



IMO Staff Recommendation to Panel on Exemption Application (Specified facilities and equipment prior to market opening)

PART 1 – GENERAL INFORMATION

Market Participant Name: **Cardinal Power of Canada, L.P.**

Location/Site: Cardinal Power NUG

Exemption Application ID: 01-1224

Market Participant ID:

Description of Exemption Requested: The *exemption applicant* is requesting an *exemption* from the requirement to supply data monitoring information for a *generator* until Dec 31, 2015.

Date Exemption Application Received: March 8, 2002.

Date all relevant application information supplied by applicant: March 8, 2002.

IMO Management Approvals Obtained (YES or NO): YES

Are there any outstanding disputes, compliance actions, or pending market rule amendments involving the subject matter of this exemption application? (YES or NO): NO
(if YES, see attachments)

Are there any outstanding disputes, compliance actions, or pending market rule amendments involving the exemption applicant? (YES or NO): NO
(if YES, see attachments)

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

- *Section 1.5.1 (Application for Exemptions for Facilities and Equipment prior to Market Opening)*

Market Rule(s) or related Market Manual(s) from which exemption is requested (copy of Market Rule(s) or related Market Manual(s) attached): “Market Rules”, Baseline 10.1, Chapter 4, Appendix 4.15 “IMO Monitoring Requirements: Generators” and Appendix 4.19 “IMO Monitoring Requirements: Generator Performance Standards”.

Third Party Submissions Received (YES or NO):

Supplemental Assessment Information Attached (YES or NO): NO

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Related Historical Exemption Application(s) or Related Exemption Application(s) in Process (YES or NO): YES

N. B. If YES, see attached History of Exemption Applications 1146 and two Summaries for OPGI applications

Role of applicant in the market as it relates to this exemption application: *transitional scheduling generator with a major generation facility*

Part 2 – Recommendation

Recommendation: GRANTED with Conditions

Criteria Used in Assessment of Exemption Applications Prior to Market Opening (Section 1.5.2 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:

- impact the ability of the IMO to direct the operations and maintain the reliability of the IMO-controlled grid;

Comment: See “Assessment” section in Part 3

- affect the ability of the IMO to operate the IMO-administered markets in an efficient, competitive and reliable manner;

Comment: See “Assessment” section in Part 3

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.

Comment: See “Cost of Compliance and Compliance Plan” section in Part 3

PART 3 – DETAILS OF ASSESSMENT

Exemption Request:

The *exemption applicant* is requesting an *exemption* from the requirement to supply data monitoring information for a *Generator* until December 31, 2015.

Background:

Cardinal Power of Canada, L.P. (referred to as Cardinal Power) was classed as Non-Utility Generation (NUG) prior to market opening. Effective April 1, 1999, Cardinal Power became a *transitional scheduling generator* (TSG), under contract with the Ontario Electrical Financial Corporation (OEFEC), with a contract that expires December 31, 2015. Cardinal Power has indicated that it intends to become a *self-scheduling generation facility* (SSG) in the near future.

Cardinal Power is a *major generation facility* with two *generators*: a combustion turbine *generator* G1 rated at 143 MVA, and a steam turbine *generator* G2 rated at 63 MVA. These two *generators*, via step-up unit transformers, inject into a 115 kV bus common to both the *generation units* and an industrial load from another *market participant*. The industrial load is approximately 11 MW. The 115 kV bus is then connected to a Remote Switching Station (RSS) which interfaces with the rest of the *IMO-controlled grid* (ICG) at St. Lawrence TS. The RSS contains breakers and switches and represents the demarcation point between the *market participants' facilities* and those of their *transmitter*. It is from the RSS that Cardinal Power telemetry is currently being provided to the *IMO*.

Cardinal Power aggregates the output of the two *generation units* for purposes of the *IMO-administered markets*.

