropic Radiated Power (EIRP) (mW) at which the WSP Wireless Facilities will transmit. This information is submitted on the **RF Data / Structural Loading Form**. The information will be used to review worker exposure (minimum approach distance).

**Utility Services / Access Easements / Consents**

WSP is responsible for all costs related to acquiring utility services, access easements or consents.

If electric power is to be supplied by a NGrid electric distribution company, WSP is responsible to submit an electric service request as required.

Phone numbers to initiate an electric service Work Request in a NGrid service area:

- New England (800) 375-7405
- New York (800) 642-4272

The following URL’s list the municipalities in which NGrid provides electric service:

**NY**: [www.nationalgridus.com/niagaramohawk/about_us/serviceterr_map.asp](http://www.nationalgridus.com/niagaramohawk/about_us/serviceterr_map.asp)

**MA**: [www.nationalgridus.com/non_html/shared_about_svcmap_meco.pdf](http://www.nationalgridus.com/non_html/shared_about_svcmap_meco.pdf)

**RI**: [www.nationalgridus.com/non_html/shared_about_svcmap_neco.pdf](http://www.nationalgridus.com/non_html/shared_about_svcmap_neco.pdf)

**NH**: [www.nationalgridus.com/non_html/shared_about_svcmap_gseco.pdf](http://www.nationalgridus.com/non_html/shared_about_svcmap_gseco.pdf)

The provision of electric service is governed by:

**NY**: Electric Service Bulletin 750
[www.nationalgridus.com/niagaramohawk/non_html/constr_esb750.pdf](http://www.nationalgridus.com/niagaramohawk/non_html/constr_esb750.pdf)

**NE**: Information and Requirements for Electric Service 2000 Handbook (“The Green Book”):

Utility service conduits shall conform to the requirements in the most recent issue of NGrid Wireless Telecommunications Installations Specification (see Section 5.2).
WSP shall make application with the appropriate utilities for electric and telephone service at the site using the utilities service design depicted on the accepted Construction Drawings.

WSP shall secure any license or easement required from NGrid or property owner allowing utility service on NGrid and/or property owner property. The electric service work request submitted to NGrid will prompt the service coordinator to initiate the easement for electric service with the appropriate NGrid Real Estate representative. This occurs after the electric and telephone service has been finalized.

WSP shall secure any license or easement required from property owner allowing access on property owner property. Such documentation shall be provided to TAG.

WSP shall secure and forward to TAG any Consent required from an existing easement holder if WSPs utilities or access will cross an existing easement.

WSP will supply documentation to TAG of property owner Consent to utilize the property for Wireless Facilities for NGrid structures on an easement.

NGrid Property Legal Services Department will process and grant the easement for telephone service on NGrid fee owned property.

**Federal Aviation Association (FAA), Federal Communications Commission (FCC) and Governmental Requirements**

WSP is responsible for all costs related to fulfilling compliance with all FAA, FCC and governmental requirements.

WSP is responsible to register the Wireless Facilities with the FCC.

WSP is responsible for determining if installation of the antennas will require the structure to be registered with the FAA.

Copies of applications shall be provided on request. Copies of all permits / registrations received shall be submitted to NGrid. In the event FAA, FCC or municipal permits/approvals establish unique site requirements, e.g., structure painting or lighting, etc., the WSP shall bring to NGrid’s specific attention such unique site requirements. Such work/requirements are subject to NGrid review and approval.

WSP is responsible to attach an Antenna Structure Registration (ASR) in compliance with FCC regulations at the Wireless Facilities if required. WSP is responsible to perform and document to TAG an annual inspection of the ASR.
Section 70 filings (required - NY only)

**Miscellaneous**

WSP is responsible for all costs related to all miscellaneous submittals.

WSP shall obtain all required permits and government approvals necessary for the installation and operation of the WSP Wireless Facilities. WSP shall submit evidence to TAG that it has obtained the required reviews, approvals and permits authorizing the proposed WSP Wireless Facilities, including Zoning Board of Appeals decisions.

In absolutely no circumstance whatsoever shall WSP represent NGrid at any governmental hearings or consent to any governmental or other attachments on NGrid structures or use of NGrid property or easement in conjunction with gaining approval for their Wireless Facilities.

TAG NY will issue an invoice for actual accumulated NGrid support and review services costs.

7. **Site Licensing**

TAG shall coordinate the review and obtain acceptance of the NGrid Real Estate Management, Environmental Management, Transmission Line Engineering, Substation Engineering Services and Transmission Planning for installation of the proposed WSP Wireless Facilities. NGrid internal reviews and acceptance is documented on the [Wireless Attachment Checklist](#).

Execution of a Site License Agreement (SLA) by NGrid will occur after the following issues have been fully addressed / accepted:

- Receipt of all environmental submittals
- Acceptable structural analysis report
- Acceptable construction drawings
- GPR study & acceptable grounding system design
- All other licensing requirements have been fulfilled

TAG will draft and submit a minimum of two (2) original, partially executed **Exhibit A - Site License Agreement (SLA)** in NE or a minimum of two (2) original, partially executed **Exhibit A - Form of Supplemental Agreements (SA)** in NY, including Addendum/Attachments as required for each site to WSP for signature.
WSP will return partially executed SLA's to TAG who will have the SLA’s signed and return required number of fully executed original(s) back to WSP.

**Submittals related to site licensing**

- Exhibit A - Site License Agreement (SLA) in NE
- Exhibit A - Form of Supplemental Agreements (SA) in NY

8. **Construction Field Issue**

WSP is responsible for all costs related to Construction Field Issue development.

