



# Export Must Run Service

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Discussion Paper

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# 1 Introduction

Alberta's export capability to the Western Electricity Coordinating Council (WECC) through British Columbia is a function of the transmission system and system demand. Over the past number of years, Alberta has treated export as an opportunity service and until the most recent transmission policy, expansions or enhancements to the transmission system have not been supported specifically to enhance exports. As a result, Alberta demand has continued to consume Alberta's transmission capacity, while the export capability has diminished. Export capability is now only available during relatively low Alberta demands. (See OPP 304, Table 2, in ISO Rules.)

Section 8 (1) (g) of the Transmission Regulation (A.R. 174/2004) requires the ISO to "make arrangements for the expansion or enhancement of the transmission system so that, under normal operating conditions, the transmission system interconnections with jurisdictions outside Alberta can import and export electricity on a continuous basis, at or near the transmission facility's path rating." While the regulation anticipates adding new facilities to enhance the import and export capabilities, it is possible to enhance the capability of the existing system while maintaining reliable system operations.

Alberta generators compete to serve internal Alberta electric demand; enhanced export capability provides generators with additional market opportunities. Transmission studies have identified that if southern Alberta generators (excluding wind generators) are running, then the total transfer capability (TTC) for export on the Alberta-BC interconnection can be increased. Under the current market structure, there is no method for southern generators to assure the AESO that their energy is available and firm<sup>1</sup> over specific hours. Several industry participants from the generation sector have approached the AESO to facilitate a service termed "export must run" or XMR.<sup>2</sup> This is a service that can be provided by qualified southern generators that commit to operate their generating units for a specified time period to support exports could provide "XMR service".

Given the AESO's commitment to implement the Transmission Regulation, the AESO is examining the opportunity to address the request of participants to evaluate increasing export capability through XMR, as a possible first step in addressing export limitations. Other measures could be considered to support exports through enhancements to the market structure, tariffs and physical facilities. The AESO supports the industry participant initiative to enable southern generators to state whether their energy will be made firm for an hour, so it can be included in the TTC calculation performed by the AESO. However, the AESO has identified a number of issues, and is seeking the feedback of other industry participants to test whether there are any additional items that should be taken into consideration.

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<sup>1</sup> Participants currently have the option to restate energy out of the merit order during real time. "Firm" provision of energy suggests a commitment by the generator not to restate the energy out of the merit order, and the energy will be provided during the time that it is required to support the service.

<sup>2</sup> The industry participants included ATCO Power Ltd., Calpine Energy Services Canada, TransAlta Corporation and TransCanada Energy Ltd.

The purpose of this paper is to outline and solicit stakeholder feedback on:

- The concept of a “voluntary” XMR service and the associated issues.
- The concept of establishing a market for the provision of XMR service.

## 2 Situation Assessment

TTC for Alberta is calculated and posted on a day-ahead basis using the day-ahead Alberta interconnected electric system (AIES) load forecast and transmission outage schedules. OPP 304 of the ISO Rules outlines the procedure that the AESO follows to set the Alberta-BC interconnection transfer limits. If conditions change on the system that require adjustment of the TTC for export, then the system operators will adjust the TTC to reliable levels and advise their neighboring control center as required.<sup>3</sup>

The AESO recently completed an ‘Export Capability Study’<sup>4</sup>. The study concludes that both increased levels of southern generation and the number of southern generators on-line result in increased TTC for export in Alberta. On average, the ratio of increased TTC for export to south generation is approximately 1.3:1 MW, i.e. the export TTC can be increased by approximately 1.3 MW for every 1 MW of south system generation.

Currently, there is no mechanism in the Alberta wholesale market that creates assurance of both the availability and output of southern generators. This is true in both the day-ahead time frame and in real time operation. The Alberta wholesale market provides for generators to respond to market conditions very near to real time. As a result, the AESO posts day-ahead TTC for export taking into account only those southern generators that historically operate at high load factors (i.e. online approximately 97% of the time).

In real time, the TTC is not adjusted for actual southern generation because there is no assurance that output will continue; the generation is expected to respond to the real time market price. As a result, there is a concern that adjustments to TTC during real-time based on actual southern generator output will reduce the credibility of providing exports to other jurisdictions because the provision of exports would not be reliable. (i.e. The variable output of southern generation may result in cutting exports intra-hour.) If trades were continually interrupted intra-hour, this could adversely impact trading energy between other jurisdictions and Alberta.

## 3 Concept: Voluntary XMR Service

The AESO and a group of industry participants from the generation sector have developed an option to potentially increase export capability through XMR service. Under the XMR concept, southern generators would provide advance notice and assurance of their availability. It is proposed that generators willing to provide XMR service indicate which hours that the service is available. The AESO would include XMR generation capacity in

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<sup>3</sup> For example, if the actual load deviates from forecast or transmission contingencies occur.

<sup>4</sup> The release date of Export Capability Study is to coincide with the release of this paper.

