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Service Agreement No. 1988

**SMALL GENERATOR  
INTERCONNECTION AGREEMENT (SGIA)**

**Between**

**WM Renewable Energy**

**And**

**Niagara Mohawk Power Corporation, dba National Grid**

**TABLE OF CONTENTS**

	Page No.
<b>Article 1. Scope and Limitations of Agreement</b>	<b>1</b>
<b>Article 2. Inspection, Testing, Authorization, and Right of Access</b>	<b>3</b>
<b>Article 3. Effective Date, Term, Termination, and Disconnection</b>	<b>5</b>
<b>Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades</b>	<b>7</b>
<b>Article 5. Cost Responsibility for Network Upgrades</b>	<b>8</b>
<b>Article 6. Billing, Payment, Milestones, and Financial Security</b>	<b>10</b>
<b>Article 7. Assignment, Liability, Indemnity, Force Majeure, Consequential Damages, and Default</b>	<b>11</b>
<b>Article 8. Insurance</b>	<b>14</b>
<b>Article 9. Confidentiality</b>	<b>14</b>
<b>Article 10. Disputes</b>	<b>15</b>
<b>Article 11. Taxes</b>	<b>16</b>
<b>Article 12. Miscellaneous</b>	<b>16</b>
<b>Article 13. Notices</b>	<b>19</b>
<b>Article 14. Signatures</b>	<b>22</b>
<u>Attachment 1</u> – Glossary of Terms	
<u>Attachment 2</u> – General Description and Estimated O&M Costs of the Small Generating Facility, and Interconnection Facilities including Metering Equipment, and System Upgrades.	
<u>Attachment 3</u> – Interconnection Study with One-line Diagram, Facility Costs, the Small Generating Facility Description, Interconnection Facilities Description, Metering Equipment Description, and System Upgrades	
<u>Attachment 4</u> – Milestones	

*September*  
*JP*  
This Interconnection Agreement ("Agreement") is made and entered into this 8<sup>th</sup> day of ~~July~~, 2008, by Niagara Mohawk Power Corporation, d/b/a National Grid ("Transmission Owner"), and the WM Renewable Energy, ("Interconnection Customer") each hereinafter sometimes referred to individually as "Party" or both referred to collectively as the "Parties."

### Transmission Owner Information

Transmission Owner: Niagara Mohawk Power Corporation, d/b/a National Grid  
Attention: Manager, Transmission Commercial Services  
Address: 300 Erie Boulevard West  
City: Syracuse State: New York Zip: 13202

### Interconnection Customer Information

Interconnection Customer: WM Renewable Energy L.L.C.  
Attention: Peter Kruliczek  
Address: 1001 Fannin, Suite 4000  
City: Houston State: Texas Zip: 77002

In consideration of the mutual covenants set forth herein, the Parties agree as follows:

### Article 1. Scope and Limitations of Agreement

- 1.1 This Agreement shall be used for all Interconnection Requests submitted under the Small Generator Interconnection Procedures (SGIP) except for those submitted under the 10 kW Inverter Process contained in SGIP Attachment 5.
- 1.2 This Agreement governs the terms and conditions under which the Interconnection Customer's Small Generating Facility will interconnect with, and operate in parallel with, the Transmission Owners Transmission System.
- 1.3 This Agreement does not constitute an agreement to purchase or deliver the Interconnection Customer's power. The purchase or delivery of power and other services that the Interconnection Customer may require will be covered under separate agreements. The Interconnection Customer will be responsible for separately making all necessary arrangements (including scheduling) for delivery of electricity with the New York Independent System Operator ( Transmission Provider).
- 1.4 Nothing in this Agreement is intended to affect any other agreement between the Transmission Owner and the Interconnection Customer.
- 1.5 Responsibilities of the Parties

- 1.5.1 The Parties shall perform all obligations of this Agreement in accordance with all Applicable Laws and Regulations, Operating Requirements, and Good Utility Practice.
  - 1.5.2 The Interconnection Customer shall construct, interconnect, operate and maintain its Small Generating Facility and construct, operate, and maintain its Interconnection Facilities in accordance with the applicable manufacturer's recommended maintenance schedule, in accordance with this Agreement, and with Good Utility Practice.
  - 1.5.3 The Transmission Owner shall construct, operate, and maintain its Transmission System and Interconnection Facilities in accordance with this Agreement, and with Good Utility Practice.
  - 1.5.4 The Interconnection Customer agrees to construct its facilities or systems in accordance with applicable specifications that meet or exceed those provided by the National Electrical Safety Code, the American National Standards Institute, IEEE, Underwriter's Laboratory, and Operating Requirements in effect at the time of construction and other applicable national and state codes and standards. The Interconnection Customer agrees to design, install, maintain, and operate its Small Generating Facility so as to reasonably minimize the likelihood of a disturbance adversely affecting or impairing the system or equipment of the Transmission Owner or Affected Systems.
  - 1.5.5 Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for the facilities that it now or subsequently may own unless otherwise specified in the Attachments to this Agreement. Each Party shall be responsible for the safe installation, maintenance, repair and condition of their respective lines and appurtenances on their respective sides of the point of change of ownership. The Transmission Owner and the Interconnection Customer, as appropriate, shall provide Interconnection Facilities that adequately protect the Transmission Owner's Transmission System, personnel, and other persons from damage and injury. The allocation of responsibility for the design, installation, operation, maintenance and ownership of Interconnection Facilities shall be delineated in the Attachments to this Agreement.
  - 1.5.6 The Transmission Owner shall coordinate with all Affected Systems to support the interconnection.
- 1.6 Parallel Operation Obligations  
Once the Small Generating Facility has been authorized to commence parallel operation, the Interconnection Customer shall abide by all rules and procedures pertaining to the parallel operation of the Small Generating Facility in the applicable control area, including, but not limited to; 1) the rules and procedures concerning the operation of

generation set forth in the Tariff or by the Transmission Provider for the Transmission Owner's Transmission System and; 2) the Operating Requirements set forth in Attachment 5 of this Agreement.

**1.7 Metering**

The Interconnection Customer shall be responsible for the Transmission Provider's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair, and replacement of metering and data acquisition equipment specified in Attachments 2 and 3 of this Agreement. The Interconnection Customer's metering (and data acquisition, as required) equipment shall conform to applicable industry rules and Operating Requirements.

**1.8 Reactive Power**

1.8.1 The Interconnection Customer shall design its Small Generating Facility to maintain a composite power delivery at continuous rated power output at the Point of Interconnection at a power factor within the range of 0.95 leading to 0.95 lagging, unless the Transmission Owner has established different requirements that apply to all similarly situated generators in the control area on a comparable basis.

1.8.2 The Transmission Provider is required to pay the Interconnection Customer for reactive power that the Interconnection Customer provides or absorbs from the Small Generating Facility when the Transmission Provider requests the Interconnection Customer to operate its Small Generating Facility outside the range specified in article 1.8.1. In addition, if the Transmission Provider pays its own or affiliated generators for reactive power service within the specified range, it must also pay the Interconnection Customer.

1.8.3 Payments shall be in accordance with the Interconnection Customer's applicable rate schedule then in effect unless the provision of such service(s) is subject to a regional transmission organization or independent system operator FERC-approved rate schedule. To the extent that no rate schedule is in effect at the time the Interconnection Customer is required to provide or absorb reactive power under this Agreement, the Parties agree to expeditiously file such rate schedule and agree to support any request for waiver of the Commission's prior notice requirement in order to compensate the Interconnection Customer from the time service commenced.

1.9 Capitalized terms used herein shall have the meanings specified in the Glossary of Terms in Attachment 1 or the body of this Agreement.

**Article 2. Inspection, Testing, Authorization, and Right of Access**

## 2.1 Equipment Testing and Inspection

- 2.1.1 The Interconnection Customer shall test and inspect its Small Generating Facility and Interconnection Facilities prior to interconnection. The Interconnection Customer shall notify the Transmission Owner of such activities no fewer than five Business Days (or as may be agreed to by the Parties) prior to such testing and inspection. Testing and inspection shall occur on a Business Day. The Transmission Owner may, at its own expense, send qualified personnel to the Small Generating Facility site to inspect the interconnection and observe the testing. The Interconnection Customer shall provide the Transmission Owner a written test report when such testing and inspection is completed.
- 2.1.2 The Transmission Owner shall provide the Interconnection Customer written acknowledgment that it has received the Interconnection Customer's written test report. Such written acknowledgment shall not be deemed to be or construed as any representation, assurance, guarantee, or warranty by the Transmission Provider of the safety, durability, suitability, or reliability of the Small Generating Facility or any associated control, protective, and safety devices owned or controlled by the Interconnection Customer or the quality of power produced by the Small Generating Facility.

## 2.2 Authorization Required Prior to Parallel Operation

- 2.2.1 The Transmission Owner shall use Reasonable Efforts to list applicable parallel operation requirements in Attachment 5 of this Agreement. Additionally, the Transmission Owner shall notify the Interconnection Customer of any changes to these requirements as soon as they are known. The Transmission Owner shall make Reasonable Efforts to cooperate with the Interconnection Customer in meeting requirements necessary for the Interconnection Customer to commence parallel operations by the in-service date.
- 2.2.2 The Interconnection Customer shall not operate its Small Generating Facility in parallel with the Transmission Owner's Transmission System without prior written authorization of the Transmission Owner. The Transmission Owner will provide such authorization once the Transmission Owner receives notification that the Interconnection Customer has complied with all applicable parallel operation requirements. Such authorization shall not be unreasonably withheld, conditioned, or delayed.

## 2.3 Right of Access

- 2.3.1 Upon reasonable notice, the Transmission Owner may send a qualified person to the premises of the Interconnection Customer at or immediately before the time the Small Generating Facility first produces energy to inspect the interconnection, and observe the commissioning of the Small Generating Facility (including any



required testing), startup, and operation for a period of up to three Business Days after initial start-up of the unit. In addition, the Interconnection Customer shall notify the Transmission Owner at least five Business Days prior to conducting any on-site verification testing of the Small Generating Facility.

- 2.3.2 Following the initial inspection process described above, at reasonable hours, and upon reasonable notice, or at any time without notice in the event of an emergency or hazardous condition, the Transmission Owner shall have access to the Interconnection Customer's premises for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement or if necessary to meet its legal obligation to provide service to its customers.
- 2.3.3 Each Party shall be responsible for its own costs associated with following this article.

### **Article 3. Effective Date, Term, Termination, and Disconnection**

#### **3.1 Effective Date**

This Agreement shall become effective upon execution by the Parties subject to acceptance by FERC (if applicable), or if filed unexecuted, upon the date specified by the FERC. The Transmission Owner shall promptly file this Agreement with the FERC upon execution, if required.

#### **3.2 Term of Agreement**

This Agreement shall become effective on the Effective Date and shall remain in effect for a period of ten years from the Effective Date or such other longer period as the Interconnection Customer may request and shall be automatically renewed for each successive one-year period thereafter, unless terminated earlier in accordance with article 3.3 of this Agreement.

#### **3.3 Termination**

No termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination, including the filing with FERC of a notice of termination of this Agreement (if required), which notice has been accepted for filing by FERC.

- 3.3.1 The Interconnection Customer may terminate this Agreement at any time by giving the Transmission Owner 20 Business Days written notice.
- 3.3.2 Either Party may terminate this Agreement after Default pursuant to article 7.6.
- 3.3.3 Upon termination of this Agreement, the Small Generating Facility will be disconnected from the Transmission Owner's Transmission System. The termination of this Agreement shall not relieve either Party of its liabilities and



obligations, owed or continuing at the time of the termination.