WSP will submit Transmittal F-1 Construction Field Issue authorizing NGrid to initiate a Construction Field Issue (CFI) and agreeing that WSP will pay charges associated with NGrid preparation of the CFI. Each CFI is project dependant and costs can vary based on complexity of work proposed.

The CFI is a package provided the construction crew, whether such work is performed by NGrid, a NGrid contractor or a contractor employed by the WSP, which details NGrid requirements to perform the installation of Wireless Facilities.

A CFI is required for construction work which NGrid determines will significantly modify a NGrid Transmission Structure. The cost of producing the CFI will be included in a Work Order payable by the WSP.

A CFI is not required if the Wireless Facilities to be constructed are a direct attachment to a transmission Structure.

**Notes:** Material cost and construction, installation directions of Wireless Facilities that will significantly modify a NGrid Transmission Structure are generated through the CFI. The final NGrid accepted CD’s are required to commence writing the CFI.

Please be aware that wood poles over 90 feet and some materials may not be readily available and can have extended ordering times.

**Submittals related to Construction Field Issue**

- Transmittal F-1 Construction Field Issue

9. **Transmission Line Outages**
Installation and maintenance of Wireless Facilities on transmission structures are typically worked with lines still energized by qualified electrical workers experienced with high voltage work.

Although live line transmission line work for Wireless Facilities is strongly preferred, line outages may be granted on low congestion impact circuits in NY. If a transmission line outage can be scheduled in NY, WSP will incur congestion charges equal to $3,000.00 per day, unless otherwise notified.

Transmission line outages for Wireless Facilities will not be granted in NE, however extraordinary circumstances or worker safety may be considered. Explicit senior transmission management consent is required to grant a transmission outage in NE.

WSP will notify TAG NY that an outage is requested on a specific low congestion impact circuit and provide the following information:

i. desired date for construction of the installation
ii. estimated work duration
iii. estimated outage duration (if not live line construction)
iv. whether live line construction is a consideration
v. maintenance/removal requirements (done live or outage required)

TAG NY will forward information to TLE and will work with TLE to manage the outage request, coordination of the outage and scheduling of NGrid FCS.

If an outage can be scheduled, TAG will notify WSP and invoice for total congestion charges accumulated at completion of construction.

10. Construction Contractors

WSP shall select a NGrid approved transmission construction contractor or NGrid’s TLS construction department to perform the aerial construction. WSP shall procure construction bids directly from approved transmission contractors. WSP shall provide documentation to TAG if sole source construction contractor is utilized explaining the reasoning and acceptance of the sole source bid.

If the proposed aerial construction work will be over $20,000, NGrid Procurement shall coordinate the bids submittal...

Once a construction contractor’s bid is accepted by the WSP, the selected construction contractor shall work directly for NGrid.
WSP shall forward the successful and rejected bids to TAG in order that NGrid Procurement can establish a Purchase Order.

The contractor will invoice TAG, who will in turn invoice the WSP or its General Contractor. NGrid will not mark up actual costs. Typical costs can include, but are not limited to:

- construction contractors invoiced cost
- replacement pole(s), crossarm(s), bracing or other material required to install the Wireless Facilities (minor material may be assigned to the WSP to purchase directly)
- NGrid Field Construction Supervisors time

All work on transmission Structures shall be in accordance with construction practices described in the most recent issue of NGrid Wireless Telecommunications Installations Specification (see Section 6.0).

Current NGrid approved live line transmission contractors are listed in Appendix E.

If the NGrid TLS construction department is requested to perform the construction work on a time and materials basis, a construction estimate shall be developed by NGrid and TAG will forward a Project Cost Proposal Letter to WSP who will signify acceptance by signing the letter and returning to TAG.

11. **Construction Scheduling**

TAG will notify WSP when regulatory approval is received for a project in NY.

When WSP receives zoning approval for a project in NE, WSP will inform TAG of such notification indicating the project is approved and funded to be constructed.

WSP submits preliminary project schedule for each transmission structure to TAG using the **Telecommunications Project Outage Duration Form**. Information to be provided shall include:

i. project name
ii. line(s) designation/no.
iii. voltage
iv. structure number
v. municipality
vi. area
vii. outage project start
viii. outage project finish
ix. outage duration days
x. estimated labor hours
xi. project duration days
xii. comments

Because NGrid construction crews and approved construction contractors work is scheduled on an extended window, it is critical that WSP submit the Telecommunications Project Outage Duration Form as soon as a realistic schedule is determined.

TAG will provide feedback on planned utility initiated outages for the transmission line(s) involved to WSP.

WSP will inform TAG if preliminary project construction schedule can be revised in order to perform the construction work during a utility scheduled outage.

**Submittals related to Construction Scheduling**

- **Telecommunications Project Outage Duration Form**

12. **Construction Coordination**

WSP shall request TAG to schedule an on site field meeting to discuss construction start date, construction activities, safety issues and schedules.

If construction work is to be performed by a construction contractor, the construction contractor will develop and submit the **Work Plan, Safety and Health Plan, Project Risk Assessment Form and the Project Risk Mitigation Plan** and forward to TAG. The FCS shall accept the submittals or request additional information.

Once the project scope and cost has been accepted by the WSP, TAG will issue a **Notice to Proceed (NTP)** authorizing installation of the WSP Wireless Facilities. The following are prerequisites to the issuance of a NTP:

- Fully executed Site License Agreement
- NGrid acceptance of the Structural Analysis Report
- NGrid acceptance of the GPR analysis and grounding system design
- NGrid acceptance of the site Construction Drawings
- NGrid review for potential transmission system reliability impact
- NGrid acceptance of appropriate property rights
- NGrid acceptance of a WSP project risk assessment detailed on a project risk assessment form
- NGrid acceptance of WSP risk mitigation plan
A NTP for ground level civil work is generally issued separately from a NTP for aerial work.

