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Northbrook Lyons Falls LLC

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2013 AUG 13 PM 3: 59 August 8th, 2013
PUBLIC UTILITIES COMMISSION

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

Dear Ms. Massaro,

Northbrook Lyons Falls LLC ("NBLF") hereby respectfully requests that the State of Rhode Island Public Utilities Commission certify NBLF's Gouldtown Development as an eligible renewable energy resource pursuant to the Renewable Energy Act §39-26-1 *et. seq.* of the General Laws of Rhode Island. The Gouldtown Development ("GD") is one of three developments part of the Lyons Falls Hydroelectric Project.

The GD is a Run-of-River facility that has a nameplate capacity of 2 MW and that does not cause and appreciable change in the river flow. Major investments were made at the GD in 1998 and 2007. The former was due to a flood and the latter was due to foreign objects passing through the equipment rendering the development completely inoperable. Please find attached NBLF's application seeking eligibility as a renewable energy resource in the State of Rhode Island as a "repowered" generator.

The GD is located in the New York control area, adjacent to NEPOOL. It has been certified as a Class I Renewable Energy Source in the State of Connecticut. Power produced will be sold to market participants in NEPOOL, through bilateral contracts.

As a supplement to NBLF's application we are attaching a redacted version of project expenditures and book values for public record. NBLF has submitted a Motion for Protective Treatment under separate cover along with a copy of the confidential attachment to the Commission pending a determination on the NBLF's Motion.

NBLF would like to make clear that Mr. Stéphane Cohen and Mr. Gilles Côté are authorized representatives of NBLF and that they have accurate knowledge in regards to the above mentioned project.

Additional confidential material to be provided is subject to protective treatment.

Thank you for your consideration of NBLF's request. If you have any questions or need additional information, please contact:

Stéphane Cohen
Northbrook Lyons Falls LLC
c/o Kruger Energy Inc.
3285 chemin Bedford

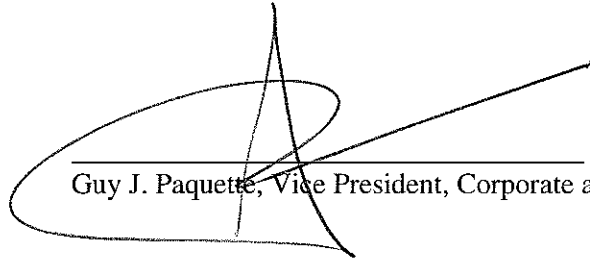
Northbrook Lyons Falls LLC

Montreal, Québec

H3S 1G5

E-mail: stéphane.cohen@kruger.com

Tel : 514-343-3100 ext. 2109

A handwritten signature in black ink, consisting of a large, stylized 'G' and 'P' that overlap significantly. The signature is written over a horizontal line.

Guy J. Paquette, Vice President, Corporate and Legal Affairs

RIPUC Use Only

Date Application Received: ___ / ___ / ___
Date Review Completed: ___ / ___ / ___
Date Commission Action: ___ / ___ / ___
Date Commission Approved: ___ / ___ / ___

GIS Certification #:

37936

RENEWABLE ENERGY RESOURCES ELIGIBILITY FORM

**The Standard Application Form
Required of all Applicants for Certification of Eligibility of Renewable Energy Resource
(Version 8 – December 5, 2012)**

**STATE OF RHODE ISLAND PUBLIC UTILITIES COMMISSION
Pursuant to the Renewable Energy Act
Section 39-26-1 et. seq. of the General Laws of Rhode Island**

NOTICE:

When completing this Renewable Energy Resources Eligibility Form and any applicable Appendices, please refer to the State of Rhode Island and Providence Plantations Public Utilities Commission Rules and Regulations Governing the Implementation of a Renewable Energy Standard (RES Regulations, Effective Date: January 1, 2006), and the associated RES Certification Filing Methodology Guide. All applicable regulations, procedures and guidelines are available on the Commission's web site: www.ripuc.org/utilityinfo/res.html. Also, all filings must be in conformance with the Commission's Rules of Practice and Procedure, in particular, Rule 1.5, or its successor regulation, entitled "Formal Requirements as to Filings."

- Please complete the Renewable Energy Resources Eligibility Form and Appendices using a typewriter or black ink.
- Please submit one original and three copies of the completed Application Form, applicable Appendices and all supporting documentation to the Commission at the following address:
Rhode Island Public Utilities Commission
Attn: Luly E. Massaro, Commission Clerk
89 Jefferson Blvd
Warwick, RI 02888

In addition to the paper copies, electronic/email submittals are required under Commission regulations. Such electronic submittals should be sent to res@puc.state.ri.us.

- In addition to filing with the Commission, Applicants are required to send, electronically or electronically and in paper format, a copy of the completed Application including all attachments and supporting documentation, to the Division of Public Utilities and Carriers and to all interested parties. A list of interested parties can be obtained from the Commission's website at www.ripuc.org/utilityinfo/res.html.
- Keep a copy of the completed Application for your records.
- The Commission will notify the Authorized Representative if the Application is incomplete.
- Pursuant to Section 6.0 of the RES Regulations, the Commission shall provide a thirty (30) day period for public comment following posting of any administratively complete Application.
- Please note that all information submitted on or attached to the Application is considered to be a public record unless the Commission agrees to deem some portion of the application confidential after consideration under section 1.2(g) of the Commission's Rules of Practice and Procedure.
- In accordance with Section 6.2 of the RES Regulations, the Commission will provide prospective reviews for Applicants seeking a preliminary determination as to whether a facility would be eligible prior to the formal certification process described in Section 6.1 of the RES Regulations. Please note that space is provided on the Form for applicant to designate the type of review being requested.
- Questions related to this Renewable Energy Resources Eligibility Form should be submitted in writing, preferably via email and directed to: Luly E. Massaro, Commission Clerk at res@puc.state.ri.us.

SECTION I: Identification Information

- 1.1 Name of Generation Unit (sufficient for full and unique identification): **Gouldtown Development**
- 1.2 Type of Certification being requested (check one):
 Standard Certification Prospective Certification (Declaratory Judgment)
- 1.3 This Application includes: (Check all that apply)¹
- APPENDIX A: Authorized Representative Certification for Individual Owner or Operator
 - APPENDIX B: Authorized Representative Certification for Non-Corporate Entities Other Than Individuals
 - APPENDIX C: Existing Renewable Energy Resources
 - APPENDIX D: Special Provisions for Aggregators of Customer-sited or Off-grid Generation Facilities
 - APPENDIX E: Special Provisions for a Generation Unit Located in a Control Area Adjacent to NEPOOL
 - APPENDIX F: Fuel Source Plan for Eligible Biomass Fuels
- 1.4 Primary Contact Person name and title: **Stéphane Cohen, Jr. Engineer**
- 1.5 Primary Contact Person address and contact information:
Address: **3285 chemin Bedford, Montreal, Québec, H3S 1G5**
Phone: **514-343-3100 #2109** Fax: **514-343-3124**
Email: **stephane.cohen@kruger.com**
- 1.6 Backup Contact Person name and title: **Gilles Côté, Director, Sustainable Development**
- 1.7 Backup Contact Person address and contact information:
Address: **3285 chemin Bedford, Montréal, Québec, H3S 1G5**
Phone: 514-343-3100 #2011 Fax: 514-343-3124
Email: **gilles.cote@kruger.com**
- 1.8 Name and Title of Authorized Representative (*i.e.*, the individual responsible for certifying the accuracy of all information contained in this form and associated appendices, and whose signature will appear on the application): **Guy J. Paquette, Vice President, Corporate and Legal Affairs**
- Appendix A or B (as appropriate) completed and attached? Yes No N/A

¹ Please note that all Applicants are required to complete the Renewable Energy Resources Eligibility Standard Application Form and all of the Appendices that apply to the Generation Unit or Owner or Operator that is the subject of this Form. Please omit Appendices that do not apply.