3.3.4 This provisions of this article shall survive termination or expiration of this Agreement.

3.4 Temporary Disconnection

Temporary disconnection shall continue only for so long as reasonably necessary under Good Utility Practice.

3.4.1 Emergency Conditions – "Emergency Condition" shall mean a condition or situation: (1) that in the judgment of the Party making the claim is imminently likely to endanger life or property; or (2) that, in the case of the Transmission Owner, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to the Transmission System, the Transmission Owner's Interconnection Facilities or the Transmission Systems of others to which the Transmission System is directly connected; or (3) that, in the case of the Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Small Generating Facility or the Interconnection Customer's Interconnection Facilities. Under Emergency Conditions, the Transmission Owner may immediately suspend interconnection service and temporarily disconnect the Small Generating Facility. The Transmission Owner shall notify the Interconnection Customer promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Interconnection Customer's operation of the Small Generating Facility. The Interconnection Customer shall notify the Transmission Owner promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Transmission Owner's Transmission System or other Affected Systems. To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties' facilities and operations, its anticipated duration, and the necessary corrective action.

3.4.2 Routine Maintenance, Construction, and Repair

The Transmission Owner may interrupt interconnection service or curtail the output of the Small Generating Facility and temporarily disconnect the Small Generating Facility from the Transmission Owner's Transmission System when necessary for routine maintenance, construction, and repairs on the Transmission Owner's Transmission System. The Transmission Owner shall provide the Interconnection Customer with five Business Days notice prior to such interruption. The Transmission Owner shall use Reasonable Efforts to coordinate such reduction or temporary disconnection with the Interconnection Customer.

3.4.3 Forced Outages

During any forced outage, the Transmission Owner may suspend interconnection

service to effect immediate repairs on the Transmission Owner's Transmission System. The Transmission Owner shall use Reasonable Efforts to provide the Interconnection Customer with prior notice. If prior notice is not given, the Transmission Owner shall, upon request, provide the Interconnection Customer written documentation after the fact explaining the circumstances of the disconnection.

**3.4.4 Adverse Operating Effects**

The Transmission Owner shall notify the Interconnection Customer as soon as practicable if, based on Good Utility Practice, operation of the Small Generating Facility may cause disruption or deterioration of service to other customers served from the same electric system, or if operating the Small Generating Facility could cause damage to the Transmission Owner's Transmission System or Affected Systems. Supporting documentation used to reach the decision to disconnect shall be provided to the Interconnection Customer upon request. If, after notice, the Interconnection Customer fails to remedy the adverse operating effect within a reasonable time, the Transmission Owner may disconnect the Small Generating Facility. The Transmission Owner shall provide the Interconnection Customer with five Business Day notice of such disconnection, unless the provisions of article 3.4.1 apply.

**3.4.5 Modification of the Small Generating Facility**

The Interconnection Customer must receive written authorization from the Transmission Owner before making any change to the Small Generating Facility that may have a material impact on the safety or reliability of the Transmission System. Such authorization shall not be unreasonably withheld. Modifications shall be done in accordance with Good Utility Practice. If the Interconnection Customer makes such modification without the Transmission Owner's prior written authorization, the latter shall have the right to temporarily disconnect the Small Generating Facility.

**3.4.6 Reconnection**

The Parties shall cooperate with each other to restore the Small Generating Facility, Interconnection Facilities, and the Transmission Owner's Transmission System to their normal operating state as soon as reasonably practicable following a temporary disconnection.

**Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades**

**4.1 Interconnection Facilities**

- 4.1.1 The Interconnection Customer shall pay for the cost of the Interconnection Facilities itemized in Attachment 2 of this Agreement. The Transmission Owner shall provide a best estimate cost, including overheads, for the purchase and

construction of its Interconnection Facilities and provide a detailed itemization of such costs. Costs associated with Interconnection Facilities may be shared with other entities that may benefit from such facilities by agreement of the Interconnection Customer, such other entities, and the Transmission Owner.

4.1.2 The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its own Interconnection Facilities, and (2) operating, maintaining, repairing, and replacing the Transmission Owner's Interconnection Facilities.

4.2 Distribution Upgrades

The Transmission Owner shall design, procure, construct, install, and own the Distribution Upgrades described in Attachment 6 of this Agreement. If the Transmission Owner and the Interconnection Customer agree, the Interconnection Customer may construct Distribution Upgrades that are located on land owned by the Interconnection Customer. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the Interconnection Customer.

**Article 5. Cost Responsibility for Network Upgrades**

5.1 Applicability

No portion of this article 5 shall apply unless the interconnection of the Small Generating Facility requires Network Upgrades.

5.2 Network Upgrades

The Transmission Owner or the Transmission Owner shall design, procure, construct, install, and own the Network Upgrades described in Attachment 6 of this Agreement. If the Transmission Owner and the Interconnection Customer agree, the Interconnection Customer may construct Network Upgrades that are located on land owned by the Interconnection Customer. Unless the Transmission Owner elects to pay for Network Upgrades, the actual cost of the Network Upgrades, including overheads, shall be borne initially by the Interconnection Customer.

5.2.1 Repayment of Amounts Advanced for Network Upgrades

The Interconnection Customer shall be entitled to a cash repayment, equal to the total amount paid to the Transmission Owner and Affected System operator, if any, for Network Upgrades, including any tax gross-up or other tax-related payments associated with the Network Upgrades, and not otherwise refunded to the Interconnection Customer, to be paid to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, as payments are made under the Transmission Owner's Tariff and Affected System's Tariff for transmission services with respect to the Small Generating Facility. Any repayment shall include interest calculated in accordance with the

methodology set forth in FERC's regulations at 18 C.F.R. § 35.19a(a)(2)(iii) from the date of any payment for Network Upgrades through the date on which the Interconnection Customer receives a repayment of such payment pursuant to this subparagraph. The Interconnection Customer may assign such repayment rights to any person.

5.2.1.1 Notwithstanding the foregoing, the Interconnection Customer, the Transmission Owner, and Affected System operator may adopt any alternative payment schedule that is mutually agreeable so long as the Transmission Owner and Affected System operator take one of the following actions no later than five years from the Commercial Operation Date: (1) return to the Interconnection Customer any amounts advanced for Network Upgrades not previously repaid, or (2) declare in writing that the Transmission Owner or Affected System operator will continue to provide payments to the Interconnection Customer on a dollar-for-dollar basis for the non-usage sensitive portion of transmission charges, or develop an alternative schedule that is mutually agreeable and provides for the return of all amounts advanced for Network Upgrades not previously repaid; however, full reimbursement shall not extend beyond twenty (20) years from the commercial operation date.

5.2.1.2 If the Small Generating Facility fails to achieve commercial operation, but it or another generating facility is later constructed and requires use of the Network Upgrades, the Transmission Owner and Affected System operator shall at that time reimburse the Interconnection Customer for the amounts advanced for the Network Upgrades. Before any such reimbursement can occur, the Interconnection Customer, or the entity that ultimately constructs the generating facility, if different, is responsible for identifying the entity to which reimbursement must be made.

### 5.3 Special Provisions for Affected Systems

Unless the Transmission Owner provides, under this Agreement, for the repayment of amounts advanced to Affected System operator for Network Upgrades, the Interconnection Customer and Affected System operator shall enter into an agreement that provides for such repayment. The agreement shall specify the terms governing payments to be made by the Interconnection Customer to Affected System operator as well as the repayment by Affected System operator.

### 5.4 Rights Under Other Agreements

Notwithstanding any other provision of this Agreement, nothing herein shall be construed as relinquishing or foreclosing any rights, including but not limited to firm transmission rights, capacity rights, transmission congestion rights, or transmission credits, that the Interconnection Customer shall be entitled to, now or in the future, under any other



agreement or tariff as a result of, or otherwise associated with, the transmission capacity, if any, created by the Network Upgrades, including the right to obtain cash reimbursements or transmission credits for transmission service that is not associated with the Small Generating Facility.

## **Article 6. Billing, Payment, Milestones, and Financial Security**

### **6.1 Billing and Payment Procedures and Final Accounting**

6.1.1 The Transmission Owner shall bill the Interconnection Customer for the design, engineering, construction, and procurement costs of Interconnection Facilities and Upgrades contemplated by this Agreement on a monthly basis, or as otherwise agreed by the Parties. The Interconnection Customer shall pay each bill within 30 calendar days of receipt, or as otherwise agreed to by the Parties.

6.1.2 Within three months of completing the construction and installation of the Transmission Owner's Interconnection Facilities and/or Upgrades described in the Attachments to this Agreement, the Transmission Owner shall provide the Interconnection Customer with a final accounting report of any difference between (1) the Interconnection Customer's cost responsibility for the actual cost of such facilities or Upgrades, and (2) the Interconnection Customer's previous aggregate payments to the Transmission Owner for such facilities or Upgrades. If the Interconnection Customer's cost responsibility exceeds its previous aggregate payments, the Transmission Owner shall invoice the Interconnection Customer for the amount due and the Interconnection Customer shall make payment to the Transmission Owner within 30 calendar days. If the Interconnection Customer's previous aggregate payments exceed its cost responsibility under this Agreement, the Transmission Owner shall refund to the Interconnection Customer an amount equal to the difference within 30 calendar days of the final accounting report.

### **6.2 Milestones**

The Parties shall agree on milestones for which each Party is responsible and list them in Attachment 4 of this Agreement. A Party's obligations under this provision may be extended by agreement. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Force Majeure Event, it shall immediately notify the other Party of the reason(s) for not meeting the milestone and (1) propose the earliest reasonable alternate date by which it can attain this and future milestones, and (2) requesting appropriate amendments to Attachment 4. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless it will suffer significant uncompensated economic or operational harm from the delay, (2) attainment of the same milestone has previously been delayed, or (3) it has reason to believe that the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstances explained by the Party proposing the amendment.

**6.3 Financial Security Arrangements**

At least 20 Business Days prior to the commencement of the design, procurement, installation, or construction of a discrete portion of the Transmission Owner's Interconnection Facilities and Upgrades, the Interconnection Customer shall provide the Transmission Owner, at the Interconnection Customer's option, a guarantee, a surety bond, letter of credit or other form of security that is reasonably acceptable to the Transmission Owner and is consistent with the Uniform Commercial Code of the jurisdiction where the Point of Interconnection is located. Such security for payment shall be in an amount sufficient to cover the costs for constructing, designing, procuring, and installing the applicable portion of the Transmission Owner's Interconnection Facilities and Upgrades and shall be reduced on a dollar-for-dollar basis for payments made to the Transmission Owner under this Agreement during its term. In addition:

- 6.3.1 The guarantee must be made by an entity that meets the creditworthiness requirements of the Transmission Owner, and contain terms and conditions that guarantee payment of any amount that may be due from the Interconnection Customer, up to an agreed-to maximum amount.
- 6.3.2 The letter of credit or surety bond must be issued by a financial institution or insured reasonably acceptable to the Transmission Owner and must specify a reasonable expiration date.