After TAG issues a NTP, site improvements and WSP Wireless Facilities installation may commence subject to the Conditions for Proposed Activities Within Transmission Line Rights-of-Way, which will be provided with the NTP. If NGrid construction crews are performing the construction work, installation is typically scheduled ten (10) to fifteen (15) business days after notification from the WSP that the site is ready e.g., site access roads and civil work complete and all material is correct, available and on-site.

At least ten (10) days prior to construction commencement, NGrid (NY only) shall provide for New York Department of Public Services Staff review, revised drawings and specifications depicting the limits of construction disturbance, showing all underground utilities and transmission line counterpoise (if any) in addition to showing locations of temporary and permanent erosion controls, any culverts and revegetation measures and specifications. The limits of construction disturbance shall also be field located prior to construction.

Aerial work schedules are typically dependent on the availability of line outages or non-reclosure requests (e.g., typically energized and de-energized work activities require coordination with NGrid and the appropriate Independent System Operator (ISO)).

NGrid anticipates the Wireless Facilities will be installed and tested within ninety (90) days from receipt of all permits/authorizations. The Wireless Services Provider shall advise NGrid if installation will be deferred beyond (90) days. Note: Contract language may trigger occupancy fees irrespective of actual installation.

Submittals related to Construction Coordination

- Work Plan
- Safety and Health Plan
- Project Risk Assessment Form
- Project Risk Mitigation Plans
13. **New York State Public Service Commission (PSC) Order Compliance:**

During site work and antenna installation, NGrid shall observe WSP construction activities to ensure faithful execution of Commission’s Orders and that the activities by others are consistent with Commission rules and regulations for Right-of-Way vegetation management plans. PSC approval establishes site specific requirements which typically require:

- WSP and NGrid shall ensure that the radio signal cable and the Power Mount (if applicable) are of the same color as the NGrid structure to which they are mounted.

- WSP and NGrid shall ensure that temporary erosion controls are in place before any soil is moved for site preparation and continue to be effective pending final restoration of the disturbed site.

- WSP and NGrid shall ensure that dirt and mud are not tracked onto the local roads by vehicles leaving the site.

- WSP and NGrid shall ensure that all rubbish and debris shall be disposed in a permitted landfill.

- WSP and NGrid shall ensure final restoration be monitored for effectiveness.

- NGrid shall ensure that the light fixture at the equipment shelter door is fitted with a shield or the use of a full cutoff luminaire-type fixture to be installed to prevent the direct upward beams of light from the fixture.

- NGrid shall follow all direction from Staff regarding the need for additional landscape screen plantings upon the installation of the fenced equipment shelter.

- WSP and NGrid shall ensure that a spill response kit (for potential fuel spills) is installed at sites with fuel storage capabilities.

The Wireless Service Provider shall insure the installation of the Wireless Facilities shall comply with the NY PSC Order approving installation.

14. **Project Closeout:**
Upon installation of WSP Wireless Facilities and completion of site improvements, TAG will arrange a final site inspection (punch list) with WSP, Electric Transmission & Distribution, Transmission Line Engineering, Transmission Line Services or the construction contractor(s) to identify remaining items of work and accept final construction. TAG shall coordinate corrective actions, if any, with WSP.

Within thirty (30) days of completing construction and punch list, WSP will provide as-built construction drawings which shall conform to the requirements in the most recent issue of NGrid Wireless Telecommunications Installations Specification (See Section 11.0).

15. **Project Certification:**

WSP is responsible for all costs related to Project Certification.

Within ten (10) calendar days of completing installation of the Wireless Facilities and punch list, the WSP shall inspect the construction of the Wireless Facilities to assure conformance with the construction drawings, NGrid Standards and the National Electric Safety Code (NESC). The inspection shall result in submittal of a Project Certification (reference Section 12.0 of the Wireless Telecommunications Installations Specification). The Project Certification shall be stamped by a Professional Engineer (PE) licensed and registered in the state in which the construction has taken place. An acceptable **Wireless Site Certification Template** is provided in the NGrid list of WSP submittals at the end of this process document.

WSP Design Engineer will inspect the construction of the Wireless Facilities as required to provide acceptable project certification. NGrid recommends at a minimum, three (3) inspections:

1. completion of foundation/civil work
2. during aerial work
3. completion of all work

**Submittals related to Project Certification**

- **Wireless Site Certification**

16. **Invoicing**
TAG will invoice WSP for:

- NGrid provided construction and engineering services including CFI and FCS costs.
- Total amount of congestion charges incurred (if applicable).

17. Other

Questions and inquiries regarding wireless occupancy on a NGrid transmission structure shall be directed to NGrid TAG representative Michael Ludovico at (315) 428-6688 or Charles Kosinski at (508) 421-7664.
NATIONAL GRID LIST OF WIRELESS SERVICE PROVIDER SUBMITTALS

Exhibit B – Request for Right of Entry

Exhibit B-1 – Collocation Application

Exhibit C – Site Application

RF Data / Structural Loading Form

Location Plan

Location Plan Checklist (reference Specification for Wireless Telecommunications Installations)

Transmittal T-1 Structure Location Information

Grounding Analysis Report

GPR Analysis Submittal – R1 Ground Potential Rise (GPR) Study

Structural Analysis Report

Consultant Submittal – S1

Construction Drawings

Transmittal F-1 Construction Field Issue

Environmental Submittals (as listed and / or as required)

Exhibit A - Site License Agreement (New England)

Exhibit A - Form of Supplemental Agreement (New York / New England)