- 1.9 Authorized Representative address and contact information:
Address: **3285 chemin Bedford, Montréal, Québec, H3S 1G5**
Phone: **514-343-3100 #2109** Fax: **514-343-3124**
Email: **stephane.cohen@kruger.com**
- 1.10 Owner name and title: **Northbrook Lyons Falls LLC**
- 1.11 Owner address and contact information:
Address: **3285 chemin Bedford, Montreal, Québec, H3S 1G5**
Phone: **514-343-3100 #2109** Fax: **514-343-3124**
Email: **stephane.cohen@kruger.com**
- 1.12 Owner business organization type (check one):
 Individual
 Partnership
 Corporation
 Other: **Limited Liability Company**
- 1.13 Operator name and title: **Northbrook Lyons Falls LLC**
- 1.14 Operator address and contact information:
Address: **3285 chemin Bedford, Montreal, Quebec, H3S 1G5**
Phone: **514-343-3100 #2109** Fax: **514-343-3124**
Email: **stephane.cohen@kruger.com**
- 1.15 Operator business organization type (check one):
 Individual
 Partnership
 Corporation
 Other: **Limited Liability Company**

SECTION II: Generation Unit Information, Fuels, Energy Resources and Technologies

- 2.1 ISO-NE Generation Unit Asset Identification Number or NEPOOL GIS Identification Number (either or both as applicable): **The energy produced by the GD will be sold to a market participant in NEPOOL. The GD asset identification number is NY23570 and the GIS identification number is 37936.**
- 2.2 Generation Unit Nameplate Capacity: 2 MW
- 2.3 Maximum Demonstrated Capacity: 2.4 MW
- 2.4 Please indicate which of the following Eligible Renewable Energy Resources are used by the Generation Unit: (Check ALL that apply) – *per RES Regulations Section 5.0*
- Direct solar radiation
 - The wind
 - Movement of or the latent heat of the ocean
 - The heat of the earth
 - Small hydro facilities
 - Biomass facilities using Eligible Biomass Fuels and maintaining compliance with all aspects of current air permits; Eligible Biomass Fuels may be co-fired with fossil fuels, provided that only the renewable energy fraction of production from multi-fuel facilities shall be considered eligible.
 - Biomass facilities using unlisted biomass fuel
 - Biomass facilities, multi-fueled or using fossil fuel co-firing
 - Fuel cells using a renewable resource referenced in this section
- 2.5 If the box checked in Section 2.4 above is “Small hydro facilities”, please certify that the facility’s aggregate capacity does not exceed 30 MW. – *per RES Regulations Section 3.32*
- ← check this box to certify that the above statement is true
 - N/A or other (please explain) _____
- 2.6 If the box checked in Section 2.4 above is “Small hydro facilities”, please certify that the facility does not involve any new impoundment or diversion of water with an average salinity of twenty (20) parts per thousand or less. – *per RES Regulations Section 3.32*
- ← check this box to certify that the above statement is true
 - N/A or other (please explain) _____
- 2.7 If you checked one of the Biomass facilities boxes in Section 2.4 above, please respond to the following:
- A. Please specify the fuel or fuels used or to be used in the Unit: _____
 - B. Please complete and attach Appendix F, Eligible Biomass Fuel Source Plan.

Appendix F completed and attached? Yes No N/A

2.8 Has the Generation Unit been certified as a Renewable Energy Resource for eligibility in another state's renewable portfolio standard?

Yes No If yes, please attach a copy of that state's certifying order.

Copy of State's certifying order attached? Yes No N/A

SECTION III: Commercial Operation Date

Please provide documentation to support all claims and responses to the following questions:

3.1 Date Generation Unit first entered Commercial Operation: **05 / 06 / 1986** at the site.

If the commercial operation date is after December 31, 1997, please provide independent verification, such as the utility log or metering data, showing that the meter first spun after December 31, 1997. This is needed in order to verify that the facility qualifies as a New Renewable Energy Resource.

Documentation attached? Yes No N/A

3.2 Is there an Existing Renewable Energy Resource located at the site of Generation Unit?

Yes
 No

3.3 If the date entered in response to question 3.1 is earlier than December 31, 1997 or if you checked "Yes" in response to question 3.2 above, please complete Appendix C.

Appendix C completed and attached? Yes No N/A

3.4 Was all or any part of the Generation Unit used on or before December 31, 1997 to generate electricity at any other site?

Yes
 No

3.5 If you checked "Yes" to question 3.4 above, please specify the power production equipment used and the address where such power production equipment produced electricity (attach more detail if the space provided is not sufficient):

SECTION IV: Metering

4.1 Please indicate how the Generation Unit's electrical energy output is verified (check all that apply):

ISO-NE Market Settlement System

- Self-reported to the NEPOOL GIS Administrator
 Other (please specify below and see Appendix D: Eligibility for Aggregations):
-

Appendix D completed and attached? Yes No N/A

SECTION V: Location

5.1 Please check one of the following that apply to the Generation Unit:

- Grid Connected Generation
 Off-Grid Generation (not connected to a utility transmission or distribution system)
 Customer Sited Generation (interconnected on the end-use customer side of the retail electricity meter in such a manner that it displaces all or part of the metered consumption of the end-use customer)

5.2 Generation Unit address: **3908 Shibley Road, Lyonsdale NY 13368**

5.3 Please provide the Generation Unit's geographic location information:

A. Universal Transverse Mercator Coordinates: _____

B. Longitude/Latitude: **43° 36' 45.03"/75° 20' 20.77"**

5.4 The Generation Unit located: (please check the appropriate box)

- In the NEPOOL control area
 In a control area adjacent to the NEPOOL control area
 In a control area other than NEPOOL which is not adjacent to the NEPOOL control area ← *If you checked this box, then the generator does not qualify for the RI RES – therefore, please do not complete/submit this form.*

5.5 If you checked "In a control area adjacent to the NEPOOL control area" in Section 5.4 above, please complete Appendix E.

Appendix E completed and attached? Yes No N/A

SECTION VI: Certification

6.1 Please attach documentation, using one of the applicable forms below, demonstrating the authority of the Authorized Representative indicated in Section 1.8 to certify and submit this Application.

Corporations

If the Owner or Operator is a corporation, the Authorized Representative shall provide **either**:

- (a) Evidence of a board of directors vote granting authority to the Authorized Representative to execute the Renewable Energy Resources Eligibility Form, **or**
- (b) A certification from the Corporate Clerk or Secretary of the Corporation that the Authorized Representative is authorized to execute the Renewable Energy Resources Eligibility Form or is otherwise authorized to legally bind the corporation in like matters.

Evidence of Board Vote provided? Yes No N/A

Corporate Certification provided? Yes No N/A

Individuals

If the Owner or Operator is an individual, that individual shall complete and attach APPENDIX A, or a similar form of certification from the Owner or Operator, duly notarized, that certifies that the Authorized Representative has authority to execute the Renewable Energy Resources Eligibility Form.

Appendix A completed and attached? Yes No N/A

Non-Corporate Entities

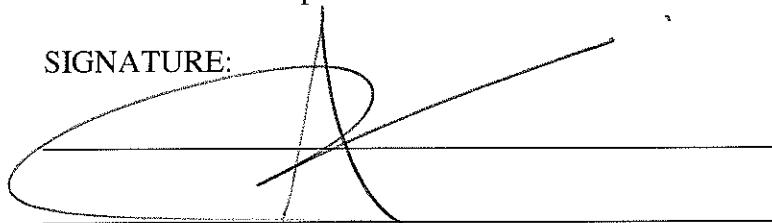
(Proprietorships, Partnerships, Cooperatives, etc.) If the Owner or Operator is not an individual or a corporation, it shall complete and attach APPENDIX B or execute a resolution indicating that the Authorized Representative named in Section 1.8 has authority to execute the Renewable Energy Resources Eligibility Form or to otherwise legally bind the non-corporate entity in like matters.