**Article 7. Assignment, Liability, Indemnity, Force Majeure, Consequential Damages, and Default**

**7.1 Assignment**

This Agreement may be assigned by either Party upon 15 Business Days prior written notice and opportunity to object by the other Party; provided that:

- 7.1.1 Either Party may assign this Agreement without the consent of the other Party to any affiliate of the assigning Party with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the assigning Party under this Agreement;
- 7.1.2 The Interconnection Customer shall have the right to assign this Agreement, without the consent of the Transmission Owner, for collateral security purposes to aid in providing financing for the Small Generating Facility, provided that the Interconnection Customer will promptly notify the Transmission Owner of any such assignment.
- 7.1.3 Any attempted assignment that violates this article is void and ineffective. Assignment shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof. An assignee is responsible for meeting the same financial, credit, and insurance obligations as

the Interconnection Customer. Where required, consent to assignment will not be unreasonably withheld, conditioned or delayed.

**7.2 Limitation of Liability**

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, consequential, or punitive damages, except as authorized by this Agreement.

**7.3 Indemnity**

7.3.1 This provision protects each Party from liability incurred to third parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in article 7.2.

7.3.2 The Parties shall at all times indemnify, defend, and hold the other Party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's action or failure to meet its obligations under this Agreement on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

7.3.3 If an indemnified person is entitled to indemnification under this article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this article, to assume the defense of such claim, such indemnified person may at the expense of the indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.

7.3.4 If an indemnifying party is obligated to indemnify and hold any indemnified person harmless under this article, the amount owing to the indemnified person shall be the amount of such indemnified person's actual loss, net of any insurance or other recovery.

7.3.5 Promptly after receipt by an indemnified person of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in this article may apply, the indemnified person shall notify the indemnifying party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying party.



7.4 Consequential Damages

Other than as expressly provided for in this Agreement, neither Party shall be liable under any provision of this Agreement for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to the other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

7.5 Force Majeure

7.5.1 As used in this article, a Force Majeure Event shall mean "any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure Event does not include an act of negligence or intentional wrongdoing."

7.5.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the Force Majeure Event (Affected Party) shall promptly notify the other Party, either in writing or via the telephone, of the existence of the Force Majeure Event. The notification must specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the Affected Party is taking to mitigate the effects of the event on its performance. The Affected Party shall keep the other Party informed on a continuing basis of developments relating to the Force Majeure Event until the event ends. The Affected Party will be entitled to suspend or modify its performance of obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of Reasonable Efforts. The Affected Party will use Reasonable Efforts to resume its performance as soon as possible.

7.6 Default

7.6.1 No Default shall exist where such failure to discharge an obligation (other than the payment of money) is the result of a Force Majeure Event as defined in this Agreement or the result of an act or omission of the other Party. Upon a Default, the non-defaulting Party shall give written notice of such Default to the defaulting Party. Except as provided in article 7.6.2, the defaulting Party shall have 60 calendar days from receipt of the Default notice within which to cure such Default; provided however, if such Default is not capable of cure within 60

calendar days, the defaulting Party shall commence such cure within 20 calendar days after notice and continuously and diligently complete such cure within six months from receipt of the Default notice; and, if cured within such time, the Default specified in such notice shall cease to exist.

- 7.6.2 If a Default is not cured as provided in this article, or if a Default is not capable of being cured within the period provided for herein, the non-defaulting Party shall have the right to terminate this Agreement by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this article will survive termination of this Agreement.

#### **Article 8. Insurance**

- 8.1 The Interconnection Customer shall, at its own expense, maintain in force general liability insurance without any exclusion for liabilities related to the interconnection undertaken pursuant to this Agreement. The amount of such insurance shall be sufficient to insure against all reasonably foreseeable direct liabilities given the size and nature of the generating equipment being interconnected, the interconnection itself, and the characteristics of the system to which the interconnection is made. The Interconnection Customer shall obtain additional insurance only if necessary as a function of owning and operating a generating facility. Such insurance shall be obtained from an insurance Owner authorized to do business in the State where the interconnection is located. Certification that such insurance is in effect shall be provided upon request of the Transmission Owner, except that the Interconnection Customer shall show proof of insurance to the Transmission Owner no later than ten Business Days prior to the anticipated commercial operation date. An Interconnection Customer of sufficient credit-worthiness may propose to self-insure for such liabilities, and such a proposal shall not be unreasonably rejected.
- 8.2 The Transmission Owner agrees to maintain general liability insurance or self-insurance consistent with the Transmission Owner's commercial practice. Such insurance or self-insurance shall not exclude coverage for the Transmission Owner's liabilities undertaken pursuant to this Agreement.
- 8.3 The Parties further agree to notify each other whenever an accident or incident occurs resulting in any injuries or damages that are included within the scope of coverage of such insurance, whether or not such coverage is sought.

#### **Article 9. Confidentiality**

- 9.1 Confidential Information shall mean any confidential and/or proprietary information provided by one Party to the other Party that is clearly marked or otherwise designated "Confidential." For purposes of this Agreement all design, operating specifications, and metering data provided by the Interconnection Customer shall be deemed Confidential Information regardless of whether it is clearly marked or otherwise designated as such.
- 9.2 Confidential Information does not include information previously in the public domain, required to be publicly submitted or divulged by Governmental Authorities (after notice to the other Party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce this Agreement. Each Party receiving Confidential Information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the Party providing that information, except to fulfill obligations under this Agreement, or to fulfill legal or regulatory requirements.
- 9.2.1 Each Party shall employ at least the same standard of care to protect Confidential Information obtained from the other Party as it employs to protect its own Confidential Information.
- 9.2.2 Each Party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of Confidential Information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.
- 9.3 Notwithstanding anything in this article to the contrary, and pursuant to 18 CFR § 1b.20, if FERC, during the course of an investigation or otherwise, requests information from one of the Parties that is otherwise required to be maintained in confidence pursuant to this Agreement, the Party shall provide the requested information to FERC, within the time provided for in the request for information. In providing the information to FERC, the Party may, consistent with 18 CFR § 388.112, request that the information be treated as confidential and non-public by FERC and that the information be withheld from public disclosure. Parties are prohibited from notifying the other Party to this Agreement prior to the release of the Confidential Information to FERC. The Party shall notify the other Party to this Agreement when it is notified by FERC that a request to release Confidential Information has been received by FERC, at which time either of the Parties may respond before such information would be made public, pursuant to 18 CFR § 388.112. Requests from a state regulatory body conducting a confidential investigation shall be treated in a similar manner if consistent with the applicable state rules and regulations.

#### **Article 10. Disputes**

- 10.1 The Parties agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this article.

- 10.2 In the event of a dispute, either Party shall provide the other Party with a written Notice of Dispute. Such Notice shall describe in detail the nature of the dispute.
- 10.3 If the dispute has not been resolved within two Business Days after receipt of the Notice, either Party may contact FERC's Dispute Resolution Service (DRS) for assistance in resolving the dispute.
- 10.4 The DRS will assist the Parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the Parties in resolving their dispute. DRS can be reached at 1-877-337-2237 or via the internet at <http://www.ferc.gov/legal/adr.asp>.
- 10.5 Each Party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs paid to neutral third-parties.
- 10.6 If neither Party elects to seek assistance from the DRS, or if the attempted dispute resolution fails, then either Party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of this Agreement.

#### **Article 11. Taxes**

- 11.1 The Parties agree to follow all applicable tax laws and regulations, consistent with FERC policy and Internal Revenue Service requirements.
- 11.2 Each Party shall cooperate with the other to maintain the other Party's tax status. Nothing in this Agreement is intended to adversely affect the Transmission Owner's tax status.

#### **Article 12. Miscellaneous**

- 12.1 Governing Law, Regulatory Authority, and Rules  
The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the state of New York (where the Point of Interconnection is located), without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.
- 12.2 Amendment  
The Parties may amend this Agreement by a written instrument duly executed by both Parties.
- 12.3 No Third-Party Beneficiaries  
This Agreement is not intended to and does not create rights, remedies, or benefits of any



character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.

#### 12.4 Waiver

12.4.1 The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

12.4.2 Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this Agreement. Termination or default of this Agreement for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Transmission Owner. Any waiver of this Agreement shall, if requested, be provided in writing.

#### 12.5 Entire Agreement

This Agreement, including all Attachments, constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

#### 12.6 Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

#### 12.7 No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

#### 12.8 Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this

Agreement shall remain in full force and effect.

**12.9 Security Arrangements**

Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. FERC expects all Transmission Owners, market participants, and Interconnection Customers interconnected to electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and, eventually, best practice recommendations from the electric reliability authority. All public utilities are expected to meet basic standards for system infrastructure and operational security, including physical, operational, and cyber-security practices.

**12.10 Environmental Releases**

Each Party shall notify the other Party, first orally and then in writing, of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Small Generating Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.

**12.11 Subcontractors**

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

12.11.1 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall the Transmission Owner be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

12.11.2 The obligations under this article will not be limited in any way by

any limitation of subcontractor's insurance.

**12.12 Reservation of Rights**

The Transmission Owner shall have the right to make a unilateral filing with FERC to modify this Agreement with respect to any rates, terms and conditions, charges, classifications of service, rule or regulation under section 205 or any other applicable provision of the Federal Power Act and FERC's rules and regulations thereunder, and the Interconnection Customer shall have the right to make a unilateral filing with FERC to modify this Agreement under any applicable provision of the Federal Power Act and FERC's rules and regulations; provided that each Party shall have the right to protest any such filing by the other Party and to participate fully in any proceeding before FERC in which such modifications may be considered. Nothing in this Agreement shall limit the rights of the Parties or of FERC under sections 205 or 206 of the Federal Power Act and FERC's rules and regulations, except to the extent that the Parties otherwise agree as provided herein.

**Article 13. Notices**

**13.1 General**

Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person, delivered by recognized national carrier service, or sent by first class mail, postage prepaid, to the person specified below:

If to the Interconnection Customer:

Interconnection Customer: WM Renewable Energy L.L.C.  
Attention: Peter Kruliczek  
Address: 1001 Fannin, Suite 4000  
City: Houston                      State: TX              Zip: 77002  
Phone: 713-394-5079              Fax: 713-287-2423

If to the Transmission Owner:

Transmission Owner: Niagara Mohawk Power Corporation, d/b/a National Grid  
Attention: Manager, Transmission Commercial Services  
Address: 300 Erie Boulevard West  
City: Syracuse                      State: New York              Zip: 13202

**13.2 Billing and Payment**

Billings and payments shall be sent to the addresses set out below:

Interconnection Customer: WM Renewable Energy, L.L.C.  
Attention: Todd Roberts - Controller  
Address: 1001 Fannin, Suite 4000 City: Houston              State: TX              Zip:  
77002



**Transmission Owner: Niagara Mohawk Power Corporation, d/b/a National Grid**  
**Attention: Misc. Billing Department**  
**Address: 300 Erie Boulevard West**  
**City: Syracuse State: New York Zip:13202**

**13.3 Alternative Forms of Notice**

Any notice or request required or permitted to be given by either Party to the other and not required by this Agreement to be given in writing may be so given by telephone, facsimile or e-mail to the telephone numbers and e-mail addresses set out below:

If to the Interconnection Customer:

**Interconnection Customer: WM Renewable Energy, L.L.C.**  
**Attention: Randy Beck**  
**Address: 1001 Fannin, Suite 4000**  
**City: Houston State:TX Zip:77002**  
**Phone: Fax:**

If to the Transmission Owner:

**Transmission Owner: Niagara Mohawk Power Corporation, d/b/a National Grid**  
**Attention: Transmission Commercial Services – Account Management**  
**Address: 300 Erie Boulevard West**  
**City: Syracuse State: New York Zip: 13202**  
**Fax: 315-428-5114**

**13.4 Designated Operating Representative**

The Parties may also designate operating representatives to conduct the communications which may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities.