Market Rule Requirement:

Cardinal Power is classified as a *transitional scheduling generator* with a *major generation facility* as defined in Section 1.1.1.386 and Section 1.1.1.202 of Chapter 11 and for the purposes of Appendices 4.15 and 4.19. When Cardinal Power becomes a *self-scheduling generation facility*, as defined in Section 1.1.1.340 of Chapter 11 of the *market rules*, the requirements of Appendices 4.15 and 4.19 described below will still apply. TSG's and SSG's both operate independently of *dispatch instructions* from the *IMO* and it is this operational characteristic along with Cardinal Power's status as a *major generation facility* that are the primary factors that determine the requirements. Thus Appendices 4.15 and 4.19 require Cardinal Power to provide the following quantities at high performance:

1. MegaWatts (MW) and MegaVars (MX) for the aggregated output of *generation units* G1 and G2, net of *station service* load.
2. *Generator* terminal voltage for each unit.
3. Automatic Voltage Regulator (AVR) and Power System Stabilizer (PSS) status for each *generation unit* greater than or equal to 100 MVA.
4. Appendix 4.19 of the "Market Rules" requires the provision of data monitoring quantities on a continual basis to the *IMO* at high performance for a *major generation facility*. Medium performance allows communications to arrive at the *IMO* interface at a lower frequency and with less *reliability* than at high performance. (For example, every 10 seconds under medium performance instead of every 2 seconds at high performance.) Cardinal Power currently provides all its data values at medium performance but the *market rules* require high performance.

PART 3 – DETAILS OF ASSESSMENT**Description of existing data monitoring for the Cardinal Power site:**

Presently there is no direct telemetry for the Cardinal Power *generation units*, or for the industrial load. There is telemetry at the RSS which provides the MW and MX for the net combination of the two Cardinal Power *generation units* and the industrial load. This net telemetry is provided at medium performance by the *transmitter* to the *IMO*.

Other data values that are required by the *market rules* are being provided, but these are telemetered at medium performance rather than at high performance as the *market rules* require.

Impact on the operation of the IMO-administered markets and the IMO-controlled grid:

The current telemetry available to the *IMO* does not meet the *market rule* requirements noted above.

1. MegaWatts (MW) and MegaVars (MX) for the aggregated output of *generation units* G1 and G2, net of *station service* load.

MW and MX for the aggregate of Cardinal Power G1 and G2 are not available. This poses a problem with reconciling the *IMO-administered markets*. Cardinal Power provides a forecast of their expected aggregate generation. The current telemetry only provides the measured power flow at the RSS. As noted above, this quantity is the Cardinal generation net of the industrial load. Thus, the *dispatch data* submitted to the *IMO* by Cardinal Power is always higher than actual, by an amount equal to the *energy* consumed by the industrial load. Other *generators* need to be *dispatched* to make up for this difference. As a result, the *IMO-administered markets* incur a cost for this outstanding generation. There may also be instances where the other *generators* may receive constraint payments (i.e. Congestion Management *Settlement Credit* -CMSC) as a result of their requirement to be *dispatched* higher.

The *IMO* has analysed this situation and has suggested a compromise to the *market participant* in order to reconcile the discrepancy in the *IMO-administered markets*. It was proposed that rather than have Cardinal Power install telemetry at their *generator* outputs as required by the *market rules*, that instead, Cardinal Power could provide a forecast (termed “Cardinal Net”) of their generation that was net of the industrial load. This will result in a forecast that corresponds with the current telemetered value available at the RSS.

In proposing this, the *IMO* took into consideration the following:

- Cardinal Power is a *transitional scheduling generator* and is only required to follow their forecast to a reasonable degree. There will be inherent error between the forecasted values and the actual generation from Cardinal Power, regardless of the accuracy of the telemetry.
- The industrial load is the only load tied to the Cardinal Power generation. Due to this radial situation, Cardinal Power is able to detect and estimate the industrial load with a reasonable degree of accuracy.
- The industrial load, because of its small size, is not required by the *market rules* to provide any telemetry. Any forecasts made by Cardinal Power or by the *IMO* will always require that the industrial load be estimated.
- Cardinal Power is the only *generation facility* at this location and with the proposed solution, the data values from the RSS are used to determine the Cardinal Power generation for state estimation calculations. Requiring telemetry at the Cardinal Power *generators* would not add value in this situation and would needlessly cost Cardinal Power and the *IMO* both time and

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money for additional metering and associated communication changes required to accommodate any new telemetry.