Appendix B completed and attached? Yes No N/A

6.2 Authorized Representative Certification and Signature:

I hereby certify, under pains and penalties of perjury, that I have personally examined and am familiar with the information submitted herein and based upon my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties, both civil and criminal, for submitting false information, including possible fines and punishment. My signature below certifies all information submitted on this Renewable Energy Resources Eligibility Form. The Renewable Energy Resources Eligibility Form includes the Standard Application Form and all required Appendices and attachments. I acknowledge that the Generation Unit is obligated to and will notify the Commission promptly in the event of a change in a generator's eligibility status (including, without limitation, the status of the air permits) and that when and if, in the Commission's opinion, after due consideration, there is a material change in the characteristics of a Generation Unit or its fuel stream that could alter its eligibility, such Generation Unit must be re-certified in accordance with Section 9.0 of the RES Regulations. I further acknowledge that the Generation Unit is obligated to and will file such quarterly or other reports as required by the Regulations and the Commission in its certification order. I understand that the Generation Unit will be immediately de-certified if it fails to file such reports.

Signature of Authorized Representative:

SIGNATURE:  DATE: 2013.02.08

Guy J. Paquette, Vice President, Corporate and Legal Affairs

APPENDIX B
(Required When Owner or Operator is a Non-Corporate Entity
Other Than An Individual)

STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISSION

RENEWABLE ENERGY RESOURCES ELIGIBILITY FORM

Pursuant to the Renewable Energy Act
Section 39-26-1 et. seq. of the General Laws of Rhode Island

RESOLUTION OF AUTHORIZATION

Resolved: that **Guy J. Paquette**, named in Section 1.8 of the Renewable Energy Resources Eligibility Form as Authorized Representative, is authorized to execute the Application on the behalf of **Northbrook Lyons Falls LLC**, the Owner or Operator of the Generation Unit named in section 1.1 of the Application.

SIGNATURE: _____

DATE: _____

[Handwritten signature of Guy J. Paquette]

State: _____

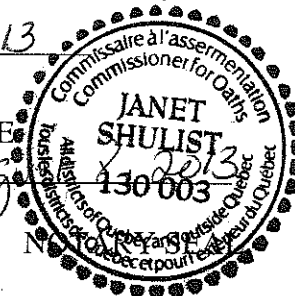
County: _____

(TO BE COMPLETED BY NOTARY) I, Janet Shulist as a notary public, certify that I witnessed the signature of the above named Guy J. Paquette, and that said person stated that he/she is authorized to execute this resolution, and the individual verified his/her identity to me, on this date: August 8, 2013

SIGNATURE: _____

DATE: _____

My commission expires on: November 2013



APPENDIX C
(Revised 6/11/10)
(Required of all Applicants with Generation Units at the Site of Existing
Renewable Energy Resources)

STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISSION

RENEWABLE ENERGY RESOURCES ELIGIBILITY FORM
Pursuant to the Renewable Energy Act
Section 39-26-1 et. seq. of the General Laws of Rhode Island

If the Generation Unit: (1) first entered into commercial operation before December 31, 1997; or (2) is located at the exact site of an Existing Renewable Energy Resource, please complete the following and attach documentation, as necessary to support all responses:

- C.1 Is the Generating Unit seeking certification, either in whole or in part, as a New Renewable Energy Resource? Yes No
- C.2 If you answered "Yes" to question C.1, please complete the remainder of Appendix C. If you answered "No" and are seeking certification entirely as an Existing Renewable Energy Resource, you do NOT need to complete the remainder of Appendix C.
- C.3 If an Existing Renewable Energy Resource is/was located at the site, has such Existing Renewable Energy Resource been retired and replaced with the new Generation Unit at the same site? Yes No
- C.4 Is the Generation Unit a Repowered Generation Unit (as defined in Section 3.29 of the RES Regulations) which uses Eligible Renewable Energy Resources and which first entered commercial operation after December 31, 1997 at the site of an existing Generation Unit? Yes No
- C.5 If you checked "Yes" to question C.4 above, please provide documentation to support that the entire output of the Repowered Generation Unit first entered commercial operation after December 31, 1997. **See attachment 2.**
- C.6 Is the Generation Unit a multi-fuel facility in which an Eligible Biomass Fuel is first co-fired with fossil fuels after December 31, 1997? Yes No

- C.7 If you checked “Yes” to question C.6 above, please provide documentation to support that the renewable energy fraction of the energy output first occurred after December 31, 1997.
- C.8 Is the Generation Unit an Existing Renewable Energy Resource other than an Intermittent Resource (as defined in Sections 3.10 and 3.15 of the RES Regulations)? Yes No
- C.9 If you checked “Yes” to question C.8 above, please attach evidence of completed capital investments after December 31, 1997 attributable to efficiency improvements or additions of capacity that are sufficient to, were intended to, and can be demonstrated to increase annual electricity output in excess of ten percent (10%). As specified in Section 3.23.v of the RES Regulations, the determination of incremental production shall not be based on any operational changes at such facility **not directly** associated with the efficiency improvements or additions of capacity.

Please provide the single proposed percentage of production to be deemed incremental, attributable to the efficiency improvements or additions of capacity placed in service after December 31, 1997. Please make this calculation by comparing actual electrical output over the three calendar years 1995-1997 (the “Historical Generation Baseline”) with the actual output following the improvements. The incremental production above the Historical Generation Baseline will be considered “New” generation for the purposes of RES. Please give the percentage of the facility’s total output that qualifies as such to be considered “New” generation.

- C.10 Is the Generating Unit an Existing Renewable Energy Resource that is an Intermittent Resource? Yes No
- C.11 If you checked “Yes” to question C.10 above, please attach evidence of completed capital investments after December 31, 1997 attributable to efficiency improvements or additions of capacity that are sufficient to, were intended to, and have demonstrated on a normalized basis to increase annual electricity output in excess of ten percent (10%). The determination of incremental production shall not be based on any operational changes at such facility **not directly** associated with the efficiency improvements or additions of capacity. In no event shall any production that would have existed during the Historical Generation Baseline period in the absence of the efficiency improvements or additions to capacity be considered incremental production. Please refer to Section 3.23.vi of the RES Regulations for further guidance.
- C.12 If you checked “Yes” to C.10, provide the single proposed percentage of production to be deemed incremental, attributable to the efficiency improvements or additions of capacity placed in service after December 31, 1997. The incremental production above the Historical Generation Baseline will be considered “New” generation for the purposes of RES. Please make this calculation by comparing actual monthly electrical output over the three calendar years 1995-1997 (the “Historical Generation Baseline”) with the actual output following the improvements on a normalized basis. Please provide back-up

information sufficient for the Commission to make a determination of this incremental production percentage.

For example, for small hydro facilities, please use historical river flow data to create a monthly normalized comparison (e.g. average MWh produced per cubic foot/second of river flow for each month) between actual output values post-improvements with the Historical Generation Baseline. For solar and wind facilities, please use historical solar irradiation, wind flow, or other applicable data to normalize the facility's current production against the Historical Generation Baseline. **See attachment 3.**

C.13 If you checked "no" to both C.3 and C.4 above, please complete the following:

- a. Was the Existing Renewable Energy Resource located at the exact site at any time during calendar years 1995 through 1997? Yes No
- b. If you checked "yes" in Subsection (a) above, please provide the Generation Unit Asset Identification Number and the average annual electrical production (MWhs) for the three calendar years 1995 through 1997, or for the first 36 months after the Commercial Operation Date if that date is after December 31, 1994, for each such Generation Unit.
- c. Please attach a copy of the derivation of the average provided in (b) above, along with documentation support (such as ISO reports) for the information provided in Subsection (b) above. Data must be consistent with quantities used for ISO Market Settlement System.