Telecommunications Project Outage Duration Form

Health & Safety Plan

Project Risk Assessment / Mitigation Plans

Wireless Site Certification
EXHIBIT B - REQUEST FOR RIGHT OF ENTRY

Date _____________    Date Received ___________

Name of Applicant ____________________________________________________________

Address _____________________________________________________________________

_____________________________________________________________________

Telephone: ________________________             _______________________________
   Office         Mobile

Fax: ___________________________  E-mail: ____ _________________________

Designated Agent (if applicable) _________________________________________________

Address ____________________________________________________________________

_____________________________________________________________________

Telephone: ________________________             _______________________________
   Office     Mobile

Fax: ___________________________  E-mail: ________ _______________________

Description of Proposed Facility: ________________________________________________

___________________________________________________________________________

Location of Interest:

City/Town: _____________________  State: ____________________

Nearest Street: ______________________________________________________

Description of Site (Transmission Structure No., existing communications antenna, vacant land, substation, etc.):

____________________________________________________________________________

____________________________________________________________________________

TO COMPLETE YOUR REQUEST, PLEASE ATTACH A COPY OF A USGS LOCUS MAP AND WRITTEN AUTHORIZATION FROM THE UNDERLYING LANDOWNER IF LICENSOR’S RIGHTS ARE BY EASEMENT, LEASE OR LICENSE.
EXHIBIT B (CONTINUED) - REPLY

Request Granted ___________________________ Date ______________

Conditions Applicable to Entry (including time limitation on Right of Entry): __________
_________________________________________________________________________________
_________________________________________________________________________________

Request Denied ___________________________ Date ______________

Reasons __________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

_________________________________________
# EXHIBIT B-1 COLLOCATION APPLICATION

Please fill out the appropriate information and submit with antenna cut sheet and site sketch.

<table>
<thead>
<tr>
<th>National Grid Site Information</th>
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<tbody>
<tr>
<td>NGrid Site Name / Number</td>
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<tr>
<td>NGrid Site Address</td>
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<tr>
<td>Latitude / Longitude</td>
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<tr>
<td>Structure Height</td>
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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Date Submitted</td>
</tr>
<tr>
<td>New Installation</td>
</tr>
<tr>
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<tr>
<td>Applicant Site Name / Number</td>
</tr>
<tr>
<td>Contact</td>
</tr>
<tr>
<td>Applicant Contact Name / Title</td>
</tr>
<tr>
<td>Applicant Phone / Fax</td>
</tr>
<tr>
<td>Applicant Email</td>
</tr>
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<td>Applicant Address</td>
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<table>
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<tr>
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<td>Quantity / Manufacturer / Model #</td>
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<tr>
<td>Antenna Dimensions / Weight</td>
</tr>
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<td>Number of Sectors</td>
</tr>
<tr>
<td>Sector Azimuths</td>
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<tr>
<td>Antenna Gain</td>
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<tr>
<td>Power Output</td>
</tr>
<tr>
<td>Radiated Power (ERIP)</td>
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<tr>
<td>Number of Cable Runs</td>
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<td>Cable Size</td>
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<tr>
<td>Transmit Frequency</td>
</tr>
<tr>
<td>Receive Frequency</td>
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<tr>
<td>FCC Call Sign</td>
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<tr>
<td>Tower Mounted Amplifiers</td>
</tr>
<tr>
<td>Manufacturer / Model #</td>
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<tr>
<td>TMA Quantity/ Dimensions/Weight</td>
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<tr>
<td>TMA Mounting Location</td>
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<tr>
<td>TMA Additional Cables / Sizes</td>
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<tr>
<td>Microwave / Special Mounts / etc</td>
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<td>Quantity / Dimensions / Weight</td>
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<th>Lease Area / Ground Equipment Information</th>
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<td>Lease Area Size Requested</td>
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<tr>
<td>Generator Type / Model / Size</td>
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<tr>
<td>Fuel Type / Additional Space Reqs</td>
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### Additional Information

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<td>Qty/Size</td>
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<td>Existing Lines</td>
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<tr>
<td>Qty/Size</td>
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<tr>
<td>Existing Equipment</td>
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<td>Additional Comments</td>
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### For National Grid Use Only

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<td>Fees $</td>
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<td>Signature</td>
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<td>Date</td>
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### ENGINEERING & CONSTRUCTION

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<td></td>
</tr>
<tr>
<td>Signature</td>
<td></td>
<td></td>
<td>Date</td>
</tr>
</tbody>
</table>
Site Sketch
EXHIBIT C - SITE APPLICATION (New England)

In accordance with Section 2 of the Master License Agreement by and between __________ (Licensor) and _______________ (Licensee) dated __________, 20_, Licensee hereby submits to Licensor this Site Application and the agreed-upon Site Application Fee for the following Property:

Site Name and Number:

Site Address:

___ Site Application Fee in the amount of $ ______ (attached)

___ Certificates of Insurance as required by Section 15 of the Master License Agreement (attached)

___ Test Description (attached)
Please provide information on vehicles and equipment involved, setup, proposed schedule, duration, type of test.

___ Plan or drawing (attached)
Please provide information sufficient to indicate anticipated relationships of testing vehicle/equipment to Licensor properties (including transmission lines).

Licensee acknowledges that this Site Application is limited to entry upon, inspection of, testing upon, in or around the Property described above.