<http://www.aeso.ca/files/AlbertaBCExportCapabilityStudy.pdf>

the calculation of TTC in its day-ahead process, thereby adding export opportunity to Alberta's energy market. In order to provide open access transmission, the additional TTC available for export will be made available to all participants wishing to export on an equal basis. To remain in compliance with ISO rules, generators offering XMR service would have to ensure that they are in-merit in the energy market after receiving the XMR dispatch.

The provision of the XMR service includes the following concepts for consideration that would impact how participants would offer:

1. XMR service is voluntary; i.e. the AESO will not pay a participant to provide the XMR service.
2. There are no rights to TTC for export based on provision of XMR.<sup>5</sup> i.e. The XMR service provider does not have any rights to the additional TTC nor does any other participant that enters into a bi-lateral arrangement with the XMR service provider to offer the service. Export offers will be dispatched through the existing interconnection transaction approval processes (E-tags) and the bids in the energy merit order, representing no change to the current process.
3. XMR generation availability declarations are provided to AESO day-ahead to provide suitable time for the TTC posting.<sup>6</sup>
4. Only qualified southern Alberta generators can provide XMR. Generators are qualified through their demonstrated contribution to supporting transmission for exports, through the studies performed by the AESO.
5. Since inter-tie transactions are considered firm for the hour in the North West Power Pool, dispatched XMR generation would be firm for the time that they are required to support the export. i.e. an XMR service provider receiving an XMR dispatch can only restate below the XMR dispatch level during the hour for which the XMR service is being provided for physical availability reasons, such as an unplanned outage – should this occur, the TTC may be lowered and exports above TTC would be cut.
6. The XMR service provider would be responsible for coordinating and managing its energy, ancillary service and XMR submissions.

Consideration must also be made for System Controller procedures in real-time:

1. Following the gate close for inter-tie transactions (T-20), taking into consideration transmission must run and all other qualified south generation, the System Controller (SC) will dispatch XMR to the appropriate and reliable level to be effective for the next hour.
2. XMR will be dispatched using the energy market merit order and its rules for energy market dispatch. For example, XMR will be dispatched from lowest offer price to highest offer price in the energy market merit order; equal priced XMR offers will be dispatched pro rata.<sup>7</sup>

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<sup>5</sup> "Rights" to export through a bilateral with an XMR generator suggests that the XMR generator is determining who may have access to the transmission capacity, and may be contrary to an open access tariff.

<sup>6</sup> The submitting time still would need to be discussed with stakeholders; consideration needs to be made with the timing day-ahead offers and provide adequate time for the AESO to develop the TTC schedule.

<sup>7</sup> Participants may wish to consider whether a pro rata approach is appropriate for \$0 XMR offers.

3. The SC will continue the current practice of adjusting TTC for forecast errors and unplanned contingencies.
4. For events within the hour that affect the ability to support the TTC for export<sup>8</sup>, the SC will immediately dispatch additional XMR to support the export level. If additional XMR service is not available, the SC will immediately reduce export to the appropriate and reliable level.
5. The SC will recalculate and dispatch XMR hourly, based on exports.

## 4 Issues

### 4.1 In-Merit Energy Market Dispatch

The concept requires that XMR dispatched generation must be in-merit and available to the energy market merit order. It is expected that a bilateral agreement will be required between an exporter and an XMR service provider. The process for an XMR bilateral agreement would be the same as a bilateral agreement between two parties without AESO involvement. If the bilateral agreement requires the generating unit to physically deliver during specific hours, then the XMR service provider would offer the energy in a way to remain in-merit. The difference between XMR and other bilateral contracts is that for an XMR bilateral agreement the AESO must be made aware that the energy will be made available when it is necessary to provide the XMR service and will use the information in its TTC calculations.

The in-merit requirement may impact XMR service provider offer behaviour with an associated impact on price. For example, by requiring dispatched XMR units to be in-merit, they may be required to restate their XMR volumes to lower prices in real time, if the pool price happens to fall below their offer price. The restatement of energy may remove some price depth from the merit order and increase the volatility of pool prices during these times. Also, due to the requirement that XMR generation must be made available for dispatch to support exports, it is possible that some XMR generators will run at minimum load at \$0 offer prices while awaiting an XMR dispatch; these units may have otherwise been off-line. Even though the expected amount of dispatched XMR generation would be equal to or less than the export volume it supports, these examples demonstrate that XMR could also result in downward pressure on prices.

The AESO considered the option of allowing an XMR unit to be dispatched out of merit. However, since XMR is voluntary and is similar to other bilateral contracts in the market with a must run requirement, the AESO believes that XMR generator offers must be on a level playing field with energy market offers; they must be in-merit.