APPENDIX E
(Revised 6/11/10)

(Required of all Applicants Located in a Control Area Adjacent to NEPOOL)

STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISSION

RENEWABLE ENERGY RESOURCES ELIGIBILITY FORM

Pursuant to the Renewable Energy Act
Section 39-26-1 et. seq. of the General Laws of Rhode Island

Please complete the following and attach documentation, as necessary to support all responses:

E.1 Please indicate in which Control Area adjacent to NEPOOL the Generation Unit is located:

- New York
 Hydro Quebec
 Maritimes (including Northern Maine Independent System Administrator)

E.2 Applicant must provide to the Commission by July 1st of each year assurances that the Generation Unit's New Renewable Energy Resources used for compliance with the Rhode Island's Renewable Energy Act during the previous Compliance Year have not otherwise been, nor will be, sold, retired, claimed or represented as part of electrical energy output or sales, or used to satisfy obligations in jurisdictions other than Rhode Island. Such assurances may consist of a report from a neighboring Generation Attribute accounting system or an affidavit from the Generation Unit.

- ← please check this box to acknowledge this requirement
 N/A or other (please explain) _____

E.3 Applicant must acknowledge and provide evidence to support that, in accordance with Section 5.1.(ii) of the RES Regulations, the Generation Attributes associated with the Generation Unit shall be applied to the Rhode Island Renewable Energy Standard only to the extent of the energy produced by the Generation Unit that is or will be actually delivered into NEPOOL for consumption by New England customers. Verification of the delivery of such energy from the Generation Unit into NEPOOL will be performed in accordance with subparagraphs (a), (b) and (c) of RES Regulations Section 5.1.(ii)

← please check this box to acknowledge this requirement.

- (a) Under subparagraph 5.1.(ii)(a), Applicant must verify that the energy produced by the Generation Unit is actually delivered into NEPOOL via "a unit-specific bilateral contract for the sale and delivery of such energy into NEPOOL".

← please check this box to acknowledge the requirement for Applicant to provide ongoing evidence of one or more unit-specific bilateral contract(s) for all energy delivery into NEPOOL for which Applicant seeks RI RES certification, prior to creation of certificates in each quarter, and:

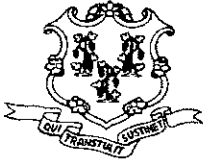
i. Please describe the type of evidence to be provided to the GIS Administrator to demonstrate the existence of such unit-specific bilateral contract(s) for the sale and delivery of such energy into NEPOOL, including duration, quantity and counter-party in NEPOOL: **Northbrook Lyons Falls will send to the GIS administrator, every quarter, a report specifying:**

- **The quantity of energy sold and delivered in NEPOOL from the GD for that quarter**
- **The counter-party in NEPOOL**
- **And a confirmation that this energy was delivered under a unit-specific bilateral contract**

N/A or other (please explain): _____

ATTACHMENT 1

State of Connecticut Decision on Qualification of Gouldtown Development as a Class I
Renewable Energy Source



STATE OF CONNECTICUT

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
PUBLIC UTILITIES REGULATORY AUTHORITY
TEN FRANKLIN SQUARE
NEW BRITAIN, CT 06051

**DOCKET NO. 12-08-14 APPLICATION OF NORTHBROOK LYONS FALLS LLC
FOR QUALIFICATION OF GOULDTOWN DEVELOPMENT
AS A CLASS I RENEWABLE ENERGY SOURCE**

December 19, 2012

By the following Directors:

Michael A. Caron
John W. Betkoski, III
Arthur H. House

DECISION

I. INTRODUCTION

A. SUMMARY

In this Decision, the Public Utilities Regulatory Authority determines that Gouldtown Development qualifies as a Class I renewable energy source as a run-of-the-river hydroelectric facility, beginning with the calendar quarter commencing July 1, 2012.

B. BACKGROUND OF THE PROCEEDING

By application dated August 17, 2012, Northbrook Lyons Falls LLC (Northbrook) requested that the Public Utilities Regulatory Authority (Authority) determine that the Gouldtown Development (Gouldtown) generation facility qualifies as a Class I renewable energy source.

C. CONDUCT OF THE PROCEEDING

There is no statutory requirement for a hearing, no person requested a hearing, and none was held.

D. PARTICIPANTS IN THE PROCEEDING

The Authority recognized Northbrook Lyons Falls LLC, 3285 Bedford Road, Montreal, Quebec, Canada H3S 1G5; and the Office of Consumer Counsel, 10 Franklin Square, New Britain, Connecticut 06051, as Participants in this proceeding.

II. AUTHORITY ANALYSIS

A. LEGAL STANDARDS

Pursuant to §16-1(a)(27) of the General Statutes of Connecticut (Conn. Gen. Stat.), "Class I renewable energy source" includes energy derived from a run-of-the-river hydropower facility provided such facility has a generating capacity of not more than five megawatts, does not cause an appreciable change in the river flow, and began operation after July 1, 2003.

By Decision dated September 10, 2004 in Docket Number Docket No. 04-02-07, DPUC Declaratory Ruling Concerning "Run-of-the-River Hydropower" as That Term is Used in the Definitions of Class I and Class II Renewable Energy Source in Conn. Gen. Stat. §16-1(a)(26) &(27) (2004 Decision), the Authority determined that:

(1) "Facility" refers to an entire hydroelectric plant at a single site rather than a turbine generating unit within a hydroelectric plant;

(2) The "generating capacity of not more than five megawatts" refers to a hydroelectric facility's nameplate capacity, not its actual or average generation output;

(3) In order to qualify as "run-of-the-river," a hydroelectric facility must show a current Federal Energy Regulatory Commission (FERC) license or exemption that requires the facility to operate in run-of-river mode. In addition, a facility can qualify as a Class I or Class II renewable energy facility only to the extent that its FERC license or exemption requires run-of-river operation. Hydroelectric facilities that are not regulated by FERC will be required to show a FERC order or a court decision stating that FERC has no jurisdiction, or has declined to exercise jurisdiction, over such facility. In such cases, the hydroelectric facility must show that its operation allows the river inflow to equal outflow instantaneously and therefore, does not cause an appreciable change in the river flow; and

(4) "Began operations" means (a) the date an existing facility with generation began commercial operation as shown in documentation from FERC; (b) the new date given to an abandoned or destroyed facility that comes back into operation as shown in its documentation from FERC or as determined by the Authority; (c) the date upon which a facility changes operation from store and release to run-of-river as shown in

documentation from FERC; or (d) the new date that incremental generation is in operation at an existing facility as shown in its documentation from FERC.

B. AUTHORITY DETERMINATION

Gouldtown is a hydroelectric generating facility located in Lyonsdale, New York and is currently owned by Northbrook. Gouldtown began commercial operation on September 23, 2007, and has a rated capacity of 2 megawatts (MW). Application, pp. 1, 2 and 4.

Gouldtown's current FERC license was issued on May 6, 1986, requiring that Gouldtown operate in an instantaneous run-of-the-river mode. Gouldtown is equipped with a Pond Level Control that continuously monitors water levels to ensure that the river inflows always equal outflows. *Id.*, pp. 3 and 4.

Gouldtown was severely damaged on March 23, 2006, and it was determined that the damage was not repairable and Gouldtown was rendered inoperable for 18 months, during which time the generating unit was rehabilitated. Northbrook made substantial capital investments for the rehabilitation and improvement of Gouldtown, allowing it to essentially become a new facility. *Id.*, p. 4.

The Authority determines that Gouldtown is a hydroelectric facility that began operating again on September 23, 2007. Gouldtown has a rated capacity of less than 5 MW and operates in run-of-the-river mode. Therefore, Gouldtown qualifies as a Class I renewable energy source.

III. FINDINGS OF FACT

1. Gouldtown is a hydroelectric generating facility located in Lyonsdale, New York.
2. Gouldtown is currently owned by Northbrook.
3. Gouldtown began commercial operation again on September 23, 2007.
4. Gouldtown has a rated capacity of 2 MW.
5. Gouldtown is equipped with a Pond Level Control that continuously monitors water levels.
6. Gouldtown's current FERC license was issued on May 6, 1986
7. Under its FERC license, Gouldtown is required to operate in run-of-the-river mode.