**Interconnection Customer's Operating Representative:**

**Interconnection Customer: WM Renewable Energy L.L.C. Attention: Randy Beck**  
**Address: 1001 Fannin Suite 4000**  
**City: Houston State:TX Zip:77002 Phone: 713-265-1672**  
**Fax: 713-287-2423**

**Transmission Owner's Operating Representative:**

**Transmission Owner: Niagara Mohawk Power Corporation, d/b/a National Grid**

Service Agreement No. 1988

Attention: Transmission Account Manager or Designee  
Address: 300 Erie Boulevard W.  
City: Syracuse State: NY Zip: 13202

13.5 Changes to the Notice Information

Either Party may change this information by giving five Business Days written notice prior to the effective date of the change.

This Agreement and its terms is subject to change by any ruling of the FERC.

**Article 14. Signatures**

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

For the Transmission Owner

Name: Mary Ellen Paravalos

Title: Vice President Transmission Regulation + Commercial

Date: 9/8/2008

For the Interconnection Customer

Name: Paul P...

Title: Vice President

Date: 8/21/08

## Glossary of Terms

**Affected System** – An electric system other than the Transmission Owner's Transmission System that may be affected by the proposed interconnection.

**Applicable Laws and Regulations** – All duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority.

**Business Day** – Monday through Friday, excluding Federal Holidays.

**Default** – The failure of a breaching Party to cure its Breach under the Small Generator Interconnection Agreement.

**Distribution System** – The Transmission Owner's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which Distribution Systems operate differ among areas.

**Distribution Upgrades** – The additions, modifications, and upgrades to the Transmission Owner's Distribution System at or beyond the Point of Interconnection to facilitate interconnection of the Small Generating Facility and render the transmission service necessary to effect the Interconnection Customer's wholesale sale of electricity in interstate commerce. Distribution Upgrades do not include Interconnection Facilities.

**Good Utility Practice** – Any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

**Governmental Authority** – Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include the Interconnection Customer, the Interconnection Owner, or any Affiliate thereof.

**Interconnection Customer** – Any entity, including the Transmission Owner, the Transmission Owner or any of the affiliates or subsidiaries of either, that proposes to interconnect its Small

**Generating Facility with the Transmission Owner's Transmission System.**

**Interconnection Facilities** – The Transmission Owner's Interconnection Facilities and the Interconnection Customer's Interconnection Facilities. Collectively, Interconnection Facilities include all facilities and equipment between the Small Generating Facility and the Point of Interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the Small Generating Facility to the Transmission Owner's Transmission System. Interconnection Facilities are sole use facilities and shall not include Distribution Upgrades or Network Upgrades.

**Interconnection Request** – The Interconnection Customer's request, in accordance with the Tariff, to interconnect a new Small Generating Facility, or to increase the capacity of, or make a Material Modification to the operating characteristics of, an existing Small Generating Facility that is interconnected with the Transmission Owner's Transmission System.

**Material Modification** – A modification that has a material impact on the cost or timing of any Interconnection Request with a later queue priority date.

**Network Upgrades** – Additions, modifications, and upgrades to the Transmission Owner's Transmission System required at or beyond the point at which the Small Generating Facility interconnects with the Transmission Owner's Transmission System to accommodate the interconnection of the Small Generating Facility with the Transmission Owner's Transmission System. Network Upgrades do not include Distribution Upgrades.

**Operating Requirements** – Any operating and technical requirements that may be applicable due to Regional Transmission Organization, Independent System Operator, control area, or the Transmission Owner's requirements, including those set forth in the Small Generator Interconnection Agreement.

**Party or Parties** – The Transmission Owner, Transmission Owner, Interconnection Customer or any combination of the above.

**Point of Interconnection** – The point where the Interconnection Facilities connect with the Transmission Owner's Transmission System.

**Reasonable Efforts** – With respect to an action required to be attempted or taken by a Party under the Small Generator Interconnection Agreement, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.

**Small Generating Facility (SGF)**– The Interconnection Customer's device for the production of electricity identified in the Interconnection Request, but shall not include the Interconnection Customer's Interconnection Facilities.

**Tariff** – The Transmission Provider's Tariff through which open access transmission service and Interconnection Service are offered, as filed with the FERC, and as amended or supplemented

Service Agreement No. 1988

from time to time, or any successor tariff.

**Transmission Owner** – The entity that owns, leases or otherwise possesses an interest in the portion of the Transmission System at the Point of Interconnection and may be a Party to the Small Generator Interconnection Agreement to the extent necessary.

**Transmission Provider** – The public utility (or its designated agent) that owns, controls, or operates transmission or distribution facilities used for the transmission of electricity in interstate commerce and provides transmission service under the Tariff. The term Transmission Provider should be read to include the Transmission Owner when the Transmission Owner is separate from the Transmission Provider.

**Transmission System** – The facilities owned, controlled or operated by the Transmission Provider or the Transmission Owner that are used to provide transmission service under the Tariff.

**Upgrades** – The required additions and modifications to the Transmission Owner's Transmission System at or beyond the Point of Interconnection. Upgrades may be Network Upgrades or Distribution Upgrades. Upgrades do not include Interconnection Facilities.

**Description and Costs of the Small Generating Facility,  
Interconnection Facility, and Metering Equipment**

Interconnection Customer Attachment Facilities

The Interconnection Customer is planning to build, own and operate a new 2 MVA Small Generation Facility at the Madison County Landfill in Madison County, New York. The Facility is described in detail in Attachment 3. The Customer's Interconnection Facility (DAF) is composed of two switches and a breaker. The Transmission Owner's metering and associated RTUs are located within the DAF.

Transmission Owner Attachment Facilities and System Upgrades

The Transmission Owner's Attachment Facilities includes the Metering and associated RTU (see above) and approximately 20 feet of overhead conductor. The system upgrades include a new sectionalizing reclosure, fuse replacements and bi-directional voltage regulator controls. Details are shown in Attachment 3. The total estimated cost for the TO's attachment facility and system upgrades including administration and general address is \$165,000.

Estimated Annual Operation and Maintenance Expense of Interconnection Facilities, metering equipment, and system upgrades = \$5,000

Financial Security Requirement

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The Interconnection Customer shall provide for financial security per Section 6.3 of the Agreement in the amount of \$165,000.



**Interconnection Study**

**(Including One-line Diagram Depicting the Small Generating Facility,  
Interconnection  
Facilities, Metering Equipment, and Upgrades)**

Service Agreement No. 1988



**Interconnection Study:  
WM Renewable Energy -  
Madison County Landfill Gas to Energy  
2,000 kVA Small Generating Facility  
Buyea Road in the Town of Lincoln, NY**

**Prepared by:**

**National Grid**  
300 Erie Blvd. West  
Syracuse, NY 13202-4250

**November 21, 2008**  
(Supersedes issue dated May 12, 2008)



Service Agreement No. 1988

**Interconnection Study:** Madison County Landfill Gas to Energy 2 MVA Small Generating Facility

## **GENERAL CONTENT**

### **Section**

1. INTRODUCTION
  2. PROJECT DESCRIPTION
  3. STUDY SCOPE
  4. THERMAL AND VOLTAGE ANALYSIS
  5. GROUNDING REQUIREMENTS AND SYSTEM PROTECTION
  6. INTERCONNECTION METHOD CONCLUSION AND ALTERNATIVES
  7. CONCEPTUAL COST ESTIMATE
  8. SCHEDULING
  9. CONCLUSIONS
  10. APPLIED REFERENCE REQUIREMENTS
- ATTACHMENT A - COMPANY MILESTONE REQUIREMENTS for GENERATOR-OWNER PROJECT SCHEDULE

## **1. INTRODUCTION**

WM Renewable Energy, the interconnect customer, has made application for a new Small Generator Facility having a total capacity of 2MVA. In February 2008, the Developer (interconnect customer) WM Renewable Energy, 1001 Fannin, Suite 4000, Houston, TX, 77002 entered into a Support Services Agreement with National Grid (Company) to evaluate the feasibility of a 13.2kV interconnection for their Madison County Landfill Gas to Energy Small Generator Facility project. The requested in service date is between December 2008 and February 2009.

This report presents the analysis results for WM Renewable Energy's study in accordance with Attachment Z, Small Generator Interconnection Procedures (SGIP), of the NYISO OATT. The intent of this report is to assess the project's feasibility and determine its impact on the existing power system.

The study was performed in accordance with applicable NERC, NPCC, National Grid/NMPC reliability and design standards, and in accordance with applicable NYISO and NMPC study guidelines, procedures and practices. In addition to assessing the project impact on the power system, the study includes a list of the facilities required to interconnect the project physically to the power network, as well as non-binding good faith cost estimates to construct those facilities.

The report included steady state (thermal and voltage) and short circuit analysis for summer peak loading conditions. Further, a sensitivity study (steady state only) was conducted to assess the impact of the project during light load conditions. Analysis was performed on models with and without the project, in order to evaluate the impact of the project on the bulk and local power network.

## **2. PROJECT DESCRIPTION**

WM Renewable Energy has proposed to connect 2MVA of generation from their new facility located at the Madison County Landfill Facility in the Town of Lincoln, NY off Buyea Road to the National Grid 3-phase, 4-wire, 13.2kV distribution system. The interconnect point is approximately 9.1 miles indirect to Oneida Station from the generation site with a delivery point at the 13.2kV line side of the small generator facility's main disconnect switch #503 (See **Figure 1** for general interconnection configuration and location map).

The proposed Madison County Landfill Gas to Energy Small Generator Facility project ("project"), as specified, will consist of one Caterpillar model 3520 methane burning engine driving a 2MVA generator at 0.8 p.f. (1.6MW). This generator data is as submitted in the NYISO Attachment Z - Appendix 2 Small Generator Interconnection Request dated Dec. 6, 2007. The fuel for the engine will be

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produced on site. The output will be stepped up to 13.2kV through a single 4.16-13.2kV, 2/2.2MVA  
OA/FA transformer at an assumed 6.5% impedance. Also, the one-line diagram submitted for the project  
is drawing E002, revision 3. See **Figure 1B** for the small generator facility's general configuration.