- MW or MX quantities at the *generation units* are not required for *reliability* limits and, therefore, do not affect the *security* of the ICG from this point of view.
- The *IMO*, with implementation of the proposed solution, has determined that the *IMO-administered markets* are better served as a result of the more accurate forecasts provided by Cardinal Power versus the current real-time results.

Cardinal Power has agreed to the proposed solution and as of October 3, 2003, is providing "Cardinal Net" for their hourly generation schedules. Cardinal Power will continue to provide this forecast, subject to the *Exemption Panel's* approval regarding this matter. *IMO* staff recommends that the *Exemption Panel* approve this arrangement and exempt Cardinal Power from the need to provide new telemetry, for the reasons stated above.

The impact of granting this *exemption* for MW and MX quantities will be minimal upon the conditions that Cardinal Power continues to operate as a *transitional scheduling generator facility* and continues to provide *dispatch data* for their *generators* net of the industrial load withdrawing *energy* from their 115 kV bus.

The rationale for this recommendation is based upon the assessment that the revised *dispatch data* (i.e. "Cardinal Net") with the aggregate of the two *generators* net of the industrial load does not adversely impact the *IMO-administered markets* or the *IMO-controlled grid*. *IMO* staff accepts this as an economical alternative to specific data monitoring being installed at the *generator site*.

2. *Generator* terminal voltage for each unit

There are no voltage quantities currently being received from Cardinal Power.

ICG operation requires voltage indication for each unit of a *major generation facility*. The *IMO* requires that such voltage monitoring information be provided by *market participants* accurately and regularly in real-time in order:

- to *dispatch* generation resources for voltage control,
- where this quantity is required to derive or monitor *reliability* limits
- to monitor compliance of *ancillary service* voltage support contracts.

Cardinal Power as a TSG is not normally subject to *dispatch instructions*. Cardinal Power does not have an *ancillary service* contract for voltage support; therefore, there is no impact regarding compliance or *settlement* with a voltage support contract. The Cardinal Power *generator* voltages are not part of any *reliability* limits.

IMO staff is satisfied that the absence of voltage monitoring will not impact on the *security* of the ICG or the operation of the *IMO-administered markets*. *IMO* staff recommends that Cardinal Power be granted an *exemption* from having to supply voltages at their *generator* terminals until such time as:

- the voltage quantities may be required for deriving or monitoring of *reliability* limits;
- or such time as Cardinal Power enters into *ancillary service* voltage support contracts.

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3. Automatic Voltage Regulator (AVR) and Power System Stabilizer (PSS) status for each *generation unit* greater than or equal to 100 MVA.

The AVR/PSS at Cardinal Power G1 is a combined unit. Thus, only one status indicating whether the unit is in-service or out-of-service is required. No long-term *exemption* for the provision of AVR/PSS status is recommended for generation over 100 MW. In order for engineering work to be completed by Cardinal Power and the *transmitter* for the provision of the AVR/PSS status to the *IMO*, *IMO* staff assesses two years to be a reasonable amount of time for Cardinal Power to become compliant. *IMO* staff recommends granting the *exemption* from the provision of AVR/PSS status via telemetry for two years at the Cardinal site, following the *Exemption Panel* decision regarding this matter. Until the *facility* is compliant, Cardinal Power shall immediately communicate a change of status of the AVR/PSS to the *IMO* by phone.

Where these conditions are not or cannot be met, the *IMO* will take appropriate action to ensure the *reliability* of the ICG and appropriate non-compliance actions will be taken pursuant to Chapter 3 of the “Market Rules”. Notwithstanding the granting of any *exemptions*, including these, Cardinal Power shall continue to be liable for the breach of any *reliability standards*.