IV. CONCLUSION AND ORDER

A. CONCLUSION

Gouldtown qualifies as a Class I renewable energy source, pursuant to Conn. Gen. Stat. §16-1(a)(27). Gouldtown is eligible to receive Class I Renewable Energy Credits as of the calendar quarter beginning July 1, 2012.

The Authority's determination in this docket is based on the information submitted by Northbrook. The Authority may reverse its ruling or revoke the Applicant's registration if any material information provided proves to be false or misleading. Northbrook is reminded that it is obligated to notify the Authority within 10 days of any changes to any of the information it has provided to the PURA.

B. ORDER

For the following Order, submit one original of the required documentation to the Executive Secretary, 10 Franklin Square, New Britain, CT 06051, and file an electronic version through the PURA's website at www.ct.gov/pura. Submissions filed in compliance with Authority Orders must be identified by all three of the following: Docket No., Title and Order No.

1. The Applicant shall file with the Authority, by the date indicated in the table below, the Quarterly Generation Report from the New England Power Pool Generation Information System (NEPOOL GIS) that shows the number of Renewable Energy Credits (RECs) created by the NEPOOL GIS Administrator based on the Class I Activities of Gouldtown on the Creation Date [as defined in Section 2.1(b) of the NEPOOL GIS Operating Rules, as amended from time to time] for said quarter.

The first report is due February 15, 2013 with subsequent due dates as shown below:

| Class I Activity Calendar Quarter | GIS REC Creation Date | Report Due Date |
|--|----------------------------------|----------------------------|
| 1. (Jan 01 – Mar 31) | Jul 15 | Aug 15 |
| 2. (Apr 01 – Jun 30) | Oct 15 | Nov 15 |
| 3. (Jul 01 – Sep 30) | Jan 15 | Feb 15 |
| 4. (Oct 01 – Dec 31) | Apr 15 | May 15 |

The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to requirements of the Americans with Disabilities Act. Any person with a disability who may need information in an alternative format may contact the agency's ADA Coordinator at 860-424-3194 or at deep.hrmed@ct.gov. Any person with limited proficiency in English, who may need information in another language, may contact the agency's Title VI Coordinator at 860-424-3035 or at deep.aaoffice@ct.gov. Any person with a hearing impairment may call the State of Connecticut relay number – 711. Discrimination complaints may be filed with DEEP's Title VI Coordinator. Requests for accommodations must be made at least two weeks prior to any agency hearing, program or event.

**DOCKET NO. 12-08-14 APPLICATION OF NORTHBROOK LYONS FALLS LLC
FOR QUALIFICATION OF GOULDTOWN DEVELOPMENT
AS A CLASS I RENEWABLE ENERGY SOURCE**

This Decision is adopted by the following Directors:

Michael A. Caron

John W. Betkoski, III

Arthur H. House

CERTIFICATE OF SERVICE

The foregoing is a true and correct copy of the Decision issued by the Public Utilities Regulatory Authority, State of Connecticut, and was forwarded by Certified Mail to all parties of record in this proceeding on the date indicated.



Kimberley J. Santopietro
Executive Secretary
Department of Energy and Environmental Protection
Public Utilities Regulatory Authority

December 20, 2012
Date

ATTACHMENT 2

Attachment to Appendix C as Required by C.4, and C.5

Northbrook Lyons Falls LLC

The Gouldtown Development (“GD”) was refurbished on two separate occasions after December 31, 1997, both of which were necessitated by events out of Northbrook Lyons Falls’ and the previous owners of the facility’s control. In 1998, following a flood, a control system upgrade was needed. Then, in 2006, major rehabilitation of a turbine was required following entry of a foreign object which caused critical damage to the GD. This rendered the GD inoperable for 18 months, from April 2006 to September 2007, as shown in tables 4 and 7. The list below summarizes the modifications made to the unit:

The investments made in 1998 were:

- A new switchgear was installed, this equipment is a combination of electrical disconnect switches, protective relays and circuit breakers used to control, protect and isolate electrical equipment, mainly the generator.
- A new Programmable Logic Controller was installed and this equipment allows the generation process to be fully automated.
- A new generator excitation system was installed; this equipment provides the power necessary to create a magnetic field in the generator windings, ultimately allowing it to create energy.
- A new motor control center was installed, which consists of an assembly of motor starters, for equipment located inside the powerhouse.
- Installation of new governor system. This hydraulic system controls the flow of water through the turbine as well as the speed and loading of the turbine/generator unit.

The investments made in 2006-2007 were:

- Turbine Replacement
 - The turbine had experienced extensive damages which were too important to repair. Brand new, updated stainless steel, double Francis runners were purchased and installed. These runners were not only more efficient and more powerful but also more resistant to cavitation due to the hardness of the updated stainless steel construction.
 - Wicket Gates Redesigned
 - The wicket gates were the first to be impacted by the foreign object and it was also found that their design was inadequate due to their large size. The new design consisted of a higher number of smaller gates allowing more space between the turbine runner and the gates, thus reducing the possibility of a gate impacting the turbine in case of future, unexpected failures.
 - Main Turbine Shaft and Extension Shaft Replacement
-

Northbrook Lyons Falls LLC

- The main turbine shaft that held the 2 runners in place had been bent by the multiple impacts it received thus rendering it unusable and needed to be replaced. The extension shaft connects the main shaft of the turbine to the generator and some significant defects were found on it. Extensive repairs were also done to this shaft.
- Thrust Bearing Rebuilt
 - There is only one thrust bearing for the generator and the turbine. It had been inspected and needed work due to the important impact the turbine shaft was subjected to. Given that the thrust bearing was disassembled as part of the turbine replacement, it was more economical to completely rebuild it.
- Generator Guide Bearing Replacement
 - The two generator guide bearings had been damaged by the abnormal axial movements of the thrust bearing. Both generator guide bearings were rebabbitted.
- Turbine Guide Bearing Replacement
 - Guide bearings (upstream and center guide bearings) are mounted directly on the turbine shaft and given the shaft had experienced important damage they needed to be replaced as well.
- Trash Rack Replacement
 - All trash racks sections were redesigned and new cross sectional members were added to increase their strength and filtering capacity. Large rocks can no longer pass through.

Northbrook Lyons Falls LLC

Following a flood at the Gouldtown Development (“GD”) in 1998, a major powerhouse renovation was required in which the governor system, the switchgear, the motor control center and the excitation system were replaced. This equipment was supplied by L&S Electric Inc. (“L&S”) and installed by O’Connell Electric Co. (“O’Connell”).

The major repairs undertaken between the months of May 2006 and September 2007 to rehabilitate the facility after being severely damaged by a foreign object which passed through the trash racks and damaged the turbine and other major components were managed and undertaken mostly by Norcan Hydraulic Turbine Inc (“NORCAN”).

Listed below are all refurbishments which contributed to a heightened efficiency of the facility and their respective prices.

{REDACTED}

In order to determine the value of investments as compared to the value of the facility, the costs of repairs in 1998 and 2006-2007 as well as the book value of the facility before investments in 1997 dollars were determined. Northbrook Lyons Falls (“NBLF”) purchased the GD in 2004. As a result, the depreciated total amount for the 1998 repairs and the purchase price of the GD were known only as of 2004. It was assumed that a 50 year depreciation schedule had been used by the previous owner. **{REDACTED}**. Knowing the costs of the repairs in 1998 and 2006-2007, the percentage of costs representing the investments made after December 31, 1997 was determined.

{REDACTED}

The investments amount to **{REDACTED}**. This represents approximately 108.5% of the value of generating equipment at the site including the land and the dam which was worth **{REDACTED}** in 1997. This, in Northbrook Lyons Falls’ opinion, constitutes the repowered portion of the GD.