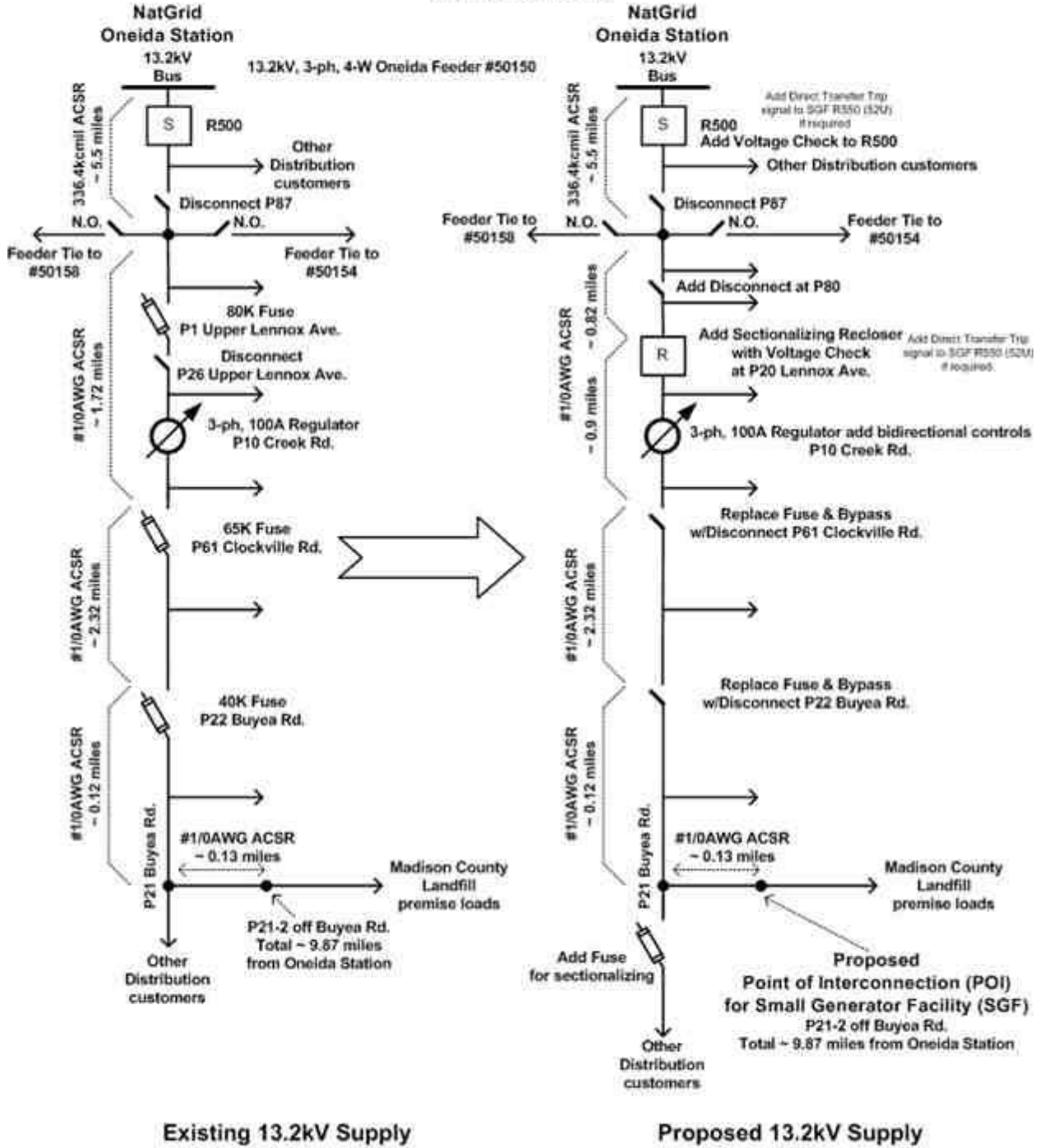
Service Agreement No. 1988

Interconnection Study: Madison County Landfill Gas to Energy 2 MVA Small Generating Facility

# Madison County Landfill Gas-Energy IPP

## 2MVA Parallel Generation Interconnection System with National Grid

Figure 1



INFORMATION ONLY  
NOT ALL DETAILS SHOWN

## **Figure 1A - General 13.2kV Interconnection Configuration**

Madison County LFGTE Interconnection Study rev11 21 2008.doc

**Page 3 of 15**

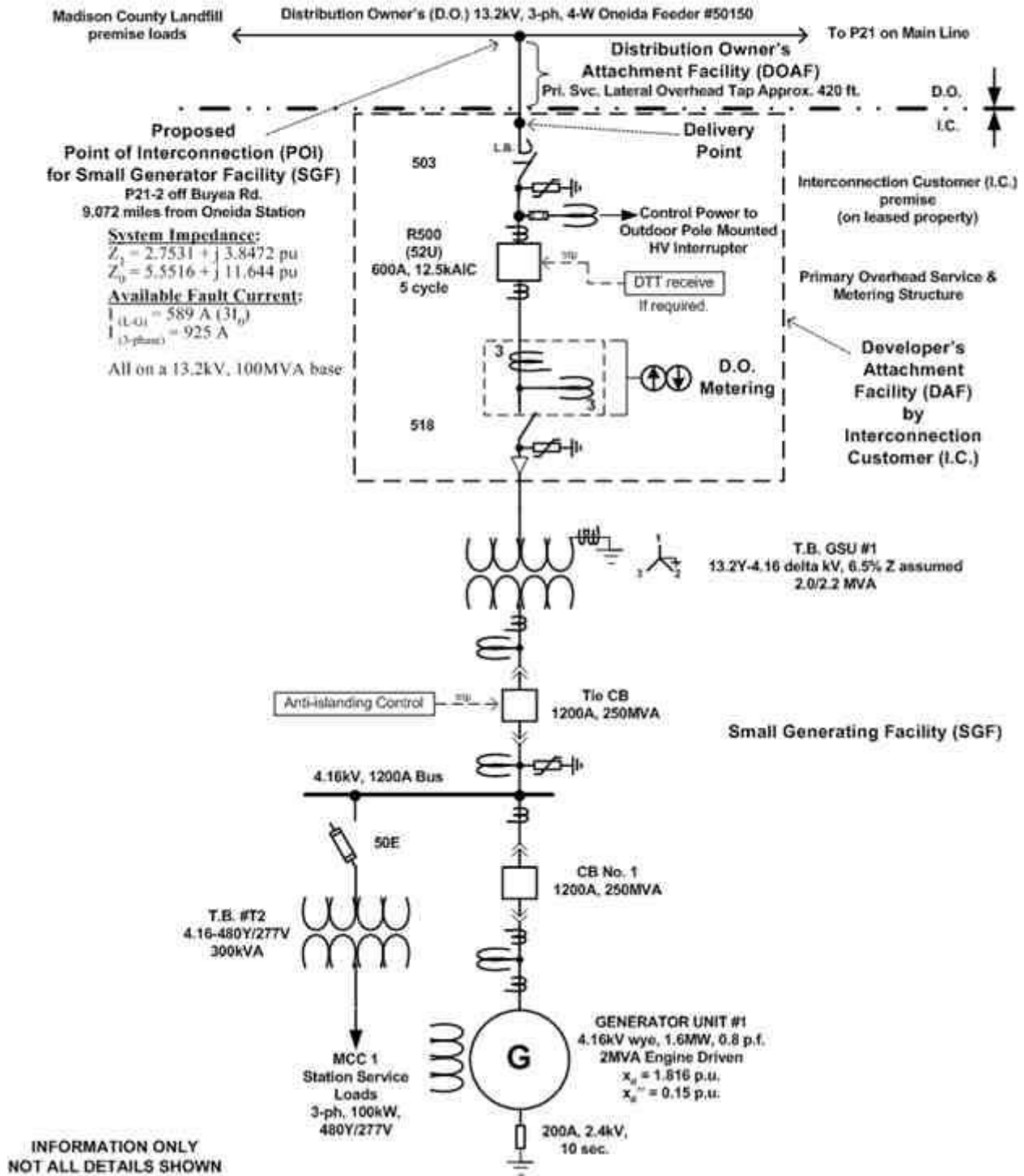
**rev. Nov. 21, 2008**



Service Agreement No. 988

**Interconnection Study: Madison County Landfill Gas to Energy 2 MVA Small Generating Facility**

**Madison County Landfill Gas-Energy IPP**  
 2MVA Parallel Generation  
**Interconnection System**  
 with National Grid

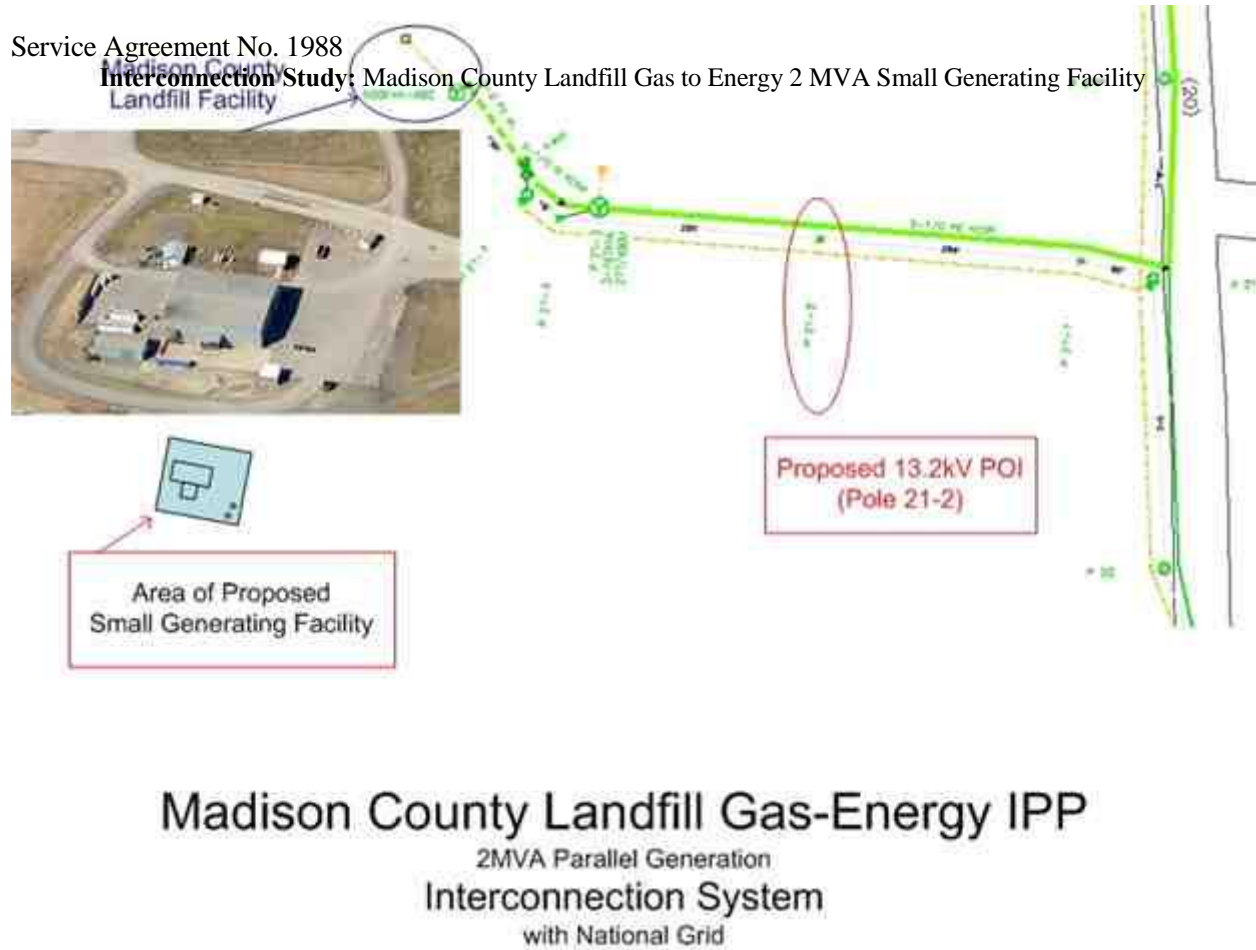


**Figure 1B - General Small Generator Facility Configuration**

[Madison County LFGTE Interconnection Study rev11 21 2008.doc](#)

**Page 4 of 15**

**rev. Nov. 21, 2008**



**Figure 1C - General Project Location Map**

### 3. STUDY SCOPE

The scope of this study is limited to evaluating the project's impact on the following four items as listed in Section 6.0 of Appendix 6 of Attachment Z: **6.1**-Initial identification of circuit breaker short circuit capability limits; **6.2**-Initial identification of thermal overload or voltage limit violations; **6.3**-Initial review of grounding requirements and system protection; and, **6.4**-Description and non-binding estimated cost of facilities required to interconnect the proposed Small Generator Facility and to address the identified short circuit and power flow issues. The scope of this study provides the results of:

- Initial identification of thermal overload or voltage limit violations (steady state) for summer and winter peak loading conditions
- Sensitivity study (steady state only) to assess the impact of the project during light load conditions
- Analysis on models with and without the project, in order to evaluate the impact of the project on the bulk and local power network
- Available 13.2kV system characteristics on a 100MVA base at each 13.2kV delivery point to each of the 3 customer service locations
- Recommended interconnection configuration with a list of system upgrades required
- Initial identification of circuit breaker short circuit capability limits
- Initial review of system protection requirements to be included for the Company's system and those at the generation facility/customer service points

NYISO Agreements --> Service Agreements --> SGIA No. 1988 between Niagara Mohwak and WM Renewable Energy

- List of system protection upgrades required

Service Agreement No. 1988

**Interconnection Study:** Madison County Landfill Gas to Energy 2 MVA Small Generating Facility

#### **4. THERMAL AND VOLTAGE ANALYSIS**

The results of the thermal and voltage study to determine the project's impact on the Company's Electric Power System (EPS) and the need for any resulting mitigating actions are as follows.