### 4.2 Base Load/Non-XMR Offered Generation

While XMR units would voluntarily commit to being permitted to restate only for physical reasons, the AESO is not suggesting that the same condition should apply to the other

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<sup>8</sup> It is intended to create an automated alarming tool for the System Controller to monitor generation levels to support southern load, including exports.

southern generating units. However, there is a concern with the inequity of restatement practice between base load units, non-XMR offered units and XMR units. Generators that are online approximately 97% of the time are considered base load, therefore they are included in the time-ahead TTC calculation and, unless they are on an outage, they are assumed online within OPP 304 Alberta-BC Interconnection Transfer Limits (e.g. Sheerness). The TTC would be adjusted in real-time if the availability or output of the unit changes.

Since XMR service is proposed to be voluntary, qualified southern generating units cannot be compelled to offer the service. However, the AESO does not wish to remove the base load units from the calculation of TCC, if they are generally expected to be available. The AESO also believes that Transmission Must Run (TMR) and other qualified southern generators should be accounted for in real-time prior to issuing an XMR dispatch, to minimize the impact to the market. This means that XMR generators could be subject to XMR dispatches based on the physical or economic availability of other southern generating units. For example, a base load unit that was included in the calculation could be dispatched down because its offer is no longer in-merit, or the participant has simply restated the availability of the unit downward. This means that an XMR generator may need to be dispatched up in order to support the previously dispatched exports.

If an unintended consequence of implementing this concept is that base load unit availability becomes less predictable, then the viability of voluntary XMR may need to be reconsidered.

### **4.3 Information Provision**

Further consideration is needed to determine what information with respect to XMR offers should be provided to the market. Currently under consideration are three information provision options (“options”):

1. Post only the TTC and list the qualified south generators; or
2. Post TTC, qualified south generators and the sum of XMR volumes that has been offered for each hour; or
3. Post TTC, qualified south generators and XMR generators with their individual volumes for each hour.

The AESO believes that information should be made available to the market as soon as it can reasonably be provided, and should be provided in adequate time so that the market can reasonably respond to the signal it provides.

When considering what level of information is necessary for the market, there are several issues that stakeholders may wish to take into consideration:

- A bilateral arrangement may be necessary for a generator to provide XMR service. The arrangement may require a unit to offer in their energy differently than they have in the past, and the counterparty may know before the rest of the market whether a specific unit may be running.

- Terms of currently existing bilateral arrangements between participants are typically not available to the market, and may have similar impacts to a participant's offer behaviour as an XMR bilateral contract.<sup>9</sup>
- Even under an XMR bilateral contract, there is decreasing ability to forecast whether a specific XMR generator will be dispatched for XMR service since there are multiple variables that may impact the need including: TMR, other qualified southern generating units online, imports, and what price XMR units have offered their energy in the energy market merit order.
- Although OPP 304 specifies the base load generation included in the TTC calculation, the AESO does not inform the market on the rare occasion when these specific units are not available and therefore would not be included in the calculation. Parallels could be made with the information provided on XMR generating units.

The above options and the issues for consideration are not intended to be comprehensive. The AESO is seeking stakeholder feedback on the appropriate amount of information that would be necessary for the market, and the reasons/rationale for the information provision.

#### 4.4 Other Items

In addition to the concept above, the industry participants supporting XMR service have requested the AESO to consider some additional enhancements to the provision of XMR. These enhancements include:

- XMR as a service for a fee;
- XMR as an ancillary service; and/or
- Finding a method to link XMR generation to a firm export transmission product.

Impacts to settlement, tariff items and new markets to facilitate XMR will take considerably more time than the implementation of the concept in section 3. It is suggested that the additional provisions for XMR should not cause a significant delay the implementation of the concept, and therefore should be considered at a later date.

It is unclear whether it is more appropriate to consider compensating XMR generators through an ISO fee as an energy cost or whether costs could be justified through the ISO tariff as an ancillary service; this will need to be discussed further with stakeholders.

Finally, the implementation of the Department of Energy's Wholesale Market Review may impact the provision of XMR service. If the Wholesale Market Review impacts the need for XMR or its enhancements, the benefits of the program will need to be weighed against the timing for the implementation and cost of the program.

## 5 Next Steps

The AESO is requesting a written response to this paper from stakeholders by April 15, 2005. Responses may be submitted to [colleen.fairhead@aeso.ca](mailto:colleen.fairhead@aeso.ca). Stakeholder responses will

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<sup>9</sup> For example, a bilateral based on output may suggest the generator would offer at \$0.

be posted to the AESO website unless specifically requested otherwise. The AESO is requesting participants to consider any issues with the concept, or any opportunities to improve upon the concept. The AESO will take all comments under consideration to evaluate whether a recommendation to proceed on this concept or modification thereof is appropriate.

The chart below demonstrates where the AESO is with respect to its stakeholder engagement process. As there are a reasonable number of system changes required with this concept, a pilot program may be appropriate to test for operational feasibility. Furthermore, considering the extent of information technology changes, implementation would need to occur within the context of competing AESO priorities. If consultation suggests that this initiative should proceed, the AESO will further investigate the potential of a pilot program, and consider the timeline for full implementation for discussion with stakeholders.