ATTACHMENT 3
As Required by C.11 and C.12

Northbrook Lyons Falls LLC

Northbrook Lyons Falls LLC had access to historical data on flow and production at the site between 1990 and 2013 which was gathered internally. Thus, two incremental percentages shall be proposed: an increase in efficiency versus baseline data compiled from 1995 to 1997 and an increase versus baseline data compiled from 1990 to 1997. Northbrook Lyons Falls is of the opinion that data collected from 1990 to 1997 provides a more accurate historical baseline of the production of the GD prior to 1998 and that the results found using these data are more representative of actual improvements made by subsequent investments. Against baseline data from 1995 to 1997, a percent increase of 38.94% was found, whereas a percent increase of 41.84% was found versus the period of 1990 to 1997. The findings are summarized below.

The incremental percentages were calculated as follows:

1. Using the monthly average production in MWh and flow rate in cubic feet per second (cfs), an average monthly ratio of production versus flow was determined using data presented in tables 1,2,4,5,7 and 8:

$$\text{monthly average} \frac{\text{MWh}}{\text{cfs}} = \frac{\text{monthly average production}}{\text{monthly average flow rate}} \quad (1)$$

2. While calculating the ratio in (1), two special conditions were considered: if the average monthly flow rate was greater than 819 cfs, the numerator of the quotient was replaced with 819 cfs (the capped monthly flow for the generator). Conversely, if the monthly average flow was less than 200 cfs, the ratio was omitted from consideration. This was because flows below 200 cfs produce no power through the generator. The results are shown in tables 3, 6 and 9.
3. Three time periods were considered when compiling the data shown in tables 1 through 9: 1990 to 1997, the “pre-upgrade” period, 1998 to 2006, the “post- 1998 upgrade” period and 2007 to 2013, the “post- 2007 upgrade” period.
4. After calculating the ratio given in (1) for each month of each year of each time period, the average MWh/cfs was calculated by month for the periods of:
 - a. 1995 to 1997 (“Case 1”)
 - b. 1990 to 1997 (“Case 2”)
 - c. 1998 to 2006 (“Case 3”)
 - d. 2007 to 2013 (“Case 4”)

The results are shown in table 10.

5. The percent increase between two time periods was calculated. For example, let us consider the percent increase in efficiency in the month of January due to the 1998 upgrade. The average MWh/cfs for January for Case 1 and the average

Northbrook Lyons Falls LLC

MWh/cfs for January Case 3 are required. The percent increase was calculated as follows:

$$\%Increase = \frac{Case\ 3(January) - Case\ 1(January)}{Case\ 1(January)} \times 100\%$$

6. The total percent increase in production was determined versus Case 1 and Case 2. Hence, a percent increase was calculated for the scenarios below:
 - a. Case 3 versus Case 1
 - b. Case 3 versus Case 2
 - c. Case 4 versus Case 3

The results are collected in table 11.

7. Summing the percent increase in production of (a) and (c) above gives the total increase of today's site versus the 1995 to 1997 historical baseline. Summing the percent increase in production of (b) and (c) gives the total increase of today's site versus the 1990 to 1997 baseline. Both are shown in table 12.

Northbrook Lyons Falls LLC

Pre-upgrade

| Production (MWh) | | | | | | | | | | | | | | |
|------------------|---------|----------|-------|-------|------|------|------|--------|-----------|---------|----------|----------|-------|----------|
| Year/Month | January | February | March | April | May | June | July | August | September | October | November | December | Total | Average |
| 1990 | 725 | 570 | 270 | | | | 487 | 571 | | 208 | 1217 | 1369 | 1179 | 6596 |
| 1991 | 330 | 267 | 719 | 1205 | 999 | 696 | 148 | | | 215 | 1211 | 1188 | | 6976 |
| 1992 | 848 | 454 | 665 | 1057 | 1041 | 662 | 730 | 712 | 420 | 993 | 1334 | 1165 | 10082 | 840,1667 |
| 1993 | 872 | 313 | 307 | 1153 | 1089 | 1030 | 220 | 294 | 681 | 1279 | 1216 | 1149 | 9603 | 800,25 |
| 1994 | 407 | 808 | 852 | 1100 | 801 | 755 | 378 | 744 | 516 | 789 | 1094 | 938 | 9183 | 765,25 |
| 1995 | 604 | 651 | 951 | 961 | 512 | 187 | 122 | 150 | 164 | 315 | 1110 | 977 | 6704 | 558,6667 |
| 1996 | 754 | 190 | 739 | 1050 | 1200 | 1033 | 1080 | 158 | | 656 | 1322 | 1441 | 9623 | 874,8182 |
| 1997 | 1110 | 914 | 885 | 1315 | 1304 | 1016 | 232 | 78 | 255 | 907 | 1363 | 1082 | 10441 | 870,0833 |
| Total: | 5650 | 4167 | 5369 | 7941 | 6946 | 5380 | 3397 | 2707 | 2244 | 6371 | 10019 | 9117 | 69208 | 6139,724 |

Table 1: Monthly production of the Gouldtown Development prior to 1998.

| Flow (cfs) | | | | | | | | | | | | | | |
|------------|---------|----------|-------|-------|-------|------|------|--------|-----------|---------|----------|----------|----------|---------|
| Year/Month | January | February | March | April | May | June | July | August | September | October | November | December | Total | Average |
| 1990 | 1326 | 1446 | 2445 | 2126 | 2168 | 829 | 633 | 462 | 453 | 1757 | 1507 | 1973 | 17125.09 | 1427.09 |
| 1991 | 1277 | 826 | 2044 | 1996 | 912 | 491 | 339 | 363 | 543 | 900 | 927 | 1095 | 11711.01 | 975.92 |
| 1992 | 969 | 720 | 1540 | 2830 | 1280 | 874 | 991 | 747 | 1113 | 1573 | 1626 | 872 | 15065.07 | 1255.42 |
| 1993 | 1354 | 517 | 721 | 4517 | 1040 | 1127 | 473 | 658 | 768 | 1121 | 1432 | 1173 | 14799.75 | 1233.31 |
| 1994 | 806 | 1031 | 1144 | 3889 | 1440 | 1122 | 1032 | 894 | 824 | 811 | 1332 | 1201 | 15325.90 | 1277.15 |
| 1995 | 1369 | 544 | 1600 | 944 | 600 | 380 | 329 | 203 | 420 | 1737 | 1520 | 609 | 10255.00 | 854.58 |
| 1996 | 1254 | 1185 | 1114 | 2842 | 2088 | 1281 | 1054 | 471 | 626 | 694 | 1411 | 2185 | 16204.56 | 1350.38 |
| 1997 | 1202 | 1164 | 1461 | 2964 | 1635 | 666 | 472 | 327 | 324 | 643 | 854 | 726 | 12437.55 | 1036.46 |
| Total: | 9386 | 7434 | 12069 | 22107 | 11163 | 6770 | 5323 | 4024 | 5069 | 9236 | 10509 | 9834 | 112924 | 9470 |

Table 2: Average monthly flow of the Gouldtown Development prior to 1998.