On behalf of Licensee:

________________________
Name

________________________
Title

________________________
Date

Acknowledged by Licensor:

________________________
Name

________________________
Title

________________________
Date
RF Data / Structural Loading Form

To Be Completed By National Grid:
<table>
<thead>
<tr>
<th>NGrid Tracking Number:</th>
<th>Site Address:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure Number:</td>
<td>Site Address:</td>
</tr>
<tr>
<td>Line Name / Number:</td>
<td>Carrier / Contact:</td>
</tr>
<tr>
<td>(E) Structure Height (A.G.L.):</td>
<td>(E) Structure Type:</td>
</tr>
</tbody>
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To Be Completed By Applicant (RF): RF Engineer:
| Desired ACL: (A.G.L.) |

# of Sectors: | # of Antenna per Sector: *(See Note 1)* |
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<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector 1</td>
<td>Sector 2</td>
</tr>
<tr>
<td>Sector 2</td>
<td>Sector 3</td>
</tr>
</tbody>
</table>

Sector Orientation/Azimuths
“Tower Mounted” Amps per Antenna:
Feedlines per Antenna:
Requested Horizontal Separation Between: (ft.)
Minimum Horizontal Separation Between: (ft.)

Antenna Mount Type: *(See Note 2)*

Mechanical Equipment Specifications:

Antenna Dimensions (LxWxD): in. X in. X in.
Net Weight: lbs. *(inclusive of mounting/down tilt brackets)*
Feedline Size: in. Dia.
Feedline Weight: lb/ft

Amplifier(s) Dimensions (LxWxD): in. X in. X in.
Net Weight: lbs.
Amplifier mounting location and/or orientation:

Note 1: Carrier to prepare loading inventory for full complement/maximum leased equipment.
Note 2: Reference National Grid list of “approved” attachment hardware.

For Safe Worker Clearances

EIRP = mW
frequency = mHz
antenna gain = dBi
TRANSMITTAL T-1
Structure Location Information

FROM | TO
--- | ---
Applicant | Telecom Coordinator
Phone No. | Phone No.
Fax No. | Fax No.
e-mail | e-mail
Date | Date

SECTION 1
Structure Information

- Primary Site Candidate
- Supplemental Information Required for GPR Study

<table>
<thead>
<tr>
<th>Transmission Line Name(s):</th>
<th>Circuit A</th>
<th>Circuit B</th>
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</thead>
<tbody>
<tr>
<td>Transmission Voltage(s):</td>
<td>Circuit A</td>
<td>□ 69 kV □ 115 kV □ 230 kV □ 345 kV</td>
</tr>
<tr>
<td></td>
<td>Circuit B</td>
<td>□ 69 kV □ 115 kV □ 230 kV □ 345 kV</td>
</tr>
<tr>
<td>Structure Number</td>
<td>Circuit A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Circuit B</td>
<td></td>
</tr>
<tr>
<td>Distribution Line Name(s):</td>
<td>Circuit A</td>
<td>□ 13.2 kV □ 13.8 kV □ 23 kV □ 34.5 kV</td>
</tr>
<tr>
<td></td>
<td>Circuit B</td>
<td>□ 13.2 kV □ 13.8 kV □ 23 kV □ 34.5 kV</td>
</tr>
<tr>
<td>Distribution Voltage(s):</td>
<td>Circuit A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Circuit B</td>
<td></td>
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<tr>
<td>Structure Number</td>
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</table>

GPS Coordinate NAD 83 DD.dddd or D/M/S
<table>
<thead>
<tr>
<th>Location (check one)</th>
<th>New York</th>
<th>New England</th>
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</thead>
<tbody>
<tr>
<td>Latitude (N)</td>
<td></td>
<td>Longitude (W)</td>
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Location Information
SECTION 2
USGS Locus Maps / Site Photo / Closest Public Way
GPR Analysis Submittal - R1
Ground Potential Rise (GPR) Study

FROM
Consultant
Contact Engineer
Phone Number
Fax Number
e-mail
Date

TO
Transmission Engineer
Phone Number
Fax Number
e-mail
Date

SECTION 1. Site Information

<table>
<thead>
<tr>
<th>Transmission Line(s) Name / #</th>
<th>Structure Number</th>
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</thead>
<tbody>
<tr>
<td>Proposed Telecom Equipment Area (ft x ft)</td>
<td>Proposed Telecom Lease Area (ft x ft)</td>
</tr>
<tr>
<td>Proposed Telecom Fencing Material</td>
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<tr>
<td>Antenna Installation Type</td>
<td>Monopole</td>
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SECTION 2. Analysis Submittals

<table>
<thead>
<tr>
<th>Analysis Report</th>
<th>Calculations</th>
<th>Schematic of Grounding Grid Design</th>
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</table>

SECTION 3. Grounding Design

<table>
<thead>
<tr>
<th>Counterpoise Ring Area</th>
<th>Material</th>
<th>Buried Depth of Ring</th>
<th># Rods</th>
<th>Depth of Rod</th>
<th>Encircles</th>
</tr>
</thead>
</table>

| Calculated Earth Fault Current | amps |
| Calulated Ground Potential Rise | volts (rms) |
| Allowable | Calculated |
| Grounding System Resistance | ohms |
| 300-Volt GPR distance | feet |

SECTION 4. Safety Calculations: Step and Touch Potential

A. Assumptions

| Clearing Time | seconds |
| Native Soil Resistivity | ohm-meters |
| Shoe/Footwear Resistance | ohms |
| Body Resistance | ohms |
| Fibrillation Current Calculation (basis) | kg |
| List Others: | |

Transmission Structure Wireless Occupancy Process
03/17/2008
B. Design Calculations

<table>
<thead>
<tr>
<th>DESIGN CONDITION</th>
<th>Touch Voltage</th>
<th>Step Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Maximum Allowable</td>
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<td></td>
</tr>
<tr>
<td>B. Grid and Native Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Grid and Surface Modifications</td>
<td></td>
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<table>
<thead>
<tr>
<th>Location Description</th>
<th>Location A</th>
<th>Location B</th>
<th>Location C</th>
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<tbody>
<tr>
<td>Material</td>
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<tr>
<td>Depth of Material (in.)</td>
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<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>VALUES</th>
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<tbody>
<tr>
<td>Assumed</td>
<td>Calculated</td>
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<tr>
<td>X/R Ratio</td>
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</table>

The consulting engineer for this study hereby states that the engineering analysis and all related documents contained within this submittal strictly comply with the National Grid Transmission Engineering and Design Specification WRLS602 and all applicable statutes, regulations, and design codes, including, but not limited to, National Electrical Code, National Electrical Safety Code, ANSI / IEEE Standard 80-2000 “IEEE Guide for Safety in AC Substation Grounding”, and OSHA Appendix C of 29 CFR 1910.269.

