

All information submitted in this process will be used by the *IESO* solely in support of its obligations under the "Electricity Act, 1998", the "Ontario Energy Board Act, 1998", the "Market Rules" and associated policies, standards and procedures and its licence. All submitted information will be assigned the appropriate confidentiality level upon receipt.

Terms and acronyms used in this Form that are italicized have the meanings ascribed thereto in Chapter 11 of the "Market Rules".

**PART 1 – GENERAL INFORMATION**

*Market Participant Name:* Five Nations Energy Inc.

*Location/Site:* Kashechewan Stations

*Exemption Application ID:* 1333

*Market Participant ID:*

*Description of Exemption Requested:* Exemption from the need to provide:

- a) voltage reduction capability, and
- b) automatic under-frequency load shedding capability

*Date Exemption Application Received:* September 4, 2008

*Date all relevant application information supplied by exemption applicant:* September 4, 2008

*Management Approvals Obtained:*  Yes  No

Are there any outstanding disputes, compliance actions, or pending *market rule* amendments involving the subject matter of this *exemption application*?  Yes  No

Are there any outstanding disputes, compliance actions, or pending *market rule* amendments involving the *exemption applicant*?  Yes  No

Section of the *Exemption Application* and Assessment Procedure under which the *exemption application* is made:

- Section 1.4.1 "Application for Exemption – General"

*Market Rule(s)* or related *Market Manual(s)* from which *exemption* is requested (copy of *Market Rule(s)* or *Market Manual(s)* attached): Chapter 4, Appendix 4.4 Items 3 and 8 and Chapter 5, Sections 10.3 and 10.4

*Third Party Submissions Received:*  Yes  No

*Supplemental Assessment Information Attached:*  Yes  No

Exemption Decision 01-1155 attached.

**PART 1 – GENERAL INFORMATION**

Related Historical *Exemption Application(s)* or Related *Exemption Application(s)* in Process:

Yes     No

**Note:** If YES, list History of *Exemption Applications*:

Exemption 01-1155 was granted in 2004 for a different transformer exempting the market participant from complying with the same market rules for which they are now requesting an exemption

In 2006, the market participant applied for an identical exemption for another transformer. As the equipment had been purchased at the time Exemption 01-1155 was granted, it was considered covered by Exemption 01-1155

Role of *exemption applicant* in the market as it relates to this *exemption application*: Transmitter

**PART 2 – RECOMMENDATION**

**Recommendation:** Grant the exemption without conditions.

**Criteria Used in Assessment of General Exemption Applications (Section 1.4.2 of Exemption Application and Assessment Procedure):**

(If X appears in a box, the criterion is applicable to this *exemption application* and is evaluated in Part 3 - Details of Assessment; if X does not appear in a box, the criterion is not applicable to this *exemption application*.)

Whether the *exemption* that is the subject-matter of the *exemption application* would, if granted, materially: [ **All criteria in the section below are considered to have no material impact** ]

- impact the ability of the *IESO* to direct the operations and maintain the *reliability* of the *IESO-controlled grid*;
  
- impact the ability of the *IESO* to ensure non-discriminatory access to the *IESO-controlled grid*;
  
- affect the ability of the *IESO* to operate the *IESO-administered markets* in an efficient, competitive, and reliable manner;
  
- increase costs of *market participants*; or
  
- increase costs of the *IESO*;

Whether the *exemption* that is the subject-matter of the *exemption application* would, if granted,

**PART 2 – RECOMMENDATION**

give the *exemption applicant* an undue preference in the *IESO-administered markets*;

Whether the cost or delay to the *exemption applicant* of complying with the obligation or standard to which the *exemption application* relates is reasonable, having regard to the nature of the obligation or standard, the nature of the *exemption application* and the anticipated impact of non-compliance by the *exemption applicant* in terms of the elements referred to above;

The adequacy of the *exemption* plan submitted by the *exemption applicant*;

Where the *exemption applicant* is the *IESO*, the identification of the benefit to *market participants* of compliance with the obligation or standard relative to the financial and other resources required to achieve compliance within such deadlines as may be applicable;

Where the *exemption applicant* is the *IESO*, the manner in which it proposes to operate in the *IESO-administered markets* or direct the operations and maintain the *reliability* of the *IESO-controlled grid* during the period in which the *exemption* would be in effect;

Whether the *facility* or equipment that is the subject-matter of the *exemption application*:

- was in service or was returned to service on the date on which the obligation or standard to which the *exemption application* relates came into force;
- was ordered by the *exemption applicant* on or prior to the date on which the obligation or standard to which the *exemption application* relates came into force; or
- was in the process of construction on or prior to the date on which the obligation or standard to which the *exemption application* relates came into force; and

The capability of the owner of the *facility* to operate the *facility* consistent with the terms of the proposed *exemption*.