4. High performance requirement for telemetry

Cardinal Power is supplying the current telemetry from the RSS at medium performance. The *market rules* require high performance. *IMO* staff has assessed this situation and notes the following:

- Cardinal Power is a TSG and as such their *dispatch data* is not relied upon to be followed exactly. To have data telemetered at high performance would not add any additional value to the *IMO-administered markets*.
- The provision of data at medium performance would also not adversely affect the estimation for missing data quantities performed by the State Estimation software used by the *IMO*. To have data telemetered at high performance would not add any additional value.
- The output and status of Cardinal Power *facilities* is not used in the derivation of *reliability* limits. To have data telemetered at high performance would not add any additional value to the *security* of the ICG.
- The proposed solution noted above regarding “Cardinal Net” forecasts was an economical compromise that required no new telemetry, while still satisfying the needs of the *IMO-administered markets* and ensuring the *security* of the ICG. The requirement for high performance telemetry would cost the *market participant* and the *IMO* additional time and money, but would not add any additional value, in the opinion of *IMO* staff.
- Current medium performance is considered manageable by *IMO* staff in all aspects concerning this situation. This level of performance only affects the latency or timing of how quickly the *IMO* receives the information, and does not unduly impact the *IMO-administered markets* or the *security* of the ICG in this case.

IMO staff recommends that the *Exemption Panel* approve the applicant’s request to maintain medium performance telemetry until such time as operating conditions for this *market participant* change or system conditions affecting this *market participant* change.

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Cost of Compliance and Compliance Plan:

Cardinal Power has submitted a confidential estimate of its costs to become fully compliant with the *market rules* which are the subject of this *exemption*. *IMO* staff assesses the estimated cost of compliance at approximately \$30,000, should the Panel decide that all requirements of the *market rules* are to be satisfied. The cost to meet the requirements as recommended by *IMO* staff would be considerably less, in the order of \$2000.

As part of a compliance plan discussed with Cardinal Power, their “Transmission Connection Agreement” (June 6, 2002) was provided to the *IMO* which indicated that Cardinal Power’s *transmitter* is to program the AVR/PSS status on an existing spare digital channel. Cardinal Power is to bring the cable to their *transmitter’s* Remote Terminal Unit (RTU).

Recommendation:

IMO staff recommends Cardinal Power be granted an *exemption* from the requirement to supply data monitoring information as outlined below with the following conditions.

1. Cardinal Power registration is limited to operation as a *transitional scheduling generator* or *self-scheduling generator*. Should Cardinal Power change its role in the *IMO-administered markets*, then new requirements for data quantities would prevail and this *exemption* would cease to be in effect.
2. Should operating conditions or system conditions affecting this *market participant’s facilities* change, then this *exemption* would be reconsidered.

Megawatts (MW) and MegaVars (MX) Quantities

IMO staff recommends that Cardinal Power be granted an *exemption* from providing MW and MX quantities at their *generator* site for the life of the equipment subject to the following conditions.

3. Cardinal Power continues to provide “Cardinal Net” *dispatch data* to the *IMO* for their *generators* net of the industrial load withdrawing *energy* from their 115 kV bus;
4. until such time as MW and MX quantities are required for *reliability* limits; and
5. until there is a material change in the configuration of the load and generation at the Cardinal 115 kV bus.

Voltage (kV)

IMO staff recommends that Cardinal Power be granted an *exemption* from providing individual *generator* unit voltage for the life of the equipment subject to the following conditions.

6. The *exemption* shall be reconsidered at such time as:
 - the provision of data quantities become part of deriving or monitoring *reliability* limits, where they were not originally used for this purpose; or
 - until Cardinal Power becomes involved in voltage support requirements or a Voltage Support Contract requiring kV quantities.