##### **4.1 Summary**

National Grid can accept 2MVA of generation from the Project on the Oneida 115-13.2kV distribution substation under specified conditions.

To keep the voltage within acceptable parameters and minimize losses, the Project will be required to be normally interconnected to Oneida 13.2kV Feeder #50150. The Company's existing ties to other feeders that are normally opened, should not pose voltage or thermal concerns if operated under emergency or maintenance operations. A voltage regulator at pole 10 on Creek Road in the feeder system will require bidirectional control.

The possibility of islanding the Local EPS, Oneida Feeder #50150, by the station breaker or present in line feeder fuses will require the following:

1. Remove fuses and install 600A disconnects at existing fuse locations on pole 61 on Clockville Road and pole 22 on Buyea Road. This suggests the installation of a sectionalizing recloser and a fuse beyond the Madison County Landfill tap point for reliability of the feeder's customers.
2. Anti-islanding protection of the Small Generating Facility (SGF) on the Local EPS for this situation shall be made by the Project by either:
  - a. The SGF is certified to pass an applicable non-islanding test according to IEEE 1547 and IEEE 1547.1.
  - b. The SGF contains other non-islanding means, such as:
    - (1) forced frequency or voltage shifting (according to the interconnection response criteria in IEEE 1547), or
    - (2) a special protection system (SPS), such as Direct Transfer Trip.

The protective devices for either of these means would become part of the Local EPS designated control devices. If under-frequency relays do not trip on a fault and the DG islands the Local EPS, then the SPS is required.

If it is identified that items 2.a and 2.b(1) cannot be met through the Developer's protection of the SGF as reviewed by the Company for acceptance, then the installation of Direct Transfer Trip (DTT) will be necessary; however, further evaluation of this SPS will be necessary outside the scope of this study.

##### **4.2 Power Flow Model Development and Calibration**

###### **4.2.1 System Limits**

Thermal Overload/Voltage Limits on Oneida Feeder #50150 to the Project are not exceeded by the generation.

###### **4.2.2 2006/2007 Load Calibrations**

The light load condition sensitivity study results in the following: (feeder load at minimum and generation at maximum)

- The Project's capacity exceeds one-third of the minimum load or is in excess of 25% of the peak load of the Local EPS (Oneida Feeder #50150).
- On Oneida Feeder #50150, the maximum output from the Project's generation is not anticipated to backfeed into the 115kV power network due to the other distribution feeder loads at Oneida station.

##### **4.3 Power Flow Analysis Procedure and Results**

###### **4.3.1 Analysis Procedure and Contingencies**

No contingencies were modeled due to the radial nature of the system. The analysis is made based on normal connection to the Oneida Feeder #50150.





Service Agreement No. 1988

**Interconnection Study:** Madison County Landfill Gas to Energy 2 MVA Small Generating Facility

### **4.3.2 2006/2007 Power Flow and Contingency Analysis Results**

The bus at the Oneida substation shall be maintained at its present voltage levels for National Grid to hold regulated voltage to its <600V distribution customers within +2.5%/-5% as NY State PSC obligated. The Project will need to hold their 13.2kV point of interconnection (POI) to a 13.2kV+2.5%/-5% voltage level.

The maximum inrush current allowed at the 13.2kV POI without contribution of the Small Generating Facility's equipment (e.g. transformer, motor, cable impedance's...etc.) is 22.4 amperes (0.51MVA). Attention is called to Sections 8.0 and 11.0 of ESB 750-2002 regarding motor starting requirements and mitigation of disturbances.

### **4.4 Impact on Local EPS Reliability**

The site is approximately 9.1 miles indirect (as one follows the feeder) from National Grid's Oneida 115-13.2kV distribution station to the Project's proposed 13.2kV point of interconnection (POI). The feeder is entirely an overhead pole and open conductor system at 13.2kV operating voltage.

The reliability as of May 2008 for the existing 13.2kV Oneida Feeder #50150 distribution circuit, excluding planned and major storm events, is 1 sustained and 12 momentary interruptions for a 5-year period at the station feeder breaker. In addition, two occurrences of feeder fuses were blown that would affect this Project POI. This is not a prediction of future performance of the Company's supply system.

Fuses located on pole 61 on Clockville Road and pole 22 on Buyea Road in the main feeder to the Project POI will not coordinate with the Small Generating Facility (SGF) and could present a possibility of islanding small portions of the Local EPS, Oneida Feeder #50150. These fuses will need to be removed and replaced with 600A disconnects. Removing these fuses will degrade the present reliability of the feeder and will suggest the installation of a sectionalizing recloser approximately 5.5 miles from the Oneida substation to ensure that all 3 phases are interrupted to avoid problems with the SGF or problems to the Company's other customers from the SGF. This will sectionalize the largely loaded part of the feeder from the remaining predominant rural radial loads. It is noted that sectionalizing reclosers with infeed may not be capable of Direct Transfer Trip (DTT) controls and if DTT is determined necessary according to Section 4.1.2 above, then special equipment will need to be evaluated outside the scope of this study. In addition, fuses will be required around pole 20 on Buyea Road beyond the Madison County Landfill's tap point to sectionalize other distribution customers.

The 100 ampere 3-phase Voltage Regulator at pole 10 on Creek Road will need to be capable of reverse power flows. At this time, a new set of regulator bidirectional controls will be planned for installation.

## **5. GROUNDING REQUIREMENTS AND SYSTEM PROTECTION**

### **5.1 Grounding Requirements**

The maximum desired ground grid resistance for the project's 13.2kV substation ground grid is 23 ohms for an 8,000V ground potential rise. Or, the ground grid resistance shall be no greater than that which would exceed the step and touch voltage limits of  $E_{step} = 3134$  volts and  $E_{touch} = 885$  volts according to IEEE Std. 80 for a supply system clearing time of 30 cycles as a minimum.

The Generator-Owner is responsible to limit the ground potential rise (GPR) for communication conductors entering their substation that must be safeguarded and mitigate the zone of influence (ZOI) for point where the GPR is 300 volts peak asymmetrical of the voltage variations on the surface of the earth considering all systems connected having earth return paths. The Generator-Owner should consider the effects of lightning when designing surge protection for the telecommunications equipment.

Refer to IEEE Std. 80 for design of a substation ground grid. The Generator-Owner shall provide the results of the ground grid design calculations and the test results for the ground grid resistance

NYISO Agreements --> Service Agreements --> SGIA No. 1988 between Niagara Mohawk and WM Renewable Energy  
according to ESB's 752 and 753. The Company recommends the 4-point Fall-of-Potential Method of  
testing; refer to IEEE Std. 81 for testing method standards.



Service Agreement No. 1988

**Interconnection Study:** Madison County Landfill Gas to Energy 2 MVA Small Generating Facility

## 5.2 System Protection Analysis

**5.2.1** Short circuit analysis was performed on busses in the area to determine if any circuit breaker ratings were exceeded with the addition of the project and none were identified.

The following are National Grid's estimated 13.2kV system characteristic maximum values on a 100MVA base at the Project's proposed 13.2kV point of interconnection (POI) without any Generator Owner equipment contribution. Future system or load growth may require the service equipment to have a larger interrupting rating. Any costs associated with changes to Generator-owned equipment shall be borne by the Generator-Owner. The Generator-Owner's interconnection facilities and equipment shall be suitable for the maximum fault current available at its supply.

**Assuming Interconnection to Pole #21-2 off Buyea Road, Town of Lincoln (from Oneida Station):**

**System Impedance:**

$$Z_1 = 2.7531 + j 3.8472 \text{ pu}$$

$$Z_0 = 5.5516 + j 11.644 \text{ pu}$$

**Available Fault Current:**

$$I_{(L-G)} = 589 \text{ A } (3I_0)$$

$$I_{(3\text{-phase})} = 925 \text{ A}$$

Please note that the Generator-Owner shall refer to Section 1.7 of the Company's [ESB 750-2002](#) and [ESB 755](#) regarding their responsibility for their electric service operating and maintenance requirements. Also, [NFPA 70E](#) provides information where to find work safety practices for premises wiring.

**Disclaimer**

*The Company shall not be liable for any errors, inaccuracies or delays in content, or for any actions taken in reliance thereon. The Company expressly disclaims all warranties, expressed or implied, as to the accuracy of any the content provided, or as to the fitness of the information for any purpose.*

*Although the Company makes every reasonable effort to obtain reliable information and proper calculations, the Company provides no warranty, expressed or implied, as to the accuracy, reliability or completeness of furnished data past the time of gathering data for the calculations to be made. The Company's electric power system is dynamic that changes from moment to moment as demands are made to the system. Furthermore, permanent changes to the system are common which will change the information provided.*

**5.2.2** A preliminary coordination study was performed with the project added to the National Grid Oneida Station 13.2kV bus. The project shall conform to National Grid's ESB 756 Appendix A for protection requirements.

### 5.2.2.1 Supply System Protection

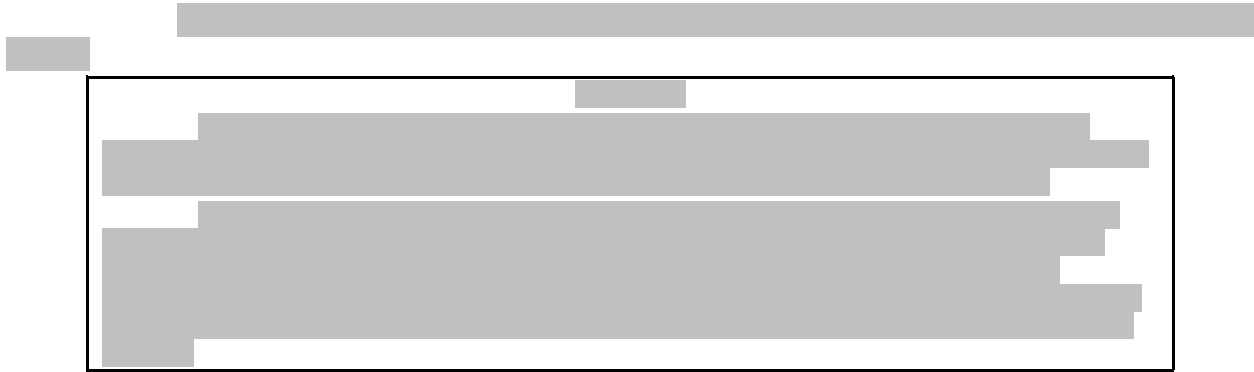
The existing feeder relay for Oneida Feeder #50150 (G.E. IAC77) will detect phase faults up to the point of interconnection (POI). The relay is set at the Company's standard 720 amps pickup. However, the clearing time for three lines-to-ground fault at the POI is 6.4 seconds. Analysis of this clearing time for acceptance on the distribution system will need further evaluation upon the Developer's preliminary design submittal for Company acceptance review. If a faster clearing time is needed, the phase relay setting may be lowered; however, it must be set above load on that feeder as well as coordinated with the protective device downstream on that feeder.