**PART 3 – DETAILS OF ASSESSMENT**

Five Nations is proposing to expand their existing Kashechewan Substation by installing a second step-down transformer at the station. The proposed new transformer at Kashechewan will be identical to the existing transformer with a capability of 6/8/10 MVA and connected to B3A bus

### **PART 3 – DETAILS OF ASSESSMENT**

through a 138 kV circuit switcher.

The proposed new transformer at Kashechewan will be identical to the transformer that was the subject of Exemption 01-1155 with a capability of 6/8/10 MVA. The new transformer will operate in hot stand by, energized from the 115 kV side with the 8.32 kV breaker open. Whenever the main transformer becomes unavailable, the stand-by transformer will be automatically connected on load. Each transformer is adequate to supply the loads at the substation.

Five Nations Energy Inc. (Five Nations) is requesting an exemption for the requirement to provide:

- a) Voltage reduction facilities for transformer stations; and
- b) Automatic under-frequency load shedding at Kashechewan transformer stations.

Five Nations was granted Exemption 01-1155 for the facilities placed in service in 2001 and 2003 which includes the existing transformer at Kashechewan and is seeking a similar exemption for the second transformer.

#### **ASSESSMENT:**

##### **Voltage Reduction:**

Voltage reduction is a demand control method used to reduce the amount of power to be consumed by non-dispatchable loads during times of insufficient supply of generation. This is to avoid the need to directly reduce non-dispatchable load by manual load shedding.

Five Nations cannot achieve voltage reduction with their current design and facilities due to the following factors:

- Five Nations does not have primary equipment installed that would enable them to implement the voltage reduction at Fort Albany, Kashechewan and Attawapiskat (this exemption is for secondary stand-by equipment).
- The IESO requires operation of voltage reduction and other demand control actions to be carried out within five minutes of receipt of the direction. Five Nations does not have the remote supervisory control built into their facilities to affect voltage reduction promptly or remotely.

In addition, the size of the Five Nations load is very small. Their summer peak is low, approximately 1 MW, while their winter peak, though higher, is only approximately 2.2 MW. Even a 5% voltage reduction on such a small load would provide negligible assistance (which is equivalent to 0.02 to 0.05 MW). As such, granting this exemption would have negligible impact on the ability of the IESO to direct the operations and maintain the reliability of the IESO controlled grid.

##### **Under-Frequency Load Shedding:**

In the event of a major disturbance, generation and load may no longer be in balance. When this occurs, the frequency of the interconnected system will fluctuate. If the disturbance results in too little generation for the load, the frequency will drop. If the disturbance results in too much generation for the load, the frequency will increase. Automatic controls on all generating units, known as speed governors, act to restore the system slowly to a stable frequency. In addition, generating units are only capable of operating within a relatively narrow frequency range without incurring damage to the facilities due to vibration.

The purpose of under-frequency load shedding is to automatically reduce load when the frequency declines rapidly, to attempt to arrest the frequency decline and hold the system frequency above the

**PART 3 – DETAILS OF ASSESSMENT**

point at which generating stations would be automatically removed to avoid damage. By taking this automatic action, as many generators as possible remain on-line following the disturbance, and their speed governor controls have time to act to restore stable frequency. In this way, a disturbance may be prevented from becoming a widespread total blackout. The facilities used to achieve automatic load disconnection are called under-frequency load-shedding facilities.

The IESO-controlled grid is divided into load-shedding areas, which individually must meet the requirement for enabling the disconnection of at least 30% of the area's peak customer demand, after allowing for control equipment on maintenance and generators which cannot operate down to the frequency at which load shedding is initiated. Five Nations is located in Under-Frequency Load-Shedding Area #4 which already has the capability of automatically disconnecting 650 MW out of the total Area load of 1480 MW or more than 40%. The installation of an under-frequency load facility to reject the minimum 30% of Five Nations' total load would only provide 0.3 to 0.6 MW. This small amount, in an area which already has more than the required 30%, would result in a negligible improvement in the performance of this Area during a disturbance. As such, granting this exemption would have negligible impact on the ability of the IESO to direct the operations and maintain the reliability of the IESO controlled grid.