Prepared By

Date

Approved By

Date

Engineering license stamp area.
Consultant Submittal - S1
Structural Analysis Report for Telecommunications Installation

FROM
Consultant
Contact Engineer
Phone Number
Fax Number
e-mail
Date

TO
Transmission Engineer
Phone Number
Fax Number
e-mail
Date

SECTION 1. Site Information

Line Name / #
Structure Number
Installation Type
Structure Type
Suspension
Strain
Dead End
R.A.

SECTION 2. Submittals
(check all applicable)

<table>
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<tr>
<th>Engineering Analysis</th>
<th>Construction Drawings</th>
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<td>Paper Copy (2 sets ANSI B size)</td>
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<tr>
<td>Electronic File of Structural Analysis</td>
<td>Electronic files on CD-R</td>
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<tr>
<td>Calculations</td>
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<td></td>
<td>*.DWG</td>
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<tr>
<td></td>
<td>*.DGN</td>
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<tr>
<td>Grounding Report/Analysis</td>
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SECTION 3. Transmission Structure Analysis
Report the maximum member usage for each load case in the table below.

<table>
<thead>
<tr>
<th>Load Case</th>
<th>Structure Wind Load (p.s.f.)</th>
<th>Structure Section (e.g. body, leg, x-arm)</th>
<th>Allowable Capacity (kips)</th>
<th>Maximum Force (kips)</th>
<th>% of Capacity</th>
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<tbody>
<tr>
<td>I. NESC Heavy</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>II. Extreme Wind</td>
<td></td>
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<tr>
<td>III. Heavy Ice</td>
<td></td>
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<tr>
<td>IV. NESC Heavy w/ Antenna Installation</td>
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<tr>
<td>V. Extreme Wind w/ Antenna Installation</td>
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<td>VI. Heavy Ice w/ Antenna Installation</td>
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</tbody>
</table>

NOTE: Use ‘+’ to indicate tension, ‘-’ to indicate compression
SECTION 4. Antenna Support Structure Analysis

The responsible engineer shall initial each box to verify that the component sufficiently meets the analysis requirements for each respective load case.

<table>
<thead>
<tr>
<th>Load Case</th>
<th>Connections to Transmission Structure</th>
<th>Support Frame / Monopole</th>
<th>Antenna Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSI/TIA/EIA-222-F-1996 Loading</td>
<td>I. NESC Heavy Antenna</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. NESC Heavy Antenna</td>
<td>I. NESC Heavy Antenna</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II. NESC Extreme Wind Antenna</td>
<td>II. NESC Extreme Wind Antenna</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III. Heavy Ice Antenna</td>
<td>III. Heavy Ice Antenna</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The consulting engineer for this project hereby states that the engineering analysis and all related documents contained within this submittal comply with the National Grid Transmission Engineering and Design Specification WRLS602 and all applicable codes, standards, and regulations corresponding to the development of these documents.

Prepared By

Date

Approved By

Date

Engineering license stamp area.
TRANSMITTAL F-1
Construction Field Issue

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicant</td>
<td>Telecom Coordinator</td>
</tr>
<tr>
<td>Phone No.</td>
<td>Phone No.</td>
</tr>
<tr>
<td>Fax No.</td>
<td>Fax No.</td>
</tr>
<tr>
<td>e-mail</td>
<td>e-mail</td>
</tr>
<tr>
<td>Date</td>
<td>Date</td>
</tr>
</tbody>
</table>

Structure Information

<table>
<thead>
<tr>
<th>Transmission Line Name / Number</th>
<th>Structure Number</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Location (check one)</th>
<th>New York</th>
<th>New England</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Applicant requests National Grid Transmission Line Engineering to initiate a Construction Field Issue (CFI) for the telecommunications installation on the transmission structure identified above.

Applicant understands and agrees the full cost of the CFI is payable to National Grid in accordance with the Master and Site License Agreements. Applicant understands the cost of the CFI cannot be determined in advance and such cost shall be added to the Work Order created for the wireless construction.

Signature: ____________________________

Date: ________________________________

Title: ________________________________

Attachment: National Grid accepted final Construction Drawings dated __ / __ / ____
EXHIBIT A - SITE LICENSE AGREEMENT (SLA)

New England

This Site License Agreement ("Site License") made this ______ day of
__________, ____ by and between ___________________ ("Licensor") and
_____________________________ (“Licensee”).

This Site License is referred to in the Master License Agreement between Licensor
and Licensee, dated ____________ ("Master License"). All of the terms and conditions of
the Master License are incorporated herein by reference and made a part hereof. In the event
of any contradiction, modification or inconsistency between the terms of the Master License
and this Site License, the terms of this Site License shall prevail. Unless otherwise stated in
this Site License, capitalized terms used in this Site License shall have the same meaning as
declared in the Master License.

LICENSOR, ITS AFFILIATES AND SUPPLIERS IN PROVIDING ANY SERVICE
HEREUNDER MAKE NO WARRANTIES EXPRESS OR IMPLIED, AND
SPECIFICALLY DISCLAIM ANY WARRANTY OF FITNESS FOR A
PARTICULAR PURPOSE.