The existing feeder relay for Oneida Feeder #50150 (G.E. IAC 53) will not detect ground faults at the POI. The relay is set at the Company's standard 480 amps pickup. The setting can be lowered but this will need to be coordinated with the downstream protective device. Further evaluation upon the Developer's preliminary design submittal for Company acceptance review will need to be made if it is necessary to change the feeder setting.

### 5.2.2.2 Supply System Reclosing

The Generator-Owner is responsible to ensure their generation source is disconnected before the Company's feeder breaker or line sectionalizer recloses for protecting against faults on the 13.2kV distribution system. The Company's reclose time for Feeder #50150 is 15 sec. [This means that the

NYISO Agreements --> Service Agreements --> SGIA No. 1988 between Niagara Mohawk and WM Renewable Energy  
system will reclose in 15 sec whether the generation is off or on]. Note that the Company would have to  
lose 3 lines and the tie breaker at Oneida Substation. [The only time that would happen is on a bus fault  
or a breaker failure of the tie breaker, therefore, the Project can ignore the reclosing times on the 115 kV.]



Service Agreement No. 1988

**Interconnection Study:** Madison County Landfill Gas to Energy 2 MVA Small Generating Facility

The Company assumes no liability for the Generator-Owner’s system if this is not observed by the generator protective controls. The Generator-Owner needs to understand that if the Company’s system recloses and they are still online, the systems will most likely be out of synch and the Generator-Owner’s generation could sustain major damage and damage to other customer connected equipment may occur. Additionally, if the Generator-Owner’s generator causes disturbances to others, then they are subject to disconnection per ESB 756 Appendix A Section 5.2, ESB 750 Sections 3 and 11, and the Company's tariff, PSC No. 207. Subsequently, the Generator-Owner may be responsible to compensate for any damages. As changes occur to the Company’s system these reclose settings are subject to change by the Company according to its utility practice. The Generator-Owner is responsible for maintaining their own equipment coordination with the Company’s system at their cost. There is no notification requirement in place for the Company’s changes of reclosing settings. The Generator-Owner needs to communicate with the Company upon their relay coordination maintenance schedule (see ESB 755) for information necessary to update their studies.

There are serious safety concerns such as, if the station breaker is manually opened, it is possible that the generation would continue to energize the circuit while utility personnel may assume that the circuit is de-energized and safe. Also, if the Small Generating Facility (SGF) is able to island with the connected load, there will be an out of synch close condition on the Oneida Station feeder breaker when trying to close. The station breaker cannot be closed until the SGF has been tripped off. Currently there is no synchronism or voltage check on the Oneida Station breaker, R500, for closing conditions. It is recommended for this project to include adding at least a voltage check relay to the station breaker and at the new feeder recloser (item 4.1.1 above) for close supervision.

**5.2.2.3 Small Generating Facility Protection Coordination**

Upon the Company’s review of the submitted preliminary design dated 11-26-07, it is noted that the Generator-Owner is providing two SEL-351-A microprocessor based multi-function relays that will trip their main 13.2kV breaker R500 (52U). This provides for meeting the Company’s requirement for redundant protection schemes with microprocessor based relays. In addition, microprocessor relays shall have ABB FT-1, or equivalent, test switches isolating all inputs and outputs of the relay meeting the following requirements:

- AC Inputs: Each relay shall have its own AC test switch. DC inputs or outputs are not permitted on AC test switches.
- DC Inputs and Outputs:
  - For relays designated by the Company as necessary to protect its electric system, it is required that each individual relay have its own DC test switch that isolates the positive and negative DC for each input and output.
  - For relays required to protect Customer equipment, it is preferred that each relay have its own DC test switch for inputs and outputs. For ease of maintenance testing and troubleshooting, it is preferred to isolate the positive and negative DC of the input and output, however, it is permissible to isolate the negative side only in Company approved situations.
- Groups of relays that protect the same piece of equipment, such as a transformer or a feeder, may share a DC test switch under the following conditions:
  - The individual blades of the test switch shall be grouped by relay.
  - A permanent label shall be affixed to the relay panel identifying the use of each blade.

Protection will be determined by the Generator-Owner’s NYS licensed professional engineer.

1. The Project is required to have the setting of the voltage and frequency relays within the requirements of. Section 4.5.2.8 in ESB 756 Appendix A. The Small Generating Facility will be required to coordinate with the Company’s underfrequency load shedding relays at Oneida station. The Company will not be providing any compensatory load shedding.
2. In order to sense ground faults on the Company’s system, a 51G utility grade relay located on the neutral of the high voltage side of the transformer will be required.
3. Device 51V relays shall be added at the Project’s SGF station to trip their generation off for phase

4. The Company will review for acceptance the Generator-Owner's proposed settings of those relays that the Company's Protection Engineering Dept. designates as being required to satisfy the Company





Service Agreement No. 1988

**Interconnection Study:** Madison County Landfill Gas to Energy 2 MVA Small Generating Facility

protection practices. Any relay setting issued by the Company shall not be changed or modified at any time without the prior written consent of the Company. The manufacturer and model of the relay protection shall be shown on the one line diagram. The proposed relay protection and settings shall be submitted for the Company's acceptance review along with AC 3-line and DC elementary control drawings. These Company-designated devices will be witness-tested/verified by the Company's personnel prior to energization.

5. The Generator-Owner is solely responsible for the protection of their plant equipment. The Generator-Owner is required to provide electrical equipment and relays with ranges and rating that will allow proper Generator-Owner relay system coordination with Company protection systems. Coordination margins and parameters will be determined by the Company.
6. The Generator-Owner shall ensure the duty rating of the service equipment and overcurrent devices meet the requirements of the latest edition of the National Electrical Code enforced by the authority having jurisdiction (AHJ).

**5.2.2.4 Other Small Generator Equipment Protection Requirements**

All high voltage 13.2kV equipment up to the transformer HV winding's bushing shall be rated at 110kV BIL outdoors to match the BIL of the distribution supply line. The 13.2kV surge arresters required to protect the Company's revenue metering instrument transformers shall be rated 8.4kV MCOV Distribution Class and located between the main disconnect switch and main overcurrent device. Surge arrester MCOV ratings for the transformer(s) shall be as recommended by the Generator-Owner's transformer manufacturer.

The project will require a grounded wye primary winding step up transformer at 13.2kV. The transformer manufacturer's test data sheet to be submitted to the Company by the Generator-Owner shall include the ratings information, guaranteed losses and no-load-losses in kW, and the transformer impedance in % on its own base.

**5.3 System Operating Impact**

The Generator-Owner will need to abide by the power factor requirements in Section 4.4.1.3 of ESB 756 Appendix A.

If the project absorbs vars from National Grid, then they will need to compensate their generation output according to power factor requirements in ESB 756. As a minimum, the Project will need to maintain at least a 0.95 p.f. at their point of interconnection (POI).

This interconnection study does not address the future operations and maintenance (O&M) associated with the distribution feeder and associated additions and modifications to National Grid's system.

The Company's Peterboro station's feeders (Nos. 51455, 51456, or 51458) may be used at various points for possible connection under contingency operations during Oneida Feeder #50150 restoration or maintenance situations. However, this Project's normal interconnection is with Oneida #50150. For these reasons on a radial distribution feeder, the Company has an operating requirement for remote control of the Project's main 13.2kV overcurrent device R500 through a Company-provided EMSRTU point. This is to avoid dropping multiple customers from the distribution feeder because of a generator facility problem when the Company is performing emergency feeder switching. To accomplish this, the Small Generating Facility will require instrumentation control cabling from the main 13.2kV overcurrent device R500 and the Company's EMS-RTU.

**6. INTERCONNECTION METHOD CONCLUSION AND ALTERNATIVES**

The results in Sections 4 and 5 herein for this proposed project has identified changes necessary to the existing Company distribution system to accommodate the Generator-Owner's 2MVA interconnection. The interconnection requirement specifically identified in **Figure 1** and Sections 4.1,

4.4, 5.2, and 5.3 is feasibly offered and may be expected to require Company management approval if the parties desire to proceed with the project.



Service Agreement No. 1988

**Interconnection Study:** Madison County Landfill Gas to Energy 2 MVA Small Generating Facility

As shown in **Figures 1A and 1B**, this configuration provides the interconnection within the Generator-Owner's proposal expectation. The Project will be required to be normally interconnected to Oneida 13.2kV Feeder #50150 with all the protection requirements identified in this study and installed according to the Company's applicable ESB's 750, 752, 753, and 756 Appendix A. Based on Sections 4 and 5 above, in brief the following are the Company distribution system changes and additions for this interconnection:

**Feeder #50150:**

- Add voltage check on the Oneida Station breaker, R500.
- Remove and replace fuses with 600A disconnects at existing fuse locations on pole 61 on Clockville Road and pole 22 on Buyea Road.
- Install sectionalizing recloser approximately 5.5 miles from Oneida substation with voltage check.
- Install sectionalizing fuses near pole 20 on Buyea Road after the Madison County Landfill tap point.
- Install bidirectional controls on voltage regulator at pole 10 on Creek Road.
- Overhead 13.2kV tap to the Project's SGF primary overhead service and metering structure.

This excludes any changes as may be necessary for a special protection system (SPS) that could result from the evaluation of the Developer's preliminary design proposal for anti-islanding protection or other.

Other alternatives such as an express feeder from a new breaker position made at Oneida substation approximately 9 miles away may be considered to avoid operating concerns associated with using an existing encumbered feeder discussed above. Also, a 34.5kV interconnection point approximately 1.75 direct miles away to Whitman Station could be considered. However, these alternatives will be more costly to provide upon initial installation.

At the Generator-Owner's point of interconnection (POI) with the Company's system, the following are some other concerns observed in this study.

1. The Generator-Owner is responsible for securing the right-of-way for the Company's 13.2kV primary overhead tap.
2. The parallel generator installation shall comply with the Company's [ESB 750 series](#) requirements.
3. Since the Company's distribution supply line is overhead construction and the Generator-Owner is required to have a main breaker, R500 (52U), to coordinate with the 13.2kV supply, the Generator-Owner will need a 13.2kV primary overhead service and metering structure.
4. No future increase in generation output beyond 2MVA for this 13.2kV interconnection has been studied. Any increase is subject to a new study.

## 7. CONCEPTUAL COST ESTIMATE

The following are general descriptions of, and non-binding good faith estimated costs for, the Interconnection Facility components that are determined to be required by the project:

UTILITY METERING - The conceptual cost for 13.2kV outdoor metering CT's and PT's and meters at the project location is estimated at **\$26,400 +/-25%**. This excludes telecommunications circuit costs.