**Cost to Comply**

The cost of establishing under-frequency load-shedding and automatic voltage reduction capability would mean the installation of supervisory control systems and protections at Kashechewan. The estimated cost is greater than \$1,500,000 (including supervisory and protections) due to the remoteness of the stations. This cost seems unreasonable given the negligible results the capability would provide to the Province as well as the fact that this transformer is primarily a stand by unit which will not be in service most of the time.

As transmission rates are regulated by the Ontario Energy Board, the avoided costs of compliance do not raise issues of competition and thus the granting of this exemption would not give the applicant an undue preference in the IESO administered markets.

Finally, the granting an exemption from the requirement to have an automatic under-frequency load-shedding facility or voltage reduction facility does not increase the costs to other transmitters required to meet this obligation nor would it increase costs to the IESO.

**RECOMMENDATION:**

It is recommended that the exemption for voltage reduction capability and automatic under-frequency load-shedding capability be granted for the life of the new 115 kV transformer at the Kashechewan station.

**PART 4 – TERMS AND CONDITIONS**

<p><b>Effective Date of Exemption</b> (or event causing <i>exemption</i> to become effective)</p>	<p>September 4, 2008</p>
<p><b>Date of Expiration of Exemption</b></p> <ul style="list-style-type: none"> <li>• If greater than 5 years, the Panel must be satisfied that the circumstances justify a later date.</li> <li>• Circumstances which will cause the <i>exemption</i> to immediately expire.</li> </ul>	<p>Date of expiration is at the end of the life of the equipment</p> <p>None</p>
<p><b>Market Rule(s) or related Market Manual(s) from which the <i>Exemption</i> is granted.</b></p>	<p>Chapter 4, Appendix 4.4, Item 3 and 8 Chapter 5, Section 10.3 and 10.4 All in relation to voltage reduction and automatic under-frequency load shedding requirements only</p>
<p><b>Restrictions on the manner of operation and/or additional obligations to be met during the term of the Exemption, if any.</b></p>	<p>None</p>
<p><b>Monitoring Information Required</b> Information required to be provided by the <i>exemption applicant</i> for monitoring by the <i>IESO</i>.</p>	<p>None</p>
<p><b>Payment of Costs</b></p> <ul style="list-style-type: none"> <li>• Processing Costs (when introduced)</li> <li>• Incremental <i>Exemption</i> Costs</li> <li>• <i>Settlement amounts</i> to be withheld or repaid.</li> </ul>	<p>None</p>
<p><b>Reconsideration/Removal</b></p> <ul style="list-style-type: none"> <li>• Date on which the <i>exemption</i> will be reconsidered (if applicable).</li> <li>• Circumstances under which the <i>exemption</i> will be reconsidered (if applicable) other than unforeseen future change in circumstances.</li> </ul>	<p>Circumstances under which this exemption should be reconsidered are:</p> <ul style="list-style-type: none"> <li>• The addition of any new transformer facilities to Five Nations Energy Inc.’s existing or new connections;</li> <li>• The addition of any means to regulate distribution voltages under load at the Fort Albany, Kashechewan or Attawapiskat transformer stations;</li> <li>• For the portion of this exemption concerning under</li> </ul>

**PART 4 – TERMS AND CONDITIONS**

	frequency load shedding facilities, if the total expected and/or peak loading of all three of Five Nations transformer stations exceeds 15 MW.
<b>Transferability</b> <ul style="list-style-type: none"> <li>List the terms and conditions that need to be met to allow for a transfer of this <i>exemption</i> to be approved by <i>IESO</i> staff.</li> </ul>	<p>Approval to transfer this exemption may occur once the following criteria have been met:</p> <ol style="list-style-type: none"> <li>the transfer meets applicable terms and conditions set forth in the exemption itself and whether the transfer would affect the ability of the proposed transferee to comply with all of the terms and conditions of the exemption; and</li> <li>the proposed transferee is a market participant or undertakes in writing to the IESO to apply for authorization as a market participant.</li> </ol>
<b>Other:</b>	None