Site Name and Number ________________________________

Site Address _______________________________________

Electric Circuit (line) No. _____________________________

Electric Circuit Name _________________________________

Tower/Structure No. __________________________________

Site Latitude _________________________________________

Site Longitude _______________________________________

Access Requirements _________________________________

Site Conditions/Limitations ___________________________
EXHIBIT A - SITE LICENSE AGREEMENT (SLA)  
New England

The Legal Description of the Premises and Property are attached as Exhibit 1 to this Site License.

The description of Licensee Equipment is shown on the License Exhibit and Construction Drawings which are attached as Exhibit 2 to this Site License.

All required permits, approvals, easements, or licenses, which in the sole opinion of the Licensor are sufficient and appropriate for fulfilling the terms of the Master License, are attached as Exhibit 3 to this Site License.

The Term of this Site License is described in Section 5 of the Master License.

The Commencement Date of this Site License is described in Section 5 of the Master License.

Licensee shall pay Licensor an annual License Fee as described in, and as increased pursuant to, Section 6 of the Master License.

Licensor contact for emergencies: ________________________________

Licensee contact for emergencies: ________________________________

Estimated Removal and Restoration Cost (as defined in Section 4 of the Master License): _____

Special provisions: ____________________________________________

To the extent that Licensor owns the Property, Licensee is entitled access to the Premises throughout the Term, so long as Licensee is not in default of any term of the Master License and this Site License beyond the expiration of the applicable cure period.

A visual review of the site was conducted on __________ and no evidence of contamination was found.

Licensor requires the Licensee to submit written certification, in a form acceptable to Licensor, certifying that Licensee’s wireless facility installation conforms to the accepted plans and Licensor standards. The certification shall be prepared by a licensed Professional Engineer licensed in the state where the work is located and submitted within ten (10) days of completing construction and punch list. In the event that the Professional Engineer determines the installation does not comply with plans or standards, the Professional Engineer shall submit a report stating the findings along with a plausible solution(s).
## EXHIBIT A - SITE LICENSE AGREEMENT (SLA)  
**New England**

<table>
<thead>
<tr>
<th><strong>Licensor:</strong></th>
<th><strong>Licensee:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By: ____________________________  
Print Name: ______________________  
Title: ___________________________  
Date: ____________________________

By: ____________________________  
Print Name: ______________________  
Title: ___________________________  
Date: ____________________________

**Attachments:**  
1. Exhibit 1: Legal Description  
2. Exhibit 2: Description of Licensee’s Equipment (License Exhibit, Constructions Drawings)  
3. Exhibit 3: Permits, Approvals, Easements, Licenses  
4. Exhibit 4: Current Communications Uses of Site (including frequencies)
EXHIBIT A - FORM OF SUPPLEMENTAL AGREEMENT (SA)
New York

SA NO._______
STRUCTURE NO._______

EXHIBIT A

Form of Supplemental Agreement

To the Master Right-of-Occupancy Agreement between NGrid, and Licensee, dated as of ____________________, the terms and conditions of which are incorporated by reference herein, agree as follows:

1. Site No./Name: _________________________________

2. Name of ____________________ Affiliate: _________________________________

3. Site Latitude and Longitude: _________________________________

4. Payment Commencement date: _________________________________

5. Annual Fee: _________________________________

6. Term: ______ yrs. ______ Expiring on: ________ (m/d/y)

7. Property Owned by NGrid: [ ] or Lessor-Leased easement: [ ]

   If Leased, term of underlying Lease Site NGrid Fee Owner: _________________________________

   Other existing easement holders   yes [ ]  no [ ] If so, list all other property rights holders

8. Access Requirements: _________________________________

9. NGrid Contact for Emergency Access: _________________________________

10. Licensee contact for Emergency: _________________________________

11. Licensee address for Notice Purposes: _________________________________
12. Special provisions/site limitation/changes in ownership):

13. A visual review of the site was conducted on __________ and no evidence of contamination was found.

14. Licensor requires the Licensee to submit written certification, in a form acceptable to Licensor, certifying that Licensee’s wireless facility installation conforms to the accepted plans and Licensor standards. The certification shall be prepared by a licensed Professional Engineer licensed in the state where the work is located and submitted within ten (10) days of completing construction and punch list. In the event that the Professional Engineer determines the installation does not comply with plans or standards, the Professional Engineer shall submit a report stating the findings along with a plausible solution(s).

NIAGARA MOHAWK POWER CORPORATION

By: ________________________________

Title: ________________________________

Date: ________________________________

LICENSEE

By: ________________________________

Title: ________________________________

Date: ________________________________

Addendum/Attachments:

Schedule 1: Description of Antennas/Dishes Location(s)
Schedule 2: Description of Equipment Shelter/ Room/Cabinet Location(s)
Schedule 3: Plans and Specifications
Schedule 4: Current Communications Users of Site (including frequencies)
Telecommunications Project Outage Duration Form

| Date Submitted: |  |
| Submitted By: |  |
| Company: |  |
| Project Name: |  |
| Line(s) Designation/No. |  |
| Voltage: |  |
| Structure Number: |  |
| Municipality: |  |
| Area * |  |

<table>
<thead>
<tr>
<th>Outage Project Start</th>
<th>Outage Project Finish</th>
<th>Outage Duration Days</th>
<th>Estimated Labor Hours</th>
<th>Project Duration Days</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

* Area

<table>
<thead>
<tr>
<th>New England</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>East</td>
</tr>
<tr>
<td>South</td>
<td>Central</td>
</tr>
<tr>
<td></td>
<td>West</td>
</tr>
</tbody>
</table>
To: Wireless Service Provider  

Re: _____________________ Site – Site No. ______________
  Construction Certification

Dear Ms. __________________:

Based on our review of the work completed for the above-referenced project, including As-Built Drawings provided by (Wireless Service Provider), and a final field observation of the site performed on ______________, I find the project has been completed in conformance with the plans and in compliance with applicable National Grid Standards and National Electric Safety Code requirements.