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<p>AVR/PSS status</p> <p><i>IMO</i> staff recommends granting the <i>exemption</i> from the provision of the AVR/PSS status via telemetry for two years at the Cardinal Power site with the following conditions.</p> <p>7. Until the <i>facility</i> is compliant with the requirements in this <i>exemption</i> recommendation, Cardinal Power shall immediately report a change in the status of the AVR/PSS to the <i>IMO</i> by phone.</p> <p>High Performance telemetry</p> <p>8. The <i>IMO</i> will accept medium performance in lieu of high performance for the life of the equipment for all the telemetry required of Cardinal Power until such time as operating conditions for this <i>market participant</i> change or system conditions affecting this <i>market participant</i> change.</p> <p>General</p> <p>9. <i>IMO</i> staff further recommends the <i>exemption</i> order expressly provide that, notwithstanding the granting of any <i>exemptions</i>, Cardinal Power shall continue to be liable for the breach of any <i>reliability standards</i>.</p>

PART 4 – TERMS AND CONDITIONS

<p>Effective Date of Exemption (or event causing exemption to be become effective)</p>	<p>From date <i>exemption application</i> was received – March 8, 2002</p>
<p>Date of Expiration of Exemption</p> <ul style="list-style-type: none"> • If greater than 5 years, the Panel must be satisfied that the circumstances justify a later date • Circumstances which will cause the exemption to immediately expire 	<p>MW, MX, kV and Performance:</p> <p>For the life of the equipment subject to reconsideration conditions.</p> <p>AVR/PSS:</p> <p>Two years from the date of the Panel decision for the provision of the AVR/PSS status.</p> <p>If there is a change in the registration of Cardinal Power as a <i>transitional scheduling generator (or self-scheduling generation facility)</i>, then this <i>exemption</i> would expire.</p>
<p>Market Rule (s) or related Market Manual(s) from which the Exemption is granted</p>	<p>Chapter 4, Appendix 4.15 and Appendix 4.19</p>

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<p>Restrictions on the manner of operation and/or additional obligations to be met during the term of the Exemption, if any</p>	<p>Cardinal Power will continue to submit <i>dispatch data</i> net of the industrial load withdrawing <i>energy</i> from the 115 kV bus.</p> <p>Cardinal Power shall immediately communicate a change in status of the AVR/PSS to the <i>IMO</i> by phone.</p>
<p>Monitoring Information Required</p> <ul style="list-style-type: none"> • Information required to be provided by the Exemption Applicant for monitoring by the IMO 	<p>None</p>
<p>Payment of Costs</p> <ul style="list-style-type: none"> • Processing Costs (when introduced) • Incremental Exemption Costs • Settlement amounts to be withheld or repaid 	<p>None</p>
<p>Reconsideration/ Removal</p> <ul style="list-style-type: none"> • Date on which the Exemption will be reconsidered (<i>if applicable</i>) • Circumstances under which the Exemption will be reconsidered (<i>if applicable</i>) other than unforeseen future change in circumstances 	<p>This <i>exemption</i> shall be reconsidered/removed:</p> <ul style="list-style-type: none"> • At such time as when provision of data quantities become part of deriving or monitoring <i>reliability</i> limits, where they were not originally used for this purpose, or until Cardinal Power becomes involved in voltage support requirements or a Voltage Support Contract requiring kV quantities; • If there is a material change in the configuration of the load and generation at the Cardinal 115 kV bus; • Should there be a change in operating conditions or system conditions affecting this <i>market participant's facilities</i>.
<p>Transferability</p> <ul style="list-style-type: none"> • List the terms and conditions that need to be met to allow for a transfer of this exemption to be approved by IMO staff 	<p>Approval to transfer this <i>exemption</i> may occur once the following criteria have been met:</p> <ul style="list-style-type: none"> • the transfer meets applicable terms and conditions set forth in the <i>exemption</i> itself and whether the transfer would affect the ability of the proposed transferee to comply with all of the terms and conditions of the <i>exemption</i>; • the proposed transferee is a <i>market participant</i> or undertakes in writing to the <i>IMO</i> to apply for authorization as a <i>market participant</i>; and • the extent to which the transfer of the <i>exemption</i> will

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	impact the timely implementation of the plan to become compliant with the exempted obligation (such plan may be the <i>exemption</i> plan, modified as required by the Panel as part of the terms and conditions of the <i>exemption</i>).
Other:	<i>IMO</i> staff further recommends the <i>exemption</i> order expressly provide that, notwithstanding the granting of any <i>exemptions</i> , Cardinal Power shall continue to be liable for the breach of any <i>reliability standards</i> .