RTU - It has been determined that the NYISO will be administering the revenues for this Project's 2MVA small generating facility and a Company EMS-RTU will be required. The conceptual cost for the Company's EMS-RTU provision is estimated at **\$115,700 +/-25%**.

SERVICE LATERAL (DISTRIBUTION OWNER ATTACHMENT FACILITY) - The conceptual cost which is based on 420 feet of 13.2kV overhead primary with pole and guying and without encumbrances would be **\$100,500 +/-25%**. This cost would not include right-of-way, which would be the project's

DISTRIBUTION SYSTEM UPGRADES - The conceptual cost of additions and modifications of the

[Redacted text block]

[Redacted text block]

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Service Agreement No. 1988

**Interconnection Study:** Madison County Landfill Gas to Energy 2 MVA Small Generating Facility

National Grid Oneida 13.2kV Feeder #50150 identified above, including materials; engineering, design, and construction labor; and overhead costs, will be **\$198,900 +/-25%**. This includes:

- Add voltage check on the Oneida Station breaker, R500 at \$108,400+/-25%.
- Remove and replace fuses with 600A disconnects at existing fuse locations on pole 61 on Clockville Road and pole 22 and install sectionalizing fuses near pole 20 on Buyea Road at \$12,700+/-25%.
- Install sectionalizing recloser approximately 5.5 miles from Oneida substation at \$58,300+/-25%.
- Install bidirectional controls on voltage regulator at pole 10 on Creek Road at \$19,500+/-25%.

LINE EXTENSION - None anticipated at this time based on this study.

COMMUNICATIONS CIRCUITS & EQUIPMENT - An estimate is not identified at this time; however, it is expected that communications circuits will be required at least for the revenue metering and the EMS-RTU

ENGINEERING REVIEW & COMPLIANCE VERIFICATION OF THE GENERATOR-OWNER'S FACILITIES - The conceptual cost to review the project's designs and installation according to the applicable National Grid Electric System Bulletins is **\$9,100 +/-25%**.

COMPLIANCE VERIFICATION OF GENERATOR-OWNER'S STATION FUNCTIONAL TESTING - The conceptual cost to field verify the project's installation for functional compliance according to the applicable National Grid Electric System Bulletins is **\$1,400 +/-25%**.

**TOTAL = \$452,000 +/-25%.**

NOTES:

1. These conceptual estimated costs are based upon the results of this study and subject to change upon receipt of the Generator-Owner's decision to proceed with preliminary design. *It is important to note that the Company will reconcile the charges after project completion, and the Generator-Owner will be responsible for all final charges, which may be higher or lower than estimated according to this interconnection study, the Interconnection Agreement, and NMPC PSC No. 207.*
2. The conceptual cost estimate provided in this plan is according to the Company's rates and schedules in effect and will be deemed withdrawn if not accepted by the Generator-Owner within 90 days. The estimate includes sales tax and contingency on direct labor and material costs.
3. The conceptual cost estimates provided do not include:
  - interconnection study costs,
  - application fees,
  - applicable surcharges,
  - property and income taxes,
  - future operation and maintenance costs,
  - project management costs,
  - recurring monthly communications circuits' charges responsible by the Generator-Owner to the communications utility,
  - provisions for communications circuits, if needed, as responsible by the Generator-Owner to the communications utility,
  - allowance for funds used during construction (AFUDC) assuming Customer upfront payment,
  - adverse field conditions such as rock, water, weather, and Generator-Owner electrical equipment obstructions,
  - extended construction hours to minimize outage time or National Grid's public duty to serve,
  - the cost of any temporary construction service, or
  - any required permits.

4. Cost adders estimated for overtime would be based on 1.5 and 2 times labor rates if required for work beyond normal business hours. Meals and equipment are also extra costs incurred for overtime labor.
5. Payments in accordance with the Interconnection Agreement between the Developer and the Company.



Service Agreement No. 1988

**Interconnection Study:** Madison County Landfill Gas to Energy 2 MVA Small Generating Facility

## 8. SCHEDULING

The Company is aware that the Generator-Owner desires a **December 2008-February 2009 in-service date**. This date may not be achievable, depending upon receipt of funds and notification to proceed, weather, equipment delivery, public opposition to right-of-way and untimely Developer design submittals that may affect this schedule. Close coordination is required to sequence construction and planned interruption events. *As a result, any final schedule requires mutual agreement and would be subject to change.*

- Refer to **Attachment A** for the Company's items to be considered in the Generator-Owner's Project Schedule.
- The Generator-Owner is required to submit a project schedule that includes the necessary coordination activities to both themselves and the Company to provide for the design, installation, compliance verification, and energization of the Generator-Owner's interconnection to the Company's distribution system.
- Based on this study, the Company requires a **6-month lead time** from receipt of necessary funding and written commitment to proceed. The lead time required to complete the installation of phone circuits, if required, is unknown and is dependent upon the local communications provider.

## 9. CONCLUSIONS

Based on the available data and the analysis performed, the following conclusions have been reached based on the recommended modifications and additions to the existing 13.2kV overhead feeder, Oneida #50150:

1. The generation did not cause any thermal or voltage problems at peak or light load conditions.
2. For normal operating conditions, the proposed generating station is feasible.
3. Under light load conditions, protection from anti-islanding is required for the proposed small generating facility with the Oneida substation's Feeder #50150.
4. No National Grid circuit breakers exceed their short circuit ratings because of the project.
5. Fuse replacement with disconnects and the addition of a recloser and fuse are necessary for feeder reliability.
6. A voltage regulator will require bidirectional controls.
7. Voltage check will need to be added on the Oneida Station breaker, R500.
8. An EMS-RTU will be needed at the proposed generating station for administering sales to the NYISO and control under emergency feeder switching operations.
9. Total conceptual cost to interconnect the project for National Grid's impact is approximately \$452,000 +/-25% excluding possible additional costs noted in Section 7, note 3.

## 10. APPLIED REFERENCE REQUIREMENTS

The following National Grid electric service bulletins apply to the project for submittal of service installation designs for National Grid's review and acceptance.

- ESB No. 750 - Specifications for Electrical Installations
- ESB No. 752 - Service above 15,000 Volts
- ESB No. 753 - Primary Meter Pole Service
- ESB No. 755 - Operation & Maintenance Requirements for Services Above 600 Volts
- ESB No. 756 Appendix A - Requirements for Parallel Generation Connected to National Grid Facilities in New York
- ESB 750 series Errata and Change Revision List

Note: All ESB's are available at <http://www.nationalgridus.com/electricalspecifications>

Other related references:

- PSC No. 207 - Niagara Mohawk Power Corporation Electricity Tariff  
<<[http://www.nationalgridus.com/niagaramohawk/non\\_html/rates\\_psc207.pdf](http://www.nationalgridus.com/niagaramohawk/non_html/rates_psc207.pdf)>>

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Service Agreement No. 1988

**Interconnection Study:** Madison County Landfill Gas to Energy 2 MVA Small Generating Facility

- New York Independent System Operator, Inc. FERC Electric Tariff Original Volume No. 1 Attachment Z - SMALL GENERATOR INTERCONNECTION PROCEDURES (SGIP) (Applicable To Generating Facilities No Larger Than 20 MW)  
<<[http://www.nyiso.com/public/webdocs/services/planning/links\\_to\\_tariff\\_attachments/att\\_z.pdf](http://www.nyiso.com/public/webdocs/services/planning/links_to_tariff_attachments/att_z.pdf)>>
- New York State Consolidated Laws, Public Service, Article 4, Section 65.  
<<<http://public.leginfo.state.ny.us/menugetf.cgi?COMMONQUERY=LAWS> then select "PBS">>
- Regarding unqualified persons approaching the area of work: Laws of New York - Labor - Article 7 § 202-h. High-voltage proximity.  
<<<http://www.labor.state.ny.us/workerprotection/safetyhealth/sh57.shtm>>>

Madison County LFGTE Interconnection  
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**rev. Nov. 21, 2008**

Service Agreement No. 1988

**Interconnection Study:** Madison County Landfill Gas to Energy 2 MVA Small Generating Facility

**ATTACHMENT A**

**Company Milestone Requirements for Generator-Owner Project Schedule**

These are Company items to be considered in the Generator-Owner's Project Schedule per §3.C.2.0 in [ESB 756](#) Appendix A.

**ID**    **Activity Description**    **ESB 756 App. A § ref.**

**Project Definition & Conceptual Analysis Phase**

1	Developer Technical Submittal w/prelim. design received	2.2.2
2	Company Interconnection Study	2.1.5 & 2.3
3	Company Service Plan or Specification for Elec. Installation	1.3, 3.0 & 4.0
4	Company Interconnection Agreement	2.1.5

**Final Design Review Phase**

5	Developer Executed Interconnection Agreement received	2.1.5.3 & 2.3.1.3
6	Developer's funding received	2.3.1.1
7	Developer's project schedule received	2.3.2
8	Company Functional Specification (where required) provided to Developer	1.3.2, 1.5.1, & 2.1.2
9	Developer's final design & spec's received per ESB 750 & 752 or 753 or 758	2.2.2.1.2 & 3
10	Company reviews Developer's design & returns comments per ESB 752 or 753 or 758	2.4

**Installation Progress Review Phase**

11	Developer's corrected design, test reports & settings received per ESB 752 or 753 or 758	1.3.1.3
12	Company reviews Developer's design & returns comments per ESB 752 or 753 or 758	1.3.1.3
13	Company field audit of Developer's installation progress	2.4

**Installation Compliance Verification Phase**

14	Developer's 6-week advance notice of functional testing received per ESB 755 & 752 or 753 or 758	4.5.3
15	Company witness of Developer's functional testing	4.5.3
16	3rd Party Inspection Agency certification approval received per ESB 750 & 752 or 753 or 758	2.4
17	Developer's acknowledgement of satisfactory wiring & relay tests received per ESB 755 & 752 or 753 or 758	2.4, 4.5.3
18	Company field audit of Developer's service per ESB 750 series	2.4
19	Developer resolves open items	

**Energization & Synchronization Phase**

20	Developer's communication circuits available from Telco.	4.1 & 2
21	Company's metering installation complete	3.3
22	Company's telemetering installation complete (where required)	4.1
23	Company's supply system interconnection complete	
24	Company review/acceptance of Developer's resolved open items	
25	Developer's energization sequence plan received per ESB 755 & 752 or 753 or 758	
26	Company proceeds with energization	

**Project Closeout Phase**

27	Developer's as-built design drawings received within 90 days	2.4
28	Company reconciliation of project costs with Developer	2.3.1.1

For all National Grid NY Operations Specifications for Electrical Installations, ESB 750 series bulletins, see:

<http://www.nationalgridus.com/electricalspecifications>





### Proposed Milestone Schedule

In-Service Date: December 31, 2008

Proposed milestones and responsibility as agreed to by the Parties:

	<b>Milestone/Date</b>	<b>Responsible Party</b>
(1)	Begin construction of SGF by- 8/19/2008	Interconnection Customer
(2)	Submission of final design drawings of SGF to NMPC 9/01/2008	Interconnection Customer
(3)	Metering Installation 11/01/2008	National Grid
(4)	13.2 kV Interconnection Tap 11/01/2008	National Grid
(5)	Interconnection Customer's SGF ready for back-feed – 11/21/2008	Interconnection Customer
(6)	SGF Ready for Initial Synchronization 12/08/2008	Interconnection Customer
(7)	_____	_____
(8)	_____	_____
(9)	_____	_____
(10)	_____	_____