If you have any questions or require any additional information, please do not hesitate to contact me.

Very truly yours,

_________ ENGINEERS, INC.

________________________ P.E.
  Service Group Manager
APPENDIX A

Current NGrid approved crane services:

- American Lighting & Signalization, Inc.
  5 Spanish River Rd.
  Grafton, MA 01519

- Associated Maintenance Corp.
  P.O. Box 223
  Eastwood Station
  Syracuse, NY 13206

- Collins Crane & Rigging Service, Inc.
  408 Spring St.
  East Bridgewater, MA 02333

- NES Rentals Holdings, Inc.
  12 New Bond St.
  Worcester, MA 01606

- Northeast Crane and Rigging Service
  11 Groveland St.
  Seabrook, NH 03874

- United Rentals, Inc.
  Five Greenwich Office Park
  Greenwich, CT 06830
APPENDIX B

Current NGrid approved GPR/grounding design consultant:

- Lyncole Industries, Inc.
  3547 Voyager St.
  Torrance, CA 90503
APPENDIX C

Current NGrid approved engineering consultants to perform Structural Analyses:

- Black & Veatch
  709 East Ordnance Road, Suite 503
  Baltimore, MD 21226

- Commonwealth Associates
  PO Box 1124
  Jackson, MI 49204-1124

- TRC
  225 Greenfield Parkway, Suite 203
  Liverpool, NY 13088

- RCP Engineering
  11 Kenny Drive
  Mohton, PA 19540

- Vanderweil Engineers
  274 Sumner Street
  Boston, MA 02210-1123
<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <em>Cornus racemosa</em></td>
<td>Gray Dogwood</td>
<td>Shrub</td>
</tr>
<tr>
<td>15 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. <em>Corylus americana</em></td>
<td>American Hazel</td>
<td>Shrub</td>
</tr>
<tr>
<td>12 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. <em>Corylus cornuta</em></td>
<td>Beaked Hazel</td>
<td>Shrub</td>
</tr>
<tr>
<td>6 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. *Ilex serrata x verticullata ‘Sparkeleberry’</td>
<td>Sparkleberry Holly</td>
<td>Tree</td>
</tr>
<tr>
<td>12 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. <em>Ilex decidua</em></td>
<td>Deciduous Holly</td>
<td>Tree</td>
</tr>
<tr>
<td>15 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. <em>Juniperus chinensis ‘Keteleeri’</em></td>
<td>Keteleeri Chinese Juniper</td>
<td>Tree</td>
</tr>
<tr>
<td>15 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. *Juniperus virginiana ‘Manhattan Blue’</td>
<td>Manhattan Blue Juniper</td>
<td>Tree</td>
</tr>
<tr>
<td>12 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. <em>Malus var. Adirondack</em></td>
<td>Adirondack Crabapple</td>
<td>Tree</td>
</tr>
<tr>
<td>18 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. <em>Malus var. Indian Summer</em></td>
<td>Indian Summer Crabapple</td>
<td>Tree</td>
</tr>
<tr>
<td>18 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. <em>Malus var. Liset</em></td>
<td>Liset Crabapple</td>
<td>Tree</td>
</tr>
<tr>
<td>15 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. <em>Picea glauca ‘conica’</em></td>
<td>Dwarf Alberta Spruce</td>
<td>Tree</td>
</tr>
<tr>
<td>6 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. <em>Picea pungens ‘bakeri’</em></td>
<td>Bakeri Blue Spruce</td>
<td>Tree</td>
</tr>
<tr>
<td>15 feet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX D (CONTINUED)

**TRANSMISSION LINE TREES**

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syringa sp.</td>
<td>Lilac species</td>
<td>Shrub</td>
</tr>
<tr>
<td>Taxus x. media ‘Hicksii’</td>
<td>Hicksi Yew</td>
<td>Tree</td>
</tr>
<tr>
<td>Taxus x. media ‘viridis’</td>
<td>Viridis Yew</td>
<td>Tree</td>
</tr>
<tr>
<td>Thuja occidentalis ‘techny’</td>
<td>Mission Arborvitae</td>
<td>Tree</td>
</tr>
<tr>
<td>Viburnum dentatum</td>
<td>Arrowwood viburnum</td>
<td>Shrub</td>
</tr>
<tr>
<td>Viburnum prunifolium</td>
<td>Blackhawk viburnum</td>
<td>Shrub</td>
</tr>
</tbody>
</table>

- Height: 10 feet
- Height: 12 feet
- Height: 15 feet
Current NGGrid approved live line contractors:

- Harlan Construction Company (Note 1)
  P.O. Box 1605
  Hopewell, VA 23860

- Hawkeye (Note 1)
  100 Marcus Boulevard
  Hauppauge, NY 11788

- KT Power, Inc.
  P.O Box 504
  Waddington, NY 13694

- M J Electric, Inc. (Note 2)
  P.O Box 310
  1047 Shoemaker Ave
  Shoemaker, PA 19555

- O’Connell Electric (Note 2)
  830 Phillips Rd.
  Victor, NY 14564

- 3 Phase Line Construction, Inc
  25 Main Street
  P.O. Box 18
  Farmington, NH 03835

- THIRO USA (Note 1)
  127 Costello Road
  Newington, CT 06111

Note 1: National Grid Alliance Contractor

Note 2: Requires prior Transmission Line Services review of work practice