| Year/Month | Production/Flow (MWh/cfs) With Capped Flow at: 819 | | | | | | | | | | | | Total | Average |
|------------|--|----------|-------|-------|-------|-------|-------|--------|-----------|---------|----------|----------|--------|---------|
| | January | February | March | April | May | June | July | August | September | October | November | December | | |
| 1990 | 0.885 | 0.696 | 0.330 | | | | 0.769 | 1.236 | 0.460 | 1.486 | 1.672 | 1.440 | 8.972 | 0.997 |
| 1991 | 0.403 | 0.326 | 0.878 | 1.471 | 1.220 | 1.418 | 0.437 | 0.000 | 0.000 | 1.479 | 1.479 | 1.448 | 9.342 | 0.778 |
| 1992 | 1.035 | 0.630 | 0.813 | 1.291 | 1.271 | 0.808 | 0.891 | 0.953 | 0.513 | 1.212 | 1.629 | 1.422 | 12.470 | 1.039 |
| 1993 | 1.065 | 0.606 | 0.426 | 1.408 | 1.330 | 1.258 | 0.465 | 0.527 | 0.887 | 1.562 | 1.485 | 1.403 | 12.420 | 1.035 |
| 1994 | 0.672 | 0.987 | 1.040 | 1.343 | 0.978 | 0.923 | 0.462 | 0.908 | 0.630 | 0.973 | 1.336 | 1.145 | 11.397 | 0.950 |
| 1995 | 0.737 | 1.196 | 1.161 | 1.173 | 0.853 | 0.492 | 0.371 | 0.739 | 0.390 | 0.385 | 1.355 | 1.605 | 10.459 | 0.872 |
| 1996 | 0.921 | 0.232 | 0.902 | 1.282 | 1.465 | 1.261 | 1.319 | 0.335 | | 0.945 | 1.614 | 1.759 | 12.037 | 1.094 |
| 1997 | 1.355 | 1.116 | 1.056 | 1.606 | 1.692 | 1.525 | 0.492 | 0.239 | 0.788 | 1.411 | 1.664 | 1.490 | 14.334 | 1.195 |

Table 3: Average monthly MWh/cfs with capped flow at 819 cfs and minimum flow at 200 cfs for the period prior to 1998.

Post- 1998 upgrade

| Production (MWh) | | | | | | | | | | | | | | | |
|------------------|---------|----------|-------|-------|------|------|------|--------|-----------|---------|----------|----------|-------|----------|---------|
| Year/Month | January | February | March | April | May | June | July | August | September | October | November | December | Total | Average | |
| 1998 | 301 | | | 95 | 760 | 1470 | 1027 | 816 | 822 | 908 | 1187 | 1197 | 8573 | 857.3 | |
| 1999 | 930 | 860 | 544 | 901 | 808 | 443 | 343 | 487 | 487 | 1143 | | | 6459 | 717,6667 | |
| 2000 | | | | | | 1412 | 992 | 1058 | 1148 | 409 | 414 | 853 | 801 | 7087 | 885,875 |
| 2001 | 302 | 886 | 719 | 1088 | 1279 | 629 | 806 | 232 | 389 | 947 | 1401 | 1333 | 9991 | 832,5833 | |
| 2002 | 924 | 1356 | 1549 | 1346 | 1230 | 1251 | 204 | 18 | 126 | 1005 | 895 | 1386 | 11290 | 940,8333 | |
| 2003 | 871 | 664 | 814 | 1112 | 1271 | 922 | 310 | 511 | 330 | 1083 | 1218 | 1199 | 10305 | 858,75 | |
| 2004 | 360 | 211 | 582 | 1203 | 1269 | 844 | 561 | 1073 | 784 | 683 | 939 | 1072 | 9581 | 798,4167 | |
| 2005 | 633 | 732 | 503 | 1050 | 844 | 563 | 760 | 148 | 239 | 1163 | 1298 | 1088 | 9021 | 751,75 | |
| 2006 | 1503 | 743 | 364 | | | | | | | | | | 2610 | 870 | |
| Total: | 5824 | 5432 | 5075 | 6785 | 8873 | 7114 | 5069 | 3946 | 3586 | 7346 | 7791 | 8076 | 74917 | 7513,175 | |

Table 4: Monthly production of the Gouldtown Development between 1998 and 2006.

| Flow (cfs) | | | | | | | | | | | | | | |
|------------|---------|----------|-------|-------|-------|------|------|--------|-----------|---------|----------|----------|----------|---------|
| Year/Month | January | February | March | April | May | June | July | August | September | October | November | December | Total | Average |
| 1998 | 2352 | 883 | 2127 | 1817 | 787 | 1341 | 630 | 632 | 342 | 437 | 731 | 550 | 12628.60 | 1052.38 |
| 1999 | 1243 | 699 | 699 | 2493 | 881 | 321 | 485 | 194 | 642 | 1085 | 849 | 606 | 10196.60 | 849.72 |
| 2000 | 1123 | 753 | 1901 | 2174 | 1992 | 780 | 637 | 814 | 497 | 600 | 769 | 1008 | 13046.50 | 1087.21 |
| 2001 | 372 | 1010 | 760 | 3340 | 978 | 1402 | 487 | 299 | 472 | 574 | 817 | 993 | 11504.20 | 958.68 |
| 2002 | 573 | 1257 | 1828 | 2862 | 1648 | 1214 | 287 | 221 | 340 | 890 | 1289 | 891 | 13308.64 | 1109.05 |
| 2003 | 635 | 514 | 1962 | 2211 | 2073 | 1052 | 519 | 632 | 825 | 1979 | 2025 | 1674 | 16099.45 | 1341.62 |
| 2004 | 1109 | 651 | 1620 | 2254 | 1866 | 604 | 615 | 1259 | 1028 | 559 | 1151 | 2317 | 15051.60 | 1254.30 |
| 2005 | 1331 | 718 | 745 | 2883 | 837 | 731 | 683 | 373 | 698 | 1818 | 2221 | 1248 | 14283.81 | 1190.32 |
| 2006 | 1736 | 1643 | 1565 | 1853 | 1039 | 2166 | 1721 | 660 | 690 | 2721 | 2698 | 2130 | 20621.76 | 1718.48 |
| Total: | 10472 | 8137 | 13206 | 21886 | 12119 | 9611 | 6063 | 5084 | 5534 | 10664 | 12549 | 11415 | 126741 | 10562 |

Northbrook Lyons Falls LLC

Table 5: Average monthly flow of the Gouldtown Development between 1998 and 2006.

| Production/Flow (MWh/cfs) With Capped Flow at: 819 | | | | | | Minimum Tubrine Flow (cfs): 200 | | | | | | Total: | Average | |
|--|---------|----------|-------|-------|-------|---------------------------------|-------|--------|-----------|---------|----------|----------|---------|-------|
| Year/Month | January | February | March | April | May | June | July | August | September | October | November | December | | |
| 1998 | 0.368 | | | 0.104 | 0.966 | 1.795 | 1.630 | 1.291 | 2.401 | 2.079 | 1.625 | 2.177 | 14.435 | 1.444 |
| 1999 | 1.136 | 1.230 | 0.778 | 1.100 | 0.987 | 1.378 | 0.707 | | 0.759 | 1.396 | | | 9.471 | 1.052 |
| 2000 | | | | | 1.724 | 1.273 | 1.662 | 1.410 | 0.823 | 0.690 | 1.109 | 0.978 | 9.669 | 1.209 |
| 2001 | 0.813 | 1.057 | 0.947 | 1.328 | 1.562 | 0.768 | 1.655 | 0.775 | 0.824 | 1.649 | 1.715 | 1.628 | 14.720 | 1.227 |
| 2002 | 1.613 | 1.856 | 1.891 | 1.643 | 1.502 | 1.527 | 0.711 | 0.082 | 0.371 | 1.227 | 1.093 | 1.692 | 15.008 | 1.251 |
| 2003 | 1.372 | 1.293 | 0.994 | 1.358 | 1.552 | 1.126 | 0.598 | 0.809 | 0.403 | 1.322 | 1.487 | 1.464 | 13.777 | 1.148 |
| 2004 | 0.440 | 0.324 | 0.711 | 1.469 | 1.549 | 1.398 | 0.912 | 1.310 | 0.957 | 1.222 | 1.147 | 1.309 | 12.747 | 1.062 |
| 2005 | 0.773 | 1.020 | 0.675 | 1.282 | 1.031 | 0.770 | 1.113 | 0.397 | 0.342 | 1.420 | 1.585 | 1.328 | 11.736 | 0.978 |
| 2006 | 1.835 | 0.907 | 0.444 | | | | | | | | | | 3.187 | 1.062 |

Table 6: Average monthly MWh/cfs with capped flow at 819 cfs and minimum flow at 200 cfs for the period of 1998 to 2006.

Post- 2007 upgrade

| Production (MWh) | | | | | | | | | | | | | | Total: | Average |
|------------------|---------|----------|-------|-------|------|------|------|--------|-----------|---------|----------|----------|-------|----------|---------|
| Year/Month | January | February | March | April | May | June | July | August | September | October | November | December | | | |
| 2007 | | | | | | | | | | 1224 | 1547 | 1224 | 3124 | 1041.333 | |
| 2008 | 1113 | 603 | 1064 | 1491 | 1142 | 750 | 1130 | 1211 | 356 | | | 560 | 9419 | 941.9 | |
| 2009 | 465 | | 901 | 1471 | 1462 | 1124 | 1273 | 666 | 381 | 1543 | 1439 | 1308 | 12051 | 1095.546 | |
| 2010 | 515 | 323 | 991 | 1379 | 1051 | 1115 | 887 | 566 | 495 | 1375 | 1546 | 1103 | 11346 | 945.5 | |
| 2011 | 920 | 679 | 1427 | 1419 | 1362 | 1300 | 403 | 274 | 1098 | 1218 | 1267 | 1520 | 12887 | 1073.917 | |
| 2012 | 1169 | 1176 | 1389 | 1408 | 1512 | 954 | 53 | 12 | 291 | 1508 | 1346 | 1680 | 12498 | 1041.5 | |
| Total: | 4182 | 2781 | 5772 | 7168 | 6529 | 5243 | 3746 | 2749 | 2620 | 5997 | 7146 | 7393 | 61325 | 6139.695 | |

Table 7: Monthly production of the Gouldtown Development between 2007 and 2013.

| Flow (cfs) | | | | | | | | | | | | | | Total: | Average |
|------------|---------|----------|-------|-------|------|------|------|--------|-----------|---------|----------|----------|----------|---------|---------|
| Year/Month | January | February | March | April | May | June | July | August | September | October | November | December | | | |
| 2007 | 2398 | 707 | 2100 | 2896 | 851 | 401 | 367 | 217 | 266 | 1264 | 1453 | 982 | 13901.25 | 1158.44 | |
| 2008 | 1579 | 1449 | 1759 | 3809 | 902 | 821 | 793 | 900 | 425 | 1040 | 1571 | 2074 | 17120.87 | 1426.74 | |
| 2009 | 781 | 1007 | 2351 | 2181 | 1547 | 771 | 705 | 685 | 484 | 1126 | 787 | 816 | 13241.23 | 1103.44 | |
| 2010 | 1005 | 439 | 1577 | 1106 | 803 | 1139 | 658 | 655 | 454 | 2163 | 1152 | 1107 | 12367.31 | 1029.78 | |
| 2011 | 475 | 460 | 1793 | 3966 | 2022 | 837 | 373 | 582 | 1060 | 1313 | 1653 | 1280 | 15213.80 | 1267.82 | |
| 2012 | 1216 | 832 | 1820 | 983 | 1260 | 662 | 220 | 242 | 305 | 737 | 438 | 1128 | 9842.80 | 820.23 | |
| Total: | 7453 | 4893 | 11500 | 14942 | 7385 | 4830 | 3116 | 3281 | 2994 | 7642 | 6453 | 7387 | 81677 | 6806 | |

Table 8: Average monthly flow of the Gouldtown Development between 2007 and 2013.

| Production/Flow (MWh/cfs) With Capped Flow at: 819 | | | | | | Minimum Tubrine Flow (cfs): 200 | | | | | | Total: | Average | |
|--|---------|----------|-------|-------|-------|---------------------------------|-------|--------|-----------|---------|----------|----------|---------|-------|
| Year/Month | January | February | March | April | May | June | July | August | September | October | November | December | | |
| 2007 | | | | | | | | | | 0.431 | 1.889 | 1.495 | 3.814 | 1.271 |
| 2008 | 1.359 | 0.736 | 1.299 | 1.821 | 1.394 | 0.916 | 1.424 | 1.479 | 0.836 | | | 0.684 | 11.948 | 1.195 |
| 2009 | 0.595 | | 1.100 | 1.796 | 1.785 | 1.458 | 1.806 | 1.001 | 0.787 | 1.884 | 1.829 | 1.600 | 15.642 | 1.422 |
| 2010 | 0.629 | 0.738 | 1.210 | 1.684 | 1.309 | 1.381 | 1.348 | 0.864 | 1.090 | 1.679 | 1.888 | 1.347 | 15.145 | 1.262 |
| 2011 | 1.938 | 1.476 | 1.742 | 1.733 | 1.663 | 1.587 | 1.080 | 0.471 | 1.341 | 1.487 | 1.547 | 1.856 | 17.921 | 1.493 |
| 2012 | 1.427 | 1.436 | 1.696 | 1.719 | 1.846 | 1.442 | 0.241 | 0.050 | 0.954 | 2.046 | 3.073 | 2.051 | 17.981 | 1.495 |

Table 9: Average monthly MWh/cfs with capped flow at 819 cfs and minimum flow at 200 cfs for the period of 2007 to 2013.

Summary

| | Average Production/Flow (MWh/cfs) | | | | | | | | | | | | | Average |
|---------------------------------------|-----------------------------------|----------|-------|-------|-------|-------|-------|--------|-----------|---------|----------|----------|-------|---------|
| | January | February | March | April | May | June | July | August | September | October | November | December | | |
| Case 1: 1995-1997, Pre-upgrade | | 1.004 | 0.848 | 1.040 | 1.354 | 1.304 | 1.093 | 0.727 | 0.438 | 0.589 | 0.914 | 1.545 | 1.618 | 1.039 |
| Case 2: 1990-1997, Pre-upgrade | | 0.884 | 0.724 | 0.826 | 1.368 | 1.244 | 1.098 | 0.651 | 0.617 | 0.524 | 1.030 | 1.529 | 1.464 | 0.966 |
| Case 3: 1998-2006, Post- 1998 Upgrade | | 1.044 | 1.070 | 0.920 | 1.183 | 1.359 | 1.254 | 1.123 | 0.868 | 0.860 | 1.376 | 1.394 | 1.511 | 1.164 |
| Case 4: 2007-2013, Post- 2007 Upgrade | | 1.190 | 1.096 | 1.410 | 1.750 | 1.600 | 1.353 | 1.180 | 0.773 | 1.002 | 1.505 | 2.045 | 1.505 | 1.367 |

Table 10: Average MWh/cfs ratio for each month by time period.

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| | Monthly % Increase in Production/Flow | | | | | | | | | | | | |
|----------------------|---------------------------------------|----------|---------|---------|--------|--------|--------|---------|-----------|---------|----------|----------|---------|
| | January | February | March | April | May | June | July | August | September | October | November | December | Average |
| % Increase, Case 1-3 | 3.89% | 26.14% | -11.52% | -12.57% | 4.25% | 14.80% | 54.49% | 98.23% | 45.95% | 50.55% | -9.73% | -6.63% | 21.49% |
| % Increase, Case 2-3 | 18.02% | 47.82% | 11.41% | -13.47% | 9.23% | 14.27% | 72.65% | 40.58% | 64.13% | 33.61% | -8.82% | 3.20% | 24.39% |
| % Increase, Case 3-4 | 14.00% | 2.48% | 53.20% | 47.90% | 17.70% | 7.85% | 5.02% | -10.92% | 16.48% | 9.44% | 46.67% | -0.37% | 17.45% |

Table 11: The monthly percent increase in MWh/cfs between designated time periods.

| | |
|---|--------|
| % Increase 1998-2013 vs 1995-1997 Production | 38.94% |
| % Increase 1998-2013 vs 1990-1997 Production | 41.84% |

Table 12: The total percent increase in production due to investments completed after December 31, 1997 using (a) the period of 1995 to 1997 and (b) 1990 to 1997 as a historical baseline.